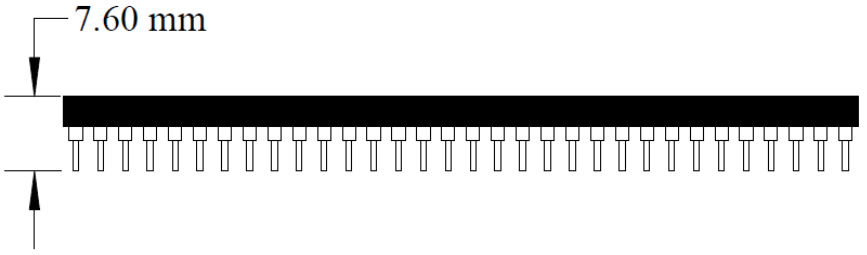
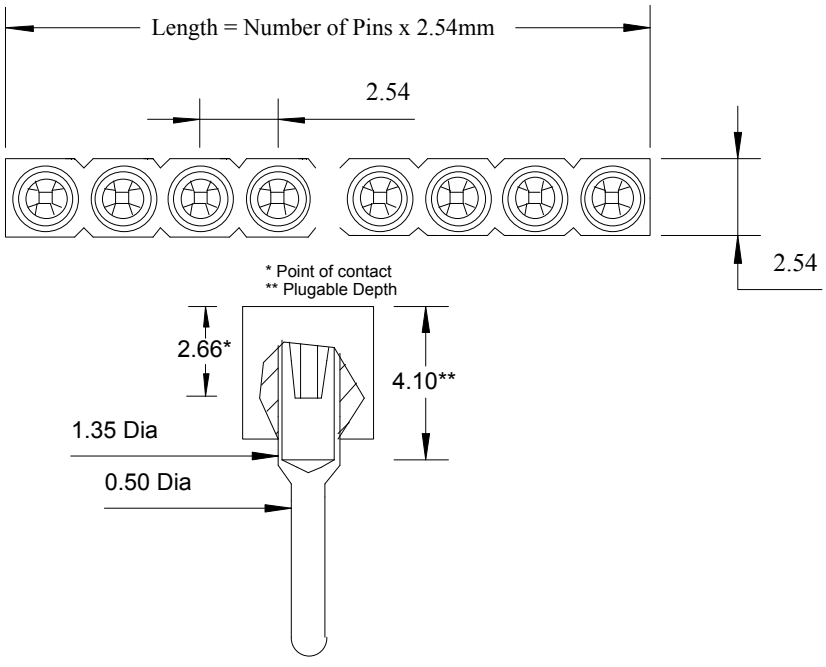
WINSLOW ADAPTICs

Data Sheet – Screw Machined I.C. Sockets
W35500TRC - W35500T - W35500G
W35500TTRC

The W35500 Series uses a screw machined half hard brass outer pin with a beryllium copper contact. The outer pin has 3 plating options; RoHS compliant Tin, Tin/Lead or Gold. The beryllium copper contact can be Gold or pure Tin.
Moulding material is 30%GF PBT rated to UL 94 V-0. Part are designed and packaged for automatic PCB loading machines. The following table explains the plating options for the range.

SUFFIX	OUTER PLATING	CONTACT PLATING
TRC	Pure Tin (RoHS Compliant)	Gold
T	Tin Lead	Gold
G	Gold	Gold
TTRC	Pure Tin (RoHS Compliant)	Pure Tin (RoHS Compliant)





PART NUMBER*	PINS	LENGTH
W35520	20	50.8mm
W35532	32	81.2mm

*Remember to add your plating suffix when ordering.

Product snaps to length required. Customers may order specific pin-outs as follows: **W355(xx).** Insert number of pins required in place of (xx). Minimum 1—Maximum 32

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Data Sheet – Screw Machined I.C. Sockets
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W35500TTRC

General Specifications. Unless stated all values are typical.

Contact

Resistance: See test results below. Current Rating: 5.0 amps
Capacitance: 0.35pF max Material: Brass outer, beryllium copper inner.

*Plating: Outer;
W35500TRC Nickel 2.5Um/Pure Tin 6.0Um
W35500T 60/40 tin/lead 2-3Um.
W35500G Nickel 2.5Um/Gold 0.1Um
W35500TTRC Nickel 2.5Um/Pure Tin 6.0Um

*Plating: Inner;
W35500TRC Nickel 2.5Um/Gold 0.1Um
W35500T Nickel 2.5Um/Gold 0.1Um
W35500G Nickel 2.5Um/Gold 0.1Um
W35500TTRC Nickel 2.5Um/ Pure Tin 0.1Um

Note: Other plating specs available. Please contact sales@winslowadaptics.com with your requirements.

Insertion Force: 350 grams per pin 0.018" diameter
Withdrawal Force: 250 grams per pin 0.018" diameter.
Force to remove from moulding: 12lb minimum

Test Data and Results (Sockets Tested—W30524T)

Test	Conditions	Result
Vibration	10 to 2,000Hz at 20g's	No mechanical damage to assembly or loss of continuity
Shock	150g's	No mechanical damage to assembly or loss of continuity
Thermal Shock	-65 to +150 degrees Centigrade	No change in insulation resistance, loss of continuity or mechanical damage to assembly.
Life vs Contact Resistance	1,000 cycles insertion/ withdrawal of IC lead device.	Average: Before test; 5.8mOhms After test; 6.9mOhms
Fungus Resistance of Moulding		Non-Nutrient
Salt Spray		Contact resistance remained 14mOhm. No galvanic corrosion visible at 50X
Endurance & Exposure to Ammonium Sulphide	Exposure after 10 insertions of DIP IC.	New tin-plated contact resistance 11mOhms
Atmosphere (contact)	Exposure after 10 insertions of DIP IC	New gold-plated contact resistance 5mOhms max.
Continuity of Soldered Connectors		Resistance change was less than 10%

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Data Sheet – Screw Machined I.C. Sockets
W35500TRC - W35500T - W35500G
W35500TTRC

General Specifications. Unless stated all values are typical.

Moulding

Material:	Glass-reinforced Polyester (PBT)
Insulation Resistance:	1010 Ohms (contact to contact) at 500VDC
Arc Resistance:	145 seconds at 23 degrees C
Electrical Strength:	121KV/cm at 23 degrees C
Dielectric Constant:	3.9 (48 hrs 90%RH) at 100Hz 23 degrees C 4.5 at 100Hz 121 degrees C 3.7 (48 hrs 90%RH) at 1MHz 23 degrees C 4.3 at 1MHz 121 degrees C
Dissipation Factor:	0.0077 (48 hrs 30%RH) at 100Hz 23 degrees C 0.0300 at 100Hz 121 degrees C 0.0150 (48 hrs 30%RH) at 1MHz 23 degrees C 0.0200 at 1MHz 121 degrees C
Volume Resistivity:	3 x 1013ohms-CM (48 hrs 90%RH) at 25 degrees C 1013ohms-CM at 121 degrees C
Operating Temperature:	-65 to 150 degrees C
Flammability:	UL94V-0

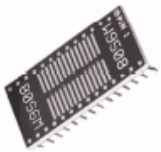
Note: Dimensions are subject to change without prior notice.

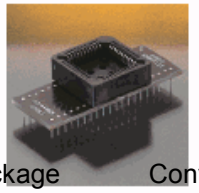
sales@winslowadaptics.com

DIP Support products from Winslow Adaptics

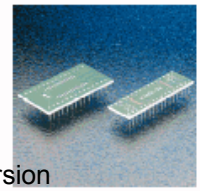
www.winslowadaptics.com

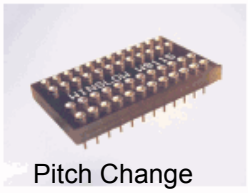
Custom Upgrades





Package Conversion





Pitch Change

Also available from Winslow Adaptics are cost effective, time saving solutions to test, obsolescence, supply problems and upgrades. OEMs can upgrade equipment with custom Adaptics utilising additional logic, often saving considerable cost and time on re-design. If lead-time becomes an issue contact us for a suitable package convertor. We specialise in conversion of all package lead-frames.

Kingbright

T-1 3/4 (5mm) BLINKING LED LAMP

Part Number: L-56BYD Yellow

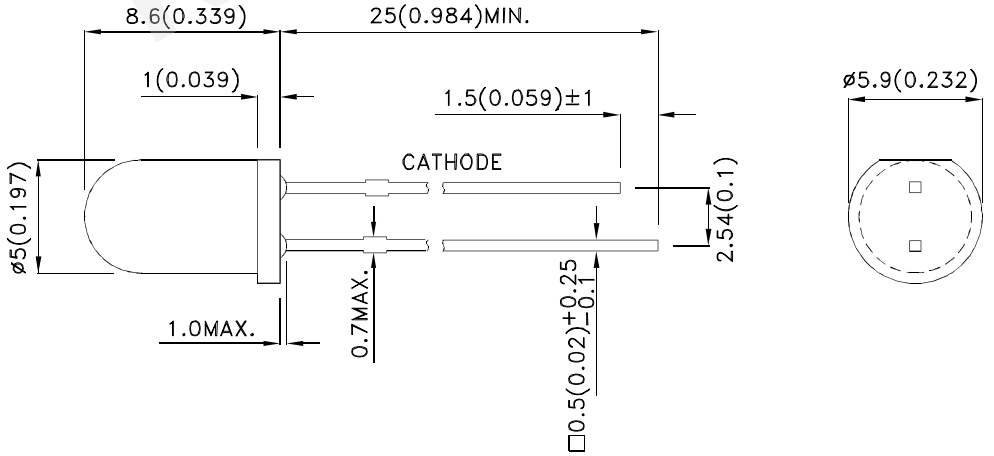
Features

- T-1 3/4 package.
- With built-in blinking IC.
- Operation voltage from 3.5V to 14V.
- Blinking frequency from 3.0Hz to 1.5Hz.
- RoHS compliant.

Description

The Yellow source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Yellow Light Emitting Diode.

Package Dimensions



Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25(0.01") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.
4. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.

Selection Guide

Part No.	Dice	Lens Type	Iv (mcd) V= 9V		Viewing Angle [1]
			Min.	Typ.	2θ1/2
L-56BYD	Yellow (GaAsP/GaP)	Yellow Diffused	12	20	60°

Notes:
1. θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
2. Luminous intensity value is traceable to the CIE127-2007 compliant national standards.

Electrical / Optical Characteristics at TA=25°C

Symbol	Parameter	Device	Min.	Typ.	Max.	Units	Test Conditions
λpeak	Peak Wavelength	Yellow		590		nm	
λD	Dominant Wavelength	Yellow		588		nm	
Δλ1/2	Spectral Line Half-width	Yellow		35		nm	
I_F	Forward Current	Yellow	8	22		mA	Min:V_F=3.5V Typ:V_F=5V
I_{SON}	Supply Current	Yellow		8		mA	V_F=3.5V
I_{SON}	Supply Current	Yellow		44		mA	V_F=14V
f	Blink Frequency	Yellow	1.5		3	Hz	V_F=3.5V~14V

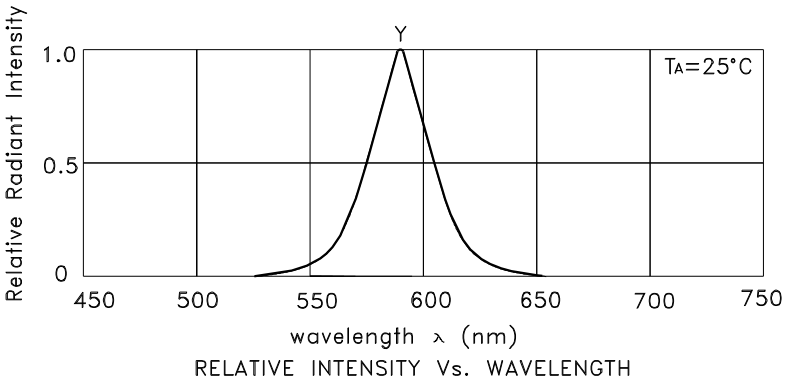
Note:
1. Wavelength value is traceable to the CIE127-2007 compliant national standards.

Kingbright

Absolute Maximum Ratings at TA=25°C

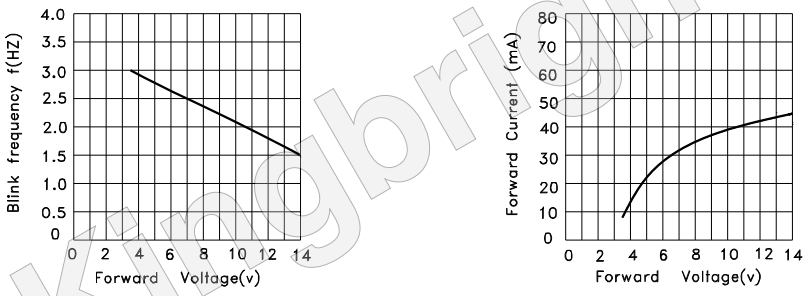
Parameter	Yellow	Units
Power dissipation	310	mW
Forward Voltage	14	V
Reverse Voltage	0.5	V
Operating Temperature	-40°C To +70°C	
Storage Temperature	-40°C To +85°C	
Lead Solder Temperature [1]	260°C For 3 Seconds	
Lead Solder Temperature [2]	260°C For 5 Seconds	

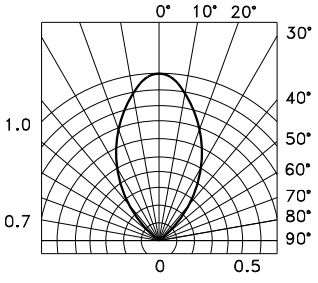
Notes:
1. 2mm below package base.
2. 5mm below package base.



RELATIVE INTENSITY Vs. WAVELENGTH

Yellow **L-56BYD**

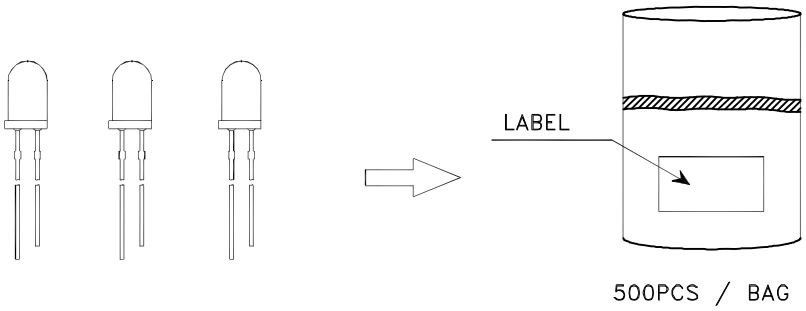


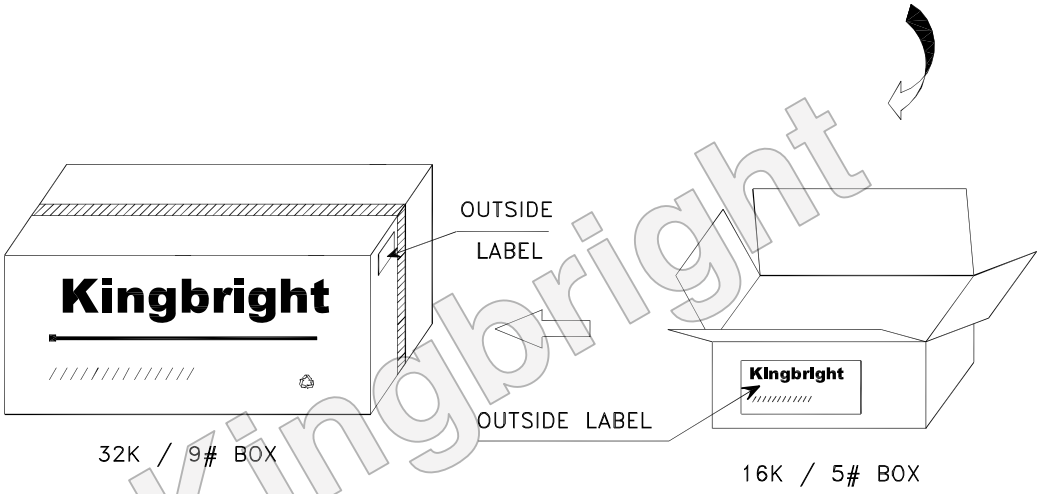


SPATIAL DISTRIBUTION

Kingbright

PACKING & LABEL SPECIFICATIONS **L-56BYD**





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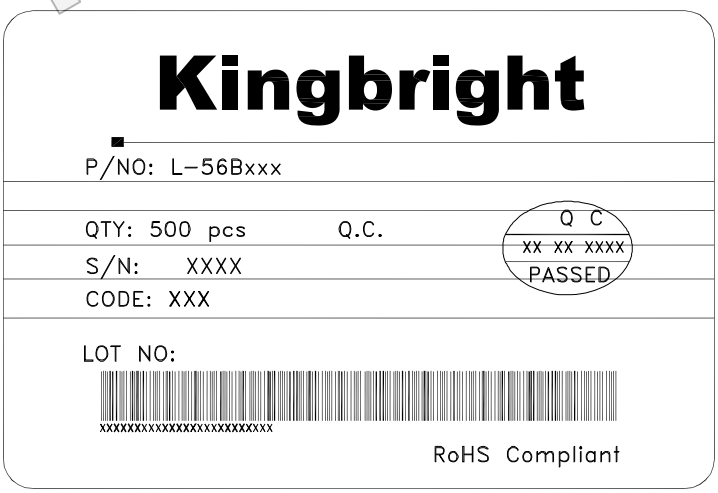


PRECAUTIONS

1. The lead pitch of the LED must match the pitch of the mounting holes on the PCB during component placement. Lead-forming may be required to insure the lead pitch matches the hole pitch. Refer to the figure below for proper lead forming procedures. (Fig. 1)

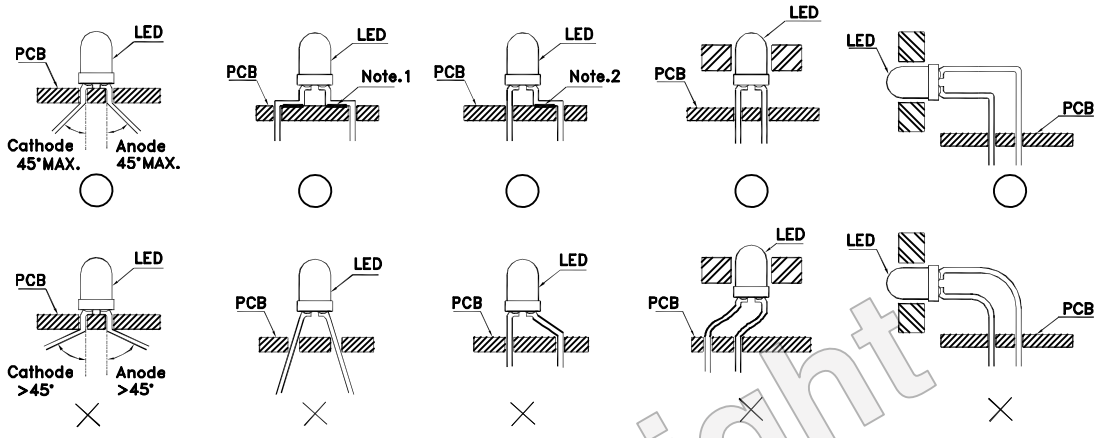


Fig.1

"○" Correct mounting method "×" Incorrect mounting method

2. When soldering wire to the LED, use individual heat-shrink tubing to insulate the exposed leads to prevent accidental contact short-circuit. (Fig.2)

3. Use stand-offs (Fig.3) or spacers (Fig.4) to securely position the LED above the PCB.

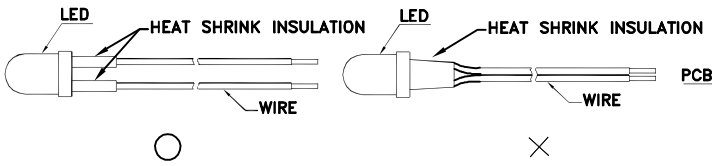


Fig. 2

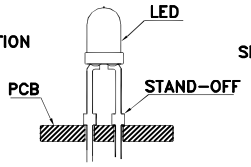


Fig. 3

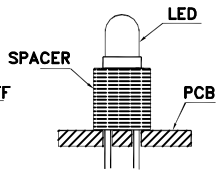


Fig. 4

4. Maintain a minimum of 2mm clearance between the base of the LED lens and the first lead bend. (Fig. 5 and 6)

5. During lead forming, use tools or jigs to hold the leads securely so that the bending force will not be transmitted to the LED lens and its internal structures. Do not perform lead forming once the component has been mounted onto the PCB. (Fig. 7)

Kingbright

6. Do not bend the leads more than twice. (Fig. 8)

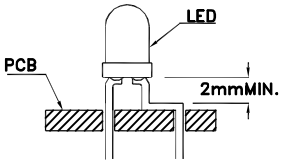


Fig. 5

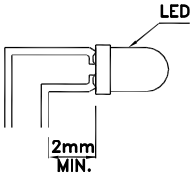


Fig. 6

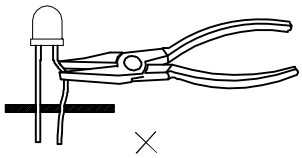


Fig. 7

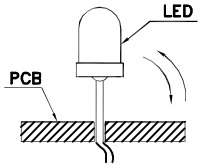
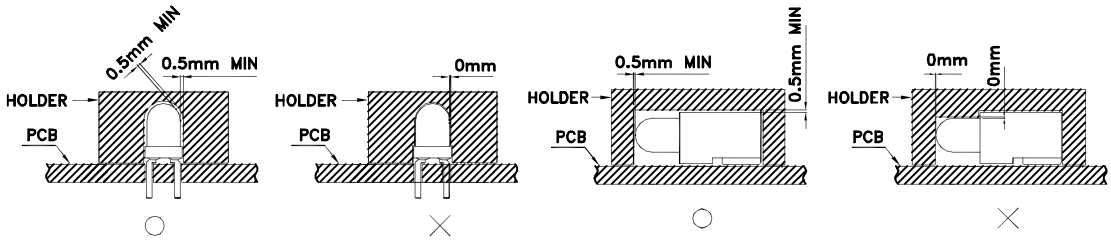
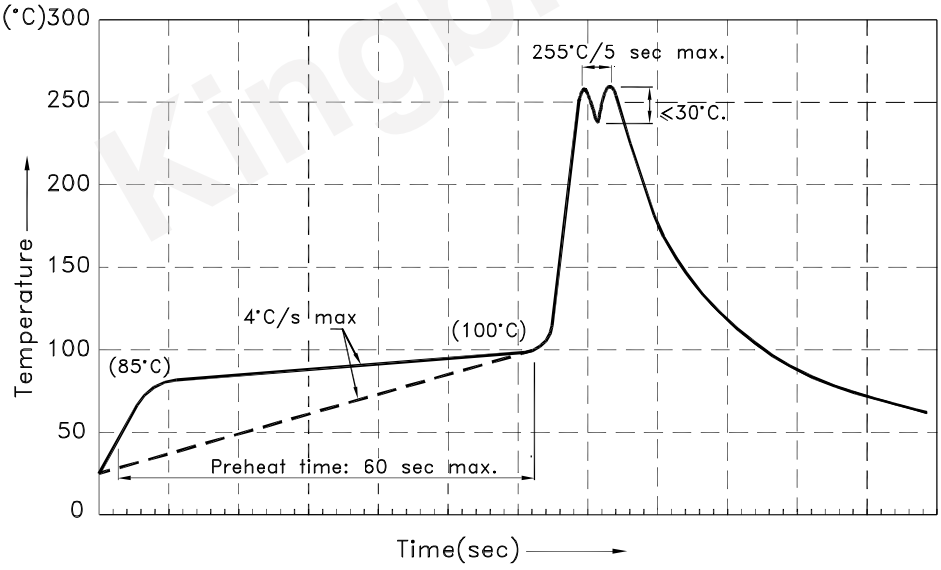


Fig. 8

7. During soldering, component covers and holders should leave clearance to avoid placing damaging stress on the LED during soldering.



8. The tip of the soldering iron should never touch the lens epoxy.
9. Through-hole LEDs are incompatible with reflow soldering.
10. If the LED will undergo multiple soldering passes or face other processes where the part may be subjected to intense heat, please check with Kingbright for compatibility.
11. Recommended Wave Soldering Profiles:



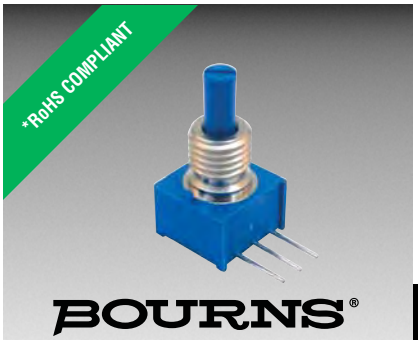
Notes:

1. Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C
2. Peak wave soldering temperature between 245°C ~ 255°C for 3 sec (5 sec max).
3. Do not apply stress to the epoxy resin while the temperature is above 85°C.
4. Fixtures should not incur stress on the component when mounting and during soldering process.
5. SAC 305 solder alloy is recommended.
6. No more than one wave soldering pass.

Detailed application notes are listed on our website.
http://www.kingbright.com/application_notes

MIKROE-513

Wire Jumpers Male to Male (15 cm length, 10pcs)



Features

- Miniature package for design flexibility
- Long operating life
- Conductive plastic element
- Bushing or PC board mount
- Quadrature output
- RoHS compliant*

BOURNS® PRO AUDIO

3315 - 9 mm Square Sealed Incremental Encoder

Electrical Characteristics

Output	2-bit quadrature code, Channel A leads Channel B electrically turning clockwise (CW)
Closed Circuit Resistance	5 ohms maximum
Contact Rating	TTL compatible loads
Insulation Resistance (500 VDC)	1,000 megohms minimum
Dielectric Withstanding Voltage	
Sea Level	900 VAC minimum
Electrical Travel	Continuous
Contact Bounce	5 milliseconds maximum
RPM (Operating)	120 maximum

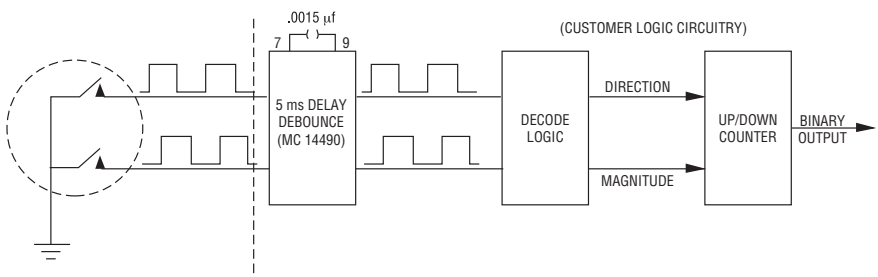
Environmental Characteristics

Operating Temperature Range	-40 °C to +125 °C (-40 °F to +257 °F)
Storage Temperature Range	-55 ºC to +125 ºC (-67 °F to +257 °F)
Humidity	MIL-STD-202, Method 103B, Condition B
Vibration	30 G
Contact Bounce	5.0 millisecond maximum
Shock	100 G
Contact Bounce	5.0 millisecond maximum
Rotational Life	100,000 cycles @ 6 PPR 25,000 cycles @ 16 PPR
IP Rating	IP 67

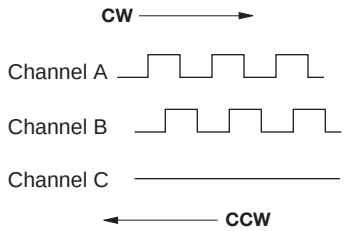
Mechanical Characteristics

Mechanical Angle	360 ° Continuous
Running Torque	3.53 N-cm (5 oz.-in.) maximum
Mounting Torque	
Plastic Bushing	45.19 N-cm (4.0 lb.-in.) maximum
Metal Bushing	79 N-cm (7.0 lb.-in.) maximum
Weight	4.5 gm (0.15 oz.)
Terminals	Solderable pins
Soldering Condition	
Manual Soldering	96.5Sn/3.0Ag/0.5Cu solid wire or no-clean rosin cored wire; 370 °C (700 °F) max. for 3 seconds
Wave Soldering	96.5Sn/3.0Ag/0.5Cu solder with no-clean flux; 260 °C (500 °F) max. for 5 seconds
Wash Processes	For recommended wash processes, please refer to http://www.bourns.com/pdfs/sldclen.pdf
Marking	Manufacturer's trademark, part number, and date code
Hardware	One lockwasher and one mounting nut are shipped with each encoder, except where noted in the part number.

Suggested Incremental Control Diagram



Quadrature Output Table



*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

How to Order

3315 Y - 0 0 1 - 006 L

Model Number Designator
- 3315 = 9 mm Encoder

Terminal Style Designator
- C = In-line Straight Terminals Side Exit
- R = In-line Terminals Rear Exit
- P = 5.08 mm x 2.54 mm Triangular Pattern Rear Exit
- Y = 5.08 mm x 5.08 mm Triangular Pattern Rear Exit

Shaft End Designator
- 0 = Shaft End Slotted
- 1 = Shaft End Flatted

Shaft Length Designator
- 0 = 12.7 mm FMS Long Plastic Shaft (Available w/bushing only)
- 1 = 19.05 mm FMS Long Plastic Shaft (Available w/bushing only)
- 2 = 5.59 mm FMS (Bushingless version only)

Bushing Designator
- 1 = 6.35 mm x 6.35 mm Plastic
- 2 = 6.35 mm x 6.35 mm Ni Plated Brass
- 5 = Bushingless (Board Level)

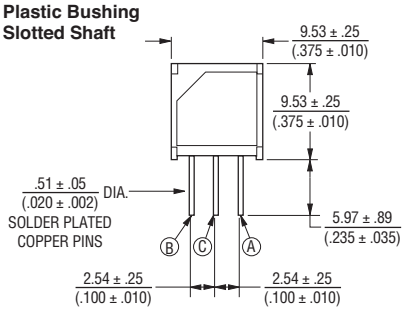
Pulses per Revolution Code
- 006 = 6 PPR
- 016 = 16 PPR

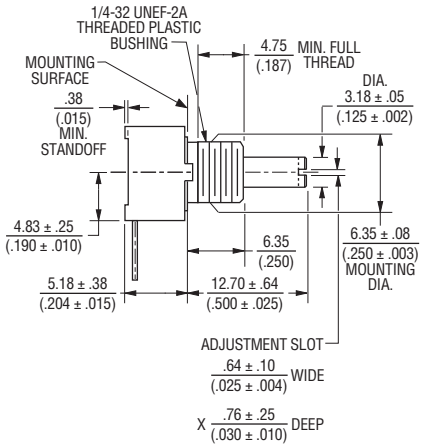
RoHS Identifier
- L = Compliant

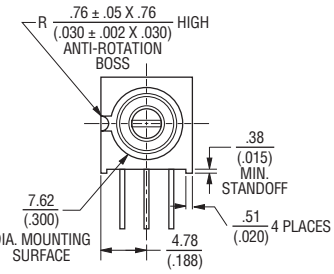
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

Product Dimensions

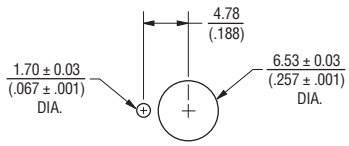
COMMON DIMENSIONS
3315-001
Plastic Bushing
Slotted Shaft



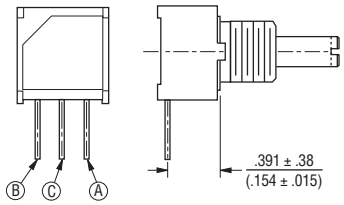




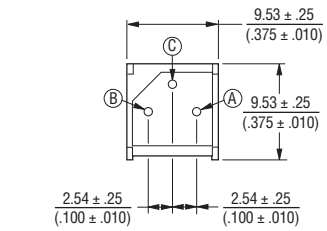
MOUNTING HOLE PATTERN

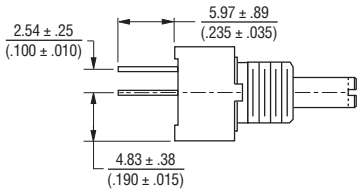


3315C-001



3315P-001





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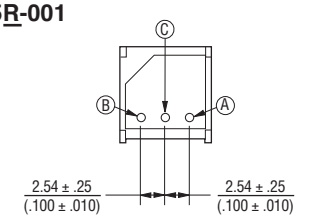

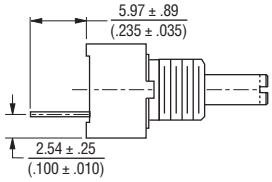

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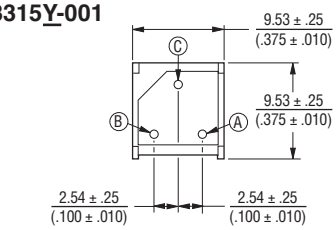
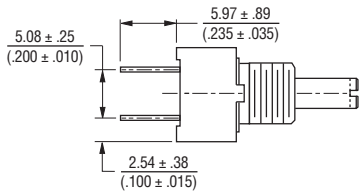
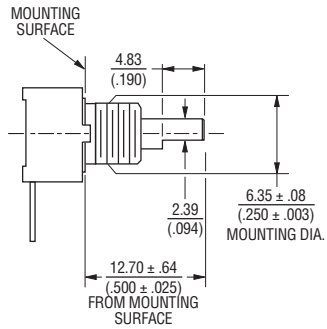
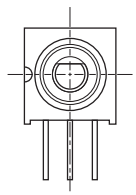




COMMON DIMENSIONS
3315C-101
Plastic Flatted Shaft



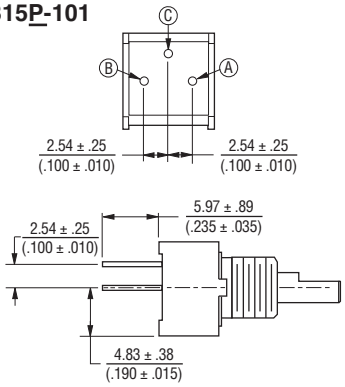


DIMENSIONS: MM / (INCHES)

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

Product Dimensions

3315P-101



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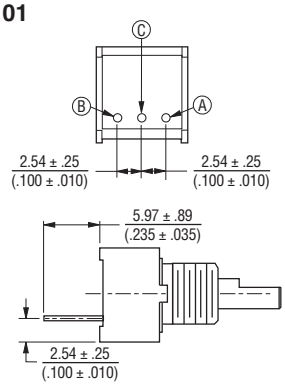

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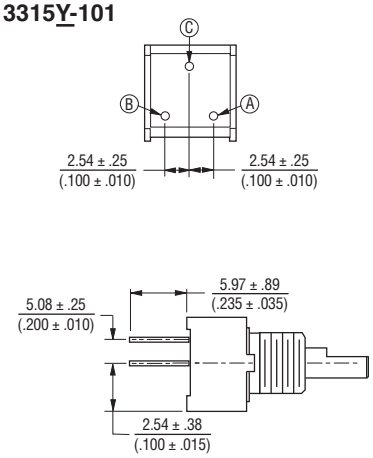

COMMON DIMENSIONS
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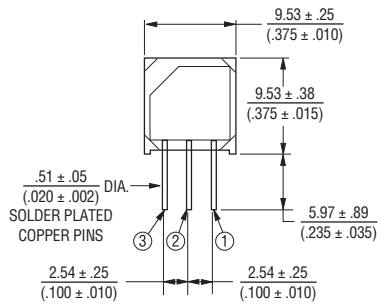
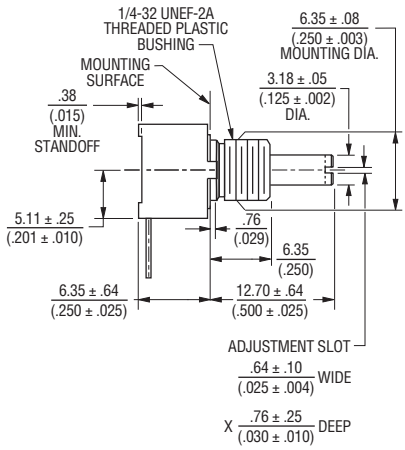
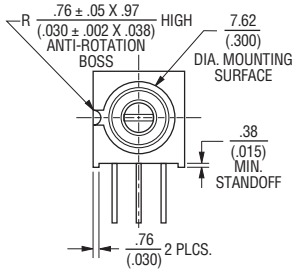
Metal Bushing







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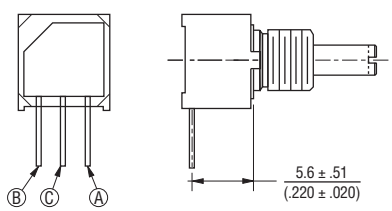

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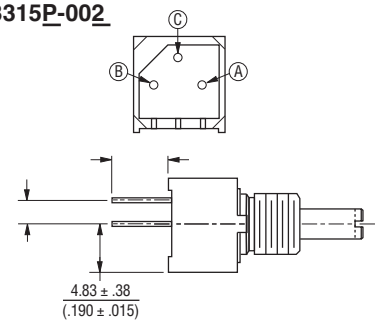

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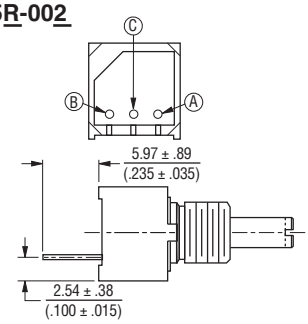

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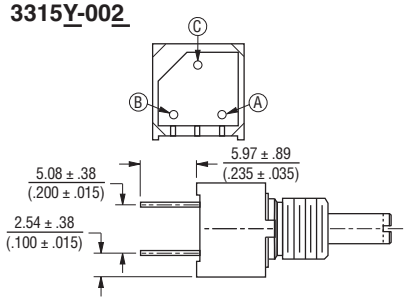
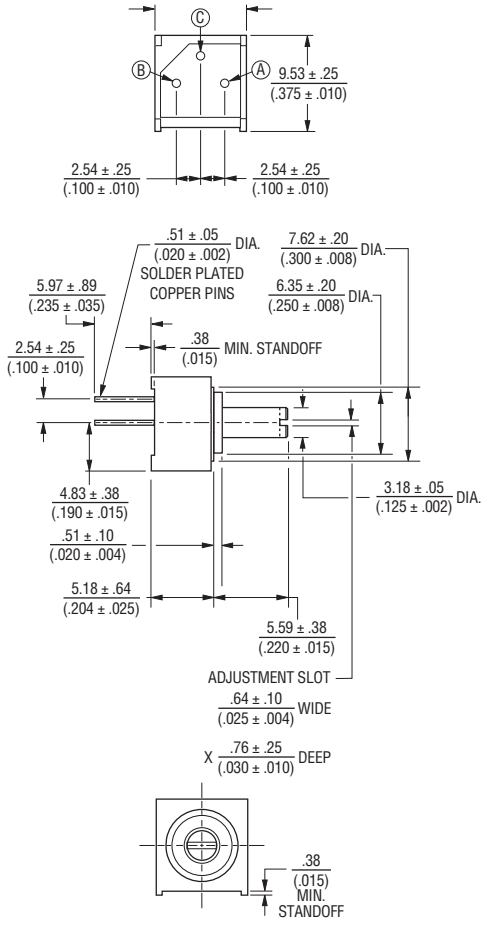


DIMENSIONS: MM / (INCHES)

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

Product Dimensions

3315P-025
Bushingless



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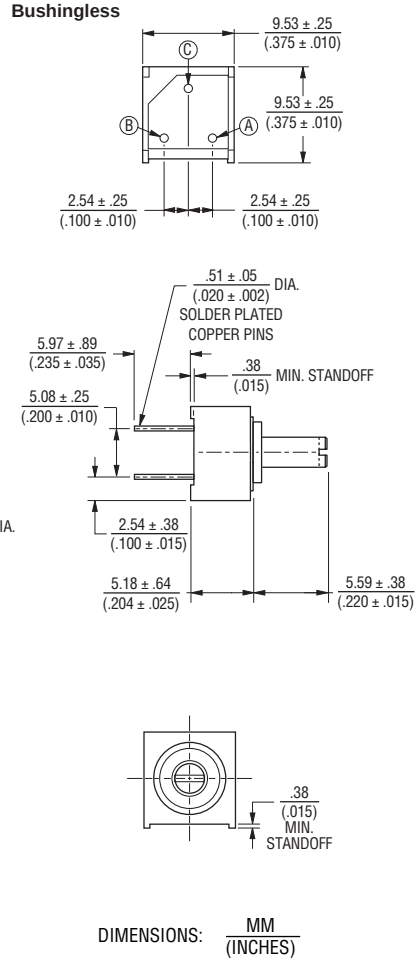
Bushingless



DIMENSIONS: MM / (INCHES)

REV. 10/12

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

rotronic

Datenblatt - Fiche technique - Data sheet

12.03.2030

ROLINE 9pol. Buchse-Buchse,

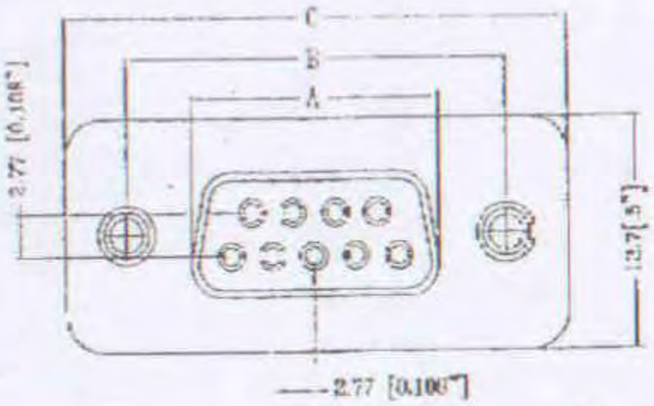
Connecteur femelle / femelle 9 pôles,

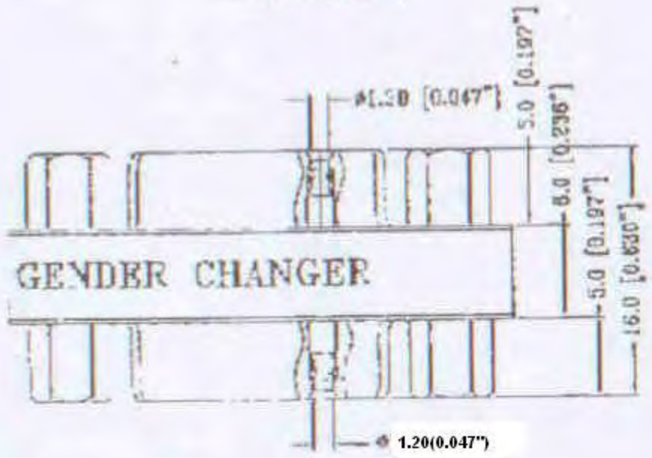
ROLINE Mini Gender Changer, 9-pin F – F,

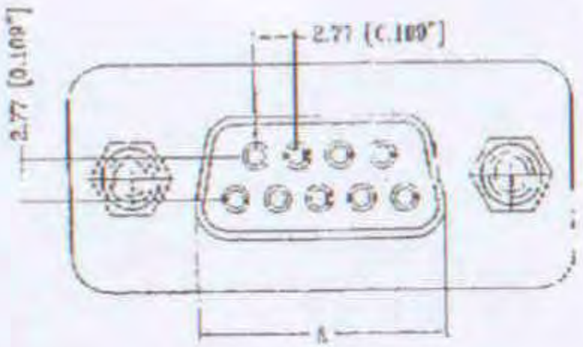
05-27-97 01:16 P. 002

REV.	ECN No.

DB F-F







SPECIFICATION:

1.VOLTAGE RATING: 300VAC(rms).
2.CURRENT RATION: 5 AMPERES.
3.DIELECTRIC STRENGTH: 1000VDC.
4.CONTACT RESISTANCE: 30mΩ max
5.INSULATION RESISTANCE: 5000mΩ min
6.DURABILITY: 30 CYCLES FOR GOLD FLASH
150 CYCLES FOR 15u" GOLD PLATED
7.CORROSION RESISATANCE: MEET MIL-STD-202F METHOD
101 CONDITION SALT WATER
SPRAY FOR GOLD PLATED OVER 15u"
8.MATING FORCE: PER CONTACT 1 OZ - 16 OZ
UNMATING FORCE: 1 KG MIN.

MATERIAL:

INSULATOR: P.B.T UL94V-0
CONTACTS: BRASS, GOLD FLASH OVER NICKLE.
SHELL: STEEL
SHELL: BRASS, NICKLE OVER ALL.

PART NO	Circuits	A	B	C
9-S	9	16.3 16.3	25.3 25.0	31.2 31.2
15-S	15	24.6 24.6	33.3 33.3	39.3 39.3
25-S	25	36.3 36.3	47.0 47.0	53.3 53.3
37-S	37	54.8 54.8	63.5 63.1	69.5 69.5

Rotronic Co.,Ltd.

Title: GC DF/DF

TOLERANCE UNLESS OTHERWISE SPECIFIED

mm: .0=±0.30 .00=±0.15 .000=±
inch: .00=± .0000=±
Ang: 0.0=± 0.00=±

Units: mm / inch

Sheet: 1 / 1

REV	DRAWN BY	CHECKED BY	APPROVED BY	VIEW	DRAWING NO
1	C.C.S	TED JU	TED JU		#12.03.2030
	07212001	07212001	07212001		

Cables, Connectors and Much More...

HDMI TO VGA ADAPTOR

Details correct on: 22/01/2016

Notification	
Product Code	NLHDMI-HSV01
Short Description	Converts HDMI to VGA
Full Description	The NLHDMI-HSV01 converts the HDMI digital signal into a VGA analogue signal for use with VGA displays. This model does not have a port for additional power or any audio.
Extra Information	**Specifications:** • Easy to Use: Installs in seconds and does not need drivers • Converts HDMI in to VGA video • Built in HDMI cable • Input HDMI • Output VGA

Cables, Connectors and Much More...

HDMI TO VGA Adaptor + Audio

Details correct on: 22/01/2016

Notification	
Product Code	NLHDMI-HSV02
Short Description	Converts HDMI to VGA with sound
Full Description	The NLHDMI-HSV02 converts the HDMI digital signal into a VGA analogue signal for use with VGA displays, it also has a 3.5mm stereo socket to output sound to devices such as speakers.
Extra Information	**Specifications:** • Easy to Use: Installs in seconds and does not need drivers • Converts HDMI in to VGA video with audio • 3.5mm Stereo output port • Built in HDMI cable • Input HDMI • Output VGA

2N4921G, 2N4922G, 2N4923G

Medium-Power Plastic NPN Silicon Transistors

These high−performance plastic devices are designed for driver circuits, switching, and amplifier applications.

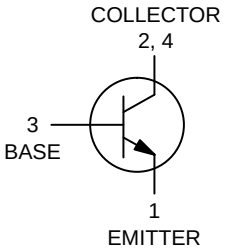
Features

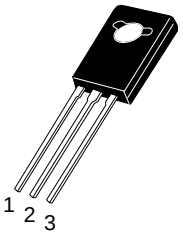
- Low Saturation Voltage
- Excellent Power Dissipation Due to Thermopad™ Construction
- Excellent Safe Operating Area
- Complement to PNP 2N4920G
- These Devices are Pb−Free and are RoHS Compliant**

ON Semiconductor®

http://onsemi.com

1.0 AMPERE GENERAL PURPOSE POWER TRANSISTORS 40−80 VOLTS, 30 WATTS





TO−225
CASE 77−09
STYLE 1

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector−Emitter Voltage 2N4921G 2N4922G 2N4923G	V_{CEO}	 40 60 80	Vdc
Collector−Emitter Voltage 2N4921G 2N4922G 2N4923G	V_{CB}	 40 60 80	Vdc
Emitter Base Voltage	V_{EB}	5.0	Vdc
Collector Current − Continuous (Note 1)	I_C	1.0	Adc
Collector Current − Peak (Note 1)	I_{CM}	3.0	Adc
Base Current − Continuous	I_B	1.0	Adc
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	 30 0.24	 W mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. The 1.0 A maximum I_C value is based upon JEDEC current gain requirements. The 3.0 A maximum value is based upon actual current handling capability of the device (see Figures 5 and 6).

THERMAL CHARACTERISTICS (Note 2)

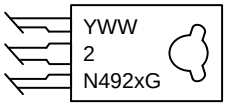
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	4.16	°C/W

2. Recommend use of thermal compound for lowest thermal resistance.

*Indicates JEDEC Registered Data.

** For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

MARKING DIAGRAM



Y = Year
WW = Work Week
2N492x = Device Code
x = 1, 2, or 3
G = Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping
2N4921G	TO−225 (Pb−Free)	500 Units / Box
2N4922G	TO−225 (Pb−Free)	500 Units / Box
2N4923G	TO−225 (Pb−Free)	500 Units / Box

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ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector−Emitter Sustaining Voltage (Note 3) (I_C = 0.1 Adc, I_B = 0) 2N4921G 2N4922G 2N4923G	$V_{CEO(sus)}$	 40 60 80	 − − −	Vdc
Collector Cutoff Current (V_{CE} = 20 Vdc, I_B = 0) 2N4921G (V_{CE} = 30 Vdc, I_B = 0) 2N4922G (V_{CE} = 40 Vdc, I_B = 0) 2N4923G	I_{CEO}	 − − −	 0.5 0.5 0.5	mAdc
Collector Cutoff Current (V_{CE} = Rated V_{CEO}, $V_{EB(off)}$ = 1.5 Vdc) (V_{CE} = Rated V_{CEO}, $V_{EB(off)}$ = 1.5 Vdc, T_C = 125°C	I_{CEX}	 − −	 0.1 0.5	mAdc
Collector Cutoff Current (V_{CB} = Rated V_{CB}, I_E = 0)	I_{CBO}	 −	 0.1	mAdc
Emitter Cutoff Current (V_{EB} = 5.0 Vdc, I_C = 0)	I_{EBO}	 −	 1.0	mAdc
ON CHARACTERISTICS				
DC Current Gain (Note 3) (I_C = 50 mAdc, V_{CE} = 1.0 Vdc) (I_C = 500 mAdc, V_{CE} = 1.0 Vdc) (I_C = 1.0 Adc, V_{CE} = 1.0 Vdc)	h_{FE}	 40 30 10	 − 150 −	−
Collector−Emitter Saturation Voltage (Note 3) (I_C = 1.0 Adc, I_B = 0.1 Adc)	$V_{CE(sat)}$	 −	 0.6	Vdc
Base−Emitter Saturation Voltage (Note 3) (I_C = 1.0 Adc, I_B = 0.1 Adc)	$V_{BE(sat)}$	 −	 1.3	Vdc
Base−Emitter On Voltage (Note 3) (I_C = 1.0 Adc, V_{CE} = 1.0 Vdc)	$V_{BE(on)}$	 −	 1.3	Vdc
SMALL−SIGNAL CHARACTERISTICS				
Current−Gain − Bandwidth Product (I_C = 250 mAdc, V_{CE} = 10 Vdc, f = 1.0 MHz)	f_T	 3.0	 −	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)	C_{ob}	 −	 100	pF
Small−Signal Current Gain (I_C = 250 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz)	h_{fe}	 25	 −	−

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

3. Pulse Test: PW ≈ 300 μs, Duty Cycle ≈ 2.0%.

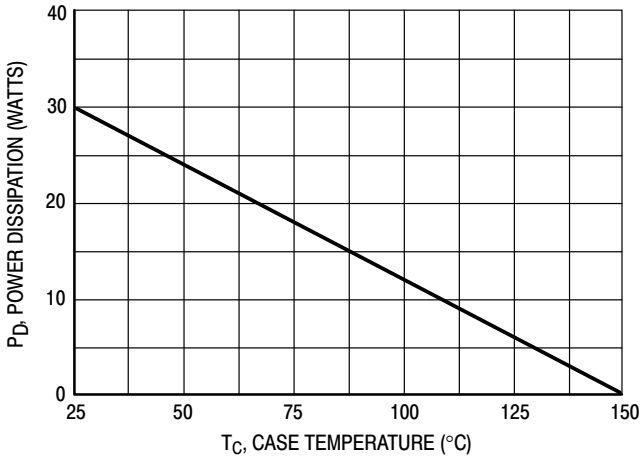


Figure 1. Power Derating

Safe Area Curves are indicated by Figure 5. All limits are applicable and must be observed.

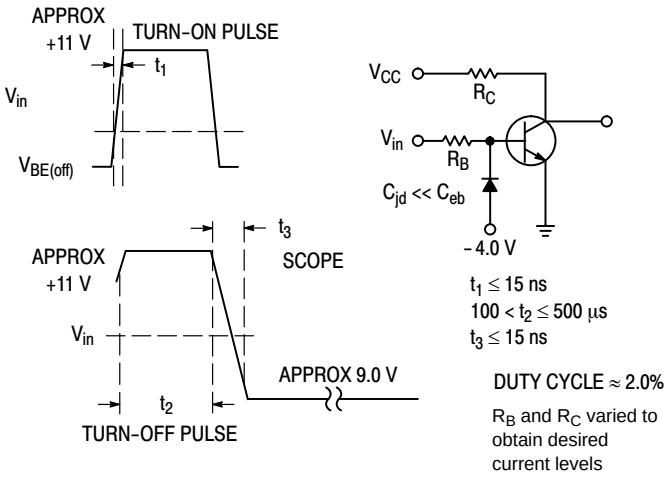


Figure 2. Switching Time Equivalent Circuit

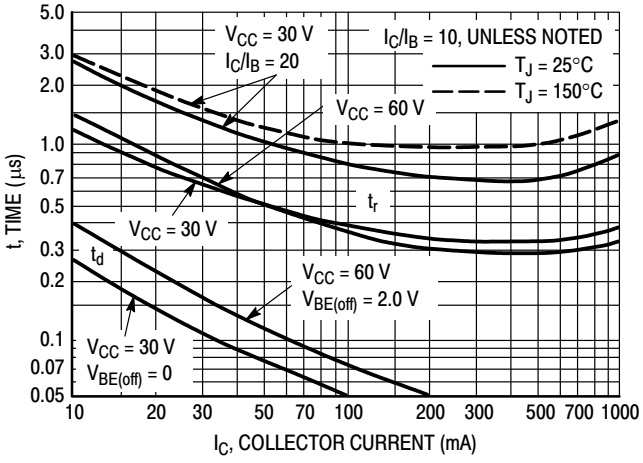


Figure 3. Turn−On Time

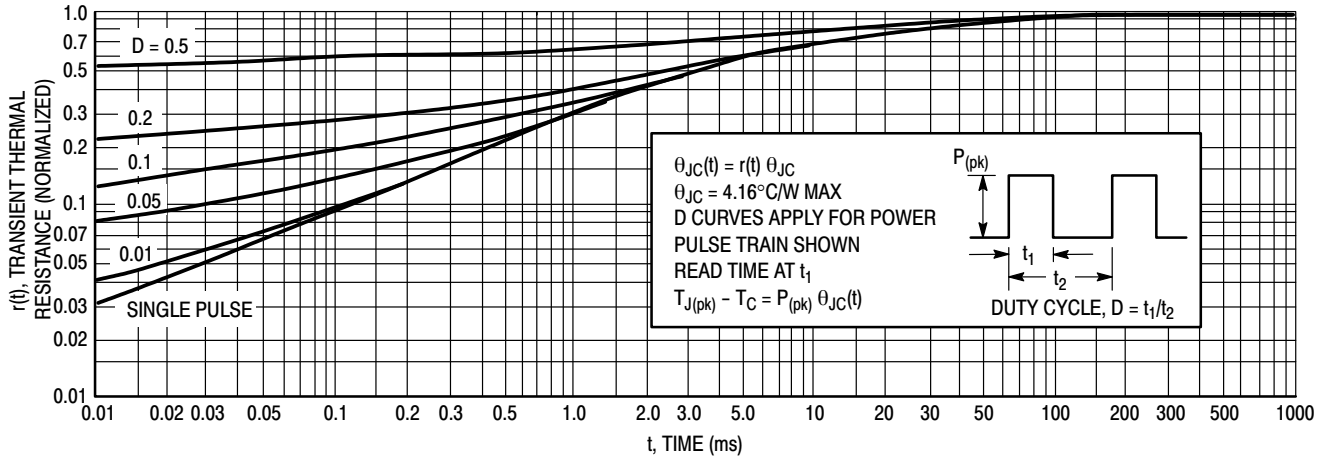


Figure 4. Thermal Response

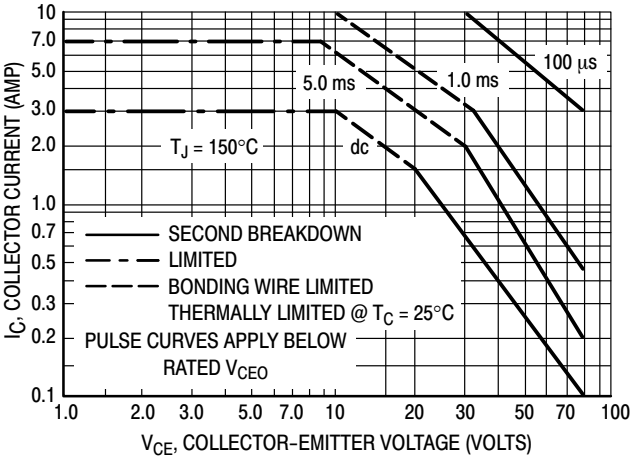


Figure 5. Active−Region Safe Operating Area

There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate $I_C - V_{CE}$ operation i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of Figure 5 is based on $T_{J(pk)} = 150°C$; T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150°C$. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

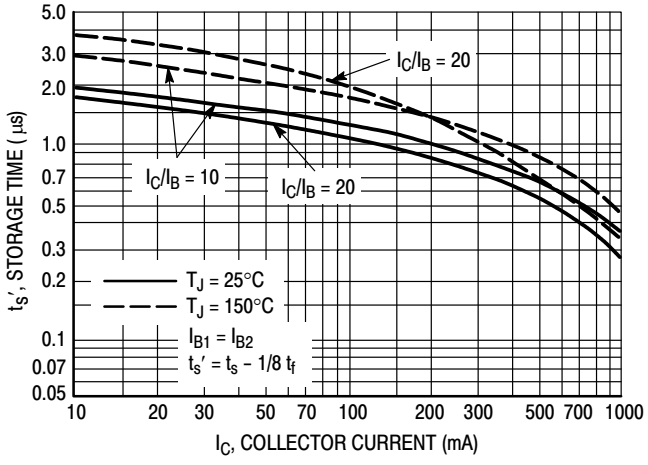


Figure 6. Storage Time

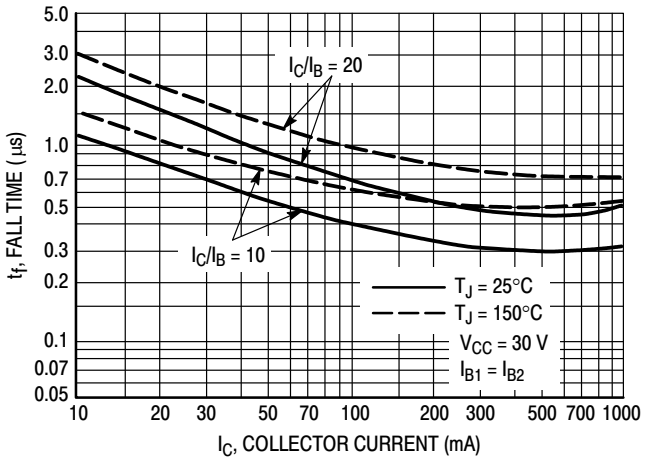


Figure 7. Fall Time

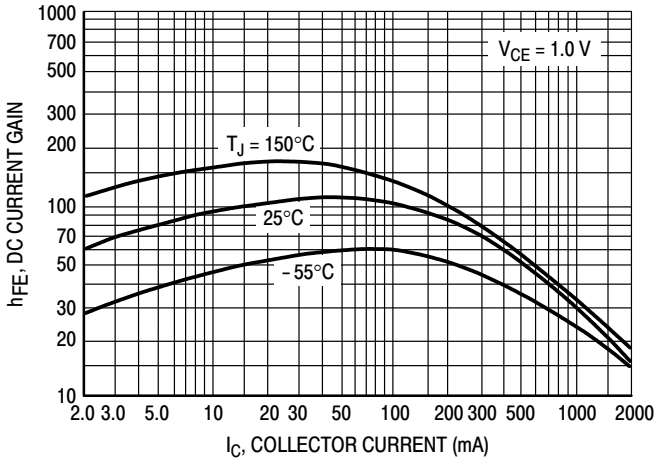


Figure 8. Current Gain

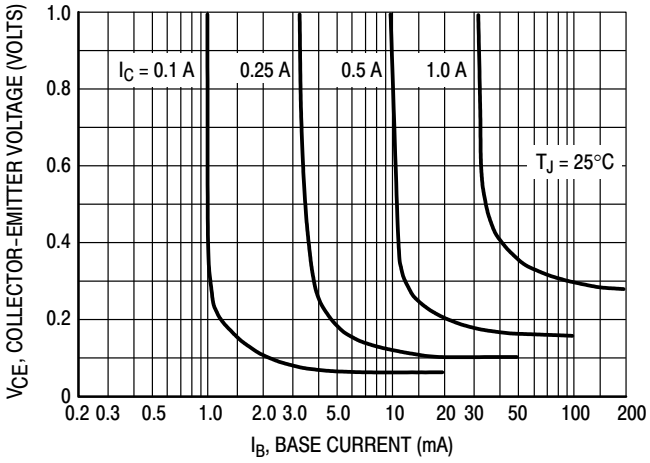


Figure 9. Collector Saturation Region

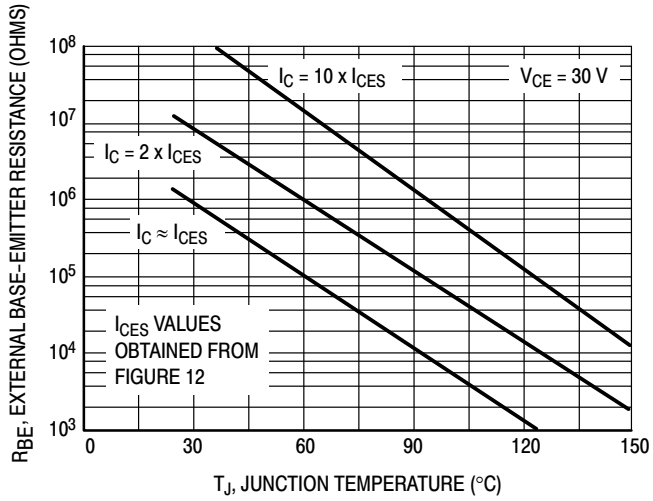


Figure 10. Effects of Base−Emitter Resistance

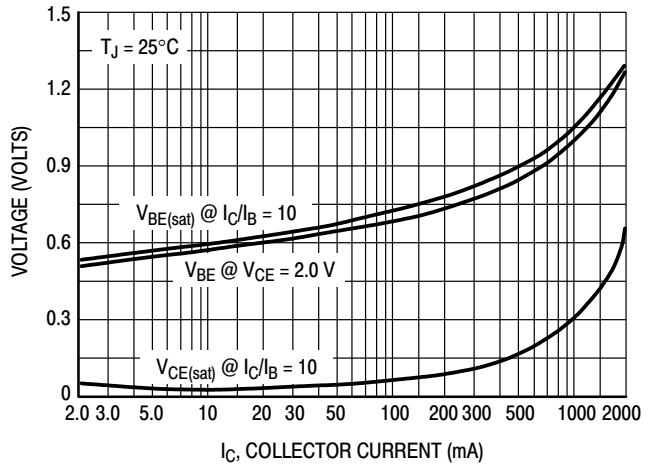


Figure 11. “On” Voltage

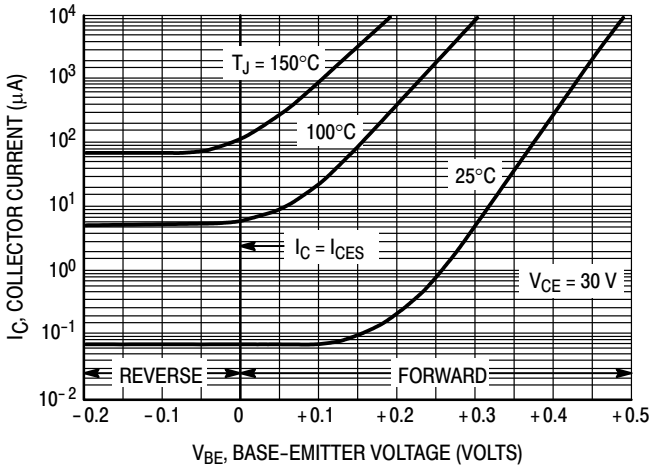


Figure 12. Collector Cut−Off Region

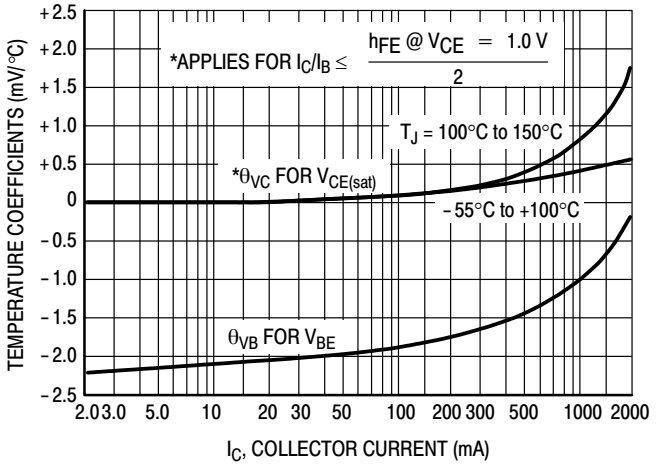
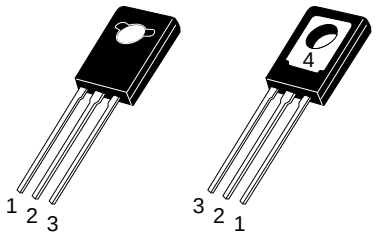


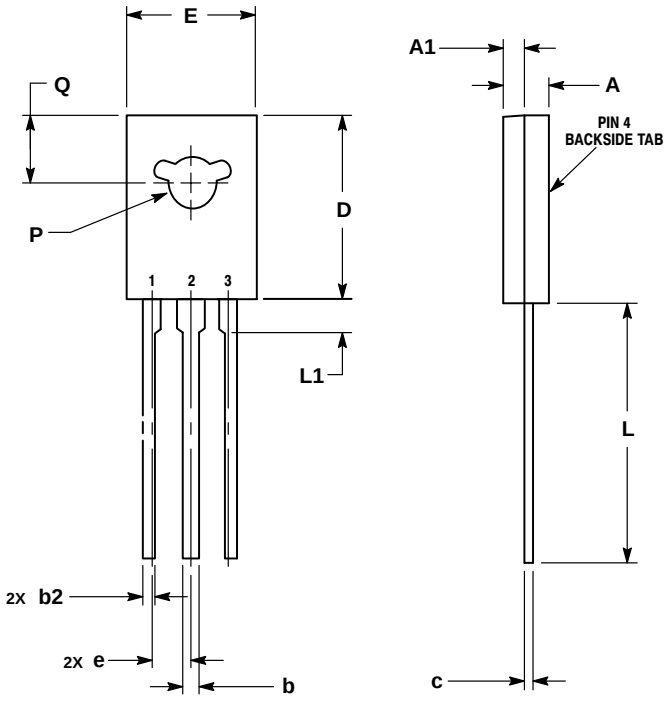
Figure 13. Temperature Coefficients

PACKAGE DIMENSIONS

TO−225
CASE 77−09
ISSUE AC



FRONT VIEW **BACK VIEW**



FRONT VIEW **SIDE VIEW**

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. NUMBER AND SHAPE OF LUGS OPTIONAL.

	MILLIMETERS	
DIM	MIN	MAX
A	2.40	3.00
A1	1.00	1.50
b	0.60	0.90
b2	0.51	0.88
c	0.39	0.63
D	10.60	11.10
E	7.40	7.80
e	2.04	2.54
L	14.50	16.63
L1	1.27	2.54
P	2.90	3.30
Q	3.80	4.20

STYLE 1:
PIN 1. EMITTER
2., 4. COLLECTOR
3. BASE

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2N4921/D

T5875DV

Raspberry Pi Power Supply

Features:

- Official Raspberry Pi Power Supply
- 1.5M Micro USB B Lead
- ErP Level 6 Efficiency Rating
- 50,000 Hour MTBF
- 1 Years Warranty

Output

Output Voltage	+5.1Vdc
Minimum Load Current	0A
Nominal Load Current	2.5A
Nominal Output Power	13W
Output Regulation	+/-5%
Line Regulation	+/-2%
Ripple & Noise	120mVp-p Maximum
Rise Time	100mS Maximum at nominal input
Turn-on Delay	3 Seconds Maximum at nominal input
Protection	Short circuit, over current, over voltage
Efficiency	80.86%
Output Cable	1500mm Micro USB B 5 Pin

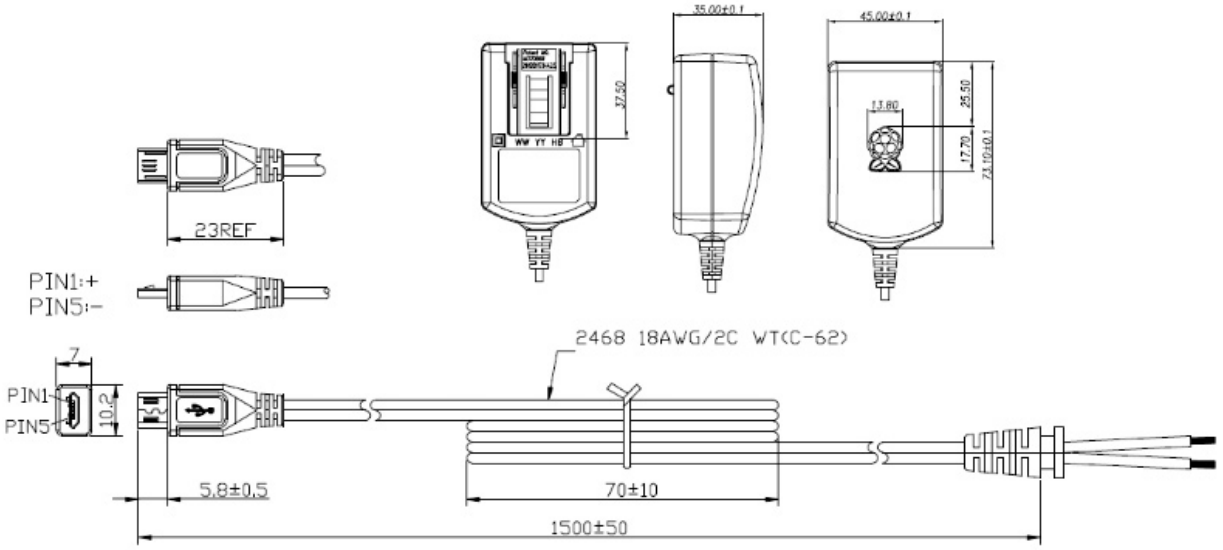
Input

Input Voltage Range	90-264VAC
Input Frequency	47-63Hz
Input Current	0.5A Max
Inrush Current	No damage and IP fuse will not blow
AC Inlet	UK, Euro, Aus & US changeable heads

Other

Dimensions	73.2 (L) * 45.1 (W) * 35.1 (H) mm
Weight	Approx 150g
Operating Temp.	0 °C to 40 °C
Storage Temp.	-20 °C to +60 °C
Opertating Humidity	20 ~ 85 % RH. Non-Condesning
MTBF	50,000 Hours

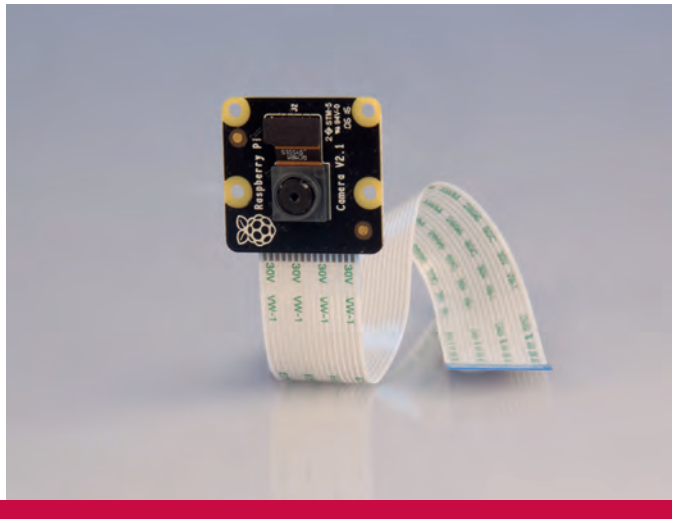
Diagrams



STONTRONICS
Chancerygate Business Centre, Cradock Road, Reading, Berkshire, RG2 0AH.
Tel: +44 (0) 118 931 1199 • Fax: +44 (0) 118 931 1145 • Email: info@stontronics.co.uk • Web: www.stontronics.co.uk

Please Note: Image shown is representative of entire range. Individual PSU image &/or drawings or data sheets available on request.
Stontronics Ltd accepts no responsibility for typographical errors in the production of this leaflet. Product specifications are subject to change without notice.

Raspberry Pi



Pi NoIR Camera Module

Product Name	**Pi NoIR - Raspberry Pi Infrared Camera Module**
Product Description	Featuring the same 8 megapixel image sensor as the standard Raspberry Pi camera with the infrared cut-off filter removed to increase IR light sensitivity. The Pi NoIR is compatible with all Raspberry Pi models and provides high definition, high sensitivity, low crosstalk and low noise image capture in an ultra small and lightweight design. The camera module connects to the Raspberry Pi board via the CSI connector which is capable of extremely high data rates and it exclusively carries pixel data to the processor.
RS Part Numer	**913-2673**

Specifications

Image Sensor	Sony IMX 219 PQ CMOS image sensor in a fixed-focus module with IR blocking filter removed.
Resolution	8-megapixel
Still picture resolution	3280 x 2464
Max image transfer rate	1080p: 30fps (encode and decode) 720p: 60fps
Connection to Raspberry Pi	15-pin ribbon cable, to the dedicated 15-pin MIPI Camera Serial Interface (CSI-2).
Image control functions	Automatic exposure control Automatic white balance Automatic band filter Automatic 50/60 Hz luminance detection Automatic black level calibration
Temp range	Operating: -20° to 60° Stable image: -20° to 60°
Lens size	1/4"
Dimensions	23.86 x 25 x 9mm
Weight	3g
Note	The Pi NoIR camera is sensitive to short-wavelength IR radiation (around 880nm) and requires IR illumination to see in the dark.

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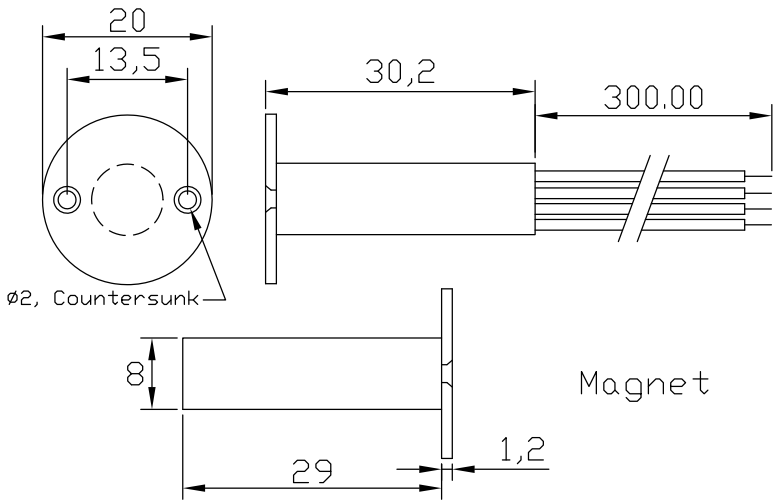
Datasheet

Stock No: 9182665

RS Pro Grade 2 Flush alarm contact



Specifications

- Normally open + supervisory loop contacts
- Grade 2
- Maximum switching voltage 50 VAC/ DC
- Maximum switching current 0.5 Amps
- Maximum power 10 W/VA
- Insulation resistance 100 MOhms
- Contact resistance 150 mOhms
- Operating distance 15mm
- Operating temperature -40° to +60° Celsius
- High impact Polystyrene housing material

Ficha técnica

N.º de artículo 146

Artículo Kälte BR

Tamaños disponibles
200 ml, 400 ml

Descripción del producto / ventajas del producto

KÄLTE BR es una mezcla de gases pura y garantiza una refrigeración fiable hasta -50 °C. KÄLTE BR resulta excelente para una búsqueda rápida de fallos ante interrupciones térmicas, así como en sistemas eléctricos y electrónicos.
KÄLTE BR es perfecto para la rápida comprobación de interruptores térmicos y termostatos con fines de prueba.
KÄLTE BR también es imprescindible para los trabajos de mantenimiento y servicio en el servicio externo.
Además permite realizar pruebas de baja temperatura en sistemas electromecánicos y localizar fisuras en placas de circuitos impresos.

Instrucciones de uso

KÄLTE BR proporciona una refrigeración inmediata y fiable hasta -50 °C. KÄLTE BR es químicamente puro y no deja rastros. Por lo demás, KÄLTE BR tiene una excelente compatibilidad con materiales y no agrede a plásticos ni otros materiales.
Enfriar la pieza prevista con el tubo pulverizador. No debe utilizarse cerca de llamas ni objetos calientes. Antes de utilizar, desconectar los equipos bajo tensión. Utilizar KÄLTE BR solo en estancias bien ventiladas.

Propiedades físicas

Densidad a 25 °C	0,55 g/cm³
Olor	inodoro
Evaporación	completa
Temperatura alcanzable	mínimo -50 °C
Punto de inflamación	<0 °C
Compatibilidad de materiales	muy buena

Almacenamiento / vida útil

Si el almacenamiento es correcto, el periodo de conservación alcanza los 2 años.
Una vez vacío, eliminar el envase en los contenedores para reciclaje.

ITW LLC Co. KG
Mühlacker Strasse 149, D-75417 Mühlacker
Teléfono +49 7041 96 34 0, fax +49 7041 96 34 29
Correo electrónico info@itwcp.de, sitio web www.itwcp.de

Datasheet

ENGLISH

Stock No: 129-757

RS Pro Beige Polyetheretherketone (PEEK) Rod, 300mm x 60mm Diameter

Product Details

Victrex® PEEK 450G

Typical applications include valve seats in steam and water mixers, components in a high temperature diesel engine turbo actuators etc.

- Continuous working temperature approx 250°C
- No significant degradation in steam or high pressure water environments
- Can absorb over 1000 Mrads of radiation without appreciable loss of mechanical properties
- Excellent resistance to a wide range of organic and inorganic liquids, and resistant to all common solvents
- Fawn in colour

ENGLISH

Max Service Temperature (Long Term)	260°C
Elongation	5 %
Tensile Strength MPa	92
Hardness (Rockwell-Shore D)	M99 (Rockwell)
Flammability Rating	UL 94 V-0
Water Absorption	0.5 %

Note
No. Per Lot is 1

Specifications:

Colour	Beige
Length	300mm
Material	PEEK
Form	Rod
Rod Diameter	60mm
Density	1.32g/cm³
Tensile Strength	95 MPa
Flammability Rating	UL 94 V-0
Maximum Operating Temperature	+260°C
Hardness	M 99 Rockwell
Elongation	25%
Water Absorption	0.5%

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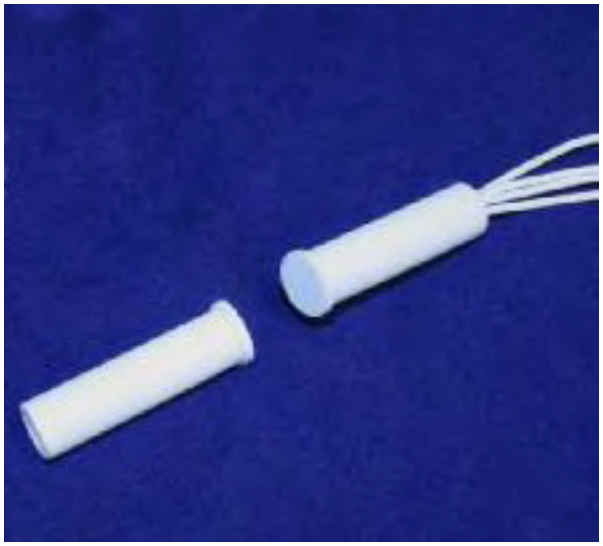
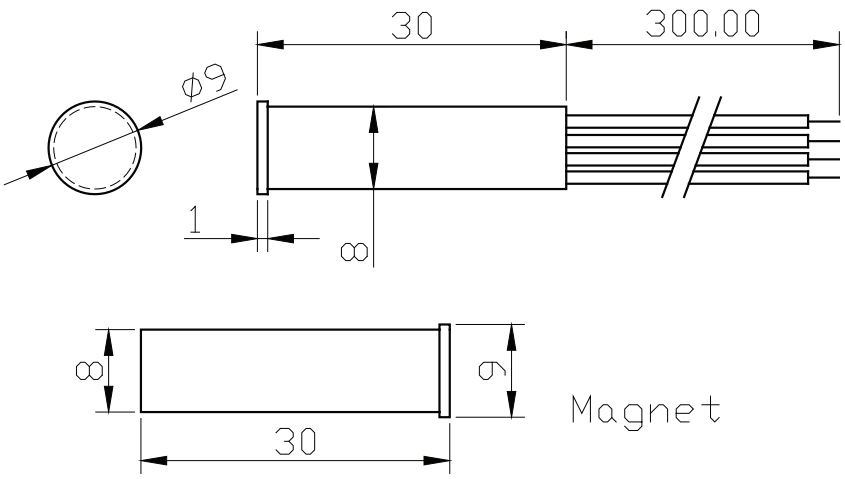
Datasheet

Stock No: 122-0716

RS Pro Cylindrical recess mount Proximity switch & Magnet





Specifications

- Normally open + supervisory loop
- Operating distance 15mm
- Maximum switching voltage 50 V/DC
- Maximum switching current 0.5 Amps DC (Resistive)
- Maximum power 10 W/VA
- Contact resistance 1 Ohm (typical)
- Operating temperature -10° to +60° Celsius

HS Aluminium Housed Resistors

Manufactured in line with the requirements of MIL 18546 and IEC 115, designed for direct heatsink mounting with thermal compound to achieve maximum performance.

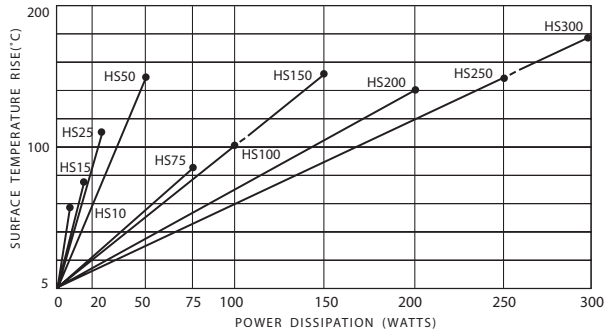
- High Power to volume
- Wound to maximise High Pulse Capability
- Values from R005 to 100K
- Custom designs welcome
- RoHS Compliant

Characteristics

Tolerance (Code):	Standard ±5% (J) and ±10% (K). Also available ±1% (F), ±2% (G) and ±3% (H)
Tolerance for low Ω values:	Typically ≥ R05 ±5% ≤ R047 ±10%
Temperature coefficients:	Typical values < 1K 100ppm Std. > 1K 25ppm Std. For lower TCR's please contact Arcol
Insulation resistance (Dry):	10,000 MΩ minimum
Power dissipation:	At high ambient temperature dissipation derates linearly to zero at 200°C
Ohmic values:	From R005 to 100K depending on wattage size
Low inductive (NHS):	Specify by adding N before HS Series code, e.g. NHS50
NHS ohmic value:	Divide standard HS maximum value by 4
NHS working volts:	Divide standard HS maximum working voltage by 1.414

Temp. Rise & Power Dissipation

Surface temperature of resistor related to power dissipation. The resistor is standard heatsink mounted using a proprietary heatsink compound.



Heat Dissipation

Heat dissipation: Whilst the use of proprietary heat sinks with lower thermal resistances is acceptable, uprating is not recommended. For maximum heat transfer it is recommended that a heat sink compound be applied between the resistor base and heat sink chassis mounting surface. It is essential that the maximum hot spot temperature of 200°C is not exceeded, therefore, the resistor must be mounted on a heat sink of correct thermal resistance for the power being dissipated.

Ordering Procedure

Standard Resistor. To specify standard: Series, Watts, Ohmic Value, Tolerance Code, e.g.: HS25 2R2 J
Non Inductive Resistor. To specify add N, e.g.: NHS100 10R J

ARCOL UK Limited,
Threemilestone Ind. Estate,
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www.arcolresistors.com

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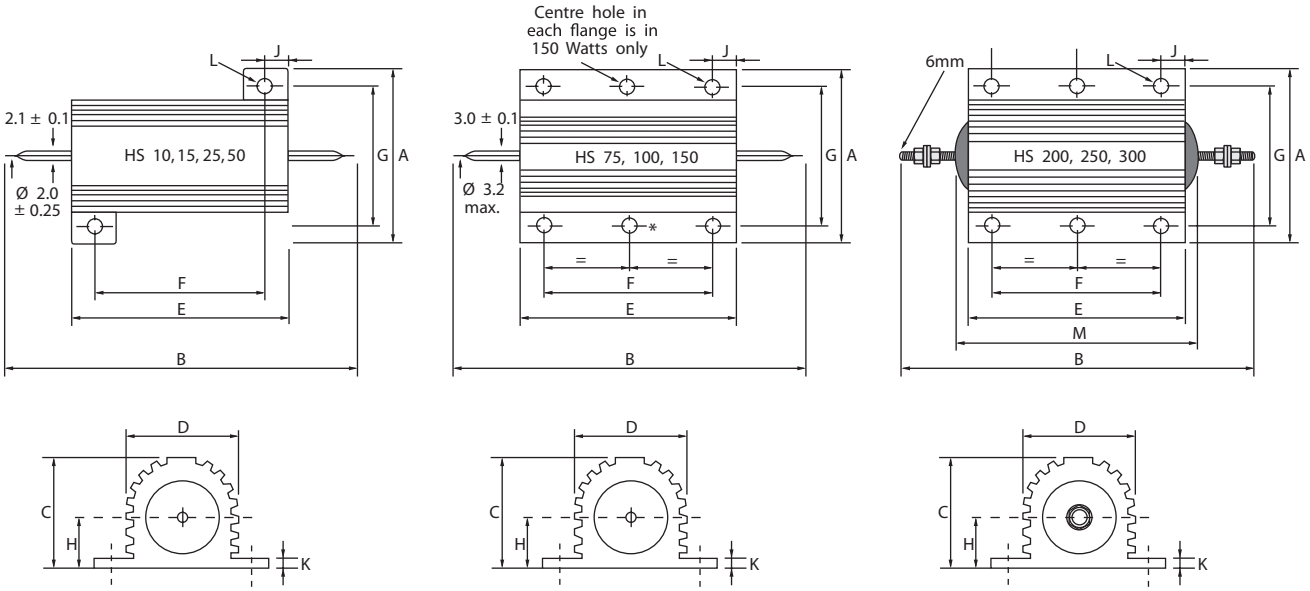
HS Aluminium Housed Resistors

Electrical Specifications

Size	Style MIL-R 18546	Power rating on std. heatsink @25°C	Watts with no heatsink @25°C	Resis-tance range	Limiting element voltage	Voltage proof AC Peak	Voltage proof AC rms.	Approx weight gms	Typical surface rise HS mounted	Standard heatsink	
										cm^2	Thickness mm
HS10	RE 60	10	5	R005-10K	160	1400	1000	4	5.8	415	1
HS15	RE 65	15	7	R005-10K	265	1400	1000	7	5.1	415	1
HS25	RE 70	25	9	R005-36K	550	3500	2500	14	4.2	535	1
HS50	RE 75	50	14	R01-86K	1250	3500	2500	32	3.0	535	1
HS75		75	24	R01-50K	1400	6363	4500	85	1.1	995	3
HS100		100	30	R01-70K	1900	6363	4500	115	1.0	995	3
HS150		150	45	R01-100K	2500	6363	4500	175	1.0	995	3
HS200		200	50	R01-50K	1900	7070	5000	475	0.7	3750	3
HS250		250	55	R01-50K	2200	7070	5000	600	0.6	4765	3
HS300		300	60	R01-68K	2500	7070	5000	700	0.6	5780	3

HS10-HS300 Standard Resistor



Dimensions (mm)

Size	A Max	B Max	C Max	D Max	E Max	F±0.3	G±0.3	H Max	J Max	K Max	L ±0.25*	M Max
HS10	16.5	30.0	8.8	8.5	15.9	11.3	12.4	4.5	2.4	1.8	2.4	
HS15	21.0	36.5	11.0	11.2	19.9	14.3	15.9	5.5	2.8	1.8	2.4	
HS25	28.0	51.0	14.8	14.2	27.3	18.3	19.8	7.7	5.2	2.6	3.2	
HS50	28.0	72.5	14.8	14.2	49.1	39.7	21.4	8.4	5.2	2.6	3.2	
HS75	47.5	72.0	24.1	27.3	48.7	29.0	37.0	11.8	10.4	3.7	4.4	
HS100	47.5	88.0	24.1	27.3	65.2	35.0	37.0	11.8	15.4	3.7	4.4	
HS150	47.5	121.0	24.1	27.3	97.7	58.0	37.0	11.8	20.4	3.7	4.4	
HS200	72.5	145.7	41.8	45.5	89.7	70.0	57.2	20.5	10.4	5.5	5.1	103.4
HS250	72.5	167.0	41.8	45.5	109.7	89.0	57.2	20.5	10.4	5.5	5.1	122.4
HS300	72.5	184.4	41.8	45.5	127.7	104.0	59.0	20.5	12.4	5.5	6.6	141.4

* HS200-HS300 Watts is ± 0.45

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Tolerance for low Ω values:	Typically ≥ R05 ±5% ≤ R047 ±10%
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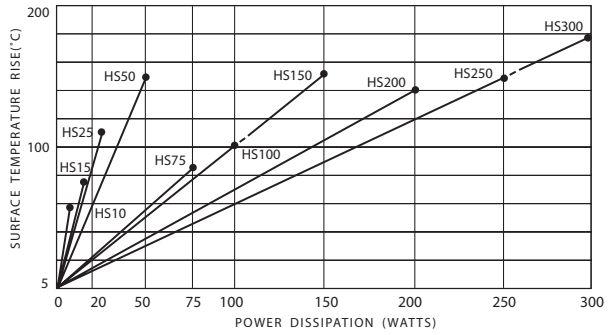

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HS Aluminium Housed Resistors

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Size	Style MIL-R 18546	Power rating on std. heatsink @25°C	Watts with no heatsink @25°C	Resis-tance range	Limiting element voltage	Voltage proof AC Peak	Voltage proof AC rms.	Approx weight gms	Typical surface rise HS mounted	Standard heatsink	
										cm^2	Thickness mm
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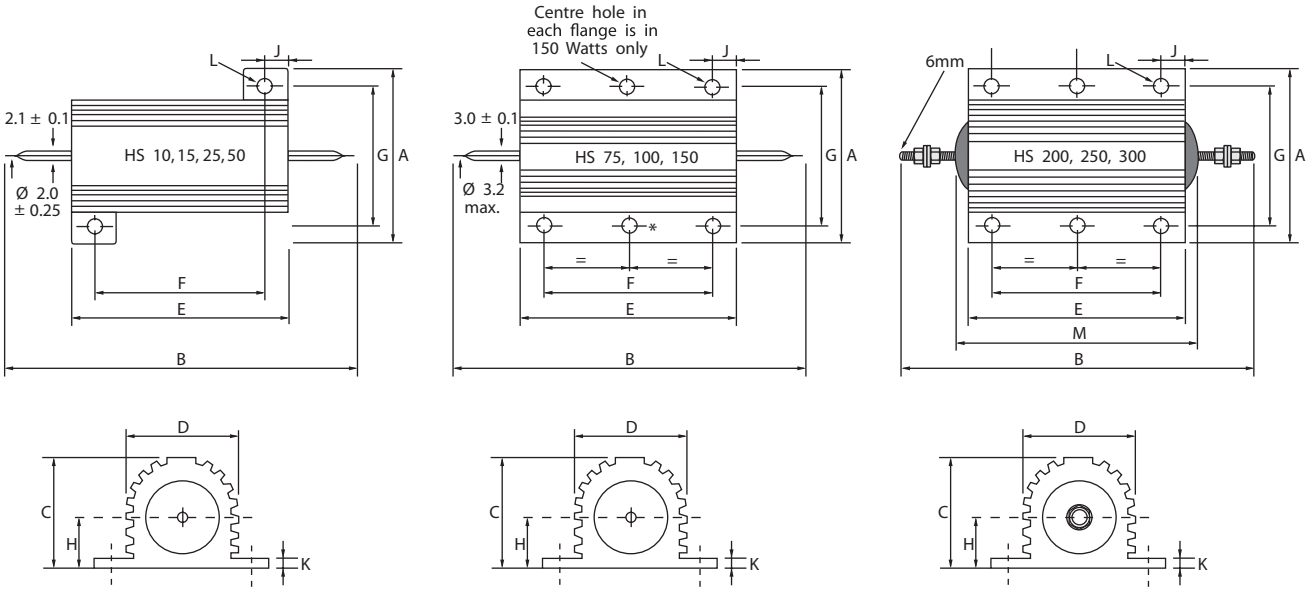
HS15	RE 65	15	7	R005-10K	265	1400	1000	7	5.1	415	1
HS25	RE 70	25	9	R005-36K	550	3500	2500	14	4.2	535	1
HS50	RE 75	50	14	R01-86K	1250	3500	2500	32	3.0	535	1
HS75		75	24	R01-50K	1400	6363	4500	85	1.1	995	3
HS100		100	30	R01-70K	1900	6363	4500	115	1.0	995	3
HS150		150	45	R01-100K	2500	6363	4500	175	1.0	995	3
HS200		200	50	R01-50K	1900	7070	5000	475	0.7	3750	3
HS250		250	55	R01-50K	2200	7070	5000	600	0.6	4765	3
HS300		300	60	R01-68K	2500	7070	5000	700	0.6	5780	3

HS10-HS300 Standard Resistor



Dimensions (mm)

Size	A Max	B Max	C Max	D Max	E Max	F±0.3	G±0.3	H Max	J Max	K Max	L ±0.25*	M Max
HS10	16.5	30.0	8.8	8.5	15.9	11.3	12.4	4.5	2.4	1.8	2.4	
HS15	21.0	36.5	11.0	11.2	19.9	14.3	15.9	5.5	2.8	1.8	2.4	
HS25	28.0	51.0	14.8	14.2	27.3	18.3	19.8	7.7	5.2	2.6	3.2	
HS50	28.0	72.5	14.8	14.2	49.1	39.7	21.4	8.4	5.2	2.6	3.2	
HS75	47.5	72.0	24.1	27.3	48.7	29.0	37.0	11.8	10.4	3.7	4.4	
HS100	47.5	88.0	24.1	27.3	65.2	35.0	37.0	11.8	15.4	3.7	4.4	
HS150	47.5	121.0	24.1	27.3	97.7	58.0	37.0	11.8	20.4	3.7	4.4	
HS200	72.5	145.7	41.8	45.5	89.7	70.0	57.2	20.5	10.4	5.5	5.1	103.4
HS250	72.5	167.0	41.8	45.5	109.7	89.0	57.2	20.5	10.4	5.5	5.1	122.4
HS300	72.5	184.4	41.8	45.5	127.7	104.0	59.0	20.5	12.4	5.5	6.6	141.4

* HS200-HS300 Watts is ± 0.45

Datos técnicos Nº de acciones de RS. 621-2170CABLE TERMOPAR TIPO K CON PUNTO CALIENTE

RANGO DE AISLAMIENTO DE LA TEMPERATURA DE FUNCIONAMIENTO NORMAL:

- -50°C/+400°C

EL RANGO DE TEMPERATURA DE TERMOPAR:

- -50°C / +1000°C

UTILIZA :

- Universal, sencilla y económica, ideal para la temperatura de las medidas de prueba o de laboratorio.

PONE DE RELIEVE:

- Tiempo de respuesta corto, fácil implementación y bajo cota.

CARACTERÍSTICAS :

- 2 cables conductores, sección mm² 0,07, aislamiento del vidrio.
- Aparente punto caliente

DIMENSIONES :

- Longitud de Cable = 2000mm
- Plana = 1,7 x 1,1mm
- Peso= 8.33g

DATOS METROLÓGICOS:

- Cumple con la norma IEC 584 General tolerancia TC 'K' Class1:
  -40°C < t°< +375°C = ± 1,5°C
  375°C < t°< 1000°C= ±0.004
- El tiempo constante de 63% = 0,7 seg.
- EGF (mV) de salida siguiente de la curva de señal del tipo "K" resultado de la norma IEC 60584"

Otros tipos de cable termopar vidrio de seda:

Tipo de termopar	J	N	T
RS en stock no.	621-2186	621-2192	621-2209
T ° de la gama de aislamiento	-50 à 400°C		
Rango de T (termopar)	-50 à 1000°C	-50 à +1200°C	-200 à +350°C
Longitud 2000 mm			

El tipo de termopar es elegido según la temperatura a medir y la señal electrónica que debe ser compatible.

ENGLISH

Datasheet

RS Pro Swiss made tweezers - Carbon fiber - tips: curved, very fine. OAL: 130mm. ESD safe

RS Stock No: 1369733

Anti-Acid:	Yes
Anti-Magnetic:	Yes
Material:	Carbon fiber tips + Anti-Acid/Anti-Mag SS handles
Model Number:	7CFR.SA
Overall Length:	130mm
Point Type:	curved, very fine

ENGLISH

TECHNICAL DATA SHEET

RS 136-8549
PTFE/Silicone Oil Lubricant

A lubricant based upon a blend of silicone oil, PTFE and anti-corrosives designed to deposit an inert, low friction surface to improve slip.

For general purpose uses on metals, plastics and most other hand, impervious surfaces.
Protection of H.T. cables/housings against moisture ingress
Protection of cables, linkages, switches, fasteners, etc., against moisture and corrosion.

Do NOT use on any surface where application of a slippery film may cause a health hazard.

Physical Properties:

This is for the lubricant base except where stated.

Appearance:	An opaque white liquid lubricant
Specific Gravity:	0.643 ± 0.15 at 20 °C
Non Volatiles % m/m:	15.0 – 20.0
Flash Point:	<-20°C
Service Temperature (Continuous):	Up to 200 °C
Service Temperature (Intermittent):	Up to 300 °C

Application Details:

Shake can thoroughly before use. Hold upright, and spray from a distance of 15 to 30cm. Taking care to avoid overspray, especially on floors. After use, invert can and pulse spray to clear nozzle.

Packaging	Order Code	Shelf Life
400 ml Aerosol	RS 136-8549	24 Months

Datasheet

ENGLISH

RS Pro USB 3.0 3-port Hub With Gigabit

Stock No: 141-1992

Product Details

USB 3.0 3-Port hub with Gigabit Ethernet adapter is compliant with USB2.0 specification. It is two applications in the product. With USB interface, you can access USB 3.0 Hub and Giga Ethernet at the same time. Stylish design and slim type make it easy to carry

Features

- USB 3.0 Giga Lan with 3 ports USB 3.0 HUB
- Small design make users easy hand carry.
- Support wake-on-LAN function
- Support Green Ethernet
- Support IEEE 802.3az(Energy Efficient Ethernet)
- Support IPV4/IPV6 pack Checksum Offload Engine(COE) to reduce CPU loading
- It works with Window® XP, Windows® Vista, Windows® 7, Windows® 8, Windows® 8.1, Mac OS®
- Bus-power

System Requirements

- PC with USB port.
- Laptop with USB port.
- One of the following operation systems: Windows® XP, Windows® Vista, Windows® 7, Windows® 8, Windows® 8.1 & Mac OS®

Package Contents

- USB 3.0 3-port Hub with Gigabit Ethernet Adapter x1
- CD (Driver & User's Manual) x1
- Quick Installation Guide x1

Specifications

USB	Upstream port x 1 (USB Type A plug)
	Downstream port x 3 (USB Type A receptacles)
	Compliance: USB3.0
LAN	RJ-45 x 1 (Ethernet 10/100/1000M Gigabit)
	Complies with the Full-duplex with flow control and Half-duplex with backpressure operation
LED	Green and Yellow LED for Ethernet Connection indication
Housing	Size (L x W x H) : 91 x 40.5 x 16 mm approx.
	Material : plastic
	Weight : 50.8g approx.
Power Mode	Bus-powered : 3.3V/500mA
Working Environment	Operation temperature : 0 ~ 40ºC
	Storage temperature : -20 ~ 70ºC
	Certification : FCC, CE

Datasheet

ENGLISH

RS Pro USB 2.0 Ethernet Adapter

Stock No: 144-7998

Product Details

The USB 2.0 Ethernet Adapter allows your computer instantly connect to a 10/100Mbps network through simply a USB port; no hassle to open up your computer case as is required for an internal card now! It's also an ideal USB-to-LAN alternative for gaming console that needs network access in an environment lacking wireless capability. Compared with USB 1.1 standard which offers 12 Mbps speed, the adapter's compliance with USB 2.0 (480Mbps) ensures true 10/100 Mbps network speed without any compromise. Furthermore, the adapter is compact and is USB bus-powered; it requires no external power adapter, so that you can use it without crowding your workspace at all.

Features

- Compliant with USB 2.0 and USB 1.1 specifications
- Compliant with IEEE 802.3 (10Base-T) and 802.3u (100Base-TX) standards
- Supports both full-duplex and half-duplex operations
- Supports suspend mode and remote wakeup via link-up and magic packet
- Powered by USB port only
- Equipped with diagnostic LEDs
- Plug & Play installation

System Requirements

- IBM compatible Pentium-233MHz or faster PC or Mac
- 64 MB RAM or more
- One available USB port
- Windows® XP, Windows® Vista, Windows® 7, Windows® 8, Windows® 8.1, Windows® 10, Mac OS®

Package Contents

- USB2.0 Ethernet Adapter x1
- CD (Driver & User's Manual) x1
- Quick Installation Guide x1

Specifications

Items	Descriptions
Network Standards	IEEE 802.3: 10Base -T IEEE 802.3u: 100Base -T
Data Transfer Rates	Ethernet: 10Mbps (Half/Full Duplex) Fast Ethernet: 100Mbps (Half/Full Duplex)
Data Bus	USB 2.0 (1.1 compliant)
LED Indicators	Power, Link
Power Consumption	220mW
Power Management	Suspend mode, hibernation mode
Network Interface	Female RJ45 jack
RAM	Embedded 20KB SRAM for RX packet buffering and 20KB SRAM for TX packet buffering
Operating System Support	Windows® XP, Windows® Vista, Windows® 7, Windows® 8, Windows® 8.1, Windows® 10, Mac OS®
Operating Temperature	0°C to 40°C
Storage Temperature	-20°C to 70°C
Compliance	CE, FCC

AE2250
Micr
o USB
AE2240
Mini USB
AE2230
US
(A-
USB
(A-Type)

Internet
ADSL Modem
Ethernet Cable
AE2250
Micro USB
AE2240
Mini USB
AE2230
USB
Smart Phone
Netbook
Tablet PC
Notebook
Tablet PC

ENGLISH

Datsheet

9 Volt Rechargeable Batteries

Sealed Nickel-Metal Hydride Cylindrical Rechargeable Battery Cells

RS Stock No. 199-646

RS, Professionally Approved Products, gives you professional quality parts across all products categories. Our range has been testified by engineers as giving comparable quality to that of the leading brands without paying a premium price.

ENGLISH

Type 9 V (8.4 V), 200 mAh

Nominal Voltage		8.4 V
Capacity	Typical	200 mAh/0.2 CmA
	Minimum	160 mAh/0.2 CmA
Charge	Standard	0.1 CmA for 16 hrs.
	Rapid	1.0 CmA for 1.2hrs.(approx.) (With-ΔV = 35~70mV, Temp., Time charging control)
	Trickle	0.03 CmA (1 month)
Maximum Discharge Current		1.0 CmA
Discharge Cut-off Voltage		7.0 V
Cycle Life		500 cycles
Applicable Temperature	Standard Charge	0~+45℃
	Rapid Charge	0~+40℃
	Discharge	-10~+60℃
Storage	Within one year	-20℃~+35℃
	Within 3 months	-20℃~+45℃
	Within 1 month	-20℃~+55℃
Relative Humidity Range		65%±20%
Dimension		L = 48.4 mm max
		W= 26.2 mm max.
		H = 17.4 mm max.
Weight		Approx. 32.0 g

2. Performance:

Unless otherwise stated, tests should be done within 45 days of delivery under the following Conditions:

Ambient Temperature, Ta : 20 ± 5℃
Relative Humidity : 65 ± 20% RH

Standard Charge / Discharge Condition
Charge : 0.1 CmA x 16 hours
Discharge : 0.2 CmA to 1.0 V/cell

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ENGLISH

Test Item	Test Method	Performance	Remarks
Capacity	Standard Charge Standard Discharge	No less than rated capacity	Up to 3 cycles are allowed
High Rate Discharge (1.0CmA)	Standard Charge 1 hour rest before discharge	No less than 85% of rated capacity	
Low Temperature Discharge	Discharge at 0.2CmA in 0 ± 2℃ for 16~24 hours stand after a standard charge	No less than 80% of rated capacity	
Terminal Voltage Open Circuit Voltage	Within 1 hour after standard charge	No less than 1.31V/cell in terminal voltage	
Cycle Life	IEC 285 (1993) 4.4.1	Over 500 cycles	See Note:1
Charge Retention	Standard Charge Storage 28 days at 20 ± 2℃ Standard Discharge	No less than 75% of rated capacity	
Overcharge	Charge at 0.1CmA for 48 hours Standard Discharge	No less than rated capacity	
Over-discharge	Standard Charge Discharge at 2.0CmA to 1.0 V/cell Over-discharge at 1.0CmA for 1 hour	The cell shall not explode The safety valve of the cell shall operate	
Vibration Amplitude Frequency Direction and Time	3.6mm peak to peak 1000 cpm Arbitrary direction / 1 hour	The cell shall be normality in appearance No less than 1.2V/cell in terminal voltage.	
Shock Dropping Distance Shock Board Dropping Time	0.45 m (spontaneous dropping) Hard wood (Thickness: over 10 mm) Arbitrary direction / 3 times	The cell shall be normality in appearance No less than 1.2Vcell in terminal voltage	
Leakage	Standard Charge Storage : 14 days in 33 ± 5℃ and 80 ± 5% RH	The cell shall have no visible leakage	
Short Circuit	After standard charge, short circuit by 2 mm Ni-tab for 1 hour	Leakage and deformation may occur, but no explosion is allowed	

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ENGLISH

3. Safety Requirement for User

Please keep in mind the following points when operating, designing, or manufacturing your equipment.

1. Avoid short-circuiting of the battery. Do not connect the positive and the negative terminals with a wire or other metal items, as this will cause a large flow of current through the battery. It may damage the battery.
2. Do not attempt to take the battery apart or subject to pressure or impact. The parts of the battery will be damaged, when the battery has ruptured, heat may be generated or fire may result. The alkaline electrolyte may harm the skin or eyes or damage clothing upon contact.
3. Do not heat or incinerate the battery. The battery may swell or rupture and it may explode or release alkaline electrolyte.
4. Do not solder directly to the battery. It may damage the battery.
5. If any abnormally or problem is found while using the battery, stop its use, and bring it to your local dealer. Please do not attempt to fix or take the battery apart. It may cause dangerous to you.
6. Charge the battery only with a charger qualified by NEX*cell* or with a charger that meets our specified conditions. Charging without a proper control will cause overcharging and damage the battery. Overcharging can cause battery to capacity drop, short life, leakage, overheat, burst, or even catch fire.
7. Discharge cutoff at 1.0V per cell is required. However, 1.05V/cell cutoff voltage is suggested for multi-cell battery pack.
8. Do not operate the cells/battery packs in a sealed case. A pressure vent is required.

Note 1: IEC285 (1993) 4.4.1 Cycle life Test：

The battery is capable of 500 cycles under the following conditions:

Cycle number	Charge	Rest	Discharge
1	0.10CmA for 16 hrs	none	0.25CmA for 2 hrs 20 mins
2~48	0.25CmA for 3 hrs 10 mins	none	0.25CmA for 2 hrs 20 mins
49	0.25CmA for 3 hrs 10 mins	none	0.25CmA to 1.0V/cell
50	0.10CmA for 16 hrs	1-4hr(s)	0.20CmA to 1.0V/cell
Cycle 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes less than 3 hrs.			

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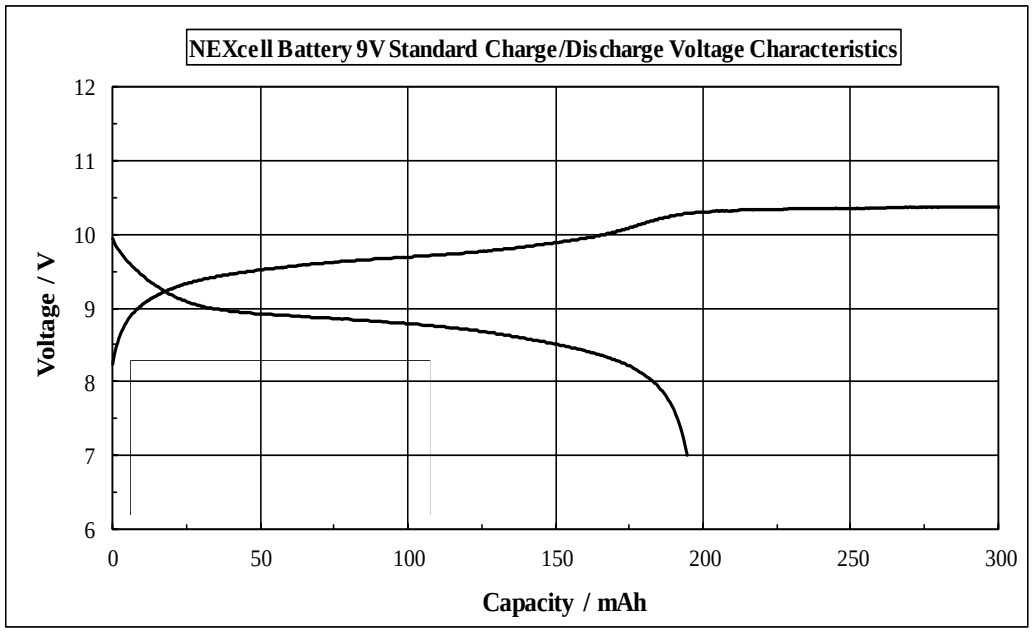
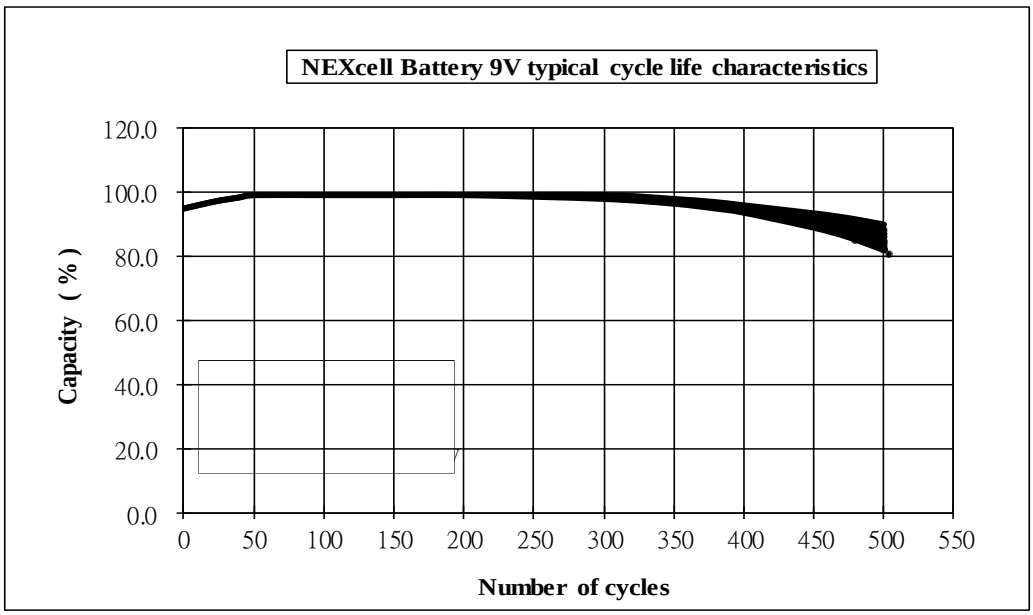
ENGLISH

The actual cycle life depends on the operating temperature and cycling conditions.





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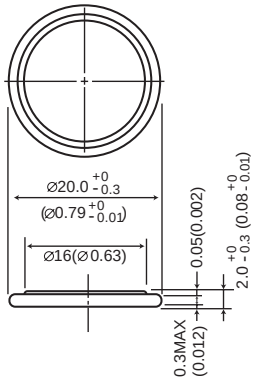
Vanadium Pentoxide Lithium Coin Batteries (VL Series): Individual Specifications

VL2020

■ Dimensions(mm)

Weight:2.2g

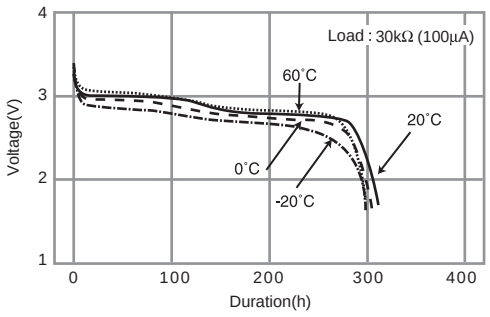


Note: This bare cell diagram is for size reference only. Please refer to the tab configurations at the end of this section for available tabs.

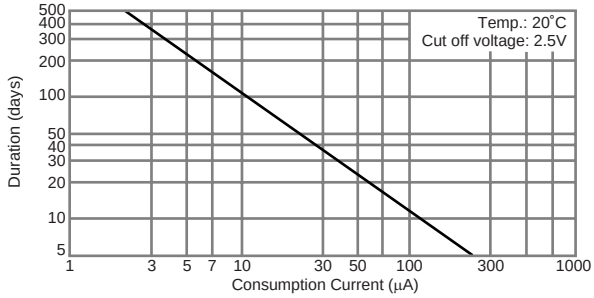
■ Specification

Nominal voltage (V)	3
Nominal capacity (mAh)	20.0
Continuous standard load (mA)	0.07
Operating temperature (C)	-20 ~ +60

■ Discharge Temperature Characteristics



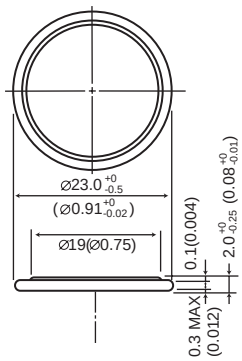
■ Consumption current vs. Duration time



VL2320

■ Dimensions(mm)

Weight:2.7g

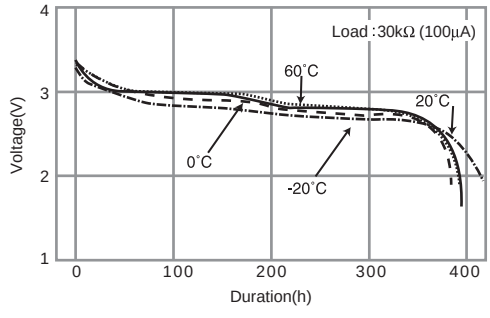


Note: This bare cell diagram is for size reference only. Please refer to the tab configurations at the end of this section for available tabs.

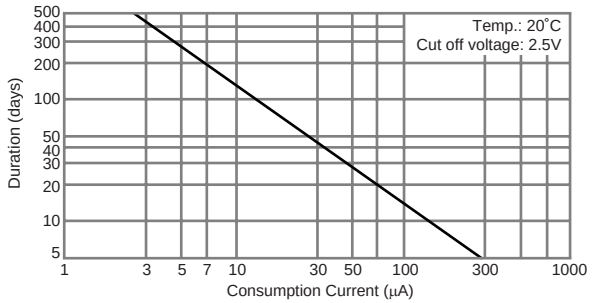
■ Specification

Nominal voltage (V)	3
Nominal capacity (mAh)	30.0
Continuous standard load (mA)	0.1
Operating temperature (C)	-20 ~ +60

■ Discharge Temperature Characteristics



■ Consumption current vs. Duration time



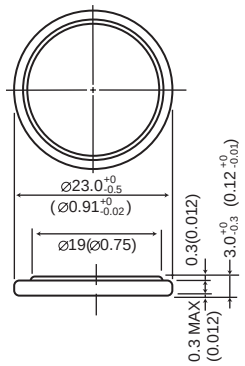
This information is generally descriptive only and is not intended to make or imply any representation, guarantee or warranty with respect to any cells and batteries. Cell and battery designs/specifications are subject to modification without notice. Contact Panasonic for the latest information.

Vanadium Pentoxide Lithium Coin Batteries (VL Series): Individual Specifications

VL2330

■ Dimensions(mm)

Weight:3.5g

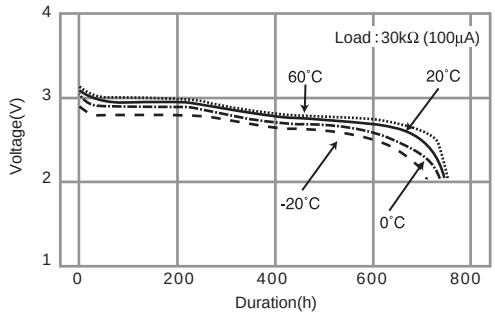


Note: This bare cell diagram is for size reference only. Please refer to the tab configurations at the end of this section for available tabs.

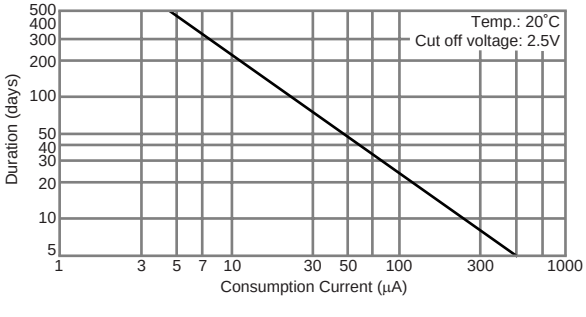
■ Specification

Nominal voltage (V)	3
Nominal capacity (mAh)	50.0
Continuous standard load (mA)	0.1
Operating temperature (C)	-20 ~ +60

■ Discharge Temperature Characteristics



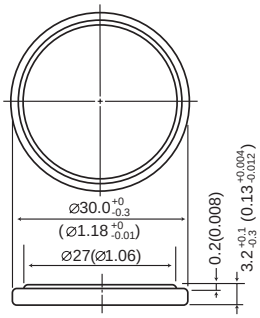
■ Consumption current vs. Duration time



VL3032

■ Dimensions(mm)

Weight:6.2g

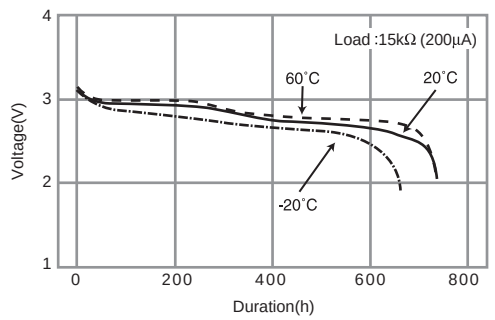


Note: This bare cell diagram is for size reference only. Please refer to the tab configurations at the end of this section for available tabs.

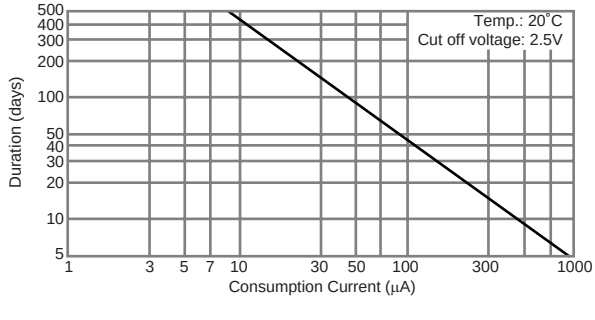
■ Specification

Nominal voltage (V)	3
Nominal capacity (mAh)	100.0
Continuous standard load (mA)	0.2
Operating temperature (C)	-20 ~ +60

■ Discharge Temperature Characteristics



■ Consumption current vs. Duration time



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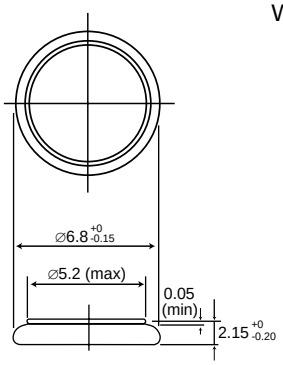
Vanadium Pentoxide Lithium Coin Batteries (VL Series): Individual Specifications

VL621

■ Dimensions(mm)

Weight:0.27g

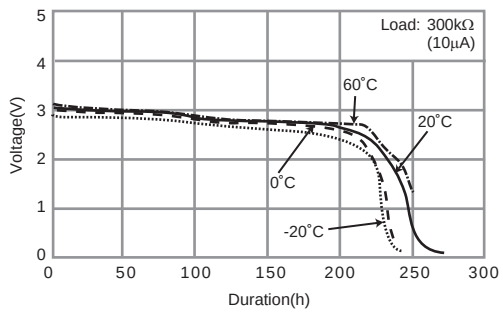


Note: This bare cell diagram is for size reference only. Please refer to the tab configurations at the end of this section for available tabs.

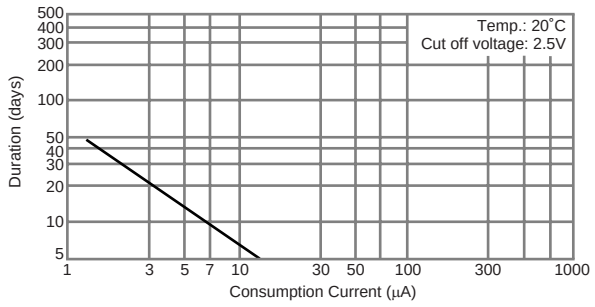
■ Specification

Nominal voltage (V)	3
Nominal capacity (mAh)	1.5
Continuous standard load (mA)	0.01
Operating temperature (C)	-20 ~ +60

■ Discharge Temperature Characteristics



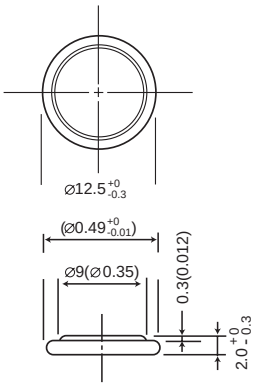
■ Consumption current vs. Duration time



VL1220

■ Dimensions(mm)

Weight:0.8g

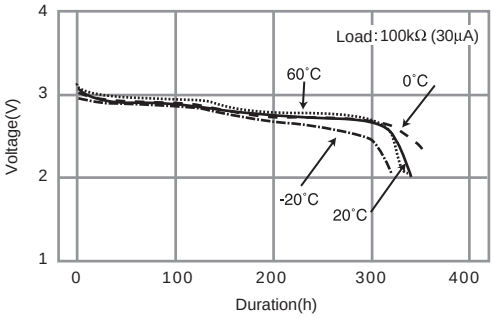


Note: This bare cell diagram is for size reference only. Please refer to the tab configurations at the end of this section for available tabs.

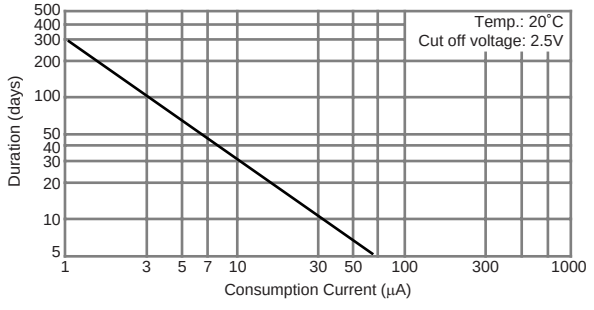
■ Specification

Nominal voltage (V)	3
Nominal capacity (mAh)	7.0
Continuous standard load (mA)	0.02
Operating temperature (C)	-20 ~ +60

■ Discharge Temperature Characteristics



■ Consumption current vs. Duration time



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Product Information Sheet

Panasonic Batteries
Panasonic Industrial Company
A Division Panasonic Corporation of North America
5201 Tollview Drive, 1F-3
Rolling Meadows, IL 60008
Toll Free: 877-726-2228
Fax: 847-637-4660
Internet: www.panasonic.com/industrial/batteries.oem
e-mail: oembatteries@panasonic.com

Product: Vanadium Pentoxide (VL Type) Lithium Batteries
Applicable models/sizes: All VL type

Revision: January 1, 2014

The batteries referenced herein are exempt articles and are not subject to the OSHA Hazard Communication Standard requirement. This sheet is provided as a service to our customers.

MSDS

Material Safety Data Sheets (MSDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as a manufactured item other than a fluid or particle; (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees.

Because all of our batteries are defined as "articles", they are exempt from the requirements of the Hazard Communication Standard; hence a MSDS is not required.

DISPOSAL

Panasonic has determined that our Vanadium Pentoxide battery (VL type) is considered a hazardous waste when disposed of in the states of California, Rhode Island and Washington.

State	Classification	Monthly weight needed to qualify
California	Non-RCRA Hazardous	No minimum (1)
Rhode Island	Rhode Island Waste (Type 1C)	No minimum (1)
Washington	Dangerous Waste (Category D)	220 Pounds (2)

Notes:

(1) Any amount of VL type batteries in California or Rhode Island must be disposed of in accordance with the hazardous waste laws of each state**. These requirements do not apply to individual consumers or to end products that contain VL batteries.**

(2) If you generate less than 220 ponds of these batteries in any one calendar month, you are exempt from the State of Washington hazardous waste regulations.

In all cases, it remains the responsibility of the party generating the waste to properly dispose of your waste in accordance with all laws and regulations. Panasonic recommends that large quantities of this battery be disposed of in a fully permitted hazardous landfill.

TRANSPORTATION

All Panasonic lithium batteries are not subject to the requirements of the Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185 and Special Provision 188.

Effective January 1, 2014 all Panasonic lithium batteries can be shipped by air in accordance with International Civil Aviation Organization (ICAO), 2013-2014 edition, Section II or Section 1B, International Air Transport Association (IATA) 55th edition, Section II or Section 1B Packing Instructions (PI) 968 (Batteries), PI 969 (Batteries, packed with equipment) and PI 970 (Batteries, contained in equipment) as appropriate

Notice: The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Panasonic Industrial Company makes no warranty expressed or implied.

All Panasonic lithium batteries are regulated by the International Maritime Organization (IMO), 2012 edition, 36th amendment, under Special Provisions 188 and 230.

All Panasonic lithium cells are tested and comply with the UN Model Regulations, Manual of Test and Criteria, Part III, subsection 38.3.

If you build any of our lithium cells into a battery pack, you must also assure that they are tested in accordance with the UN Model Regulations, Manual of Test and Criteria. Part III, subsection 38.3, 5th revised edition, Amendment 1.

The DOT requires that the outside of each package that contains lithium metal batteries, regardless of size or number of batteries, be labeled with the following statement: "**LITHIUM METAL BATTERIES- FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT**". The labeling requirement covers shipments via highway, rail, vessel or cargo-only aircraft and covers all shipments inside, into or out of the US. The label must be in contrasting color and the letters must be 12 mm (0.5 in) in height for packages weighing more than 30 Kg and 6 mm (0.25 in) in height for packages weighting less than 30 Kg.

First Aid

If you get electrolyte in your eyes, flush with water for 15 minutes without rubbing and immediately contact a physician. If you get electrolyte on your skin wash the area immediately with soap and water. If irritation continues, contact a physician. If a battery is ingested, call the National Capital Poison Center (NCPC) at 202-625-333 (Collect) or your local poison center immediately. Lithium coin batteries lodged in the esophagus should be removed immediately. Leakage, chemical burns and perforation can occur within hours of ingestion.

General Recommendations

CAUTION: Risk of fire, explosion and burns. Do not recharge, crush, heat above 212^{O}F (100^{O}C) or incinerate.

Fire Safety

In case of fire, you can use a Class "D" fire extinguisher or other smothering agent such as Lith-X, copper powder or dry sand. If you use water, use enough to smother the fire. Using an insufficient amount of water will only make the fire worse. Cooling the exterior of the batteries will help prevent rupturing. Burning of these batteries will generate toxic and corrosive lithium hydroxide fumes. Fire fighters should use self-contained breathing apparatus. Detailed information on fighting a lithium metal battery fire can be found in Guide 138 (Substances – Water – Reactive) of the US DOT Emergency Response Guide.

Notice: The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Panasonic Industrial Company makes no warranty expressed or implied.

STANDARD DESOLDERING PUMP, DG MODEL

ASSEMBLY

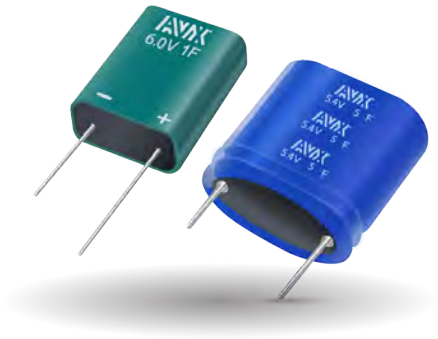
Aluminium body, interchangeable PTFE end, strong vacuum, light 50 gr., length 200 mm

- Standard desoldering pump, DG model (Ref. BO63)
- Spare tips for desoldering pump BO63 (sachet of 5) (Ref. BO64)

CIF- 240 rue Hélène Boucher - 78530 Buc - FRANCE- Tél. : +33 (0) 1 3966 9683- www.cif.fr- Email : cif@cif.fr

SCM Series

Series-Connected SuperCapacitor Modules



This new series of electrochemical, double-layer, series-connected SuperCapacitor modules

capacitance and very low ESR. Used by themselves or in conjunction with primary or secondary batteries, they provide extended back up time, longer battery life, and provide instantaneous

applications, and battery replacement.

FEATURES

- High Pulse Power Capability
- Low ESR
- Low Leakage Current
- Plastic, Moisture Resistant Version

APPLICATIONS

- Camera Flash Systems
- Energy Harvesting
- GSM/GPRS Pulse Applications
- UPS/Industrial
- Wireless Alarms
- Remote Metering
- Scanners
- Toys and Games

HOW TO ORDER

SCM	R	14	C	474	P	R	B	A	0
Series SuperCap Module	**Diameter** Q = 6.3mm R = 8mm / 9.5mm** S = 10mm T = 12.5mm U = 16mm	**Case Length** Two digits represent case length in mm	**Voltage Code** C = 5.0V D = 5.4V F = 5.5V G = 7.5V H = 6.0V J = 8.1V L = 9.0V	**Capacitance Code** 1st two digits represent signi cant gures 3rd digit represents multiplier (number of zeros to follow)	**Tolerance** P = +100%/-0% S = +30%/-10%	**Package/Lead Format** R = Shrink Wrap/Radial S = Plastic/Radial	**Package** B = Bulk T = Tray*	**Balancing** A = Unbalanced B = Passive Balanced	**Lead Orientation** 0 = Straight Leads 1 = Bent Leads*

*Inquire about availability
**Plastic/Radial version

QUALITY INSPECTION

Parts are tested for life cycle, high temperature load life, temperature characteristics, vibration resistance, and humidity characteristics.
See pages 2-5 for more information.

TERMINATION

These SuperCapacitors are compatible with hand soldering, as well

precautions are followed. See page 11 for more information.

LEAD-FREE
LEAD-FREE COMPATIBLE COMPONENT

RoHS COMPLIANT

For RoHS compliant products, please select correct termination style.

5.4V/5.0V SCM Series

Series-Connected SuperCapacitors Modules

AVX Part Number	Diameter (mm)	Length (mm)	Rated Capacitance (F)	Capacitance Tolerance	Rated Voltage (V)	Rated Temperature (°C)	DCL Max @ 72 Hrs (µA)	ESR Max @ 1000 Hz (mΩ)	ESR Max @ DC (mΩ)	Peak Current (A)	Power Density (W/kg)	Max Energy (Wh)	Energy Density (Wh/kg)
Shrink Wrap / Radial Lead													
SCMQ14C474PRBA0	6.3	14	0.47	+100%/-0%	5.0/4.2*	65/85*	2	400	1000	0.80	2143	0.0016	1.17
SCMQ14C474PRTA0	6.3	14	0.47	+100%/-0%	5.0/4.2*	65/85*	2	400	1000	0.80	2143	0.0016	1.17
SCMQ14D474PRBB0	6.3	14	0.47	+100%/-0%	5.4/4.6*	65/85*	6	400	1000	0.86	2499	0.0019	1.36
SCMQ14D474PRTB0	6.3	14	0.47	+100%/-0%	5.4/4.6*	65/85*	6	400	1000	0.86	2499	0.0019	1.36
SCMR14C474PRBA0	8	14	0.47	+100%/-0%	5.0/4.2*	65/85*	2	300	1000	0.80	1429	0.0016	0.78
SCMR14D474PRBB0	8	14	0.47	+100%/-0%	5.4/4.6*	65/85*	6	300	1000	0.86	1666	0.0019	0.91
SCMR18C105PRBA0	8	18	1	+100%/-0%	5.0/4.2*	65/85*	6	200	720	1.45	1667	0.0035	1.39
SCMR18D105PRBB0	8	18	1	+100%/-0%	5.4/4.6*	65/85*	10	200	720	1.57	1944	0.0041	1.62
SCMR22C155PRBA0	8	22	1.5	+100%/-0%	5.0/4.2*	65/85*	10	190	580	2.01	1669	0.0052	1.68
SCMR22D155PRBB0	8	22	1.5	+100%/-0%	5.4/4.6*	65/85*	15	190	580	2.17	1946	0.0061	1.96
SCMS22C255PRBA0	10	22	2.5	+100%/-0%	5.0/4.2*	65/85*	20	140	360	3.29	1852	0.0087	1.93
SCMS22D255PRBB0	10	22	2.5	+100%/-0%	5.4/4.6*	65/85*	25	140	360	3.55	2113	0.0101	2.20
SCMT22C505PRBA0	12.5	22	5	+100%/-0%	5.0/4.2*	65/85*	25	100	150	7.14	2740	0.0174	2.38
SCMT22D505PRBB0	12.5	22	5	+100%/-0%	5.4/4.6*	65/85*	30	100	150	7.71	3069	0.0203	2.66
SCMT32C755SRBA0	12.5	32	7.5	+30%/-10%	5.0/4.2*	65/85*	65	70	160	8.52	1953	0.0260	2.71
SCMT32D755SRBB0	12.5	32	7.5	+30%/-10%	5.4/4.6*	65/85*	70	70	160	9.20	2209	0.0304	3.07

*with appropriate voltage derating operating temperature can be extended to 85°C

OPERATING TEMPERATURE RANGE

-40°C to +65°C @ 5.4V Balanced, 5.0V Unbalanced
-40°C to +85°C @ 4.6V Balanced, 4.2V Unbalanced

QUALIFICATION TEST SUMMARY

Test	Test Method	Parameter	Limits
Life Cycle	Capacitors are cycled between rated voltage and half-rated voltage under constant current at +25°C for 500,000 cycles	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects
High Temperature Load Life	Temperature: +65°C Voltage: Rated Voltage Test Duration: 2,000 hours	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects
Storage Temperature Characteristics	Storage Duration: 2 year No Load Temperature: +35°C	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects
Vibration Resistance	Amplitude: 1.5mm Frequency: 10 ~ 55Hz Direction: X, Y, Z for 2 hours each	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects
Humidity	Voltage: Rated Voltage RH: 90% Temperature: +60°C Test Duration: 1,500 hours	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects

6.0V/5.5V SCM Series

Series-Connected SuperCapacitors Modules

AVX Part Number	Diameter (mm)	Length (mm)	Rated Capacitance (F)	Capacitance Tolerance	Rated Voltage (V)	Rated Temperature (°C)	DCL Max @ 72 Hrs (µA)	ESR Max @ 1000 Hz (mΩ)	ESR Max @ DC (mΩ)	Peak Current (A)	Power Density (W/kg)	Max Energy (Wh)	Energy Density (Wh/kg)
Shrink Wrap / Radial Lead													
SCMQ14F474PRBA0	6.3	14	0.47	+100%/-0%	5.5/4.6*	65/85*	6	500	3000	0.54	864	0.0020	1.41
SCMQ14H474PRBB0	6.3	14	0.47	+100%/-0%	6.0/5.0*	65/85*	7	500	3000	0.59	1029	0.0024	1.68
SCMR14F474PRBA0	8	14	0.47	+100%/-0%	5.5/4.6*	65/85*	6	380	1720	0.71	1005	0.0020	0.94
SCMR14H474PRBB0	8	14	0.47	+100%/-0%	6.0/5.0*	65/85*	7	380	1720	0.78	1196	0.0024	1.12
SCMR18F105PRBA0	8	18	1	+100%/-0%	5.5/4.6*	65/85*	6	250	720	1.60	2017	0.0042	1.68
SCMR18H105PRBB0	8	18	1	+100%/-0%	6.0/5.0*	65/85*	12	250	720	1.74	2400	0.0050	2.00
SCMR22F155PRBA0	8	22	1.5	+100%/-0%	5.5/4.6*	65/85*	12	200	560	2.24	2091	0.0063	2.03
SCMR22H155PRBB0	8	22	1.5	+100%/-0%	6.0/5.0*	65/85*	18	200	560	2.45	2488	0.0075	2.42
SCMS22F255PRBA0	10	22	2.5	+100%/-0%	5.5/4.6*	65/85*	24	180	340	3.72	2373	0.0105	2.33
SCMS22H255PRBB0	10	22	2.5	+100%/-0%	6.0/5.0*	65/85*	30	180	340	4.05	2762	0.0125	2.72
SCMS32F505PRBA0	10	32	5	+100%/-0%	5.5/4.6*	65/85*	30	120	150	7.86	3580	0.0210	3.11
SCMS32H505PRBB0	10	32	5	+100%/-0%	6.0/5.0*	65/85*	36	120	150	8.57	4235	0.0250	3.68
SCMT22F505PRBA0	12.5	22	5	+100%/-0%	5.5/4.6*	65/85*	30	120	150	7.86	3176	0.0210	2.76
SCMT32F755SRBA0	12.5	32	7.5	+30%/-10%	5.5/4.6*	65/85*	78	90	120	10.86	3151	0.0315	3.28
SCMT32H755SRBB0	12.5	32	7.5	+30%/-10%	6.0/5.0*	65/85*	84	90	120	11.84	3600	0.0375	3.75
SCMU33F156SRBB0	16	33	15	+30%/-10%	5.5/4.6*	65/85*	70	35	50	23.57	3946	0.0630	3.43
Plastic / Radial Lead													
SCMR14F474PSBA0	9.5	16	0.47	+100%/-0%	5.5/4.6*	65/85*	3	380	1720	0.71	541	0.0020	0.51
SCMR14H474PSBB0	9.5	16	0.47	+100%/-0%	6.0/5.0*	65/85*	7	380	1720	0.78	644	0.0024	0.60
SCMR18F105PSBA0	9.5	20	1	+100%/-0%	5.5/4.6*	65/85*	7	250	720	1.60	1096	0.0042	0.91
SCMR18H105PSBB0	9.5	20	1	+100%/-0%	6.0/5.0*	65/85*	12	250	720	1.74	1304	0.0050	1.09
SCMR22F155PSBA0	9.5	24	1.5	+100%/-0%	5.5/4.6*	65/85*	12	200	560	2.24	1179	0.0063	1.15
SCMR22H155PSBB0	9.5	24	1.5	+100%/-0%	6.0/5.0*	65/85*	18	200	560	2.45	1403	0.0075	1.36

OPERATING TEMPERATURE RANGE

-40°C to +65°C @ 6.0V Balanced, 5.5V Unbalanced
-40°C to +85°C @ 5.0V Balanced, 4.6V Unbalanced

QUALIFICATION TEST SUMMARY

Test	Test Method	Parameter	Limits
Life Cycle	Capacitors are cycled between rated voltage and half-rated voltage under constant current at +25°C for 500,000 cycles	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects
High Temperature Load Life	Temperature: +65°C Voltage: Rated Voltage Test Duration: 2,000 hours	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects
Storage Temperature Characteristics	Storage Duration: 2 year No Load Temperature: +35°C	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects
Vibration Resistance	Amplitude: 1.5mm Frequency: 10 ~ 55Hz Direction: X, Y, Z for 2 hours each	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects
Humidity	Voltage: Rated Voltage RH: 90% Temperature: +60°C Test Duration: 1,500 hours	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects

7.5V SCM Series

Series-Connected SuperCapacitors Modules

AVX Part Number	Diameter (mm)	Length (mm)	Rated Capacitance (F)	Capacitance Tolerance	Rated Voltage (V)	Rated Temperature (°C)	DCL Max @ 72 Hrs (µA)	ESR Max @ 1000 Hz (mΩ)	ESR Max @ DC (mΩ)	Peak Current (A)	Power Density (W/kg)	Max Energy (Wh)	Energy Density (Wh/kg)
Shrink Wrap / Radial Lead													
SCMR14G334SRBA0	8	14	0.33	+30%/-10%	7.5/6.4*	65/85*	2	450	900	0.95	2419	0.0026	0.83
SCMR14G334SRBB0	8	14	0.33	+30%/-10%	7.5/6.4*	65/85*	6	450	900	0.95	2419	0.0026	0.83
SCMR18G604SRBA0	8	18	0.6	+30%/-10%	7.5/6.4*	65/85*	6	225	450	1.77	3947	0.0047	1.23
SCMR18G604SRBB0	8	18	0.6	+30%/-10%	7.5/6.4*	65/85*	10	225	450	1.77	3846	0.0047	1.20
SCMR22G105SRBA0	8	22	1	+30%/-10%	7.5/6.4*	65/85*	10	180	360	2.76	4076	0.0078	1.70
SCMR22G105SRBB0	8	22	1	+30%/-10%	7.5/6.4*	65/85*	15	180	360	2.76	3989	0.0078	1.66

*with appropriate voltage derating operating temperature can be extended to 85°C

OPERATING TEMPERATURE RANGE

-40°C to +65°C @ 7.5V
-40°C to +85°C @ 6.4V

QUALIFICATION TEST SUMMARY

Test	Test Method	Parameter	Limits
Life Cycle	Capacitors are cycled between rated voltage and half-rated voltage under constant current at +25°C for 500,000 cycles	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects
High Temperature Load Life	Temperature: +65°C Voltage: Rated Voltage Test Duration: 2,000 hours	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects
Storage Temperature Characteristics	Storage Duration: 2 year No Load Temperature: +35°C	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects
Vibration Resistance	Amplitude: 1.5mm Frequency: 10 ~ 55Hz Direction: X, Y, Z for 2 hours each	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects
Humidity	Voltage: Rated Voltage RH: 90% Temperature: +60°C Test Duration: 1,500 hours	Capacitance Change ESR Appearance	≤30% of initial value ≤2 times initial value No remarkable defects

9.0V/8.1V SCM Series

Series-Connected SuperCapacitors Modules

AVX Part Number	Diameter (mm)	Length (mm)	Rated Capacitance (F)	Capacitance Tolerance	Rated Voltage (V)	Rated Temperature (°C)	DCL Max @ 72 Hrs (µA)	ESR Max @ 1000 Hz (mΩ)	ESR Max @ DC (mΩ)	Peak Current (A)	Power Density (W/kg)	Max Energy (Wh)	Energy Density (Wh/kg)
Shrink Wrap / Radial Lead													
SCMR14J334SRBA0	8	14	0.33	+30%/-10%	8.1/6.9*	65/85*	3	500	2850	0.69	897	0.0030	0.98
SCMR14J334SRBB0	8	14	0.33	+30%/-10%	8.1/6.9*	65/85*	6	500	2850	0.69	869	0.0030	0.95
SCMR14L334SRBB0	8	14	0.33	+30%/-10%	9.0/7.6*	65/85*	7	500	2850	0.77	1072	0.0037	1.17
SCMR18J604SRBA0	8	18	0.6	+30%/-10%	8.1/6.9*	65/85*	7	400	1080	1.47	1934	0.0055	1.45
SCMR18J604SRBB0	8	18	0.6	+30%/-10%	8.1/6.9*	65/85*	15	400	1080	1.47	1869	0.0055	1.40
SCMR18L604SRBB0	8	18	0.6	+30%/-10%	9.0/7.6*	65/85*	12	400	1080	1.64	2308	0.0068	1.73
SCMR22J105SRBA0	8	22	1	+30%/-10%	8.1/6.9*	65/85*	12	350	840	2.20	1986	0.0091	1.93
SCMR22J105SRBB0	8	22	1	+30%/-10%	8.1/6.9*	65/85*	15	350	840	2.20	1894	0.0091	1.84
SCMR22L105SRBB0	8	22	1	+30%/-10%	9.0/7.6*	65/85*	18	350	840	2.45	2338	0.0113	2.27
Plastic / Radial Lead													
SCMR14J334SSBA0	9.5	16	0.33	+30%/-10%	8.1/6.9*	65/85*	3	500	2850	0.69	498	0.0030	0.54
SCMR14L334SSBB0	9.5	16	0.33	+30%/-10%	9.0/7.6*	65/85*	7	500	2850	0.77	598	0.0037	0.65
SCMR18J604SSBA0	9.5	20	0.6	+30%/-10%	8.1/6.9*	65/85*	7	400	1080	1.47	1063	0.0055	0.80
SCMR18L604SSBB0	9.5	20	0.6	+30%/-10%	9.0/7.6*	65/85*	12	400	1080	1.64	1286	0.0068	0.96
SCMR22J105SSBA0	9.5	24	1	+30%/-10%	8.1/6.9*	65/85*	12	350	840	2.20	1129	0.0091	1.10
SCMR22L105SSBB0	9.5	24	1	+30%/-10%	9.0/7.6*	65/85*	18	350	840	2.45	1361	0.0113	1.32

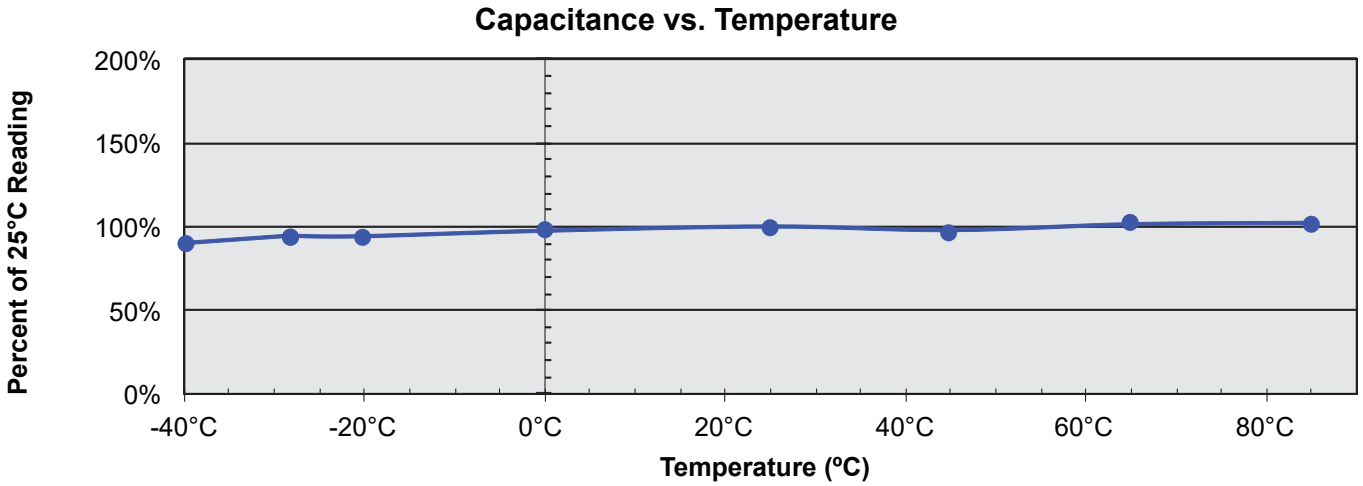
OPERATING TEMPERATURE RANGE

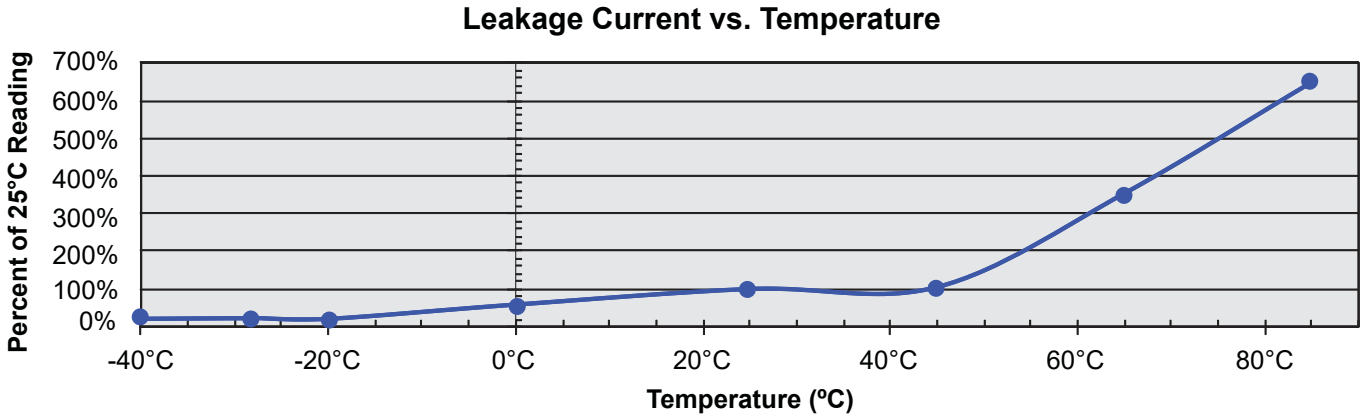
-40°C to +65°C @ 9.0V Balanced, 8.1V Unbalanced
-40°C to +85°C @ 7.6V Balanced, 6.9V Unbalanced

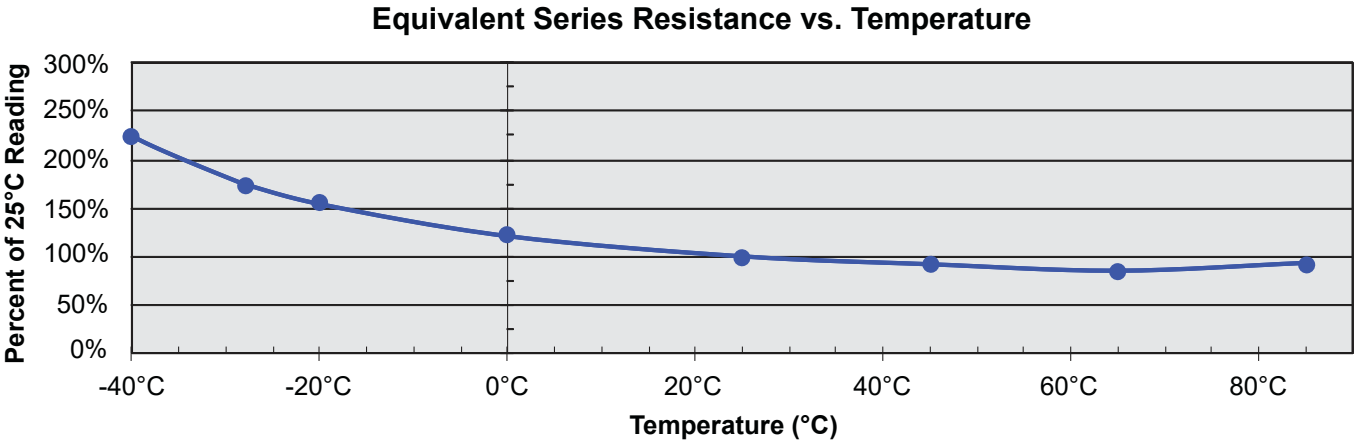
QUALIFICATION TEST SUMMARY

Test	Test Method	Parameter	Limits
Life Cycle	Capacitors are cycled between rated voltage and half-rated voltage under constant current at +25°C for 500,000 cycles	Capacitance Change ESR Appearance	≤30% of initial spec value ≤2 times initial spec value No remarkable defects
High Temperature Load Life	Temperature: +65°C Voltage: Rated Voltage Test Duration: 2,000 hours	Capacitance Change ESR Appearance	≤30% of initial spec value ≤2 times initial spec value No remarkable defects
Storage Temperature Characteristics	Storage Duration: 2 year No Load Temperature: +35°C	Capacitance Change ESR Appearance	≤30% of initial spec value ≤2 times initial spec value No remarkable defects
Vibration Resistance	Amplitude: 1.5mm Frequency: 10 ~ 55Hz Direction: X, Y, Z for 2 hours each	Capacitance Change ESR Appearance	≤30% of initial spec value ≤2 times initial spec value No remarkable defects
Humidity	Voltage: Rated Voltage RH: 90% Temperature: +60°C Test Duration: 1,500 hours	Capacitance Change ESR Appearance	≤30% of initial spec value ≤2 times initial spec value No remarkable defects

QUALITY AND RELIABILITY

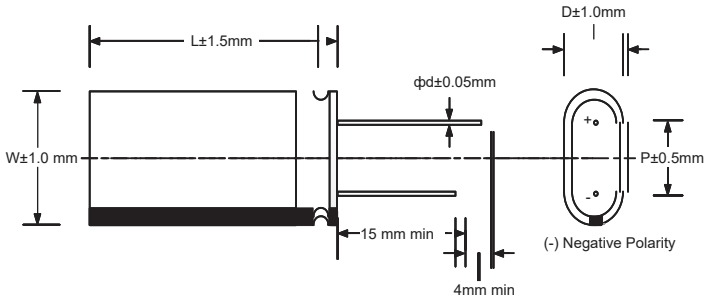




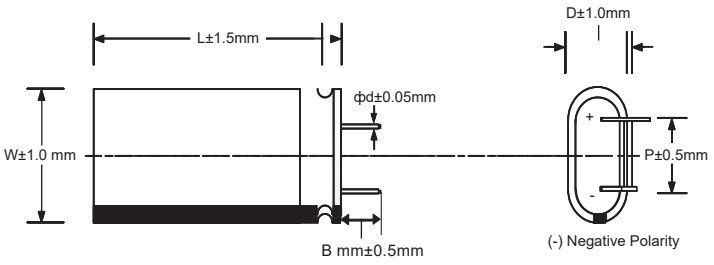


MECHANICAL SPECIFICATIONS

5.4V, 6.0V Shrink Wrap Type - Straight Leads



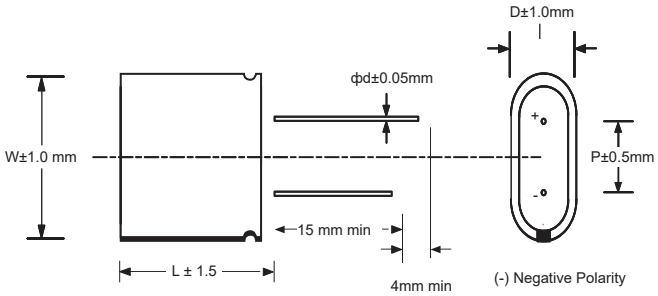
5.4V, 6.0V Shrink Wrap Type - Bent Leads



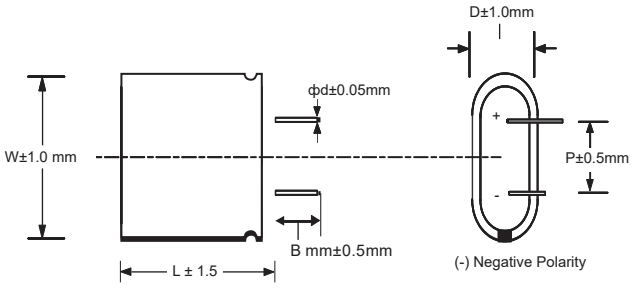
Cap (F)	D (mm)	W (mm)	L (mm)	P (mm)	d (mm)	B (mm)*
0.47	6.3	13.6	14.0	9.0	0.6	2.0
0.47	8.0	16.0	14.0	11.5	0.6	2.0
1	8.0	16.0	18.0	11.5	0.6	2.0
1.5	8.0	16.0	22.0	11.5	0.6	2.0
2.5	10.0	20.0	22.0	15.5	0.6	2.0
5	10.0	20.0	32.0	15.5	0.6	2.0
5	12.5	25.0	22.0	18.0	0.6	2.0
7.5	12.5	25.0	32.0	18.0	0.6	2.0
15	16.0	32.0	33.0	23.7	0.8	2.0

*for version with bent leads

7.5V, 9.0V Shrink Wrap Type - Straight Leads



7.5V, 9.0V Shrink Wrap Type - Bent Leads

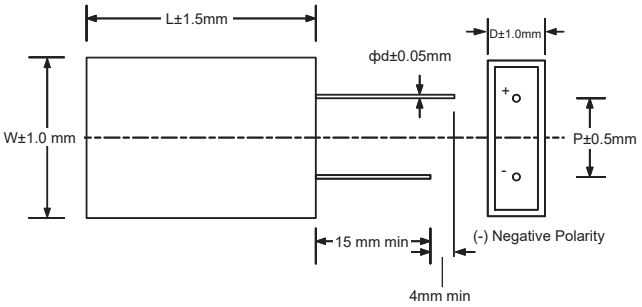


Cap (F)	D (mm)	W (mm)	L (mm)	P (mm)	d (mm)	B (mm)*
0.33	8.0	24.0	14.0	13.5	0.6	2.0
0.6	8.0	24.0	18.0	13.5	0.6	2.0
1	8.0	24.0	22.0	13.5	0.6	2.0

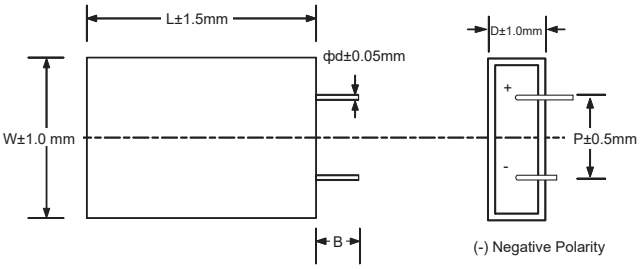
*for version with bent leads

MECHANICAL SPECIFICATIONS

6.0V Plastic Type - Straight Leads



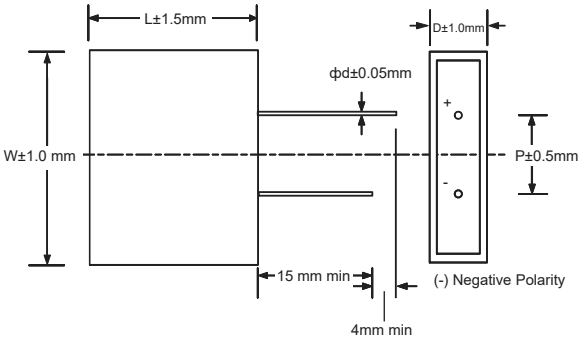
6.0V Plastic Type - Bent Leads



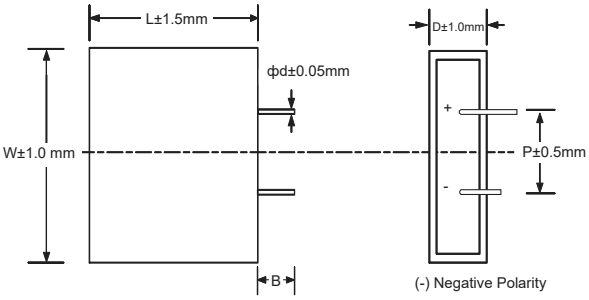
Cap (F)	D (mm)	W (mm)	L (mm)	P (mm)	d (mm)	B (mm)*
0.47	9.5	18.5	16.0	11.5	0.6	2.0
1	9.5	18.5	20.0	11.5	0.6	2.0
1.5	9.5	18.5	24.0	11.5	0.6	2.0

*for version with bent leads

9.0V Plastic Type - Straight Leads



9.0V Plastic Type - Bent Leads



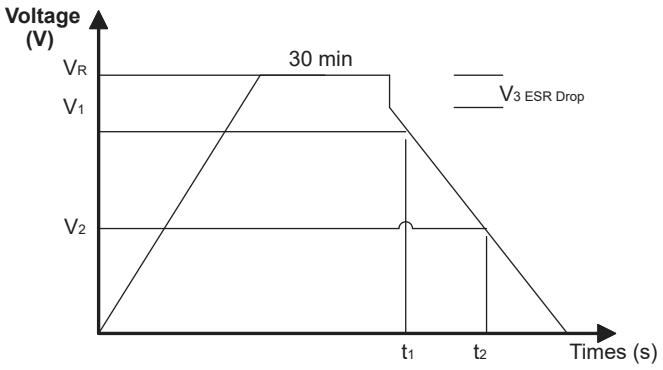
Cap (F)	D (mm)	W (mm)	L (mm)	P (mm)	d (mm)	B (mm)*
0.33	9.5	26.6	16.0	11.5	0.6	2.0
0.6	9.5	26.6	20.0	11.5	0.6	2.0
1	9.5	26.6	24.0	11.5	0.6	2.0

*for version with bent leads

TEST METHODS

IEC Capacitance Test Method

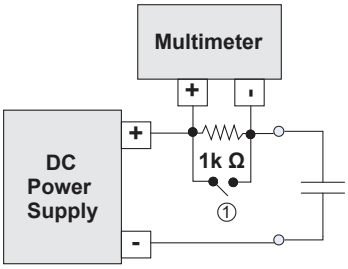
- Capacitance is measured using a Keithley 2400 or 2602 Meter
- Procedure
  - Charge Capacitor to Rated Voltage at room temperature
  - Discharge cells with a constant current I determined by 4 * C * VR
  - Noting V1, t1, V2, t2 and performing the calculation for C



I – Discharge Current [mA], 4 * C * V_R V_R – Rated Voltage
V_1 – Initial Test Voltage, 80% of V_R
V_2 – Final Test Voltage, 40% of V_R
t_1 – Initial Test time
t_2 – Final Test time
$C = I * (t_2 – t_1) / (V_1 – V_2)$

DCL Measurement @ 25°C

- DCL is measured using a Multimeter with high internal impedance across a resistor
  - Charge Capacitor to Rated Voltage at room temperature for 72 Hours
  - Disconnect parts from Voltage by opening switch 1 (Stabilize for 10 Min)
  - Measure Voltage across a known Valued Resistor (1K Ohm)
  - Calculate DCL = V/R

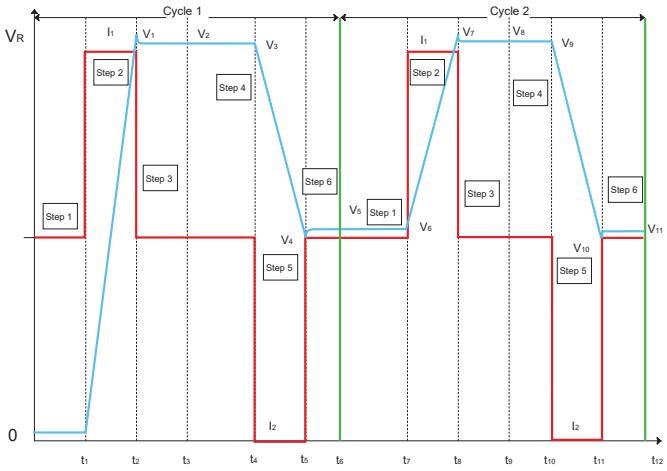


Initial ESR Measurement @ 25°C

- Using an Agilent 4263B LCR Meter and a Kelvin connection
  - Measure at frequency of 1000 Hz
  - Measurement Voltage of 10mV

DC ESR Measurement

- Six steps capacity and ESRDC Test Method is used as illus-
- Tests are carried out by charging and discharging the capacitor for two cycles at rated voltage and half rated voltage
  - $C = (C_{DC1}+C_{DC2}) / 2$
  - $ESR_{DC} = (ESR_{DC1} + ESR_{DC2}) / 2$ Where: $C_{DC1} = I_2*(t_5-t_4)/(V_3-V_4)$ $C_{DC2} = I_2*(t_{11}-t_{10})/V_9-V_{10})$
    $ESR_{DC1} = (V_5-V_4)/I_2$
    $ESR_{DC2} = (V_{11}-V_{10})/I_2$ $I_1 = I_2 = 75mA/F$



Maximum Operating Current

- This is the maximum current when capacitor temperature rise of the capacitor during its operation is less than 15°C

Maximum Peak Current

- This is the maximum current in less than 1 sec

Watt Density

- Watt Density = $(0.12*V^2 / R_{DC}) / mass$

Energy Density

- Energy density = $(½ CV^2) / (3600*mass)$

POLARITY / REVERSE VOLTAGE

In principal the positive and negative electrodes of the SuperCapacitors are symmetrical and in theory they should not have a polarity but for product consistency and for optimum performance the negative polarity is marked because the capacitors do not discharge completely when in use. It is recommended that the polarity should be used as marked. If the polarity is reversed the circuit will not have a catastrophic failure but the circuit will see a much higher leakage current for a short duration of time and the life time of the SuperCapacitors will be reduced.

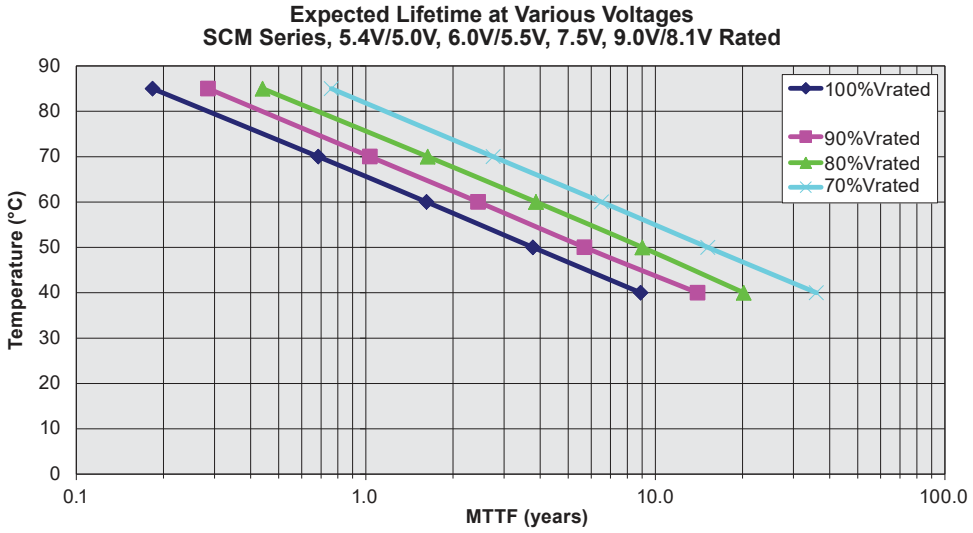
LIFE TIME AND TEMPERATURE PERFORMANCE

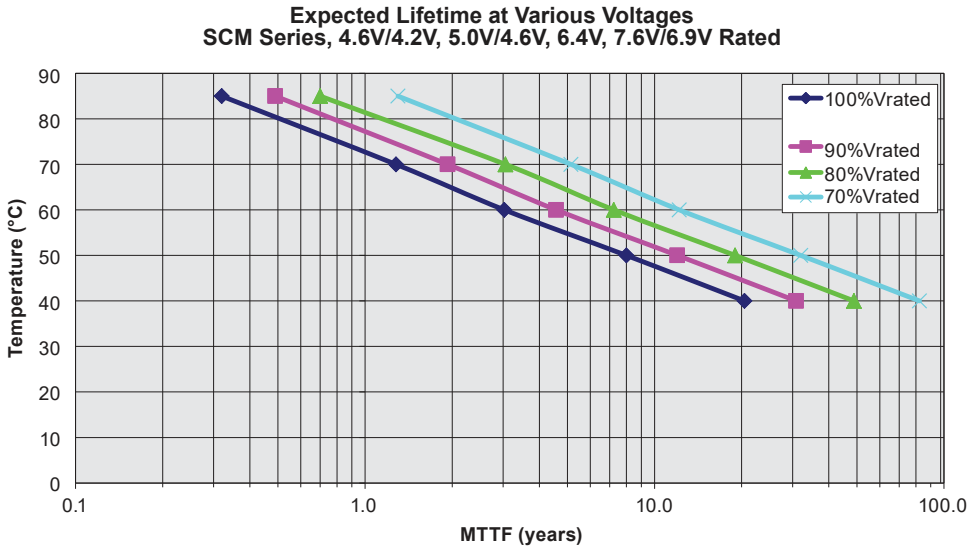
The life of a SuperCapacitor is impacted by a combination of operating voltage and the operating temperature according to the following equation:

time to failure, $t \propto Vn * \exp(-Q / k*T)$ .....(1)

where V is the voltage of operation, Q is the activation energy in electron volts (eV), k is the Boltzmann's constant in eV and T is the operating temperature in °K (where K is in degrees Kelvin). Typical values for the voltage exponent, n, is between 2.5 - 3.5, and Q is between 1.0 - 1.2 eV in the normal operating temperature range of 40° to 65°C. The industry standard for SuperCapacitor end of life is when the equivalent series resistance, ESR, increases to 200% of the original value and the capacitance drops by 30%. Typically a SuperCapacitor shows an initial change in

excessive temperatures the ESR will show a continuous degradation In the extreme case, if the temperatures or voltages are substantially higher, than the rated voltage, this will lead to cell leakage or gas leakage and the product will show a faster change in the ESR which may increase to many times the original value.





SOLDERING RECOMMENDATIONS

When soldering SuperCapacitors to a PCB, the temperature & time that the body of the SuperCapacitor sees during soldering can have a e advise following these guidelines:

- Do not immerse the SuperCapacitors in solder. Only the leads should come in contact with the solder.
- Ensure that the body of the SuperCapacitor is not in contact with the PCB or other components during soldering. Temperature cycling during soldering may cause the case to shrink or crack, potentially damaging the PCB or other components.

HAND SOLDERING

Keep some distance between the SuperCapacitor body and the tip of the soldering iron; contact between SuperCapacitor body and soldering iron will cause extensive damage to the SuperCapacitor. It is recommended that the soldering iron temperature should be less than 350°C, and contact time should be limited to no more than 4 seconds. Too much exposure to terminal heat during soldering can cause heat to transfer to the body of the SuperCapacitor, potentially damaging the SuperCapacitor.

WAVE SOLDERING

Only use wave soldering on Radial type SuperCapacitors. The PCB should be preheated for no longer than 60 seconds, with temperature at, or below, 100°C. Soldering tin should be 0.8mm or thicker.

Solder Temperature (°C)	Suggested Solder Time (s)	Maximum Solder Time (s)
220	7	9
240	7	9
250	5	7
260	3	5

REFLOW SOLDERING

SAFETY RECOMMENDATIONS

Warnings

- To avoid short circuit, after usage or test, SuperCapacitor voltage needs to discharge to ≤ 0.1V
- Do not apply over-voltage, reverse charge, burn or heat higher than 150°C, explosion-proof valve may break open
- Do not press, damage or disassemble the SuperCapacitor, housing could heat to high temperature causing burns
- If you observe overheating or burning smell from the capacitor disconnect power immediately, and do not touch

Emergency Applications

- If housing is leaking:
  - Skin contact: use soap and water thoroughly to wash the area of the skin

    immediately seek medical treatment
  - Ingestion: immediately wash with water and seek medical treatment

Transportation

Not subjected to US DOT or IATA regulations
UN3499, <10Wh, Non-Hazardous Goods
International shipping description –
"Electronic Products – Capacitor"

Regulatory

- UL 810A
- RoHS Compliant
- Reach Compliant / Halogen Free

Storage

- Capacitors may be stored within the operating temperature range of the capacitor
- Lower storage temperature is preferred as it extends the shelf life of the capacitor
- Do not store the SuperCapacitors in the following environments
  - High temperature / high humidity environments >40°C / 70% RH
  - Direct sunlight
  - In direct contact with water, salt oil or other chemicals
  - In direct contact with corrosive materials, acids, alkalis, or toxic gases
  - Dusty environment
  - In environment with shock and vibration conditions

Licensed by CAP-XX

Key Features

High Power with Small Size for Space Saving

Excellent Long Term Stability

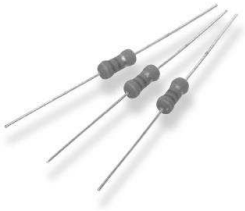
Complete Flameproof Construction

Controlled Temperature Capability

Solvent Resistant Coat and Code

Special Lead Formations Possible

Type ROX Series



The resistive element comprises a metal oxide film deposited on a ceramic former. The element is protected by a flameproof coating which will withstand overload conditions without flame or mechanical damage. They are recommended for use in applications such as line protection etc

Characteristics – Electrical

Type		Rated Power @ 70°C	Max. Working Voltage	Max. Overload Voltage	Dielectric Withstand Voltage	Resistance Range Ω	Operating Temp. Range
Normal Size	ROX025	0.25W	250V	400V	250V	0.3 ~ 50K	-55 ~ 155°C
	ROX05	0.5W	250V	400V	250V	0.3 ~ 330K	
	ROX1	1W	350V	600V	350V	0.1 ~ 470K	
	ROX2	2W	350V	600V	350V	0.1 ~ 560K	
	ROX3	3W	500V	800V	500V	5.0 ~ 100K	
	ROX5	5W	750V	1000V	750V	5.0 ~ 150K	
	ROX7	7W	750V	1000V	750V	20 ~ 150K	
	ROX8	8W	750V	1000V	750V	30 ~ 200K	
	ROX9	9W	750V	1000V	750V	50 ~ 200K	
Small Size	ROX05S	0.5W	250V	400V	250V	0.3 ~ 50K	
	ROX1S	1W	350V	600V	350V	0.1 ~ 270K	
	ROX2S	2W	350V	600V	350V	0.1 ~ 470K	
	ROX3S	3W	350V	600V	350V	0.3 ~ 560K	
	ROX4S	4W	500V	800V	500V	5.0 ~ 100K	
	ROX5SS	5W	500V	800V	500V	5.0 ~ 100K	
	ROX5S	5W	500V	800V	500V	5.0 ~ 560K	

Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial line frequency and waveform corresponding to the power rating , as determined from the following formula :

RCWV = √P x R

Where : RCWV = Rated DC or RMS AC continuous working voltage at commercial-line frequency and waveform (volt)

P = Power Rating (watt)

R = Nominal Resistance (ohm)

Rated Voltage = RCWV or Max. Working Voltage, whichever is smaller

Environmental Characteristics

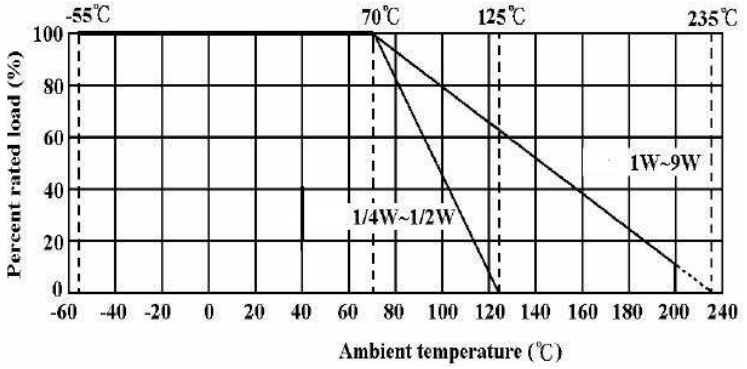
<table>
<tr><th>Characteristics</th><th>Specification</th><th>Test Methods
(JIS C 5201-1)</th></tr>
<tr><td>DC. Resistance</td><td>Must be within the specified tolerance</td><td>5.1 The limit of error of measuring apparatus shall not exceed allowable range or 5% of resistance tolerance</td></tr>
<tr><td>Temperature Coefficient</td><td><table><tr><th>Range Ω</th><th>TCR (PPM/°C)</th></tr><tr><td>0.1Ω ~ 12Ω</td><td>±200</td></tr><tr><td>12.1Ω ~ 100K</td><td>±350</td></tr><tr><td>101K ~ 1M</td><td>-700</td></tr><tr><td>1.1M ~ 10M</td><td>-1500</td></tr></table></td><td>5.2 Natural resistance change per temp. degree centigrade.
$\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/°C)
R_1: Resistance value at room temperature (t_1)
R_2: Resistance value at room temp. plus 100 °C (t_2)</td></tr>
<tr><td>Short time overload</td><td>Resistance change rate is
Normal Size : ± (1% + 0.05Ω) Max.
Small Size : ± (2% + 0.05Ω) Max.
with no evidence of mechanical damage</td><td>5.5 Permanent resistance change after the application of a potential of 2.5 times RCWV or the max. overload voltage respectively specified in the above list, whichever less for 5 seconds</td></tr>
<tr><td>Dielectric Withstanding Voltage</td><td>No evidence of flashover mechanical damage, arcing or insulation break down</td><td>5.7 Resistors shall be clamped in the trough of a 90° metallic V-block and shall be tested at AC potential respectively specified in the electrical characteristics table for
60 + 10/ -0 seconds</td></tr>
<tr><td>Terminal Strength</td><td>No Evidence of mechanical damage</td><td>6.1 Direct load:
Resistance to a 2.5 kgs direct load for 10 secs. in the direction of the longitudinal axis of the terminal leads
Twist test:
Terminal leads shall be bent through 90 ° at point of about 6mm from the body of the resistor and shall be rotated through 360° about the original axis of the bent terminal in alternating direction for a total of 3 rotations.</td></tr>
<tr><td>Resistance to soldering heat</td><td>Resistance change rate is:
± (1% + 0.05Ω) Max. with no evidence of mechanical damage</td><td>6.4 Permanent resistance change when leads immersed to 3.2 mm to 4.8 mm from the body in 350°C ± 10 °C solder for 3 ± 0.5 seconds</td></tr>
<tr><td>Solderability</td><td>95 % coverage Min.</td><td>6.5 The area covered with a new , smooth, clean , shiny and continuous surface free from concentrated pinholes.
Test temp. of solder: 245°C ± 3°C
Dwell time in solder : 2 ~ 3 seconds</td></tr>
</table>

Environmental Characteristics (continued)

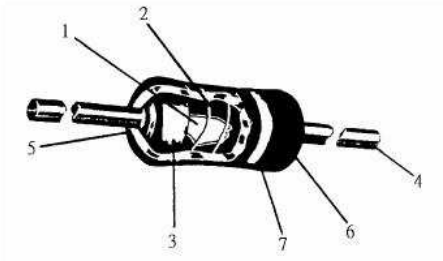
<table>
<tr><th>Characteristics</th><th>Specification</th><th>Test Methods
(JIS C 5201-1)</th></tr>
<tr><td>Resistance to Solvent</td><td>No deterioration of protective coatings and marking</td><td>6.9 Specimens shall be immersed in a bath of trichroethane completely for 3 minutes with ultrasonic</td></tr>
<tr><td>Temperature cycling</td><td>Resistance change rate is:
± (2% + 0.05Ω) Max. with no evidence of mechanical damage</td><td>7.4 Resistance change after continuous 5 cycles for duty shown below:
<table><tr><th>Step</th><th>Step</th><th>Step</th></tr><tr><td>1</td><td>1</td><td>1</td></tr><tr><td>2</td><td>2</td><td>2</td></tr><tr><td>3</td><td>3</td><td>3</td></tr><tr><td>4</td><td>4</td><td>4</td></tr></table></td></tr>
<tr><td>Load life in humidity</td><td><table><tr><th>Resistance Value</th><th>ΔR/R</th></tr><tr><td>Less than 100KΩ</td><td>± 5 %</td></tr><tr><td>100KΩ or more</td><td>± 10 %</td></tr></table></td><td>7.9 Resistance change after 1,000 hours operating at RCWV with duty cycle of (1.5 hours "on", 0.5 hour "off") in a humidity test chamber controlled at 40 ℃ ± 2 ℃ and 90 to 95 % relative humidity</td></tr>
<tr><td>Load life</td><td><table><tr><th>Resistance Value</th><th>ΔR/R</th></tr><tr><td>Less than 100KΩ</td><td>± 5 %</td></tr><tr><td>100KΩ or more</td><td>± 10 %</td></tr></table></td><td>7.10 Permanent resistance change after 1,000 hours operating at RCWV with duty cycle of (1.5 hours "on", 0.5 hour "off") at 70℃ ± 2℃ ambient</td></tr>
<tr><td>Pulse overload</td><td>Resistance change rate is:
Normal Size : ± (2% + 0.05Ω) Max.
Small Size : ± (5% + 0.05Ω) Max.
with no evidence of mechanical damage</td><td>5.8 Resistance change after 10,000 cycles (1 second "on", 25 seconds "off") at 4 times RCWV or the max. pulse overload voltage</td></tr>
</table>

Derating:

In ambient temperatures greater than 70°C the load shall de-rate as shown in the graph below:

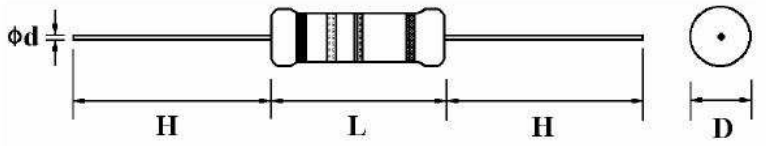


Construction:



No.	Name	Material
1	Basic Body	Rod Type Ceramics
2	Resistance Film	0.1Ω ≤ R ≤ 12Ω : CNP film 10Ω ≤ R ≤ 100kΩ : Metal oxide film R > 100kΩ : Carbon film
3	End Cap	Steel (Tin plated iron surface)
4	Lead Wire	Annealed copper wire coated with tin
5	Joint	By welding
6	Coating	Normal size: --Insulated & Non-Flame Paint (Color : Gray) Small size: --Insulated & Non-Flame Paint (Color : Sea-Blue)
7	Color Code	Non-Flame epoxy resin

Dimensions:

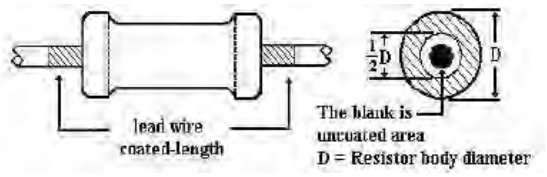


Type		Dimensions (MM)			
		D (max.)	L (max.)	d ±0.05	H ±3
Normal Size	ROX025	2.5	7.5	0.54	28
	ROX05	3.5	10	0.54	28
	ROX1	5	12	0.70	25
	ROX2	5.5	16	0.70	28
	ROX3	6.5	17.5	0.75	28
	ROX5	8.5	26	0.75	38
	ROX7	8.5	32	0.75	38
	ROX8	8.5	41	0.75	38
	ROX9	8.5	54	0.75	38
Small Size	ROX05S	2.5	7.5	0.54	28
	ROX1S	3.5	10	0.54	28
	ROX2S	5	12	0.70	25
	ROX3S	5.5	16	0.70	28
	ROX4S	6.5	17.5	0.75	28
	ROX5SS	6.5	17.5	0.75	28
	ROX5S	8	25	0.75	38

NB. Pre-formed leads available on request.

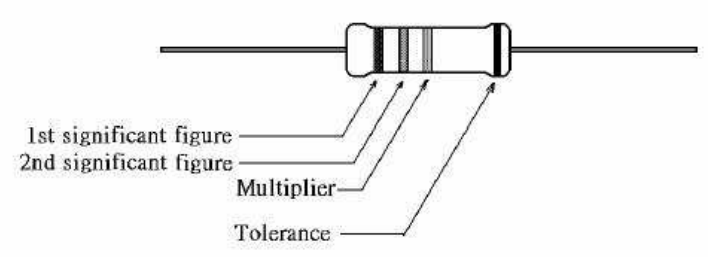
Painting method:

Welding point, terminal and lead wire, is permissible to be exposed without the outer coated cover. The extent should be within 1/2 of the resistor body diameter.

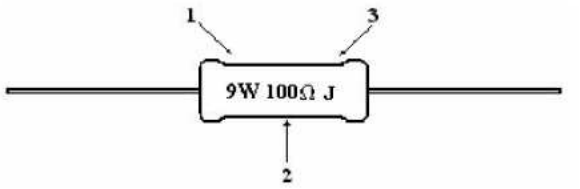


Marking:

For 1/4W, 1/2W, 1W, 2W, 3W, 4W, 5W and all of small size Resistors shall be marked with color coding. colors shall be in accordance with JIS C 0802



For 7W, 8W, 9W marking shall be in text format:



Code description and regulation

1. Wattage rating.
2. Nominal resistance value.
3. Resistance Tolerance.

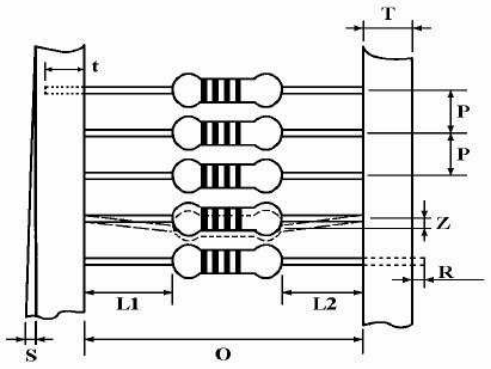
   G: ± 2 %

   J: ± 5 %

   K: ± 10 %

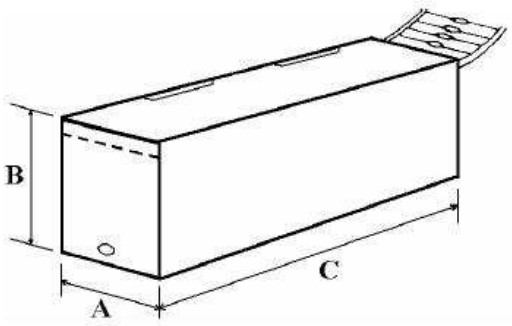
Packing Specification:

Taping:



	Type	Style	O±1	P	L1-L2	T	Z	R	t	S
Normal Size	ROX025	PT-52	52	5±0.3	1 Max	6±1	1 Max	0	4±1	0.5 max
	ROX05	PT-52	52	5±0.3	1 Max	6±1	1 Max	0	4±1	0.5 max
	ROX1	PT-52	52	5±0.3	1 Max	6±1	1 Max	0	4±1	0.5 max
	ROX2	PT-64	64	10±0.5	1 Max	6±1	1 Max	0	5±1	0.5 max
	ROX3	PT-64	64	10±0.5	1 Max	6±1	1 Max	0	5±1	0.5 max
Small Size	ROX05S	PT-52	52	5±0.3	1 Max	6±1	1 Max	0	4±1	0.5 max
	ROX1S	PT-52	52	5±0.3	1 Max	6±1	1 Max	0	4±1	0.5 max
	ROX2S	PT-52	52	5±0.3	1 Max	6±1	1 Max	0	4±1	0.5 max
	ROX3S	PT-64	64	10±0.5	1 Max	6±1	1 Max	0	5±1	0.5 max
	ROX4S	PT-64	64	10±0.5	1 Max	6±1	1 Max	0	5±1	0.5 max
	ROX5SS	PT-64	64	10±0.5	1 Max	6±1	1 Max	0	5±1	0.5 max

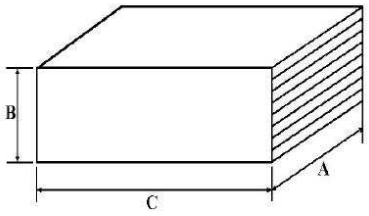
Tape in box packing (Ammopack):



Type	C ± 5	A ± 5	B ± 5	Pack Quantity
ROX025	250	75	96	5000
ROX05	260	85	70	1000
ROX1	262	86	80	1000
ROX2	262	92	108	1000
ROX3	256	92	80	500
ROX05S	250	75	96	5000
ROX1S	260	85	70	1000
ROX2S	262	86	80	1000
ROX3S	262	92	108	1000
ROX4S	256	92	80	500
ROX5SS	256	92	80	500

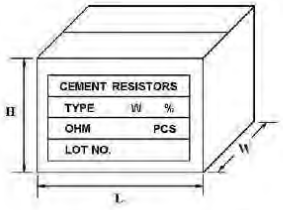
NB Certain products can be supplied reeled on request.

Plastic cases in box:

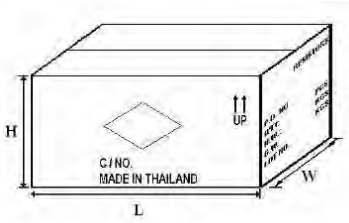


Type	C ±5	A ±5	B ±5	Quantity	
				Plastic Case	Box
ROX5S	36	20	8	100	1000
ROX5	36	20	8	100	1000

Bulk packaging (plastic bag in inner box):



Inner Box of Plastic bag.



Carton Box

Type	Qty/Bag (Pcs)	Qty/Box (Pcs)	Qty/Carton Pcs	Box size LxWxH (±5)	Carton size LxWxH (±5)	Gross wt ±2 Kgs
ROX7	8	32	1600	150 x 75 x 33	432 x 308 x 215	9.5
ROX8	8	32	1600	150 x 75 x 33	432 x 308 x 215	11.5
ROX9	10	300	1800	200 x 171 x 113	520 x 215 x 250	15

How To Order

ROX 1S J 100K

Common Part	Power Rating		Tolerance	Resistance Value	Special Request
	Normal size	**Small size**			
ROX – Flame proof power metal oxide film resistor	025 - 1/4W 05 – 1/2W 1 – 1W 2 – 2W 3 – 3W 5 – 5W 7 – 7W 8 – 8W 9 – 9W	05S – 1/2W 1S – 1W 2S – 2W 3S – 3W 4S – 4W 5SS – 5W 5S – 5W	G – 2% J – 5%	R33 -0.33Ω 1R0 - 1Ω 10R - 10Ω 100R - 100Ω 1K0 – 1KΩ (1000Ω) 100K – 100KΩ (100,000Ω)	BL * – Pre-formed Leads TR - Reeled

Dimensions in millimetres unless otherwise specified

Dimensions Shown for reference purposes only. Specifications subject to change

For Email, phone or live chat, go to: www.te.com/help

BU406, BU407

NPN Power Transistors

These devices are high voltage, high speed transistors for horizontal deflection output stages of TV's and CRT's.

Features

- High Voltage
- Fast Switching Speed
- Low Saturation Voltage
- These Devices are Pb−Free and are RoHS Compliant*

MAXIMUM RATINGS

Rating		Symbol	Value	Unit
Collector−Emitter Voltage	BU406 BU407	V_{CEO}	200 150	Vdc
Collector−Emitter Voltage	BU406 BU407	V_{CEV}	400 330	Vdc
Collector−Base Voltage	BU406 BU407	V_{CBO}	400 330	Vdc
Emitter−Base Voltage		V_{EBO}	6	Vdc
Collector Current − Continuous − Peak Repetitive		I_C	7 10	Adc
Collector Current − Peak (10 ms)		I_{CM}	15	Adc
Base Current		I_B	4	Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C		P_D	60 0.48	W W/°C
Operating and Storage Junction Temperature Storage		T_J, T_{stg}	−65 to 150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	2.08	°C/W
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	70	°C/W
Maximum Lead Temperature for Soldering Purposes1/8″ from Case for 5 Seconds	T_L	260	°C

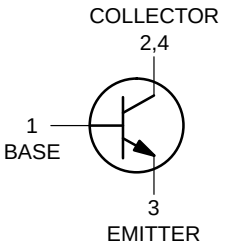
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor®

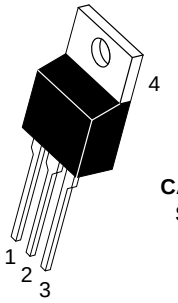
www.onsemi.com

NPN SILICON POWER TRANSISTORS 7 AMPERES − 60 WATTS 150 AND 200 VOLTS

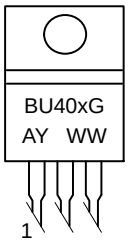
SCHEMATIC



MARKING DIAGRAM



TO−220
CASE 221A
STYLE 1



BU40x = Specific Device Code
x = 6 or 7
A = Assembly Location
Y = Year
WW = Work Week
G = Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping
BU406G	TO−220AB (Pb−Free)	50 Units / Rail
BU407G	TO−220AB (Pb−Free)	50 Units / Rail

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ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector−Emitter Sustaining Voltage (Note 1) (I_C = 100 mAdc, I_B = 0)	BU406 BU407	$V_{CEO(sus)}$	200 150	− −	− −	Vdc
Collector Cutoff Current (V_{CE} = Rated V_{CEV}, V_{BE} = 0) (V_{CE} = Rated V_{CEO} + 50 Vdc, V_{BE} = 0) (V_{CE} = Rated V_{CEO} + 50 Vdc, V_{BE} = 0, T_C = 150°C)		I_{CES}	 − − −	 − − −	 5 0.1 1	mAdc
Emitter Cutoff Current (V_{EB} = 6 Vdc, I_C = 0)	BU406, BU407	I_{EBO}	−	−	1	mAdc
ON CHARACTERISTICS (Note 1)						
Collector−Emitter Saturation Voltage (I_C = 5 Adc, I_B = 0.5 Adc)		$V_{CE(sat)}$	−	−	1	Vdc
Base−Emitter Saturation Voltage (I_C = 5 Adc, I_B = 0.5 Adc)		$V_{BE(sat)}$	−	−	1.2	Vdc
Forward Diode Voltage (I_{EC} = 5 Adc) “D” only		V_{EC}	−	−	2	Volts
DYNAMIC CHARACTERISTICS						
Current−Gain − Bandwidth Product (I_C = 0.5 Adc, V_{CE} = 10 Vdc, f_{test} = 20 MHz)		f_T	10	−	−	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1 MHz)		C_{ob}	−	80	−	pF
SWITCHING CHARACTERISTICS						
Inductive Load Crossover Time (V_{CC} = 40 Vdc, I_C = 5 Adc, I_{B1} = I_{B2} = 0.5 Adc, L = 150 μH)		t_c	−	−	0.75	μs

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 1%.

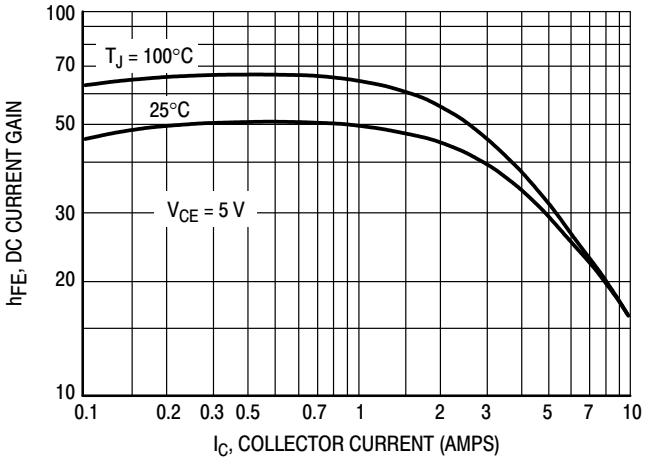


Figure 1. DC Current Gain

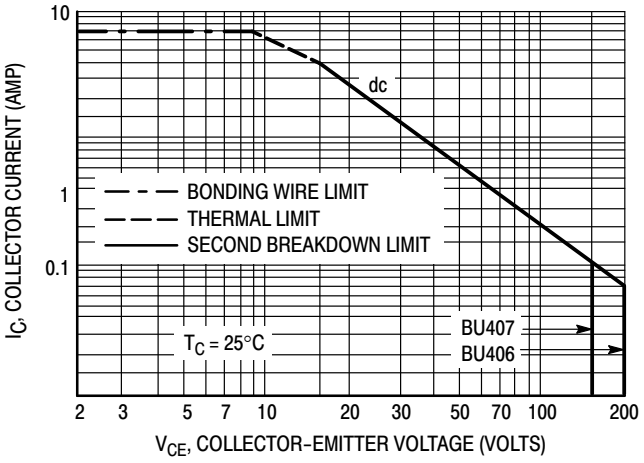
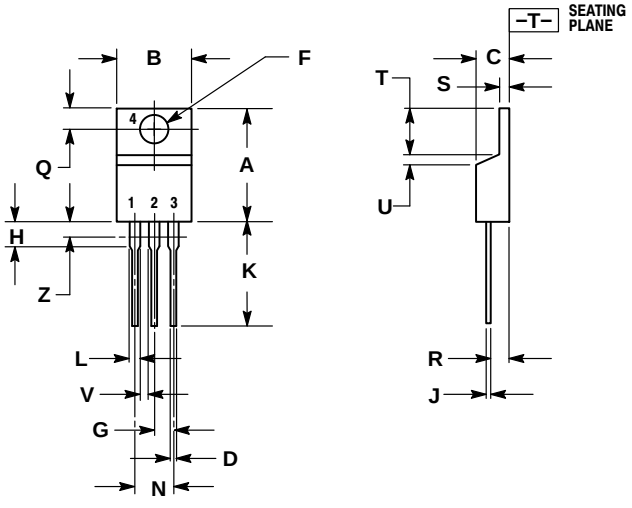


Figure 2. Maximum Rated Forward Bias Safe Operating Area

PACKAGE DIMENSIONS

TO−220
CASE 221A−09
ISSUE AH



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.415	9.66	10.53
C	0.160	0.190	4.07	4.83
D	0.025	0.038	0.64	0.96
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
J	0.014	0.024	0.36	0.61
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

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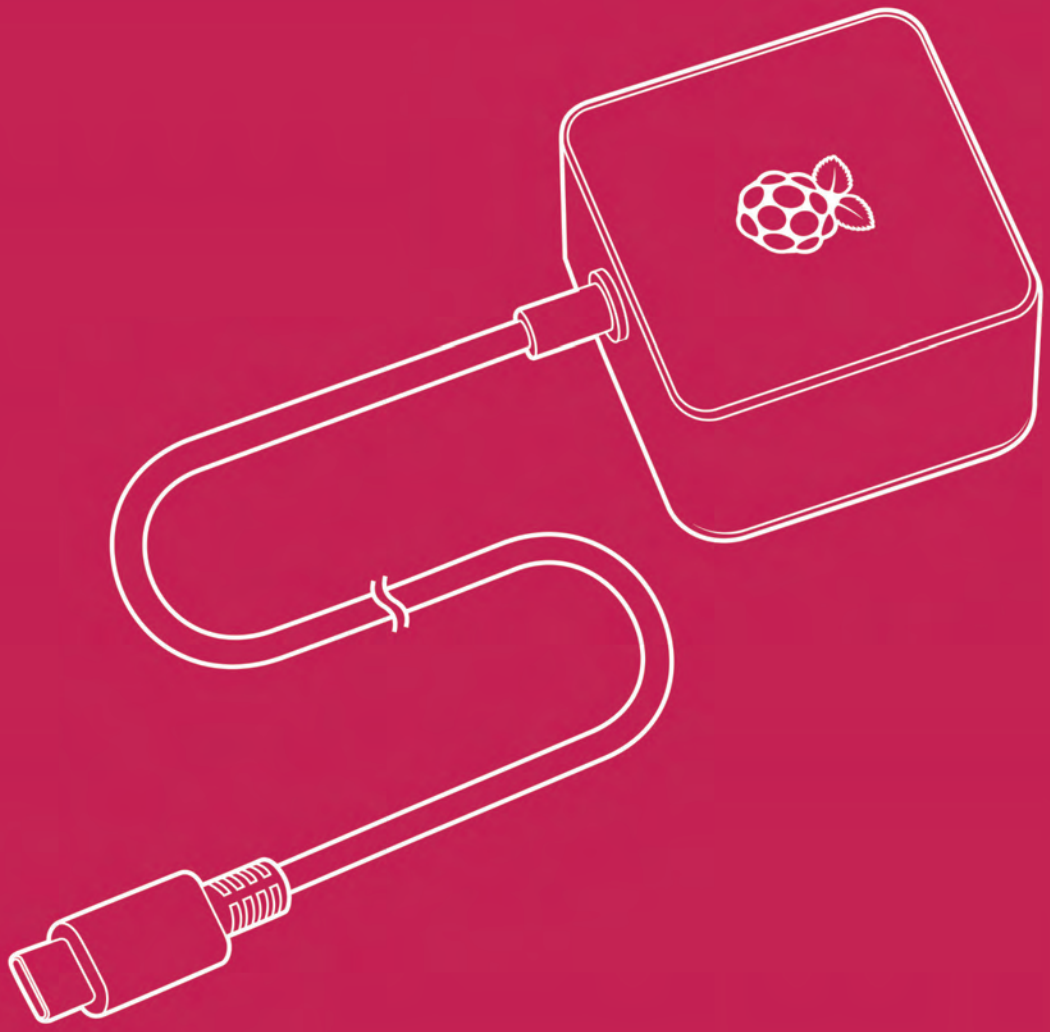
BU406/D

Raspberry Pi 15.3W USB-C Power Supply



Published in June 2019
by Raspberry Pi Trading Ltd.

Raspberry Pi

www.raspberrypi.org

Overview

The official Raspberry Pi USB-C power supply is designed to power the latest Raspberry Pi 4 Model B computers, which were released in June 2019.

Featuring a captive USB-C cable, the power supply is available in four different models to suit different international power sockets, and in two colours, white and black.

Specification

Output

Output voltage:	+5.1V DC
Minimum load current:	0A
Nominal load current:	3.0A
Maximum power:	15.3W
Load regulation:	±5%
Line regulation:	±2%
Ripple & noise:	120mVp-p
Rise time:	100ms maximum to regulation limits for DC outputs
Turn-on delay:	3000ms maximum at nominal input AC voltage and full load
Protection:	Short circuit protection Overcurrent protection Over temperature protection
Efficiency:	81% minimum (output current from 100%, 75%, 50%, 25%)
	72% minimum at 10% load
Output cable:	1.5m 18AWG
Output connector:	USB Type-C

Input

Voltage range:	100-240Vac (rated)
	96-264Vac (operating)
Frequency:	50/60Hz ±3Hz
Current:	0.5A maximum
Power consumption (no load):	0.075W maximum
Inrush current:	No damage shall occur and the input fuse shall not blow

Plug styles

Part number	Colour	Plug Style	Plug Type
KSA-15E-051300HA White	White	Australia New Zealand China	Type I
KSA-15E-051300HA Black	Black		
KSA-15E-051300HE White	White	Europe, India	Type C
KSA-15E-051300HE Black	Black		
KSA-15E-051300HK White	White	UK	Type G
KSA-15E-051300HK Black	Black		
KSA-15E-051300HU White	White	US, Canada	Type A
KSA-15E-051300HU Black	Black		

Environment

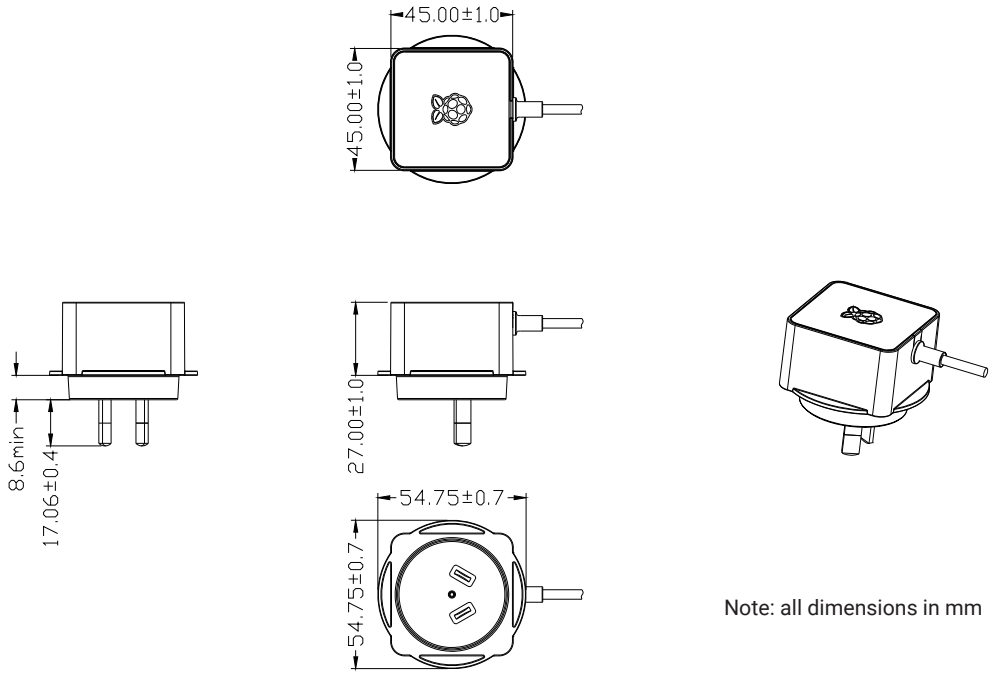
Operating ambient temperature 0–40°C

Compliance

For a full list of local and regional product approvals, please visit www.raspberrypi.org/documentation/hardware/raspberrypi/conformity.md

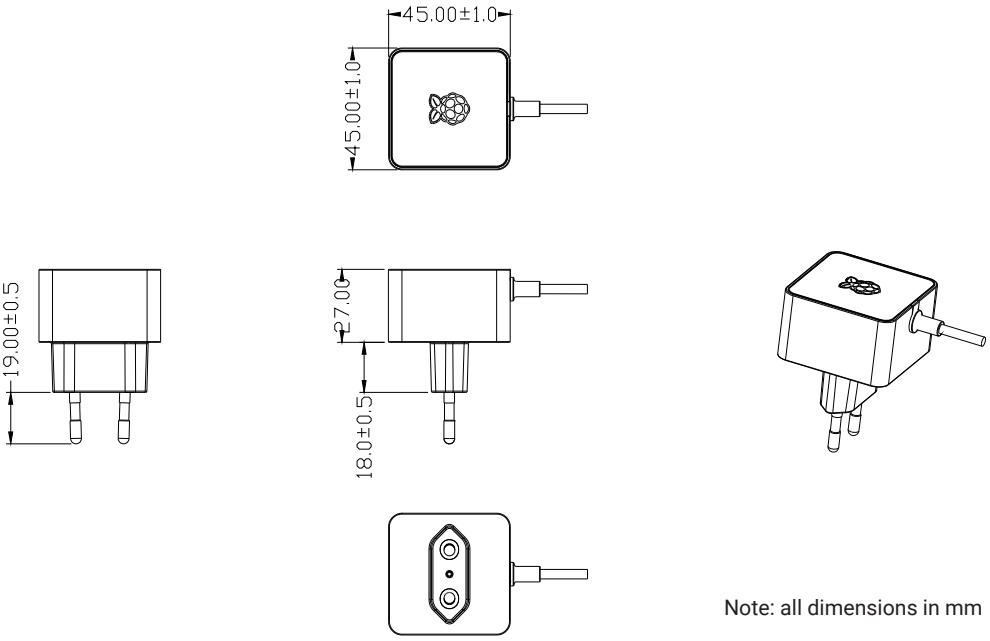
Physical Specifications

KSA-15E-051300HA



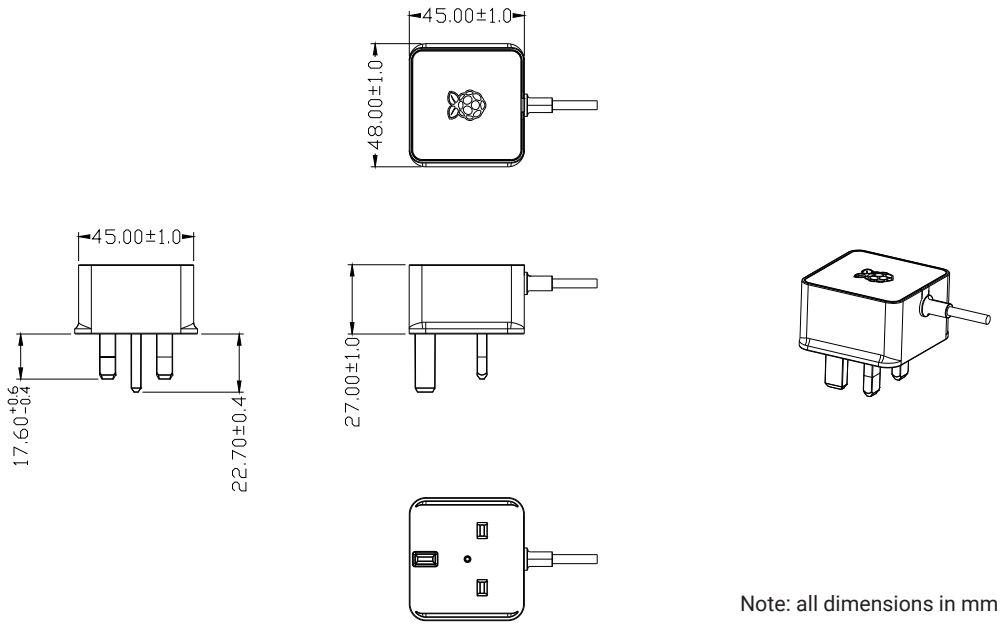
Note: all dimensions in mm

KSA-15E-051300HE



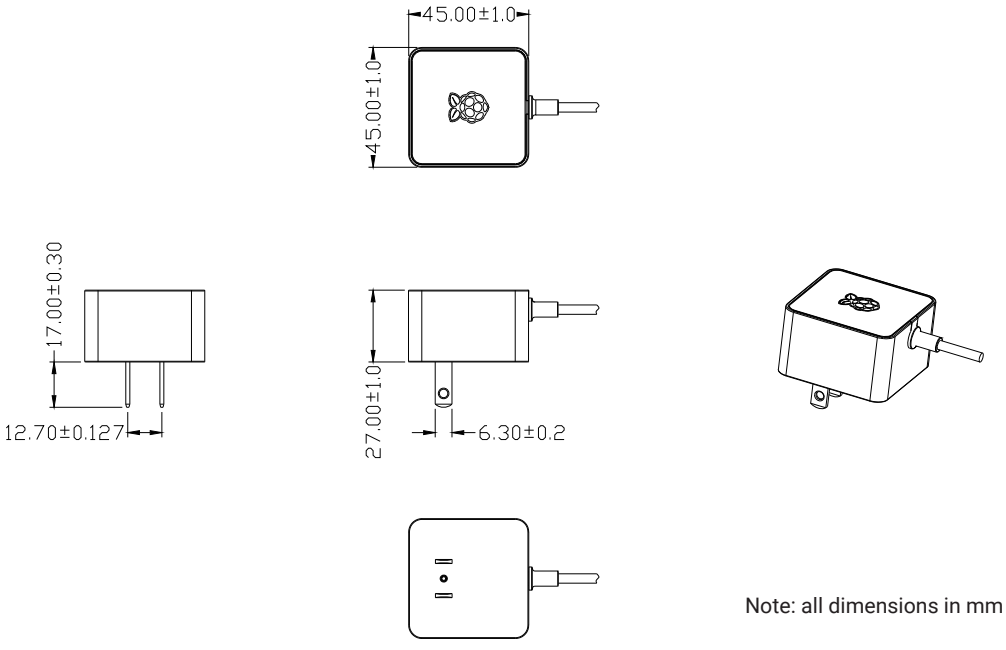
Note: all dimensions in mm

KSA-15E-051300HK



Note: all dimensions in mm

KSA-15E-051300HU



Note: all dimensions in mm

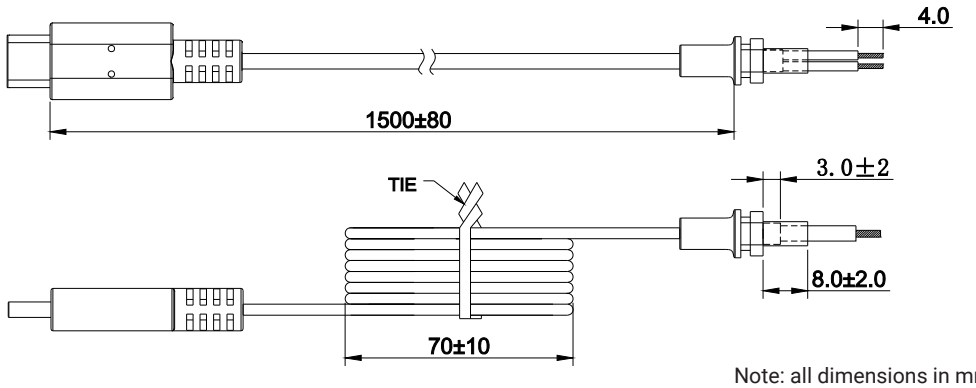
Case material

UL94V-1

AC pin material

Brass (NI plated)

DC cord & output plug



Note: all dimensions in mm

WARNINGS

- This product should be operated in a well-ventilated environment.
- The connection of incompatible devices to this power supply may affect compliance, result in damage to the unit and invalidate the warranty.

SAFETY INSTRUCTIONS

To avoid malfunction or damage to this product please observe the following:

- Do not expose to water or moisture, or place on a conductive surface whilst in operation.
- Do not expose to heat from any source; this is designed for reliable operation at normal ambient room temperatures.
- Do not attempt to open or remove the power supply case.

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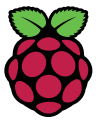


Raspberry Pi

Power Relay RM 8

- **2 pole 25 A, 2 form C (2 CO) contacts**
- **DC or AC coil**
- **Mechanical indicator**
- **Push-to-test button**
- **Chassis or DIN rail mount**

Typical applications
Cleaning equipment, heating and cooling equipment.

Approvals

VDE Cert. No. 40003144, UL E214025,
Technical data of approved types on request.

Contact Data

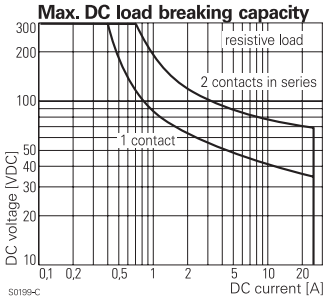
Contact arrangement	2 form C (CO)
Rated voltage	250VAC (VDE) /415VAC (UL)
Max. switching voltage	415VAC
Rated current	25A
Limiting making current, 20ms max.	60A
Switching power	6000VA
Contact material	AgNi90/10
Min. recommended contact load	24VDC/100mA
Frequency of operation, with/without load, DC coil	360/6000h^{-1}
Operate/release time max., DC coil	15/10ms
Bounce time max., form A/form B, DC coil	4/6ms

Contact ratings

Type	Contact	Load	Cycles
IEC 61810			
RM82/7	C (CO)	25 A, 250 VAC, cosφ=1 DC-coil, 65°C	10x10^3
RM82/7	C (CO)	25 A, 250 VAC, cosφ=1 AC-coil, 40°C	10x10^3
UL 508			
RM82/7	A/B (NO/NC)	25 A, 277 VAC, general purpose, 50°C	6x10^3
RM8	A/B (NO/NC)	25 A, 415 VAC, resistive, 45°C	10x10^3
RM82/7	C (CO)	16 A, 415 VAC, resistive, 70°C	30x10^3
RM82/7	A/B (NO/NC)	240 VAC, 1phase, 2HP, 50°C	6x10^3

Mechanical endurance 10x10^6 operations

Max. DC load breaking capacity



Coil Data

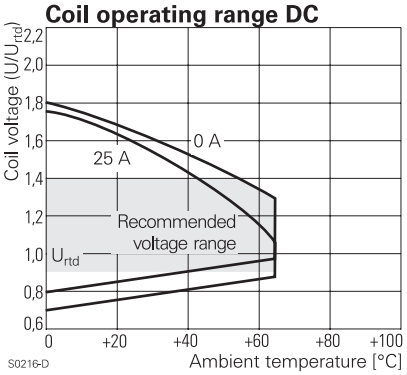
Coil voltage range	6 to 220VDC 12 to 400VAC
Operative range, IEC 61810	2
Coil insulation system according UL	class 130 (B)

Coil versions, DC coil

STD	LED bipolar	Coil code PD[3]	LED+ PD[3]	Rated voltage VDC	Coil resistance Ω±10%[1)2)]	Rated coil power W
006	L06	0A6	LA6	6	32	1.1
012	L12	0B2	LB2	12	110	1.3
024	L24	0C4	LC4	24	475	1.2
048	L48	0E8	LE8	48	2000	1.2
060	L60	0G0	LG0	60	2850	1.3
110	M10	1B0	MB0	110	10000[1)]	1.2
221	N21	2C1	NC1	220	40000[2)]	1.2
Operate voltage, DC coil				75% of rated coil voltage		
Release voltage, DC coil				10% of rated coil voltage		

1) Coil resistance ±12%, 2) Coil resistance ±15%.
3) Protection diode PD; standard polarity: +A1 / -A2.
All figures are given for coil without pre-energization, at ambient temperature +23°C.

Coil operating range DC



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Catalog product data, 'Definitions' section, application notes and all specifications are subject to change.

Power Relay RM 8 (Continued)

Coil Data (continued)

Coil versions, AC coil

Coil code STD	Coil code LED	Rated voltage VAC	Operate voltage 50/60Hz VAC	Release voltage 50/60Hz VAC	Coil resistance Ω±10%[1)2)]	Rated coil power 50/60Hz VA
512	R12	12	9.6/10.2	3.6	19.5	2.71/2.27
524	R24	24	19.2/20.4	7.2	80	2.62/2.00
548	R48	48	38.4/40.8	14.4	320	2.60/2.17
560	R60	60	48.0/51.0	18.0	500	2.62/2.20
615	S15	115	92.0/97.8	34.5	1850	2.65/2.22
730	T30	230	184.0/195.5	69.0	7500	2.69/ 2.26
900	V00	400	320.0/340.0	120.0	23500[2)]	2.61/2.20

2) Coil resistance ±15%.

All figures are given for coil without pre-energization, at ambient temperature +23°C.

Insulation Data

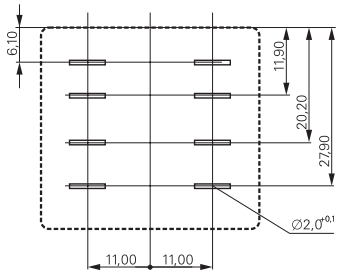
Initial dielectric strength	
between open contacts	1500Vrms
between contact and coil	2500Vrms
between adjacent contacts	4000Vrms
Initial surge withstand voltage	
between contact and coil	5000V(1.2/50µs)
between adjacent contacts	6000V(1.2/50µs)
Clearance/creepage	
between contact and coil	≥4.0/14.9mm
between adjacent contacts	≥15.3/15.3mm
Material group of insulation parts	IIIa

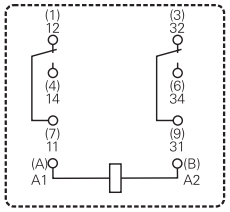
Other Data

Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www.te.com/customersupport/rohssupportcenter	
Ambient temperature	
for mounting/handling	-20 to +40°C
in operation	
DC coil	-40 to +65°C
AC coil	-40 to +40°C
16 A contact load	-40 to +70°C
Category of environmental protection	
IEC 61810	RTI - dust protected
Vibration resistance (functional)	
form A (NO)/form B (NC)	10/5g, 30 to 150Hz
Terminal type	quick-connect
Cover retention, pull/push force	100/100N
Weight	81g
Packaging unit	10/25 pcs.

Terminal assignment

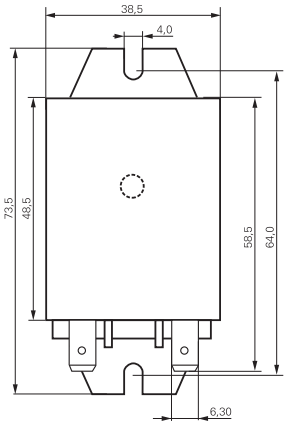
Bottom view on pins

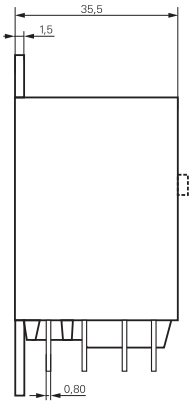




Dimensions

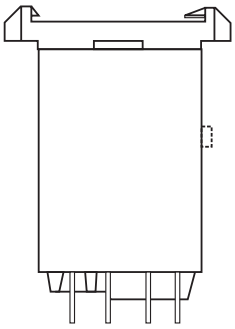
Cover with mounting brackets, 6.3mm quick connect terminals



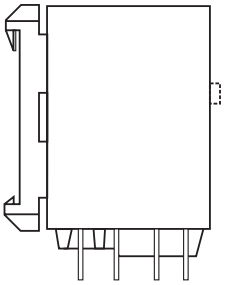


Cover with DIN-snap-on attachement

horizontal



vertical



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Power Relay RM 8 (Continued)

Product code structure

Typical product code	RM	8	2	9	024

Type
RM Power relay RM8

Contact configuration
8 2 form C contacts (2 CO), 25A

Version
0 Discontinued: AgCdO, without test button
2 AgNi90/10, without test button
3 Discontinued: AgCdO, with test button
7 AgNi90/10, with test button

Enclosure
5 cover with mounting brackets, 6.3mm quick connect terminals
8 cover with DIN-snap-on attachment, horizontal, 6.3mm quick connect terminals
9 cover with DIN-snap-on attachment, vertical, 6.3mm quick connect terminals

Coil
Coil code: please refer to coil versions table

1) AgCdO contacts are discontinued and replaced with AgNi contacts (see PCN E-18-003016)

Product code	Contacts	Cont. material	Version	Enclosure	Coil	Coil	Part number
RM825012	2 form C,	AgNi	Without	Mounting brackets	DC-coil	12VDC	4-1415546-4
RM825024	2 CO contacts	AgNi	test button	quick c. 6.3 mm	DC-coil	24VDC	7-1415544-3
RM825524	25 A	AgNi			AC-coil	24VAC	4-1415546-5
RM825615		AgNi			AC-coil	115VAC	4-1415546-6
RM825730		AgNi			AC-coil	230VAC	5-1415544-8
RM829024		AgNi		DIN-snap-on	DC-coil	24VDC	4-1415546-7
RM829730		AgNi		vertical	AC-coil	230VAC	4-1415546-8
RM875024		AgNi	With	Mounting brackets	DC-coil	24VDC	4-1415546-9
RM875048		AgNi	test button	quick c. 6.3 mm	DC-coil	48VDC	5-1415546-0
RM875730		AgNi			AC-coil	230VAC	5-1415546-1
RM878012		AgNi		DIN-snap-on	DC-coil	12VDC	5-1415546-2
RM878024		AgNi		horizontal	DC-coil	24VDC	5-1415546-3
RM879024		AgNi		DIN-snap-on	DC-coil	24VDC	5-1415546-4
RM879730		AgNi		vertical	AC-coil	230VAC	2-1415547-1

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rotronic

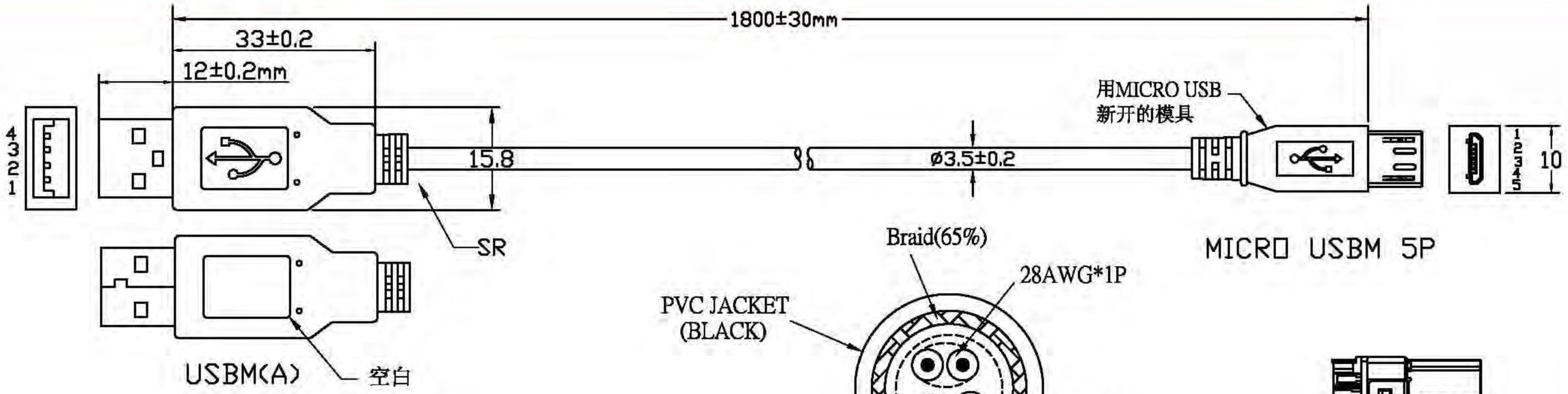
Datenblatt - Fiche technique - Data sheet

11.02.8754

ROLINE USB 2.0 Kabel, USB A ST – Micro USB B ST, 0,8m

ROLINE Câble USB 2.0, USB A mâle – Micro USB B mâle, 0,8m

ROLINE USB 2.0 Cable, USB Type A M – Micro USB B M, 0.8 m



（注意:A头和B头,头的形状是不一样）

此结构图中间不需要在另加地线

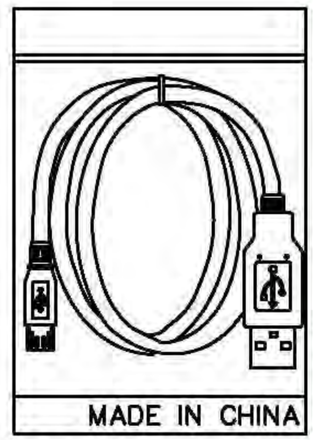
NOTE: 线材印字: USB2.0 CABLE 28AWG/1P+28AWG/2C E314459 兄 AWM 2725 80℃ 30V VW-1

1. CABLE:UL2725,USB 2.0,AL+B-FOIL,#28*1P+#28*2C,BLACK COLOR,OD=3.5mm,PVC JACKET.
   (AL/MG 65%,double shielded, bare copper conductor,)
2. LENGTH: 1.8M.
3. CONNECTORS:USB4P(A)TYPE PLUG*1(WHITE INSULATOR)(PIN 30U").
   MICRO USBM 5P*1(BLACK INSULATOR)(PIN 30U").
4. MOLD:MOLDING USB TYPE.
5. CONTACTS:

USB4P(A)	1	2	3	4	64
MICRO USB5P	1 RED	2 WHITE	3 GREEN	5 BLACK	64 DRAIN
		PAIR			

6. OPEN/SHORT TEST: 100% TEST.
   INSULATION: 2M.

ITEM NO	COLOR	LENGTH
11.02.8752	BLACK	1.8M
11.02.8754	BLACK	0.8M
11.02.8755	BLACK	3.0M



1PCS/PE BAG.

COMPANY	RLA		ITEM NO.		NO B5538			
REVISION	DATE	DISCRIPTION	DRAWN BY		贴纸:AR	Rotronic Co.,Ltd.	SCALE	NON
REV.A/3	2009.12.28	修正图面AM为白胶芯	DESIGNED BY				UNIT(mm)	
REV.A/4	2010.12.16	ADD ITEM	APPROVAL BY				DRAWING NO.	
REV.A/2	2009.12.24	修正料号不用-A 是贴纸的版本:AR						

Datenblatt

NP Baureihe - Ventilgesteuerte Blei-Säure Batterie

NP2.8-6

SPEZIFIKATIONEN		
Nennspannung	6	V
20-stündige Kapazität bis 10,5 V bei 20°C	2.8	Ah
10-stündige Kapazität bis 10,8 V bei 20°C	2.5	Ah
ABMESSUNGEN		
Länge	134 (±1)	mm
Breite	34 (±1)	mm
Höhe		mm
(Höhe über den Anschlüssen.)	64 (±2)	mm
Gewicht (kg)	0.57	kg
ANSCHLUSSPOL TYP		
FASTON (Steckanschluss)	4.7	mm
BETRIEBSTEMPERATUR-BEREICH		
Lagerung (in vollgeladenem Zustand)	-20°C to +60°C	
Ladung	-15°C to +50°C	
Entladung	-20°C to +60°C	
LAGERUNG		
Kapazitätsverlust pro Monat bei 20°C (ca.)	3	%
GEHÄUSEMATERIAL		
Standard	ABS (UL.94:HB)	
Option Schwer Entflammbar (FR)	ABS (UL94:V0)	
LADESPANNUNG		
Schwebeladespannung bei 20°C	6.825 (±1%)	V
	2.275 (±1%)	V/Zelle
Ladespannungskompensationsfaktor (bei Abweichungen von der Standardtemperatur 20°C)	-3	mV/Zelle/°C
Starkladung bei 20°C	7.26 (±3%)	V
	2.42 (±3%)	V/Zelle
Ladespannungskompensationsfaktor bei Starkladung (für Abweichungen von der Standardtemperatur 20°C)	-4	mV/Zelle/°C
LADESTROM		
Ladestrombegrenzung bei Schwebeladung	keine Begrenzung	A
Ladestrombegrenzung bei Starkladung	0.7	A
MAXIMALER ENTLADESTROM		
1 Sekunde	84	A
1 Minute	28	A
KURZSCHLUSSSTROM & INNENWIDERSTAND		
(Gemäß EN IEC 60896-21)		
Innenwiderstand	N/A	mΩ
Kurzschlussstrom	N/A	A
IMPEDANZ		
Gemessen bei 1 kHz	30	mΩ
LEISTUNGS - UND KENNDATEN		
mehr im technischen Handbuch	NP	
GEBRAUCHSDAUER		
EUROBAT-Klasse: standard commercial	3 bis 5	Jahre
YUASA GEBRAUCHSDAUER (bei 20°C)	bis zu 5	Jahre

SICHERHEIT

Einbau

Kann in beliebiger Lage installiert und betrieben werden, außer dauerhaft über Kopf.

Tragegriffe

Batterien nicht dauerhaft an den Tragegriffen hängend installieren (wo vorhanden)

Gasung

VRLA Batterien setzen Wasserstoffgas frei, das in Verbindung mit Luft eine explosive Mischung bilden kann. Die Batterien dürfen deshalb nicht in gasdichten Gehäusen gelagert oder betrieben werden.

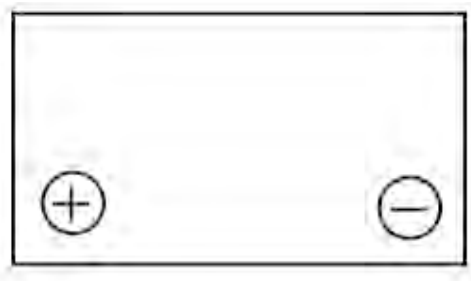
Ventile

Um den Gasdruck auszugleichen, ist jede Zelle mit einem Niedrigdruckventil ausgestattet, das nach dem Öffnen wieder schließt.

Entsorgung

Yuasa VRLA Batterien müssen am Ende ihrer Gebrauchsdauer gemäß den lokalen und nationalen Gesetzen und Richtlinien entsorgt werden.

LAYOUT



ZERTIFIKATE VON UNABHÄNGIGEN INSTITUTIONEN

ISO 9001 - Quality Management Systems

ISO 14001 - Environmental Management Systems

EN 18001 - OHSAS Management Systems

UNDERWRITERS LABORATORIES Inc.

STANDARDS

IEC61056

ÄNDERUNGEN VORBEHALTEN

Ausgabe V.2 / Ausgabedatum: März 2011

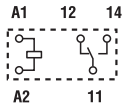
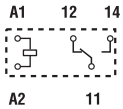
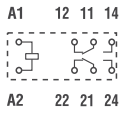
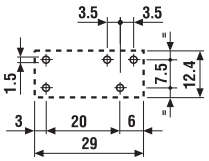
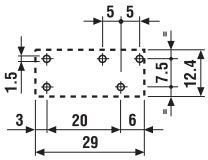
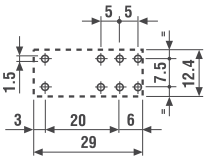
YUASA BATTERY
(EUROPE) Gmbh
Wanheimer Strasse 47
DE- 40472
Duesseldorf
GERMANY

Características

Relé con 1 o 2 contactos
40.31 - 1 contacto 10 A (pas 3.5 mm)
40.51 - 1 contacto 10 A (pas 5 mm)
40.52 - 2 contactos 8 A (pas 5 mm)

Montaje en circuito impreso
- directo o en zócalo
Montaje en carril de 35 mm (EN 60715)
- en zócalos con bornes a pletina o de conexión rápida

- Bobina DC (estándar o sensible) y bobina AC
- Contactos sin Cadmio
- 8 mm, 6 kV (1.2/50 µs) entre bobina y contactos
- UL Listing (combinaciones relé/zócalo)
- Estanco al flux: RT II estándar, (disponible en versión RT III)
- Zócalos serie 95
- Módulos de señalización y protección CEM
- Módulos temporizados serie 86

	40.31	40.51	40.52
	• Reticulado 3.5 mm • 1 contacto 10 A • Montaje en circuito impreso o en zócalo serie 95	• Reticulado 5 mm • 1 contacto 10 A • Montaje en circuito impreso o en zócalo serie 95	• Reticulado 5 mm • 2 contactos 8 A • Montaje en circuito impreso o en zócalo serie 95
			
			
Para Cargas de Motores y "Pilot Duty" Homologadas por UL ver "Información Técnica General" página V	Vista parte inferior	Vista parte inferior	Vista parte inferior
Dimensiones ver página 10	Largo de terminal 5.3 mm para CI o zócalo	Largo de terminal 5.3 mm para CI o zócalo	Largo de terminal 5.3 mm para CI o zócalo

Características de los contactos				
Configuración de contactos		1 contacto conmutado	1 contacto conmutado	2 contacto conmutado
Corriente nominal/Máx. corriente instantánea	A	10/20	10/20	8/15
Tensión nominal/Máx. tensión de conmutación	V AC	250/400	250/400	250/400
Carga nominal en AC1	VA	2500	2500	2000
Carga nominal en AC15 (230 V AC)	VA	500	500	400
Motor monofásico (230 V AC)	kW	0.37	0.37	0.3
Capacidad de ruptura en DC1: 30/110/220 V	A	10/0.3/0.12	10/0.3/0.12	8/0.3/0.12
Carga mínima conmutable	mW (V/mA)	300 (5/5)	300 (5/5)	300 (5/5)
Material estándar de los contactos		AgNi	AgNi	AgNi
Características de la bobina				
Tensión nominal	V AC (50/60 Hz)	6 - 12 - 24 - 48 - 60 - 110 - 120 - 230 - 240		
de alimentación (U_N)	V DC	5 - 6 - 7 - 9 - 12 - 14 - 18 - 21 - 24 - 28 - 36 - 48 - 60 - 90 - 110 - 125		
Potencia nominal en AC/DC/DC sens.	VA (50 Hz)/W/W	1.2/0.65/0.5	1.2/0.65/0.5	1.2/0.65/0.5
Campo de funcionamiento	AC	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$
	DC/DC sensible	$(0.73...1.5)U_N/(0.73...1.5)U_N$	$(0.73...1.5)U_N/(0.73...1.5)U_N$	$(0.73...1.5)U_N/(0.73...1.5)U_N$
Tensión de mantenimiento	AC/DC	0.8 U_N /0.4 U_N	0.8 U_N /0.4 U_N	0.8 U_N /0.4 U_N
Tensión de desconexión	AC/DC	0.2 U_N /0.1 U_N	0.2 U_N /0.1 U_N	0.2 U_N /0.1 U_N
Características generales				
Vida útil mecánica	ciclos	$10 \cdot 10^6$	$10 \cdot 10^6$	$10 \cdot 10^6$
Vida útil eléctrica con carga nominal AC1	ciclos	$200 \cdot 10^3$	$200 \cdot 10^3$	$100 \cdot 10^3$
Tiempo de respuesta: conexión/desconexión	ms	7/3 - (12/4 sensible)	7/3 - (12/4 sensible)	7/3 - (12/4 sensible)
Aislamiento entre bobina y contactos (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)	6 (8 mm)
Rigidez dieléctrica entre contactos abiertos	V AC	1000	1000	1000
Temperatura ambiente	°C	–40...+85	–40...+85	–40...+85
Categoría de protección		RT II**	RT II**	RT II**
Homologaciones (según los tipos)				

** Ver información técnica "Indicaciones sobre los procedimientos de soldadura automatica" página II.

TECHNICAL DATA SHEET

Stainless steel type SA

General notes:

- **Low carbon austenitic steel** (Material number 1.4435, DIN X2CrNiMo18-14-3, AISI number 316L)
- contains from 16.5 to 18.5 wt% chromium and has important quantities of nickel and molybdenum as additional alloying elements
- non-magnetizable (80%)
- good corrosion resistance to most chemicals, salts and acids
- generally used where corrosion resistance and toughness are primary requirements
- typical applications include tweezers for the electronic industry, watch-makers, jewelers and laboratory and medical applications in moderately aggressive chemical environments

Composition

Component	Wt.%	Component	Wt.%	Component	Wt.%
C	≤0.03	**Si**	≤1.0	**Mn**	≤2.0
P	≤0.045	**S**	≤0.03	**Cr**	17.0-19.0
Mo	2.5-3.0	**Ni**	12.5-15.0		

Mechanical properties

State	**annealed**
Density	**8.0 g/cm^3**
Hardness, Vickers	**230 HV**
Tensile strength, ultimate	**500-700 MPa**
Tensile strength, yield	**290**
0.2% Yield stress	≥ **200 MPa**
Elongation, break	**40%**
Modulus of elasticity	**200 GPa**

Thermal properties

Coef. of lin. therm expansion	**16.0 E-6/°C**	*20°C-100°C*
Coef. of lin. therm expansion	**17.0 E-6/°C**	*20°C-300°C*
Specific heat capacity	**0.50 J/(g·K)**	
Thermal conductivity	**15 W/(m·K)**	
Continuos use temperature	**350°C**	
Max service temperature, air	**925°C**	

Electrical properties

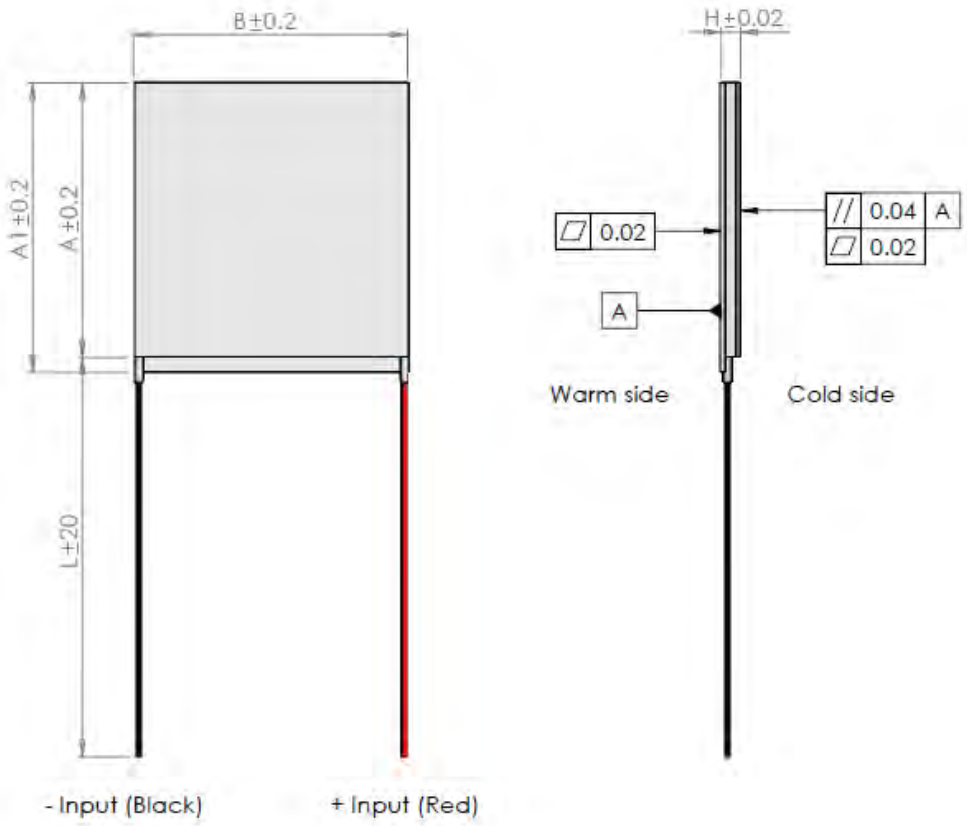
Resistivity	**0.75 E-4 Ohm.cm**

This document contains information based on average values as obtained from the results of laboratory tests and observations made on the material. Ideal-Tek SA declines all responsibility from an improper use of the product described in this document.

ETH-127-14-15-S

Peltier cooler module

Data sheet



Imax	[A]	6
Vmax	[Vdc]	15.7
Pc max	[W]	55.6
ΔTmax	[°C]	74
A	[mm]	40
A1	[mm]	40
B	[mm]	40
H	[mm]	3.9
L	[mm]	100
Wire	AWG	n/a

- Silicone sealed
- (At hot side temperature Th = 25°C / 298K, under dry N_2)
- Pc max = Cooling power at ΔT = 0 and I = Imax
- ΔTmax = Temperature difference at I = Imax and Pc = 0
- Max hot side temperature Th = 150°C for best long term performance
- Max mounting pressure: 1.5MPa
- Wires: UL-style 1569, 105°C (Unstripped)

Adaptive® Thermal Management

Adaptive is a registered trademark of European Thermodynamics Limited.
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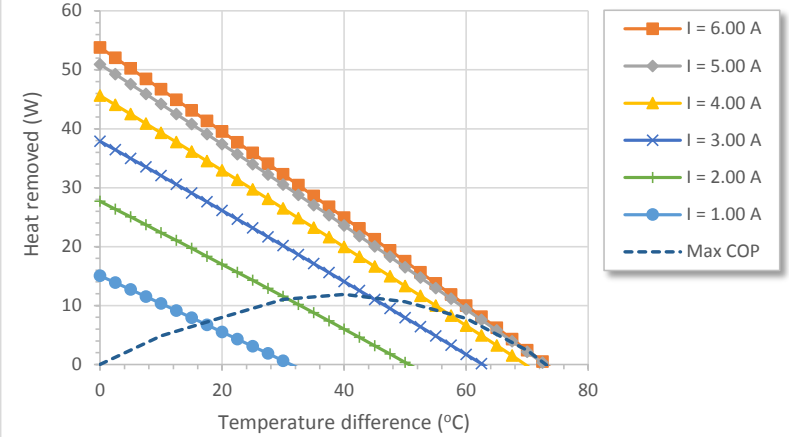
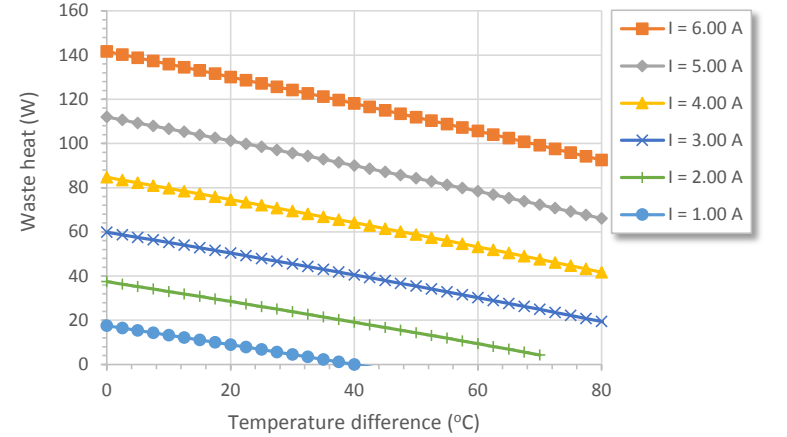
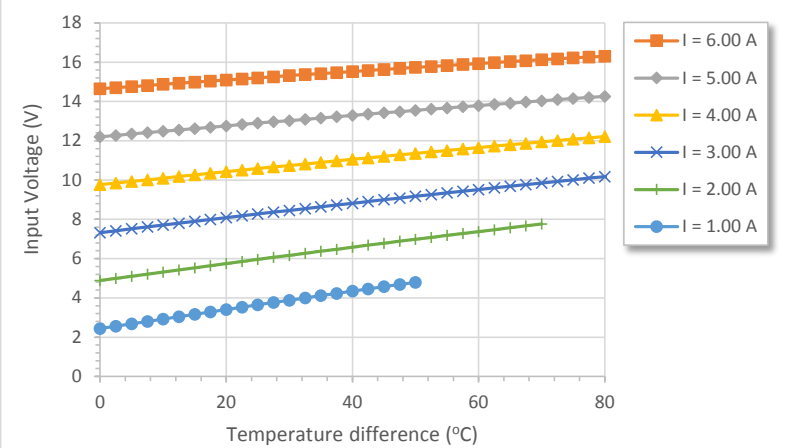
ETH-127-14-15-S

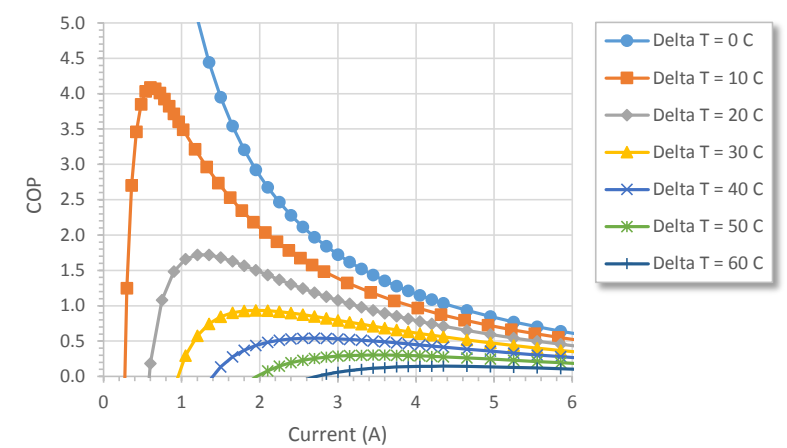
Peltier cooler module

Data sheet - At hot side temperature 25°C









*Note - Waste heat = Heat out of hot side

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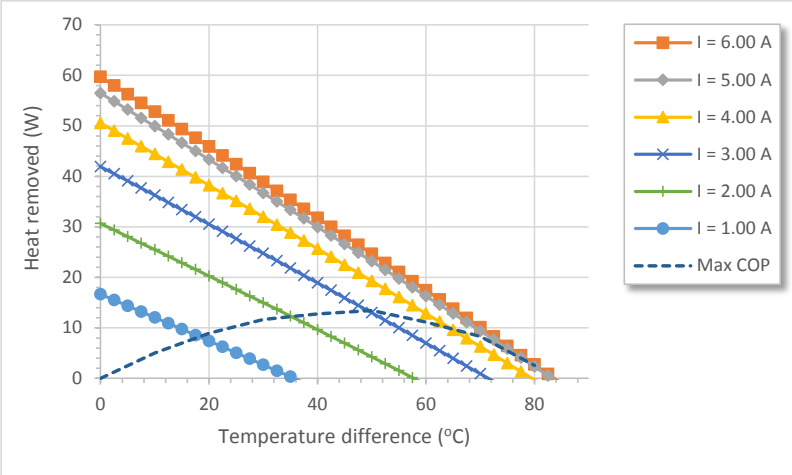
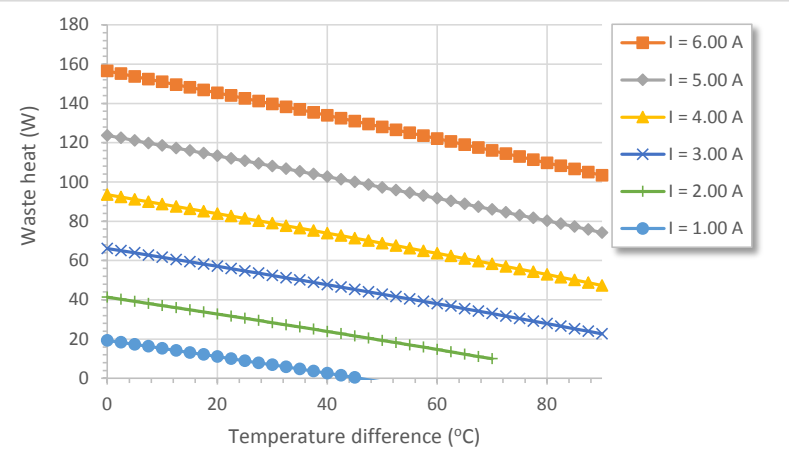
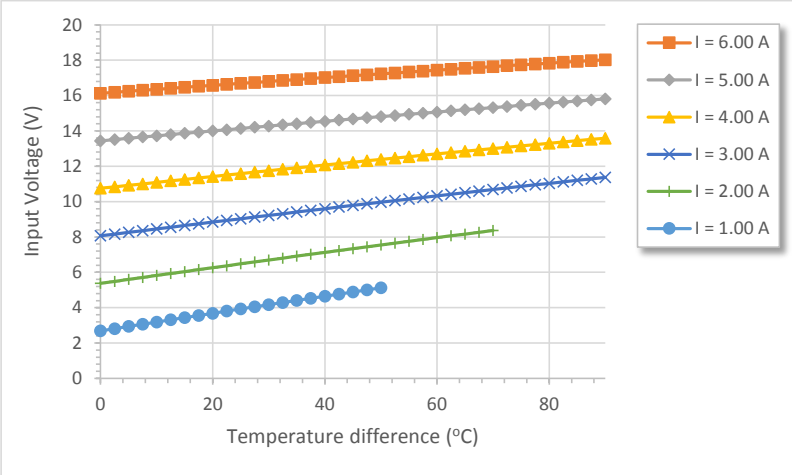
ETH-127-14-15-S

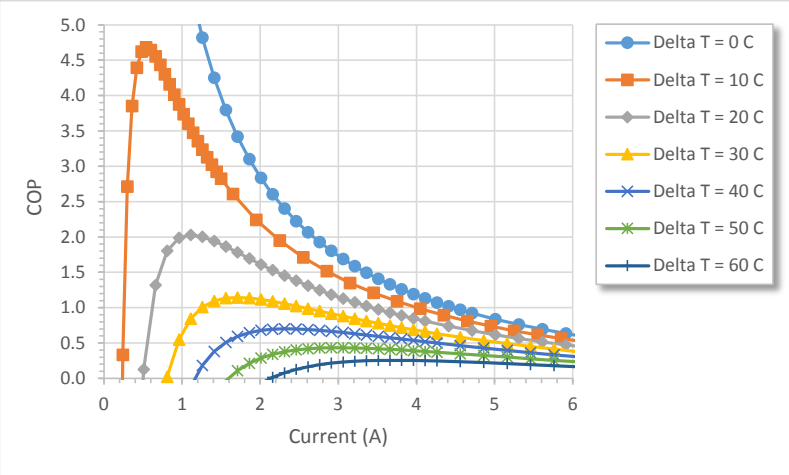
Peltier cooler module

Data sheet - At hot side temperature 50°C









*Note - Waste heat = Heat out of hot side

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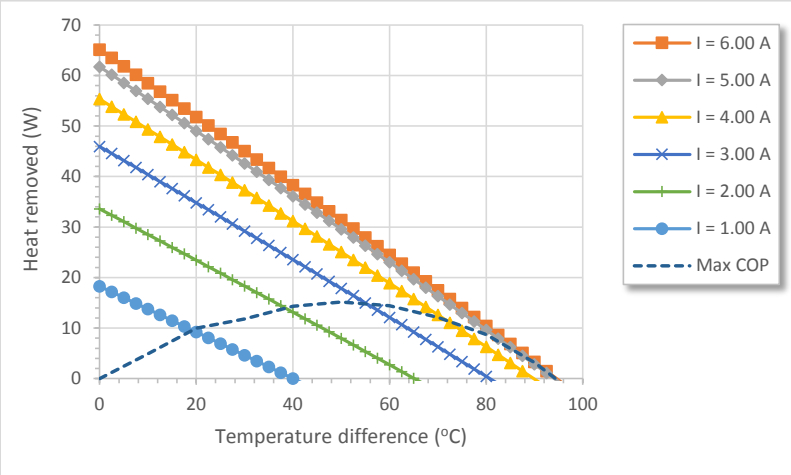
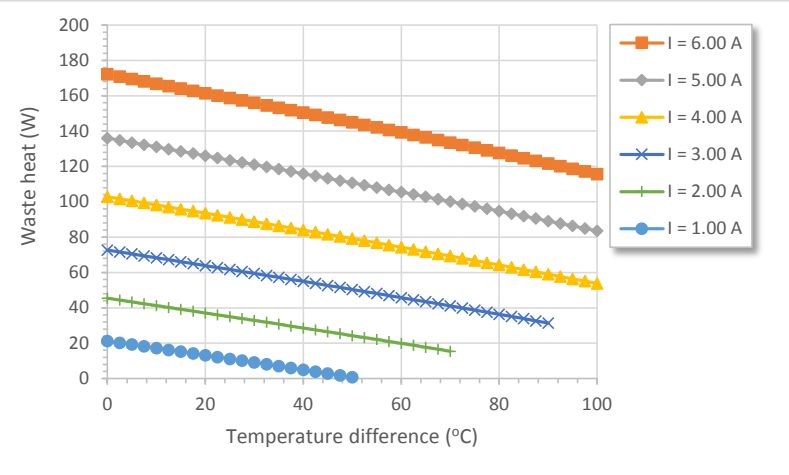
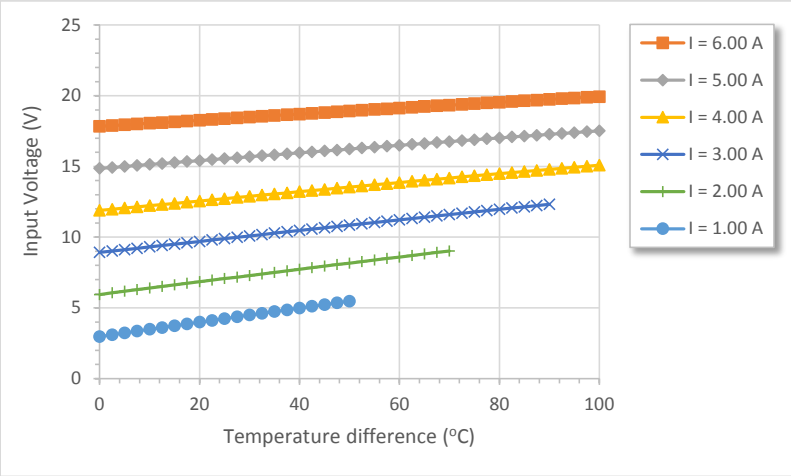
ETH-127-14-15-S

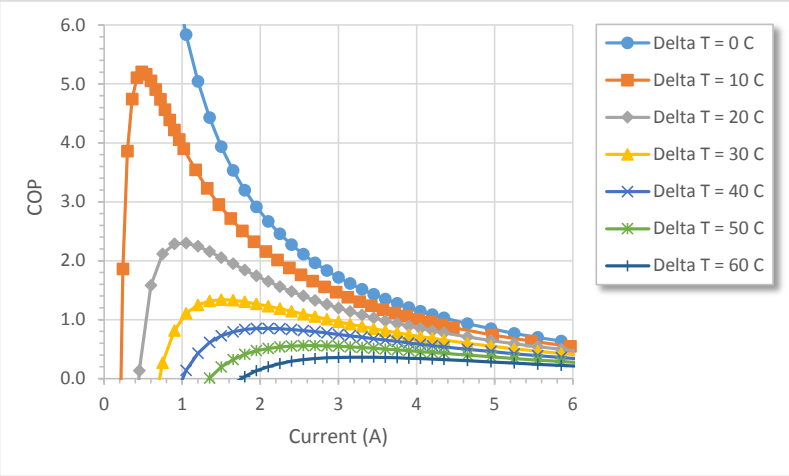
Peltier cooler module

Data sheet - At hot side temperature 75°C









*Note - Waste heat = Heat out of hot side

Adaptive® Thermal Management

Jigsawing and **Sabre Sawing**

Back

Grey – for wood

The product name describes the characteristics	The features	The blade quality
basic for Wood	Good and cost-effective	HCS, milled
speed for Wood	For fast cuts	HCS, ground
clean for Wood	Fine and clean cuts	HCS, ground
extra-clean for Wood	Tear-free cuts in wood	HCS, ground
precision for Wood	Exact cut at accurate angles	HCS, ground
PROGRESSOR for Wood	Fast through thick and thin	HCS, ground
speed for HardWood	For quick cuts, also in hardwood	BIM, ground
clean for HardWood	For fine cuts, also in hardwood	BIM, ground
extra-clean for HardWood	Tear-free in wood, also in hardwood	BIM, ground
special for Laminate	For precise, clean cuts in laminate	BIM, ground

Blue – for metal

The product name describes the characteristics	The features	The blade quality
basic for Metal	Good and cost-effective	HSS, milled
basic for Inox	Good and cost-effective for stainless steel	BIM, milled
flexible for Metal	Breakproof, long lifetime	BIM, milled
flexible for Metal-Sandwich	Break proof, long lifetime	BIM, milled
speed for Metal	Fast, breakproof, long lifetime	BIM, milled
PROGRESSOR for Metal	Fast through thick and thin	HSS, milled
special for Alu	Ideal for aluminium, soft and non-ferrous metal	HSS, milled

White – for wood and metal

The product name describes the characteristics	The features	The blade quality
PROGRESSOR for Wood and Metal	Universal, fast through thick and thin	BIM, milled

Black – for special applications

The product name describes the characteristics	The features	The blade quality
special for Inox	For stainless steel	TC, ground
special for Synthetics	For abrasive synthetics	TC, ground
special for Fiber and Plaster	For fibre and cement materials	TC, ground
special for Ceramics	For ceramic materials	TC, grit
special for Acrylic	Clean through acrylic glass	HSS, ground
special for Soft-Material	Cuts soft materials	HCS, ground

Quality controlled
for optimum results

HCS
- Carbon steel for use with softer materials such as softwood, wood fibreboards and soft plastics

HSS
- Fully hardened high-grade high speed steel for use with harder materials such as metal, aluminium and non-ferrous metal

BIM
- Bi-metal, a highly elastic bond of HSS and HCS to meet the greatest demands. Especially suitable for use in hardwood, abrasive wooden materials, hard plastics, and harder materials such as non-ferrous metal and ferrous metal
- The flexible BIM saw blades are used, for example, if there is a risk of shank breakage
- They have a lifetime about twice as long as the HSS blades and last approx. 10 times longer than HCS blades. This means that they are excellent value for money

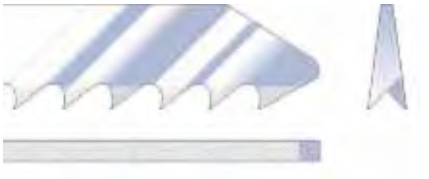
TC
- Tungsten carbide saw blades are particularly powerful
- The tungsten carbide teeth bite through glass fibre reinforced plastic, cement-bonded fibreboards or plasterboard
- Tungsten carbide tooth strips cut stainless steel
- A coating with tungsten carbide grit (= RIFF) cuts through abrasive materials such as wall tiles or glass fibre reinforced plastic

The right geometry
is what's important

Milled and side set teeth
Blade with relatively rough cut and quick work progress cutting into hard and softwood, aluminium, plastics and non-ferrous metals (e.g. T 111 C, T 345 XF).

Milled and wavy set teeth
Blade for fine, straight cutting results into plywood, soft steel, aluminium, non-ferrous metals and plastics (e.g. T 119 B, T 118 A).

Ground and side set teeth
Blade for quick cuts in wood (e.g. T 144 D, T 244 D).



Ground and taper ground teeth
Blade with taper ground spine for fine and clean cuts in wood and plastic (e.g. T 101 B, T 234 X).

Speed for Metal jigsaw blades

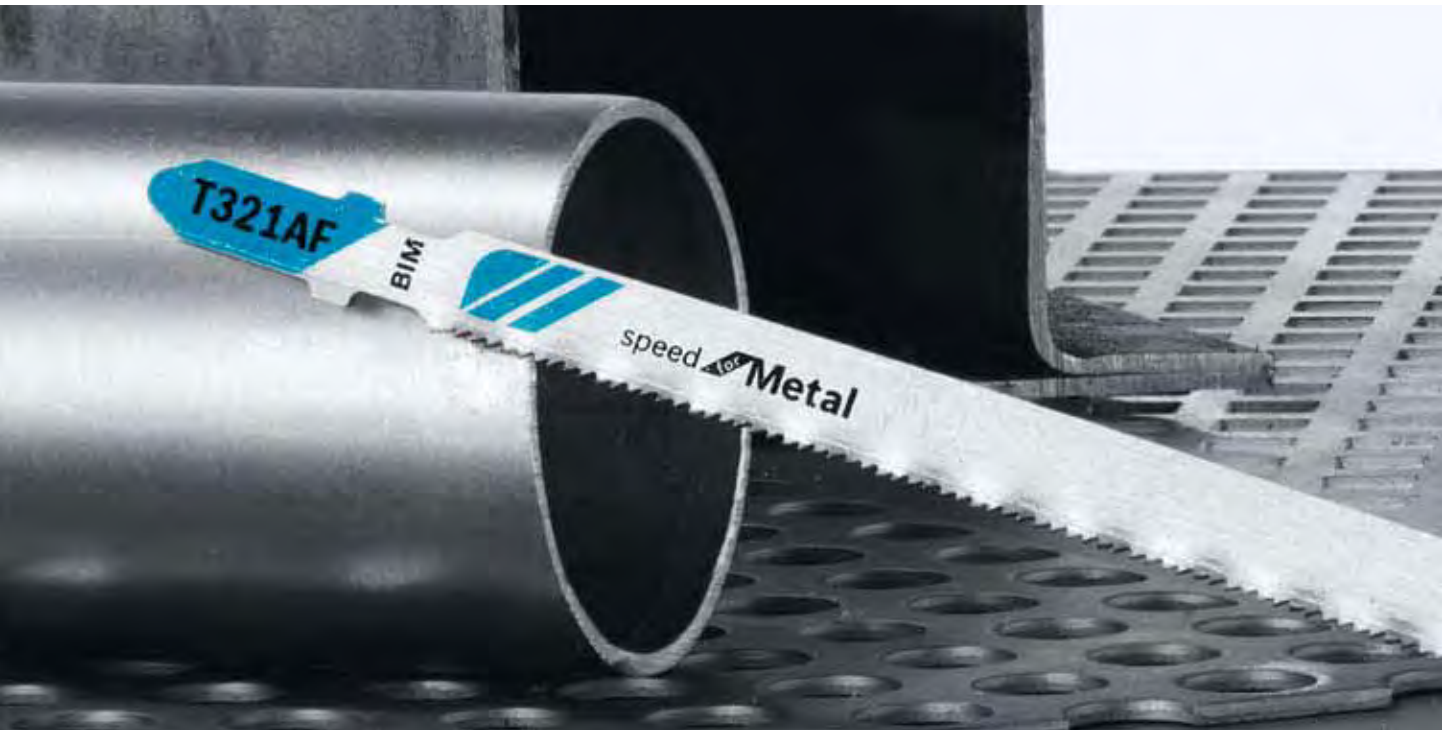
Unrivalled cutting speed and superior longevity in metal

The significance of steel as the most important building material is constantly increasing. Metal components have to be cut to length or adjusted in size, in order to meet given size or space requirements on the construction site.

Conventional metal jigsaw blades are often unsatisfactory where cutting speed and lifetime are concerned, and therefore do not meet the expectations of professional users. The new jigsaw blades in the Speed for Metal series offer unrivalled cutting speed and superior lifetime when cutting metal, e.g. sawing thick perforated sheet metals or thick-walled metal profiles.

We have achieved unsurpassed sawing performance with a metal-optimised material selection and tool design:

- 50% higher cutting speed
- Three times the lifetime of conventional jigsaw blades made of HSS steel



T 121 GF
For very thin sheet metals

T 121 AF
For thin sheet metals and perforated sheet metals

T 121 BF
For medium-thick sheet metals and perforated sheet metals

T 321 AF
For thin-walled metal pipes and profiles

T 321 BF
For thick-walled metal pipes and profiles

Powerful saw blades
make work noticeably easier

Ideal for precise, clean cuts on both sides in laminate and plastic-coated boards.

With the Speed for Wood T 244 D, curves are no problem – even in wood core plywood.

With the Precision for Wood T 144 DP, you can cut kitchen worktops and doors with precise angular accuracy.

The Basic for Inox jigsaw blade T 118 GFS is particularly suitable for working in thin stainless steel sheets.

Using the Progressor for Wood and Metal T 345 XF at the construction site, you can cut through not only wood with nails without a problem, but also sheet metals, pipes and aluminium profiles.

Extraclean for Wood.

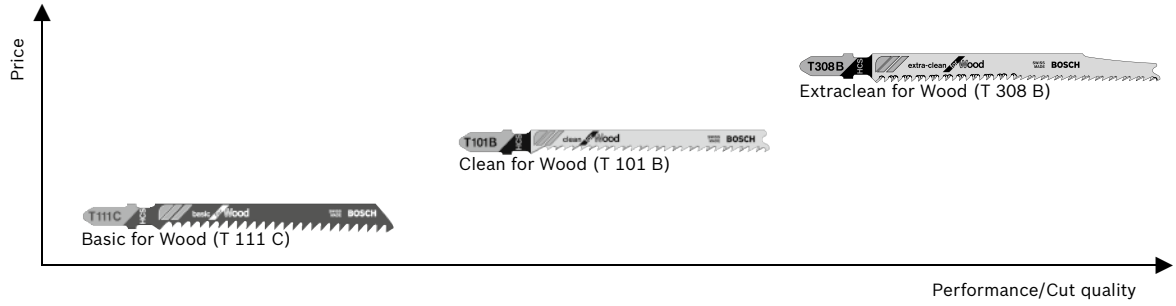
Particularly fine, clean, tear-free cuts on both sides in wood

An absolute first: tear-free, straight cuts on both sides in wood; regardless of whether the jigsaw is guided from above or below. The wood no longer has to be marked from underneath, making incorrect marking a thing of the past. For clean and accurate working with high cutting speed and long lifetime.

The teeth make it all possible: the tooth strip with its revolutionary tooth geometry* results in this exceptional work.

* patent pending

The right jigsaw blade for any requirement



Ideal for adjusting shelves made of softwood

Accurate cutting of visible end strips

The T 308 BF is perfectly suitable for working in high-quality panel materials laminated on both sides (HPL layer thickness min. 0.7 mm).

The right saw blade **for every application**

Wood

Material to be processed		Dimensions max. mm	Subbrand	Type of cut					
				Straight, fine	Straight, coarse	Curve, fine	Curve, coarse	At accurate angles	Thin and thick
	Softwood, wood core plywood	1.5 – 15	clean for Wood			T 101 AO			
		2 – 15	basic for Wood	T 119 B		T 119 BO			
		3 – 65	PROGRESSOR for Wood	T 234 X					T 234 X
			precision for Wood	T 301 BCP				T 301 BCP	
		3 – 30	clean for Wood	T 101 B					
			clean for Wood	T 101 BR					
		4 – 50	basic for Wood		T 111 C				
		5 – 50	speed for Wood		T 144 D		T 244 D		
			extra-clean for Wood	T 308 B		T 308 BO			
			precision for Wood		T 144 DP			T 144 DP	
		5 – 100	speed for Wood		T 344 D				
			precision for Wood		T 344 DP			T 344 DP	
		10 – 45	clean for Wood	T 101 D					
		10 – 65	clean for Wood	T 301 CD					
	Hardwood, MDF, chipboard	3 – 30	clean for HardWood	T 101 BF					
			clean for HardWood	T 101 BRF					
		4 – 65	clean for HardWood	T 301 CDF					
		5 – 50	speed for HardWood		T 144 DF				
			extra-clean for HardWood	T 308 BF		T 308 BOF			
		5 – 100	speed for HardWood		T 344 DF				
	Plywood	1.5 – 15	clean for Wood			T 101 AO			
		2 – 15	basic for Wood	T 119 B		T 119 BO			
		3 – 30	clean for Wood	T 101 B					
		5 – 50	extra-clean for Wood	T 308 B		T 308 BOF			
	Construction wood	<30	clean for Wood	T 101 B					
		<65	PROGRESSOR for Wood	T 234 X					T 234 X
		<100	speed for Wood		T 344 D				
			speed for HardWood		T 344 DF				
			precision for Wood		T 344 DP			T 344 DP	
		<135	speed for Wood		T 744 D				
	Laminated panels	1.5 – 15	clean for HardWood			T 101 AOF			
		2 – 30	clean for HardWood	T 101 AIF					
		3 – 30	clean for HardWood	T 101 BRF					
		5 – 50	speed for HardWood		T 144 DF				
			extra-clean for HardWood	T 308 BF		T 308 BOF			
		5 – 100	speed for HardWood		T 344 DF				
	Kitchen tops/ Worktops	<45	clean for HardWood	T 101 BRF					
		<50	extra-clean for HardWood	T 308 BF		T 308 BOF			
		<50	precision for Wood		T 144 DP			T 144 DP	
			precision for Wood	T301BCP				T 301 BCP	
	Laminates	1.5 – 15	special for Laminate	T 101 BIF		T 101 AOF			
	Plastics	<30	clean for Wood	T 101 B					
			clean for HardWood	T 101 AIF					
			clean for HardWood	T 101 BF					
	Glass fibre reinforced plastic/ epoxy	<30	clean for HardWood	T 101 AIF					
			clean for HardWood	T 101 BF					

Wood and metal

Material to be processed		Dimensions max. mm	Subbrand	Type of cut					
				Straight, fine	Straight, coarse	Curve, fine	Curve, coarse	At accurate angles	Thin and thick
	Construction timber with nails	<65	PROGRESSOR for Wood and Metal		T 345 XF				T 345 XF
	Construction wood	<65	PROGRESSOR for Wood and Metal		T 345 XF				T 345 XF
	Pipes, profiles, thick-walled (open and closed)	<65	PROGRESSOR for Wood and Metal		T 345 XF				T 345 XF
	Aluminium	<65	PROGRESSOR for Wood and Metal		T 345 XF				T 345 XF
	Glass fibre reinforced plastic/ epoxy	<65	PROGRESSOR for Wood and Metal		T 345 XF				T 345 XF

Metal

Material to be processed		Dimensions max. mm	Subbrand	Type of cut					
				Straight, fine	Straight, coarse	Curve, fine	Curve, coarse	At accurate angles	Thin and thick
	Sheet metals	0.5 – 1.5	basic for Metal	T 118 G					
			speed for Metal	T 121 GF					
		1 – 3	basic for Metal	T 118 A		T 218 A			
			speed for Metal	T 121 AF					
			basic for Metal	T 318 A					
		2.5 – 6	basic for Metal	T 118 B					
			speed for Metal	T 121 BF					
			basic for Metal	T 318 B					
		1.5 – 10	PROGRESSOR for Metal	T 123 XF					T 123 XF
		3 – 15	special for Alu	T 127 D		T 227 D			
	Perforated sheet metals	0.5 – 1.5	speed for Metal	T 121 GF					
		1 – 3	flexible for Metal	T 118 AF					
			speed for Metal	T 121 AF					
			flexible for Metal	T 318 AF					
		1.5 – 4	flexible for Metal			T 118 EOF			
		2.5 – 6	flexible for Metal	T 118 BF					
			speed for Metal	T 121 BF					
			flexible for Metal	T 318 BF					
	Aluminium, non-ferrous metal	<30	special for Alu	T 127 D		T 227 D			
			PROGRESSOR for Metal	T 123 XF					T 123 XF
		<65	basic for Metal	T 318 A					
			basic for Metal	T 318 B					
			flexible for Metal	T 318 AF					
			flexible for Metal	T 318 BF					
			speed for Metal	T 321 AF					
			speed for Metal	T 321 BF					

Metal

Material to be processed		Dimensions max. mm	Subbrand	Type of cut					
				Straight, fine	Straight, coarse	Curve, fine	Curve, coarse	At accurate angles	Thin and thick
	Pipes, profiles (closed)	<30	PROGRESSOR for Metal	T 123 XF					T 123 XF
		<65	basic for Metal	T 318 A					
			basic for Metal	T 318 B					
			flexible for Metal	T 318 AF					
			flexible for Metal	T 318 BF					
			speed for Metal	T 321 AF					
			speed for Metal	T 321 BF					
	Profiles (open)	<65	flexible for Metal	T 318 AF					
			flexible for Metal	T 318 BF					
			flexible for Metal	T 318 BF					
			speed for Metal	T 321 AF					
	Inox sheets	0.5 – 1.5	basic for Inox	T 118 GFS					
		1.5 – 4	basic for Inox	T 118 EFS					
	Sandwich material	<65	flexible for Metal	T 318 AF					
			flexible for Metal	T 318 BF					
			speed for Metal	T 321 AF					
		<120	flexible for Metal-Sandwich	T 718 BF					
	Plastics	<30	special for Alu	T 127 D		T 227 D			
		<65	flexible for Metal	T 318 AF					
			flexible for Metal	T 318 BF					
	Glass fibre reinforced plastic/ epoxy	<30	special for Alu	T 127 D		T 227 D			
		<65	flexible for Metal	T 318 AF					
			flexible for Metal	T 318 BF					
			speed for Metal	T 321 AF					
			speed for Metal	T 321 BF					

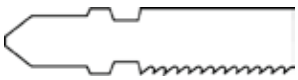
Special applications

Material to be processed		Dimensions max. mm	Subbrand	Type of cut					
				Straight, fine	Straight, coarse	Curve, fine	Curve, coarse	At accurate angles	Thin and thick
	Inox sheets	1.5 – 3	special for Inox	T 118 AHM					
		2 – 5	special for Inox	T 118 EHM					
	Glass fibre reinforced plastic/ epoxy	<50	special for FiberPlaster		T 141 HM				
		<65	special for Synthetics	T 301 CHM					
		<80	special for FiberPlaster		T 341 HM				
	Plasterboard	5 – 50	special for FiberPlaster		T 141 HM				
		5 – 80	special for FiberPlaster		T 341 HM				

Special applications

Material to be processed		Dimensions max. mm	Subbrand	Type of cut					
				Straight, fine	Straight, coarse	Curve, fine	Curve, coarse	At accurate angles	Thin and thick
	Porous concrete	<80	special for Fiber Plaster		T 341 HM				
	Fibre cement	5 – 50	special for Fiber Plaster		T 141 HM				
		5 – 80	special for Fiber Plaster		T 341 HM				
	Ceramic wall tiles	5 – 10	special for Ceramics	T 150 RIFF					
		5 – 15	special for Ceramics		T 130 RIFF				
	Perspex	2 – 20	special for Acrylic	T 101 A					
	Polystyrene	<50	special for Soft-Material	T 113 A					
		<100	special for Soft-Material	T 313 AW					
	Cardboard, carpet, leather	<50	special for Soft-Material	T 113 A					
		<100	special for Soft-Material	T 313 AW					
	Rubber	<50	special for Soft-Material	T 113 A					
		<100	special for Soft-Material	T 313 AW					

Jigsaw blades
for wood



Single lug shank

Jigsaw blades – Basic for Wood

Good and cost-effective

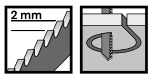
basic for Wood

Softwood, panels [mm]	Plywood [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties				**Ordering information**						

T 119 B

HCS, wavy set, milled
Softwood (2-15 mm), plywood, chipboards, wood core plywood, fibre boards

2-15	2-15	92	1.9-2.3	**2 608 630 878**	C1b	3	10	007245	GAJ	3.22
				2 608 630 037	C1b	5	10	006835	GAJ	5.06



T 119 BO

HCS, wavy set, milled
Softwood (2-15 mm), plywood, chipboard, wood core plywood, fibre boards, especially for curve cuts

2-15	2-15	83	2	**2 608 637 788**	C1b	3	10	045940	GAJ	4.11
				2 608 630 310	C1b	5	10	006941	GAJ	6.45
				2 608 637 879	C1a	100	1	067461	GAJ	109.74

fast CUT

T 111 C

HCS, side set, milled
Softwood (4-50 mm), chipboard, wood core plywood, fibre boards, quick cut

4-50	-	100	3	**2 608 630 808**	C1b	3	10	007139	GAJ	2.97
				2 608 630 033	C1b	5	10	006811	GAJ	4.42
				2 608 633 A38	P1a	25	1	264211	GAJ	19.90
				2 608 637 878	C1a	100	1	067454	GAJ	75.14

Jigsaw blades – Speed for Wood

Fast cut

speed for Wood

Softwood, panels [mm]	Coarse wood [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties				**Ordering information**						

T 144 D

HCS, side set, ground
Softwood (5-50 mm), chipboards, wood core plywood, fibre boards

5-50	-	100	4-5.2	**2 608 630 560**	C1b	3	10	006989	GAJ	4.24
				2 608 630 040	C1b	5	10	006842	GAJ	6.86
				2 608 633 625	P1a	25	1	127691	GAJ	30.87
				2 608 637 880	C1a	100	1	067478	GAJ	116.59

T 244 D

HCS, side set, ground
Softwood (5-50 mm), chipboards, wood core plywood, fibre boards, especially for curve cuts

5-50	-	100	4-5.2	**2 608 630 879**	C1b	3	10	007221	GAJ	5.78
				2 608 630 058	C1b	5	10	006859	GAJ	8.90
				2 608 633 626	P1a	25	1	127707	GAJ	40.07
				2 608 637 881	C1a	100	1	067485	GAJ	151.37

T 344 D

HCS, side set, ground
Thick construction timber, softwood (5-100 mm), chipboards, wood core plywood, fibre boards

5-100	<100	152	4	**2 608 637 944**	C1b	3	1	070942	GAJ	13.10
				2 608 633 A34	C1b	5	1	264174	GAJ	18.99

T 744 D

HCS, side set, ground
Softwood/boards, thick construction timber, sandwich materials

5-135	-	180	4	**2 608 663 314**	C1c	3	1	348591	GAJ	31.91

Jigsaw blades – Clean for Wood

Clean cut

clean for Wood

Softwood, panels [mm]	Plywood [mm]	Laminated panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties					**Ordering information**						

T 101 AO

HCS, pointed teeth, ground teeth and taper ground
Softwood, plywood, laminated panels (1.5-15 mm), especially for curve cuts

1.5-15	1.5-15	1.5-15	83	1.4	**2 608 630 559**	C1b	3	10	006972	GAJ	5.14
					2 608 630 031	C1b	5	10	006798	GAJ	8.08

T 101 B

HCS, ground teeth and taper ground
Softwood, chipboard, wood core plywood, fibre boards (3-30 mm), plastics/epoxy (dia. <30 mm)

3-30	-	-	100	2.7	**2 608 630 557**	C1b	3	10	006958	GAJ	5.51
					2 608 630 030	C1b	5	10	006781	GAJ	8.82
					2 608 633 622	P1a	25	1	127660	GAJ	39.69
					2 608 637 876	C1a	100	1	067430	GAJ	149.93

T 101 BR

HCS, ground teeth and taper ground
Softwood, chipboard, wood core plywood, fibre boards (3-30 mm), laminated panels, clean surface

3-30	-	3-30	100	2.5	**2 608 633 779**	C1b	3	10	091374	GAJ	6.11
					2 608 630 014	C1b	5	10	012454	GAJ	9.70
					2 608 633 623	P1a	25	1	127677	GAJ	43.65

T 101 D

HCS, ground teeth and taper ground
Softwood, chipboards, wood core plywood, fibre boards (10-45 mm)

10-45	-	-	100	4-5.2	**2 608 630 558**	C1b	3	10	006965	GAJ	5.51
					2 608 630 032	C1b	5	10	006804	GAJ	8.82
					2 608 633 577	P1a	25	1	148726	GAJ	39.69
					2 608 637 877	C1a	100	1	067447	GAJ	149.93

T 301 CD

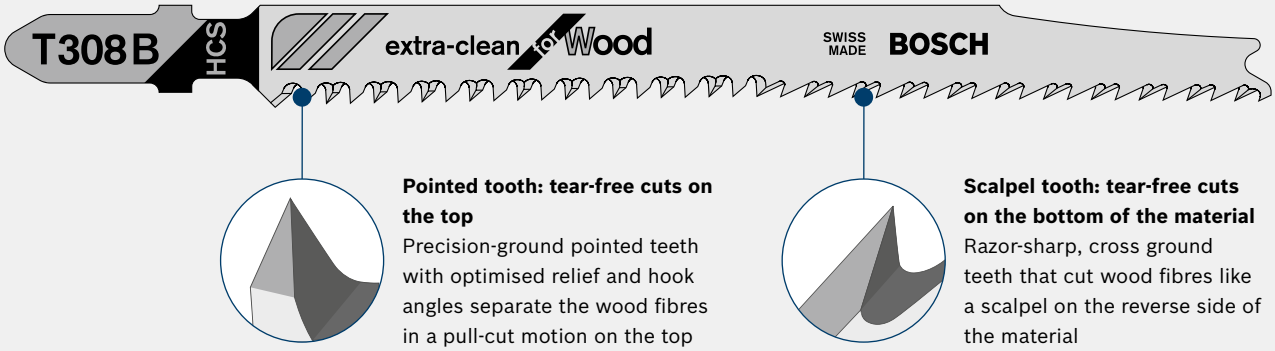
HCS, ground teeth and taper ground
Softwood, chipboards, wood core plywood, fibre boards (10-65 mm)

10-65	-	-	117	3.0	**2 608 637 591**	C1b	3	1	016315	GAJ	9.37
					2 608 637 590	C1b	5	1	016308	GAJ	15.81

Extraclean for Wood

Particularly fine, clean, tear-free cuts on both sides in wood

Optimum cutting action due to integrated pre-cutting function.
No need for time-consuming reworking of the material.
Fatigue-free working: the jigsaw no longer has to be guided from underneath.



Pointed tooth: tear-free cuts on the top
Precision-ground pointed teeth with optimised relief and hook angles separate the wood fibres in a pull-cut motion on the top surface of the material

Scalpel tooth: tear-free cuts on the bottom of the material
Razor-sharp, cross ground teeth that cut wood fibres like a scalpel on the reverse side of the material

Jigsaw blades – Extraclean for Wood

For tear-free cutting

extra-clean for Wood

Softwood, panels [mm]	Plywood [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties				**Ordering information**						

T 308 B

HCS, ground teeth and taper ground
for softwood and non-abrasive wooden materials

5-50	5-50	117	2.2 XC	**2 608 663 750**	C1b	3	10	470278	GAJ	7.29
				2 608 663 751	C1b	5	10	470285	GAJ	11.47
				2 608 663 752	P1a	25	1	470292	GAJ	49.68
				2 608 663 753	C1a	100	1	470308	GAJ	187.68

T 308 BO

HCS, ground teeth and taper ground
for softwood and non-abrasive wooden materials, especially for curve cuts

5-50	5-50	117	2.2 XC	**2 608 663 867**	C1b	3	1	535779	GAJ	7.29
				2 608 663 868	C1b	5	1	535786	GAJ	11.47
				2 608 663 869	P1a	25	1	535793	GAJ	49.68

Jigsaw blades – Precision for Wood

Cutting at accurate angles

precision for Wood

Softwood, panels [mm]	Coarse wood [mm]	Kitchen worktops [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties					**Ordering information**						

T 144 DP

HCS, side set, ground
Softwood, chipboards, wood core plywood, fibre boards (5-50 mm), doors, kitchen worktops (<50 mm)

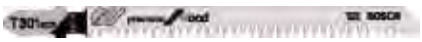
5-50	-	<50	100	4.0	**2 608 633 A31**	C1b	3	10	244143	GAJ	5.78
					2 608 633 A35	C1b	5	10	264181	GAJ	9.13
					2 608 633 A39	P1a	25	1	264228	GAJ	41.08
					2 608 633 A42	C1a	100	1	264259	GAJ	155.15

T 344 DP

HCS, side set, ground
Thick construction timber, softwood (5-100 mm), chipboards, wood core plywood, fibre boards

5-100	<100	-	152	4.0	**2 608 633 A36**	C1b	5	1	264198	GAJ	18.27

T 301 BCP



HCS, ground teeth and taper ground
Softwood, chipboards, wood core plywood, fibre boards (3-65 mm), doors, kitchen worktops (<50 mm)

3-65	-	<50	117	2.5	**2 608 633 A37**	C1b	5	1	264204	GAJ	13.09
					2 608 633 A40	P1a	25	1	264235	GAJ	58.91

Jigsaw blades – Progressor for Wood

Fast, clean through thick and thin

PROGRESSOR for Wood

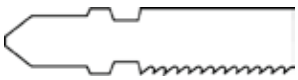
Softwood, panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties			**Ordering information**						

T 234 X

HCS, ground teeth and taper ground
Softwood (3-65 mm), chipboards, wood core plywood, fibre boards

3-65	117	2-3	**2 608 633 523**	C1b	3	10	169493	GAJ	9.11
			2 608 633 528	C1b	5	10	169509	GAJ	13.03
			2 608 633 524	P1a	25	1	169516	GAJ	58.63
			2 608 633 A41	C1a	100	1	264242	GAJ	221.51

Jigsaw blades
for hardwood



Single lug shank

Jigsaw blades – Speed for Hard Wood

Fast cut

speed for HardWood

Hardwood, panels [mm]	Coarse wood [mm]	Laminated panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties					**Ordering information**						

T 144 DF

BIM, side set, ground
Hardwood and softwood (5-50 mm), all types of panels, including laminates

5-50	-	5-50	100	4-5.2	**2 608 634 567**	C1b	5	10	009430	GAJ	12.87
					2 608 634 990	P1a	25	1	127738	GAJ	57.91

T 344 DF

BIM, side set, ground
Thick hardwood and softwood (5-100 mm), all types of panels, including laminates

5-100	<100	5-100	152	4	**2 608 634 243**	C1b	5	1	091947	GAJ	28.00

Jigsaw blades – Clean for Hard Wood

Clean cut

clean for HardWood

Hardwood, panels [mm]	Laminates [mm]	Kitchen worktops [mm]	Glass fibre reinforced plastic/epoxy [mm]	Laminated panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties							**Ordering information**						

T 101 AOF

BIM, pointed teeth, ground teeth and taper ground

Hardwood, laminated panels/HPL (1.5-15 mm), plywood, especially for curve cuts, no tears

1.5-15	1.5-15	-	-	1.5-15	83	1.4	**2 608 634 233**	C1b	5	10	091848	GAJ	16.17

T 101 AIF

BIM, pointed teeth, ground teeth and taper ground
Hardwood, laminated panels/HPL (2-30 mm), glass fibre reinforced plastic/epoxy (dia. <30 mm), no tears

2-30	2-30	-	<30	2-30	100	1.7	**2 608 634 897**	C1b	5	1	096355	GAJ	16.65

Jigsaw blades – Clean for Hard Wood

Clean cut

clean for HardWood

Hardwood, panels [mm]	Laminates [mm]	Kitchen worktops [mm]	Glass fibre reinforced plastic/epoxy [mm]	Laminated panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties							**Ordering information**						

T 101 BF

2,7 mm progressive

BIM, ground teeth and taper ground
Hardwood, laminated panels/HPL (3-30 mm), glass fibre reinforced plastic/epoxy (dia. <30 mm)

3-30	-	-	<30	3-30	100	2.7	**2 608 634 234**	C1b	5	10	091855	GAJ	16.65
							2 608 634 988	P1a	25	1	127714	GAJ	76.00

T 101 BRF

2,5 mm REVERSE

BIM, ground teeth and taper ground
Laminated panels (3-30 mm), kitchen worktops (<45 mm), clean surface

-	3-30	<45	-	3-30	100	2.5	**2 608 634 235**	C1b	5	10	091862	GAJ	18.10
							2 608 634 989	P1a	25	1	127721	GAJ	81.47

T 301 CDF

3 mm

BIM, ground teeth and taper ground
Hardwood and softwood (4-65 mm), laminated panels/HPL

4-65	-	-	-	4-65	117	3.0	**2 608 636 229**	C1b	5	1	264389	GAJ	20.84

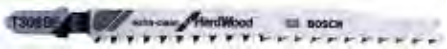
Jigsaw blades – Extraclean for Hard Wood

For tear-free cutting

extra-clean for HardWood

Plywood [mm]	Kitchen worktops [mm]	Softwood, panels [mm]	Hardwood, panels [mm]	Laminated panels [mm]	Multiplex panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties								**Ordering information**						

T 308 BF



2,2 mm XC

BIM, ground teeth and taper ground
for hardwood and abrasive wooden materials

5-50	<50	5-50	5-50	5-50	5-50	117	2.2 XC	**2 608 636 568**	C1b	3	10	470315	GAJ	12.74
								2 608 636 569	C1b	5	10	470322	GAJ	19.98
								2 608 636 570	P1a	25	1	470339	GAJ	86.75
								2 608 636 571	C1a	100	1	470346	GAJ	327.74

Jigsaw blades – Extraclean for Hard Wood

For tear-free cutting

extra-clean for HardWood

Plywood [mm]	Kitchen worktops [mm]	Softwood, panels [mm]	Hardwood, panels [mm]	Laminated panels [mm]	Multiplex panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties								**Ordering information**						

T 308 BOF

BIM, ground teeth and taper ground
for hardwood and abrasive wooden materials, especially for curve cuts

5-50	<50	5-50	5-50	5-50	5-50	117	2.2 XC	**2 608 636 639**	C1b	3	1	535809	GAJ	12.74
								2 608 636 640	C1b	5	1	535816	GAJ	19.98
								2 608 636 641	P1a	25	1	535823	GAJ	86.75

Jigsaw blades – Special for Laminate

Precise, clean cuts on both sides

special for Laminate

Laminates [mm]	Laminated panels [mm]	Multiplex panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties					**Ordering information**						

T 101 BIF

BIM, ground teeth and taper ground
Laminates (1.5-15 mm), laminated panels/HPL (1.5-15 mm), multiplex panels (1.5-15 mm)

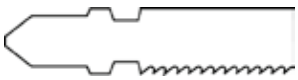
1.5-15	1.5-15	1.5-15	83	1.7	**2 608 636 431**	C1b	5	10	393416	GAJ	16.66

T 101 AOF

BIM, ground teeth and taper ground
Laminates (1.5-15 mm), laminated panels/HPL (1.5-15 mm), multiplex panels (1.5-15 mm)

1.5-15	1.5-15	1.5-15	83	1.4	**2 608 636 432**	C1b	3	10	393423	GAJ	13.84

Jigsaw blades
for wood and metal

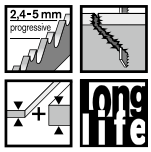


Single lug shank

Jigsaw blades – Progressor for Wood and Metal — Universal, fast through thick and thin

PROGRESSOR for Wood and Metal

Construction timber with nails [mm]	Coarse wood [mm]	Glass fibre reinforced plastic/epoxy [mm]	Sheet metals, pipes, profiles [mm]	Aluminium [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties							**Ordering information**						



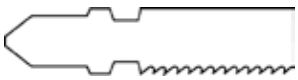
T 345 XF

BIM, side set, milled

Construction timber with nails (<65 mm), wooden materials, plastics, sheet metals, pipes/profiles, inc. aluminium (dia. 3-10 mm)

<65	<65	3-10	3-10	3-10	132	2.4-5	**2 608 634 993**	C1b	3	10	128018	GAJ	9.77
							2 608 634 994	C1b	5	10	128025	GAJ	15.63
							2 608 634 995	P1a	25	1	128032	GAJ	70.31
							2 608 634 486	C1a	100	1	266208	GAJ	265.71

Jigsaw blades
for metal



Single lug shank

Jigsaw blades – Basic for Metal

Good and cost-effective

basic for Metal

Sheet metals [mm]	Pipes, profiles: closed [mm]	Aluminium [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties					**Ordering information**						

T 118 G

HSS, wavy set, milled
Very thin sheet metals (0.5-1.5 mm)

0.5-1.5	-	-	92	0.7	**2 608 631 674**	C1b	3	10	007566	GAJ	5.78
					2 608 631 012	C1b	5	10	007283	GAJ	8.50

T 118 A

HSS, wavy set, milled
Thin sheet metals (1-3 mm)

1-3	-	-	92	1.1-1.5	**2 608 631 507**	C1b	3	10	007399	GAJ	5.51
					2 608 631 013	C1b	5	10	007290	GAJ	8.50
					2 608 638 470	P1a	25	1	127769	GAJ	38.21
					2 608 631 964	C1a	100	1	067492	GAJ	144.34

T 218 A

HSS, wavy set, milled
Thin sheet metals (1-3 mm), especially for curve cuts

1-3	-	-	92	1.1-1.5	**2 608 631 672**	C1b	3	10	007542	GAJ	6.51
					2 608 631 032	C1b	5	10	007337	GAJ	10.37
					2 608 631 706	C1a	100	1	279482	GAJ	176.24

T 318 A

HSS, wavy set, milled
Thin sheet metals (1-3 mm), pipes + profiles, inc. aluminium (dia. <65 mm)

1-3	<65	<65	132	1.2	**2 608 631 319**	C1b	5	1	007375	GAJ	19.24
					2 608 631 808	C1a	100	1	279499	GAJ	327.06

T 118 B

HSS, wavy set, milled
Medium-thick sheet metals (2.5-6 mm)

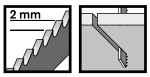
2.5-6	-	-	92	1.9-2.3	**2 608 631 673**	C1b	3	10	007559	GAJ	5.78
					2 608 631 014	C1b	5	10	007306	GAJ	8.50
					2 608 638 471	P1a	25	1	127776	GAJ	38.21
					2 608 631 965	C1a	100	1	067508	GAJ	144.34

Jigsaw blades – Basic for Metal

Good and cost-effective

basic for Metal

Sheet metals [mm]	Pipes, profiles: closed [mm]	Aluminium [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties					**Ordering information**						



T 318 B

HSS, wavy set, milled
Medium-thick sheet metals (2.5-6 mm), pipes + profiles, inc. aluminium (dia. <65 mm), precise angle cut

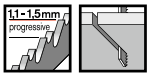
2.5-6	<65	<65	132	2.0	**2 608 631 404**	C1b	5	1	007382	GAJ	19.24

Jigsaw blades – Flexible for Metal

Break proof and durable

flexible for Metal

Sheet metals [mm]	Pipes, profiles: closed [mm]	Pipes, profiles: open [mm]	Aluminium [mm]	Sandwich materials [mm]	Glass fibre reinforced plastic/epoxy [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties								**Ordering information**						

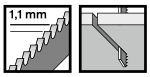


Long life

T 118 AF

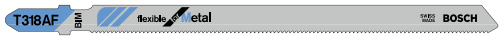
BIM, wavy set, milled
Thin sheet metals, perforated sheet metals (1-3 mm)

1-3	-	-	-	-	-	92	1.1-1.5	**2 608 634 694**	C1b	3	10	035309	GAJ	7.27
								2 608 634 505	C1b	5	10	007627	GAJ	11.25
								2 608 634 991	P1a	25	1	127745	GAJ	50.62



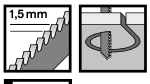
Long life

T 318 AF



BIM, wavy set, milled
Thin sheet metals, perforated sheet metals (1-3 mm), sandwich materials (<65 mm), pipes + open profiles, including aluminium (dia. <65 mm), glass fibre reinforced plastic/epoxy (<65 mm)

1-3	<65	<65	<65	<65	<65	132	1.1	**2 608 634 241**	C1b	5	1	091923	GAJ	23.43



Long life

T 118 EOF

BIM, wavy set, milled
Thin sheet metals, perforated sheet metals (1.5-4 mm), especially for curve cuts

1.5-4	-	-	-	-	-	83	1.5	**2 608 634 237**	C1b	5	1	091893	GAJ	12.37

Jigsaw blades – Flexible for Metal

Break proof and durable

flexible for Metal

Sheet metals [mm]	Pipes, profiles: closed [mm]	Pipes, profiles: open [mm]	Aluminium [mm]	Sandwich materials [mm]	Glass fibre reinforced plastic/epoxy [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties								**Ordering information**						

T 118 BF

BIM, wavy set, milled
Medium-thick sheet metals, perforated sheet metals (2.5-6 mm)

2.5-6	-	-	-	-	-	92	1.9-2.3	**2 608 634 503**	C1b	5	10	007603	GAJ	11.25
								2 608 634 992	P1a	25	1	127752	GAJ	50.62

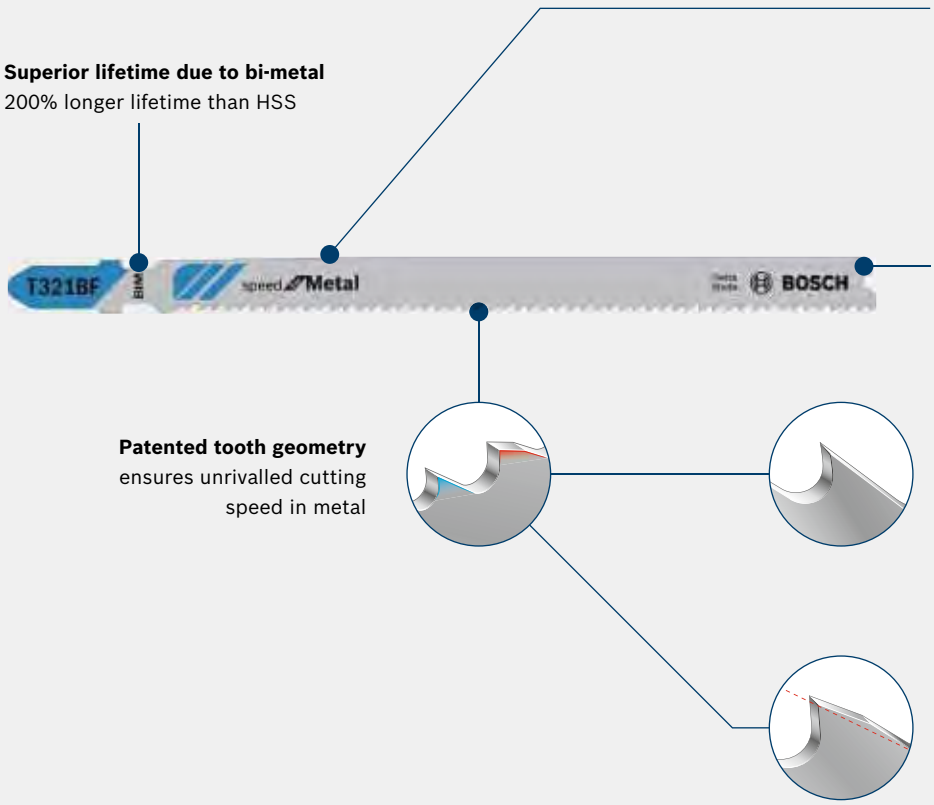
T 318 BF

BIM, side set, milled
Medium-thick sheet metals, perforated sheet metals (2.5-6 mm), sandwich materials (<65 mm), pipes + profiles, including aluminium (dia. <65 mm), glass fibre reinforced plastic/epoxy (<65 mm)

2.5-6	<65	<65	<65	<65	<65	132	1.8	**2 608 634 242**	C1b	5	1	091930	GAJ	23.43

Speed for Metal

Unrivalled cutting speed and superior lifetime in metal



Superior lifetime due to bi-metal
200% longer lifetime than HSS

Optimised speed due to backwards tapered saw blade (patent pending)
increases the cutting speed by simulating a pendulum motion

Reduced blade thickness
increases the cutting speed

Patented tooth geometry
ensures unrivalled cutting speed in metal

Aggressive tooth
straight rear edge
large flute for chip removal
► high cutting speed
► high chip removal rate

Rigid tooth
reinforced rear edge
small flute for chip removal
► longer lifetime
► less wear

Jigsaw blades – Speed for Metal

Fast, break proof and durable

speed Metal

Sheet metals [mm]	Pipes, profiles: closed [mm]	Pipes, profiles: open [mm]	Aluminium [mm]	Sandwich materials [mm]	Glass fibre reinforced plastic/epoxy [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties								**Ordering information**						

T 121 GF

BIM, wavy set, milled
Very thin sheet metals, perforated sheet metals (0.5-1.5 mm)

0.5-1.5	-	-	0.5-1.5	-	-	92	0.8	**2 608 636 695**	C1b	3	10	596824	GAJ	9.54
								2 608 636 712	C1b	5	10	620352	GAJ	14.45
								2 608 636 697	P1a	25	1	596848	GAJ	61.42

Jigsaw blades – Speed for Metal

Fast, break proof and durable

speed for Metal

Sheet metals [mm]	Pipes, profiles: closed [mm]	Pipes, profiles: open [mm]	Aluminium [mm]	Sandwich materials [mm]	Glass fibre reinforced plastic/epoxy [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties								**Ordering information**						

T 121 AF

BIM, wavy set, milled
Thin sheet metals, perforated sheet metals (1-3 mm)

1-3	-	-	1-3	-	-	92	1.2	**2 608 636 698**	C1b	3	10	596855	GAJ	9.54
								2 608 636 713	C1b	5	10	620369	GAJ	14.45
								2 608 636 700	P1a	25	1	596947	GAJ	61.42

T 121 BF

BIM, wavy set, milled
Medium-thick sheet metals, perforated sheet metals (2.5-6 mm)

2.5-6	-	-	2.5-6	-	-	92	2.0	**2 608 636 701**	C1b	3	10	596954	GAJ	9.54
								2 608 636 714	C1b	5	10	620376	GAJ	14.45
								2 608 636 703	P1a	25	1	596978	GAJ	61.42

T 321 AF

BIM, wavy set, milled
Thin sheet metals, perforated sheet metals (1-3 mm), sandwich materials (<65 mm), thin-walled pipes, closed + open profiles, including aluminium (dia. <65 mm), glass fibre reinforced plastic/epoxy (<65 mm)

1-3	<65	<65	<65	<65	<65	132	1.2	**2 608 636 704**	C1b	3	10	596985	GAJ	14.50
								2 608 636 705	C1b	5	10	596992	GAJ	21.98

T 321 BF

BIM, side set, milled
Medium-thick sheet metals, perforated sheet metals (2.5-6 mm), sandwich materials (<65 mm), thick-walled pipes, closed + open profiles, including aluminium (dia. <65 mm), glass fibre reinforced plastic/epoxy (<65 mm)

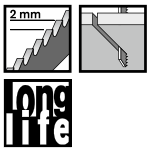
2.5-6	<65	<65	<65	<65	<65	132	2.0	**2 608 636 706**	C1b	3	10	597005	GAJ	14.50
								2 608 636 707	C1b	5	10	597012	GAJ	21.98

Jigsaw blades – Flexible for Metal-Sandwich

Break proof and durable

flexible for Metal-Sandwich

Sandwich materials [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties			**Ordering information**						



T 718 BF

BIM, wavy set, milled
Sandwich materials (<120 mm)

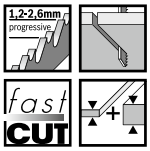
<120	180	2	**2 608 636 335**	C1b	3	1	309042	GAJ	41.24

Jigsaw blades – Progressor for Metal

Fast through thick and thin

PROGRESSOR for Metal

Sheet metals [mm]	Pipes, profiles: closed [mm]	Aluminium [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties					**Ordering information**						



T 123 XF

HSS, side set, milled
Thin to thick sheet metals (1.5-10 mm), pipes + profiles, incl. aluminium (dia. <30 mm)

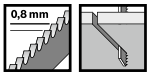
1.5-10	<30	<30	100	1.2-2.6	**2 608 638 472**	C1b	3	10	128049	GAJ	6.51
					2 608 638 473	C1b	5	10	128056	GAJ	10.40
					2 608 638 474	P1a	25	1	128063	GAJ	46.80
					2 608 638 700	C1a	100	1	264488	GAJ	176.80

Jigsaw blades – Basic for Inox

Good and cost-effective

basic for Inox

Inox sheets [mm]	Inox perforated sheets [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties				**Ordering information**						



T 118 GFS

BIM, wavy set, milled
Sawing in Inox / stainless steel

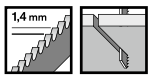
0.5-1.5	0.5-1.5	83	0.8	**2 608 636 498**	C1b	3	10	451864	GAJ	8.72
				2 608 636 496	C1b	5	10	451840	GAJ	13.45

Jigsaw blades – Basic for Inox

Good and cost-effective

basic for Inox

Inox sheets [mm]	Inox perforated sheets [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties				**Ordering information**						



T 118 EFS

BIM, wavy set, milled
Sawing in Inox / stainless steel

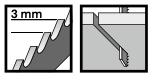
1.5-4	1.5-4	83	1.4	**2 608 636 499**	C1b	3	10	451871	GAJ	8.72
				2 608 636 497	C1b	5	10	451857	GAJ	13.45

Jigsaw blades – Special for Alu

Aluminium and non-ferrous metal

special for Alu

Sheet metals [mm]	Aluminium [mm]	Glass fibre reinforced plastic/epoxy [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties					**Ordering information**						

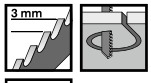


fast CUT

T 127 D

HSS, side set, milled
Thin to thick sheet metals (3-15 mm), pipes + profiles, (dia. <30 mm)

3-15	<30	<30	100	3	**2 608 631 508**	C1b	3	10	007405	GAJ	5.92
					2 608 631 017	C1b	5	10	007313	GAJ	9.21
					2 608 631 966	C1a	100	1	067515	GAJ	156.35



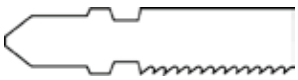
fast CUT

T 227 D

HSS, side set, milled
Thin to thick sheet metals (3-15 mm), pipes + profiles (dia. <30 mm), especially for curve cuts

3-15	<30	<30	100	3	**2 608 631 671**	C1b	3	10	007535	GAJ	7.83
					2 608 631 030	C1b	5	10	007320	GAJ	11.99
					2 608 638 382	C1a	100	1	279475	GAJ	203.81

Jigsaw blades
for special applications



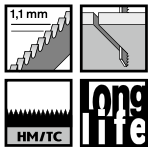
Single lug shank

Jigsaw blades – Special for Inox

Stainless steel

special for Inox

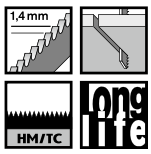
Inox sheets [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties			**Ordering information**						



T 118 AHM

Tungsten carbide tipped (bar), ground
Thin, stainless steel sheets (Inox) (1.5-3 mm)

1.5-3	83	1.1	**2 608 630 663**	C1b	3	1	017749	GAJ	43.67



T 118 EHM

Tungsten carbide tipped (bar), ground
Medium-thick stainless steel sheets (Inox) (2-5 mm)

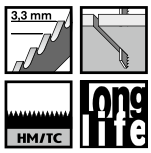
2-5	83	1.4	**2 608 630 665**	C1b	3	1	017756	GAJ	43.67

Jigsaw blades – Special for Synthetics

Abrasive synthetics

special for Synthetics

Glass fibre reinforced plastic/epoxy [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties			**Ordering information**						



T 301 CHM

Tungsten carbide tipped (bar), ground
Glass fibre reinforced plastic/epoxy, Corian (<65 mm)

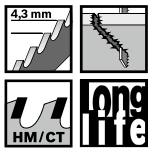
<65	117	3.3	**2 608 633 164**	C1b	3	1	091824	GAJ	57.47

Jigsaw blades – Special for Fiber and Plaster

Fibre and cement materials

special for Fiber and Plaster

Plasterboard	Porous concrete [mm]	Fibre cement [mm]	Glass fibre reinforced plastic/epoxy [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties						**Ordering information**						



T 141 HM

Tungsten carbide tipped, side set
Glass fibre reinforced plastic/epoxy (5-20 mm), plasterboard, fibre cement boards (5-50 mm)

5-50	-	5-50	5-20	100	4.3	**2 608 633 175**	C1b	3	1	109758	GAJ	36.44

T 341 HM

Tungsten carbide tipped, side set
Glass fibre reinforced plastic/epoxy (5-50 mm), plasterboard, fibre cement boards (<80 mm)

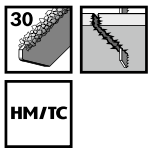
5-80	<80	5-80	5-50	132	4.3	**2 608 633 176**	C1b	3	1	109765	GAJ	42.24

Jigsaw blades – Special for Ceramics

Ceramic materials

special for Ceramics

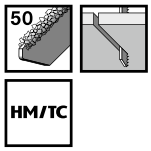
Ceramic wall tiles [mm]	Total length [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties		**Ordering information**						



T 130 RIFF

Tungsten carbide coated, with grit of 30
Soft ceramic wall tiles, cast iron (5-15 mm), coarse cut

5-15	83	**2 608 633 104**	C1b	3	1	035286	GAJ	17.98



T 150 RIFF

Tungsten carbide coated, with grit of 50
Soft ceramic wall tiles, cast iron (5-10 mm), fine cut

5-10	83	**2 608 633 105**	C1b	3	1	035293	GAJ	17.98

Jigsaw blades – Special for Acrylic

Acrylic glass

special for Acrylic

Perspex [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties			**Ordering information**						

T 101 A

HSS, ground teeth and taper ground
Perspex, polycarbonate (2-20 mm)

2-20	100	2	**2 608 631 670**	C1b	3	1	007528	GAJ	11.04
			2 608 631 010	C1b	5	1	007276	GAJ	16.80

Jigsaw blades – Special for Soft Material

Soft materials

special for Soft-Material

Polystyrene, insulation [mm]	Cardboard, carpet, leather [mm]	Rubber [mm]	Total length [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties				**Ordering information**						

T 113 A

HCS, ground blade
Cardboard, polystyrene, carpet, leather, rubber (<50 mm)

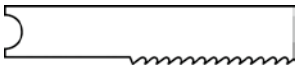
<50	<50	<50	100	**2 608 635 177**	C1b	3	1	035323	GAJ	8.89

T 313 AW

HCS, blade with serrated edge
Cardboard, polystyrene, carpet, leather, rubber (<100 mm)

<100	<100	<100	152	**2 608 635 187**	C1b	3	1	045926	GAJ	10.22

Jigsaw blades
for wood



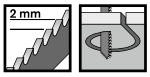
Universal shank

Jigsaw blades – Basic for Wood

Good and cost-effective

basic for Wood

Plywood [mm]	Softwood, panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties				**Ordering information**						



U 19 BO

HCS, wavy set, milled
Softwood (2-15 mm), plywood, chipboard, wood core plywood, fibre boards, especially for curve cuts

2-15	2-15	70	2	**2 608 630 567**	C1b	3	1	007016	GAJ	3.05

U 111 C

HCS, side set, milled
Softwood (4-50 mm), chipboards, wood core plywood, fibre boards

4-50	4-50	92	3	**2 608 630 566**	C1b	3	1	007009	GAJ	2.72

U 111 D

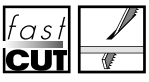
HCS, side set, milled
Softwood (5-65 mm), chipboards, wood core plywood, fibre boards

5-65	5-65	92	4	**2 608 637 559**	C1b	3	1	014083	GAJ	2.97

Jigsaw blades – Speed for Wood

Fast cut

speed for Wood



U 144 D

HCS, side set, ground
Softwood (5-50 mm), chipboards, wood core plywood, fibre boards

5-50	5-50	100	4-5.2	**2 608 630 568**	C1b	3	1	007023	GAJ	4.24

Jigsaw blades – Clean for Wood

Clean cut

clean for Wood

Plywood [mm]	Plastics [mm]	Softwood, panels [mm]	Laminated panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties						**Ordering information**						

U 1 AO

HCS, pointed teeth, ground teeth and taper ground
Softwood, plywood, laminated panels (1.5-15 mm), especially for curve cuts

1.5-15	-	1.5-15	1.5-15	70	1.4	**2 608 637 724**	C1b	3	1	038553	GAJ	5.14

U 101 B

HCS, ground teeth and taper ground
Softwood, chipboard, wood core plywood, fibre boards (3-30 mm), plastics (3-30 mm)

-	3-30	3-30	-	100	2.7	**2 608 630 565**	C1b	3	1	006996	GAJ	5.51

U 1 C

HCS, ground teeth and taper ground
Softwood (4-45 mm), chipboards, wood core plywood, fibre boards

-	-	4-45	-	80	3.0	**2 608 637 560**	C1b	3	1	014090	GAJ	5.51

U 101 D

HCS, ground teeth and taper ground
Softwood (10-45 mm), chipboards, wood core plywood, fibre boards

-	-	10-45	-	100	4-5.2	**2 608 637 723**	C1b	3	1	038546	GAJ	5.51

Jigsaw blades – Progressor for Wood

Fast and clean, through thick and thin

PROGRESSOR for Wood

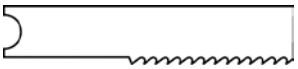
Softwood, panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties			**Ordering information**						

U 234 X

HCS, ground teeth and taper ground
Softwood (2-65 mm), chipboards, wood core plywood, fibre boards

2-65	108	2-3	**2 608 633 525**	C1b	3	1	169530	GAJ	9.11

Jigsaw blades
for hardwood



Universal shank

Jigsaw blades – Special for Laminate

Precise, clean cuts on both sides

Laminated panels [mm]	Multiplex panels [mm]	Laminates [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties					**Ordering information**						

U 1 BIF

BIM, ground teeth and taper ground
Laminates (1.5-15 mm), laminated panels/HPL (1.5-15 mm), multiplex panels (1.5-15 mm)

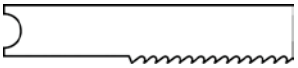
1.5-15	1.5-15	1.5-15	70	1.7	**2 608 636 433**	C1b	3	10	393430	GAJ	16.65

U 1 AOF

BIM, ground teeth and taper ground
Laminates (1.5-15 mm), laminated panels/HPL (1.5-15 mm), multiplex panels (1.5-15 mm)

1.5-15	1.5-15	1.5-15	70	1.4	**2 608 636 462**	C1b	3	10	414647	GAJ	15.04

Jigsaw blades
for wood and metal



Universal shank

Jigsaw blades – Progressor for Wood and Metal

Universal, fast through thick and thin

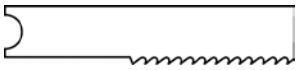
Construction timber with nails [mm]	Coarse wood [mm]	Glass fibre reinforced plastic/epoxy [mm]	Sheet metals, pipes, profiles [mm]	Aluminium [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties							**Ordering information**						

U 345 XF

BIM, side set, milled
Construction timber with nails (<65 mm), wooden materials, plastics, sheet metals, pipes/profiles, inc. aluminium (dia. 3-10 mm)

<65	<65	3-10	3-10	3-10	125	2.4-5	**2 608 634 277**	C1b	3	1	150491	GAJ	9.77

Jigsaw blades
for metal



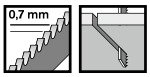
Universal shank

Jigsaw blades – Basic for Metal

Good and cost-effective

basic for Metal

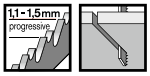
Sheet metals [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties			**Ordering information**						



U 118 G

HSS, wavy set, milled
Very thin sheet metals (0.5-1.5 mm)

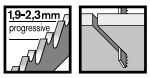
0.5-1.5	70	0.7	**2 608 631 770**	C1b	3	1	014069	GAJ	4.83



U 118 A

HSS, wavy set, milled
Thin sheet metals (1-3 mm)

1-3	80	1.1-1.5	**2 608 631 511**	C1b	3	1	007412	GAJ	4.83



U 118 B

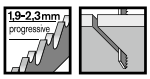
HSS, wavy set, milled
Medium-thick sheet metals (2.5-6 mm)

2.5-6	80	1.9-2.3	**2 608 631 771**	C1b	3	1	014076	GAJ	4.83

Jigsaw blades – Flexible for Metal

Breakproof and durable

flexible for Metal



Long life

U 118 BF

BIM, wavy set, milled
Medium-thick sheet metals, perforated sheet metals (2.5-6 mm)

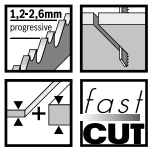
2.5-6	80	1.9-2.3	**2 608 634 695**	C1b	3	1	038539	GAJ	6.28

Jigsaw blades – Progressor for Metal

Fast through thick and thin

PROGRESSOR for Metal

Sheet metals [mm]	Pipes, profiles: closed [mm]	Aluminium [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties					**Ordering information**						



U 123 XF

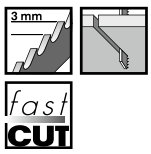
HSS, side set, milled
Thin to thick sheet metals (1.5-10 mm), pipes + profiles, incl. aluminium (dia. <30 mm)

1.5-10	<30	<30	92	1.2-2.6	**2 608 638 497**	C1b	3	1	156677	GAJ	6.51

Jigsaw blades – Special for Alu

Aluminium and non-ferrous metal

special for Alu

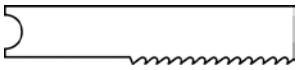


U 127 D

HSS, side set, milled
Thin to thick sheet metals (3-15 mm), pipes + profiles, (dia. <30 mm)

3-15	<30	<30	92	3	**2 608 631 512**	C1b	3	1	007429	GAJ	4.85

Jigsaw blades
for special applications



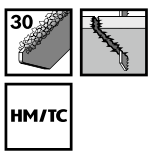
Universal shank

Jigsaw blades – Special for Ceramics

Ceramic materials

special for Ceramics

Ceramic wall tiles [mm]	Total length [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties		**Ordering information**						

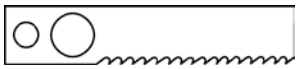


U 30 RIFF

Tungsten carbide coated
Soft ceramic wall tiles, cast iron (5-15 mm), coarse cut

5-15	70	**2 608 633 106**	C1b	3	1	038515	GAJ	15.58

Jigsaw blades
for wood



Makita shank

Jigsaw blades – Basic for Wood

Good and cost-effective

basic for Wood

Softwood, panels [mm]	Plywood [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties				**Ordering information**						

MA 119 HO

HCS, side set, milled
Softwood (3-15 mm), plywood, chipboard, wood core plywood, fibre boards, especially for curve cuts

3-15	3-15	80	2.5	**2 608 633 501**	C1b	5	1	184755	GAJ	12.10

MA 111 C

HCS, side set, milled
Softwood (4-50 mm), chipboards, wood core plywood, fibre boards

4-50	-	80	3.0	**2 608 637 572**	C1b	5	1	014519	GAJ	4.92

MA 111 D

HCS, side set, milled
Softwood (5-65 mm), chipboards, wood core plywood, fibre boards

5-65	-	80	4.0	**2 608 633 500**	C1b	5	1	184748	GAJ	11.07

Jigsaw blades – Clean for Wood

Clean cut

clean for Wood

Softwood, panels [mm]	Plastics [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties				**Ordering information**						

2,7 mm

clean CUT

MA 101 BC

HCS, ground teeth and taper ground
Softwood, chipboard, wood core plywood, fibre boards, plastics (3-30 mm)

3-30	3-30	80	2.7	**2 608 633 502**	C1b	5	1	184762	GAJ	12.82

Jigsaw blades – Progressor for Wood

Fast, clean, through thick and thin

PROGRESSOR for Wood

Softwood, panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties			**Ordering information**						

2-3 mm progressive

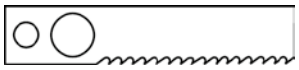
clean CUT

MA 234 X

HCS, ground teeth and taper ground
Softwood (2-65 mm), chipboards, wood core plywood, fibre boards

2-65	110	2-3	**2 608 633 530**	C1b	5	1	169547	GAJ	13.03	

Jigsaw blades
for wood and metal



Makita shank

Jigsaw blades – Progressor for Wood and Metal

Universal, fast through thick and thin

PROGRESSOR for Wood and Metal

Construction timber with nails [mm]	Coarse wood [mm]	Glass fibre reinforced plastic/epoxy [mm]	Sheet metals, pipes, profiles [mm]	Aluminium [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties							**Ordering information**						

2,4-5 mm progressive

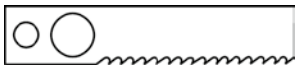
long life

MA 345 XF

BIM, side set, milled
Construction timber with nails (<65 mm), wooden materials, glass fibre reinforced plastic/epoxy, sheet metals, pipes/profiles, including aluminium (dia. 3-10 mm)

<65	<65	3-10	3-10	3-10	120	2.4-5	**2 608 634 278**	C1b	5	1	150507	GAJ	15.63

Jigsaw blades
for metal



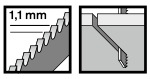
Makita shank

Jigsaw blades – Basic for Metal

Good and cost-effective

basic for Metal

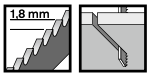
Product properties				Ordering information						
Sheet metals [mm]	Total length [mm]	Tooth spacing [mm]		Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat



MA 118 A

HSS, wavy set, milled
Thin sheet metals (1-3 mm)

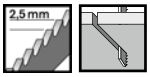
1-3	80	1.1	**2 608 631 781**	C1b	5	1	014533	GAJ	8.03



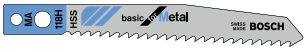
MA 118 B

HSS, wavy set, milled
Medium-thick sheet metals (2.5-6 mm)

2.5-6	80	1.8	**2 608 631 780**	C1b	5	1	014526	GAJ	8.03



MA 118 H



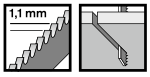
HSS, side set, milled
Thick sheet metals (3-8 mm)

3-8	80	2.5	**2 608 631 782**	C1b	5	1	014540	GAJ	8.03

Jigsaw blades – Flexible for Metal

Breakproof and durable

flexible for Metal

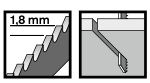


Long Life

MA 18 AF

BIM, wavy set, milled
Thin sheet metals, perforated sheet metals (1-3 mm)

1-3	80	1.1	**2 608 634 296**	C1b	5	1	184793	GAJ	18.87



Long Life

MA 18 BF

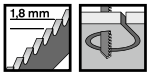
BIM, wavy set, milled
Medium-thick sheet metals, perforated sheet metals (2.5-6 mm)

2.5-6	80	1.8	**2 608 634 297**	C1b	5	1	184809	GAJ	18.87

Jigsaw blades – Flexible for Metal

Breakproof and durable

flexible for Metal



MA 18 BOF

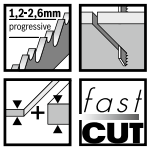
BIM, side set, milled
Medium-thick sheet metals, perforated sheet metals (2-6 mm), especially for curve cuts

Sheet metals [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
2-6	80	1.8	**2 608 634 295**	C1b	5	1	184779	GAJ	22.25

Jigsaw blades – Progressor for Metal

Fast through thick and thin

PROGRESSOR for Metal



MA 123 X

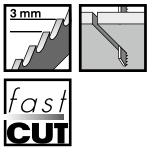
HSS, side set, milled
Thin to thick sheet metals (1.5-10 mm), pipes + profiles, incl. aluminium (dia. <30 mm)

Sheet metals [mm]	Pipes, profiles: closed [mm]	Aluminium [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
1.5-10	<30	<30	95	1.2-2.6	**2 608 638 498**	C1b	5	1	156691	GAJ	10.40

Jigsaw blades – Special for Alu

Aluminium and non-ferrous metal

special for Alu



MA 127 D

HSS, side set, milled
Thin to thick sheet metals (3-15 mm), pipes + profiles, (dia. <30 mm)

Sheet metals [mm]	Pipes, profiles: closed [mm]	Aluminium [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
3-15	<30	<30	80	3	**2 608 638 511**	C1b	5	1	184786	GAJ	14.56

Jigsaw blades
for wood

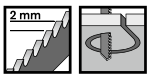
Double lug shank

Jigsaw blades – Basic for Wood

Good and cost-effective

basic for Wood

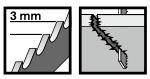
Softwood, panels [mm]	Plywood [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties				**Ordering information**						



T 19 BO

HCS, wavy set, milled
Softwood (2-15 mm), plywood, chipboard, wood core plywood, fibre boards, especially for curve cuts

2-15	2-15	85	2	**2 608 630 309**	C1b	5	1	006934	GAJ	5.89



T 57 C

HCS, side set, milled
Softwood (4-50 mm), chipboards, wood core plywood, fibre boards

4-50	-	96	3	**2 608 630 061**	C1b	5	1	006866	GAJ	5.26

Jigsaw blades – Speed for Wood

Fast cut

speed for Wood

Softwood, panels [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties			**Ordering information**						

fast CUT

T 44 D

HCS, side set, ground
Softwood (5-50 mm), chipboards, wood core plywood, fibre boards

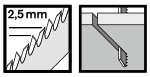
5-50	96	4	**2 608 630 010**	C1b	5	1	006774	GAJ	6.95

Jigsaw blades – Clean for Wood

Clean cut

clean for Wood

Softwood, panels [mm]	Plastics [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties				**Ordering information**						



clean CUT

T 1 B

HCS, ground teeth and taper ground
Softwood, chipboard, wood core plywood, fibre boards, plastics (3-30 mm)

3-30	3-30	96	2.5	**2 608 630 000**	C1b	5	1	006750	GAJ	8.48

Jigsaw blades
for metal

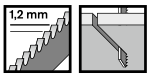
Double lug shank

Jigsaw blades – Basic for Metal

Good and cost-effective

basic for Metal

Sheet metals [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties			**Ordering information**						



T 18 A

HSS, wavy set, milled
Thin sheet metals (1-3 mm)

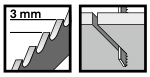
1-3	85	1.2	**2 608 631 002**	C1b	5	1	007269	GAJ	8.90

Jigsaw blades – Special for Alu

Aluminium and non-ferrous metal

special for Alu

Sheet metals [mm]	Pipes, profiles: closed [mm]	Aluminium [mm]	Total length [mm]	Tooth spacing [mm]	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
Product properties					**Ordering information**						



fast CUT

T 27 D

HSS, side set, milled
Thin to thick sheet metals (3-15 mm), pipes + profiles, (dia. <30 mm)

3-15	<30	<30	96	3	**2 608 630 008**	C1b	5	1	006767	GAJ	9.47

Jigsaw blade sets

3-piece jigsaw blade sets (single lug shank)

Product properties	Ordering information	Set contents	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
3-piece jigsaw blade set Universal, fast through thick and thin For wood, plastic and metal									
T 123 XF Progressor for Metal T 234 X Progressor for Wood T 345 XF Progressor for Wood and Metal	**2 607 010 515**	C1b	1 1 1	1	198868	GAJ	8.46
3-piece jigsaw blade set For wood, plastic and metal									
T 111 C Basic for Wood T 244 D Speed for Wood T 118 B Basic for Metal	**2 607 010 062**	C1b	1 1 1	1	006644	GAJ	5.01
3-piece jigsaw blade set Precise, clean cuts in laminate									
T 101 BIF Special for Laminate T 101 AOF Special for Laminate	**2 608 636 429**	C1b	2 1	1	393393	GAJ	13.84
3-piece jigsaw blade set For softwood and non-abrasive wooden materials									
T 308 B Extraclean for Wood T 308 BO Extraclean for Wood	**2 607 010 592**	C1b	2 1	1	535830	GAJ	7.29
3-piece jigsaw blade set For hardwood and abrasive wooden materials									
T 308 BF Extraclean for Hard Wood T 308 BOF Extraclean for Hard Wood	**2 607 010 593**	C1b	2 1	1	535847	GAJ	12.74

3-piece jigsaw blade sets (universal shank)

Product properties	Ordering information	Set contents	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
3-piece jigsaw blade set Universal, fast through thick and thin For wood, plastic and metal									
U 123 XF Progressor for Metal U 234 X Progressor for Wood U 345 XF Progressor for Wood and Metal	**2 607 010 516**	C1b	1 1 1	1	198875	GAJ	8.46
3-piece jigsaw blade set Precise, clean cuts in laminate									
U 1 BIF Special for Laminate U 1 AOF Special for Laminate	**2 608 636 430**	C1b	2 1	1	393409	GAJ	15.04

Robust Line 6-piece jigsaw blade sets (single lug shank)

Set size A:
157 x 70 x 23 mm

Product properties	Set contents	Set size	Ordering information: Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
6-piece Robust Line jigsaw blade set Progressor									
T 123 XF Progressor for Metal T 234 X Progressor for Wood T 345 XF Progressor for Wood and Metal	A		**2 607 010 531**	P1k	2 2 2	1	446150	GRL	15.33
6-piece Robust Line jigsaw blade set Wood Expert									
T 308 B Extraclean for Wood T 308 BF Extraclean for Hard Wood T 301 BCP Precision for Wood T 234 X Progressor for Wood	A		**2 607 010 572**	P1k	1 1 2 2	1	475976	GRL	15.33
6-piece Robust Line jigsaw blade set Metal Profile									
T 318 AF Flexible for Metal T 318 BF Flexible for Metal T 345 XF Progressor for Wood and Metal	A		**2 607 010 573**	P1k	2 2 2	1	475983	GRL	15.79

Robust Line 6-piece jigsaw blade sets (universal shank)

Set size A:
157 x 70 x 23 mm

Product properties	Set contents	Set size	Ordering information: Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
6-piece Robust Line jigsaw blade set Progressor									
U 123 XF Progressor for Metal U 234 X Progressor for Wood U 345 XF Progressor for Wood and Metal	A		**2 607 010 532**	P1k	2 2 2	1	446167	GRL	15.33

Robust Line 10-piece jigsaw blade sets (single lug shank)

Set size C:
124 x 107 x 23 mm

Product properties	Set contents	Set size	Ordering information: Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
10-piece Robust Line jigsaw blade set Wood Expert									
T 101 AO Clean for Wood T 101 B Clean for Wood T 101 BR Clean for Wood T 101 AOF Clean for Hard Wood T 101 BF Clean for Hard Wood T 101 BRF Clean for Hard Wood T 244 D Speed for Wood T 144 D Speed for Wood T 144 DF Speed for Hard Wood T 144 DP Precision for Wood	C		**2 607 010 540**	P1k	1 1 1 1 1 1 1 1 1 1	1	446242	GRL	16.72

Set size C:
124 x 107 x 23 mm

Product properties	Set contents	Set size	Ordering information: Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
10-piece Robust Line jigsaw blade set Metal Expert									
T 118 G Basic for Metal T 118 A Basic for Metal T 118 B Basic for Metal T 118 EOF Flexible for Metal T 118 AF Flexible for Metal T 118 BF Flexible for Metal T 118 GFS Basic for Inox T 227 D Special for Alu T 127 D Special for Alu T 123 XF Progressor for Metal	C		**2 607 010 541**	P1k	1 1 1 1 1 1 1 1 1 1	1	446259	GRL	18.57

Robust Line 10-piece jigsaw blade sets (single lug shank)

Set size C:
124 x 107 x 23 mm

Product properties	Set contents	Set size	Ordering information: Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
10-piece Robust Line jigsaw blade set Wood and Metal									
T 244 D Speed for Wood		C	**2 607 010 542**	P1k	1	1	446266	GRL	16.25
T 144 D Speed for Wood					1				
T 101 AO Clean for Wood					1				
T 101 B Clean for Wood					1				
T 101 AOF Clean for Hard Wood					1				
T 101 BF Clean for Hard Wood					1				
T 118 EOF Flexible for Metal					1				
T 118 AF Flexible for Metal					1				
T 118 BF Flexible for Metal					1				
T 123 XF Progressor for Metal					1				
10-piece Robust Line jigsaw blade set Top Expert									
T 130 RIFF Special for Ceramics		C	**2 607 010 574**	P1k	1	1	475990	GRL	24.62
T 118 AHM Special for Inox					1				
T 141 HM Special for Fiber and Plaster					1				
T 101 A Special for Acrylic					1				
T 113 A Special for Soft Material					1				
T 101 BF Clean for Hard Wood					1				
T 101 BIF Special for Laminate					1				
T 118 AF Flexible for Metal					1				
T 227 D Special for Alu					1				
T 123 XF Progressor for Metal					1				

10-piece jigsaw blade sets (single lug shank)

Product properties	Set contents	Ordering information: Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
10-piece jigsaw blade set Wood Basic								
T 119 BO Basic for Wood		**2 607 010 629**	P1k	2	1	579353	GAZ	11.70
T 119 B Basic for Wood				4				
T 111 C Basic for Wood				4				
10-piece jigsaw blade set Wood/Metal Basic								
T 119 BO Basic for Wood		**2 607 010 630**	P1k	2	1	579360	GAZ	14.93
T 119 B Basic for Wood				2				
T 111 C Basic for Wood				2				
T 218 A Basic for Metal				1				
T 118 G Basic for Metal				1				
T 118 A Basic for Metal				1				
T 118 B Basic for Metal				1				
10-piece jigsaw blade set Metal Basic								
T 218 A Basic for Metal		**2 607 010 631**	P1k	2	1	579377	GAZ	20.26
T 118 G Basic for Metal				2				
T 118 A Basic for Metal				3				
T 118 B Basic for Metal				3				

Accessories for **jigsaws**

Anti-splinter guard for jigsaws

► The anti-splinter guard effectively prevents tearing out on the top of the material. All you have to do is insert it into the sole plate. Another **tip:** It is best to saw with or diagonal to the grain

Anti-splinter guard
Appropriate for GST 14,4 V; GST 18 V; GST 75 BE; GST 80 Professional; PST 650; PST 650 L; PST 680 E; PST 680 EL; PST 700 PE; PST 800 PEL; PST 900 PEL; PST 1000 CE

Product properties	Ordering information							
	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
	2 607 010 079	C1d	5	5	006651	GAT	4.09

Anti-splinter guard
Appropriate for GST BCE; GST 150 CE Professional

	2 601 016 096	P1d	5	5	516297	GAT	4.89

Plastic plate for sole plate for jigsaws

► The interchangeable plastic plate ensures good movement on different materials

Plastic plate for sole plate
Appropriate for PST 700 PAE; PST 800 PAC

	2 601 099 040	P1d	1	1	073851	GAT	8.06

Dust extraction

Dust extraction set
Appropriate for GST BCE; GST 150 CE Professional

	2 605 510 294	P1d	1	1	516280	GAT	7.36

Parallel guide with circle cutter

Product properties	Ordering information	Part number	Packaging type	Pack quantity	Minimum order quantity	Barcode 3165140...	Discount group	List Price ex vat
	Parallel guide with circle cutter **Appropriate for** GST 14,4 V; GST 18 V; GST 24 V; GST 75 BE; GST 120 E; GST 135 BCE; GST 135 CE; GST 150 BCE; GST 150 CE Professional; PST 650; PST 650 L; PST 680 E; PST 680 EL; PST 700 E; PST 700 PE; PST 800 PEL; PST 900 PEL; PST 1000 CE; PST 1000 PEL	**2 608 040 289**	P1d	1	1	516273	GAT	11.12

Universal cutting oil and screwdriver

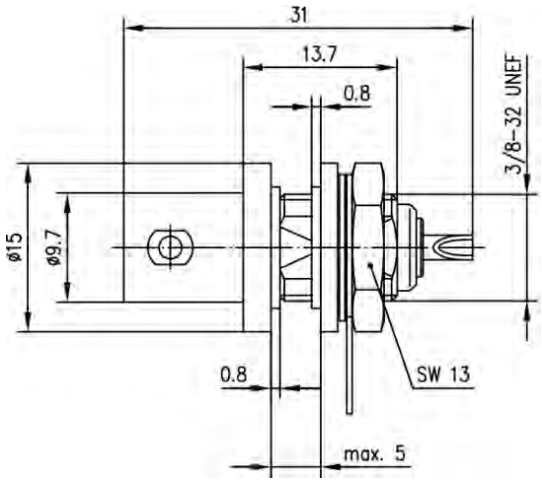
► Universal cutting oil in a spray can increases the lifetime of the tool by up to +30%, whilst also increasing the cutting speed

	Universal cutting oil Using the universal cutting oil increases the lifetime several times over when cutting in metal	**2 607 001 409**	M0b	1	1	271240	GAT	6.77
	Screwdriver **Appropriate for** all jigsaws without SDS system	**1 609 200 265**	C1d	1	1	004497	GAT	2.91

Telegärtner
KARL GÄRTNER GMBH

order number: J01003D1286

BNC Bulkhead Socket, insulated with blue insulating washers



Technical Attributes	
Z	75 Ω
Remarks	with blue insulating washers
Mount. dim.	Z03
Series	
Finish	

Product description

The BNC series is the most commonly used coax connector. With its bayonet coupling mechanism this connector can be used up to 4 GHz. Both 50 and 75 Ω impedances are available. Connector styles are available for flexible, conformable and semi-rigid cable types. Versions of the BNC connector are available for mounting to printed circuit boards using both through-hole soldered and through-hole press-fit techniques. Both crimp and clamp cable termination processes are used for this series. BNC connectors are used for signal, data and video transmission applications.

Mating face sealing for BNC connectors between plug and jack (mated) according to IP 54. The classifications are general statements for the relevant series. Individual connectors may deviate from the values shown. If in doubt, please consult our engineers.

Mechanical Characteristics	
Durability (mating cycles)	≥ 500
Material: spring contacts	CuBe2; CuPb1.15Ni1

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Lerchenstr. 35, D-71144 Steinenbronn, Tel. +49 (0) 7157 125 100, Fax +49 (0) 7157 125 120, E-Mail: info@telegaertner.com

Material: outer conductor	CuZn39Pb3
Material: other metal parts	CuZn39Pb3
Material: insulators	PTFE; PE PTFE; PE
Material: gaskets	Silicone Silicone
Finish: Inner conductor	Cu1Ni2Au0.8
Finish: Outer conductor	Cu2Ni5 (Nickel); Ag2CuSnZn0.5 (Optargen)
Finish: Other metal parts	Cu2Ni5

Climatic Characteristics	
Climatic category acc. to IEC 60068 - 1	
Types with PTFE insulator	40/155/21
Types with PE insulator	40/75/21

Electrical Characteristics	
Contact resistance inner conductor	≤ 20 mΩ
Contact resistance outer conductor	≤ 5 mΩ
Insulation resistance	≥ 5 GΩ
Voltage proof	1.5 kVeff/50 Hz
Impedance	50 Ω/(75 Ω)
Return loss: Straight style	≥ 20 dB/3 GHz (50 Ω types)
Return loss: Angle style	≥ 17.7 dB/3 GHz (50 Ω types)
Working voltage	≤ 500 Veff/50 Hz
Frequency range up to	4 GHz

Standards	
IEC 61 169-8	

Note

Combination connectors and cable clamps can be utilised to create a further number of BNC connector variations.

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Datasheet

Stock No: 770-721

ENGLISH

RS Pro Beige Polyetheretherketone (PEEK) Rod, 300mm x 50mm Diameter

Product Details:

Victrex® PEEK 450G

Typical applications include valve seats in steam and water mixers, components in a high temperature diesel engine turbo actuators etc.

- Continuous working temperature approximately 250°C
- No significant degradation in steam or high pressure water environments
- Can absorb over 1000 Mrads of radiation without appreciable loss of mechanical properties
- Excellent resistance to a wide range of organic and inorganic liquids, and resistant to all common solvents
- Fawn in colour

ENGLISH

Max Service Temperature (Long Term)	260°C
Elongation	5 %
Tensile Strength MPa	92
Hardness (Rockwell-Shore D)	M99 (Rockwell)
Flammability Rating	UL 94 V-0
Water Absorption	0.5 %

Note: No. Per Lot is 1
®Victrex is a registered trade mark of Victrex Ltd

PEEK
PEEK (Polyetheretherketone) high performance thermoplastics are chemical, abrasion and impact resistant. They possess good machine ability and self-lubricating properties.

Specifications:

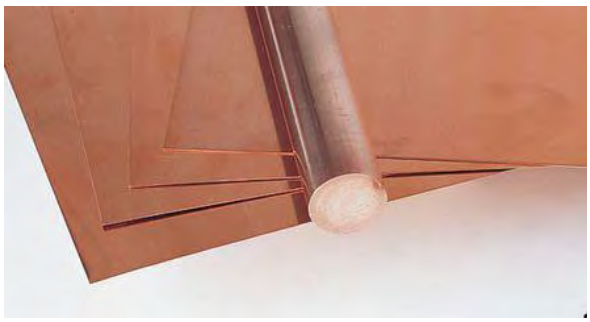
Colour:	Beige
Length:	300mm
Material:	PEEK
Form:	Rod
Rod Diameter:	50mm
Density:	1.32g/cm³
Tensile Strength:	95 MPa
Flammability Rating:	UL 94 V-0
Hardness:	M 99 Rockwell
Water Absorption:	0.5%
Maximum Operating Temperature:	+260°C
Elongation:	25%

Datasheet

Stock No: 684-282

ENGLISH

RS Pro Copper Rod, 1000mm x 20mm Diameter



Product Details:

Copper HDHC Rod, Bar & Sheet

A high conductivity, corrosion resistant, malleable copper in rod, bar and sheet form.

Chemical analysis:	
Copper	99.90
Lead	0.005
Bismuth	0.001
Tensile Strength:	
Sheet	240N/mm^2
Half Hard	240N/mm^2

Standards

BS2874/C101 (1986), BS EN 12164 CW 004A

Specifications:

Material:	Copper
Form:	Rod
Length:	1000mm
Rod Diameter:	20mm
Tensile Strength:	240 N/mm²

Datasheet

Stock No: 264-6872

ENGLISH

RS Pro 1500mm x 1/4in Diameter 316 Stainless Steel Rod

Product Details:

316 Stainless Steel Rod and Sheet

- Properties C = 0.08 maximum, Ni 12.0, Cr17, Mo 2.25
- Related specifications AS2837-1986-316, AISI TYPE 316, ASTM A276-316
- Used particularly in the chemical and allied industries, especially in conditions of pit-type corrosion

Note: All dimensions are nominal.

Rod, Sheet & Tube - Grade 316 (A4)

Austenitic stainless steels which are highly resistant to corrosion due to their Molybdenum content. They are non-magnetic and suitable for applications such as photographic, food, chemical and marine equipment.

Specifications:

Material:	316 Stainless Steel
Form:	Rod
Length:	1500mm
Outer Diameter:	1/4in

Kimberly-Clark PROFESSIONAL | Exceptional Workplaces

Product Data Sheet for 7557

Product Information

Product Long Code	07557000
Customer Facing Code	7557
Description	KIMTECH SCIENCE* Delicate Task Wipes - 100 sheets / White
PDS Reference	07/12/2015

Packaging Configuration

Case Contents	24 Cartons x 100 Sheets = 2400 Sheets
Outer Pack Material	Corrugated
Commodity Code	48189090

Dimension			
21.00	x	20.50	Length x Width(cm)

Product Description

A range of high-performance wiper solutions, suitable for ISO Class 4 or higher laboratory environments.

Ideal for: cleaning of delicate glassware, instruments and surface/parts; wiping liquids, with multi-ply absorbency and low lint content for intricate dusting.

Available as: 100 or 200 format, white paper wipers, dispensed from a POP-UP Box flexible system, giving controlled access to hygienically protected wipers when you're cleaning or wiping on the move.

Product Specifications

Fold Type	I	**Impregnated**	No
Bar Code (Case)	05027375049934	**Bar Code (Pack)**	5033848037353
Virgin Fibre(%)	100	**Bleaching Method**	Elemental Chlorine Free
Technology	Light Dry Crepe (LDC)	**Colour**	White

International Standards and Symbols

Solution

Safer Workplace	We know staff safety is your top priority. You can rely on our solutions to protect them, their environment and your important work.
Productive Workplace	The success of your business hinges on your work efficiency. That's why our solutions are designed to help improve your productivity.

Product Data Sheet for 7557

Packaging

Unit Of Sale	Case	**Net Weight(kg)**	2.823
Max Weight(kg)	4.38	**Case Dimension (LXWXH)(cm)**	40 x 24 x 35
Inner Pack Material	Cartonboard		

Pallet Type	LxWxH (m)	Cases per Layer	Layers per Pallet	Cases per Pallet
A2	1.20 x 1.00 x 1.20	13	3	39

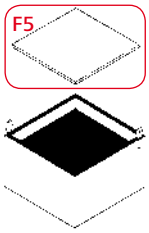
Information

It is the employer's responsibility to assess the risk of the task to be undertaken and determine the correct choice of wipers for the task. The manufacturer, Kimberly-Clark, does not accept any responsibility for the incorrect choice or misuse of wipers shown in this brochure. All care has been taken to ensure that the information contained herein is as accurate as possible at the time of publication, however errors may occur and legislation concerning personal protective equipment is under constant review and may change in the lifetime of this brochure. Accordingly, the specifications for the products may be subject to change. We would advise you to contact INFOFAX if you have any queries concerning the products shown or the suitability of such products for the particular task.Always dispose of used protective equipment in a safe and appropriate manner in accordance with European, National and Local environmental regulations

Infofax Details	infofax@kcc.com	**Websites**	www.kcprofessional.co.uk
Customer Service Number	For more information please contact Customer Service during regular office hours-0870 551 044		
Country of Origin	FRANCE		

(Code=07557000/LN=01/Country=GB/Type=C)

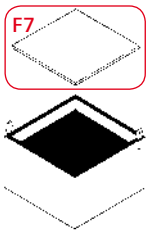
Fine dust filter M 5



- For WFE 2S, Zero Smog 4V
- 10 pieces

Order-no.	Description
T005 87 359 37	Fine dust filter for WFE 2S, Zero Smog 4V

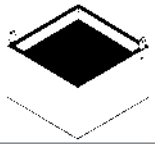
Fine dust filter F 7



- For WFE 2S, Zero Smog 4V
- 10 pieces

Order-no.	Description
T005 87 359 38	Fine dust filter for WFE 2S, Zero Smog 4V

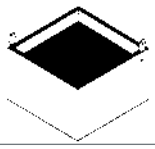
Compact filter



- For WFE 2S, Zero Smog 4V

Order-no.	Description
T005 87 359 36	Compact filter for WFE 2S, Zero Smog 4V, HEPA filter E 12 EN 1822 and 50% active carbon, 50% Puratex

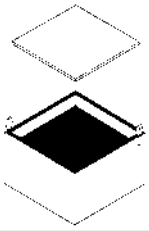
Wide band gas filter



- For WFE 2S, Zero Smog 4V

Order-no.	Description
T005 87 358 95	Compact filter for adhesive fume, wide band gas filter (50% active carbon, 50% Puratex)

Filterset E 12

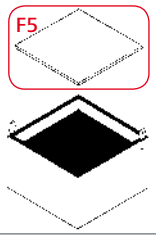


- For WFE 2ES, WFE 2CS

Order-no.	Description
T005 87 627 01	Filterset E 12 with 10 Prefilter M 5, HEPA Filter E 12, wide band gas filter (10% active carbon)

Fine dust filter M 5

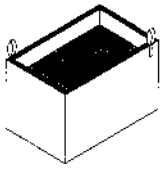
- For WFE 2ES / CS
- 10 pieces



Order-no.	Description
T005 87 627 03	Fine dust filter M 5

Compact filter

- For WFE 2X



Order-no.	Description
T005 36 590 99	HEPA Filter E 12, wide band gas filter (50% active carbon / 50% Puratex)

Pocket filter F 7

- For Pre filter box WFE 2X

Order-no.	Description
T005 87 627 58	Pocket filter for Pre filter box for WFE 2X

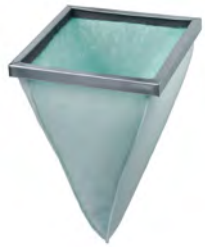
Pocket filter F 7

- For Pre filter box
- For WFE 2S / 4S, Zero Smog 4V

Order-no.	Description
T005 87 358 60	Pocket filter F 7. For applications with a high fine dust rate.

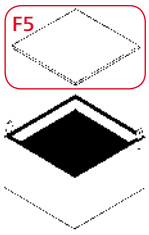
Filtring ash

- For Pre filter box
- For WFE 2S / 4S, Zero Smog 4V



Order-no.	Description
T005 87 359 24	Filtering fine dust for sticky particles (e.g. large quantities of liquid flux)

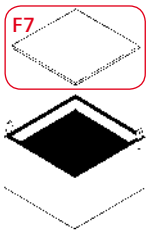
Fine dust filter M 5



- For WFE 20D and WFE 4S
- 10 pieces

Order-no.	Description
T005 87 358 37	Fine dust filter M 5

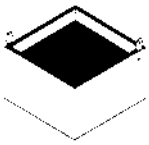
Fine dust filter F 7



- For WFE 20D and WFE 4S
- 10 pieces

Order-no.	Description
T005 87 358 36	Fine dust filter F 7

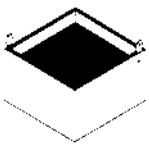
Compact filter



- For WFE 20D and WFE 4S

Order-no.	Description
T005 87 358 38	Compact filter HEPA filter E 12, wide band gas filter (50% active carbon, 50% Puratex)

Adhesive fume filter



- For WFE 4S
- For adhesive fumes

Order-no.	Description
T005 87 358 35	Compact filter for adhesive fumes, wide band gas filter (50% active carbon, 50% Puratex)

Pipe System 75 Volume Extraction

Volume extraction systems require a large volume of air to be extracted and the level of vacuum is of lesser importance. This means that a relatively large diameter pipe system is required. If the pipe diameter was too small the flow resistance would increase and extraction capacity reduced. The pipe system 75 allows installations up to 30 m with the WFE 4S uses in a stand alone system. The pipe sections are designed to stick together and have internal sealing bushes. *PEHD = Polyethylen high density, PE = Polyethylen.

Pipe 2m

Order-no.	Description
T005 87 358 70	Pipe 2 m, with seal at one end, plastic, PEHD black

Right angle pipe 90°

Order-no.	Description
T005 87 358 69	Right angle pipe, 90°, 0,2 m, with seal at one end, plastic, PEHD black

T-piece 2 x 90°

Order-no.	Description
T005 87 358 71	T-piece, 2 x 90°, 0,5 m, with 3 seals, plastic, PEHD black

End seal

Order-no.	Description
T005 87 358 55	End seal, PE, transparent

Pipe clamps

Order-no.	Description
T005 87 358 64	Pipe clamps, PE, grey

Adapter

Order-no.	Description
T005 87 358 63	Adapter PEHD pipe system 75 to pipe system 50, with seals 2 seals
T005 87 358 56	Adapter PEHD pipe system 75 to pipe system 50, without seals

ENGLISH

Datasheet

RJ45 FTP Grey Patch Lead

RS Stock number 333-6605

Specifications:

Length:	10m
Material:	PVC Sheath
Gauge:	AWG26
Impedance:	100Ω
Genre:	male/male
Colour:	Grey
Format:	No
Connectivity:	RJ45
Category:	Cat5e
Armouring:	No
Cabling:	Standard Right 568
Overmoulding:	Yes

RS, Professionally Approved Products, gives you professional quality parts across all products categories. Our range has been testified by engineers as giving comparable quality to that of the leading brands without paying a premium price.

ENGLISH

Datasheet

RS Pro RS Series Axial Carbon Resistor 3.3kΩ ±5% 0.5W - 500 → +350ppm/°C

RS Stock No: **707-8265**

Product Details

RS Pro axial carbon resistor with ±5% tolerance, provides 3.3 kΩ resistance and is power rated at 0.5 W. The temperature coefficient of resistance is in the range -500 to +350 ppm/°C. Carbon film axial leaded resistor offers excellent long-term stability. It features standard solder-plated copper leads. Applications include automotive, telecommunication and medical equipment. A comprehensive range of high stability carbon film resistors are qualified and tested to the requirements of IEC 115 and IEC 115-2. The ruggedized welded cap and lead method of manufacture provides a considerable strength and resistance to damage. The coating materials and the colour bands are epoxy resin and are highly resistant to solvents, abrasion and chipping. Improvements in materials and processing have allowed the rated power to be improved. Excellent stability against changes in load conditions or moisture levels, with a low noise level and high reliability make these carbon film resistors suitable for a wide range of applications. Rated at 70°C in free air mounted horizontally.

Features and Benefits

- Available in resistances from 1 Ω to 9.1 mΩ
- Resistor body: 2.3 mm diameter, 6.3 mm length
- Long-term stability
- Solder plated copper leads

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Specifications:

Case Style	Ceramic
Diameter	2.3 mm
Dimensions	2.3 (dia.) x 6.3 mm
Lead Diameter	0.55 mm
Length	6.3 mm
Maximum Operating Temperature	+155°C
Maximum Temperature Coefficient	+350 ppm/°C
Minimum Operating Temperature	-55°C
Minimum Temperature Coefficient	-500 ppm/°C
Power Rating	0.5 W
Resistance	3.3 kΩ
Technology	Carbon Film
Temperature Coefficient	-500 to +350 ppm/°C
Termination Style	Axial
Tolerance	±5%
Lead Length	28 mm
Maximum Operating Voltage	300 V
Maximum Overload Voltage	500 V

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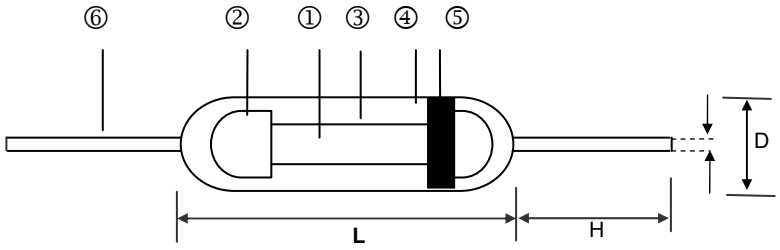
Carbon Film Leaded Resistor - RS Series



①	Ceramic Rod	④	Non-flame Paint With Sol Vent-proof
②	Tinned Iron Caps	⑤	Colour Code
③	Carbon Film	⑥	Lead Wire

■Dimensions

Unit: mm

Type	L	D	H	d	Weight (g) (1000pcs)
Carbon 0.125W	3.3+0.4/-0.2	1.8±0.3	29.3±2.0	0.452.3±0.03	92
Carbon 0.25W	6.3±0.5	2.3±0.3	28±2.0	0.55±0.03	155
Carbon 0.5W (H)	6.3±0.5	2.3±0.3	28±2.0	0.55±0.03	155
Carbon 1W (H)	9.0±0.5	3.2±0.5	26±2.0	0.65±0.03	352
Carbon 2W (H)	11.5±1.0	4.5±0.5	35±2.0	0.78±0.03	775

■Part Numbering

RS-	Carbon-	1R-	5%-	0.125W
Series				Power rating @ 70℃
	Carbon Carbon(H)	0.5R: 0.5 Ω	±5%	0.125W

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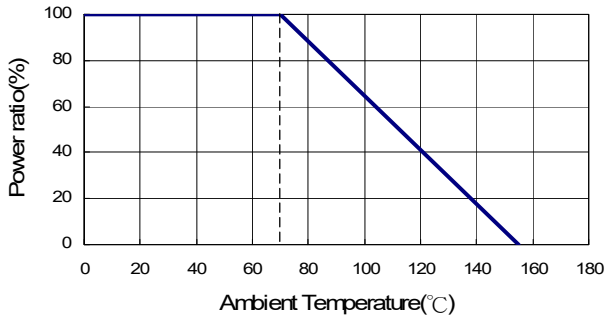
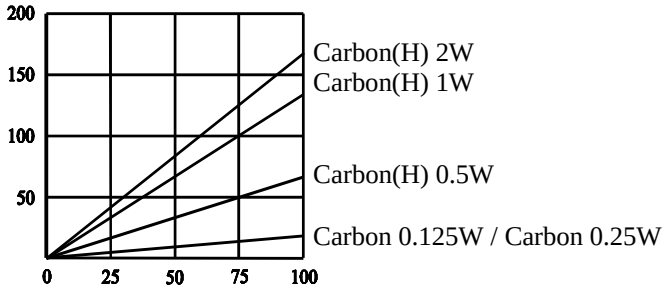
■Derating Curve



■Hop-Spot Temperature



■Environmental Characteristics

Item	Requirement	Test Method
Short Time Overload	±(0.75%+0.05Ω)	**JIS-C-5201-1 5.5** RCWV*2.5 or Max. overload voltage for 5 seconds
Insulation Resistance	＞1000MΩ	**JIS-C-5201-1 5.6** Apply 100V_{DC} for 1 minute
Endurance	±(3%+0.05Ω)	**JIS-C-5201-1 7.10** 70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	˜100K Ω±3% ˜100K Ω±5%	**JIS-C-5201-1 7.9** 40±2°C, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Solderability	90% min. Coverage	**JIS-C-5201-1 6.5** 245±5°C for 3 seconds
Dielectric Withstanding Voltage	By Type	**JIS-C-5201-1 5.7** Apply Max. Overload Voltage for 1 minute
Temperature Coefficient	< 100KΩ +350ppm~-500ppm 100KΩ~1MΩ -0ppm~-700ppm > 1 MΩ -0ppm~-1500ppm	Resistance value at room temperature and room Temperature+100˚C
Pulse Overload	±(1%+0.05Ω)	**JIS-C-5201-1 5.8** 4 times RCWV for 10000 cycles with 1 second "ON" and 25 seconds "OFF"
Resistance To Solvent	No deterioration of coatings and markings	**JIS-C-5201-1 6.9** Trichroethane for 1 min. with ultrasonic
Terminal Strength	Tensile: ˜2.5 kg	Direct Load for 10 seconds In the direction off the terminal leads

■ **Rated Continuous Working Voltage(RCWV) = $\sqrt{P*R}$**
■ **Storage Temperature: 25±3°C; Humidity < 80%RH**

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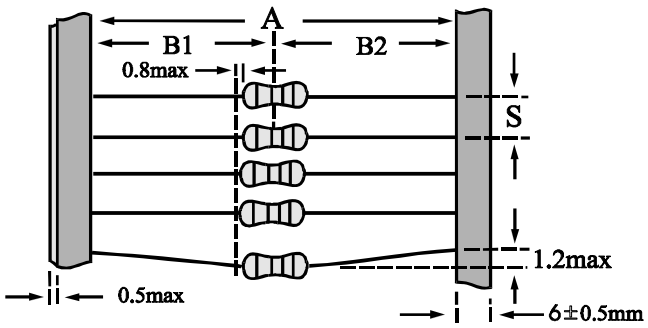
■Electrical Specifications

Item / Type	Power Rating at 70°C	Operating Temp. Range	Max. Working Voltage	Max. Overload Voltage	Dielectric Withstanding Voltage	Resistance Range ±5%
Carbon	0.125W	-55 ~ +155°C	150V	300V	300V	0.1Ω - 22MΩ
Carbon	0.25W		250V	500V	500V	1Ω - 10MΩ
Carbon(H)	0.5W		300V	500V	500V	0.1Ω - 22MΩ
Carbon(H)	1W		400V	800V	800V	1Ω - 10MΩ
Carbon(H)	2W		500V	1000V	1000V	0.1Ω - 10MΩ

■Taping/Packing Specifications

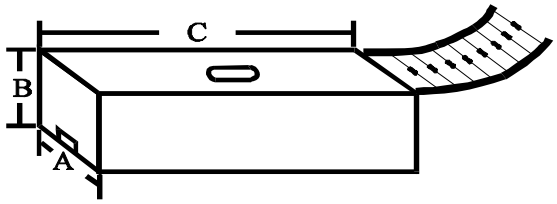
Packing Methods (Ammo)



Unit: mm

Packaging / Type	Packing Methods A	B1-B2	S
Carbon 0.125W	52+1/-0	1.2	5
Carbon 0.25W	52+1/-0	1.2	5
Carbon 0.5W (H)	52+1/-0	1.2	5
Carbon 1W (H)	52+1/-0	1.5	5
Carbon 2W (H)	52+1/-0	1.5	10

Ammo Packing



Unit: mm

Packaging / Type	Packing Methods A	B1-B2	S	Ammo Packing A	B	C	Qty
Carbon 0.125W	26+1/-0	1.0	5	80	105	264	5,000
Carbon 0.25W	26+1/-0	1.0	5	80	105	264	5,000
Carbon 0.5W (H)	26+1/-0	1.0	5	80	105	264	5,000
Carbon 1W (H)	73+1/-0	1.5	5	103	82	265	1,000
Carbon 2W (H)	73+1/-0	1.5	10	103	96	265	1,000

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■Marking & Resistance Tolerance

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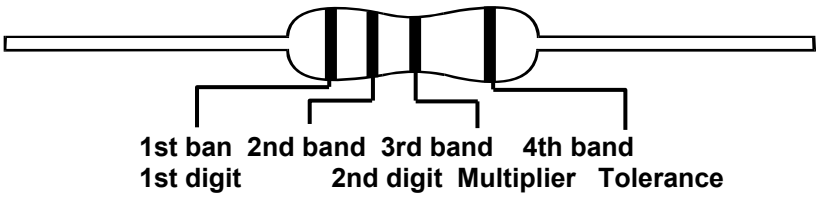

±5%	E-24	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.2	2.4	2.7	3.0	3.3	3.6	3.9	4.3	4.7	5.1	5.6	6.2	6.8	7.5	8.2	9.1

Cold	Digit	Multiplier	Tolerance	
	-	-	-	-
	-	10^{-2}	-	-
	-	10^{-1}	±5.0%	J
	0	10^{0}	-	-
	1	10^{1}	-	-
	2	10^{2}	-	-
	3	10^{3}	-	-
	4	10^{4}	-	-
	5	10^{5}	-	-
	6	10^{6}	-	-
	7	10^{7}	-	-
	8	10^{8}	-	-
	9	10^{9}	-	-

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Data sheet
PTMTCA7

RS Stock No. 8240644

RS Stock No. 8240644

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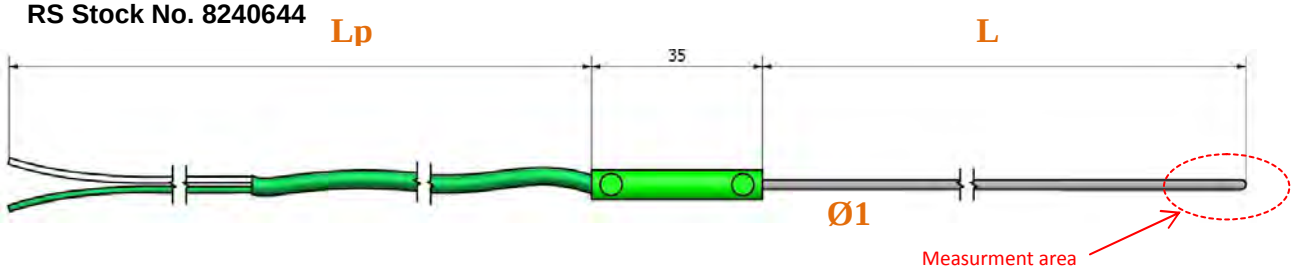

THERMOCOUPLES SHEATHED WITH MINERAL INSULATION FLEXIBLE CABLE END

RANGE :

- -50°C / +1200°C

USE :

- Universal

KEY POINT :

- Economic

SPECIFICATIONS :

- Thermocouple K type (Chromel – Alumel)
- Hot junction ungrounded
- Sheath material: Alloy 600 for 1 and 1.5mm, 310SS for Ø 3 mm
- Cable insulation : PVC/PVC
- Mineral pressed insulation
- Bendable
- Overmould transition unanswerable, Ambiante temperature : -50°C/+100°C

DIMENSIONS :

- Sheath length - L = 150mm
- Sheath diameter = - ØD = 1mm
- Cable length = Lp (1 meter for Ø 1 and 1.5mm, 2 meters for Ø 3 mm)
- Transition housing = Ø 6 per length 35mm

METROLOGICAL DATA :

- As per IEC 584
  Standard tolerance TC "K" class 1 :
  -40°C < t°< +375°C = ± 1,5°C
  375°C < t°< +1000°C= ±0.004. [t]
- Time constant in water: Time constant in water: <5 s for Ø 3 mm, <2 s for Ø 1.5mm and 1mm
- Output signal FEM (mV) as per curve of "K" type as per norm

Other dimensions:

L / ØD	100mm	150mm	250mm	500mm	1000mm	1500mm	2000mm
1mm	8240635	8240644	8240647	8240641	8240650		
1,5mm		8240653	8240657	8240666	8240669	8240663	8240672
3mm		8240675	8240679	8240688	8240681	8240685	8240694

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Data sheet
PTMTCA7

RS Stock No. 8240647
RS Stock No. 8240647

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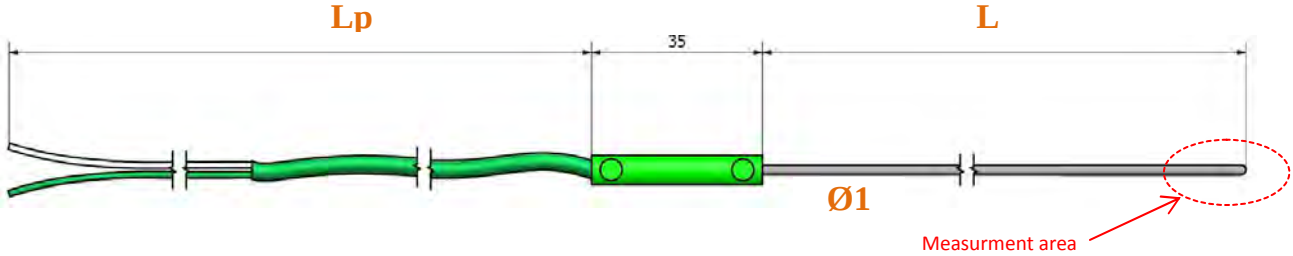

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- Hot junction ungrounded
- Sheath material: Alloy 600 for 1 and 1.5mm, 310SS for Ø 3 mm
- Cable insulation : PVC/PVC
- Mineral pressed insulation
- Bendable
- Overmould transition unanswerable, Ambiante temperature : -50°C/+100°C

DIMENSIONS :

- Sheath length - L = 250mm
- Sheath diameter = - ØD = 1 mm
- Cable length = Lp (1 meter for Ø 1 and 1.5mm, 2 meters for Ø 3 mm)
- Transition housing = Ø 6 per length 35mm

METROLOGICAL DATA :

- As per IEC 584
  Standard tolerance TC "K" class 1 :
  -40°C < t°< +375°C = ± 1,5°C
  375°C < t°< +1000°C= ±0.004. [t]
- Time constant in water: Time constant in water: <5 s for Ø 3 mm, <2 s for Ø 1.5mm and 1mm
- Output signal FEM (mV) as per curve of "K" type as per norm

Other dimensions:

ØD \ L	100mm	150mm	250mm	500mm	1000mm	1500mm	2000mm
1mm	8240635	8240644	8240647	8240641	8240650		
1,5mm		8240653	8240657	8240666	8240669	8240663	8240672
3mm		8240675	8240679	8240688	8240681	8240685	8240694

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Type LR Series

The resistive element comprises a thin film of nickel-chrome alloy evaporated onto a high thermal conductivity ceramic element. Metal end caps are force fitted to the element prior to spiralling to value. Tinned copper lead wires are welded to the end caps and the components are then coated. One coat of phenolic resin is followed by three coats of epoxy resin. All resistors are tested for value and tolerance.

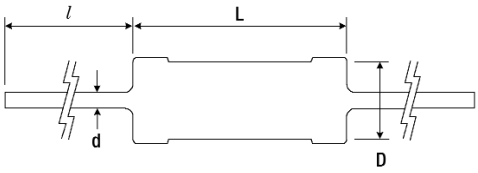
Key Features

- **Superior quality metal film resistors with 1% tolerance and temperature coefficients down to 50 ppm. 3 case sizes are available in 0.25, 0.6, 0.75W. The LR1L series is a low ohmic value range from 0.1 to 0.82 ohm. Ideally suited where low resistance and small size are required.**
- **Metal film resistors have excellent stability under load and severe environmental conditions. They exhibit very low noise current and voltage coefficients. They are available in a wide range of resistance values and are suitable for general purpose and precision applications.**

Characteristics - Electrical

	LR0204		LR1L	LR1			LR2
Rated Power @ 70 °C (W)	0.25		0.5	0.6			0.75
Resistance Range (Ohms) Min	1R0	10R	R10	1R0	10R	1M1	1R0
Max	9R1	1M0	R82	9R1	1M0	10M	1M0
Tolerance (%)	1	1	5	1 2	1 2	1 5	1 2
Code letter	F	F	J	F G	F G	F J	F G
Temperature Coefficient (ppm/°C)	± 100	± 100	± 200	± 100	± 50	± 100	± 100
Selection Series	E24	E24	E12	E24	E24	E24	E24
On Request		E96			E96		E96
Limiting Element Voltage	200		350	350			350
Max Permitted Element Voltage	200		350	350			350
Max Overload Voltage	400		500	700			700
Max Intermittent Overload Voltage	500		750	750			750
Operating Temperature Range (°C)	-55 to +155						
Climatic Category	55/155/56						
Dielectric Strength (V)	500		700	700			700
Insulation Resistance Min Dry (Mohms)	1000						

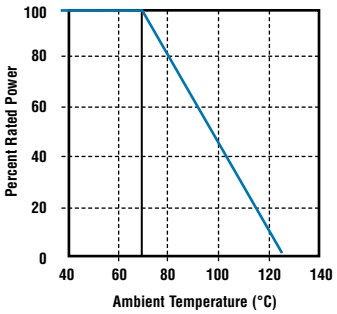
Dimensions



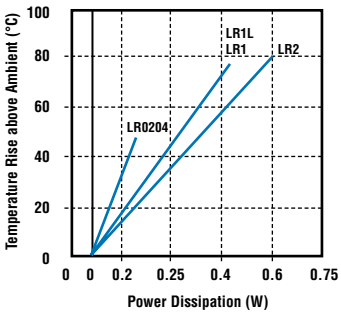
Style	L*	D	d Nom	l
LR0204	3.2 ± 0.2	1.7 ± 0.2	0.45	25
LR1L	6.2 ± 0.5	2.3 ± 0.2	0.55	25
LR1	6.2 ± 0.5	2.3 ± 0.2	0.55	25
LR2	9.7 ± 0.3	3.5 ± 0.2	0.7	25

* Length is measured in accordance with IEC 294.

Derating Curve



Surface Temperature Rise Vs Load



Metal Film Fixed Resistors

Type LR Series

Mounting

The resistors are suitable for processing on automatic insertion equipment and cutting and bending machines.

Marking

The resistors are marked with a colour band code in accordance with JIS C 0802.

Packaging

LR0204, LR1L and LR1 resistors are normally supplied taped in 'ammo' boxes of 4000 pieces. LR2 resistors are normally supplied taped in 'ammo' boxes of 1000 pieces.
Other package styles on request.
All tape specifications are in accordance with IEC 286-1.

Performance Characteristics

The evaluation of the performance characteristics is carried out with reference to IEC Specifications QC 400 000 and QC 400 100.

TEST REF	Long Term Tests ±(1% + 0.05 ohm)
4.23	Climatic sequence
4.24	Damp heat, steady state
4.25.1	Endurance at 70 °C
4.25.3	Endurance at 125 °C
TEST REF	**Short Term Tests ±(0.25% + 0.05 ohm)**
4.13	Overload
4.16	Robustness of terminations
4.18	Resistance to soldering heat
4.19	Rapid change of temperature
4.22	Vibration

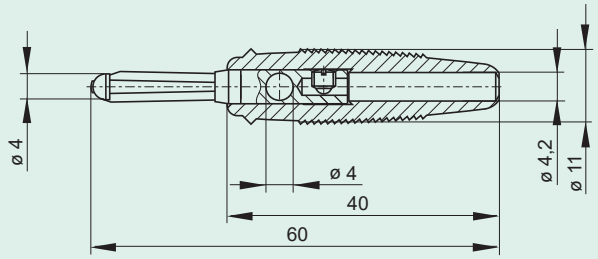
* For LR1L the limits are ± (5% + 0.1 ohm) and ± (1% + 0.05 ohm) respectively.
All resistance values are measured at a distance of 12mm from the end cap.

How to Order

LR	1	F	100R
Common Part	**Style**	**Tolerance**	**Value**
LR - Metal Film Fixed Resistor	0204 - 0.25W 1 - 0.5W 1L - 0.5W 2 - 0.75W	J - 5% G - 2% F - 1%	100 ohm (100 ohms) 100R 1K0 ohm (1000 ohms) 1K0 100K ohm (100,000 ohms) 100K

Stecker / plugs

BUELA 20 K

Produktbeschreibung	**Product description**		
Beschreibung	Description	Büschelstecker, trittfeste, biegsame Isolierhülse mit Querloch. Das sich verjüngende Hülsenende dient als Knickschutz für die Leitung. Schraubanschluss bis max. 1,5 mm² Leiterquerschnitt. Kontaktmaterial Messing vernickelt	Multiple-spring wire plug, shatterproof, flexible insulated sleeve with transverse hole. The tapering sleeve end also serves as kinking protection for the lead. Screw connection up to maximum cable cross-section of 1.5 mm². Nickel-plated brass contact material.
Typ	Type	**BUELA 20 K**	**BUELA 20 K**
Gehäusefarbe / Artikel-Nr.	Housing color / article-no.	● 930 726-100 ● 930 726-101 ● 930 726-102 ● 930 726-103 ● 930 726-104 ○ 930 726-107	
Zeichnung	**Drawing**		
			
Technische Daten	**Technical data**		
Stiftdurchmesser	Pin dimensions	4 mm	4 mm
Kontaktart	Type of contact	gefederter Stift	pin (spring-loaded)
Anschlußart	Type of termination	schrauben	screw
Bemessungsspannung	Rated voltage	30 VAC / 60 VDC	30 VAC / 60 VDC
Messkategorie lt. IEC61010	Measurement cat. acc. to IEC61010	CAT I	CAT I
Bemessungsstrom (Derating Kurve beachten)	Rated current (consider derating curve)	16 A	16 A
Durchgangswiderstand	Contact resistance	3 mOhm	3 mOhm
Werkstoff	**Material**		
Kontaktmaterial	Contact material	Messing	brass
Kontaktoberflächenmaterial	Contact surface material	Nickel	nickel
Gehäusematerial	Housing material	PVC-P	PVC-P
Umgebungsbedingungen	**Environmental condidions**		
Temperaturbereich	Temperature range	-25°C bis +70°C	-25°C to +70°C
Brennbarkeitsklassen	**Inflammability class**		
Gehäuse (Grundmaterial)	Housing (basic material)		

1182 Tape

Copper Foil Conductive Adhesive on Both Sides

Data Sheet

Product Description

3M™ 1182 Tape consists of a 1-ounce deadsoft copper foil backing that is coated on both sides with a unique electrically conductive pressure-sensitive acrylic adhesive.

- Deadsoft 1-ounce copper foil backing
- Conductive acrylic adhesive on both sides
- Supplied with removable liner on both sides for easy handling and diecutting

Like all 3M shielding tapes, 3M 1182 is available in standard and custom widths and lengths. Standard length is 18 yards.

- Widths from 1/4" to 23"
- Longer lengths up to several times normal length, dependent upon width. Check with Customer Service.

Applications

3M 1182 is typically used to bond two surfaces together, both electrically and physically. An example would be adhering a conductive gasket to a conductive surface as part of the EMI shielding solution for an electronic enclosure.

Conductivity

Since 3M 1182 double-sided copper tape would typically be used as an electrical path between two surfaces, its most important feature is its conductivity. Highly conductive particles in the acrylic adhesive provide a multitude of electrical paths between the application substrate and the surface of the copper foil on each side. The resistance of the conductive path through the adhesive (measured over a 1-in^2 area) typically measures only a few milliohms.

Properties	Typical Values
Backing thickness [1]	1.4 mil (0,04mm)
Total thickness (backing plus adhesive on both sides) [3]	3.5 mil (.088mm)
Breaking strength [1]	25 lb./in (44 N/10mm)
Adhesion to steel [1]	35 oz/in (3,8 N/10mm)
Electrical resistance through adhesive [2]	0.010 ohm
Flame retardancy [3]	Pass

* Footnote: 1. Test method ASTM D 1000
2. MIL-STD-202 Method 307 maintained at 5 psi (3,4 N/cm^2) measured over 1 in^2 surface area. Conductive particles in the adhesive provide the electrical path between the application substrate and the foil backing.
3. UL-recognized for flame retardancy per UL 510, Product Category 0ANZ2, File E17385.

3M is a trademark of 3M.

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3M

Electrical Products Division

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Austin, TX 78726-9000
800 676 8381
http://www.3m.com/elpd

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78-8124-4703-1

MDCG-4 15.3mm Sub-miniature Reed Switch

Description

The MDCG-4 Reed Switch is a sub-miniature, normally open switch with a 15.24mm long x 2.28mm diameter (0.600" x 0.090") glass envelope, capable of switching 200Vdc at 10W. It has high insulation resistance of 10^{10} ohms minimum and contact resistance less than 100 milli-ohms. This reed switch is also available in a surface mount version, that is, MDSM-4.

Features

- Sub-miniature normally open switch
- Available sensitivity 12-38 AT
- Capable of switching 200Vdc or 0.5A at up to 10W

Benefits

- Hermetically sealed switch contacts are not affected by and have no effect on their external environment
- Zero operating power required for contact closure
- Excellent for switching micro-controller logic level loads

Applications

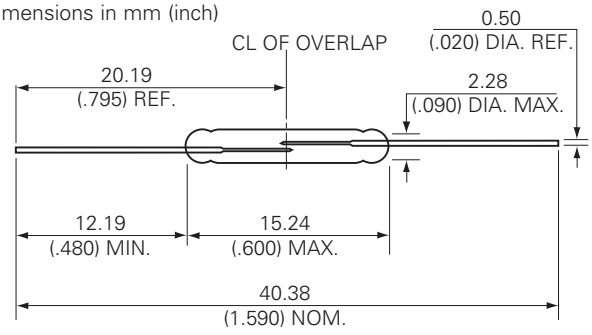
- Reed Relays
- Security
- Limit Switching
- Level Sensing
- Office Equipment
- Industrial Control

Agency Approvals

Agency	Agency File Number	Ampere-Turns Range
c UL us	E47258 E471070	12-38 AT
Ex	DEMKO 14 ATEX 1393U	12-38 AT

Dimensions

Dimensions in mm (inch)



Switch Type

Contact Form	A (SPST-NO)
Materials	Body: Glass Leads: Tin-plated Ni-Fe wire

Note: SPST-NO = Single-pole, single-throw, normally open

Electrical Ratings

Contact Rating [1]		W/VA - max.	10
Voltage [3]	Switching [2]	Vdc - max. Vac - max.	200 140
	Breakdown [4]	Vdc - min.	250
Current [3]	Switching [2]	Adc - max. Aac - max.	0.50 0.35
	Carry	Adc - max.	1.20
Resistance	Contact, Initial Insulation	Ω - max. Ω - min.	0.100 10^{10}
Capacitance	Contact	pF - typ.	0.2
Temperature	Operating Storage [5]	°C °C	-40 to +125 -65 to +125

Notes:
1. Contact rating - Product of the switching voltage and current should never exceed the wattage rating. Contact Littelfuse for additional load/life information.
2. When switching inductive and/or capacitive loads, the effects of transient voltages and/or currents should be considered. Refer to Application Notes AN108A and AN107 for details.
3. Electrical Load Life Expectancy - Contact Littelfuse with voltage, current values along with type of load.
4. Breakdown Voltage - per MIL-STD-202, Method 301.
5. Storage Temperature - Long time exposure at elevated temperature may degrade solderability of the leads.

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Specifications are subject to change without notice.

Littelfuse
Expertise Applied | Answers Delivered

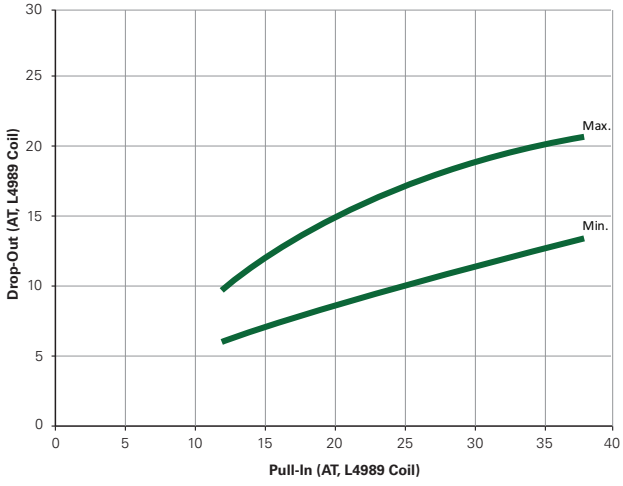
MDCG-4 15.24mm Sub-miniature Reed Switch

Product Characteristics

Operating Characteristics		
Operate Time [1]		0.6ms - max.
Release Time [1]		0.2ms - max.
Shock [2]	11ms 1/2 sine wave	100G - max.
Vibration [2]	50-2000 Hertz	30G - max.
Resonant Frequency		3.9kHz - typ.
Magnetic Characteristics		
Pull-In Range [3]	Ampere Turns	12-38
Rating Sensitivity [4]	Ampere Turns	20
Test Coil		L4989

Notes:
1. Operate (including bounce)/Release Time - per EIA/NARM RS-421-A,diode suppressed coil (Coil II).
2. Shock and Vibration - per EIA/NARM RS-421-A and MIL-STD-202.
3. Pull-In Range - Contact Littelfuse for narrower AT ranges available.
4. Rating Sensitivity - The value at which contact ratings and operating characteristics are determined. Derating may be required below this value.
5. Custom modifications of forming and/or cutting of reed switches are available. Please contact Littelfuse.

Drop-Out vs. Pull-In Chart



Note: Chart represents the range of Drop-Out, min to max for a given Pull-In value.

Part Numbering System

MDCG-4 -12-18

Series

AT Range

12-18 AT
12-23 AT
17-23 AT
17-28 AT
22-28 AT
22-33 AT
27-33 AT
27-38 AT
32-38 AT

Example:
12-18 AT product is
MDCG-4-12-18

Note: These AT values are the before-modification values of the bare reed switch.

Additional Information

Datasheet | **Resources** | **Samples**

Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code	Taping Width
Bulk	Bulk	1000	N/A	N/A

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Specifications are subject to change without notice.

ENGLISH

Datasheet

Stock No: 850-990

RS Pro 50 g Tube White Rubber & Contact Adhesive Bonding Liquid

Product Details

General Purpose Adhesive Quick-Tack

A quick-tack, high strength, one part adhesive providing a high bond strength to most common plastics, ceramics, wood, speaker-grilles, etc., found in radio and electronic equipment.

Specifications:

Application	Bonding
Product Form	Liquid
Package Type	Tube
Package Size	50 g
Maximum Operating Temperature	+90°C
Cure Time	24 h
Colour	White

ENGLISH

1m Straight Through Cat6 Ethernet Cable Assembly, U/UTP Red LSZH

RS Stock No. 556-859
Brand RS Pro

Product Details

Cat 6 LSZH Patch Leads

- Category 6 cable terminated with high grade modular plugs
- Booted strain relief gives cable support and latch protection
- LSZH outer sheath material
- Individually tested

RS Range

Specifications

Not what you're looking for? Select the attributes you require, then click the button below

Length	1m
Shield Type	U/UTP
Sheath Colour	Red
Outer Sheath Material	LSZH
Wiring Configuration	Straight Through

ACM18 Series

AC-DC Power Supplies

XP Power

18 Watt

- Energy Efficiency Level VI
- European CoC Tier 2
- Medical and ITE Approvals
- Interchangeable Mains Connectors
- Optional White Versions
- Output Voltages from 5 V to 24 V
- Class II Construction
- 3 Years Warranty

The ACM18 series of wall plug adaptors comply with the latest energy efficiency level VI standards with high active mode efficiency and extremely low no load power consumption. Available with a standard jack plug connector these adaptors suit a wide variety of cost sensitive industrial and medical applications while maintaining industry leading performance.

Dimensions:

ACM (body only):
3.46 x 1.18 x 1.95" (88.0 x 30.0 x 49.5 mm)

Models & Ratings

Output Power	Output Voltage	Output Current	Total Regulation[3]	Efficiency[4]	Model Number[1,2,5]
18 W	5.0 V	2500 mA	5%	82.5%	ACM18US05
	9.0 V	2000 mA	5%	86.7%	ACM18US09
	12.0 V	1500 mA	5%	87.5%	ACM18US12
	15.0 V	1250 mA	5%	87.5%	ACM18US15
	18.0 V	1000 mA	5%	87.5%	ACM18US18
	24.0 V	750 mA	5%	87.5%	ACM18US24

Notes

1. Model number is for body only. AC input plugs must be ordered separately, see AC input plug section.
2. Other output voltages available, contact sales for details.
3. Total regulation includes initial set accuracy, line and load regulation.
4. Typical average value measured at 115 VAC.
5. For white case version add suffix '-W' e.g. ACM18US12-W. MOQ applies, contact sales for details.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage	90		264	VAC	
Input Frequency	47		63	Hz	
Input Current			0.21	A	230 VAC
Inrush Current			70	A	240 VAC, cold start at 25 °C
Power Factor					EN61000-3-2, class A
No Load Input Power			75	mW	
Input Protection	Internal fuse in both line and neutral				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	5		24	V	See Models and Ratings table
Minimum Load	0			A	No minimum load required
Start Up Delay			4	s	
Start Up Rise Time		30		ms	
Hold Up Time	10			ms	Full load and 100 VAC
Total Regulation			5	%	See Models and Ratings table
Transient Response			4	% deviation	Recovery within <1% within 500 µs for a 60% step load change at 0.15 A/µs
Ripple & Noise			150	mV pk-pk	Measured with 20 MHz bandwidth and 10 µF electrolytic in parallel with 0.1 µF ceramic capacitor
Short Circuit Protection					Continuous, trip and restart (hiccup mode) with auto recovery
Temperature Coefficient			0.05	%/°C	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		87		%	Typical average of efficiencies measured at 25%, 50%, 75% and 100% load and 115 VAC input
Energy Efficiency					Level VI
Isolation	4000			VAC	Input to Output, 2 x MOPP
Leakage Current		30	100	µA	At 264 VAC, 60 Hz, from output to ground
Switching Frequency	24		70	kHz	Variable
Mean Time Between Failure	250			kHrs	MIL-HDBK-217F at 25 °C GB
Weight		0.18 (80)		lb (g)	Body only

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	0		+60	°C	Derate from 100% load at 40 °C to 50% load at 60 °C
Storage Temperature	-20		+85	°C	
Operating Humidity	5		90	%	RH, non-condensing
Operating Altitude			5000	m	
Cooling					Natural convection
Shock					1 m drop onto concrete on each of 6 axes, non operating
Vibration	10		300	Hz	2 g, 0.3 decades/min, 15 mins for each of 3 axes

EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55022	Level B	
Radiated	EN55022	Level B	
Harmonic Current	EN61000-3-2	Class A	
Voltage Flicker	EN61000-3-3		

EMC: Immunity

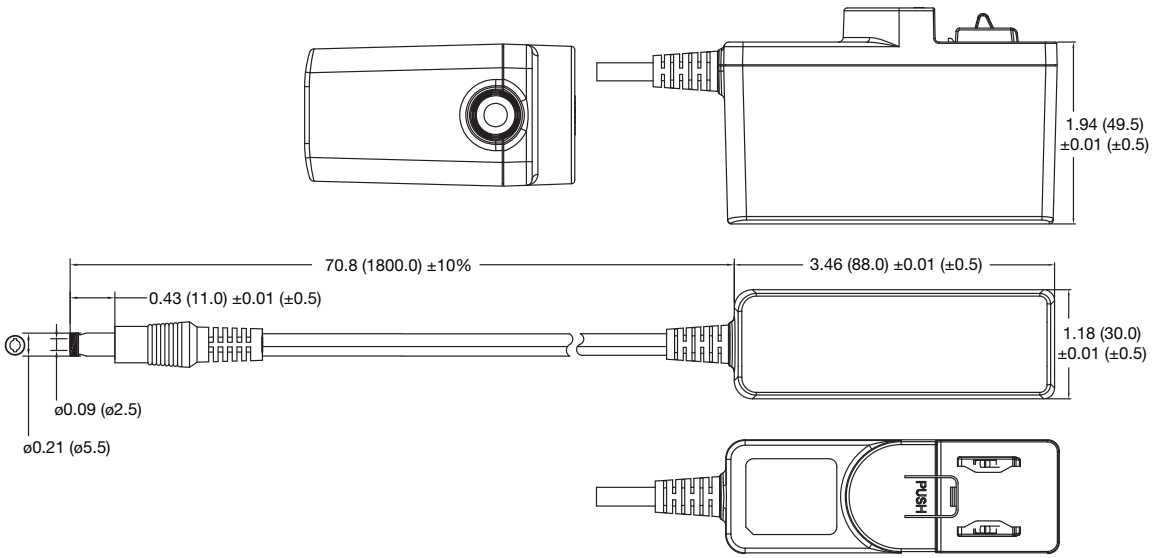
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
Medical Device EMC	IEC60601-1-2	Ed.4.0 : 2014	as below	
Low Voltage PSU EMC	EN61204-3	High severity level	as below	
ESD Immunity	EN61000-4-2	±8 kV contact, ±15 kV air	A	
Radiated Immunity	EN61000-4-3	10 V/m	A	
EFT/Burst	EN61000-4-4	Level 3	A	
Surge	EN61000-4-5	Level 3	A	
Conducted Immunity	EN61000-4-6	6 V	A	
Magnetic Fields	EN61000-4-8	30 A/m	A	
Dips and Interruptions	EN61000-4-11	Dip: 100% 10 ms	A	
		Dip: 70% 500 ms	B	
		Int: 100% 5000 ms	B	
	EN60601-1-2	Dip: 30% 25 AC Cycles	A	
		Int: 100% 0.5 AC Cycle	A	At 8 angles
		Int: 100% 1 AC Cycle	A	
		Int.: >95% 5000 ms	B	

Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
UL	UL60950-1	Information Technology
TUV	EN60950-1	
CB	IEC60950-1	
CE	LVD	
UL	ANSI/AAMI ES 60601-1	Medical, 2 x MOPP
CSA	CSA C22.2 No. 60601	
TUV	EN60601-1	
CB	IEC60601-1	

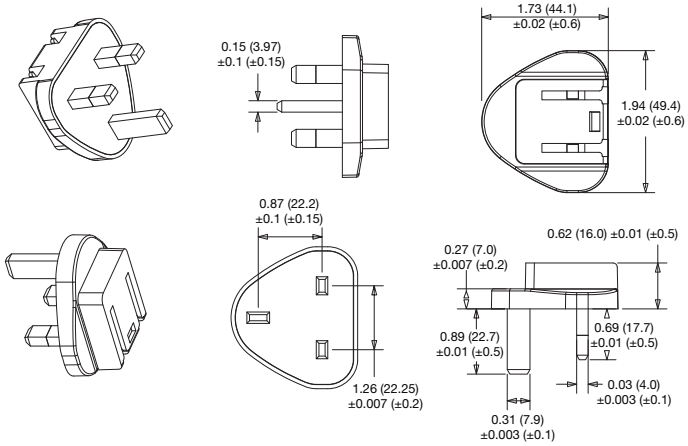
Mechanical Details

ACM18USXX

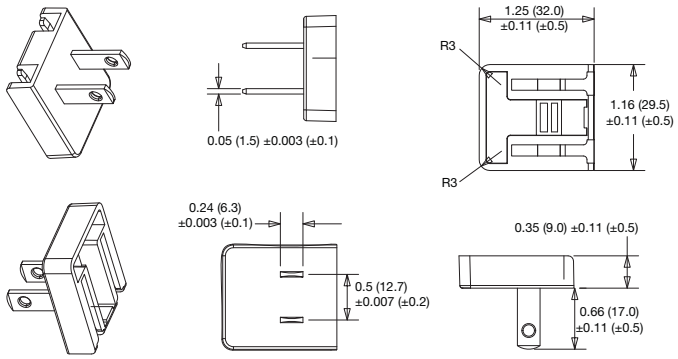


AC Input Plugs

Black UK Plug: ACM PLUG UK
White UK Plug: ACM PLUG UK W

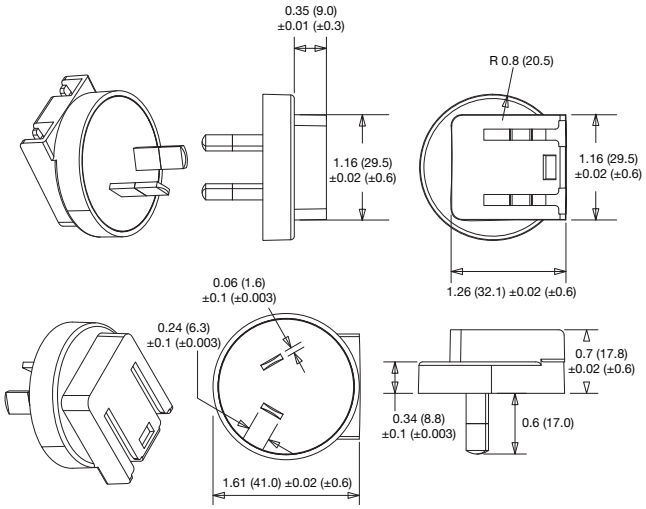


Black USA Plug: ACM PLUG US
White USA Plug: ACM PLUG US W

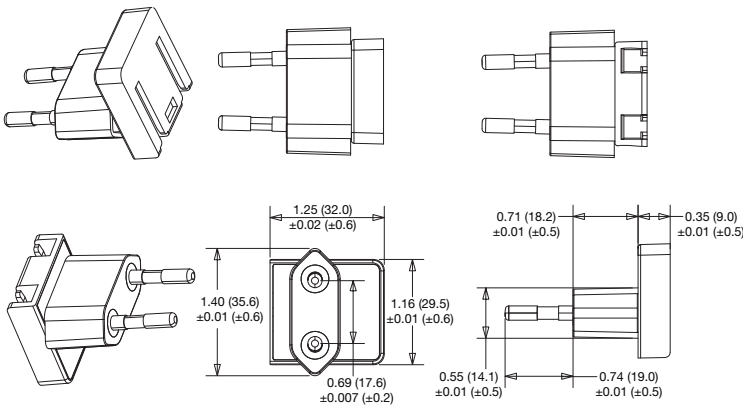


AC Input Plugs

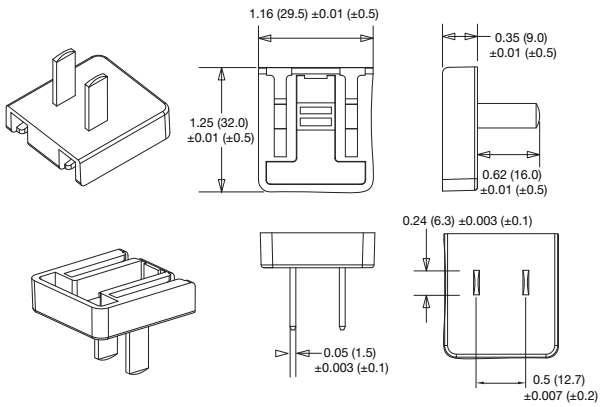
Black Australian Plug: ACM PLUG AU
White Australian Plug: ACM PLUG AU W



Black European Plug: ACM PLUG EU
White European Plug: ACM PLUG EU W



Black China Plug: ACM PLUG CN
White China Plug: ACM PLUG CN W



ENGLISH

Datasheet

Cat 6 Unscreened PVC Patch Cords

RS Stock number 557-127

Description:

Category 6 unscreened patch cord range exceeds the transmission line performance requirements of IEC and TIA for CLASS E/Category 6 systems. The patch cords are designed for mechanical and electrical reliability, using quality materials and processes, to provide a patch cord solution which delivers a consistent high level of systems performance whilst incorporating design features that allow a “one style fits all” cord application. The low profile moulded boot and snag free latching allows the cords to be deployed within even the most densely populated network installations deploying the latest blade server technology. Each Category 6 patch cords are manufactured and tested in accordance with IEC 61935-2 and comply with the requirements of ISO/IEC 11801 (2nd Edition): 2010 and supports all applications designed for CLASS E/Category 6 applications such as ATM 1200, 1000BASE-T (Gigabit Ethernet) and 1G FCBASE-T.

Applications

- Class E/category 6 standards compliant

Standards Compliance

- REACH/SvHC compliant regulation (EC) No.1907/2006

RS, Professionally Approved Products, gives you professional quality parts across all products categories. Our range has been testified by engineers as giving comparable quality to that of the leading brands without paying a premium price.

ENGLISH

Specifications:

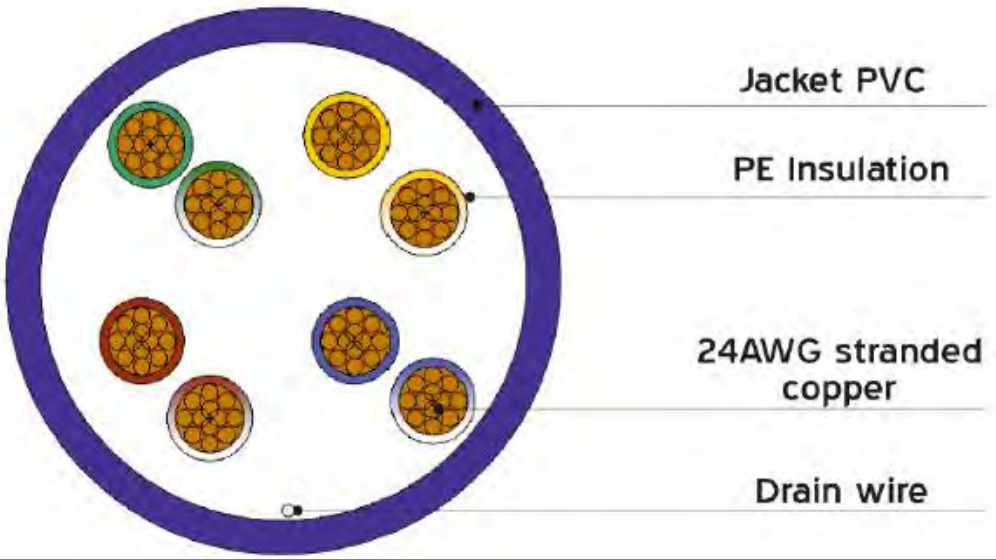
CONSTRUCTION

Conductors	AWG	26
	Size mm	7/0.20 +/- 0.008
	Material	Bare copper
Insulators	Diameter mm	0.98+/-0.05
	Material	Polyolefin
Jacket	External O.D.	6.0 +/- 0.20
	Thickness mm	0.5
	Material	PVC

Features:

- Electrically compliant beyond 250MHz
- PVC sheathed cable
- Low profile moulded strain relief boot for use with blade servers
- Integral anti-snag latch as standard
- 8 standard colours
- 7 standard lengths (1m, 2m, 3m, 5m, 10m, 15m, & 20m)
- Other lengths and colours available upon request*
- Individually bagged with traceability information
- REACH / SVHC compliant regulation (EC) No. 1907/2006

Technical Drawing:



RS, Professionally Approved Products, gives you professional quality parts across all products categories. Our range has been testified by engineers as giving comparable quality to that of the leading brands without paying a premium price.

PARATHOM Retrofit CLASSIC A

LED lamps, classic bulb shape

Areas of application

- Perfect for decorative installations
- Domestic applications
- General illumination
- Outdoor applications only in suitable luminaires

Product benefits

- Lamps with innovative LED "filament" technology
- Design, dimensions, luminous flux comparable to a halogen lamp
- Very low energy consumption
- No UV and near-IR radiation in the light beam
- Instant 100 % light, no warm-up time
- Can be easily fitted instead of ordinary light bulbs
- Lower thermal output (compared with the standard reference product)

Product features

- Professional LED lamps for line voltage
- Beam angle: up to 300°
- Not dimmable
- Base: E27
- Mercury-free lamps
- Lifetime: up to 15,000 h

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Technical data

	Electrical data		Photometrical data			Light technical data
Product description	**Nominal wattage**	**Nominal voltage**	**Nominal luminous flux**	**Rated color temperature**	**Light color (designation)**	**Warm-up time (60 %)**
P RF CLAS A 40 4 W/827 E27	4.00 W	220…240 V	470 lm	2700 K	Warm White	< 0.50 s
P CLAS A 40 4 W/827 E27	4.00 W	220…240 V	470 lm	2700 K	Warm White	< 0.50 s
P CLAS A 60 7 W/827 E27	7.00 W	220…240 V	806 lm	2700 K	Warm White	< 0.50 s
P RF CLAS A 60 7 W/827 E27	7.00 W	220…240 V	806 lm	2700 K	Warm White	< 0.50 s
P CLAS A 75 8 W/827 E27	8.00 W	220…240 V	1055 lm	2700 K	Warm White	< 0.50 s
P RF CLAS A 75 8 W/827 E27	8.00 W	220…240 V	1055 lm	2700 K	Warm White	< 0.50 s
P CLAS A 94 11 W/827 E27	11.00 W	220…240 V	1420 lm	2700 K	Warm White	< 0.50 s

		Dimensions & weight	Lifespan			
Product description	**Starting time**	**Overall length**	**Nominal lamp life time**	**Rated lamp life time**	**Number of switching cycles**	**Lumen maintenance at end of service life**
P RF CLAS A 40 4 W/827 E27	< 0.5 s	105.0 mm	15000 h	15000 h	100000	0.70
P CLAS A 40 4 W/827 E27	< 0.5 s	105.0 mm	15000 h	15000 h	100000	0.70
P CLAS A 60 7 W/827 E27	< 0.5 s	105.0 mm	15000 h	15000 h	100000	0.70
P RF CLAS A 60 7 W/827 E27	< 0.5 s	105.0 mm	15000 h	15000 h	100000	0.70
P CLAS A 75 8 W/827 E27	< 0.5 s	105.0 mm	15000 h	15000 h	100000	0.70
P RF CLAS A 75 8 W/827 E27	< 0.5 s	105.0 mm	15000 h	15000 h	100000	0.70
P CLAS A 94 11 W/827 E27	< 0.5 s	105.0 mm	10000 h	10000 h	100000	0.70

	Additional product data	Capabilities	Certificates & standards		Country specific categorizations	
Product description	**Base (standard designation)**	**Dimmable**	**Energy efficiency class**	**Energy consumption**	**ILCOS**	**Order reference**
P RF CLAS A 40 4 W/827 E27	E27	No	A++	4 kWh/1000h	DRAA/C-4/827-220-240-E27-60	LEDPCLA40 4W/82
P CLAS A 40 4 W/827 E27	E27	No	A++	4 kWh/1000h	DRAA/F-4/827-220-240-E27-60	LEDPCLA40 4W/82

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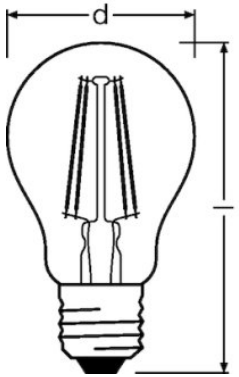
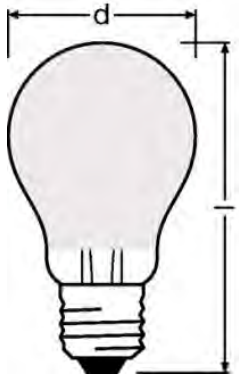
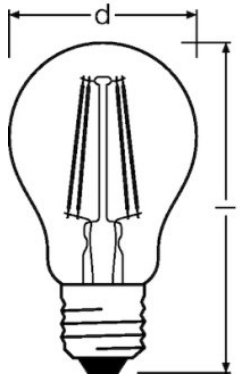
	Additional product data	Capabilities	Certificates & standards		Country specific categorizations	
Product description	**Base (standard designation)**	**Dimmable**	**Energy efficiency class**	**Energy consumption**	**ILCOS**	**Order reference**
P CLAS A 60 7 W/827 E27	E27	No	A++	7 kWh/1000h	DRAA/F-7/827-220-240-E27-60	LEDPCLA60 7W/82
P RF CLAS A 60 7 W/827 E27	E27	No	A++	7 kWh/1000h	DRAA/C-7/827-220/240-E27-60	LEDPCLA60 7W/82
P CLAS A 75 8 W/827 E27	E27	No	A++	8 kWh/1000h	DRAA/F-8/827-220-240-E27-60	LEDPCLA75 8W/82
P RF CLAS A 75 8 W/827 E27	E27	No	A++	8 kWh/1000h	DRAA/C-8/827-220/240-E27-60	LEDPCLA75 8W/82
P CLAS A 94 11 W/827 E27	E27	No	A++	11 kWh/1000h	DRAA/C-11/827-220/240-E27-60	LEDPCLA94 11W/8



P RF CLAS A 40 4 W/827 E27



P CLAS A 40 4 W/827 E27, P CLAS A 60 7 W/827 E27, P CLAS A 75 8 W/827



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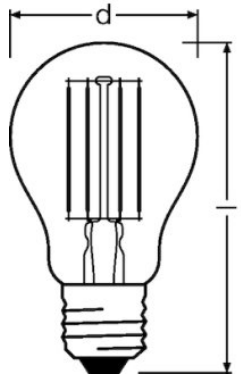

P RF CLAS A 75 8 W/827 E27

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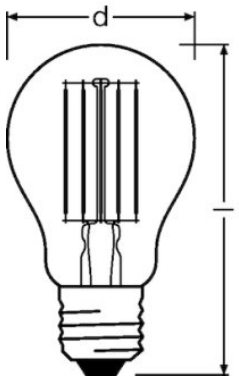
E27



P CLAS A 94 11 W/827 E27

Application advice

For more detailed application information and graphics please see product datasheet.

Logistical Data

Product code	Product description	Packaging unit (Pieces/Unit)	Dimensions (length x width x height)	Volume	Gross weight
4052899961722	P RF CLAS A 40 4 W/827 E27	Shipping carton box 10	315 mm x 131 mm x 126 mm	5.20 dm^3	553.00 g

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Product code	Product description	Packaging unit (Pieces/Unit)	Dimensions (length x width x height)	Volume	Gross weight
4058075817135	P CLAS A 40 4 W/827 E27	Shipping carton box 10	315 mm x 131 mm x 126 mm	5.20 dm^3	553.00 g
4058075817234	P CLAS A 60 7 W/827 E27	Shipping carton box 10	315 mm x 131 mm x 126 mm	5.20 dm^3	523.00 g
4052899961654	P RF CLAS A 60 7 W/827 E27	Shipping carton box 10	315 mm x 131 mm x 126 mm	5.20 dm^3	523.00 g
4058075808362	P CLAS A 75 8 W/827 E27	Shipping carton box 10	315 mm x 131 mm x 126 mm	5.20 dm^3	573.00 g
4052899961708	P RF CLAS A 75 8 W/827 E27	Shipping carton box 10	315 mm x 131 mm x 126 mm	5.20 dm^3	573.00 g
4058075817159	P CLAS A 94 11 W/827 E27	Shipping carton box 10	315 mm x 131 mm x 126 mm	5.20 dm^3	643.00 g

The mentioned product code describes the smallest quantity unit which can be ordered. One shipping unit can contain one or more single products. When placing an order, for the quantity please enter single or multiples of a shipping unit.

Disclaimer

Subject to change without notice. Errors and omission excepted. Always make sure to use the most recent release.

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3M Science. Applied to Life.™

3M™ Maintenance-Free Reusable Half Mask 4000+ Series

Technical datasheet

Product description

The 3M™ Maintenance-Free Reusable Half Masks 4000+ Series are a range of ready-to-use, maintenance-free half face masks, designed for effective and comfortable protection against many gases, vapours and combination particulate hazards.

Key features

- Disposable, maintenance-free half mask
- Twin inhalation valves and large, bonded carbon filters with permanently attached particulate filters
- Easy to use as no need for assembly, maintenance or record keeping
- Optional overspray guard (400+)

Product range and intended use

The 3M™ Maintenance-Free Reusable Half Mask 4000+ Series come in a variety of different product options:

- 3M™ 4251+ (FFA1P2 R D) provides protection against organic vapours (good warning properties and b.pt. > 65°C), up to 10x Workplace Exposure Limit (WEL) or 1000 parts per million (ppm), whichever is lower, and 10x WEL for particulates
- 3M™ 4255+ (FFA2P3 R D) provides protection against organic vapours (good warning properties and b.pt. > 65°C), up to 10x WEL or 5000 ppm, whichever is lower and 20 x WEL for particulates
- 3M™ 4277+ (FFABE1P3 R D) provides protection against organic vapours (good warning properties and b.pt. > 65°C), inorganic and acid gases up to 10x WEL or 1000 ppm, whichever is lower and 20x WEL for particulates
- 3M™ 4279+ (FFABEK1P3 R D) provides protection against organic vapours (good warning properties and b.pt. > 65°C), inorganic and acid gases and ammonia, up to 10x WEL or 1000 ppm, whichever is lower and 20x WEL for particulates

Pictured: 3M™ 4251+ (FFA1P2 R D)

Standards and approval

The 3M™ Maintenance-Free Reusable Half Mask 4000+ Series meet the performance requirements of the European Standard EN 405:2001+A1:2009 for valved filtering half-mask respirators for gases, vapours and particulate combinations.

The Certificate and Declaration of Conformity available at the following website www.3m.com\Respiratory\certs Declaration of conformity (DOC) available from www.3m.com\Respiratory\certs

Materials

Component	Material
Facemask	Thermoplastic elastomer
Head harness	Polyphenylene ether/polystyrene
Head strap	Polyisoprene/cotton
Inhalation valve	Polyisoprene
Exhalation valve	Silicone rubber
Gas and vapour filter body	Activated carbon
Particulate filter element	Polypropylene

Materials from animal origin are not intentionally added to these products

Key use limitation

1. This respirator does not supply oxygen. Do not use in atmospheres containing less than 19.5% oxygen.
2. Do not use for respiratory protection against atmospheric contaminants that have poor warning properties or are unknown or immediately dangerous to life and health (IDLH) or against contaminants which generate high heats of reaction with chemical filters.
3. Do not misuse, alter, modify or repair this product.
4. Do not use with beards or other facial hair that prevent direct contact between face and edge of the respirator.
5. Do not use with unknown concentrations of contaminants.
6. Leave the work area immediately and check the integrity of the respirator and replace face mask if:
   a. Damage has occurred or is apparent.
   b. Breathing becomes difficult or increased breathing resistance occurs.
   c. Dizziness or other distress occurs.
   d. You taste or smell the contaminant or an irritation occurs.
7. Use strictly in accordance with respirator and filter user instruction leaflet.

For full use limitations please refer to the product user instructions.

Shelf life

Shelf life*: 3 years from production date when stored at storage conditions described on packaging.

*The shelf life as defined above remains indicative and maximum data, subject to many external and non-controllable factors. It may never be interpreted as a warranty.

Important notice

The use of the 3M product, described within this document assumes that the user has previous experience of this type of product and that it will be used by a competent professional. Before any use of this product, it is recommended to complete some trials to validate the performance of the product within its expected application.

All information and specification details contained within this document are inherent to this specific 3M product and would not be applied to other products or environments. Any action or usage of this product made in violation of this document is at the risk of the user.

Compliance to the information and specification relative to the 3M product contained within this document does not exempt the user from compliance with additional guidelines (safety rules, procedures). Compliance to operational requirements especially in respect to the environment and usage of tools with this product must be observed. The 3M group (which cannot verify or control those elements) would not be held responsible for the consequences of any violation of these rules which remain external to its decision and control.

Warranty conditions for 3M products are determined with the sales contract documents and with the mandatory and applicable clause, excluding any other warranty or compensation.

Respiratory Protection is only effective if it is correctly selected, fitted and worn throughout the time when the wearer is exposed to respiratory contaminants. 3M offers advice on the selection of products, and training in the correct fitting and usage.

For more information on 3M products and services please contact 3M.

Personal Safety Division
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3M Centre
Cain Road, Bracknell
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www.3M.co.uk/4000plus

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J439823

Ficha Técnica del 7552

información sobre el producto

Código de Producto Largo	07552000
Código de Producto Corto	7552
Descripción	KIMTECH SCIENCE* Paños de Precisión - Blanco /Pequeño
PDS Referencia	11/11/2013

Dimensiones Producto

Dimensiones Caja 30 Cajas Dispensadoras x 280 paños = 8400 paños

Dimensiones		
21.30	x 11.40	Longitud x Ancho(cm)

Especificaciones Producto Terminado

Tipo de Plegado	I	**Impregnado**	No
Código de Barra (Caja)	00036000755206	**Código de Barra (Bulto)**	036000055115
Fibra Reciclada(%)	3	**Fibra Virgen(%)**	97
Método de Blanqueo	Elemental Chlorine Free	**país de origen**	UNITED STATES
Colour	Blanco		

Normas y Símbolos Internacionales

Solution

Safer Workplace

We know staff safety is your top priority.you can rely on our solutions to protect them,their environment and your important work.

Productive Workplace

The success of your business hinges on your work efficiency. Thats why our solutions are designed to help improve your productivity.

Embalaje

Unidad de Venta	Caja	**Peso Neto(kg)**	3.9
Peso Máximo(kg)	5.85	**Dimensiones Caja (LXWXH)(cm)**	38.5 x 37.3 x 24.6
Material del Embalaje Primario	Composite Paper and Plastic	**Material del Embalaje Secundario**	Papel
Código Commodity	48189090		

Tipo de Pallet	LxWxH (m)	Cajas por Capa	Capas por Pallet	Cajas por Pallet
E5	1.20 x 0.80 x 1.38	6	5	30

Ficha Técnica del 7552

información

El empleado es responsable de evaluar los riesgos de las tareas que realiza y de determinar la correcta elección paño dicha tarea. El fabricante, Kimberly-Clark, no se hace responsable de la incorrecta elección o mal uso del paño que aparece en este folleto. Se ha puesdto mucho interés en garantizar que la información que aparece sea lo más exacta posible en el momento de la publicación, sin embargo, pueden aparecer algunas erratas debido a que la legislación relativa a los equipos de protección individual está en constante revisión y puede cambiar mientras este en curso este folleto. Por lo tanto, la especificación de los productos pueden estar sujetos a cambios. Le aconsejamos que contacte con INFOFAX si usted tiene cualquier pregunta acerca de los productos mostrados o la idoneidad de dichos productos para una determinada tarea. Utilice equipos de protección de una manera segura y apropiada, de acuerdo con las normas ambientales europeas, nacionales y locales

Detalles Infofax	infofax@kcc.com	**Página Web**	www.kcprofessional.com
Número de Customer Service	Por información adicional por favor contacte con nuestro departamento de Customer Service en horario de oficina 901 810 063		

Miniature PCB Relay PCH

- **5 to 10A rating**
- **1 form A (NO) and 1 form C (CO) contact arrangements**
- **Sensitive coil available for 1 form A type**

Typical applications
Appliances, HVAC, refrigerators, microwave ovens

F_PCH_B

Approvals

VDE 119568, UL E82292, CQC08001023449
Technical data of approved types on request

Contact Data

Contact arrangement	1 Form A (NO)
Rated voltage	30VDC, 277VAC
Max. switching voltage	30VDC, 277VAC
Rated current	5 to 10A
Contact material	$AgSnO_2$
Min. recommended contact load	100mA, 5VDC
Frequency of operation	360 ops./h
Operate/release time max.	10/5ms
Electrical endurance	

D type: 5A, 277VAC resistive, -30°C to +70°C $100x10^3$ ops.
L type: 5A, 277VAC resistive, -30°C to +70°C $30x10^3$ ops.
D/L-WG type: 5A, 250VAC resistive, -40°C to +85°C $100x10^3$ ops.

Contact ratings

Type	Contact	Load	Cycles
IEC 61810			
PCH-..2M-WG	A (NO)	5A 250VAC res, 85°C	$100x10^3$
PCH-..D2-WG	A of C	5A 250VAC res, 85°C	$100x10^3$
PCH-..D2M	A (NO)	5A 250VAC res, 70°C	$100x10^3$
PCH-..L2M	A (NO)	5A 250VAC res, 70°C	$30x10^3$
PCH-..D2	C (CO)	5A/3A 250VAC res, 40°C	$30x10^3$
UL 508			
PCH	A (NO)	10A 125VAC res, 85°C	$100x10^3$
PCH	A (NO)	5A 250VAC general use, 85°C	$100x10^3$

Mechanical endurance, DC coil $10x10^6$ operations

Coil Data

Coil voltage range	3 to 48VDC
Operative range, IEC 61810	2
Coil insulation system according UL	Class F

Coil Data (continued)

Coil versions, DC coil

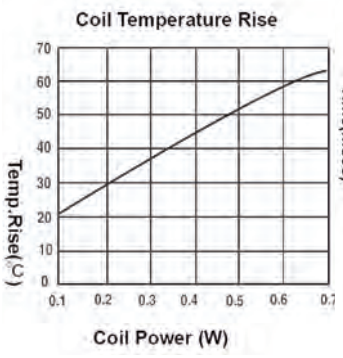
Coil code	Rated voltage VDC	Operate voltage VDC	Release voltage VDC	Coil resistance Ω±10 %	Rated coil power mW
Sensitive type (for form A type only)					
003	3	2.25	0.15	45	200
005	5	3.75	0.25	125	200
006	6	4.50	0.30	180	200
009	9	6.75	0.45	405	200
012	12	9.00	0.60	720	200
018	18	13.50	0.90	1620	200
024	24	18.00	1.20	2880	200
048	48	36.00	2.40	11520	200

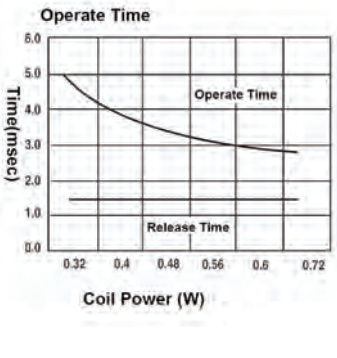
All figures are given for coil without pre-energization, at ambient temperature +23°C.

Coil versions, DC coil

Coil code	Rated voltage VDC	Operate voltage VDC	Release voltage VDC	Coil resistance Ω±10 %	Rated coil power mW
Standard type					
003	3	2.10	0.15	23	400
005	5	3.50	0.25	63	400
006	6	4.20	0.30	90	400
009	9	6.30	0.45	202	400
012	12	8.40	0.60	360	400
018	18	12.60	0.90	810	400
024	24	16.80	1.20	1440	400
048	48	33.60	2.40	5760	400

All figures are given for coil without pre-energization, at ambient temperature +23°C.





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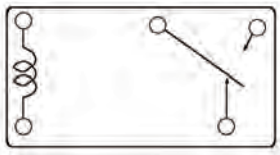
Miniature PCB Relay PCH (Continued)

Insulation Data	
Initial dielectric strength	
between open contacts	750V_{rms}
between contact and coil	4000V_{rms}
Clearance/creepage	
between contact and coil	NO: ≥ 4.1mm / 6.3mm
between contact and coil	CO: ≥ 3.1mm / 3.9mm
Tracking index of relay base	
standard type	PTI 175
WG txype	PTI 250

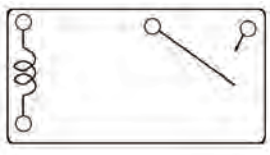
Other Data	
Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www.te.com/customersupport/rohssupportcenter	
Ambient temperature	-40°C to +85°C
Category of environmental protection	
IEC 61810	RTII - flux tight RTIII - wash tight
Shock resistance (functional)	10g
Shock resistance (destructive)	100g
Weight	7g
Resistance to soldering heat THT	
IEC 60068-2-20	RTII: 270°C/10s RTIII: 260°C/5s
Packaging unit	tray/100 pcs., carton box/1000 pcs.

Terminal assignment
Bottom view on solder pins

1 form C (CO)

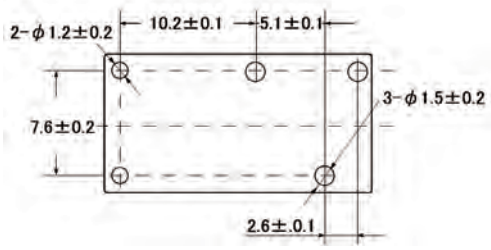


1 form A (NO)

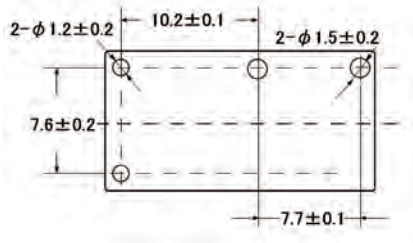


PCB layout
Bottom view on solder pins

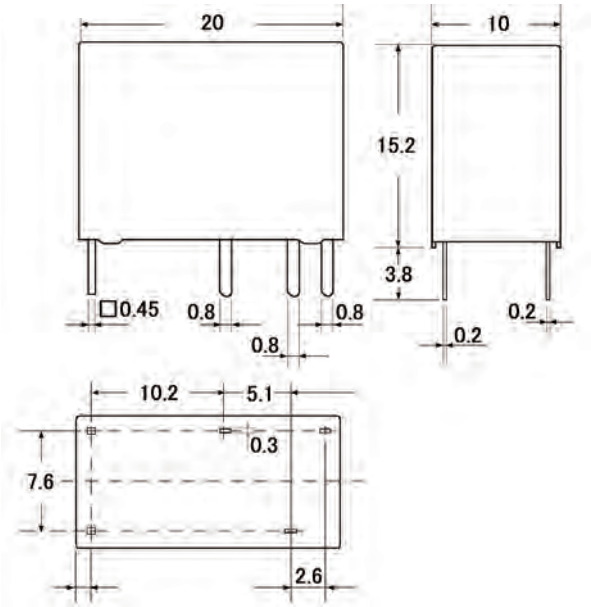
1 form C (CO)



1 form A (NO)



Dimensions



*1a Outline dimensions is omitted.
Tolerance: 0.99mm Max.: +/-0.1mm, 1-2.99mm: +/-0.2mm, 3mm Min.: +/-0.3r

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Miniature PCB Relay PCH (Continued)

Product code structure Typical product code: **PCH -1 12 D 2 H ,000**

Type
PCH Miniature PCB Relay PCH

Number of poles
1 1 pole

Coil voltage
Coil code: please refer to coil versions table (e.g. 05=5VDC)

Coil sensitivity
D Standard 400mW **L** 200mW (for 1 form A contact only)

Contact material
2 AgSnO

Contact arrangement
Blank 1 form C (CO) contact **M** 1 form A (NO) contact

Category of protection
Blank Flux proof, vented cover **H** Wash tight, sealed plastic cover

Insulation system designation
Blank Class F system **WG** Class F system and for domestic appliances (IEC 60335-1, 4 Edition);

Suffix
,000 Standard type

Other types on request

Product code	Coil	Sensitivity	Cont.material	Arrangement	Enclosure	Insulation	Part number
PCH-105D2H,000	5VDC	Standard	$AgSnO_2$	1 form C (CO)	Wash tight	Class F	9-1440003-0
PCH-105L2M,000		Sensitive		1 form A (NO)	Flux proof		1461352-2
PCH-105L2MH,000					Wash tight		1461353-2
PCH-105L2M-WG					Flux proof	Cl. F, IEC 60335-1	1721768-2
PCH-106D2,000	6VDC	Standard		1 form C (CO)		Class F	9-1440003-8
PCH-109D2H,000	9VDC				Wash tight		9-1440003-2
PCH-112D2,000	12VDC				Flux proof		1440004
PCH-112D2H,000					Wash tight		9-1440003-3
PCH-112D2M,000				1 form A (NO)	Flux proof		1461350-5
PCH-112D2M-WG						Cl. F, IEC 60335-1	1721767-5
PCH-112D2-WG				1 form C (CO)			1721766-5
PCH-112L2M,000		Sensitive		1 form A (NO)		Class F	1461352-5
PCH-112L2MH,000					Wash tight		1461353-5
PCH-112L2M-WG					Flux proof	Cl. F, IEC 60335-1	1721768-5
PCH-124D2,000	24VDC	Standard		1 form C (CO)		Class F	1440004-1
PCH-124D2H,000					Wash tight		9-1440003-5
PCH-124D2M,000				1 form A (NO)	Flux proof		1461350-6
PCH-124D2MH,000					Wash tight		1461351-6
PCH-124L2M,000		Sensitive			Flux proof		1461352-6
PCH-124L2MH,000					Wash tight		1461353-6
PCH-124L2M-WG					Flux proof	Cl. F, IEC 60335-1	1721768-6
PCH-148D2,000	48VDC	Standard		1 form C (CO)		Class F	1461410-2

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Datasheet

Stock No: 186-3593

ENGLISH

RS Pro Bottle of Silver Conductive Adhesive Paint

Product Details:

Electrically Conductive Paint

A silver-loaded conductive paint, which can be used for producing or repairing PCB track. The paint can be used for various applications including to paint-on an electrical screen, or to make electrical connections to non-solderable surfaces. This conductive adhesive is simple to apply with a brush and is touch-dry in approximately 10 minutes and usable in 30 minutes.

Key Features

- Volume resistivity 0.001 Ω cm when fully hardened.
- Baking at 121-148°C for 5 to 10 mins, after drying improves mechanical and electrical properties.
- Easy to use and quick drying

Note: Shake vigorously before using and replace cap when not in use

Specifications:

Product Type:	Paint
Conductive Element:	Silver
Package Type:	Bottle
Package Size:	5 g
Cure Time:	30 min
Applicator Type:	Brush

Science. Applied to Life.™

3M™ Particulate Respirators 8825+ and 8835+

Technical Data Sheet

Description

The 3M™ Particulate Respirators 8825+ and 8835+ meet the requirements of European Standard EN 149:2001 + A1:2009, filtering facepiece respirators for use against particles. They provide effective respiratory protection for use in industries where workers will be exposed to solid (dust) particles and/or non-volatile liquid particles.

Applications

These respirators are suitable for use in concentrations of solid (dust) particles and/or non-volatile liquid particles up to the following limits:

Product	EN 149:2001+A1:2009 Classification	Maximum Workplace Exposure Limit (WEL)*
8825+	FFP2 R D	12
8835+	FFP3 R D	50

*Many countries apply Assigned Protection Factors (APFs) which reduce the maximum concentrations of particles in which these products can be used. See national regulations and EN 529:2005.

Respiratory protection is only effective if it is correctly selected, fitted and worn throughout the time when the wearer is exposed to hazards.

Standards

Products are classified by filtering efficiency and maximum total inward leakage performance (FFP1, FFP2 and FFP3), also by usability and clogging resistance.

Performance tests in this standard include filter penetration; extended exposure (loading) test; flammability; breathing resistance and total inward leakage. Reusable products are also subjected to cleaning, storage and mandatory clogging resistance tests (clogging is optional for non-reusable products). A full copy of EN 149:2001+A1:2009 can be purchased from your national standards body.

Filter penetration

The filter penetration, initial and after 120mg of loading with both 120mg of NaCl* and Paraffin Oil, shall not exceed the following limits:

EN 149:2001+A1:2009 Classification	Maximum Filter Penetration
FFP2	6%
FFP3	1%

*Loading of NaCl may be stopped if filter penetration during loading is observed to decrease.

Total inward leakage

Ten subjects perform five test exercises whilst wearing the respirator. The total inward leakage inside of the respirator due to face seal leakage, filter penetration and valve leakage is measured for each subject exercise. The subject mean total inward leakage for 8 out of 10 subjects shall not exceed the following limits:

EN 149:2001+A1:2009 Classification	Maximum Total Inward Leakage
FFP2	8%
FFP3	2%

Version: 1
This version is the sole document applicable to the product(s) since its date of publication

Breathing resistance

The breathing resistance of the respirator is tested during inhalation (continuous flow) and exhalation (cyclical flow). The breathing resistance of the respirators shall not exceed the following limits:

EN 149:2001+A1:2009 Classification	Maximum Breathing Resistance		
	Inhalation at 30l/min	Inhalation at 95l/min	Exhalation at 160l/min
FFP2	0.7 mbar	2.4 mbar	3.0 mbar
FFP3	1.0 mbar	3.0 mbar	3.0 mbar

Clogging

For single shift use respirators (NR), the clogging test is optional. For re-usable respirators (R) this test is mandatory. The respirators are loaded with very high amount of Dolomite dust which will tend to clog the filter. After loading with the required amount of dust, the breathing resistance of the respirators shall not exceed the following limits:

EN 149:2001+A1:2009 Classification	Maximum Breathing Resistance	
	Inhalation at 95l/min	Exhalation at 160l/min (continuous flow)
FFP2	5.0 mbar (valved respirator) 4.0 mbar (unvalved respirator)	3.0 mbar (valved respirator)
FFP3	7.0 mbar (valved respirator) 5.0 mbar (unvalved respirator)	3.0 mbar (valved respirator)

Flammability

Tested respirators are mounted on a metallic head which rotates with a linear speed of 60mm/s. The respirators are passed within 20mm of the tip of an 800°C (±50°C) propane burner flame. The respirator shall not burn or continue to burn within 5 seconds of removal from the flame.

Components and materials

The following materials are used in the production of the 3M™ Particulate Respirators 8825+ and 8835+:

Component	Material
Straps (blue for FFP2 and red for FFP3)	Cotton / Polyisoprene / Polypropylene
Tension adjustable buckles	Polypropylene
Filter / Inner Shell	Polypropylene / Polyester
Cool Flow™ Valve	Polypropylene / Polyisoprene
Face seal (can be hygienically cleaned)	Thermoplastic elastomer (TPE)

These products do not contain components made from natural rubber latex, PVC and metals.

Product		Typical weight
	3M™ Particulate Respirator 8825+	35g
	3M™ Particulate Respirator 8835+	40g

Storage and Transportation

3M™ Particulate Respirators 8825+ and 8835+ have a shelf life of 5 years from date of manufacture. End of shelf life is marked on the product packaging and upon the product headband. Before initial use, always check that the product is within the stated shelf life (use by date). Product should be stored in clean, dry conditions within the temperature range: – 20°C to + 25°C with a maximum relative humidity of <80%. When storing or transporting this product use original packaging provided.

Warnings and Use Limitations

- Always be sure that the complete product is:
  - Suitable for the application;
  - Fitted correctly;
  - Worn during all periods of exposure;
  - Replaced when necessary.
- **Proper selection, training, use and appropriate maintenance are essential in order for the product to help protect the wearer from certain airborne contaminants. Failure to follow all instructions on the use of these respiratory protection products and/or failure to properly wear the complete product during all periods of exposure may adversely affect the wearer's health, lead to severe or life threatening illness or permanent disability.**
- For suitability and proper use follow local regulations, refer to all information supplied or contact a safety professional/3M representative.
- Before use, the wearer must be trained in use of the complete product in accordance with applicable Health and Safety standards/guidance.
- These products do not contain components made from natural rubber latex.
- These products do not protect against gases/vapours.
- Do not use in atmospheres containing less than 19.5% oxygen. (3M definition. Individual countries may apply their own limits on oxygen deficiency. Seek advice if in doubt).
- Do not use for respiratory protection against atmospheric contaminants/concentrations which are unknown or immediately dangerous to life and health (IDLH).
- **Do not use with beards or other facial hair that may inhibit contact between the face and the product thus preventing a good seal.**
- Leave the contaminated area immediately if:
  - Breathing becomes difficult.
  - Dizziness or other distress occurs.
- For single shift use or reusable devices: Discard and replace the respirator if it becomes damaged, breathing resistance becomes excessive or at the end of the shift*.

  *The respirators are re-usable and can be cleaned and used for more than one shift.
- Never alter, modify or repair this device.
- Before initial use, always check that the product is within the stated shelf life (use by date).

Fitting Instructions

See Figure 1.

Before fitting device, ensure hands are clean.

All respirator components should be inspected for damage prior to each use.

1. Thread top elastic strap through top buckles. Repeat for bottom strap and buckles.
2. Hold respirator under chin, with nosepiece up.
3. Locate the upper strap across the crown of the head and the lower strap below the ears. Straps must not be twisted.

4A. Adjust tension: Increase - pull evenly on both ends of the top/bottom straps.

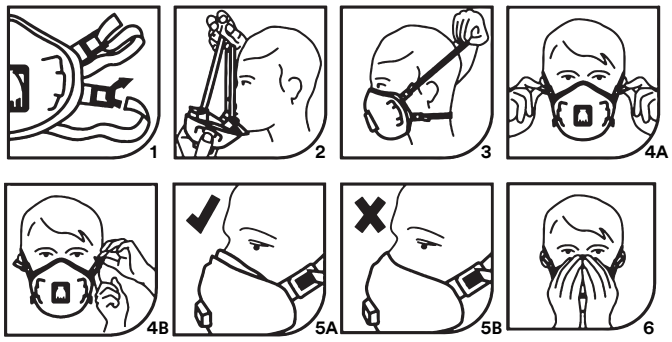
4B. Adjust tension: Decrease - without removing respirator, push out on the back of the buckles.

5A. Ensure face seal is properly formed around the nose.

5B. The face seal must not be folded in.

6. The seal of the respirator on the face should be fit-checked before entering the workplace.

Figure 1



Fit Check

1. Cover the front of the respirator with both hands being careful not to disturb the fit of the respirator.
2. VALVED respirator - INHALE sharply.
3. If the air leaks around the nosepiece, re-adjust the respirator and face seal upon the face to eliminate leakage. Repeat the fit check.
4. If air leaks at the respirator edges, adjust the tension of the straps to eliminate the leakage. Repeat the above fit check.

If you CANNOT achieve a proper fit DO NOT enter the hazardous area. See your supervisor.

Users should be fit tested in accordance with national requirements. For information regarding fit testing procedures, please contact 3M.

Version: 1

This version is the sole document applicable to the product(s) since its date of publication

Cleaning Instructions

If the respirator is to be used for more than one shift the face seal/gasket must be cleaned at the end of each shift using the 3M 105 face seal wipe.

DO NOT immerse product in water.

Store cleaned respirator in clean, airtight container.

Disposal

Contaminated products should be disposed as hazardous waste in accordance with national regulations.

Marking

R =	Reusable
D =	Meets the clogging requirements
	End of Shelf Life. Date format: YYYY/MM/DD
	Temperature Range
	Maximum Relative Humidity
	Name and address of Legal Manufacturer
	Dispose of in accordance with local regulations

Approvals

These products meet the requirements of the European Community Directive 89/686/EEC (Personal Protective Equipment Directive) and are thus CE marked. Certification under Article 10, EC Type-Examination, has been issued for these products by INSPEC International Limited, 56 Leslie Hough Way, Salford, Greater Manchester M6 6AJ, UK (Notified Body number 0194). Certification under Article 11, EC quality control, has been issued by BSI (Notified Body number 0086).

Made in UK, in an ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 certified plant.

Important Notice

The use of the 3M product described within this document assumes that the user has previous experience of this type of product and that it will be used by a competent professional. Before any use of this product it is recommended to complete some trials to validate the performance of the product within its expected application.

All information and specification details contained within this document are inherent to this specific 3M product and would not be applied to other products or environment. Any action or usage of this product made in violation of this document is at the risk of the user.

Compliance to the information and specification relative to the 3M product contained within this document does not exempt the user from compliance with additional guidelines (safety rules, procedures). Compliance to operational requirements especially in respect to the environment and usage of tools with this product must be observed. The 3M group (which cannot verify or control those elements) would not be held responsible for the consequences of any violation of these rules which remain external to its decision and control.

Warranty conditions for 3M products are determined with the sales contract documents and with the mandatory and applicable clause, excluding any other warranty or compensation.

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3M United Kingdom plc
3M Centre
Cain Road, Bracknell
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J328460

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Datasheet

1.2 V NiMH Tagged Terminal AAA Rechargeable Battery

RS Stock number [617-0767]

Description:

Tagged to allow for combining into larger battery packs for permanent installation
Voltage 1.2V
Quick 4 to 6hr charging rate.

Note: All batteries are supplied with only a residual charge and should be charged at the continuous charge rate before use.

Caution: Do not connect batteries in parallel

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Specifications:

Nominal Voltage		1.2V/cell
Capacity	Typical	1000 mAh/0.2 CmA@20℃
	Minimum	900 mAh/0.2 CmA@20℃
Charge	Standard	0.1 CmA for 16 hrs.
	Rapid	0.5CmA for 2.2hrs.(approx.) -ΔV = 0~5mV/cell, Temp. cut-off = 45~50℃, dT / dt=0.8℃/ min. Ta = 0~40℃.
	Trickle	0.03 CmA (time must to be advised from to the condition of cut-off)
Maximum Discharge Current		1.0CmA (Continuous) 3.0CmA (Pulse)
Discharge Cut-off Voltage		1.0 V/cell
Cycle Life		500 cycles (see Note:6)
Applicable Temperature	Standard Charge	0~+45℃
	Rapid Charge	0~+40℃
	Discharge	-10~+60℃
Storage	Within one year	-20℃~+20℃
	Within 3 months	-20℃~+30℃
	Within 1 month	-20℃~+40℃
Relative Humidity Range		65%±20%
Dimension		D = 10.5 mm max., H = 44.5 mm max.
Weight		Approx. 12.5 g

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Performance:

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Unless stated, tests should be done within 45 days of delivery under the following conditions:

Ambient Temperature, Ta: 20 ± 5°C
Relative Humidity: 65 ± 20% RH
Standard Charge/Discharge Condition:
Charge: 0.1 CmA x 16 hours, Discharge: 0.2 CmA to 1.0 V/cell

Test Item	Test Method	Performance	Remarks
Capacity	Standard Charge Standard Discharge	No less than rated capacity	Up to 3 cycles are allowed
High Rate Discharge (1.0CmA)	Standard Charge 1 hour rest before discharge	No less than 80% of rated capacity	
Low Temperature Discharge	Discharge at 0.2CmA in 0±2°C for 16~24 hours stand after a standard charge	No less than 70% of rated capacity	
Terminal Voltage Open Circuit Voltage	Within 1 hour after standard charge	No less than 1.25V/cell in terminal voltage	
Cycle Life	IEC 61951-2 (2003) 7.4.1.1	Over 500 cycles	See Note:6
Charge Retention	Standard Charge Storage 28 days at 20 ± 2°C Standard Discharge	No less than 60% of rated capacity	
Overcharge	Charge at 0.1CmA for 48 hours Standard Discharge	No less than rated capacity	
Over-discharge	Standard Charge Discharge at 2.0CmA to 1.0 V/cell Over-discharge at 1.0CmA for 1 hour	The cell shall not explode The safety valve of the cell shall operate	
Vibration Amplitude Frequency Direction and Time	3.6mm peak to peak 1000 cpm Arbitrary direction / 1 hour	The cell shall be normality in appearance No less than 1.2V/cell in terminal voltage.	
Shock Dropping Distance Shock Board Dropping Time	0.45 m (spontaneous dropping) Hard wood (Thickness: over 10 mm) Arbitrary direction / 3 times	The cell shall be normality in appearance No less than 1.2Vcell in terminal voltage	
Leakage	Standard Charge Storage : 14 days in 33 ± 5°C and 80 ± 5% RH	The cell shall have no visible leakage	
Short Circuit	After standard charge, short circuit by 2 mm Ni-tab for 1 hour	Leakage and deformation may occur, but no explosion is allowed	

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Safety Requirements:

Please keep in mind the following points when operating, designing, or manufacturing your equipment.

Do not short circuit the battery. Do not connect the positive and the negative terminals with a wire or other metal items, as this will cause a large flow of current through the battery. It may damage the battery.
A proper charge is needed prior to use. Reverse charging is not acceptable.
Do not charge / discharge with more than the specified current.
Do not attempt to take the battery apart or subject to pressure or impact. The parts of the battery will be damaged, when the battery has ruptured, heat may be generated or fire may result. The alkaline electrolyte may harm the skin or eyes or damage clothing upon contact.
Do not heat, incinerate or mutilate the cell/battery. The battery may swell or rupture and it may explode or release alkaline electrolyte.
Do not solder directly to the cell/battery. It may damage the cell/ battery.
If any abnormally or problem is found while using the battery, stop its use, and bring it to your local dealer. Please do not attempt to fix or take the battery apart. It may cause danger to you.

Charge the battery only with a charger that meets our specified conditions. Charging under other conditions can cause overcharging and loss of charging control, and can cause the battery to leak, overheat, burst, or catch fire.
Avoid batteries to be used in any airtight compartment. Ventilation should be provided inside the battery compartment; otherwise batteries may generate hydrogen gas, which could cause an explosion if exposed to an ignition source.
When connecting a battery pack to a charger, please ensure the polarity is correct.
The life expectancy may be reduced if the cell / battery is under adverse conditions, such as extreme temperature, deep cycling, excessive overcharge /over discharge, etc.
Do not mix with other battery brands or batteries of a different chemistry such as alkaline and zinc carbon.
Do not mix new batteries in use with semi-used batteries, over discharge may occur.

Store the cell / battery in a cool dry place.
Keep away from children. If swallowed, contact a physician at once.
If notice any noise, excessive temperature or leakage from a battery, please stop to use it.
When the battery is hot, please do not touch it or handle it, until it cooled down.

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Do not remove the outer sleeve from a battery pack nor cut into its housing.

When battery running out of power, please switch off the device to avoid overdischarge.
When not using a battery, disconnect it from the device.
Proper way to unplug a battery is to hold the connector and not by pulling at its electric wire.
After use, if the battery is still hot, allow it to cool in a well-ventilated place out of direct sunlight before recharging it.
Avoid put a battery into water or seawater.
During long term storage, battery should be charged and discharged once every half a year.

Notes:

1. Ta: Ambient Temperature
2. When using a new battery for the first time or after long-term storage, please fully charge the battery before use.
3. The charge time is for reference only. It may alter due to conditions.
4. Activate the battery once every 3 – 6 months.
5. When using a new battery for the first time or after long-term storage, please fully charge the battery before use.
6. IEC61951-2 (2003) 7.4.1.1 Endurance Cycle Life Test:

The battery is capable of 500 cycles under the following conditions and tested at 20C

Cycle number	Charge	Rest	Discharge
1	0.10CmA for 16 hrs	none	0.25CmA for 2 hrs 20 mins
2~48	0.25CmA for 3 hrs 10 mins	none	0.25CmA for 2 hrs 20 mins
49	0.25CmA for 3 hrs 10 mins	none	0.25CmA to 1.0V/cell
50	0.10CmA for 16 hrs	1-4hr(s)	0.20CmA to 1.0V/cell
Cycle 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes less than 3 hrs.			

PS: The actual cycle life depends on the operating temperature and cycling conditions.

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Datasheet

RS Pro 229mm Paint Tray

RS Stock No: **207-6510**

Product Details

RS Pro paint tray with 229 mm width, is suitable to take 9 Inch rollers.

Features and Benefits

- Plastic paint tray
- 229 mm wide
- To take 9 Inch roller

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Specifications:

Type	Tray
Width	229 mm
Material	Plastic

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Datasheet

Dual Reading Dial Calipers

RS Stock number 307-4666

General Specification:

Dual Reading: Metric/Inch
Hardened stainless steel body
Satin chrome finish
Thumb roll
Depth Rod
White dial face
Four-way measurement:
Outside
Inside
Step
Depth

Weight and Dimensions

Range	Range	Weight g	W mm	H mm	L mm
mm	inch				
150	6	360	90	27	250

Range	Metric Grads	Inch Grads	Accuracy External Jaws	Accuracy Internal Jaws & Depth Rod	External Jaw Length	Internal Jaw Length
150mm/6”	0.02mm	0.001”	±0.02mm	±0.04mm	40mm	18mm

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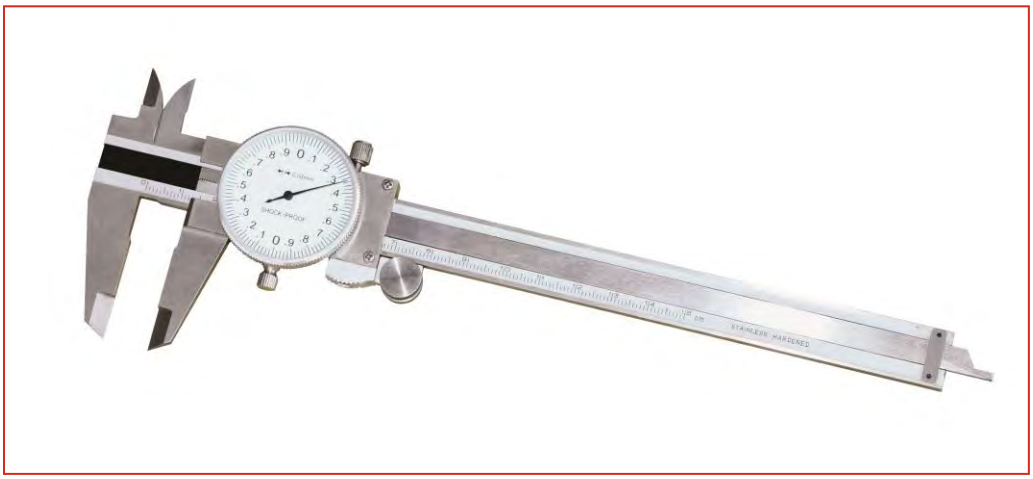
Datasheet

150mm Dial Caliper

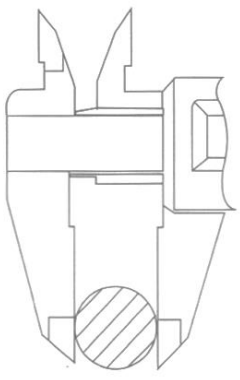
RS Stock number 725-5698



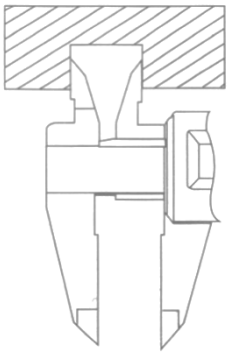
Features

- Hardened stainless steel body
- Satin chrome finish
- Thumbroll
- Depth Rod
- Four-way measurement
- Outside
- Inside
- Step
- Depth
- White dial face

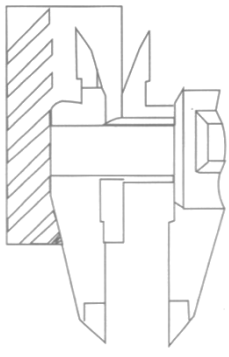
Code	Range	Metric Grads	Inch Grads	Accuracy External Jaws	Accuracy Internal Jaws & Depth Rod	External Jaw Length	Internal Jaw Length
725-5698	150mm	0.02mm	N/A	±0.02mm	±0.04mm	40mm	18mm



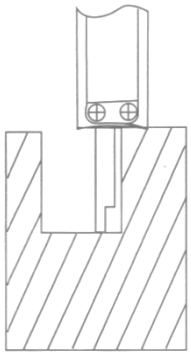
Outside Measurement



Inside Measurement



Step Measurement



Depth Measurement

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Datasheet

RS Pro 0.2 mm Conical Sharp Soldering Iron Tip

RS Stock No: **799-8976**

Product Details

RS Pro conical sharp soldering iron tip has 0.2 mm tip with conical angle for use with AT60D or AT80D soldering station with soldering iron.

Features and Benefits

- AT Series
- 0.2 mm conical sharp soldering iron tip
- For use with AT60D or AT80D soldering station with soldering iron
- Features a smaller soldering iron tip size and split design to reduce accessory expenses

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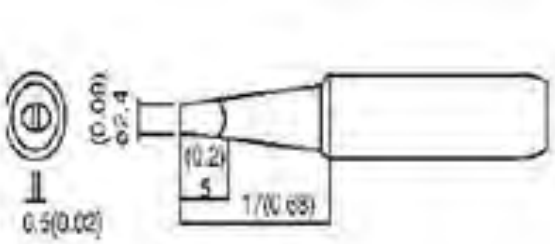
Specifications:

For Use With	AT60D Solder Iron, AT80D Solder Iron
Tip Series	AT
Tip Shape	Conical Sharp
Tip Size	0.2 mm



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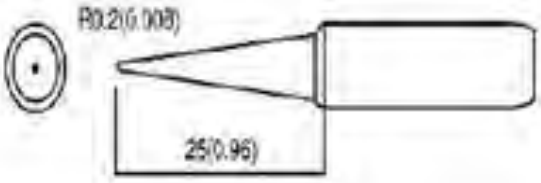

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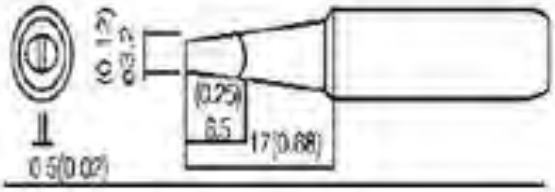

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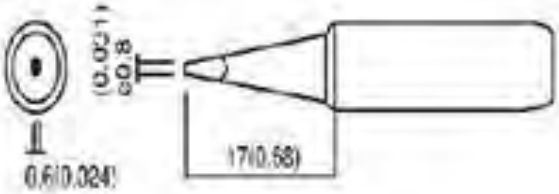

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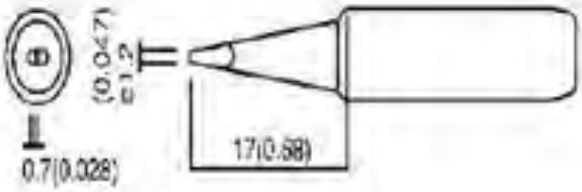

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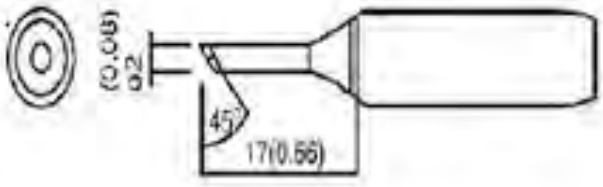

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ENGLISH

Product datasheet

Universal Industrial Wiper

Specification

RS stock number:	882-5901
Material:	30 % PP, 70 % wood pulp
Size:	Per ply 425 x 230 mm
Pattern & colour:	Shell pattern and colour in white

Feature:

- High water and oil absorbency
- Higher tensile and abrasion resistance
- Lint free after wiping
- Soft feeling and reusable nature
- Special material, naturally degradable, environment-friendly

Applications:

- Wiping and maintaining the mechanical equipment's, cleaning the workplace,
- Transmission belts and rollers, common oil dirt, fluid spill from oil compressor
- Wiping the users themselves

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LTC Batteries

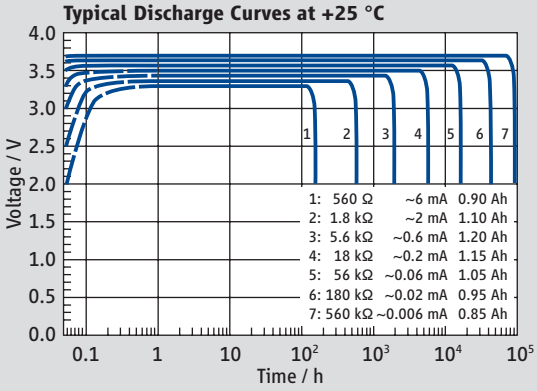
SL-350 Size: ½AA

› Standard use and stand-by

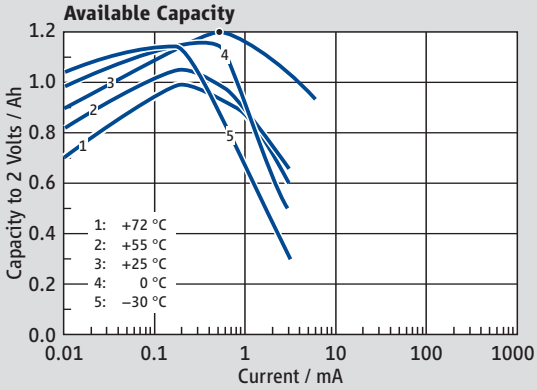
Performance Data
(Typical values for batteries stored at +25 °C for one year)

System	Lithium Thionyl Chloride
Nominal voltage	3.6 V
Nominal capacity	1.2 Ah
Nominal current	0.6 mA
Max. continuous discharge current	6 mA
Anode surface area	6 cm^2
Lithium content	0.35 g
Weight	9.6 g
Volume	4 cm^3
Temperature range	–55 °C ... +85 °C

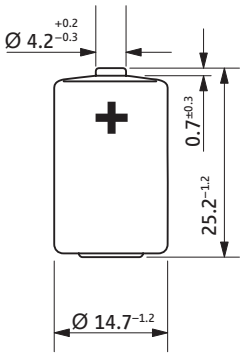
Typical Discharge Curves at +25 °C



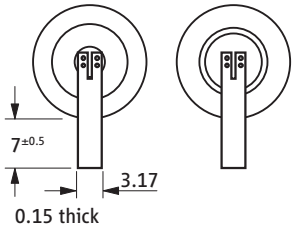
Available Capacity



SL-350/S



SL-350/T



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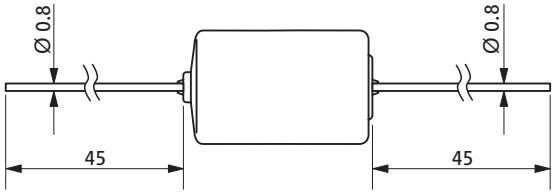
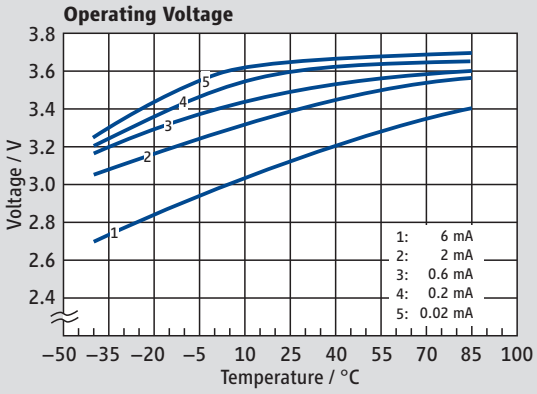
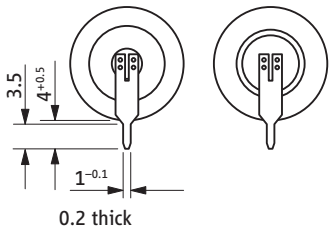


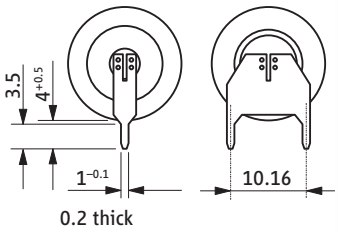
Operating Voltage



SL-350/PR



SL-350/PT



Available Terminations		Catalogue No.
SL-350/S	Standard	11 1 03501 00
SL-350/T	Tags	11 1 03502 00
SL-350/P	Pins	11 1 03503 00
SL-350/PR	Pins radial	11 1 03506 00
SL-350/PT	Polarized tags	11 1 03508 00

WARNING: Fire, explosion, and severe burn hazard. Do not recharge, disassemble, heat above 100 °C, incinerate, or expose contents to water.

Any values given here are for informational purposes only. They also depend on actual conditions of use and are not warranties of future performance. Subject to change.

Tadiran Batteries GmbH • Industriestr. 22 • 63654 BÜDINGEN
GERMANY • Tel.: +49 (0)6042 954-0 • www.tadiranbatteries.de

PDC13Eng

ENGLISH

Datasheet
Stock No: 231-964

RS Pro PTFE Tape for Sealing

Product Details

PTFE One Wrap Tape
Extra thick PTFE tape designed for sealing threaded joints in just one wrap.
Only requires 50% overlap on threads for BS21 thread up to 2 inch.
Reduced material usage.
For sealing against all common gases and liquids.
Length 5 m.
Suitable for potable water.
The PTFE tape is manufactured to :BS EN 751-3

PTFE Tapes

ENGLISH

Specifications:

Width	12mm
Thickness	0.2mm
Length	5m
Application	Sealing
Minimum Operating Temperature	-200°C
Maximum Operating Temperature	+260°C
Operating Temperature Range	-200 → +260 °C

Datasheet

Stock No: 238-6205

ENGLISH

RS Pro 115 mm Anti-Magnetic Stainless Steel Fine; Hook Tweezers Anti-Acid

Product Details:

Venus Range Precision Tweezers

- Manufactured from high grade anti-acid, anti-magnetic stainless steel
- 10 point styles available

Specifications:

Material:	Stainless Steel
Overall Length:	115 mm
Point Type:	Fine; Hook
Anti-Magnetic:	Yes
Anti-Acid:	Yes

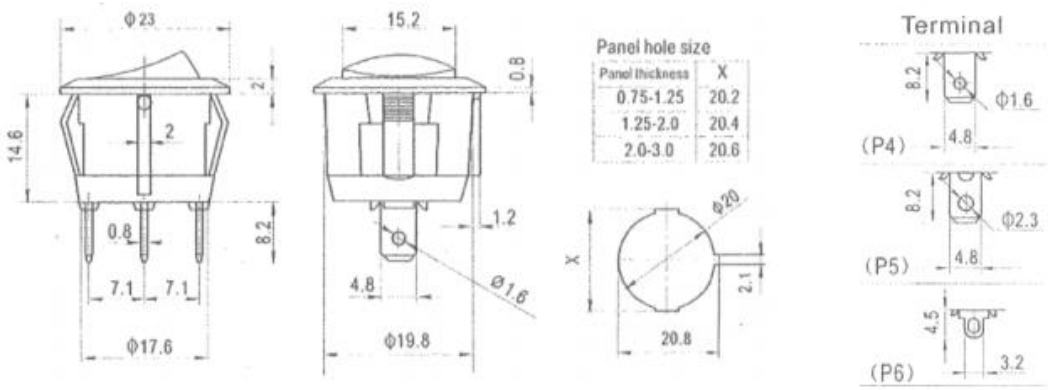
ENGLISH

Datasheet

Illuminated Red SPST Rocker Switch

RS Stock number 273-299

Dimensions: (mm)



RoHS Certified

RoHS ✓

SPECIFICATIONS	ABRR015 Round Rocker
Rating	6(2)A/250VAC T125/55 1E4 VDE 10A 125VAC UL C-UL
Colour	Black Body Red Illuminated
Switching Action	SP On-off
Contact Diameter	P5 (2.3mm)
Contact Resistance	30m Ohms Max
Insulation Resistance	500VDC 100M Ohms Min
Electrical Life	10000 cycles
Operation force	300 – 600gf
Operating Temperature Range	-25 - 125°C
Housing Material	Nylon #66 UL 94V-2
Rocker Material	PC UL 94HB
Terminal Material	Copper Alloy SN or AG plated
Contact Material	AgNi (15) Alloy

RS, Professionally Approved Products, gives you professional quality parts across all products categories. Our range has been testified by engineers as giving comparable quality to that of the leading brands without paying a premium price.

ENGLISH

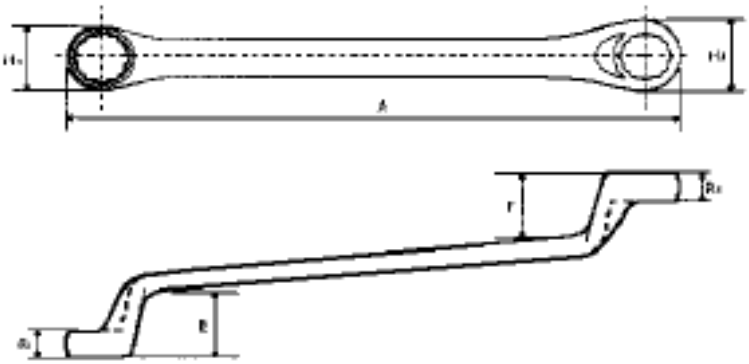
Datasheet

Ring Spanner 12 x 13mm

RS Stock number 495-3879

1. Material: Drop Forged Chrome Vanadium Steel (CR-V # 6140)
2. Finish: 40° Offset, Flat Panel with Mirror Polish and Chrome Plated
3. Hardness: Heat Treated to HRC: 42° ~ 48°
4. Standard: Hardness Range, Torque Load Test, Gauges, Dimensions Meet ANSI - B107.9M

Dimensions (mm):



Sizes (MM)	Outside Dimension Small End (H1)		Thickness Small End (R1)		Outside Dimension Large End (H2)		Thickness Large End (R2)		Working Depth Small End (E)		Working Depth Large End (F)		Overall Length (A)	
6 x 7	10.60	+0.8, -1.4	5.50	+0.4, -1.2	13.00	+0.8, -1.4	6.00	+0.4, -1.2	13.20	+0.4, -0.4	13.40	+0.4, -0.4	165.0	+3.0, -1.0
8 x 9	14.50	+0.8, -1.4	6.00	+0.4, -1.2	16.50	+0.8, -1.4	6.50	+0.4, -1.2	13.20	+0.4, -0.4	13.30	+0.4, -0.4	170.0	+3.0, -1.0
10 x 11	15.00	+0.8, -1.4	6.50	+0.4, -1.2	17.50	+0.8, -1.4	7.00	+0.4, -1.2	15.40	+0.4, -0.4	15.50	+0.4, -0.4	180.3	+3.0, -1.0
12 x 13	20.00	+0.8, -1.4	8.00	+0.4, -1.2	22.00	+0.8, -1.4	8.50	+0.4, -1.2	17.20	+0.4, -0.4	18.50	+0.4, -0.4	206.0	+3.0, -1.0
14 x 15	22.00	+0.8, -1.4	8.50	+0.5, -1.3	24.00	+0.8, -1.4	9.00	+0.5, -1.3	18.20	+0.4, -0.4	19.50	+0.4, -0.4	232.0	+3.0, -1.0
16 x 17	24.00	+0.8, -1.4	9.50	+0.5, -1.3	26.00	+0.8, -1.4	10.00	+0.5, -1.3	20.00	+0.4, -0.4	20.30	+0.4, -0.4	237.0	+3.0, -1.0
17 x 19	28.00	+0.8, -1.4	11.00	+0.5, -1.3	29.50	+0.8, -1.4	11.50	+0.5, -1.3	22.00	+0.4, -0.4	22.30	+0.4, -0.4	270.0	+3.0, -1.0
18 x 19	28.00	+0.8, -1.4	11.00	+0.5, -1.3	29.50	+0.8, -1.4	11.50	+0.5, -1.3	22.00	+0.4, -0.4	22.30	+0.4, -0.4	270.0	+3.0, -1.0
19 x 22	29.00	+0.8, -1.4	11.70	+0.5, -1.3	32.50	+0.8, -1.4	12.20	+0.5, -1.3	22.60	+0.4, -0.4	22.60	+0.4, -0.4	292.0	+3.0, -1.0
21 x 23	32.80	+0.8, -1.4	12.50	+0.5, -1.3	34.80	+0.8, -1.4	13.00	+0.5, -1.3	28.45	+0.4, -0.4	28.70	+0.4, -0.4	346.0	+3.0, -1.0
22 x 24	32.80	+0.8, -1.4	12.50	+0.5, -1.3	34.80	+0.8, -1.4	13.00	+0.5, -1.3	28.45	+0.4, -0.4	28.70	+0.4, -0.4	346.0	+3.0, -1.0
30 x 32	44.00	+0.8, -1.4	17.20	+0.5, -1.3	47.00	+0.8, -1.4	17.80	+0.5, -1.3	48.10	+0.4, -0.4	48.40	+0.4, -0.4	462.0	+3.0, -1.0

RS, Professionally Approved Products, gives you professional quality parts across all products categories. Our range has been testified by engineers as giving comparable quality to that of the leading brands without paying a premium price.

Product datasheet

ENGLISH

Sponge Scourer, Pack of 10

- Cut out grips for easy handling whilst in use
- One abrasive side is integrated into the sponge to assist with scrubbing of pots and pans
- Ideal for all washing up applications
- Dimensions: 150 x 65mm
- Thickness: 40mm

RS, Professionally Approved Products, gives you professional quality parts across all products categories. Our range has been testified by engineers as giving comparable quality to that of the leading brands without paying a premium price.

Technical Datasheet

Peltor™ Optime™ III

Product Description

The Peltor Optime III range passive earmuffs are available in headband, neckband or helmet mounted version. These products are designed to provide high level of attenuation, particularly sound dominated by low frequencies, in some key applications where extreme noise levels are encountered.

When correctly selected and worn these products help reduce exposure to hazardous levels of noise and loud sounds.

The helmet mounted version is designed to fit a wide range of industrial safety helmets (see below for further details).

NOTE: High visibility version is available in the Optime III range.

Key Features

- Modern, stylish cup design
- Unique low profile headband design helps maintain constant pressure thus providing confidence in protection
- Double casing technology helps minimise resonance effect
- Good speech intelligibility
- Large space inside cup helps reduce moisture and heat build-up
- Soft wide cushions helps reduce pressure around the ears and improves comfort and wearability
- Easy to replace cushions and inserts help keep them hygienically clean
- Easy to understand attenuation symbol to help ensure correct product selection
- Helmet mounted version fits directly to many industrial safety helmets without the need for an adapter.

Helmet mounted approved combination:

Helmet Manufacturer	Model	Combination size range according to EN352-3	
		P3 Adaptor	H540 (Optime III)
3M	1465	E	NL
Auboueix	Brennus	F	SNL
Auboueix	Fondelec	F	SNL
Auboueix	Iris	E	NL
Auboueix	Iris 2	E	NL
Sofop Taliaplast	Oceanic	E	NL
Sofop Taliaplast	Opus	E	NL
Berendsen Safety	Balance HD	N	SNL
Centurion	1125/ARCO Plus	H	SNL
Centurion	1100/ARCO Type 2	H	NL
Centurion	1540/ARCO	A	NL
Evert Larsson	Robust	E	NL
Evert Larsson	Balance	E	NL
Evert Larsson	Balance AC	E	NL
Kemira	Top Cap	A	SNL
LAS	LP2002	E	SNL
LAS	LP2006	E	SNL
MSA	Super V-Gard II	E	SNL
MSA	V-Gard	E	SNL
Peltor	G2000	K,E	SNL
Peltor	G22 (Basic Set)	E	SNL

*Protector Style 300 includes all 300-versions of this helmet.

Helmet Manufacturer	Model	Combination size range according to EN352-3	
		P3 Adaptor	H540 (Optime III)
Peltor	G3000	E	SNL
Petzl	Vertex	E	SNL
Protector	Style 300*	E	SNL
Protector	Style 600	G	SNL
Protector	Tuffmaster II	E,G	NL
Romer	Bravo 2 Nomaz	B	SNL
Romer	Marcus Top 2 Atlas Nomaz	B	SNL
Romer	N2 Atlas Nomaz	BB	SNL
Romer	Profi Expo	E	SNL
Romer	Profi Nomaz	E	SNL
Romer	Top Expo Atlas	B	SNL
Schuberth	BEN	BB	SNL
Schuberth	BER80/WPC80	EA	SNL
Schuberth	BER S	E	SNL
Schuberth	BOP R	B	SNL
Schuberth	PIONIER	B	SNL
Schuberth	SH91/WP91	EB	SNL
Schuberth	SW1	EB	NL
Uvex	Airwing	E	SNL
Voss	Inap 88	E	SNL
Voss	Inap Star	E	NL
Voss	Inap PCG	G	NL

Technical Datasheet

Peltor™ Optime™ III

Applications

The Peltor Optime III range earmuffs are ideal for protection against special applications where extremely high levels of noise (dominated by low frequencies) are generated. Examples of typical applications include:-

- Airport
- Cement manufacture
- Marine engine room
- Mining
- Power station
- Printing

Standard & Approval

The Peltor Optime III range earmuffs are tested and CE approved against the European Standard EN352-1:1993 (headband and neckband version) and EN352-3:2002 (helmet mounted version). These products meet the Basic Safety Requirements as laid out in Annex II of the European Community Directive 89/686/EEC. These products have been examined at the design stage by the Finnish Institute of Occupational Health (FIOH), Topeliuksenkatu 41aA, FIN- 00250 Helsinki, Finland (Notified Body number 0403).

Materials

The following materials are used in the manufacture of this product.

	Component	**Material**
Headband and Neckband version	Headband/Neckband/Foldable	Stainless Steel Wire, PVC, Acetal
	Headband padding	PVC
	Cups	ABS
	Inserts	Polyether
	Cushions	Polyether
	Cushion cover	PVC
Helmet mounted version	Helmet attachment arm	Stainless Steel Wire, Acetal, Polyamid
	Cups	ABS
	Inserts	Polyether
	Cushions	Polyether
	Cushion cover	PVC

Technical Datasheet

Peltor™ Optime™ III

Attenuation values

Optime III Headband Version (H540A)

Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Mf (dB)	20.8	17.4	24.7	34.7	41.4	39.3	47.5	42.6
sf (dB)	3.1	2.1	2.6	2.0	2.1	1.5	4.5	2.6
APVf (dB)	17.7	15.3	22.1	32.7	39.3	37.8	43.0	40.0

SNR = 35dB H = 40dB M = 32dB L = 23dB

Optime III Neckband Version (H540B)

Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Mf (dB)	20.9	17.5	24.5	34.5	41.4	39.5	47.3	42.0
sf (dB)	3.3	2.3	2.7	2.0	2.2	2.0	4.4	2.8
APVf (dB)	17.6	15.2	21.8	32.5	39.2	37.5	42.9	39.2

SNR = 35dB H = 40dB M = 32dB L = 23dB

Optime III Helmet Mounted Version (H540P3)

Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Mf (dB)	20.1	17.1	24.5	34.8	40.2	39.6	46.7	43.1
sf (dB)	3.3	2.3	2.8	2.2	2.0	1.8	4.2	2.5
APVf (dB)	16.8	14.8	21.7	32.6	38.2	37.8	42.5	40.6

SNR = 34dB H = 40dB M = 32dB L = 22dB

Technical Datasheet
Peltor™ Optime™ III

Accessories/Replacement Parts

The cushions and inserts on the Optime III range can be replaced with the HY54 Hygiene Kit for improved comfort and reassured protection.

The HY100A and HY100A-01 Hygiene Pads can be placed on the cushions to help absorb moisture and sweat.

Key

APVf = Assumed Protection Value

Mf = Mean attenuation value

sf = Standard deviation

H = High-frequency attenuation value (predicted noise level reduction for noise with L(C) – L(A) = -2dB)

M = Medium-frequency attenuation value (predicted noise level reduction for noise with L(C) – L(A) = +2dB)

L = Low-frequency attenuation value (predicted noise level reduction for noise with L(C) – L(A) = +10dB)

SNR = Single Number Rating (the value that is subtracted from the measured C-weighted sound pressure level, L(C) in order to estimate the effective A-weighted sound pressure level inside the ear).

3M Occupational Health &
Environmental Safety Division
EMEA Region
3M Svenska AB
Mammstensgatan 19
331 02 Värnamo Sweden
Website: www.3M.eu/occsafety

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We measure it. testo

Mini registrador de datos Temperatura y humedad

testo 174H

°C

%HR

Figura 1:1

- Sensor de humedad estable a largo plazo
- Alta seguridad de los datos
- Pantalla grande
- Visualización de temperatura o humedad actuales
- Memoria con capacidad para 16.000 lecturas
- Cómoda descarga y análisis de los datos en PC

El pequeño registrador de datos de temperatura y humedad, testo 174H, es ideal para la monitorización de productos sensibles a la humedad y la temperatura durante su almacenamiento. El testo 174H también monitoriza la climatización del interior de los edificios de forma continua, segura y discreta. El programa gratuito ComSoft Básico permite programar rápidamente el registrador de datos y realizar un sencillo análisis de éstos.

El económico registrador de datos de temperatura y humedad garantiza resultados seguros en base a la metrología de última generación. Los sensores integrados garantizan valores de medición estables a largo plazo. Con él pueden observarse y documentarse de forma segura los lineamientos para aseguramiento de calidad.

Datos técnicos / Accesorios

testo 174H

Mini registrador de datos de 2 canales, incl. sujeción mural, 2 pilas CR 2032 de litio y protocolo de calibración

Modelo 0572 6560

Set testo 174H

Set mini registrador de datos testo 174H de 2 canales, incl. interfaz USB para programación y lectura del registrador, sujeción mural, 2 pilas CR 2032 de litio y protocolo de calibración

Modelo 0572 0566

Tipo de sensor	**NTC**
Rango de medición	-20 ... +70 °C
Exactitud ±1 dígito	±0.5 °C (-20 ... +70 °C)
Resolución	0.1 °C

Tipo de sensor	**Sensor de humedad capacitivo Testo**
Rango de medición	0 ... 100 %RH*
Exactitud ±1 dígito	±3 %HR (2 ... 98 %HR) ±0.03 %HR/K
Resolución	0.1 %HR

* Inadecuado para atmósferas con condensación. Para uso en humedad elevada continua (>80 %HR a ≤30 °C >12 h, >60 %HR a >30 °C >12 h), por favor contacte con nuestro departamento de asesoramiento.

Datos técnicos generales

Canales	2 internos
Tipo de pila	2 pilas de litio (CR 2032)
Tiempo de operatividad	1 año (15' intervalo de medición a +25 °C)
Temp. de funcionamiento	-20 ... +70 °C
Temp. de almacenamiento	-40 ... +70 °C
Medidas	60 × 38 × 18.5 mm
Tipo de protección	IP20
Intervalo de medición	1 min - 24 h
Memoria	16.000 lecturas

Accesorios	**Modelo**	
Accesorios para instrumentos de medición		
Interfaz USB para programación y lectura de los registradores de datos 174T y testo 174H	0572 0500	
Pila de litio CR 2032 tipo botón (pedir 2 pilas por registrador)	0515 0028	
ComSoft Básico, software básico para la programación y lectura de registradores de dato Testo; presentación de los valores medidos en forma de gráfica o de tabla y funciones de exportación. (en caso de que no se desee la descarga gratuita desde el sitio web con registración obligatoria)	0572 0580	
ComSoft Profesional, programa profesional, incluye archivo de datos	0554 1704	
ComSoft CFR 21 Parte 11, software para requerimiento según el CFR 21 Parte 11 para registradores de datos Testo	0554 1705	
Certificado de calibración ISO de temperatura sonda de temperatura; puntos de calibración -18 °C, 0 °C, +40 °C; por canal/instrumento	0520 0153	
Certificado de calibración ISO de humedad puntos de calibración 11.3 %HR y 75.3 %HR a +25 °C/+77 °F; por canal/instrumento	0520 0076	

0985 3824/cw/A/04.2014

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STANLEY

STHT0-60211

Stanley Essential Screwdrivers have bars made from Chrome Vanadium Steel, which resists bending and snapping. The handles are made from Polypropylene, with TPR overlay for increased comfort and reduced fatigue.

3 x Phillips: PH0 x 50mm, PH1 x 75mm and PH2 x 100mm.
2 x Pozi: PZ1 x 100mm and PZ2 x 100mm.
2 x Flared Slotted: 5.5 x 100mm and 8 x 175mm.
3 x Parallel Slotted: 3 x 75mm, 4 x 100mm and 6.5 x 150mm.

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EL-USB-TC-LCD

K, J & T-Type Thermocouple Data Logger with LCD screen

- Compatible with K, J and T type thermocouples with miniature thermocouple plug connection
- Stores over 32,000 readings
- EasyLog software available as a free download
- Supplied with 1.5m K-type thermocouple with 0 to 200°C (32 to 392°F) measurement range
- High contrast LCD, with four digit temperature display function
- Logging rates between 1 second and 12 hours
- Immediate, delayed and push-to-start logging
- User-programmable alarm thresholds
- Status indication via red and green LEDs

This standalone data logger measures and stores more than 32,000 temperature readings from a J, K or T-type thermocouple at a resolution of 0.5°C (1°F). It comes supplied with a K-type thermocouple capable of measuring from 0 to 200°C (32 to 392°F).

Your application will determine which probe is most suitable based on temperature range, accuracy, form and price. A wide variety of alternative thermocouples are available. Please call Lascar for vendor recommendations.

The user can easily set up the logger and view downloaded data by plugging the data logger into a PC's USB port and using the free EasyLog software. Data can then be graphed, printed and exported to other applications for detailed analysis.

The high contrast LCD can show a variety of temperature information. At the touch of a button, the user can cycle between the current, maximum and minimum stored values for temperature.

The data logger is supplied with a lithium metal battery which typically gives 2 years' logging life.

SPECIFICATIONS

Probe measurement range	0 to 200°C (32 to 392°F) K type (supplied) -200 to +1350°C (-328 to +2462°F) K type -200 to +1190°C (-328 to +2174°F) J type -200 to +390°C (-328 to +734°F) T type
Internal resolution	0.5°C (1°F)
Accuracy (overall error)	±1°C (±2°F) (data logger only - thermocouple error not included)
Logging rate	User selectable between 1 second & 12 hours
Operating temperature range	-10 to +40°C (-14 to +104°F) (data logger only)
Battery Life	2 years (at 25°C and 1 minute logging rate)
Readings	32,510
Dimensions	135 x 24 x 21mm (5.31 x 0.94 x 0.82")

ACCESSORIES

BAT 3V6 1/2AA	Replacement battery
K-TYPE PROBE 1M5	Replacement K-type thermocouple probe
EL-DataPad	Handheld datalogger programmer & collector

INCLUDED IN THE BOX

BAT 3V6 1/2AA	Battery
K-TYPE PROBE 1M5	K-type thermocouple probe
EL-LCD WALL BRACKET	Mounting Bracket

CALIBRATION CERTIFICATES NOW AVAILABLE

Lascar now offers a Traceable Calibration Certificate Service on Temperature Data Loggers. Using reference equipment which has been calibrated by a UKAS/NIST accredited laboratory and using apparatus traceable to national or international standards. For more information, please see **www.lascarelectronics.com**.

EL-USB-TC-LCD

K, J & T-Type Thermocouple Data Logger with LCD screen

EL-WIN-USB

Lascar's EasyLog control software is available as a free download from www.easylogusb.com. Easy to install and use, the control software is compatible with 32-bit and 64-bit versions of Windows 7, 8 & 10. The software is used to set up the logger, download, graph and annotate data or export in Excel, PDF and jpeg formats.

The software allows the following parameters to be configured:

- Logger name
- Measurement parameter (°C or °F)
- Logging rate (user selectable between 1 second and 12 hours)
- High and low alarms
- Immediate and delayed logging start

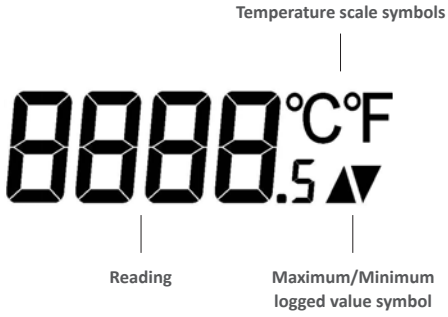
Download the latest version of the software free of charge from www.easylogusb.com

DISPLAY STATUS INDICATION

The EL-USB-TC-LCD features a high contrast LCD which shows logged temperature values using seven segment numbers, along with annunciators. The LCD can also show information regarding the loging status.

The LCD shows three different recorded readings, which can be cycled through using the built-in push button. The most recent logged temperature, maximum logged temperature and minimum logged temperature can be displayed.

To increase battery life it is possible, via the software, to turn off the display or have it active only after pressing the button.



Display	Logger Status	Explanation
dS	Delayed Start	This is shown when the button is pressed and the logger is set to start at a specific date and time
PS	Push to Start	This will flash when the logger is setup for 'Push to Start' logging
log	Logging	This is shown when the logger is running in 'LCD off' mode, and the button is pressed. The display clears again after a short period
- - -	Stopped	If the logger has not been set to log and the button is pressed, three dashes are displayed for a short period

EL-USB-TC-LCD

K, J & T-Type Thermocouple Data Logger with LCD screen

LED STATUS INDICATION

EL-USB-TC-LCD features two LEDs:

- The first LED flashes **red** to indicate that the EL-USB-TC-LCD is in an alarm condition. It will flash when the logged temperature has exceeded a Low or High alarm level.
- The second LED flashes **green** to indicate that the EL-USB-TC-LCD is not in an alarm condition.

Using EL-WIN-USB it is possible to set the alarm to remain active even if the reading has returned to normal, in which case the alarm LED will continue to flash red. This 'Hold' feature in the software ensures the user is notified that at some point an alarm level has been exceeded, without needing to download the data.

Using the control software it is possible to set a delayed alarm. In this mode the logger has to see multiple consecutive alarms before being activated.

Hold is enabled by default, and can be turned off via the control software. The red LED will then only flash whilst the logger is in an alarm condition. When the temperature returns to normal, the green LED will flash.

	Green single flash (every 10 seconds) The data logger is currently logging. No alarm
	Green single flash (every 20 seconds) The data logger is currently logging, however the battery is running low. No alarm
	Green single flash (every 30 seconds) The data logger is not currently logging, but is primed to start at a later date and time (delayed start)
	Green double flash (every 20 seconds) The data logger is full and has stopped logging. No alarm
	Red single flash (every 10 seconds) The data logger is currently logging. Low alarm
	Red single flash (every 20 seconds) The data logger is currently logging, however the battery is running low. Low alarm
	Red double flash (every 10 seconds) The data logger is currently logging High alarm
	Red double flash (every 20 seconds) The data logger is currently logging, however the battery is running low. High alarm
	Red & Green single flash alternately (every 20 seconds) The data logger is full and has stopped logging. High or low alarm
	No LEDs flash The data logger is stopped, the battery is empty or there is no battery

BATTERY INFORMATION

Replacement
We recommend that you replace the battery annually, or prior to logging critical data. Only use 3.6V ½AA lithium metal batteries. The data logger does not lose its stored readings when the battery is discharged or replaced; however, the data logging process will stop and will not resume until the battery is replaced and the logger restarted by EL-WIN-USB or an EL-DataPad.

Before replacing the battery, remove the data logger from the PC. Please note that leaving the data logger plugged into the USB port for extended periods will cause some of the battery capacity to be lost.

Passivation
If left unused for extended periods of time lithium metal batteries, including those used in the EasyLog range of data loggers, naturally form a non-conductive internal layer preventing them from self-discharge and effectively increasing their shelf life. When first installed in the data logger, this may cause a momentary drop in the battery voltage (the Transient Minimum Voltage) as the internal layer is broken down, resulting in the data logger resetting. Inserting the batteries in the data logger and leaving it connected to a PC for about 30 seconds will remove this layer. After this, remove and re-install the batteries to reset the data logger. Overall battery life will not be affected.

WARNING
Handle lithium metal batteries carefully, observe warnings on battery casing. Dispose of in accordance with local regulations.

PRODUCT PROFILE

edding 8400 CD/DVD/BD marker

Product text

- CD/DVD/BD marker, ideal for the permanent labelling of CDs, DVDs and Blu-ray discs
- The round nib has a stroke width of 0.5-1 mm
- The permanent ink and the soft, flexible nib does not damage surfaces and, as such, ensures maximum data safety
- Available in the colours black, red, blue and green
- The product is recommended by VERBATIM

Target group

- Users in companies, authorities and educational institutions who store data on CDs and DVDs
- Households with 2+ persons
- Users of products for daily desk work and school supplies for children

Benefits for the consumer

- Cap can be stored on the end of the barrel to prevent risk of losing it
- Practical clip prevents rolling away and can be secured on clothes and objects
- High-quality brand product
- Made in Germany

Product Information

Product ingredients

Water-based ink	• Yes
Pigment based ink	• Yes
Excluded additives	• toluene and xylene

Product features

Shape of nib	• round
Stroke width	• 0,5-1 mm
Permanent	• Yes
Neutral smell	• Yes
Waterproof	• Yes
Smudge-proof	• Yes
Lightfast	• Yes
Data storage layer protection	• Yes
Applicable on	• CD-DVD-BD
Cap can be repositioned	• Yes
Has clip	• Yes

Product material

Product material of cap	• Polypropylene
Product material of clip	• Polypropylene
Product material of mouthpiece	• Polypropylene
Product material of barrel	• Polypropylene
Product material of plug	• Polypropylene
Product material of nib	• Polyester
Product material of filter	• Polyester

Colour

Number of colours (product)	• 4
Colour range of product (colour codes)	• 001-004
Colour range of product (colour names)	• black • red

Colour of barrel	• blue • green
Colour of barrel - name	• 049
Communication of writing colour by cap	• white
Communication of writing colour by mouthpiece	• Yes • Yes

	SAP no.	KEA / order no.
Single product	2944XXX	4-8400XXX
Blister of 1	6578XXX	4-8400-1-1XXX
Blister of 2	8291XXX	4-8400-2-1XXX
Blister of 4	8348XXX	4-8400-4-1XXX
Set of 4 assorted (001-004)	3333999	4-8400-4
Display of 50 001 black (50x 001)	300488000	4-50317
Display of 50 assorted (25x 001, 10x 002, 10x 003, 5x 004)	300553000	4-50318

EAN code				
	Single product	Folding box	Outer carton	Shipping carton
001 black	4004764782703	4004764783205	-	4004764784073
002 red	4004764827145	4004764827152	-	4004764827169
003 blue	4004764827176	4004764827183	-	4004764827190
004 green	4004764827206	4004764827213	-	4004764827220
004 green	4004764827206	CTN	-	VSK
002 red	4004764827145	4004764827152	-	4004764827169
Blister of 1 001 black	4004764794072	-	4004764795550	4004764794089
Blister of 1 002 red	4004764895397	-	4004764895403	4004764895410
Blister of 1 003 blue	4004764895427	-	4004764895434	4004764895441
Blister of 1 004 green	4004764895458	-	4004764895465	4004764895472
Blister of 2 001 black (2x 001)	4004764867349	-	4004764867356	4004764867363
Blister of 4 001 black (4x 001)	4004764857715	-	4004764857722	4004764857739
Blister of 4 assorted (001-004)	4004764828654	-	4004764828661	4004764828678
Blister of 1 001 black (TR)	4004764794072	-	-	4004764794089
Blister of 1 001 black	4004764794072	-	4004764795550	4004764794089
Set of 4 assorted (001-004)	4004764828906	-	4004764828913	4004764828920
Display of 50 001 black (50x 001)	4004764784813	-	-	4004764784813
Display of 50 assorted (25x 001, 10x 002, 10x 003, 5x 004)	4004764827602	-	-	4004764827602

Packaging					
	Net weight	Folding box	Outer carton	Shipping carton	Pallet
Single product	11,4 g	10 pcs	-	500 pcs	16.000 pcs
Blister of 1	19 g	-	10 pcs	80 pcs	2.560 pcs
Blister of 2	22,8 g	-	10 pcs	80 pcs	2.560 pcs
Blister of 4	46 g	-	10 pcs	40 pcs	1.280 pcs
Set of 4 assorted (001-004)	53,6 g	-	10 pcs	100 pcs	3.200 pcs

ENGLISH

Datasheet

RS PRO 9V Alkaline Battery

Specifications:

These RS PRO 9V Batteries are long lasting and used in a number of applications. They are Non-rechargeable and guarantee excellent quality.

ENGLISH

1. General Information

1.1 Scope

This specification defines the technical requirements for alkaline cell, Zn/MnO2, 6LR61/9V Size(No Mercury and Cadmium added) to be supplied to the Customer by RS PRO.

1.2 Production classification

Alkaline Battery

1.3 Model type

ANSI:1604A IEC:6LR61 Size: 9V

2. Reference standards

2.1 International standards

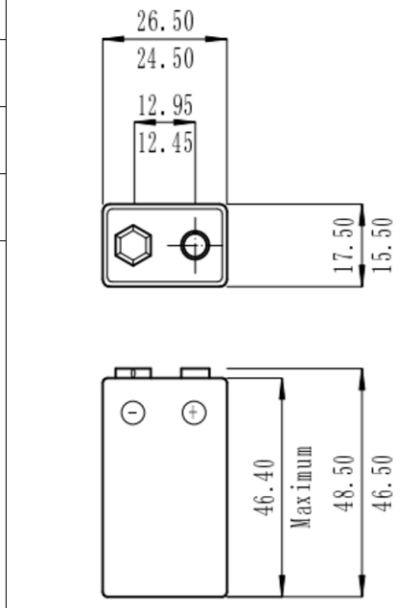
IEC60086-1:2015——Primary batteries-part 1: General
IEC60086-2:2015——Primary batteries-part 2: Physical and technologic specifications
IEC60086-5:2016——Primary batteries-part 5: Safety of batteries with aqueous electrolyte

2.2 EU's battery directive

This product complies with EU's battery directive (2006/66/EC)
Packaging materials comply with EU's directive on packaging materials and waste (94/62/EC)

ENGLISH

3. Specification

Nominal voltage	9Volt	
Open circuit voltage	$9^{+1.08}_{-0}$ Volt	
Typical weight	49±4g	
Storage temperature range	5~30℃	
Shelf life	60Months（each battery will carry a manufacturing date code followed by month and year of manufacturing for domestic and expiry for export.）	

4. Electrical Characteristic

Unless other stated, all measurements are to be performed at: 20±2℃, 55+20-40% RH

AII samples are normalized for 8 hours at least at the above environment prior to measurement

The digital voltmeter (DCM) is with the precision of 1mV (impendence ≥ 1 mΩ)

The load resistance of the total circuit is accurate within ±0.5% of the specified value

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Service Output

Application		Daily period	End voltage	Unit	Initial	After 12months storage	After 36months storage	After 60months storage
Clock radio	620Ω	2h/d	5.4	h	40	36.8	34.0	30.0
Toy	270Ω	1h/d	5.4	h	17	15.6	14.5	12.8
Smoke detector	10000Ω	24h	7.5	d	16	14	13	12
	620Ω	1s/h						
※	180Ω	24h	4.8	h	11.0	10.1	9.4	8.2

5. Leakage resistance of batteries

5.1 Over-discharge test

Over-discharge test		
Temperature and humidity	Method	Requirements
20±2℃ 55±20%	After measured discharge capacity, continue discharge until load voltage drop to less than 40% of original	No leakage and no deformation

5.2 High temperature storage

High temperature storage		
Temperature and humidity	Time	Requirements
60±2℃ 90±5%	20Days	No leakage

ENGLISH

6. Safety Requirements

Test	Conditions	Sample	Requirements
Thermal Cycling Shock	Repeat the following temperature cycle 10 times: • Heat to +70℃ within 30 minutes, hold for 4 hours. • Cool to +20℃ within 30 minutes, hold for 2 hours. • Cool to -20℃ within 30 minutes, hold for 4 hours. • Heat to +20℃ within 30 minutes After the 10th cycle store batteries for 7 days	5	No leakage, No fire, No explosion
Short Circuit	Connect positive and negative terminals using circuitry with a resistance of less than 0.1 Ohm. Discharge for 24 hours.	5	No fire, No explosion

ENGLISH

7. Information of safety

7.1 Safety precautions during handling of batteries

• Insert batteries correctly with regard to the polarities(+ & -)of battery and the equipment
• Do not short-circuit batteries
• Do not charge batteries
• Do not force discharge batteries
• Do not mix old and new batteries or batteries of different types or brands
• Exhausted batteries should be immediately removed from equipment and properly disposed
• Do not heat batteries
• Do not weld or solder directly to batteries
• Do not dismantle batteries
• Do not deform batteries
• Do not dispose of batteries in fire
• Keep batteries out of the reach of children
• Do not allow children to replace batteries without adult supervision
• Do not encapsulate or modify batteries
• Store unused batteries in their original packaging away from metal object. If already unpacked, do not mix or jumble batteries.
• Remove batteries from equipment if it is note to be used for an extended period of time unless it is for emergency purposes.

ENGLISH

7.2 Packaging

• The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking.
• The materials and packaging design shall be chosen so as to prevent the development of unintentional electrical contact, corrosion of the terminals and some protection from the environment.

7.3 Display and storage

• Batteries shall be stored in well-ventilated, dry and cool conditions
• Battery cartons should not be piled up in several layers(or should not exceed a specified height)
• When batteries are stored in warehouses or displayed in retail stores, they should not be exposed to direct sun rays for a long time or placed in areas where they get wet by rain
• Do not mix unpacked batteries so as to avoid mechanical damage and/or short-circuit among each other
• Do not keep batteries at relative humidity of 75% or above
• Do not keep batteries at temperature of 45℃ or above

ENGLISH

7.4 Transportation

• When loaded for transportation, battery packages should be so arranged to minimize the risk of falling e.g. one from the top of another.
• They should not be stacked so high that damage to the lower packages occurs, Protection from inclement weather should be provided.

7.5 Disposal

• Do not dismantle batteries
• Do not dispose of batteries in fire except under conditions of controlled incineration
• Primary batteries may be disposed of via the communal refuse arrangements, provided that no local rules to the contrary exist
• Where there is provision for the collection of used batteries, the following should be considered:

a) Store collected batteries in a non-conductive container.

b) Store collected batteries in a well-ventilated area. Since some used batteries may still contain a residual charge, they could be short circuited, charged or force discharged and thereby evolve hydrogen gas. If collection containers and storage areas are not properly ventilated, hydrogen gas can build up an explosion in the presence of an ignition source.

c) Do not mix collected batteries with other materials. Since some used batteries may still contain a residual charge, they could be short circuited, charged or force discharged. The subsequent possible heat generation can ignite flammable wastes such as oily rags, paper or wood and can cause a fire.

ENGLISH

d) Consider protecting used battery terminals, particularly those batteries with high voltage, to preclude short circuits, charging and force discharging, for instance, by means of covering battery terminals with insulating tape.

e) Failure to observe these recommendations may result in leakage, fire, and/or explosion.

8.Instructions for use

- Always select the correct size and grade of battery most suitable for the intended use. Information provided with the equipment to assist correct battery selection should be retained for reference.
- Replace all batteries of a set at the same time. Clean the battery contacts and also those of the equipment prior to battery installation.
- Ensure that the batteries all installed correctly with regard to polarity.
- Remove batteries from equipment which is not to be used for an extended period of time.
- Remove exhausted batteries promptly.

ENGLISH

9.Heavy metal content

- Mercury(Hg) content should be less than 1PPM
- Cadmium (Cd) content should be less than 2 PPM
- Lead (Pb) content should be less than 15 PPM

10.Note

Any other items do not list in here please refer to IEC 60086 standard.

TECHNICAL DATA SHEET

ENGLISH

RS 193-6122
Flammable Freezer

RS 193-6122 is a flammable refrigerant ideal for any application which requires the temperature to be maintained below freezing for short periods of time. RS 193-6122 rapidly cools to at least -45°C.

- Not suitable for use on live electrical equipment.
- Ideal for applications involving:
    - Pipe freezing
    - Ice sculptures
    - Chewing gum removal
    - Carbon fibre moulding

Typical Properties

Form	Colourless Gas
Boiling Point (°C)	-42°C

Description	Packaging	Order Code
Flammable Freezer	400ml Aerosol	RS 193-6122

Canvas Select Plus microSD

kingston.com/flash

Powerful performance, speed and durability

Kingston's Canvas Select Plus microSD is compatible with Android devices and designed with A1-rated performance. It offers improved speed and capacity for loading apps faster and capturing images and videos in multiple capacities up to 512 GB[1]. Powerful in performance, speed and durability, the Canvas Select Plus microSD is designed for reliability when shooting and developing high-resolution photos or filming and editing full HD videos. Kingston Canvas cards are tested to be durable in the harshest environments and conditions so you can take them anywhere with confidence that your photos, videos and files will be protected. Available with a lifetime warranty.

- Class 10 UHS-I speeds up to 100 MB/s[2]
- Optimised for use with Android devices
- Capacities up to 512 GB[1]
- Durable
- Lifetime Warranty

Features/specs on reverse ››

Kingston TECHNOLOGY

Canvas Select Plus microSD

FEATURES/BENEFITS

> **Faster speeds** — Class 10 UHS-I speeds up to 100 MB/s.[2]

> **Optimised for use with Android devices** — Improved performance when used with an Android smartphone or tablet.

> **Multiple capacities** — Up to 512 GB[1] to store all your memorable photos and videos.

> **Durable** — For your peace of mind, the card has been extensively tested and proven to be waterproof, temperature proof, shock and vibration proof and X-ray proof.[3]

SPECIFICATIONS

> **Capacities[1]** 16 GB, 32 GB, 64 GB, 128 GB, 256 GB, 512 GB

> **Performance[2]** 100 MB/s read (16 GB-128 GB)
100/85 MB/s read/write (256 GB-512 GB)

> **Dimensions** 11 mm x 15 mm x 1 mm (microSD)
24 mm x 32 mm x 2.1 mm (with SD adapter)

> **Format** FAT32 (16 GB-32 GB), exFAT (64 GB-512 GB)

> **Operating temperature** -25 °C~85 °C

> **Storage temperature** -40 °C~85 °C

> **Voltage** 3.3 V

> **Warranty/support** lifetime

PART NUMBERS

Card (SD adapter included):

- SDCS2/16GB
- SDCS2/32GB
- SDCS2/64GB
- SDCS2/128GB
- SDCS2/256GB
- SDCS2/512GB

Card (SD adapter not included):

- SDCS2/16GBSP
- SDCS2/32GBSP
- SDCS2/64GBSP
- SDCS2/128GBSP
- SDCS2/256GBSP
- SDCS2/512GBSP

Multi-packs of 2 and 3 cards (1 SD adapter included):

- SDCS2/16GB-2P1A
- SDCS2/16GB-3P1A
- SDCS2/32GB-2P1A
- SDCS2/32GB-3P1A
- SDCS2/64GB-2P1A
- SDCS2/64GB-3P1A

1. Some of the listed capacity on a Flash storage device is used for formatting and other functions and thus is not available for data storage. As such, the actual available capacity for data storage is less than what is listed on the products. For more information, go to Kingston's Flash Memory Guide at kingston.com/flashguide.

2. Speed may vary due to host and device configuration.

3. IEC/EN 60529 IPX7 certified for protection against continual water submersion up to 30 minutes at a depth of up to 1 m. Withstands temperature range from -25 °C to 85 °C. Based on MIL-STD-883H, METHOD 2002.5 military standard test method. Protected against X-ray exposure based on ISO7816-1 guidelines.

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MKD-407EN

Filterset for Zero Smog 2, Zero Smog EL, WFE 2ES / CS

Compact filter: particle filter H13 and granular activated carbon filter with 10 pre-filters M5 for Zero Smog 2, Zero Smog EL, WFE 2ES / CS article number : T0058762701

ESD safe
Packaging unit1
Dimensions L x W x H (mm)285 x 285 x 173
Dimensions L x W x H (inches)11.221 x 11.221 x 6.811
Diameter-
Weight (approx.) In kg3.5
Height173 mm
Filter type activated carbon granules

ENGLISH

Datasheet

RS PRO White PTFE Tape 12m x 12mm x 0.075mm

Stock No: 183-3490

Technical Specifications:

Attribute	Value
Width	12mm
Colour	White
Operating Temperature Range	-190°C -> +230°C
Length	12 m

General

Technical & Material Safety Data Sheet

Product Identification:

*Product name: PTFE Thread Seal tape
*Base materials: 100% PTFE Resin
*Thickness: 0.075mm +/- 0.015mm
*Density: 0.20g/cm3 ~ Full density
*Elongation: 25% & over
*Tensile Strength: 8N/mm2 & over
*Temperature Range: -190℃ ~ +230℃
*High Pressure Resistance: 150 ~ 200kg/mm2

Warning Statements:

*When burn this product, it will bring some hazardous gas & fog

Precautionary Measures:

*Not bury and this product don't decompose at general
*Not burn and that will bring some hazardous gas & fog
*Keep appropriate temperature with 30℃ & below

Emergency and First Aid Procedures:

*In case of eat, please call doctor soon

Hazardous Ingredients:

*To the best of our knowledge, this product does not contain any hazardous ingredients

Occupational Control Procedures:

*Keep well ventilation in deposit

Fire Protection:

*Melting point: 330℃
*Unusual Fire & Explosion Hazards: None known

Reactivity Data:

*Stability: Very stable
*Incompatibility: Not established
*Hazardous Polymerization: Not occur

Effects of Overexposure:

*Eyes: Not known effects
*Skin: Not known effects
*Inhalation: Not known immediate effects
*Chronic: Not known anticipated chronic effects
*Existing Health Conditions by Exposure: Not known effects on other illnesses

10-Physical Data:

*Physical State: Powder
*Specific Gravity: 2.14~2.20g/cm3

Datasheet

RS PRO 1mtr HDMI M-M 8K High Speed with Ethernet Cable – Black with Black Connectors

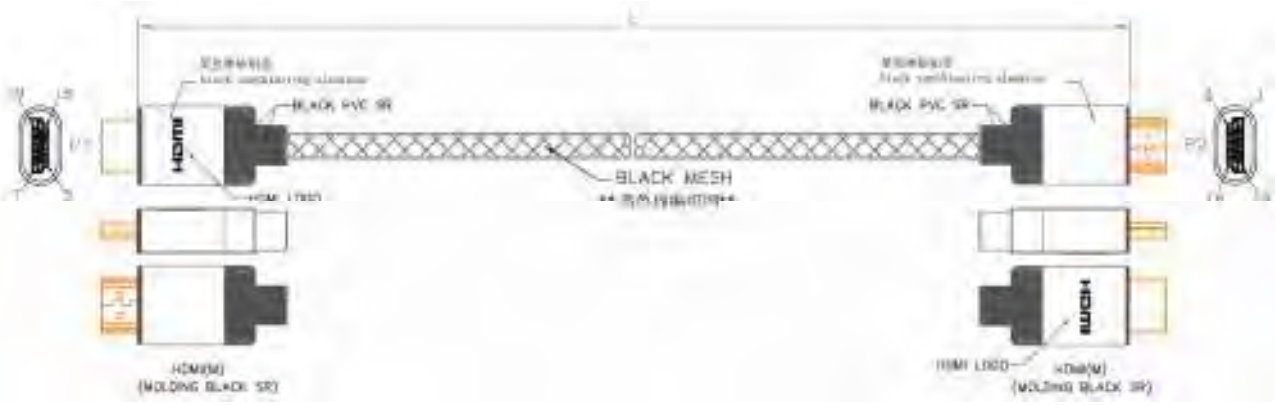
Stock number: 195-4889

EN

The RSPRO 1 metre male to male 8K HDMI cable which has a black PVC jack with mesh and an outer diameter of 7.3mm. The connectors have a gold flash covering to prevent corrosion.

The connector hoods are also made of Aluminium and sandblasted black and has a strain relief to prevent the jacket splitting around the boot.

HDMI is possibly the most common display connection on the market which can be found on devices ranging from PC's, Bluray players, games consoles and more.



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LOCTITE® EA 9466™

Conocido como LOCTITE® Hysol® 9466™
Agosto 2019

DESCRIPCIÓN DEL PRODUCTO

LOCTITE® EA 9466™ presenta las siguientes características:

Tecnología	Epoxi
Tipo de química	Epoxi
Aspecto de la resina	Pasta blanca mate
Aspecto del endurecedor	Líquido blanco translúcido
Aspecto de la mezcla	Pasta blanquecina mate
Componentes	Bicomponente - requiere mezcla
Viscosidad	Media
Proporción de mezcla, en volumen Resina : Endurecedor	2 : 1
Proporción de mezcla, en peso Resina : Endurecedor	100 : 50
Curado	Tras mezclar, curado a temperatura ambiente
Aplicación	Unión

LOCTITE® EA 9466™ es un adhesivo epoxi, tenaz, de grado industrial, con una vida útil prolongada. Una vez mezclados los dos componentes, cura a temperatura ambiente para formar una línea de unión blanquecina y tenaz, que proporciona una alta resistencia a pelado y a cortadura. El epoxi totalmente curado resiste a una amplia gama de productos químicos y disolventes, y actúa como un excelente aislante eléctrico. LOCTITE® EA 9466™ proporciona una excelente resistencia de unión en una gran variedad de plásticos y metales. Las aplicaciones típicas incluyen las industriales y de uso general, que requieran una vida de manipulación prolongada, para ajustar las piezas durante el montaje.

PROPIEDADES TÍPICAS DEL MATERIAL SIN CURAR

Resina:

Peso específico a 25 °C	1,0
Punto de inflamabilidad: consultar la Ficha de Datos de Seguridad	
Viscosidad, Brookfield - RVT, 25 °C, mPa·s (cP):	
Husillo 6, velocidad 20 rpm	15.000 a 50.000

Endurecedor:

Peso específico a 25 °C	1,0
Punto de inflamabilidad: consultar la Ficha de Datos de Seguridad	
Viscosidad, Brookfield - RVT, 25 °C, mPa·s (cP):	
Husillo 5, velocidad 50 rpm	25.000 a 60.000

Mezcla:

Tiempo de trabajo, minutos	60

CARACTERÍSTICAS TÍPICAS DE CURADO

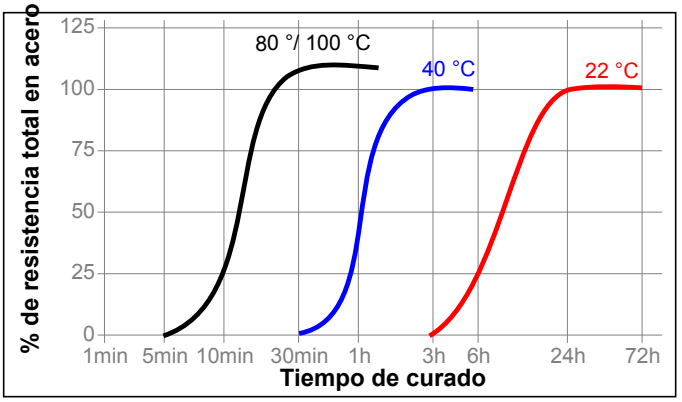
Tiempo de fijación

Se define como el tiempo hasta desarrollar una resistencia a cortadura de 0,1 N/mm² .

Tiempo de fijación, ISO 4587, minutos:	
Acero (granallado)	180

Velocidad de Curado según el Tiempo y la Temperatura

La velocidad de curado depende de la temperatura ambiente. Se pueden emplear altas temperaturas para acelerar el curado. El siguiente gráfico muestra la resistencia a cortadura con el tiempo, a diferentes temperaturas, en placas planas de acero granallado, y ensayadas según norma ISO 4587.



PROPIEDADES TÍPICAS DEL MATERIAL CURADO

Curado durante 7 días a 22 °C, película de 1,2 mm de espesor

Propiedades físicas:

Temperatura de Transición Vítrea , ASTM E 1640, °C		62
Dureza shore, ISO 868, Durómetro D		60
Alargamiento, ISO 527-3, %		3
Resistencia a TracciónASTM D 882	N/mm²	32
	(psi)	(4.640)
Módulo a tracción , ISO 527-3	N/mm²	1.718
	(psi)	(249.110)

Propiedades eléctricas:

Resistencia dieléctrica, IEC 60243-1, kV/mm	30

COMPORTAMIENTO DEL MATERIAL CURADO

Propiedades del adhesivo

Curado durante 5 días a 22 °C

Resistencia a cortadura en placas, ISO 4587 :

Acero (granallado)	N/mm²	37,0
	(psi)	(5.365)
Aluminio (lijado)	N/mm²	26,0
	(psi)	(3.770)
Aluminio (anodizado)	N/mm²	17,9
	(psi)	(2.595)
Acero galvanizado (Sumergido en caliente)	N/mm²	8,5
	(psi)	(1.230)
Acero inoxidable	N/mm²	23,0
	(psi)	(3.335)
Policarbonato	N/mm²	5,3
	(psi)	(765)
Nylon	N/mm²	1,6
	(psi)	(230)
Madera (Pino)	N/mm²	11,3
	(psi)	(1.635)
GRP	N/mm²	5,0
	(psi)	(725)
ABS	N/mm²	4,7
	(psi)	(680)

Resistencia a Pelado 180°, ISO 8510-2:

Acero (granallado)	N/mm	8,0
	(lb/in)	(45,5)

Resistencia a la tracción, ISO 6922:

Pasador de Acero (granallado) a vidrio sódico	N/mm²	43,2
	(psi)	(6.260)

Resistencia a Impactos, ISO 9653, J::

Acero (granallado)	5,8

RESISTENCIA TÍPICA MEDIOAMBIENTAL

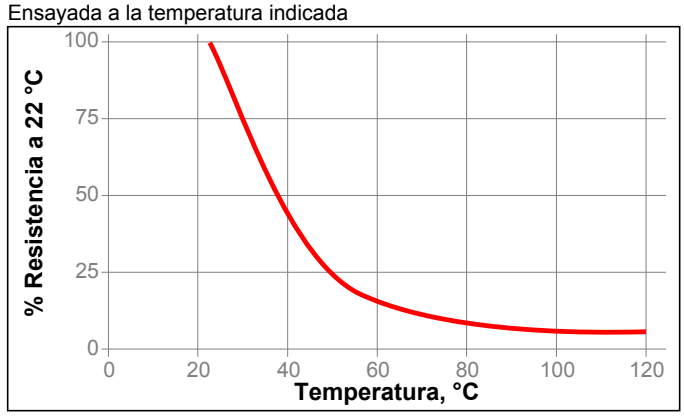
Curado durante 5 días a 22 °C

Resistencia a cortadura en placas, ISO 4587 :

Acero (granallado)

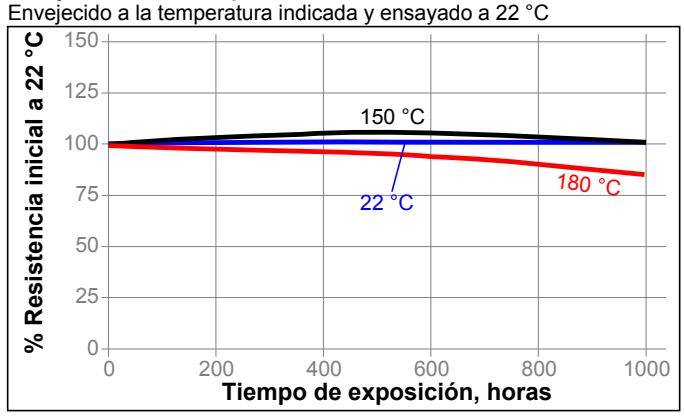
Resistencia térmica

Ensayada a la temperatura indicada



Envejecimiento a Temperatura

Envejecido a la temperatura indicada y ensayado a 22 °C



Resistencia a Productos Químicos/Disolventes

Envejecido en las condiciones indicadas y ensayado @ 22 °C.

		% de resistencia inicial	
Medio Operativo	**°C**	**500 h**	**1000 h**
Aceite de motor (10W-30)	87	135	145
Gasolina sin plomo	22	95	125
Agua/glicol 50/50	87	75	75
Niebla salina	22	---	80
98 % Humedad relativa	40	85	90
Humedad Condensada	49	---	90
Agua	22	---	90
Acetona	22	75	90
Isopropanol	22	90	100

Tensile Strength, ISO 6992:
Steel pin (grit blasted) to Soda glass

		% de resistencia inicial	
Medio Operativo	**°C**	**500 h**	**1000 h**
98 % Humedad relativa	40	90	90

INFORMACIÓN GENERAL

Para información sobre seguridad en la manipulación de este producto, consultar la Ficha de Datos de Seguridad.

Este producto no está recomendado para uso con oxígeno puro y/o sistemas ricos en oxígeno, y no se debe elegir como sellador de cloro u otros oxidantes fuertes.

Cuando se utilicen soluciones acuosas para la limpieza de las superficies, antes de la adhesión, es importante comprobar la compatibilidad entre la solución limpiadora y el adhesivo. En algunos casos, estas soluciones acuosas podrían afectar al curado y comportamiento del adhesivo.

Modo de empleo

1. Para un mejor comportamiento, las superficies de los componentes deben estar limpias y sin grasa.
2. Para uniones estructurales de alta resistencia, eliminar los contaminantes superficiales tales como la pintura, películas de óxido, aceites, polvo, agentes desmoldeantes y otros contaminantes superficiales.
3. **Doble Cartucho:** Simplemente insertar el cartucho en la pistola dosificadora e introducir el émbolo en los cilindros, presionando ligeramente el accionador. A continuación, quitar la tapa del cartucho y extruir una pequeña cantidad de adhesivo, para asegurarse de que ambas partes fluyen uniforme y libremente. Si se desea una mezcla automática de la resina y el endurecedor, acoplar la boquilla mezcladora a la punta del cartucho y comenzar a dosificar el adhesivo. Para realizar la mezcla manualmente, extruir la cantidad de adhesivo deseada y mezclar a fondo. Mezclar durante 15 segundos, aproximadamente después de haber obtenido un color uniforme.
   Envases a granel: Mezclar a fondo, por peso o volumen, en las proporciones especificadas en la sección Descripción del Producto. Mezclar enérgicamente, durante 15 segundos aproximadamente, después de obtener un color uniforme.
4. No mezclar cantidades mayores a los 4 kg. ya que podría producirse un exceso de calor. Si se mezclan cantidades más pequeñas, se minimizará el calentamiento.
5. Aplicar el adhesivo lo más rápidamente posible después de la mezcla, a una de las superficies a adherir. Para una máxima resistencia de la unión, aplicar el adhesivo uniformemente a ambas superficies. Las piezas deben ensamblarse inmediatamente después de la aplicación del adhesivo.
6. Durante el curado, no mover las piezas ensambladas. Dejar que la unión cure durante 24 horas, antes de someterla a cargas operativas .
7. Los excesos de adhesivo sin curar se pueden eliminar con disolventes orgánicos (ej. Acetona).
8. Tras su empleo, y antes de que el adhesivo endurezca, limpiar con agua jabonosa caliente, tanto el equipo mezclador como el dosificador.

No utilizar como especificaciones del producto

Los datos técnicos que aquí se mencionan se deben utilizar únicamente como referencia. Contactar con el departamento técnico para asistencia y recomendaciones sobre las especificaciones de este producto.

Almacenamiento

Almacenar el producto en sus envases, cerrados y en lugar seco. La información sobre el almacenamiento puede estar indicada en el etiquetado del envase del producto.
Almacenamiento óptimo: 8 °C a 21 °C. El almacenamiento a temperatura inferior a 8 °C o superior a 28 °C puede afectar negativamente a las propiedades del producto. El material que se extraiga del envase puede resultar contaminado durante su uso. No retornar el producto sobrante al envase original. Henkel Corporation no puede asumir ninguna responsabilidad por el producto que haya sido contaminado o almacenado en otras condiciones distintas a las previamente indicadas. Si se necesita información adicional, por favor contactar con el Departamento Técnico o su Representante local.

Conversiones

(°C x 1,8) + 32 = °F
kV/mm x 25,4 = V/mil
mm / 25,4 = "
µm / 25,4 = mil
N x 0,225 = lb
N/mm x 5,71 = lb/"
N/mm² x 145 = psi
MPa x 145 = psi
N·m x 8,851 = lb·"
N·mm x 0.142 = oz·"
mPa·s = cP

Exoneración de responsabilidad

Nota:
La información proporcionada en esta Hoja de Datos Técnicos (HDT), incluyendo las recomendaciones de uso y aplicación del producto, se basan en nuestro conocimiento y experiencia con el producto a la fecha de elaboración de esta HDT. El producto puede tener una gran variedad de aplicaciones y diferentes condiciones de trabajo y aplicación de acuerdo con el medio en que se encuentre, las cuales se encuentran fuera de nuestro control. Por lo tanto, Henkel no será responsable de la idoneidad de nuestro producto en sus procesos y condiciones de producción para el cual se utilice, ni de las aplicaciones o resultados que se esperen del mismo. Recomendamos que lleve a cabo sus propias pruebas para confirmar el funcionamiento de nuestro producto.
Se excluye cualquier responsabilidad sobre la información en la Hoja de Datos Técnicos o en cualquier otra recomendación oral o escrita relativa al producto en cuestión, excepto en los casos en que así se haya acordado expresamente o en caso de muerte o lesiones causados por nuestra negligencia o cualquier otra responsabilidad derivada de las leyes aplicables en materia de productos defectuosos.

En el caso de que los productos sean suministrados por Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS y Henkel France SA tengan en cuenta también lo siguiente:
En el caso de que a pesar de ello Henkel fuera considerada responsable en virtud de cualquier fundamento jurídico, la responsabilidad de Henkel en ningún caso superará el importe de la entrega correspondiente.

En el caso de que los productos sean suministrados por Henkel Colombiana, S.A.S., será de aplicación el siguiente descargo de responsabilidad:

La información proporcionada en esta Hoja de Datos Técnicos (HDT), incluyendo las recomendaciones de uso y aplicación del producto, se basan en nuestro conocimiento y experiencia con el producto a la fecha de elaboración de esta HDT. Por lo tanto, Henkel no será responsable de la idoneidad de nuestro producto en sus procesos y condiciones de producción para el cual se utilice, ni de las aplicaciones o resultados que se esperen del mismo. Recomendamos que lleve a cabo sus propias pruebas para confirmar el funcionamiento de nuestro producto. Se excluye cualquier responsabilidad sobre la información en la Hoja de Datos Técnicos o en cualquier otra recomendación oral o escrita relativa al producto en cuestión, excepto en los casos en que así se haya acordado expresamente o en caso de muerte o lesiones causados por nuestra negligencia o cualquier otra responsabilidad derivada de las leyes aplicables en materia de productos defectuosos.

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Uso de la Marca Registrada
A no ser que se indique lo contrario, todas las marcas registradas de este documento son marcas de Henkel Corporation en EE.UU. y en cualquier otro lugar. ® indica una marca registrada en la Oficina de Patentes y Marcas de EE.UU.

Referencia 1.3

ENGLISH

Datasheet

RS Pro HSS 0.5 to 2.2 mm 10 Piece Micro Drill Set

RS Stock No: **457-627**

Product Details

RS Pro micro drill set consists of ten different drill bits of size ranging from 0.5 to 2.2 mm. Each drill bit produces precision holes in a range of materials including steel, aluminium, brass, polycarbonate and glass fibre.

Features and Benefits

- Drill sizes 0.5, 0.6, 0.8, 0.9, 1.0, 1.3, 1.6, 1.7, 2.0, 2.2 mm
- Supplied in a plastic case
- Produces precision holes
- Suitable for use with steel, aluminium, brass, polycarbonate and glass fibre

RS, Professionally Approved Products, gives you professional quality parts across all products categories. Our range has been testified by engineers as giving comparable quality to that of the leading brands without paying a premium price.

ENGLISH

Specifications:

Material	HSS
Maximum Size	2.2 mm
Minimum Size	0.5 mm
Number of Pieces	10
Set Contents	HSS Micro Drill Bits
Set Type	Micro Drill Set

RS, Professionally Approved Products, gives you professional quality parts across all products categories. Our range has been testified by engineers as giving comparable quality to that of the leading brands without paying a premium price.

Datasheet

RS PRO 1080Pfull HD WIFI digital microscope for iOS/Android

Stock number: 1964079

EN

Specification :

Magnifications: 10x-230x (at 5M)
* Focal Distance: 0mm to 50mm
* Camera Type: high quality CMOS
* Video Resolution: 1080P (1920x1080), 720P (1280x720), VGA (640x480)
* Video Format: H.264
* Picture Resolution: 3M, 5M, 8M, 12M
* Picture Format: JPG
* Wireless: Wi-Fi
* Transmission Range: 20M (open sight)
* Transmission Rate: 150Mbps
* Power supply: 1) Built-in rechargeable lithium battery; 2) DC 5V/1A (mini USB)
* Battery life: around 100minutes
* Battery charging time: around 90 minutes
* Measurement: available on PC (by USB connection)

Include:
Microscope
Adaptor 2A with BS, VDE , Aus & USA interchangeable faces
USB cable
Software CD
Manual

Feature :

This 1080P Full HD Wifi digital microscope can work with iOS/Android devices via Wi-Fi and work with computer via the USB cable and CD software included in the set. It’s easy to zoom in on stamps, coins, paper currency, plants, insects, skin, fabrics, rocks and minerals etc. This item is a very useful tool for students, collectors, hobbyists, and testers etc to explore the microscopic world

OPA627 and OPA637 Precision High-Speed Difet® Operational Amplifiers

1 Features

- Very Low Noise: 4.5 nV/√Hz at 10 kHz
- Fast Settling Time:
  - OPA627—550 ns to 0.01%
  - OPA637—450 ns to 0.01%
- Low V_{OS}: 100-µV maximum
- Low Drift: 0.8-µV/°C maximum
- Low I_B: 5-pA maximum
- OPA627: Unity-Gain Stable
- OPA637: Stable in Gain ≥ 5

2 Applications

- Precision Instrumentation
- Fast Data Acquisition
- DAC Output Amplifier
- Optoelectronics
- Sonar, Ultrasound
- High-Impedance Sensor Amps
- High-Performance Audio Circuitry
- Active Filters

3 Description

The OPA6x7 Difet® operational amplifiers provide a new level of performance in a precision FET operational amplifier. When compared to the popular OPA111 operational amplifier, the OPA6x7 has lower noise, lower offset voltage, and higher speed. The OPA6x7 is useful in a broad range of precision and high speed analog circuitry.

The OPA6x7 is fabricated on a high-speed, dielectrically-isolated complementary NPN/PNP process. It operates over a wide range of power supply voltage of ±4.5 V to ±18 V. Laser-trimmed Difet input circuitry provides high accuracy and low-noise performance comparable with the best bipolar-input operational amplifiers.

High frequency complementary transistors allow increased circuit bandwidth, attaining dynamic performance not possible with previous precision FET operational amplifiers. The OPA627 is unity-gain stable. The OPA637 is stable in gains equal to or greater than five.

Difet fabrication achieves extremely low input bias currents without compromising input voltage noise performance. Low input bias current is maintained over a wide input common-mode voltage range with unique cascode circuitry.

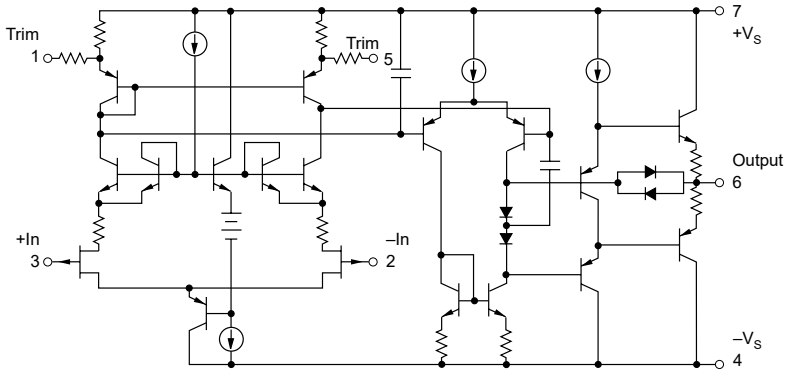
The OPA6x7 is available in plastic PDIP, SOIC, and metal TO-99 packages. Industrial and military temperature range models are available.

Device Information(1)

PART NUMBER	PACKAGE	BODY SIZE (NOM)
OPA627 OPA637	SOIC (8)	3.91 mm × 4.9 mm
	PDIP (8)	6.35 mm × 9.81 mm
	TO-99 (8)	8.95 mm (metal can diameter)

(1) For all available packages, see the orderable addendum at the end of the data sheet.

OPA627 Simplified Schematic



An IMPORTANT NOTICE at the end of this data sheet addresses availability, warranty, changes, use in safety-critical applications, intellectual property matters and other important disclaimers. PRODUCTION DATA.

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4 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Original (September 2000) to Revision A	Page
• Added *ESD Ratings* table, *Feature Description* section, *Device Functional Modes*, *Application and Implementation* section, *Power Supply Recommendations* section, *Layout* section, *Device and Documentation Support* section, and *Mechanical, Packaging, and Orderable Information* section.	1
• Removed Lead Temperature from Absolute Maximum Ratings table.	3

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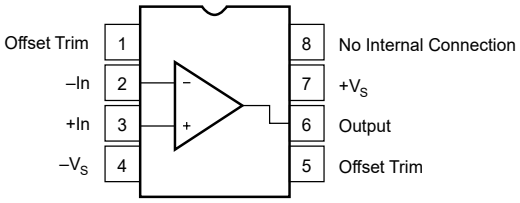
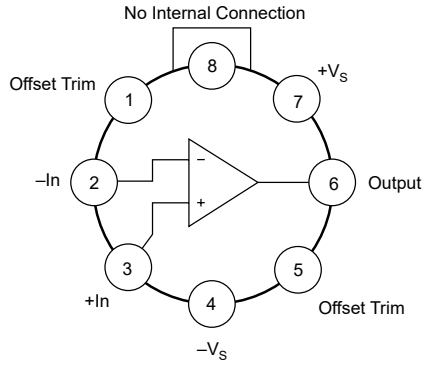
5 Pin Configuration and Functions

P and D Packages
8-Pin PDIP and SOIC
Top View



LMC Package
8-Pin TO-99
Top View



Case connected to $-V_S$.

Pin Functions

PIN		I/O	DESCRIPTION
NO.	NAME		
1	Offset Trim	—	Input offset voltage trim (leave floating if not used)
2	–In	I	Inverting input
3	+In	I	Noninverting input
4	$-V_S$	—	Negative (lowest) power supply
5	Offset Trim	—	Input offset voltage trim (leave floating if not used)
6	Output	O	Output
7	$+V_S$	—	Positive (highest) power supply
8	NC	—	No internal connection (can be left floating)

6 Specifications

6.1 Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted) (1)

		MIN	MAX	UNIT
Supply Voltage			±18	V
Input Voltage Range		$+V_S + 2$	$-V_S - 2$	V
Differential Input			Total $V_S + 4$	V
Power Dissipation			1000	mW
Operating Temperature	LMC Package	–55	125	°C
	P, D Package	–40	125	
Junction Temperature	LMC Package		175	°C
	P, D Package		150	
Storage temperature, T_{stg}	LMC Package	–65	150	°C
	P, D Package	–40	125	

(1) Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only, which do not imply functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions*. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

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6.2 ESD Ratings

			VALUE	UNIT
OPA627 and OPA637 in PDIP and SOIC Packages				
$V_{(ESD)}$	Electrostatic discharge	Human-body model (HBM), per ANSI/ESDA/JEDEC JS-001 (1)	±2500	V
OPA627 and OPA637 in SOIC Packages				
$V_{(ESD)}$	Electrostatic discharge	Charged-device model (CDM), per JEDEC specification JESD22-C101 (2)	±1000	V

(1) JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.
(2) JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process.

6.3 Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted)

		MIN	NOM	MAX	UNIT
Supply voltage, Vs = (V+) - (V-)		9 (±4.5)	30 (±15)	36 (±18)	V
Specified temperature	P and D packages	–25	25	85	°C
	LMC package	–55	25	125	°C

6.4 Thermal Information

THERMAL METRIC (1)		OPA627, OPA637			UNIT
		P (DIP)	D (SOIC)	LMC (TO-99)	
		8 PINS	8 PINS	8 PINS	
$R_{\theta JA}$	Junction-to-ambient thermal resistance	46.2	107.9	200	°C/W
$R_{\theta JC(top)}$	Junction-to-case (top) thermal resistance	34.5	57.3	—	°C/W
$R_{\theta JB}$	Junction-to-board thermal resistance	23.5	49.7	—	°C/W
ψ_{JT}	Junction-to-top characterization parameter	11.7	11.7	—	°C/W
ψ_{JB}	Junction-to-board characterization parameter	23.3	48.9	—	°C/W
$R_{\theta JC(bot)}$	Junction-to-case (bottom) thermal resistance	N/A	N/A	—	°C/W

(1) For more information about traditional and new thermal metrics, see the *Semiconductor and IC Package Thermal Metrics* application report, SPRA953.

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6.5 Electrical Characteristics

At T_A = 25°C, and V_S = ±15 V, unless otherwise noted.

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
OFFSET VOLTAGE(1)							
Input offset voltage	BM, SM grades				40	100	µV
	AM grade				130	250	
	BP grade				100	250	
	AP, AU grades				280	500	
Average drift	BM, SM grades				0.4	0.8	µV/°C
	AM grade				1.2	2	
	BP grade				0.8	2	
	AP, AU grades				2.5		
Power supply rejection	V_S = ±4.5 to ±18 V	BM, BP, SM grades		106	120		dB
		AM, AP, AU grades		100	116		
INPUT BIAS CURRENT(2)							
Input bias current	V_{CM} = 0 V	T_A = 25°C	BM, BP, SM grades		1	5	pA
			AM, AP, AU grades		2	10	
		Over specified temperature	BM, BP grades			1	nA
			SM grade			50	
			AM, AP, AU grades			2	
	V_{CM} = ±10 V, over common-mode voltage		BM, BP, SM grades		1		pA
			AM, AP, AU grades		2		
Input offset current	V_{CM} = 0 V	T_A = 25°C	BM, BP, SM grades		0.5	5	pA
			AM, AP, AU grades		1	10	
		Over specified temperature	BM, BP grades			1	nA
			SM grade			50	
			AM, AP, AU grades			2	
NOISE							
Input voltage noise density	f = 10 Hz	BM, BP, SM grades			15	40	nV/√Hz
		AM, AP, AU grades			20		
	f = 100 Hz	BM, BP, SM grades			8	20	
		AM, AP, AU grades			10		
	f = 1 kHz	BM, BP, SM grades			5.2	8	
		AM, AP, AU grades			5.6		
	f = 10 kHz	BM, BP, SM grades			4.5	6	
		AM, AP, AU grades			4.8		
Input voltage noise	BW = 0.1 Hz to 10 Hz	BM, BP, SM grades			0.6	1.6	µVp-p
		AM, AP, AU grades			0.8		
Input bias-current noise density	f = 100 Hz	BM, BP, SM grades			1.6	2.5	fA/√Hz
		AM, AP, AU grades			2.5		
Input bias-current noise	BW = 0.1 Hz to 10 Hz	BM, BP, SM grades			30	60	fAp-p
		AM, AP, AU grades			48		
INPUT IMPEDANCE							
Differential					10^{13} || 8		Ω || pF
Common-mode					10^{13} || 7		Ω || pF
INPUT VOLTAGE RANGE							
Common-mode input range	T_A = 25°C			±11	±11.5		V
	Over specified temperature			±10.5	±11		
Common-mode rejection	V_{CM} = ±10.5 V	BM, BP, SM grades		106	116		dB
		AM, AP, AU grades		100	110		

(1) Offset voltage measured fully warmed-up.
(2) High-speed test at T_J = 25°C. See Typical Characteristics for warmed-up performance.

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Electrical Characteristics (continued)

At T_A = 25°C, and V_S = ±15 V, unless otherwise noted.

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
OPEN-LOOP GAIN							
Open-loop voltage gain	V_O = ±10 V, R_L = 1kΩ	T_A = 25°C	BM, BP, SM grades	112	120		dB
			AM, AP, AU grades	106	116		
		Over specified temperature	BM, BP grades	106	117		
			SM grade	100	114		
			AM, AP, AU grades	100	110		
FREQUENCY RESPONSE							
Slew rate	G = –1, 10-V step, OPA627			40	55		V/µs
	G = –4, 10-V step, OPA637			100	135		
Settling time	G = –1, 10-V step, OPA627	0.01%			550		ns
		0.1%			450		
	G = –4, 10-V step, OPA637	0.01%			450		
		0.1%			300		
Gain-bandwidth product	G = 1, OPA627				16		MHz
	G = 10, OPA637				80		
Total harmonic distortion + noise	G = 1, f = 1 kHz				0.00003%		
POWER SUPPLY							
Specified operating voltage					±15		V
Operating voltage range				±4.5		±18	V
Current					±7	±7.5	mA
OUTPUT							
Voltage output	R_L = 1 kΩ			±11.5	±12.3		V
	Over specified temperature			±11	±11.5		
Current output	V_O = ±10 V				±45		mA
Short-circuit current				±35	±70/–55	±100	mA
Output impedance, open-loop	1 MHz				55		Ω
TEMPERATURE RANGE							
Temperature range specification	AP, BP, AM, BM, AU grades			–25		85	°C
	SM grade			–55		125	

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6.6 Typical Characteristics

At T_A = 25°C, and V_S = ±15 V, unless otherwise noted.

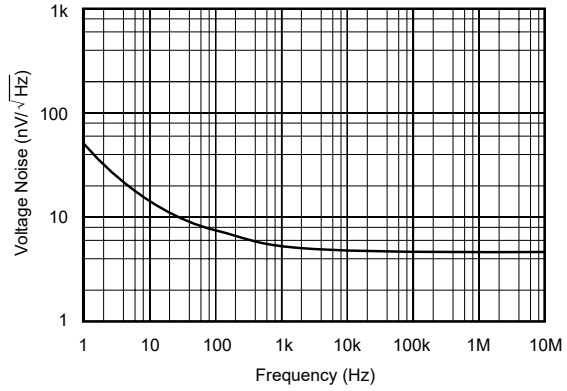

Figure 1. Input Voltage Noise Spectral Density vs Frequency

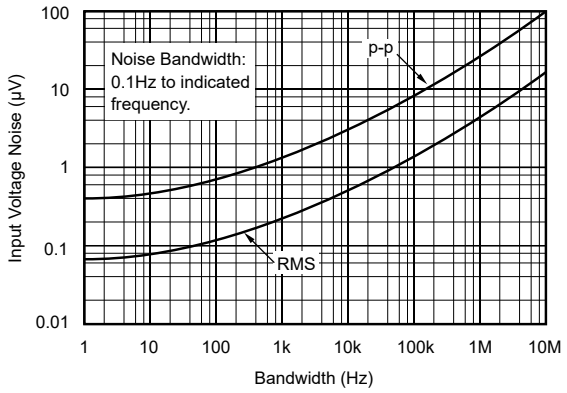

Figure 2. Total Input Voltage Noise vs Bandwidth

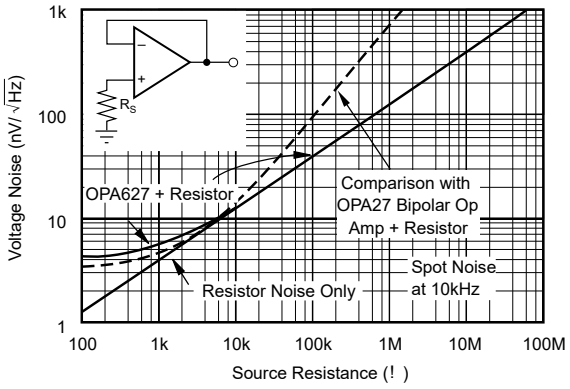

Figure 3. Voltage Noise vs Source Resistance

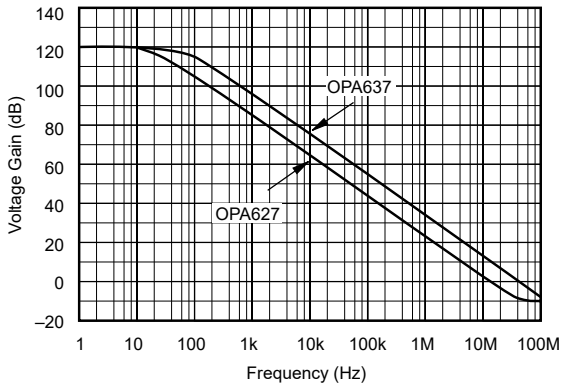

Figure 4. Open-Loop Gain vs Frequency

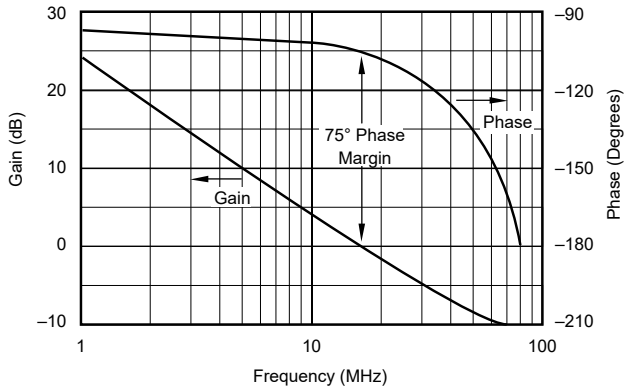

Figure 5. OPA627 Gain/Phase vs Frequency

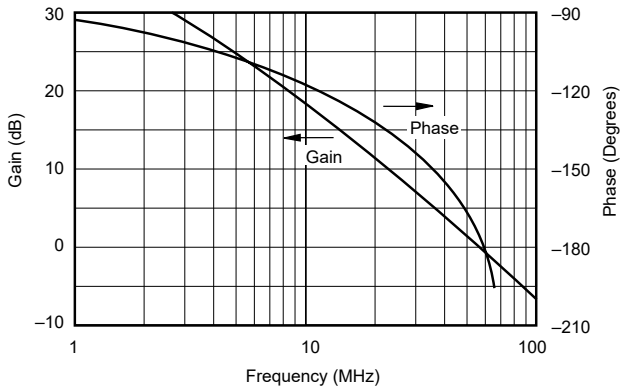

Figure 6. OPA637 Gain/Phase vs Frequency

Typical Characteristics (continued)

At T_A = 25°C, and V_S = ±15 V, unless otherwise noted.

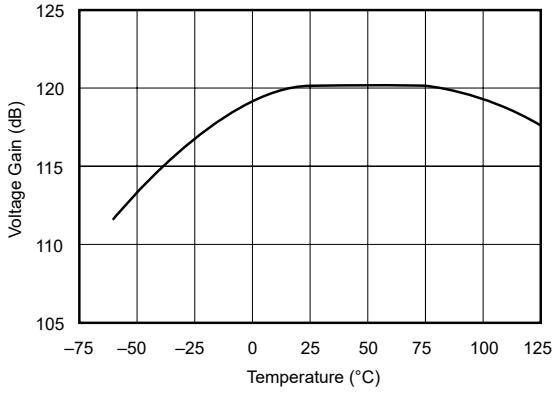

Figure 7. Open-Loop Gain vs Temperature

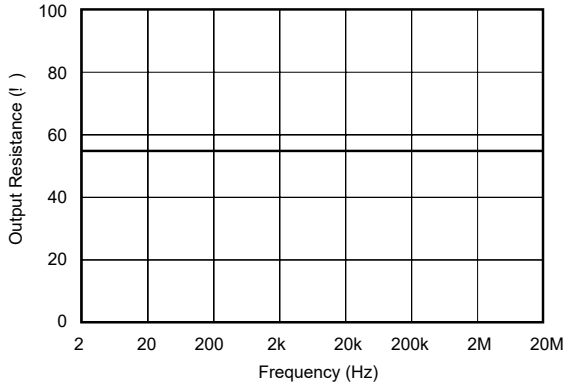

Figure 8. Open-Loop Output Impedance vs Frequency

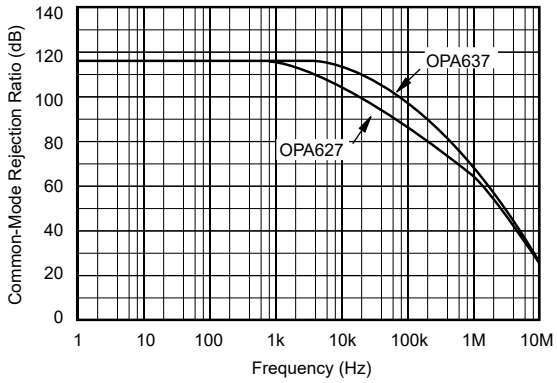

Figure 9. Common-Mode Rejection vs Frequency

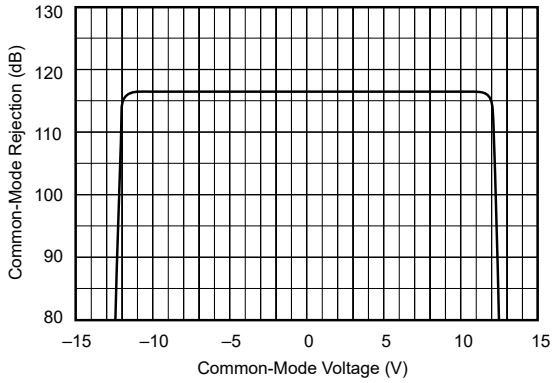

Figure 10. Common-Mode Rejection vs Input Common-Mode Voltage

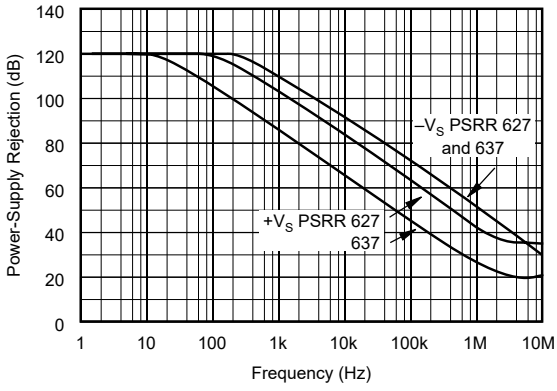

Figure 11. Power-Supply Rejection vs Frequency

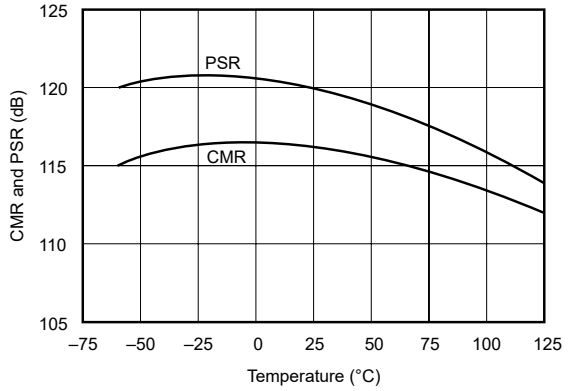

Figure 12. Power-Supply Rejection and Common-Mode Rejection vs Temperature

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Typical Characteristics (continued)

At T_A = 25°C, and V_S = ±15 V, unless otherwise noted.

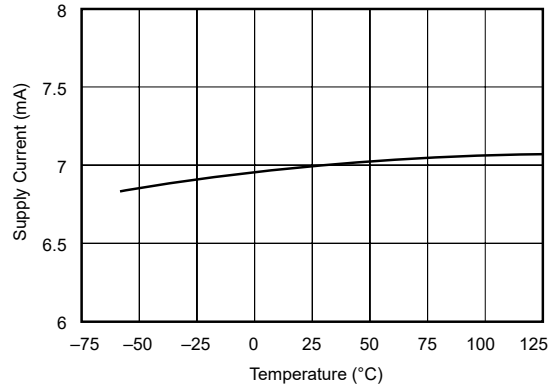

Figure 13. Supply Current vs Temperature

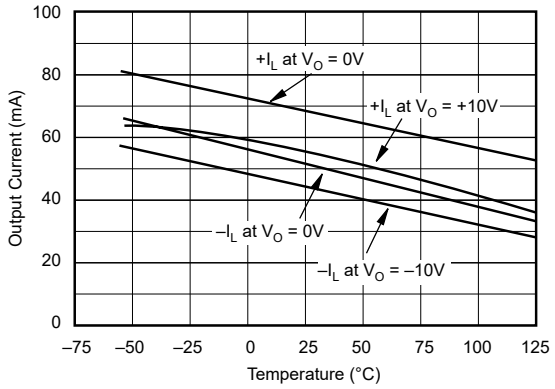

Figure 14. Output Current Limit vs Temperature

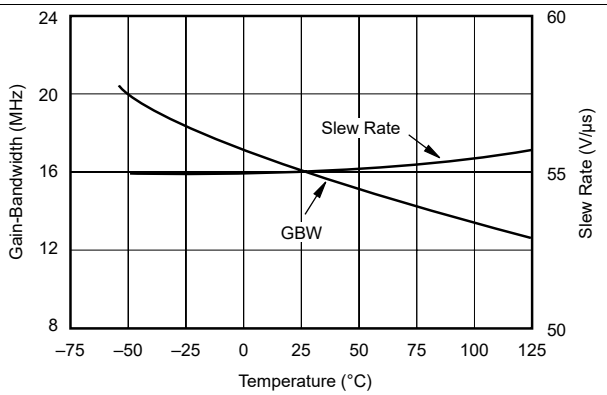

Figure 15. OPA627 Gain-Bandwidth and Slew Rate vs Temperature

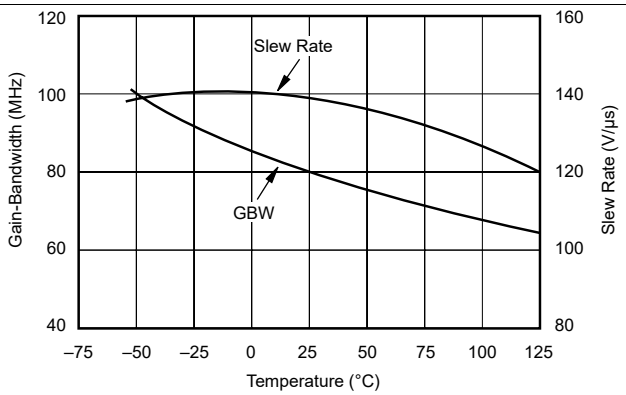

Figure 16. OPA637 Gain-Bandwidth and Slew Rate vs Temperature

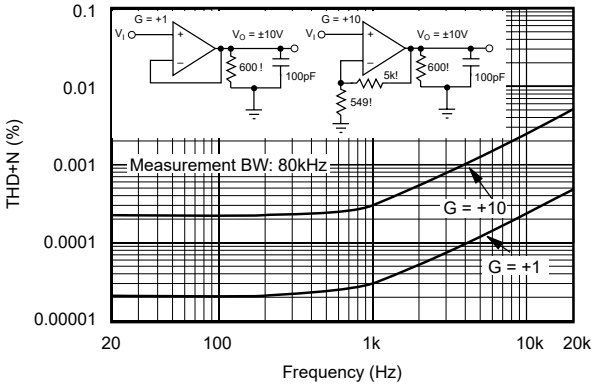

Figure 17. OPA627 Total Harmonic Distortion + Noise vs Frequency

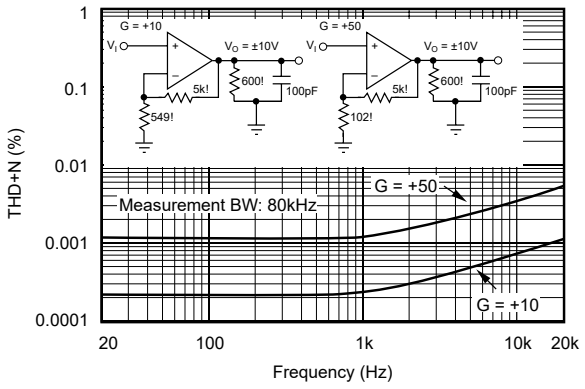

Figure 18. OPA637 Total Harmonic Distortion + Noise vs Frequency

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Typical Characteristics (continued)

At T_A = 25°C, and V_S = ±15 V, unless otherwise noted.

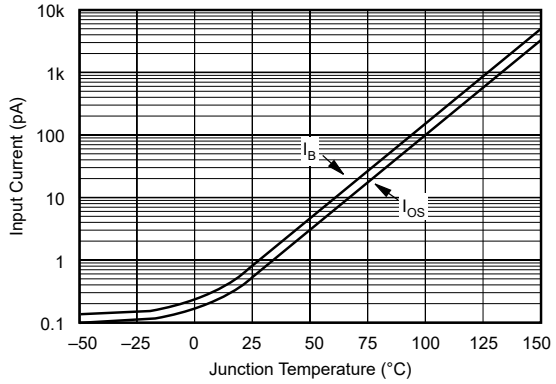

Figure 19. Input Bias and Offset Current vs Junction Temperature

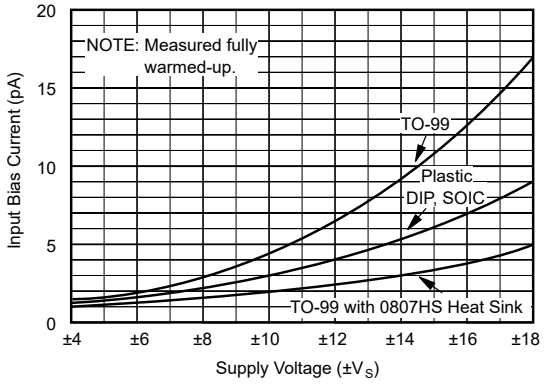

Figure 20. Input Bias Current vs Power Supply Voltage

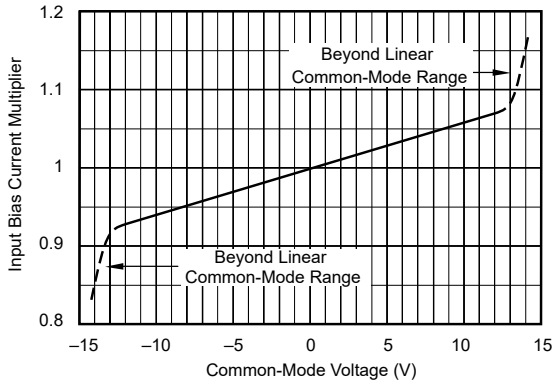

Figure 21. Input Bias Current vs Common-Mode Voltage

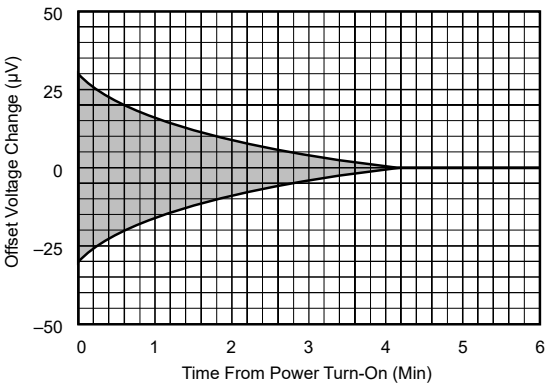

Figure 22. Input Offset Voltage Warm-up vs Time

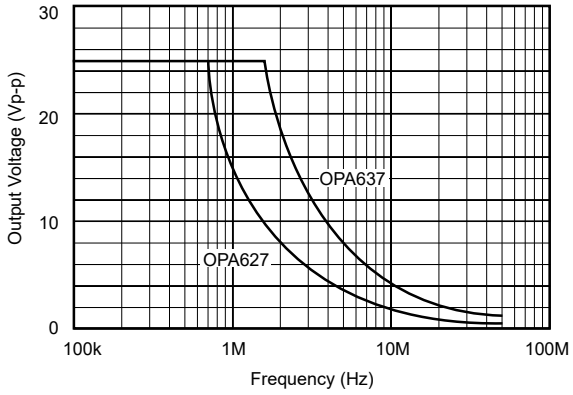

Figure 23. Maximum Output Voltage vs Frequency

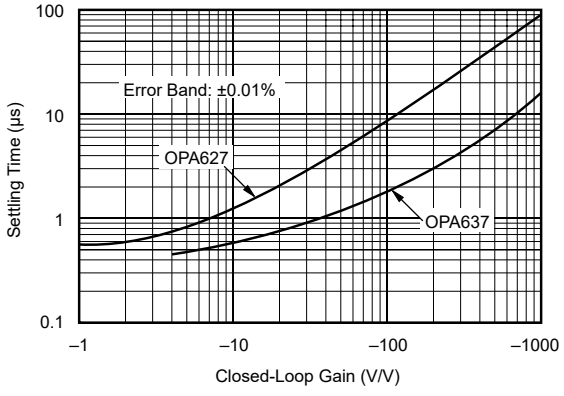

Figure 24. Settling Time vs Closed-Loop Gain

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Typical Characteristics (continued)

At T_A = 25°C, and V_S = ±15 V, unless otherwise noted.

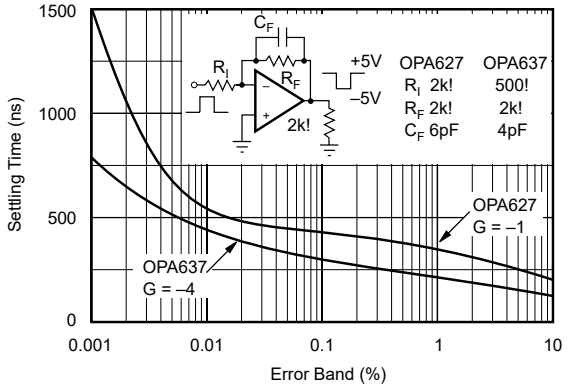


Figure 25. Settling Time vs Error Band

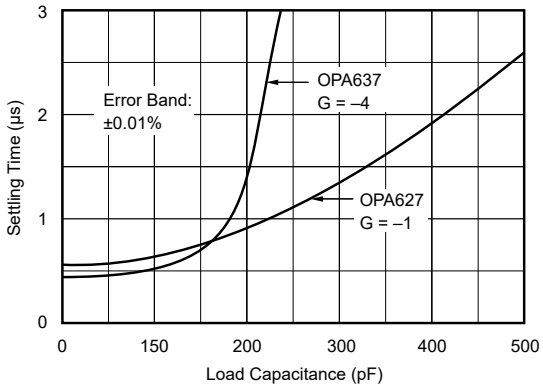


Figure 26. Settling Time vs Load Capacitance

7 Detailed Description

7.1 Overview

The OPA6x7 Difet operational amplifiers provide a new level of performance in a precision FET operational amplifier. When compared to the popular OPA111 operational amplifier, the OPA6x7 has lower noise, lower offset voltage, and higher speed. The OPA6x7 is useful in a broad range of precision and high speed analog circuitry.

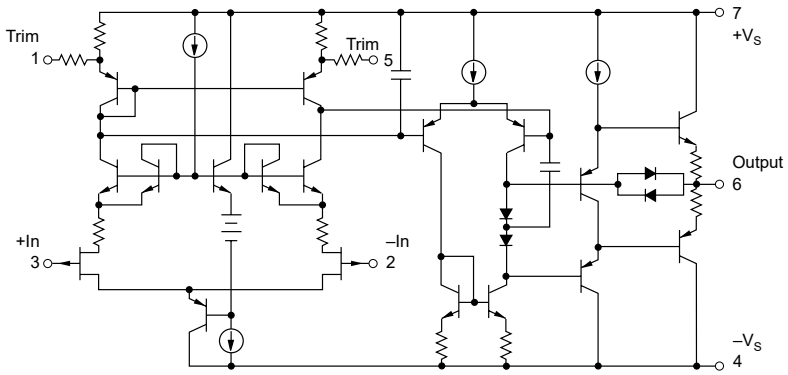
The OPA6x7 is fabricated on a high-speed, dielectrically-isolated complementary NPN/PNP process. It operates over a wide range of power supply voltage of ±4.5 V to ±18 V. Laser-trimmed Difet input circuitry provides high accuracy and low-noise performance comparable with the best bipolar-input operational amplifiers.

High frequency complementary transistors allow increased circuit bandwidth, attaining dynamic performance not possible with previous precision FET operational amplifiers. The OPA627 is unity-gain stable. The OPA637 is stable in gains equal to or greater than five.

Difet fabrication achieves extremely low input bias currents without compromising input voltage noise performance. Low input bias current is maintained over a wide input common-mode voltage range with unique cascode circuitry.

The OPA6x7 is available in plastic PDIP, SOIC, and metal TO-99 packages. Industrial and military temperature range models are available.

7.2 Functional Block Diagram



7.3 Feature Description

The OPA627 is unity-gain stable. The OPA637 may achieve higher speed and bandwidth in circuits with noise gain greater than five. Noise gain refers to the closed-loop gain of a circuit, as if the noninverting operational amplifier input were being driven. For example, the OPA637 may be used in a noninverting amplifier with gain greater than five, or an inverting amplifier of gain greater than four.

When choosing between the OPA627 or OPA637, consider the high frequency noise gain of your circuit configuration. Circuits with a feedback capacitor (see Figure 27) place the operational amplifier in unity noise-gain at high frequency. These applications must use the OPA627 for proper stability. An exception is the circuit in Figure 28, where a small feedback capacitance is used to compensate for the input capacitance at the inverting input of the operational amplifier. In this case, the closed-loop noise gain remains constant with frequency, so if the closed-loop gain is equal to five or greater, the OPA637 may be used.

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Feature Description (continued)

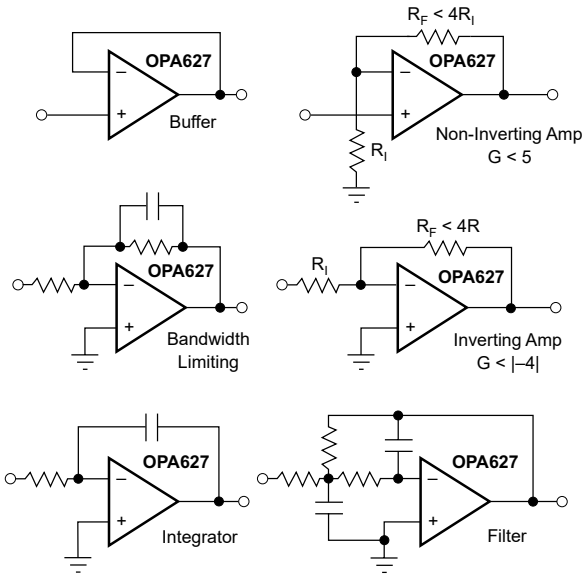

Figure 27. Circuits With Noise Gain Less Than Five Require the OPA627 for Proper Stability

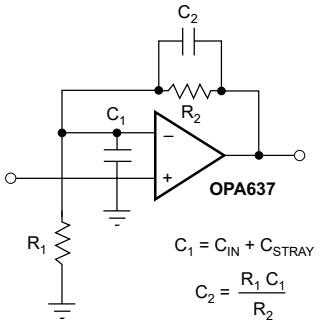

Figure 28. Circuits With Noise Gain Equal to or Greater Than Five May Use the OPA637

7.3.1 Offset Voltage Adjustment

The OPA6x7 is laser-trimmed for low offset voltage and drift, so many circuits will not require external adjustment. Figure 29 shows the optional connection of an external potentiometer to adjust offset voltage. This adjustment should not be used to compensate for offsets created elsewhere in a system (such as in later amplification stages or in an A/D converter), because this could introduce excessive temperature drift. Generally, the offset drift will change by approximately 4 μV/°C for 1 mV of change in the offset voltage due to an offset adjustment (as shown in Figure 29).

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Feature Description (continued)

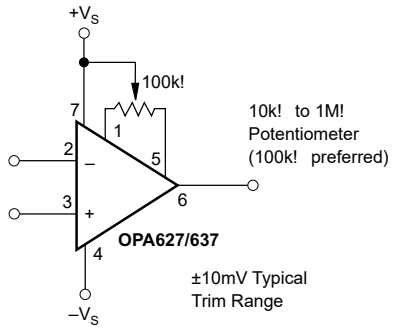

Figure 29. Optional Offset Voltage Trim Circuit

7.3.2 Noise Performance

Some bipolar operational amplifiers may provide lower voltage noise performance, but both voltage noise and bias current noise contribute to the total noise of a system. The OPA6x7 provides both low voltage noise and low current noise. This provides optimum noise performance over a wide range of sources, including reactive-source impedances. This can be seen in the performance curve showing the noise of a source resistor combined with the noise of an OPA627. Above a 2-kΩ source resistance, the operational amplifier contributes little additional noise. Below 1 kΩ, operational amplifier noise dominates over the resistor noise, but compares favorably with precision bipolar operational amplifiers.

7.3.3 Input Bias Current

Difet fabrication of the OPA6x7 provides low input bias current. Because the gate current of a FET doubles approximately every 10°C, to achieve lowest input bias current, keep the die temperature as low as possible. The high speed, and therefore higher quiescent current, of the OPA6x7 can lead to higher chip temperature. A simple press-on heat sink such as the Burr-Brown model 807HS (TO-99 metal package) can reduce chip temperature by approximately 15°C, lowering the I_B to one-third its warmed-up value. The 807HS heat sink can also reduce low-frequency voltage noise caused by air currents and thermoelectric effects. See the data sheet on the 807HS for details.

Temperature rise in the plastic PDIP and SOIC packages can be minimized by soldering the device to the circuit board. Wide copper traces also help dissipate heat.

The OPA6x7 may also be operated at reduced power supply voltage, to minimize power dissipation and temperature rise. Using ±5-V power supplies reduces power dissipation to one-third of that at ±15 V. This reduces the I_B of TO- 99 metal package devices to approximately one-fourth the value at ±15 V.

Leakage currents between printed-circuit-board traces can easily exceed the input bias current of the OPA6x7. A circuit board *guard* pattern (see Figure 30) reduces leakage effects. By surrounding critical high impedance input circuitry with a low impedance circuit connection at the same potential, leakage current will flow harmlessly to the low-impedance node. The case (TO-99 metal package only) is internally connected to $–V_S$.

Input bias current may also be degraded by improper handling or cleaning. Contamination from handling parts and circuit boards may be removed with cleaning solvents and deionized water. Each rinsing operation should be followed by a 30-minute bake at 85°C.

Many FET-input operational amplifiers exhibit large changes in input bias current with changes in input voltage. Input stage cascode circuitry makes the input bias current of the OPA6x7 virtually constant with wide common-mode voltage changes. This is ideal for accurate, high input-impedance buffer applications.

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Feature Description (continued)

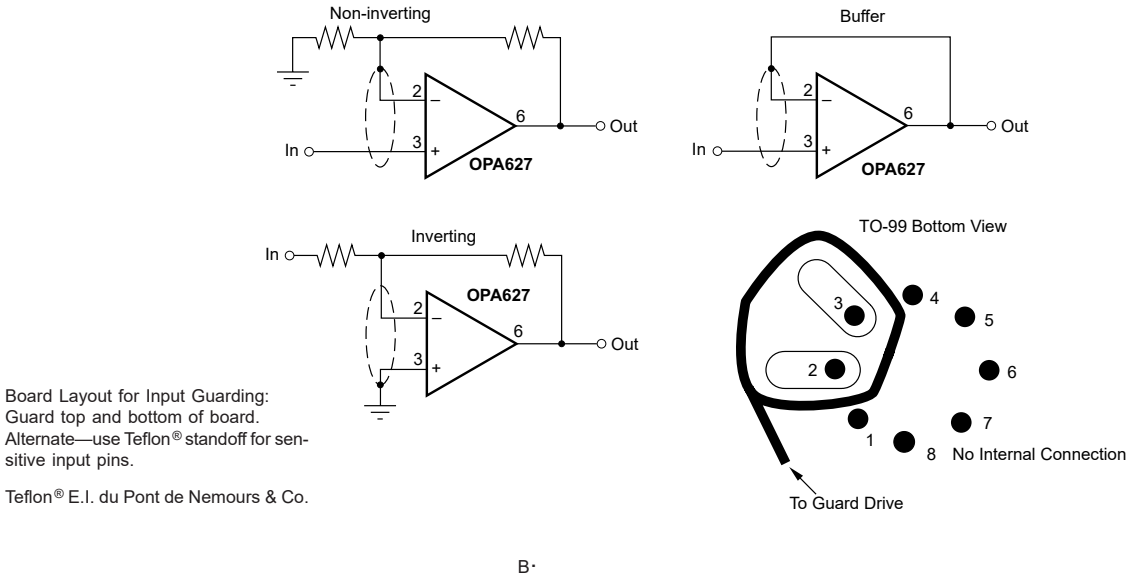

Figure 30. Connection of Input Guard for Lowest I_B

7.3.4 Phase-Reversal Protection

The OPA6x7 has internal phase-reversal protection. Many FET-input operational amplifiers exhibit a phase reversal when the input is driven beyond its linear common-mode range. This is most often encountered in noninverting circuits when the input is driven below –12 V, causing the output to reverse into the positive rail. The input circuitry of the OPA6x7 does not induce phase reversal with excessive common-mode voltage, so the output limits into the appropriate rail.

7.3.5 Output Overload

When the inputs to the OPA6x7 are overdriven, the output voltage of the OPA6x7 smoothly limits at approximately 2.5 V from the positive and negative power supplies. If driven to the negative swing limit, recovery takes approximately 500 ns. When the output is driven into the positive limit, recovery takes approximately 6 µs. Output recovery of the OPA627 can be improved using the output clamp circuit shown in Figure 31. Placing diodes at the inverting input prevent degradation of input bias current.

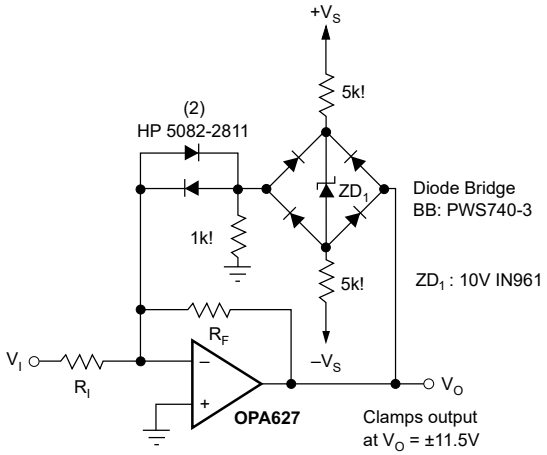

Figure 31. Clamp Circuit for Improved Overload Recovery

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Feature Description (continued)

7.3.6 Capacitive Loads

As with any high-speed operational amplifier, best dynamic performance can be achieved by minimizing the capacitive load. Because a load capacitance presents a decreasing impedance at higher frequency, a load capacitance which is easily driven by a slow operational amplifier can cause a high-speed operational amplifier to perform poorly. See the typical curves showing settling times as a function of capacitive load. The lower bandwidth of the OPA627 makes it the better choice for driving large capacitive loads. Figure 32 shows a circuit for driving very large load capacitance. The two-pole response of this circuit can also be used to sharply limit system bandwidth, often useful in reducing the noise of systems which do not require the full bandwidth of the OPA627.

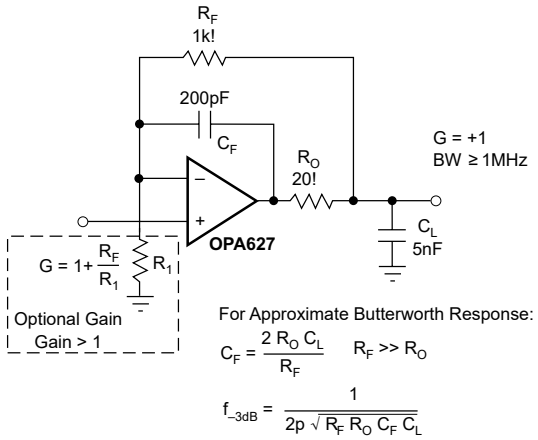

Figure 32. Driving Large Capacitive Loads

7.3.7 Input Protection

The inputs of the OPA6x7 are protected for voltages from $+V_S$ + 2 V to $–V_S$ – 2 V. If the input voltage can exceed these limits, the amplifier should be protected. The diode clamps shown in (a) in Figure 33 prevent the input voltage from exceeding one forward diode voltage drop beyond the power supplies, which is well within the safe limits. If the input source can deliver current in excess of the maximum forward current of the protection diodes, use a series resistor, R_S, to limit the current. Be aware that adding resistance to the input increases noise. The 4-nV/√Hz theoretical thermal noise of a 1-kΩ resistor will add to the 4.5-nV/√Hz noise of the OPA6x7 (by the square-root of the sum of the squares), producing a total noise of 6 nV/√Hz. Resistors less than 100 Ω add negligible noise.

Leakage current in the protection diodes can increase the total input bias current of the circuit. The specified maximum leakage current for commonly used diodes such as the 1N4148 is approximately 25 nA, more than a thousand times larger than the input bias current of the OPA6x7. Leakage current of these diodes is typically much lower and may be adequate in many applications. Light falling on the junction of the protection diodes can dramatically increase leakage current, so common glass-packaged diodes should be shielded from ambient light. Very low leakage can be achieved by using a diode-connected FET as shown. The 2N4117A is specified at 1 pA and its metal case shields the junction from light.

Sometimes input protection is required on I/V converters of inverting amplifiers; see (b) in Figure 33. Although in normal operation, the voltage at the summing junction will be near zero (equal to the offset voltage of the amplifier), and large input transients may cause this node to exceed 2 V beyond the power supplies. In this case, the summing junction should be protected with diode clamps connected to ground. Even with the low voltage present at the summing junction, common signal diodes may have excessive leakage current. Because the reverse voltage on these diodes is clamped, a diode-connected signal transistor can act as an inexpensive low leakage diode; see (b) in Figure 33.

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Feature Description (continued)

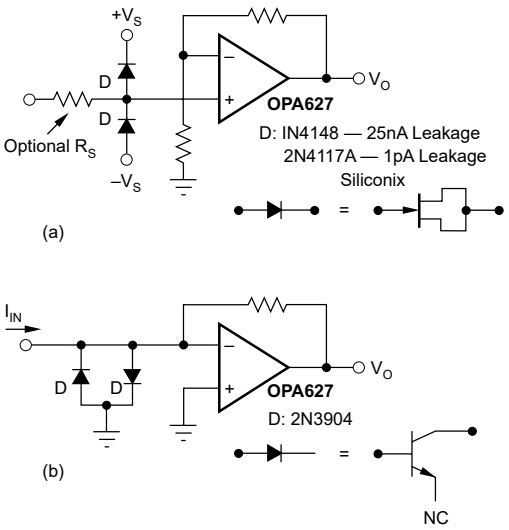

Figure 33. Input Protection Circuits

7.3.8 EMI Rejection Ratio (EMIRR)

The electromagnetic interference (EMI) rejection ratio, or EMIRR, describes the EMI immunity of operational amplifiers. An adverse effect that is common to many operational amplifiers is a change in the offset voltage as a result of RF signal rectification. An operational amplifier that is more efficient at rejecting this change in offset as a result of EMI has a higher EMIRR and is quantified by a decibel value. Measuring EMIRR can be performed in many ways, but this report provides the EMIRR IN+, which specifically describes the EMIRR performance when the RF signal is applied to the noninverting input pin of the operational amplifier. In general, only the noninverting input is tested for EMIRR for the following three reasons:

- Operational amplifier input pins are known to be the most sensitive to EMI, and typically rectify RF signals better than the supply or output pins.
- The noninverting and inverting operational amplifier inputs have symmetrical physical layouts and exhibit nearly matching EMIRR performance.
- EMIRR is easier to measure on noninverting pins than on other pins because the noninverting input terminal can be isolated on a printed-circuit-board (PCB). This isolation allows the RF signal to be applied directly to the noninverting input terminal with no complex interactions from other components or connecting PCB traces.

A more formal discussion of the EMIRR IN+ definition and test method is provided in application report *EMI Rejection Ratio of Operational Amplifiers* (SBOA128), available for download at www.ti.com.

The EMIRR IN+ of the OPA627 is plotted versus frequency as shown in Figure 34. If available, any dual and quad operational amplifier device versions have nearly similar EMIRR IN+ performance. The OPA627 unity-gain bandwidth is 16 MHz. EMIRR performance below this frequency denotes interfering signals that fall within the operational amplifier bandwidth.

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Feature Description (continued)

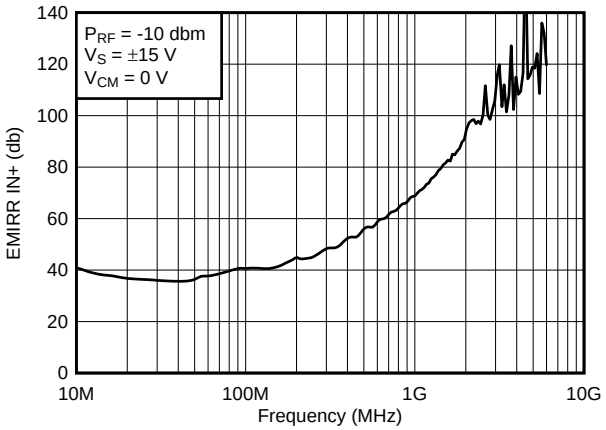

Figure 34. OPA627 EMIRR IN+ vs Frequency

Table 1 shows the EMIRR IN+ values for the OPA627 at particular frequencies commonly encountered in real-world applications. Applications listed in Table 1 may be centered on or operated near the particular frequency shown. This information may be of special interest to designers working with these types of applications, or working in other fields likely to encounter RF interference from broad sources, such as the industrial, scientific, and medical (ISM) radio band.

Table 1. OPA627 EMIRR IN+ for Frequencies of Interest

FREQUENCY	APPLICATION / ALLOCATION	EMIRR IN+
400 MHz	Mobile radio, mobile satellite/space operation, weather, radar, UHF	46.2 dB
900 MHz	GSM, radio com/nav./GPS (to 1.6 GHz), ISM, aeronautical mobile, UHF	60.3 dB
1.8 GHz	GSM, mobile personal comm. broadband, satellite, L-band	81 dB
2.4 GHz	802.11b/g/n, Bluetooth™, mobile personal comm., ISM, amateur radio/satellite, S-band	96.9 dB
3.6 GHz	Radiolocation, aero comm./nav., satellite, mobile, S-band	108.9 dB
5 Ghz	802.11a/n, aero comm./nav., mobile comm., space/satellite operation, C-band	116.8 dB

7.3.8.1 EMIRR IN+ Test Configuration

Figure 35 shows the circuit configuration for testing the EMIRR IN+. An RF source is connected to the operational amplifier noninverting input terminal using a transmission line. The operational amplifier is configured in a unity gain buffer topology with the output connected to a low-pass filter (LPF) and a digital multimeter (DMM). A large impedance mismatch at the operational amplifier input causes a voltage reflection; however, this effect is characterized and accounted for when determining the EMIRR IN+. The resulting DC offset voltage is sampled and measured by the multimeter. The LPF isolates the multimeter from residual RF signals that may interfere with multimeter accuracy. Refer to SBOA128 for more details.

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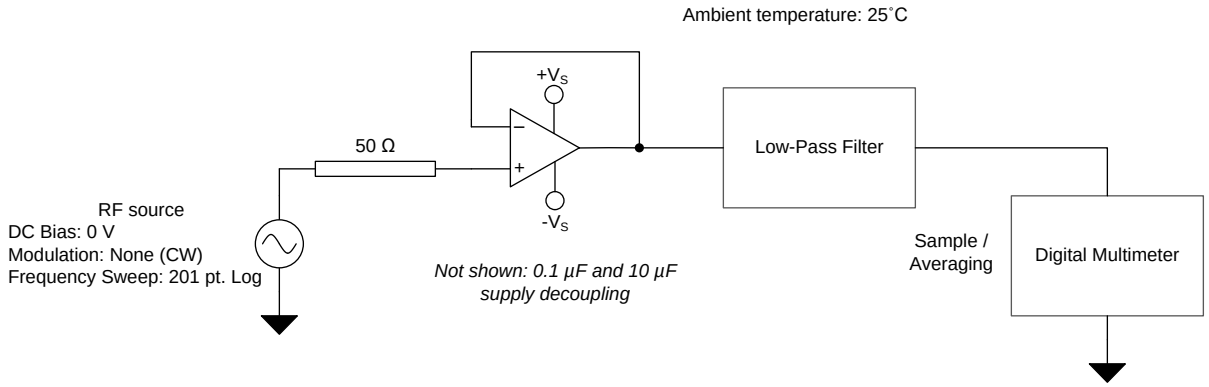
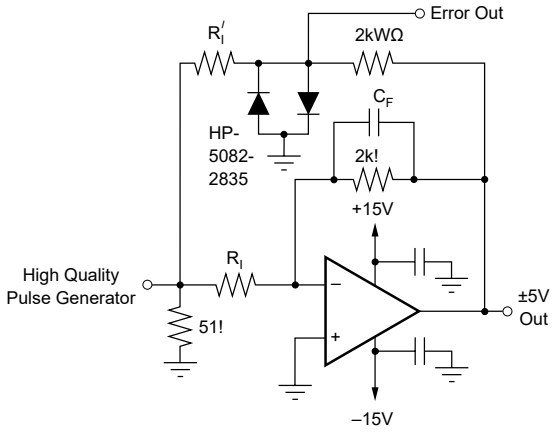


Figure 35. EMIRR IN+ Test Configuration Schematic

7.4 Settling Time

The OPA627 and OPA637 have fast settling times, as low as 300 ns. Figure 36 illustrates the circuit used to measure settling time for the OPA627 and OPA637.



	OPA627	OPA637
R_I, R_1'	2k!	500!
C_F	6pF	4pF
Error Band (0.01%)	±0.5mV	±0.2mV

NOTE: C_F is selected for best settling time performance depending on test fixture layout. Once optimum value is determined, a fixed capacitor may be used.

Figure 36. Settling Time and Slew Rate Test Circuit

7.5 Device Functional Modes

The OPA627 and OPA6377 have a single functional mode and are operational when the power-supply voltage is greater than 9V (±4.5 V). The maximum power supply voltage for the OPA627 and OPA637 are 36 V (±18 V).

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8 Application and Implementation

NOTE

Information in the following applications sections is not part of the TI component specification, and TI does not warrant its accuracy or completeness. TI's customers are responsible for determining suitability of components for their purposes. Customers should validate and test their design implementation to confirm system functionality.

8.1 Application Information

The OPA627 and OPA637 are ideally suited to use as input amplifiers in instrumentation amplifier configurations requiring high speed, fast settling and high input impedance.

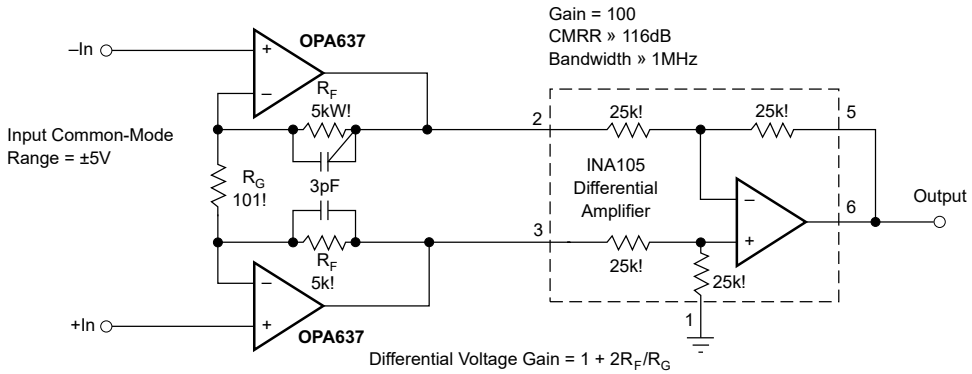


Figure 37. High Speed Instrumentation Amplifier, Gain = 100

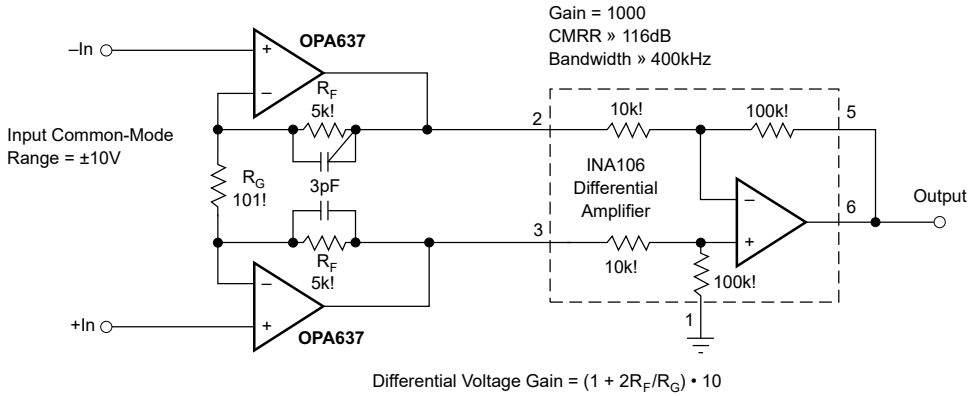
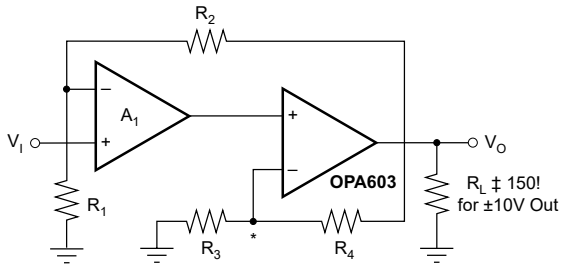


Figure 38. High Speed Instrumentation Amplifier, Gain = 1000



This composite amplifier uses the OPA603 current-feedback op amp to provide extended bandwidth and slew rate at high closed-loop gain. The feedback loop is closed around the composite amp, preserving the precision input characteristics of the OPA627/637. Use separate power supply bypass capacitors for each op amp.

∗Minimize capacitance at this node.

GAIN (V/V)	A_1 OP AMP	R_1 (Ω)	R_2 (k!)	R_3 (!)	R_4 (k!)	–3dB (MHz)	SLEW RATE (V/µs)
100	OPA627	50.5(1)	4.99	20	1	15	700
1000	OPA637	49.9	4.99	12	1	11	500

NOTE: (1) Closest 1/2% value.

Figure 39. Composite Amplifier for Wide Bandwidth

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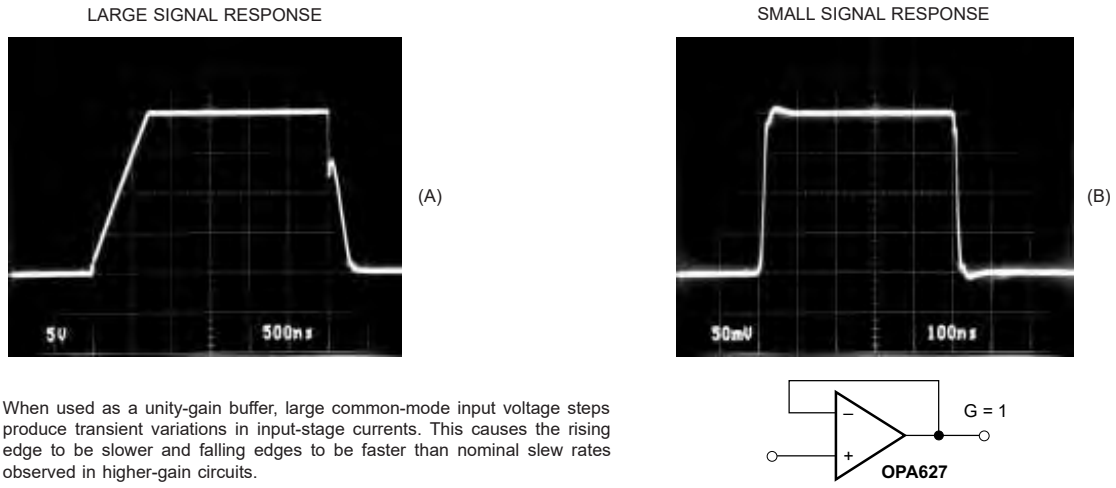
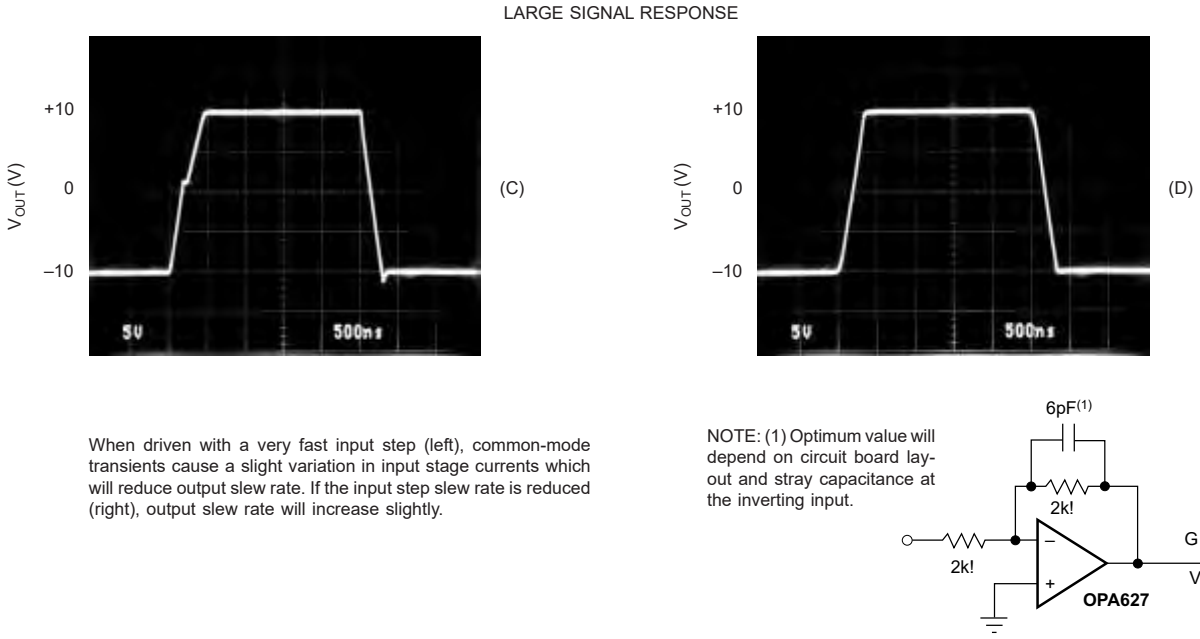
Application Information (continued)



When used as a unity-gain buffer, large common-mode input voltage steps produce transient variations in input-stage currents. This causes the rising edge to be slower and falling edges to be faster than nominal slew rates observed in higher-gain circuits.

Figure 40. OPA627 Dynamic Performance, G = 1



When driven with a very fast input step (left), common-mode transients cause a slight variation in input stage currents which will reduce output slew rate. If the input step slew rate is reduced (right), output slew rate will increase slightly.

NOTE: (1) Optimum value will depend on circuit board lay-out and stray capacitance at the inverting input.

Figure 41. OPA627 Dynamic Performance, G = –1

Application Information (continued)

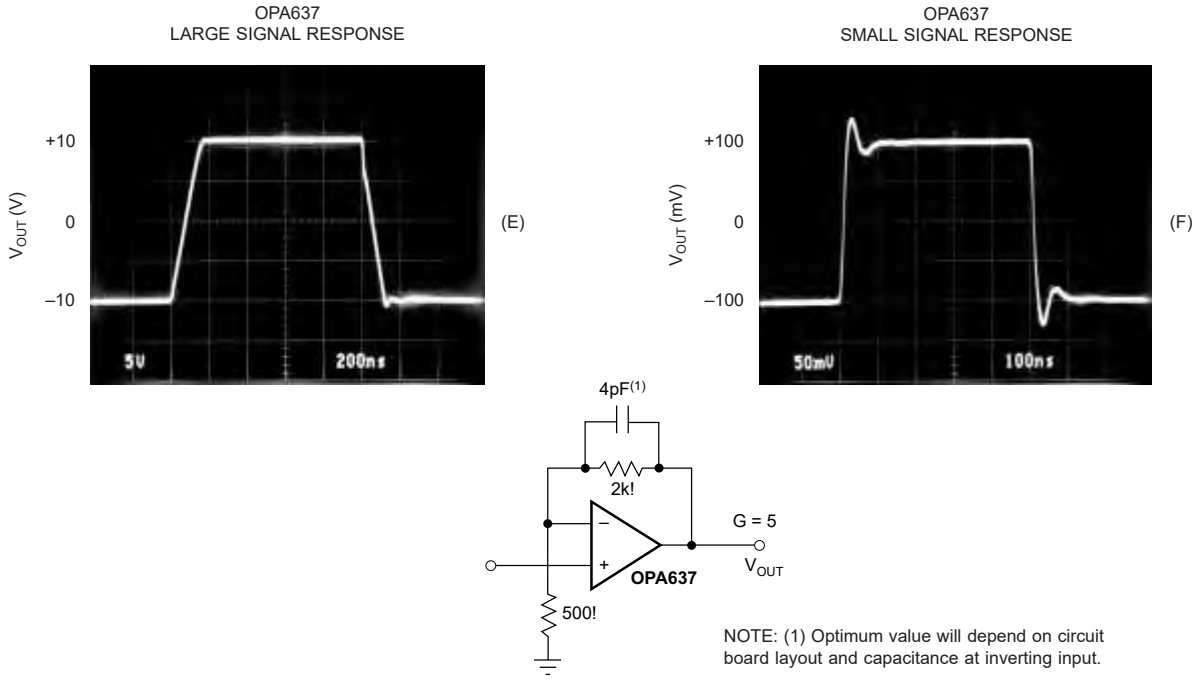


Figure 42. OPA637 Dynamic Response, G = 5

8.2 Typical Application

Low pass filters are commonly employed in signal processing applications to reduce noise and prevent aliasing. The OPA627 and OPA637 are ideally suited to construct high speed, high precision active filters. Figure 43 illustrates a second order low pass filter commonly encountered in signal processing applications.

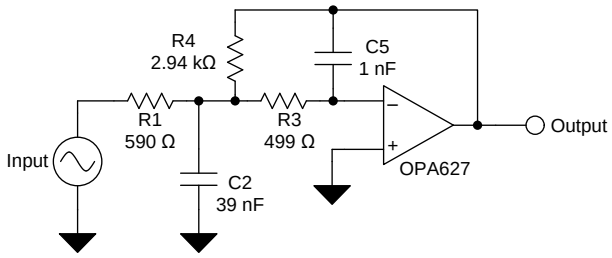


Figure 43. Second Order Low Pass Filter

8.2.1 Design Requirements

Use the following parameters for this design example:

- Gain = 5 V/V (inverting gain)
- Low pass cutoff frequency = 25 kHz
- Second order Chebyshev filter response with 3-dB gain peaking in the passband

8.2.2 Detailed Design Procedure

The infinite-gain multiple-feedback circuit for a low-pass network function is shown in Figure 43. Use Equation 1 to calculate the voltage transfer function.

$$\frac{\text{Output}}{\text{Input}}(s) = \frac{-1/R_1R_3C_2C_5}{s^2 + (s/C_2)(1/R_1 + 1/R_3 + 1/R_4) + 1/R_3R_4C_2C_5} \quad (1)$$

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Typical Application (continued)

This circuit produces a signal inversion. For this circuit the gain at DC and the low pass cutoff frequency can be calculated using Equation 2.

$$\text{Gain} = \frac{R_4}{R_1}$$

$$f_C = \frac{1}{2\pi}\sqrt{\left(1/R_3R_4C_2C_5\right)} \tag{2}$$

Software tools are readily available to simplify filter design. WEBENCH® Filter Designer is a simple, powerful, and easy-to-use active filter design program. The WEBENCH Filter Designer lets you create optimized filter designs using a selection of TI operational amplifiers and passive components from TI's vendor partners. Available as a web based tool from the WEBENCH® Design Center, WEBENCH® Filter Designer allows you to design, optimize, and simulate complete multi-stage active filter solutions within minutes.

8.2.3 Application Curve

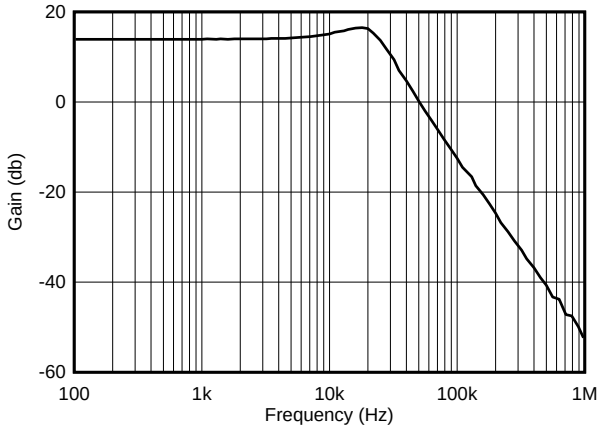

Figure 44. OPA627 2nd Order 25 kHz, Chebyshev, Low Pass Filter

9 Power Supply Recommendations

The OPA627 and OPA637 are specified for operation from 9 V to 36 V (±4.5 V to ±18 V); many specifications apply from –25°C to 85°C (P and D packages) and –55°C to 125°C (LMC package). Parameters that can exhibit significant variance with regard to operating voltage or temperature are presented in the *Typical Characteristics*.

10 Layout

10.1 Layout Guidelines

For best operational performance of the device, use good PCB layout practices, including:

- Noise can propagate into analog circuitry through the power pins of the circuit as a whole and operational amplifier itself. Bypass capacitors are used to reduce the coupled noise by providing low-impedance power sources local to the analog circuitry.
  - Connect low-ESR, 0.1-µF ceramic bypass capacitors between each supply pin and ground, placed as close to the device as possible. A single bypass capacitor from V+ to ground is applicable for single-supply applications.
  - The OPA6x7 is capable of high-output current (in excess of 45 mA). Applications with low impedance loads or capacitive loads with fast transient signals demand large currents from the power supplies. Larger bypass capacitors such as 1-µF solid tantalum capacitors may improve dynamic performance in these applications.
- Separate grounding for analog and digital portions of circuitry is one of the simplest and most-effective methods of noise suppression. One or more layers on multilayer PCBs are usually devoted to ground planes. A ground plane helps distribute heat and reduces EMI noise pickup. Make sure to physically separate digital and analog grounds paying attention to the flow of the ground current. For more detailed information refer to *Circuit Board Layout Techniques* (SLOA089).
- To reduce parasitic coupling, run the input traces as far away from the supply or output traces as possible. If these traces cannot be kept separate, crossing the sensitive trace perpendicular is much better as opposed to in parallel with the noisy trace.
- Place the external components as close to the device as possible. As shown in Figure 45, keeping RF and RG close to the inverting input minimizes parasitic capacitance.
- Keep the length of input traces as short as possible. Always remember that the input traces are the most sensitive part of the circuit.
- Consider a driven, low-impedance guard ring around the critical traces. A guard ring can significantly reduce leakage currents from nearby traces that are at different potentials.
- The case (TO-99 metal package only) is internally connected to the negative power supply, as with most common operational amplifiers.
- Pin 8 of the plastic PDIP, SOIC, and TO-99 packages has no internal connection.
- Cleaning the PCB following board assembly is recommended for best performance.
- Any precision integrated circuit may experience performance shifts due to moisture ingress into the plastic package. Following any aqueous PCB cleaning process, baking the PCB assembly is recommended to remove moisture introduced into the device packaging during the cleaning process. A low temperature, post cleaning bake at 85°C for 30 minutes is sufficient for most circumstances.

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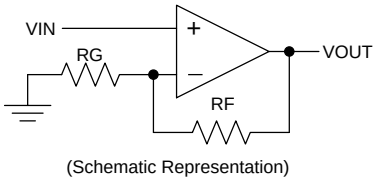
10.2 Layout Example



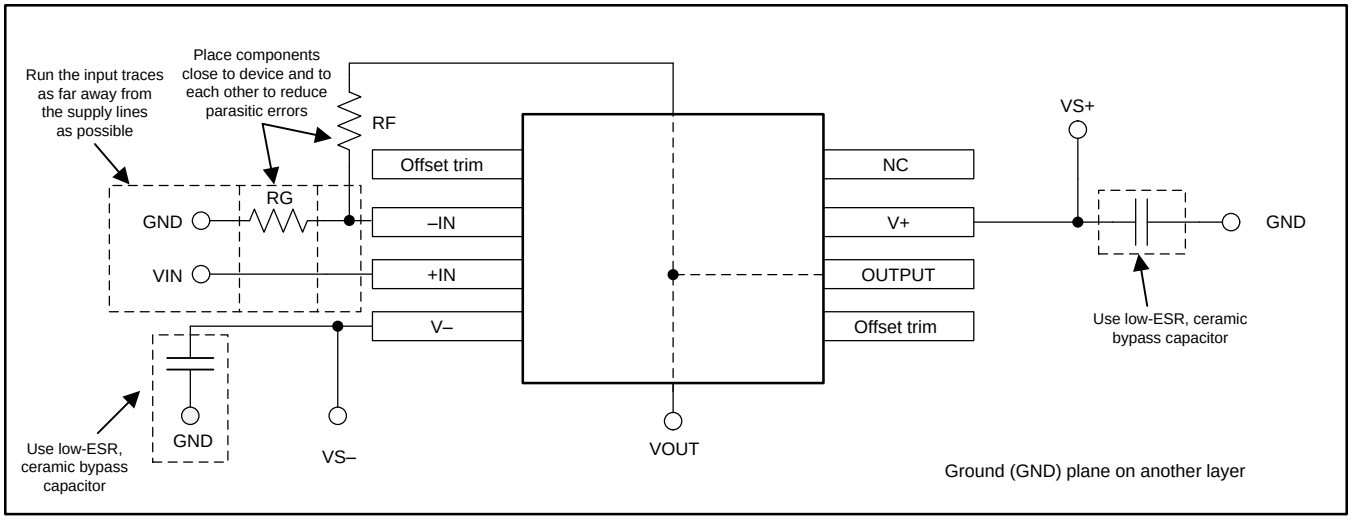


Figure 45. OPA627 Layout Example for the Noninverting Configuration

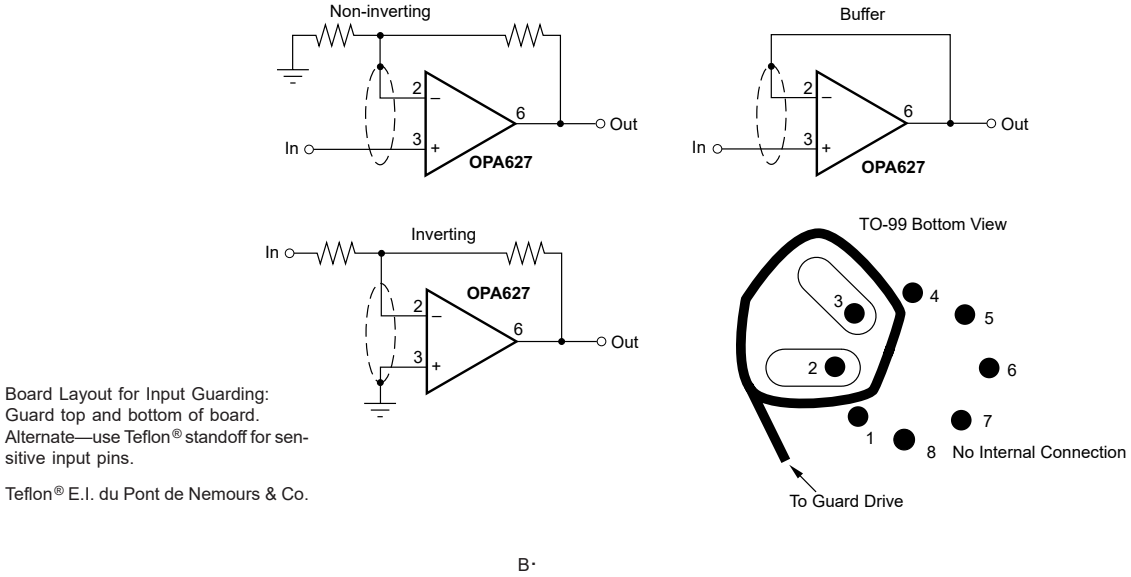


Figure 46. Board Layout for Input Guarding (LMC Package)

11 Device and Documentation Support

11.1 Device Support

11.1.1 Development Support

11.1.1.1 TINA-TI™ (Free Software Download)

TINA™ is a simple, powerful, and easy-to-use circuit simulation program based on a SPICE engine. TINA-TI is a free, fully-functional version of the TINA software, preloaded with a library of macro models in addition to a range of both passive and active models. TINA-TI provides all the conventional dc, transient, and frequency domain analysis of SPICE, as well as additional design capabilities.

Available as a free download from the Analog eLab Design Center, TINA-TI offers extensive post-processing capability that allows users to format results in a variety of ways. Virtual instruments offer the ability to select input waveforms and probe circuit nodes, voltages, and waveforms, creating a dynamic quick-start tool.

WEBENCH® Filter Designer is a simple, powerful, and easy-to-use active filter design program. The WEBENCH Filter Designer lets you create optimized filter designs using a selection of TI operational amplifiers and passive components from TI's vendor partners. Available as a web based tool from the WEBENCH® Design Center, WEBENCH® Filter Designer allows you to design, optimize, and simulate complete multi-stage active filter solutions within minutes.

NOTE

These files require that either the TINA software (from DesignSoft™) or TINA-TI software be installed. Download the free TINA-TI software from the TINA-TI folder.

11.1.1.2 TI Precision Designs

The OPA627 is featured in several TI Precision Designs, available online at http://www.ti.com/ww/en/analog/precision-designs/. TI Precision Designs are analog solutions created by TI's precision analog applications experts and offer the theory of operation, component selection, simulation, complete PCB schematic and layout, bill of materials, and measured performance of many useful circuits.

11.2 Documentation Support

11.2.1 Related Documentation

For related documentation see the following:

- *Circuit Board Layout Techniques*, SLOA089.
- *Op Amps for Everyone*, SLOD006.
- *Compensate Transimpedance Amplifiers Intuitively*, SBOS055.
- *Noise Analysis for High Speed op Amps*, SBOA066.

11.3 Related Links

The table below lists quick access links. Categories include technical documents, support and community resources, tools and software, and quick access to sample or buy.

Table 2. Related Links

PARTS	PRODUCT FOLDER	SAMPLE & BUY	TECHNICAL DOCUMENTS	TOOLS & SOFTWARE	SUPPORT & COMMUNITY
OPA627	Click here	Click here	Click here	Click here	Click here
OPA637	Click here	Click here	Click here	Click here	Click here

11.4 Trademarks

TINA-TI is a trademark of Texas Instruments, Inc and DesignSoft, Inc.
Difet is a registered trademark of Texas Instruments.
TINA, DesignSoft are trademarks of DesignSoft, Inc.

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11.4 Trademarks (continued)

All other trademarks are the property of their respective owners.

11.5 Electrostatic Discharge Caution

These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

11.6 Glossary

SLYZ022 — *TI Glossary*.

This glossary lists and explains terms, acronyms, and definitions.

12 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

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PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
OPA627AM	NRND	TO-99	LMC	8	20	Green (RoHS & no Sb/Br)	AU	N / A for Pkg Type		OPA627AM	
OPA627AP	ACTIVE	PDIP	P	8	50	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type		OPA627AP	Samples
OPA627APG4	ACTIVE	PDIP	P	8	50	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type		OPA627AP	Samples
OPA627AU	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	NIPDAU	Level-3-260C-168 HR	-25 to 85	OPA 627AU	Samples
OPA627AU/2K5	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	NIPDAU	Level-3-260C-168 HR	-25 to 85	OPA 627AU	Samples
OPA627AU/2K5E4	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	NIPDAU	Level-3-260C-168 HR	-25 to 85	OPA 627AU	Samples
OPA627AUE4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	NIPDAU	Level-3-260C-168 HR	-25 to 85	OPA 627AU	Samples
OPA627AUG4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	NIPDAU	Level-3-260C-168 HR	-25 to 85	OPA 627AU	Samples
OPA627BM	NRND	TO-99	LMC	8	1	Green (RoHS & no Sb/Br)	AU	N / A for Pkg Type		OPA627BM	
OPA627BP	ACTIVE	PDIP	P	8	50	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type		OPA627BP	Samples
OPA627SM	NRND	TO-99	LMC	8	20	Green (RoHS & no Sb/Br)	AU	N / A for Pkg Type		OPA627SM	
OPA637AM	NRND	TO-99	LMC	8	20	Green (RoHS & no Sb/Br)	AU	N / A for Pkg Type		OPA637AM	
OPA637AP	ACTIVE	PDIP	P	8	50	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type		OPA637AP	Samples
OPA637AU	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	NIPDAU	Level-3-260C-168 HR	-25 to 85	OPA 637AU	Samples
OPA637AU/2K5	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	NIPDAU	Level-3-260C-168 HR	-25 to 85	OPA 637AU	Samples
OPA637AUG4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	NIPDAU	Level-3-260C-168 HR	-25 to 85	OPA 637AU	Samples
OPA637BM	NRND	TO-99	LMC	8	20	Green (RoHS & no Sb/Br)	AU	N / A for Pkg Type		OPA637BM	

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
OPA637BP	ACTIVE	PDIP	P	8	50	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type		OPA637BP	Samples
OPA637BPG4	ACTIVE	PDIP	P	8	50	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type		OPA637BP	Samples
OPA637SM	NRND	TO-99	LMC	8	20	Green (RoHS & no Sb/Br)	AU	N / A for Pkg Type		OPA637SM	

(1) The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.
PREVIEW: Device has been announced but is not in production. Samples may or may not be available.
OBSOLETE: TI has discontinued the production of the device.

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".
RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.
Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

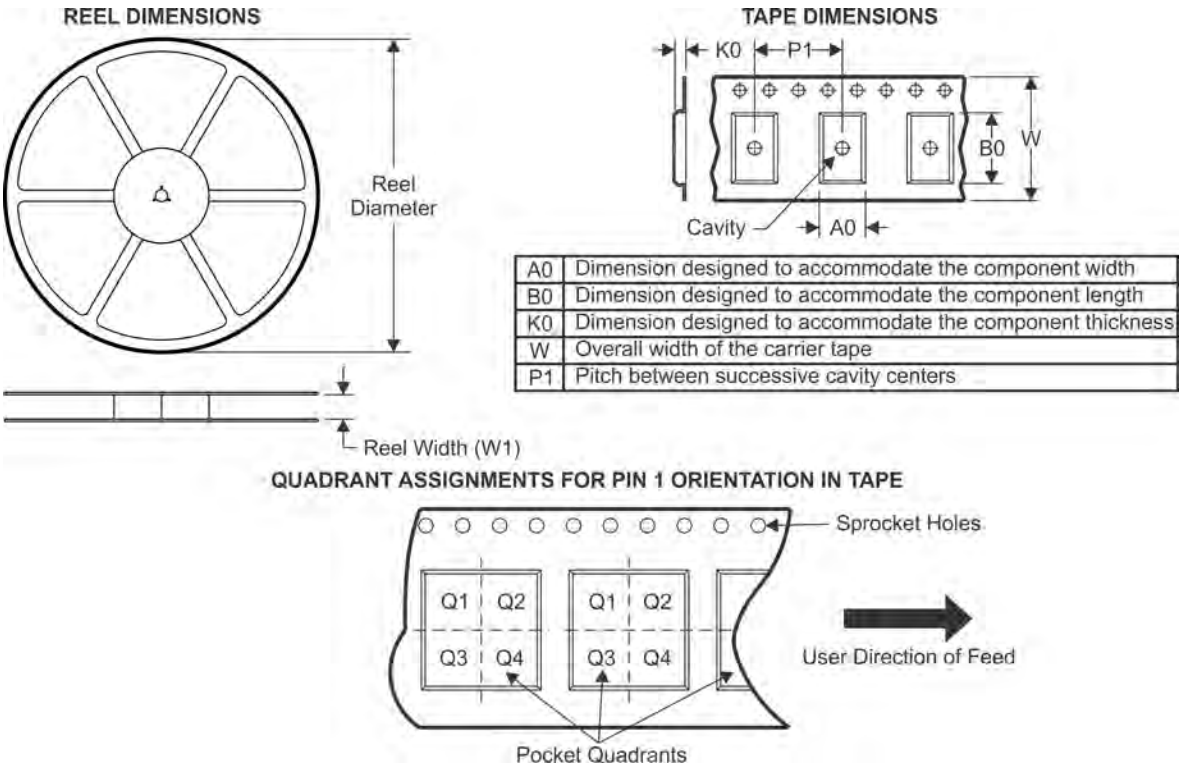
(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

TAPE AND REEL INFORMATION

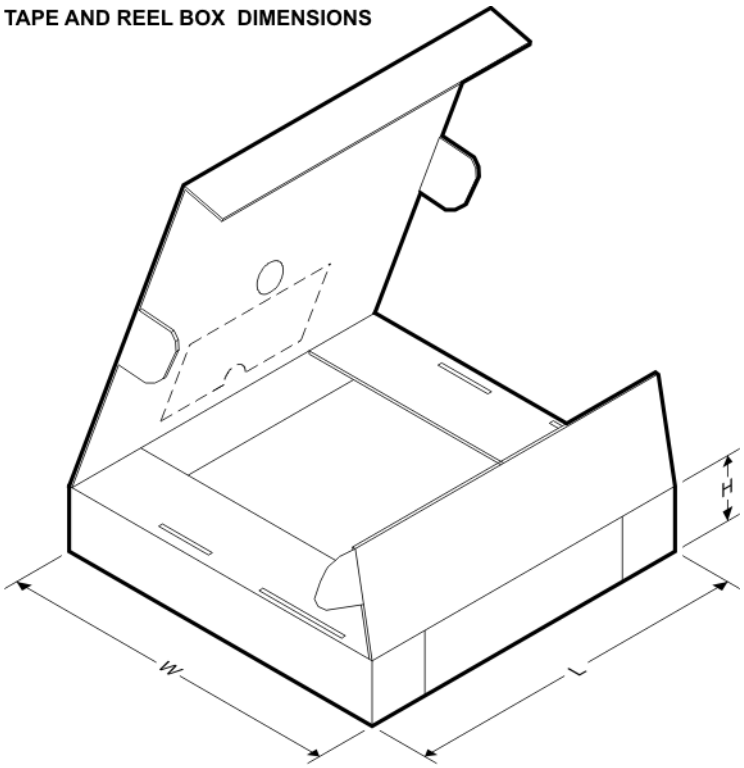


A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
OPA627AU/2K5	SOIC	D	8	2500	330.0	12.4	6.4	5.2	2.1	8.0	12.0	Q1
OPA637AU/2K5	SOIC	D	8	2500	330.0	12.4	6.4	5.2	2.1	8.0	12.0	Q1

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

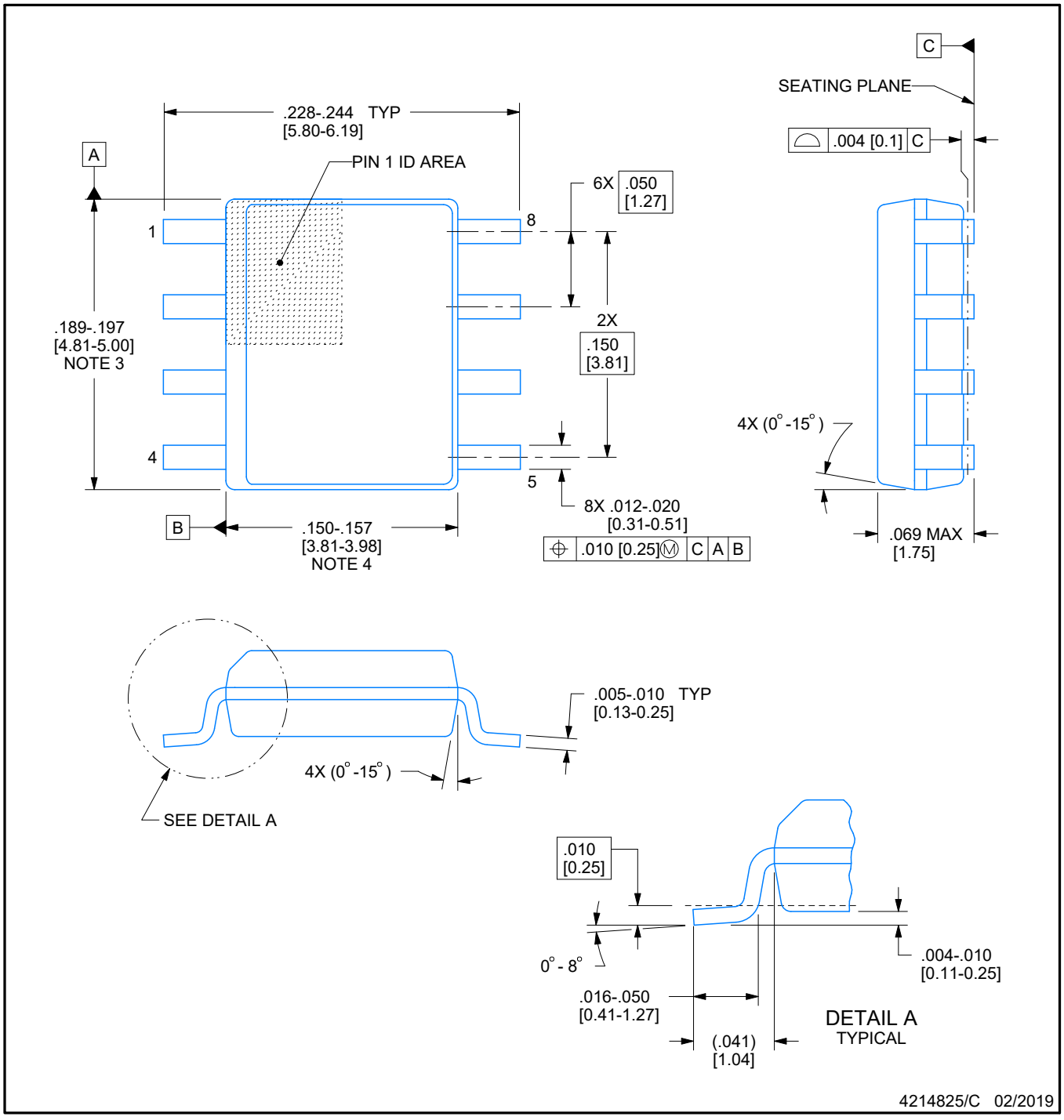
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
OPA627AU/2K5	SOIC	D	8	2500	367.0	367.0	35.0
OPA637AU/2K5	SOIC	D	8	2500	367.0	367.0	35.0

PACKAGE OUTLINE

D0008A

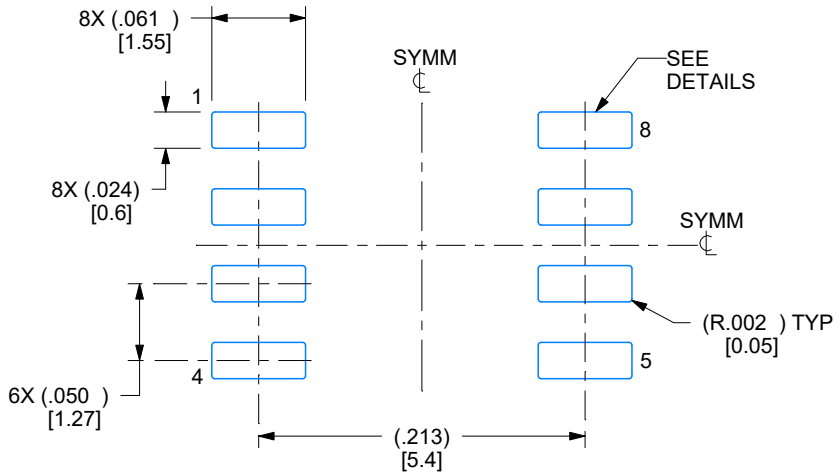
SOIC - 1.75 mm max height

SMALL OUTLINE INTEGRATED CIRCUIT

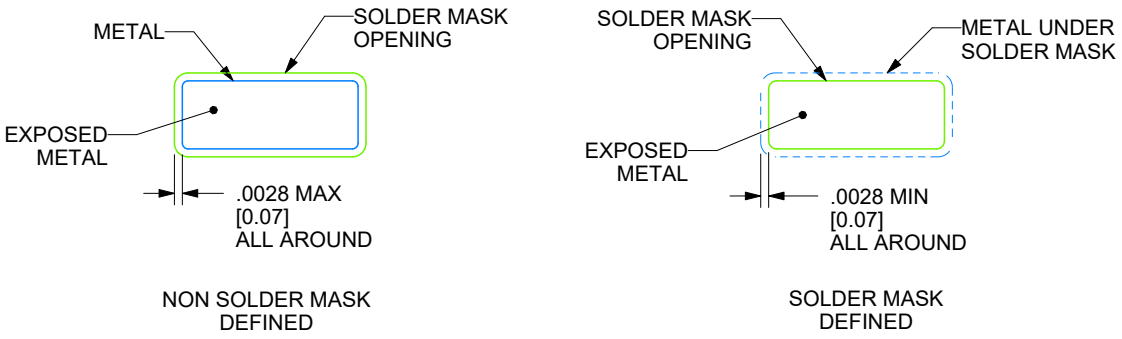


NOTES:

1. Linear dimensions are in inches [millimeters]. Dimensions in parenthesis are for reference only. Controlling dimensions are in inches. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed .006 [0.15] per side.
4. This dimension does not include interlead flash.
5. Reference JEDEC registration MS-012, variation AA.



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE:8X



SOLDER MASK DETAILS

4214825/C 02/2019

NOTES: (continued)

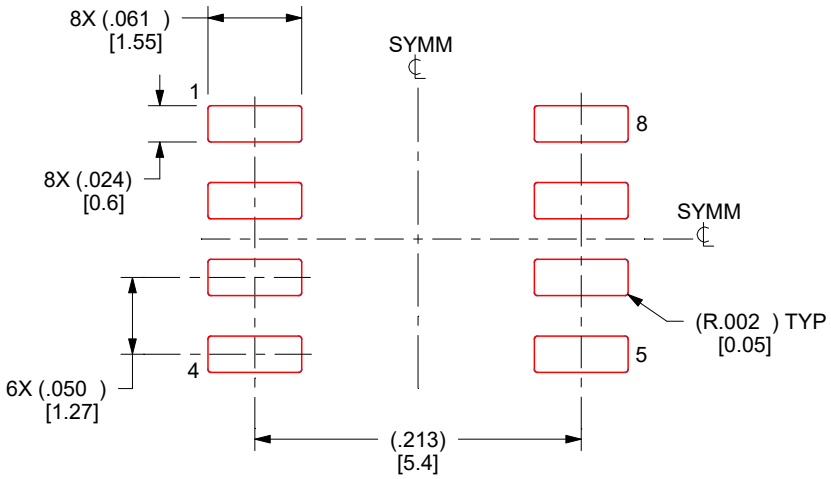
6. Publication IPC-7351 may have alternate designs.
7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

EXAMPLE STENCIL DESIGN

D0008A

SOIC - 1.75 mm max height

SMALL OUTLINE INTEGRATED CIRCUIT



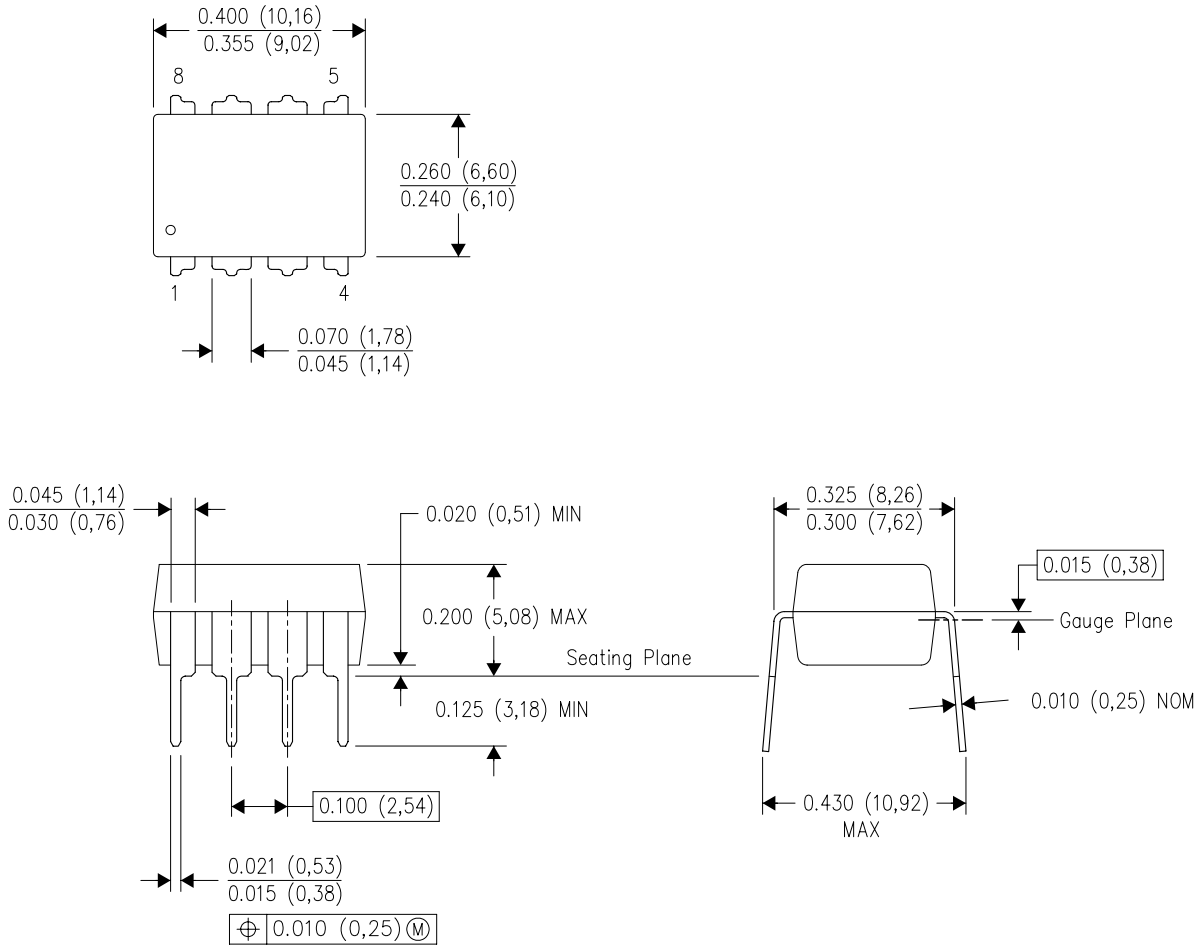
SOLDER PASTE EXAMPLE
BASED ON .005 INCH [0.125 MM] THICK STENCIL
SCALE:8X

4214825/C 02/2019

NOTES: (continued)

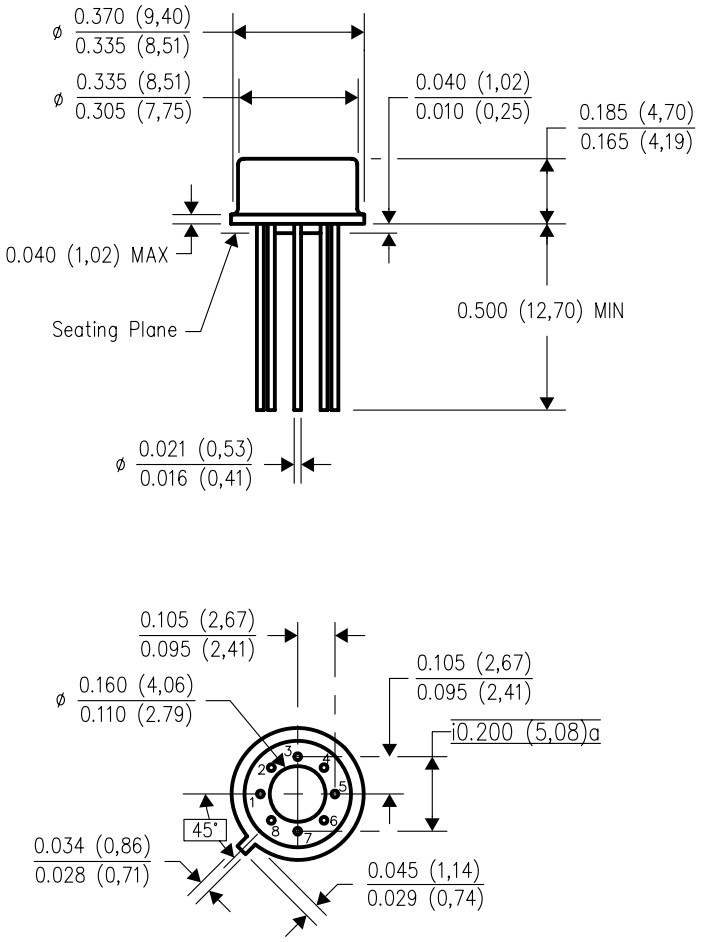
8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
9. Board assembly site may have different recommendations for stencil design.

P (R–PDIP–T8) PLASTIC DUAL–IN–LINE PACKAGE



NOTES:
A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. Falls within JEDEC MS–001 variation BA.

LMC (O–MBCY–W8) METAL CYLINDRICAL PACKAGE



4202483/B 09/07

NOTES:
A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. Leads in true position within 0.010 (0,25) R @ MMC at seating plane.
D. Pin numbers shown for reference only. Numbers may not be marked on package.
E. Falls within JEDEC MO–002/TO–99.

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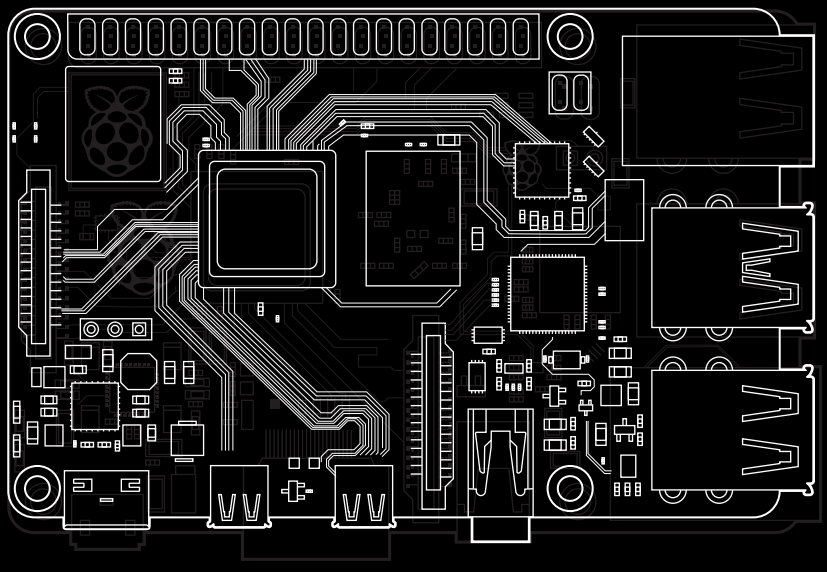
DESIGN THE WORLD

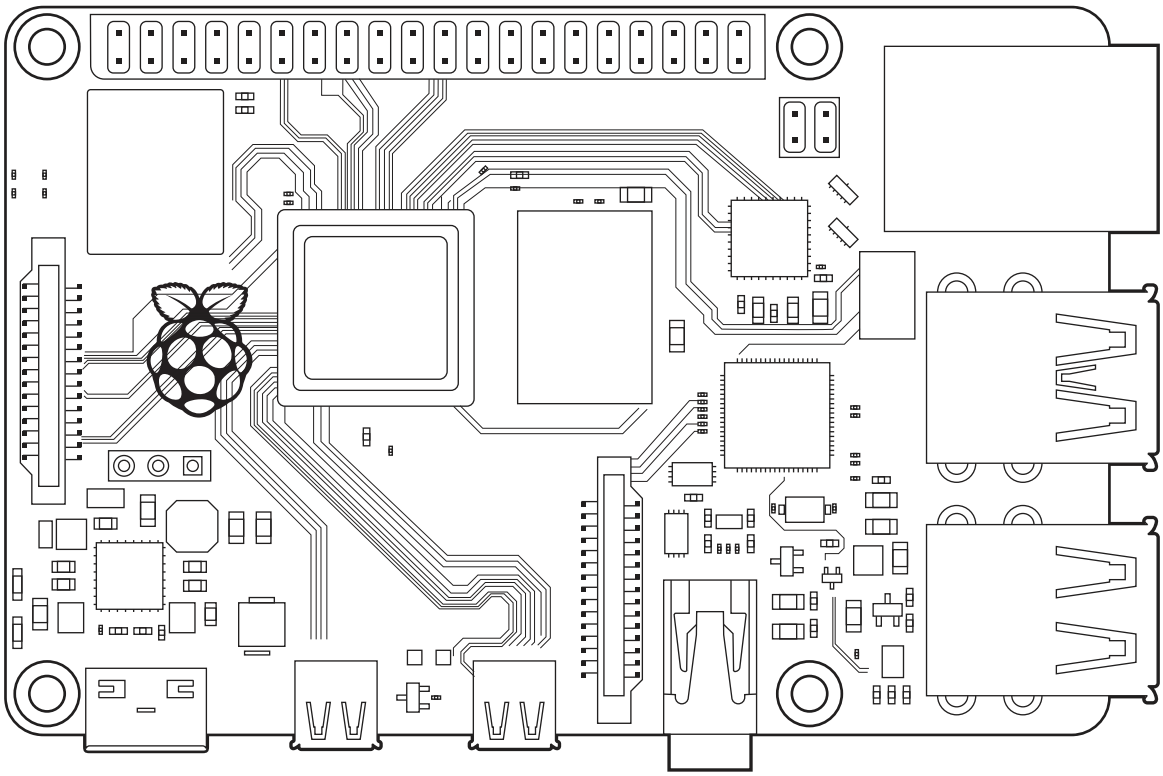


RASPBERRY Pi 4

TECHNICAL DATA

www.OKdo.com

RASPBERRY Pi 4
TECHNICAL DATA



OVERVIEW

Raspberry Pi 4 Model B is the latest product in the popular Raspberry Pi range of computers. It offers ground-breaking increases in processor speed, multimedia performance, memory, and connectivity compared to the prior-generation Raspberry Pi 3 Model B+, while retaining backwards compatibility and similar power consumption. For the end user, Raspberry Pi 4 Model B provides desktop performance comparable to entry-level x86 PC systems.

This product's key features include a high-performance 64-bit quad-core processor, dual-display support at resolutions up to 4K via a pair of micro-HDMI ports, hardware video decode at up to 4Kp60, up to 4GB of RAM, dual-band 2.4/5.0 GHz wireless LAN, Bluetooth 5.0, Gigabit Ethernet, USB 3.0, and PoE capability (via a separate PoE HAT add-on).

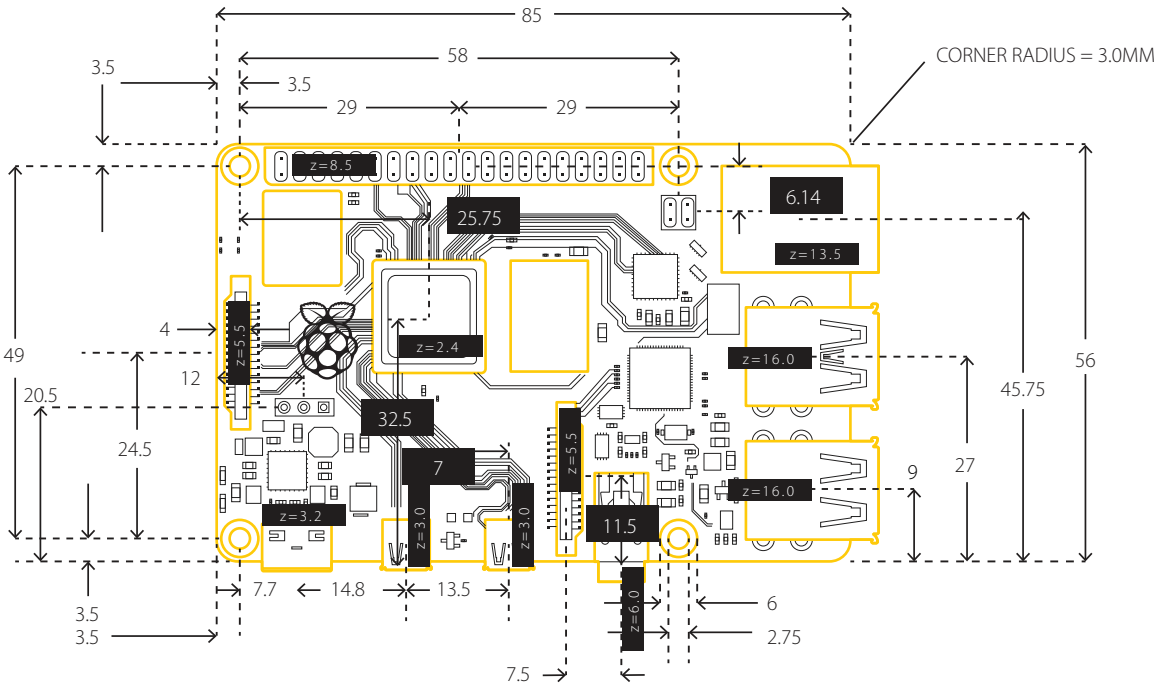
The dual-band wireless LAN and Bluetooth have modular compliance certification, allowing the board to be designed into end products with significantly reduced compliance testing, improving both cost and time to market.

RASPBERRY Pi 4
TECHNICAL DATA

SPECIFICATIONS

Processor:	Broadcom BCM2711, quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
Memory:	1GB, 2GB or 4GB LPDDR4 (depending on model)
Connectivity:	2.4 GHz and 5.0 GHz IEEE 802.11b/g/n/ac wireless LAN, Bluetooth 5.0, BLE Gigabit Ethernet 2 ×USB 3.0 ports 2 ×USB 2.0 ports
GPIO:	Standard 40-pin GPIO header (fully backwards-compatible with previous boards)
Video & sound:	2 ×micro HDMI ports (up to 4Kp60 supported) 2-lane MIPI DSI display port 2-lane MIPI CSI camera port 4-pole stereo audio and composite video port
Multimedia:	H.265 (4Kp60 decode); H.264 (1080p60 decode, 1080p30 encode); OpenGL ES, 3.0 graphics
SD card support:	Micro SD card slot for loading operating system and data storage
Input power:	5V DC via USB-C connector (minimum 3A*) 5V DC via GPIO header (minimum 3A*) Power over Ethernet (PoE)–enabled (requires separate PoE HAT)
Environment:	Operating temperature 0–50°C
Compliance:	For a full list of local and regional product approvals, please visit https://www.raspberrypi.org/documentation/ hardware/raspberrypi/conformity.md
Production lifetime:	The Raspberry Pi 4 Model B will remain in production until at least January 2026.

PHYSICAL SPECIFICATIONS



Warnings

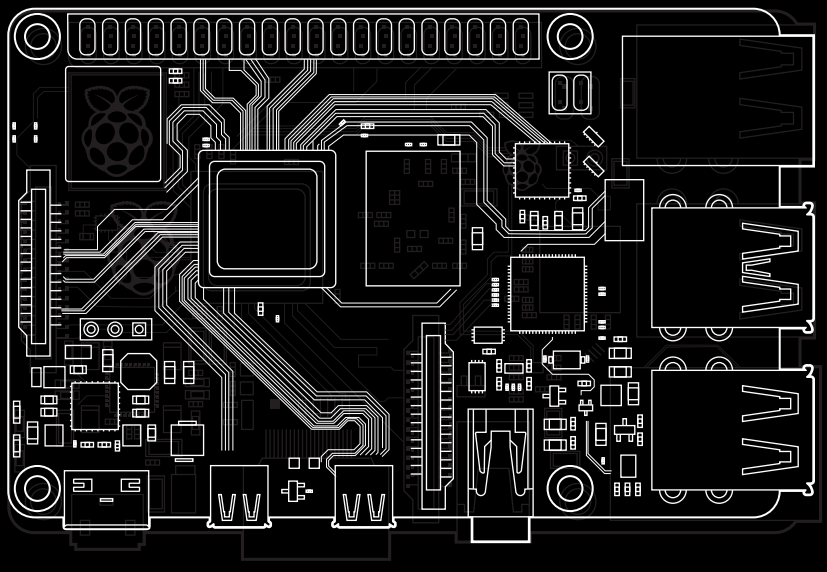
- This product should only be connected to an external power supply rated at 5V/3A DC or 5.1V/ 3A DC minimum*. Any external power supply used with the Raspberry Pi 4 Model B shall comply with relevant regulations and standards applicable in the country of intended use.
- This product should be operated in a well-ventilated environment and, if used inside a case, the case should not be covered.
- This product should be placed on a stable, flat, non-conductive surface in use and should not be contacted by conductive items.
- The connection of incompatible devices to the GPIO connection may affect compliance and result in damage to the unit and invalidate the warranty.
- All peripherals used with this product should comply with relevant standards for the country of use and be marked accordingly to ensure that safety and performance requirements are met. These articles include but are not limited to keyboards, monitors and mice when used in conjunction with the Raspberry Pi.
- Where peripherals are connected that do not include the cable or connector, the cable or connector must offer adequate insulation and operation in order that the relevant performance and safety requirements are met.

Safety instructions

- Do not expose to water or moisture, or place on a conductive surface whilst in operation.
- Do not expose it to heat from any source; Raspberry Pi 4 Model B is designed for reliable operation at normal ambient room temperatures.
- Take care whilst handling to avoid mechanical or electrical damage to the printed circuit board and connectors.
- Avoid handling the printed circuit board whilst it is powered and only handle by the edges to minimise the risk of electrostatic discharge damage.

*A good quality 2.5A power supply can be used if downstream USB peripherals consume less than 500mA in total.

DESIGN THE WORLD



RASPBERRY Pi 4

TECHNICAL DATA

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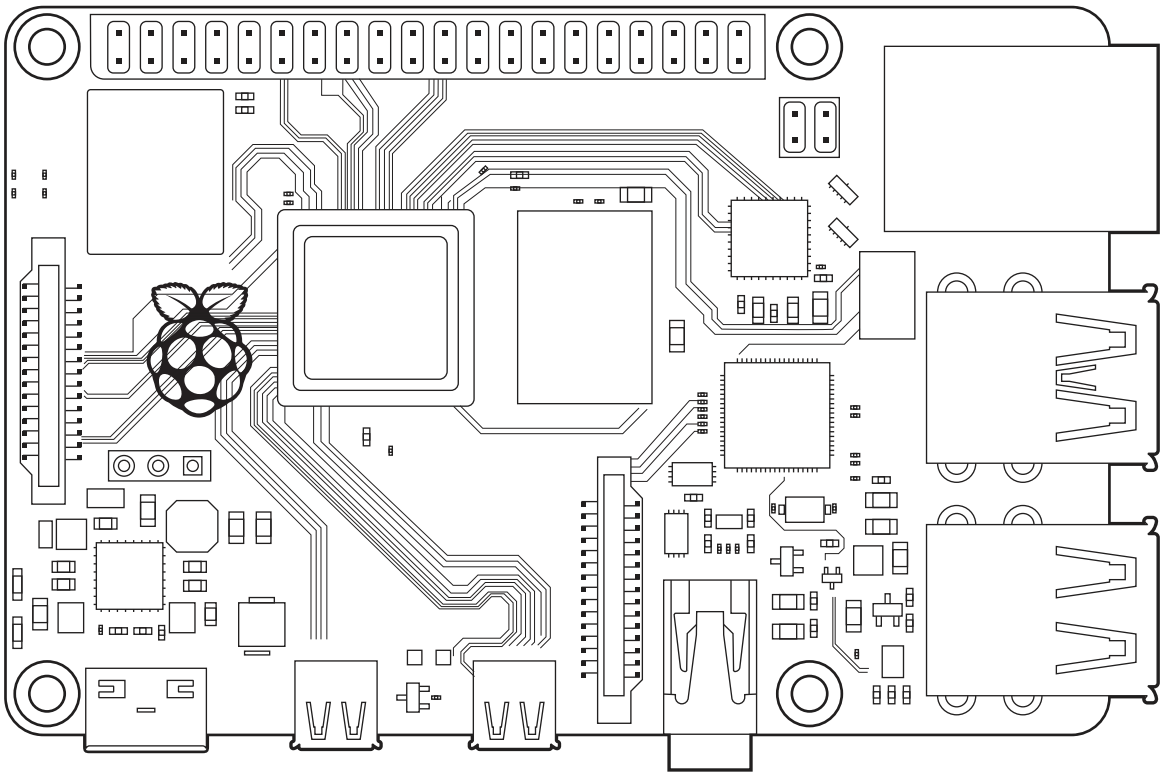
RASPBERRY Pi 4
TECHNICAL DATA



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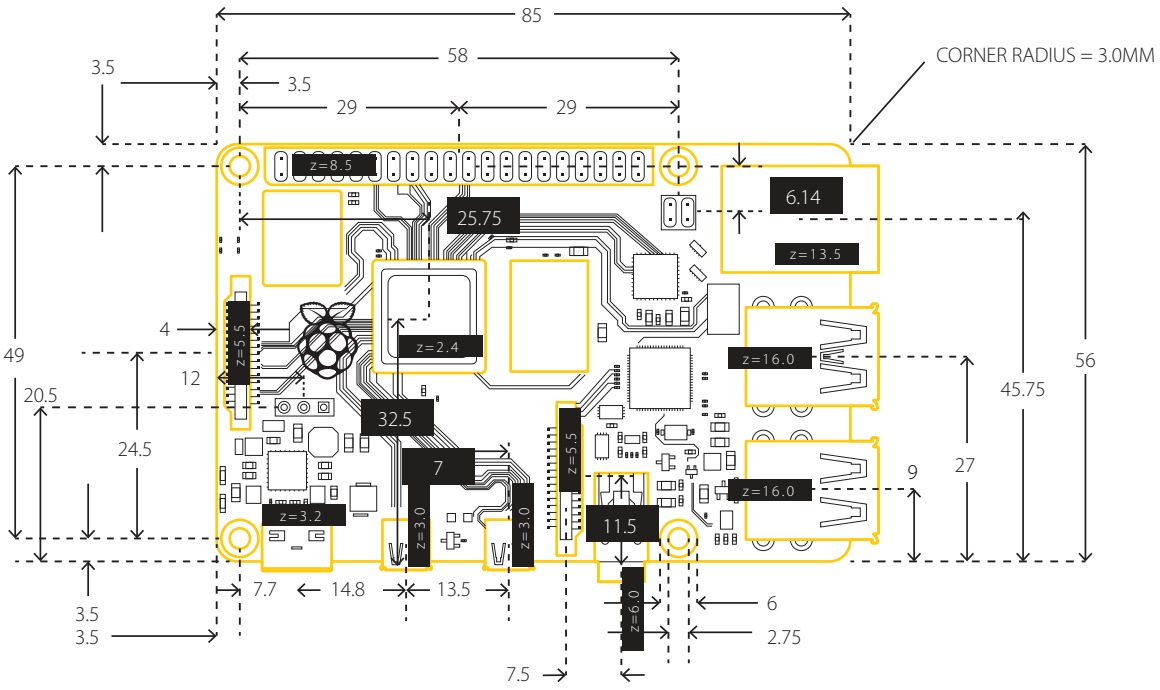

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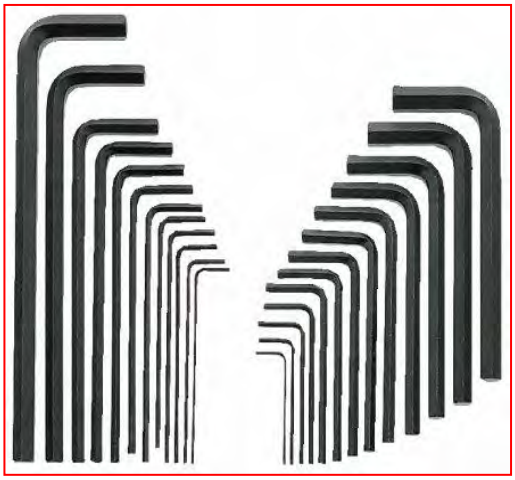
*A good quality 2.5A power supply can be used if downstream USB peripherals consume less than 500mA in total.

ESPAÑOL

Datasheet
25 Piece L Shape Long Arm Steel Hex Key Set

Código RS 537-827



Material
Llaves hexagonales de acero al cromo-vanadio

Acabado
Llaves hexagonales con acabado negro químico Estuche enrollable de vinilo de color azul

Dureza
Llave hexagonal con tratamiento térmico para alcanzar una dureza de 48~52 HRC

Los productos con aprobación profesional RS ofrecen piezas de calidad profesional en todas las categorías de productos. Nuestra gama ha sido verificada por ingenieros como una gama que proporciona una calidad comparable a la de las principales marcas sin necesidad de pagar un alto precio.

ESPAÑOL

Contenido
13 llaves hexagonales cortas métricas:
Tamaños: 1,5, 2,0, 2,5, 3,0, 4,0, 4,5, 5,0, 5,5, 6,0, 7,0, 8,0, 9,0 y 10,0 mm

12 llaves hexagonales largas en pulgadas:
Tamaños: 1/16 pulg., 5/64 pulg., 3/32 pulg., 7/64 pulg., 1/8 pulg., 9/64 pulg., 5/32 pulg., 3/16 pulg., 7/32 pulg., 1/4 pulg., 5/16 pulg. y 3/8 pulg.

Los productos con aprobación profesional RS ofrecen piezas de calidad profesional en todas las categorías de productos. Nuestra gama ha sido verificada por ingenieros como una gama que proporciona una calidad comparable a la de las principales marcas sin necesidad de pagar un alto precio.

ESPAÑOL

Hoja técnica

TORX Keys & Sets

9 Piece Long Arm Security Torx Key Set

Código RS 451-8937

Un juego de llaves Torx de seguridad de 9 piezas suministrado en un práctico estuche de plástico.

- Fabricación en acero de cromo-vanadio
- Acabado negro químico
- Tratamiento térmico conforme a 48-52 HRC
- Tamaños: T10, T15, T20, T25, T27, T30, T40, T50

Los productos con aprobación profesional RS ofrecen piezas de calidad profesional en todas las categorías de productos. Nuestra gama ha sido verificada por ingenieros como una gama que proporciona una calidad comparable a la de las principales marcas sin necesidad de pagar un alto precio.

ESPAÑOL

Hoja técnica

Código RS 873-2.360

Multímetro digital RS PRO IDM 98IV

Característica:

- Display digital de 6.000 cuentas con gráfico de barras de 62 segmentos
- Display de escala extra grande y retroiluminación blanca
- RMS real de ac + dc
- Precisión de V dc básica del 0,1 %
- Detección de tensión ac / dc automática con baja impedancia (Auto-V LoZ)
- VoltSeek (detección de tensión sin contacto)
- Retención de datos inteligentes
- Función mín. / máx.
- Contador de frecuencia en modo ca
- Medida de capacitancia
- Indicador de carga baja de la pila con segmentos
- Desconexión automática (20 minutos)
- Resistencia a impacto de caída de 4 pies
- Estándar de seguridad CAT. IV 600 V / CAT. III 1.000 V

15/06/2016

Características:

La precisión es ±(% de lectura + número de dígitos) a 23 °C ±5 °C < 80 % de HR.

Función ac

Las especificaciones V ac y A ac están acopladas a ac,

lectura de rms verdadera El factor de cresta puede ser de 3

a 4.000 cuentas

Para las ondas no sinusoidales, una precisión adicional por factor de cresta (FC):

Añadir 3 % para FC 1,0 ~ 2,0.

Añadir 5 % para FC 2,0 ~ 2,5.

Añadir 7 % para FC 2,5 ~ 3,0.

Tensión:

Tensión dc:

Rango	Resolución	Precisión
6,000 V	0,001 V	± (0,09 % de lectura + 2 dígitos)
60,00 V	0,01 V	
600,0 V	0,1 V	
1.000 V	1 V	

Impedancia de entrada: 10 MΩ

Protección contra sobrecarga: 1.000 V ac/dc

Tensión ac:

Rango	Resolución	Onda sinusoidal precisa	Respuesta de frecuencia
600,0 m V	0,1 mV	± (1,5 % de lectura + 10 dígitos)	45 ~ 500 Hz
6,000 V	0,001 V	± (1,0 % de lectura + 5 dígitos)	
60,00 V	0,01 V		45 ~ 1 KHz
600,0 V	0,1 V		
1.000 V	1 V		

Los rangos de ac de 600,0 mV se especifican del 1 % del rango al 100 % del rango.

Impedancia de entrada: 10 MΩ // menos

que 100 pF **Protección contra**

sobrecarga: 1.000 V ac/dc **Tensión ac /**

dc: Rango	Resolución	Precisión
6,000 V	0,001 V	± (2,5 % de lectura + 5 dígitos)
60,00 V	0,01 V	
600,0 V	0,1 V	
1.000 V	1 V	

Características adicionales similares a las de la función de tensión.

mV dc:

Rango	Resolución	Precisión
60,00 m V	0,01 mV	± (0,1 % de lectura + 5 dígitos)
600,0 m V	0,1 mV	± (0,1 % de lectura + 2 dígitos)

Impedancia de entrada: 10 MΩ

Protección contra sobrecarga: 1.000 V ac/dc

mV ac + dc:

Rango	Resolución	Precisión
60,00 mV	0,01 mV	± (2,5 % de lectura + 5 dígitos)
600,0 mV	0,1 mV	

Características adicionales similares a las de la función mV.

Tensión automática:

Rango	Resolución	Precisión
±600,0 V dc y ac	0,1 V	± (1,0 % de lectura + 3 dígitos)
±1,000 V dc y ac	1 V	

Impedancia de entrada: aprox. 3 kΩ

Respuesta de frecuencia ac: 45 ~ 1 KHz (Onda sinusoidal)

Protección contra sobrecarga: 1.000 V ac/dc

Corriente:

Corriente dc:

Rango	Resolución	Precisión
6,000 A	0,001A	± (1,0 % de lectura + 3 dígitos)
10,00 A	0,01 A	

Corriente de medida máxima: 20 A

Tiempo de medida máximo:

> 5 A para máx. 3 minutos con al menos 20 minutos de reposo.

> 10 A para máx. 30 segundos con al menos 10 minutos de reposo.

Protección contra sobrecargas: 11 A dc

Corriente ac:

Rango	Resolución	Onda sinusoidal precisa
6,000 A*	0,001 A	± (1,5 % de lectura + 3 dígitos)
10,00 A	0,01 A	

Corriente de medida máxima: 20 A

Tiempo de medida máximo:

> 5 A para máx. 3 minutos con al menos 20 minutos de reposo.

> 10 A para máx. 30 segundos con al menos 10 minutos de reposo.

Respuesta de frecuencia ac: 45 ~ 1 KHz (Onda sinusoidal)

Protección contra sobrecargas: 11 A ac

Corriente ac + dc:

Rango	Resolución	Precisión
6,000 A	0,001 A	± (2,5 % de lectura + 5 dígitos)
10,00 A	0,01 A	

Características adicionales similares a las de la función de corriente.

mA dc:

Rango	Resolución	Precisión
60,00 mA	0,01 mA	± (1,0 % de lectura + 3 dígitos)
600,0 mA	0,1 mA	

Tiempo de medición máximo: 10 minutos a 600 mA con al menos 20 minutos de reposo.

Protección contra sobrecargas: 440 mA dc

mA ac:

Rango	Resolución	Onda sinusoidal precisa
60,00 mA	0,01 mA	± (1,5 % de lectura + 3 dígitos)
600,0 mA	0,1 mA	

Tiempo de medición máximo: 10 minutos a 600 mA con al menos 20 minutos de reposo.

Respuesta de frecuencia ac: 45 ~ 1 KHz (Onda sinusoidal)

Protección contra sobrecargas: 440 mA ac

mA ac + dc:

Rango	Resolución	Precisión
60,00 mA	0,01 mA	± (2,5 % de lectura + 5 dígitos)
600,0 mA	0,1 mA	

Características adicionales similares a las de la función de corriente en mA.

Resistencia:

Rango	Resolución	Precisión
600,0 Ω	0,1 Ω	± (0,8 % de lectura + 5 dígitos)
6,000 kΩ	0,001 kΩ	± (0,8 % de lectura + 2 dígitos)
60,00 kΩ	0,01 kΩ	
600,0 kΩ	0,1 kΩ	
6,000 MΩ	0,001 MΩ	
40,00 MΩ *	0,01 MΩ	± (1,5 % de lectura + 5 dígitos)

* Existe una pequeña oscilación de menos de ±50 dígitos al medir > 10 MΩ

Protección contra sobrecarga: 1.000 V ac/dc

Comprobación de continuidad:

Rango	Resolución	Precisión
600,0 Ω	0,1 Ω	± (0,8 % de lectura + 5 dígitos)

Continuidad: El avisador acústico integrado suena cuando la resistencia medida es inferior a 20 Ω y se detiene cuando la resistencia medida es superior a 200 Ω. Entre 20 Ω y 200 Ω, el zumbador puede o no sonar. **Indicador de continuidad:** avisador acústico de tono de 2 KHz

Tiempo de respuesta del avisador acústico:

< 500 µs. **Protección contra sobrecarga:** 1.000 V ac/dc

Prueba de diodo:

Rango	Resolución	Precisión
1,500 V	1 mV	± (1,5 % de lectura + 2

Tensión máxima de circuito abierto: aprox. 1,8 V

Protección contra sobrecarga: 1.000 V ac/dc

Capacitancia:

Rango	Resolución	Precisión
1,000 µF	0,001 µF	± (1,2 % de lectura + 5 dígitos)
10,00 µF	0,01 µF	± (1,2 % de lectura + 2 dígitos)
100,0 µF	0,1 µF	
1,000 mF	0,001 mF	
10,00 mF	0,01 mF	

Protección contra sobrecarga: 1.000 V ac/dc

Contador de frecuencia:

Rango	Resolución	Precisión
100,00 Hz	0,01 Hz	± (0,1 % de lectura + 2 dígitos)
1000,0 Hz	0,1 Hz	
10,000 KHz	0,001 KHz	
100,00 KHz	0,01 KHz	

Sensibilidad mínima: > 6 V (para V ac 1Hz ~ 10 KHz)

> 12 V (para V ac 10 KHz ~ 50 KHz)

sin especificar (para 50 KHz ~100 KHz)

> 6 mA (para mA ac)

> 0,6 A (para A ac)

Frecuencia máxima: 1 Hz

Protección contra sobrecarga: 1.000 V o 11 A ac/dc

General:

Velocidad de muestreo:	3 veces/s
Indicación de sobrecarga:	“OL”
Indicación de batería baja:	
Desconexión automática:	Aprox. 20 minutos después de la última operación
Temperatura de funcionamiento:	-10 °C ~ 10 °C 10 °C ~ 30 °C (≦80 % de HR) 30 °C ~ 40 °C (≦75 % de HR) 40 °C ~ 50 °C (≦45 % de HR)
Temperatura de almacenamiento:	-20 °C a 60 °C, 0 % HR a 80 % HR (baterías no instaladas)
Coeficiente de temperatura	0,15 x precisión especificada) / °C, < 18 °C, > 28 °C.
Seguridad:	IEC 61010-1: CAT.IV 600 V, CAT.III 1000 V.
Requisito de alimentación:	Batería 1 x PP3 9 V
Vida útil de batería:	200 horas (alcalina, sin retroiluminación)
Tamaño:	94 mm (Anch.) x 190 mm (Lar.) x 48 mm (Prof.)
Peso:	Aprox. 460 g (con batería)
Accesorios:	Batería (instalada), cables de prueba, manual de usuario y funda protectora

Datasheet

RS PRO 0.2mm straight conical, 0.66 inch length Soldering Iron Tip

Stock Number: 2024521

EN

Product Details

RS Pro straight conical soldering iron tip has 0.2 mm 0.66 inch length tip with conical angle for use with 1411993/1611962/ 2024512 / 2024514 /8856113/8856117/ 2024487 soldering station with soldering iron.

Features and Benefits

• AT Series

• 0.2 mm 0.66 inch length straight conical soldering iron tip

• For use with 1411993/1611962/ 2024512 / 2024514 /8856113/8856117/ 2024487 soldering station with soldering iron.

• Features a smaller soldering iron tip size and split design to reduce accessory expenses

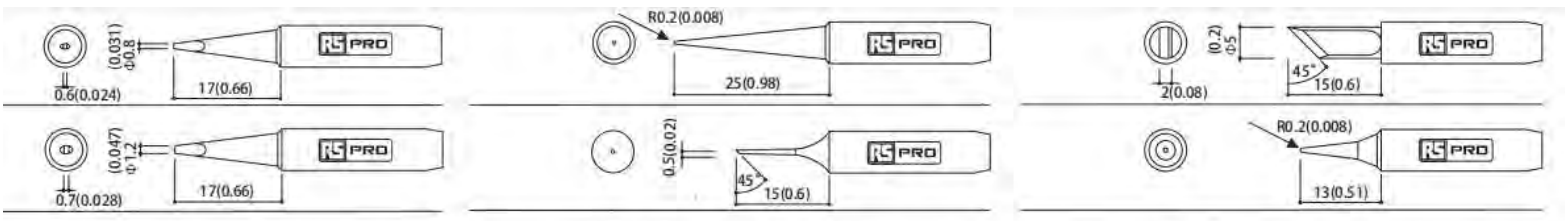
Specifications:

For Use With: 1411993/1611962/ 2024512 / 2024514 /8856113/8856117/ 2024487 Solder Iron

Tip Series: AT

Tip Shape: straight conical

Tip Size: 0.2 mm, 0.66 inch length



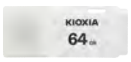
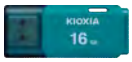
rspro.com

rspro.com

KIOXIA

2020/2/26
Rev.1.1.0.1
KIOXIA Corporation

TransMemory U202

Retail Part Number	Global	LU202W016GG4	LU202W032GG4	LU202W064GG4	LU202W128GG4	LU202L016GG4	LU202L032GG4
	China	LU202W016GC4	LU202W032GC4	LU202W064GC4	LU202W128GC4	LU202L016GC4	LU202L032GC4
	Japan	KUC-2A016GW	KUC-2A032GW	KUC-2A064GW	KUC-2A128GW	KUC-2A016GL	KUC-2A032GL
Brand name		TransMemory™	TransMemory™	TransMemory™	TransMemory™	TransMemory™	TransMemory™
Product		USB Flash Drive	USB Flash Drive	USB Flash Drive	USB Flash Drive	USB Flash Drive	USB Flash Drive
Interface		USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0
Capacity		16GB	32GB	64GB	128GB	16GB	32GB
Product Color		White	White	White	White	Light Blue	Light Blue
Country of origin		Japan	Japan	Japan	Japan	Japan	Japan
Bulk Picture							
Pre Format Type		FAT32	FAT32	FAT32	FAT32	FAT32	FAT32
Approximate Usable Capacity *1		14.4GB	28.8GB	57.6GB	115.2GB	14.4GB	28.8GB
Supported SuperSpeed		-	-	-	-	-	-
Supported high-speed		o	o	o	o	o	o
Supported Full Speed		o	o	o	o	o	o
Max. Read Speed (SuperSpeed) *2		-	-	-	-	-	-
Max. Write Speed (SuperSpeed) *2		-	-	-	-	-	-
Max. Read Speed (high-speed) *2		-	-	-	-	-	-
Max. Write Speed (high-speed) *2		-	-	-	-	-	-
Supported OS Windows 10		o	o	o	o	o	o
Supported OS Windows 8.1		o	o	o	o	o	o
Supported OS X		OS X v10.11, macOS v10.12 - v10.15	OS X v10.11, macOS v10.12 - v10.15	OS X v10.11, macOS v10.12 - v10.15	OS X v10.11, macOS v10.12 - v10.15	OS X v10.11, macOS v10.12 - v10.15	OS X v10.11, macOS v10.12 - v10.15
Bulk Dimensions	mm(Approx.)	L:51.4, W:21.4, H:8.4 (including a cap)	L:51.4, W:21.4, H:8.4 (including a cap)	L:51.4, W:21.4, H:8.4 (including a cap)	L:51.4, W:21.4, H:8.4 (including a cap)	L:51.4, W:21.4, H:8.4 (including a cap)	L:51.4, W:21.4, H:8.4 (including a cap)
Bulk Weight(Approx.)		8g	8g	8g	8g	8g	8g
Ambient Operating Temperature Range *3 (without condensation)		0 to 50°C	0 to 50°C	0 to 50°C	0 to 50°C	0 to 50°C	0 to 50°C
Enclosure of an adapter		-	-	-	-	-	-
RoHS Compliance		V	V	V	V	V	V
Package Type	Global China Japan	Blister	Blister	Blister	Blister	Blister	Blister
Package Dimensions(mm)		W:76,D:127,H:10	W:76,D:127,H:10	W:76,D:127,H:10	W:76,D:127,H:10	W:76,D:127,H:10	W:76,D:127,H:10
Package Weight(Approx.)		15.7g (Typ)	15.7g (Typ)	15.7g (Typ)	15.7g (Typ)	15.7g (Typ)	15.7g (Typ)
Carton Quantity (Units per box)		20 units per inner carton; 20 inner cartons per outer carton (400 units per outer carton)	20 units per inner carton; 20 inner cartons per outer carton (400 units per outer carton)	20 units per inner carton; 20 inner cartons per outer carton (400 units per outer carton)	20 units per inner carton; 20 inner cartons per outer carton (400 units per outer carton)	20 units per inner carton; 20 inner cartons per outer carton (400 units per outer carton)	20 units per inner carton; 20 inner cartons per outer carton (400 units per outer carton)
Inner Carton Dimensions(mm)		W: 129,D: 120,H: 78	W: 129,D: 120,H: 78	W: 129,D: 120,H: 78	W: 129,D: 120,H: 78	W: 129,D: 120,H: 78	W: 129,D: 120,H: 78
Inner Carton Weight(Approx.)		345g (Typ)	345g (Typ)	345g (Typ)	345g (Typ)	345g (Typ)	345g (Typ)
Outer Carton Dimensions(mm)		W: 270,D: 615,H: 186	W: 270,D: 615,H: 186	W: 270,D: 615,H: 186	W: 270,D: 615,H: 186	W: 270,D: 615,H: 186	W: 270,D: 615,H: 186
Outer Carton Weight(Approx.)		7400g (Typ)	7400g (Typ)	7400g (Typ)	7400g (Typ)	7400g (Typ)	7400g (Typ)
Units per Pallet		Approx. 11200 units per pallet	Approx. 11200 units per pallet	Approx. 11200 units per pallet	Approx. 11200 units per pallet	Approx. 11200 units per pallet	Approx. 11200 units per pallet
Layers per Pallet		Approx. 7	Approx. 7	Approx. 7	Approx. 7	Approx. 7	Approx. 7
Quantity per Layer		Approx. 1600 units	Approx. 1600 units	Approx. 1600 units	Approx. 1600 units	Approx. 1600 units	Approx. 1600 units

*1:This product is labeled based on the flash memory it contains, not the actual memory capacity available for data storage. Part of the capacity is reserved for card functionality.
(For purposes of measuring memory capacity in this context, 1GB = 1,073,741,824 bytes)

*2: 1 MB/s is calculated as 1,000,000 bytes/s. The value is the best value obtained in specific test environment at KIOXIA Corporation and KIOXIA Corporation does not warrant read speed use in individual devices. Read speed may vary depending on user-specifications such as devices used and file size read.

*3:Based on KIOXIA Corporation's test results. The operation in all the situations is not warranted.
KIOXIA Corporation does not warrant any data stored on the product.

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●All other company names, product names, and service names mentioned herein may be trademarks of their respective companies.
●Product specifications and design are subject to change without prior notice.

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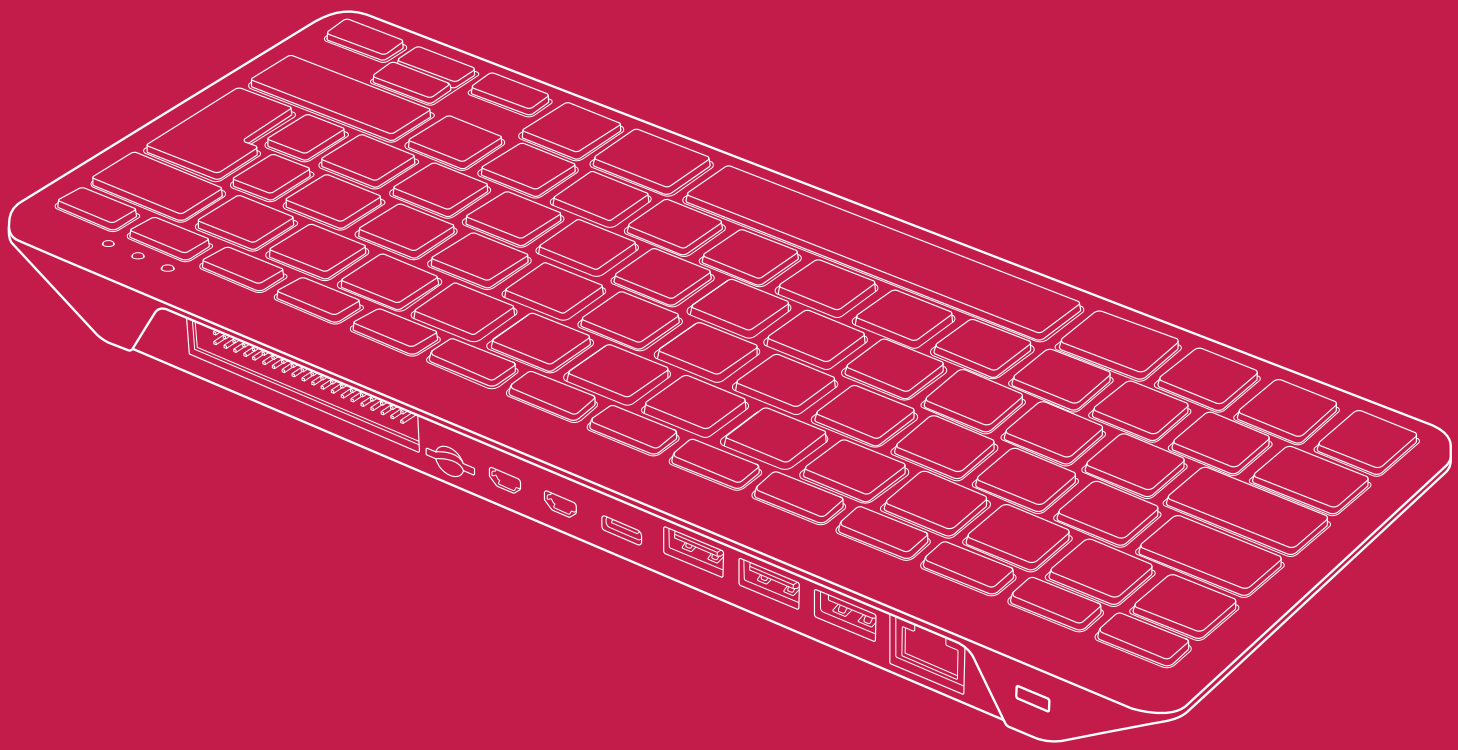
Raspberry Pi 400



Published in November 2020
by Raspberry Pi Trading Ltd.

www.raspberrypi.org

Raspberry Pi

Overview

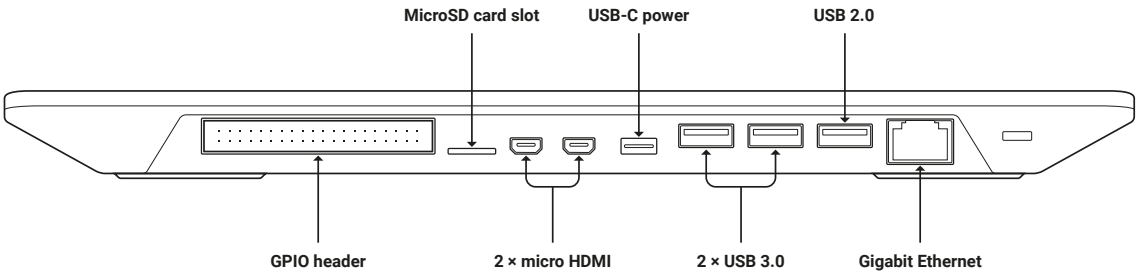
Featuring a quad-core 64-bit processor, wireless networking, dual-display output and 4K video playback, Raspberry Pi 400 is a complete personal computer, built into a compact keyboard.

Raspberry Pi 400 is ideal for surfing the web, creating and editing documents, watching videos, and learning to program using the Raspberry Pi OS desktop environment.

Raspberry Pi 400 is available in a number of different regional variants and as either a computer kit, containing everything you need to get started (except for a TV or monitor), or a computer unit only.

Specification

Processor:	Broadcom BCM2711 quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.8GHz
RAM:	4GB LPDDR4-3200
Connectivity:	Dual-band (2.4GHz and 5.0GHz) IEEE 802.11b/g/n/ac wireless LAN, Bluetooth 5.0, BLE Gigabit Ethernet 2 × USB 3.0 and 1 × USB 2.0 ports
GPIO	Horizontal 40-pin GPIO header
Video & sound:	2 × micro HDMI ports (supports up to 4Kp60)
Multimedia:	H.265 (4Kp60 decode); H.264 (1080p60 decode, 1080p30 encode); OpenGL ES 3.0 graphics
SD card support:	MicroSD card slot for operating system and data storage
Keyboard:	78- or 79-key compact keyboard (depending on regional variant)
Power:	5V DC via USB connector
Operating temperature:	0°C to +50°C
Dimensions:	286 mm × 122 mm × 23 mm (maximum)
Compliance:	For a full list of local and regional product approvals, please visit www.raspberrypi.org/documentation/hardware/raspberrypi/conformity.md



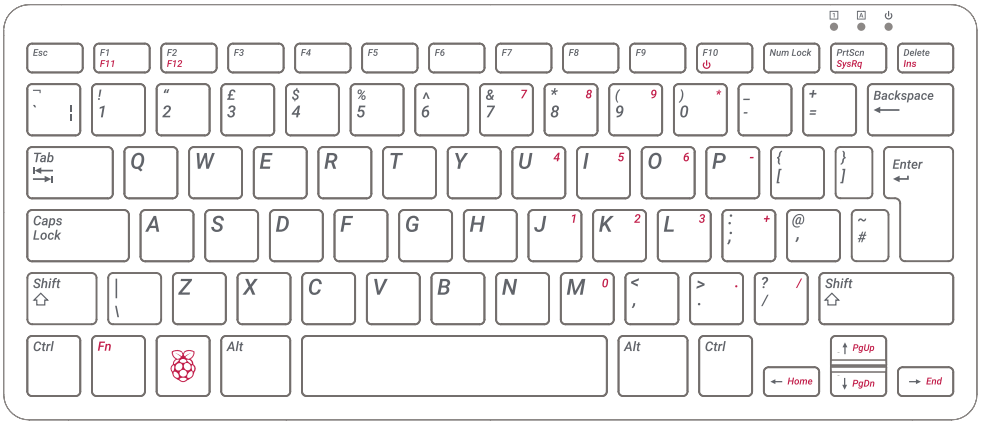
Ordering options

Model number	Keyboard layout	Power supply	Mouse	MicroSD card	HDMI cable	Beginner's Guide	Price*
Raspberry Pi 400 UK Kit	UK	UK	Yes	16GB microSD card, pre-programmed with Raspberry Pi OS	1 × micro HDMI to HDMI-A cable, 1 m	English	$100
Raspberry Pi 400 US Kit	US	US				English	
Raspberry Pi 400 DE Kit	DE	EU				German	
Raspberry Pi 400 FR Kit	FR	EU				French	
Raspberry Pi 400 IT Kit	IT	EU				Italian	
Raspberry Pi 400 ES Kit	ES	EU				Spanish	
Raspberry Pi 400 EU Kit	US	EU				English	
Raspberry Pi 400 IN Kit	US	India				English	
Raspberry Pi 400 AU Kit	US	ANZ				English	
Raspberry Pi 400 AS Kit	US	UK				English	
Raspberry Pi 400 UK Unit	UK	Not included in unit-only option					$70
Raspberry Pi 400 US Unit	US						
Raspberry Pi 400 DE Unit	DE						
Raspberry Pi 400 FR Unit	FR						
Raspberry Pi 400 IT Unit	IT						
Raspberry Pi 400 ES Unit	ES						

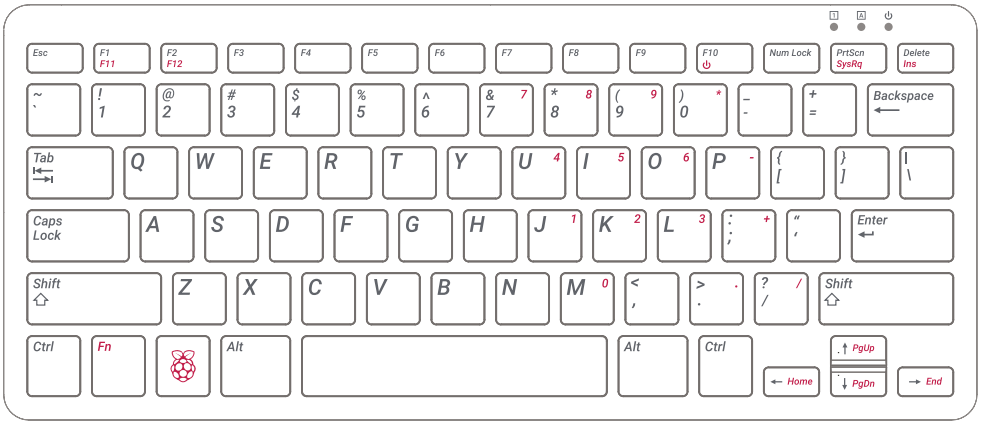
* price excludes sales tax, any applicable import duty, and local shipping costs

Keyboard print layouts

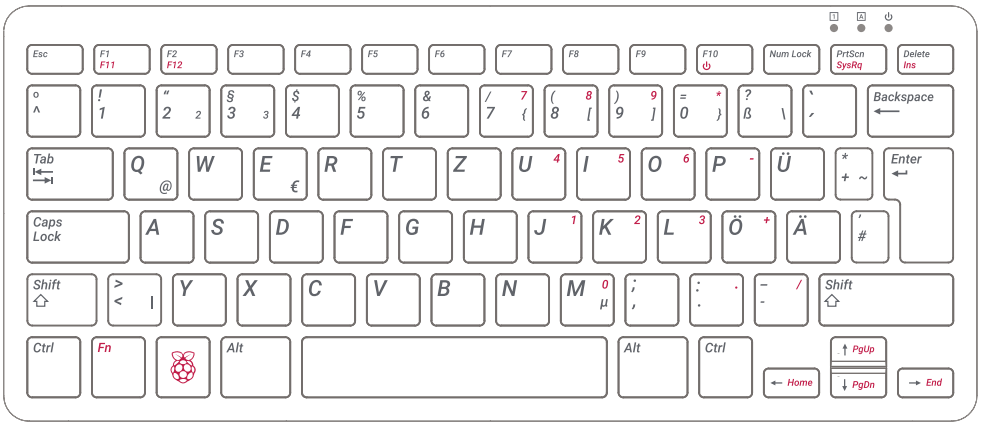
UK



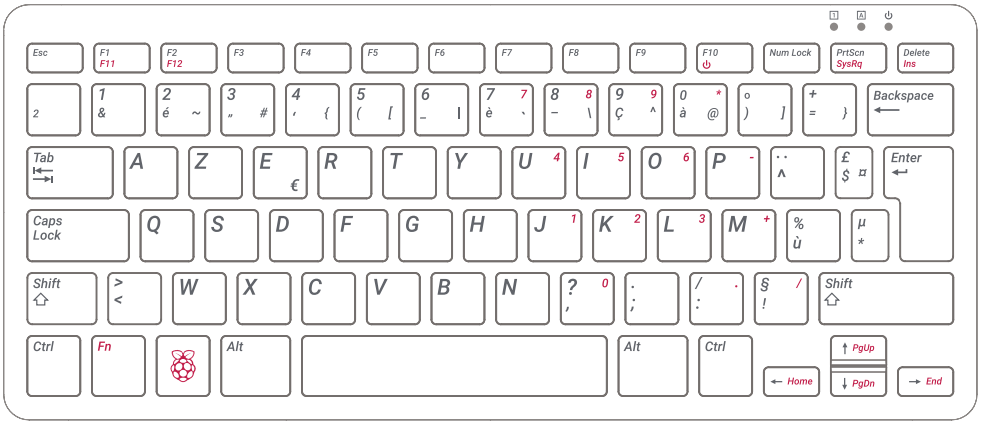
US



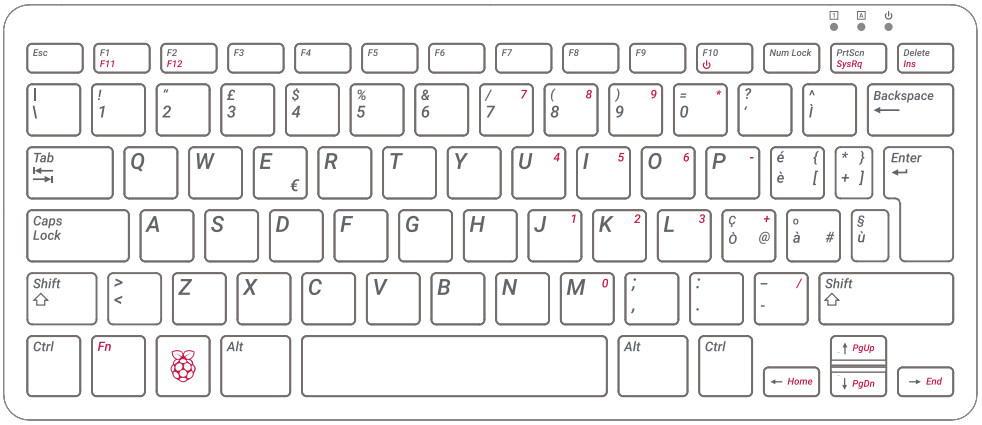
DE



FR


Esc
F1 F11
F2 F12
F3
F4
F5
F6
F7
F8
F9
F10
Num Lock
PrtScn SysRq
Delete Ins
Backspace
Tab
Caps Lock
Enter
Shift
Ctrl
Fn
Alt
PgUp
PgDn
Home
End

IT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F10
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Delete Ins
Backspace
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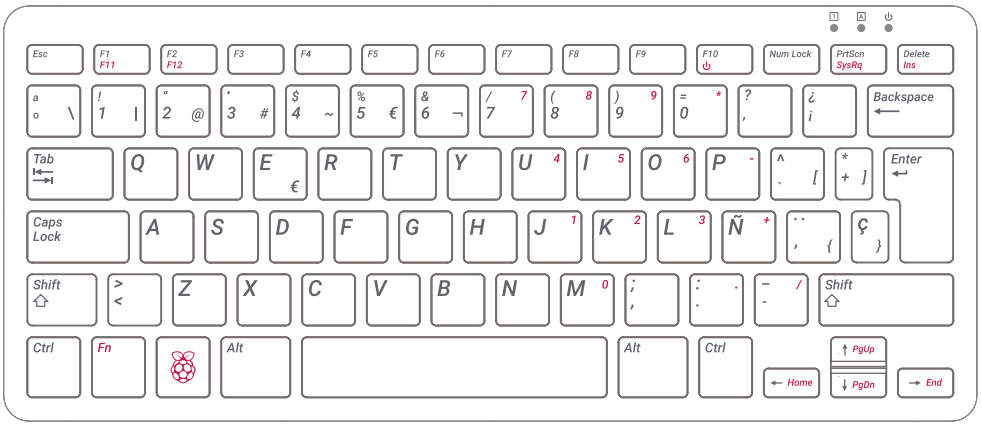
Caps Lock
Enter
Shift
Ctrl
Fn
Alt
PgUp
PgDn
Home
End

ES


Esc
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F7
F8
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F10
Num Lock
PrtScn SysRq
Delete Ins
Backspace
Tab
Caps Lock
Enter
Shift
Ctrl
Fn
Alt
PgUp
PgDn
Home
End

WARNINGS

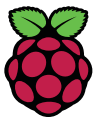
- Any external power supply used with Raspberry Pi 400 shall comply with relevant regulations and standards applicable in the country of intended use.
- This product should be operated in a well-ventilated environment and should not be covered when being operated.
- The connection of incompatible devices to Raspberry Pi 400 may affect compliance, result in damage to the unit, and invalidate the warranty.
- There are no user-serviceable parts inside Raspberry Pi 400, and opening the unit is likely to damage the product and will invalidate the warranty.
- All peripherals used with this product should comply with relevant standards for the country of use and be marked accordingly to ensure that safety and performance requirements are met. These articles include, but are not limited to, mice, monitors and cables when used in conjunction with Raspberry Pi 400.
- The cables and connectors of all peripherals used with this product must have adequate insulation so that relevant safety requirements are met.
- Prolonged exposure to direct sunlight may cause discoloration.

SAFETY INSTRUCTIONS

To avoid malfunction or damage to this product please observe the following:

- Do not expose to water or moisture whilst in operation.
- Do not expose to heat from any source; Raspberry Pi 400 is designed for reliable operation at normal ambient temperatures.
- Take care whilst handling to avoid mechanical or electrical damage to the computer.

HDMI is a trademark of HDMI Licensing, LLC
Raspberry Pi and the Raspberry Pi logo are trademarks of the Raspberry Pi Foundation



Raspberry Pi

CARACTERÍSTICAS

- Seco al tacto en unos 10 min
- Se puede utilizar en el circuito en 30 minutos

Pintura conductora de plata RS Pro, botella 5g

Código RS: 123-9911

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

Esta pintura conductora de plata se utiliza principalmente para reparar trazos en la PCB o para dibujar manualmente un circuito sencillo. La pintura se puede utilizar de diferentes maneras como, por ejemplo, la pintura en una pantalla eléctrica o para conexiones eléctricas en superficies no soldables.

Especificaciones

Tipo de producto	Pintura
Elemento conductor	Plata
Tipo de paquete	Botella
Tamaño del paquete	5g
Forma física	Sólido/líquido/Gas/Gel/Pasta
Número de componentes	2 (100:50 % en peso) / 1
Tiempo de curación	30min
Tipo de aplicador	Brocha
Aplicaciones	Reparar las pistas de la PCB

Aprobaciones

Cumplimiento/Certificaciones	2011/65/UE y 2015/863
Declaraciones	

CARACTERÍSTICAS

- Pintura conductora de plata
- Reparar las pistas de la PCB
- Dibujar manualmente un circuito simple

Pintura conductora de plata RS Pro, botella

Código RS: 186-3600

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

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Especificaciones

Tipo de producto	Pintura
Elemento conductor	Plata
Tipo de paquete	Botella
Tamaño del paquete	20g
Forma física	Líquido
Tiempo de curación	30min
Tipo de aplicador	Brocha
Composición química	Acetato de n-butilo, plata, acetato de 2-butoxietilo, acetato de 2-metoximetilo-1
Características especiales	Secado rápido
Aplicación	PCB

Especificaciones mecánicas

Resistividad de volumen	0.001Ωcm

Aprobaciones

Cumplimiento/Certificaciones	2011/65/UE y 2015/863

CARACTERÍSTICAS

- 100 toallitas por paquete
- Excelentes propiedades de limpieza
- Sin pelusa
- Vida útil de 12 meses
- Limpieza segura

Toallitas RS Pro 100 toallitas impregnadas de IPA por tubo

Código RS: 175-7848

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

Desde RS Pro se suministra con un paquete de toallitas presaturadas de alta calidad. Estas toallitas se han fabricado conforme a los estándares exigidos por los principales fabricantes de electrónica y son una solución fantástica para limpiar PCB y componentes electrónicos.

Especificaciones

Nombre comercial	IPA
Forma	Toallitas
Tipo de paquete	Bañera
Apariencia	Toallitas impregnadas de color blanco
Material	Poliviscoso
Inflamable	Sí
Olor	Característica
Corrosivo	No
Tóxico	Sí – Si se inhala
Usos	Agente de limpieza
Miscibilidad en agua	Completo
Vida útil	12months
Cantidad	100 toallitas
Aplicaciones	Inicio, Oficina, áreas comerciales, PCB, conectores hembra, interruptores

Especificaciones mecánicas

Densidad a 20 °C (g/ml)	0.85

Aprobaciones

Cumplimiento/Certificaciones	Conformidad con RoHS-2 2015/863/UE

1010nm - 1500nm Laser Safety Glasses (1990-23)

RSxxx-xxxx

Specification

Display Wavelength (nm)/OD

190-532 8+
730-1110 5+
745-1100 7+
753-765 9+
765-800 10+
>800-980 8+
>980-1065 10+

VLT

13%

CE Rating

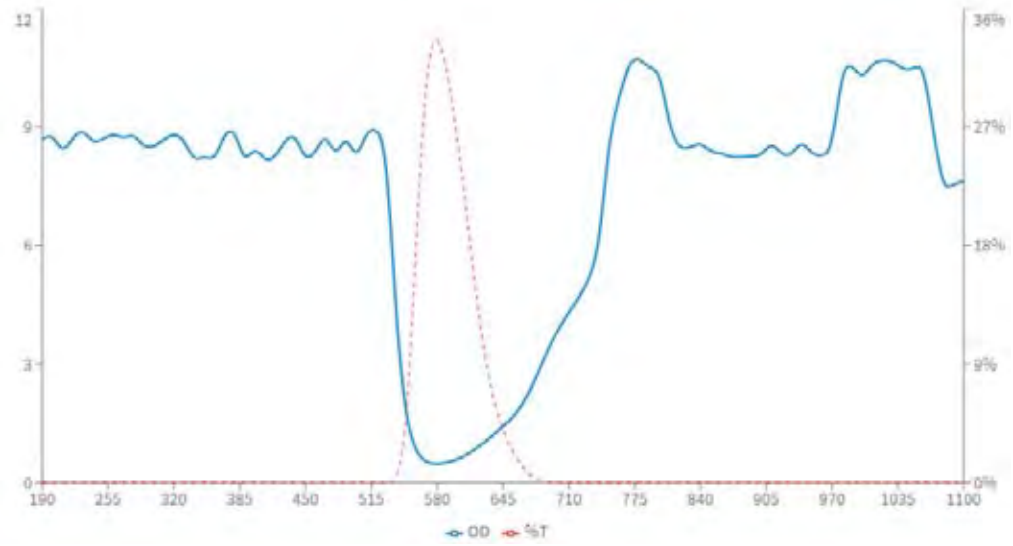
315-532 D LB6 + IR LB8 + M LB7Y
533-535 + 730-744 DIRM LB5
745-750 DIRM LB6
751-754 DIRM LB7
755-1100 D LB7 + I LB9 + R LB8 + M LB8Y

Lens Colour

Amber

Over Glasses Style

- Universal Large
- Comfortable fit over Rx glasses or alone
- Adjustable temples
- Comfort-touch frame
- Side-shields for wide field of view
- CE Certified



Caution: Never look directly into the path of a laser beam. Laser safety eyewear offers protection against accidental exposure to stray or diffused reflection of laser beam energy for a maximum exposure of 5 seconds.

Laser safety eyewear protects only the wearer. All personnel within the work area should wear appropriate eye protection against possible exposure to reflected beam energy. Increased work area lighting may be required if eye protection luminous transmittance is less than 20%.

All laser safety eyewear are clearly marked with wavelength (nm) and absorption (OD) (Optical Density = log [1/Tsig]) where Tsig=spectral transmittance) and L-rating referencing tables 1 and 4 in EN207 (where applicable). Absorption curves available upon request. Colour recognition (of warning lights, etc) may be impaired by use of tinted filters.

Filters have passed environmental testing with extended ranges of +65 to 160°F.

Care & Cleaning

- Store product in protective case when not in use.
- Store in areas not exceeding 26°C (80°F).
- Discard if damaged, faded or if scratches reduce vision.
- Clean with a mild detergent or any over the counter lens/sunglasses cleaner (no alchol) and wipe with non-abrasive cotton cloth.

Please Note: Global Laser reserve the right to change descriptions and specifications without notice.

T: +44 (0)1495 212213
F:+44 (0)1495 214004
E: sales@globallasertech.com
www.globallasertech.com

Global Laser Ltd
Unit 9-10 Roseheyworth Business Park
Abertillery, Gwent, NP13 1SP, UK

9090-05-119 Rev 1 04/09/2020

CARACTERÍSTICAS

- Completamente programable
- Diseño compacto
- Ventilador con control de temperatura inteligente
- Bajo nivel de ruido y rizado
- Se suministran cables para Reino Unido y Europa

RS Pro Digital, fuente de alimentación de banco, 150W, 1 salida, 0 → 30V 0 → 5A

Código RS: 175-7368

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

La fuente de alimentación dc con control digital RS Pro RS3005D es una fuente de alimentación ligera, compacta y fácil de usar con un display de 4 dígitos fácil de leer de los valores de tensión y corriente y dispone de un rango de tensión de salida de 0-30V y un rango de corriente de salida de 0-5A. Esta fuente de alimentación de alta fiabilidad y precisión es adecuada para diversas aplicaciones como producción, laboratorios y universidades y dispone de un ventilador con control de temperatura inteligente con bajo nivel de ruido y rizado. Esta versátil fuente de alimentación de banco ofrece un canal único de altas prestaciones con tensión constante y fuente de alimentación lineal constante, así como una función de bloqueo de mando para evitar un funcionamiento incorrecto.

Especificaciones

Tipo	Digital
Número de visualizaciones	4
Conector de entrada	IEC320-C14
Número de salidas	1
Precisión	Tensión: ≤0,5%+20 mV / corriente: ≤0,5%+10 mA
Coeficiente de temperatura	Tensión: ≤150ppm / corriente: ≤150ppm
Precisión de lectura	Tensión: 10 mV / corriente: 1 mA
Leer Temp. Posterior Coeficiente	Tensión: ≤150ppm / corriente: ≤150ppm
Tiempo de recuperación o reacción	Tensión: ≤100 MS / corriente: ≤100 MS
Resolución	Tensión: 10 mV / corriente: 1 mA
Número de canal	1
Llave de bloqueo	Sí
Aplicación	Laboratorio General, Educación, Industria, Investigación, producción, Talleres

Especificaciones

Tipo de conector macho	Conector MACHO EUROPEO/ Conector macho para Reino Unido
Tensión de alimentación	230VAC
Tensión de salida	0V a 30V
Corriente de salida	0A a 5A
Potencia nominal	150W
Regulación de carga	Tensión: ≤0,01%+2 mv / corriente: ≤0,1%+5 mA
Regulación de línea	Tensión: ≤0,01%+3 mv / corriente: ≤0,1%+3 mA
Rizado (20hz - máx 20M)	Tensión: ≤2mVrms / corriente: ≤3mArms

Especificaciones mecánicas

Dimensión	110mm x156mm x260mm
Longitud	260mm
Anchura	110mm
Altura	156mm
Peso	4.8 kg

Especificaciones del entorno de funcionamiento

Altitud	≤ 2000 m
Humedad relativa	≤ 80%
Temperatura mínima	0°C
Temperatura máxima	40°C
Temperatura de funcionamiento	0°C - 40°C
Temperatura de almacenamiento	–10°C - 70°C

Especificaciones del medidor

Tipo	pantalla 4digit

Aprobaciones

Cumplimiento/Certificaciones	Certificado de conformidad RoHS

CARACTERÍSTICAS

- Varios longitudes disponibles
- Tipos de apantallamiento F/UTP y U/UTP
- Conector chapado en oro (RJ45)
- Ejecuta aplicaciones de hasta 100 MHz

Cable U/UTP Cat5e de PVC gris RS Pro, 3M macho RJ45/macho RJ45

Código RS 556-667

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

RS Pro presenta una gama de cables Cat5e, perfectos para conexiones de red en el hogar, espacios de oficina o cualquier área que requiera una conexión a Internet fiable y de alto rendimiento. Los cables Ethernet se suministran en varias formas y tamaños, pero la calidad es algo que nunca debe pasarse por alto, ya que una conexión fiable puede marcar una gran diferencia en el rendimiento de la empresa. Todos los modelos son muy fiables y de excelente calidad.

Especificaciones

Tipo de hilo conductor	Trenzado
Terminado/Sin terminación	Terminado
Tipo de conector	Macho RJ45/ macho RJ45
Tipo de protección	U/UTP
Material de revestimiento exterior	PVC
Color de la funda	Gris
Aplicación	Se ejecuta desde el origen de Internet, como un router, hasta el destino deseado. Tiene un diseño de par trenzado y destaca tanto en entornos domésticos como de trabajo.

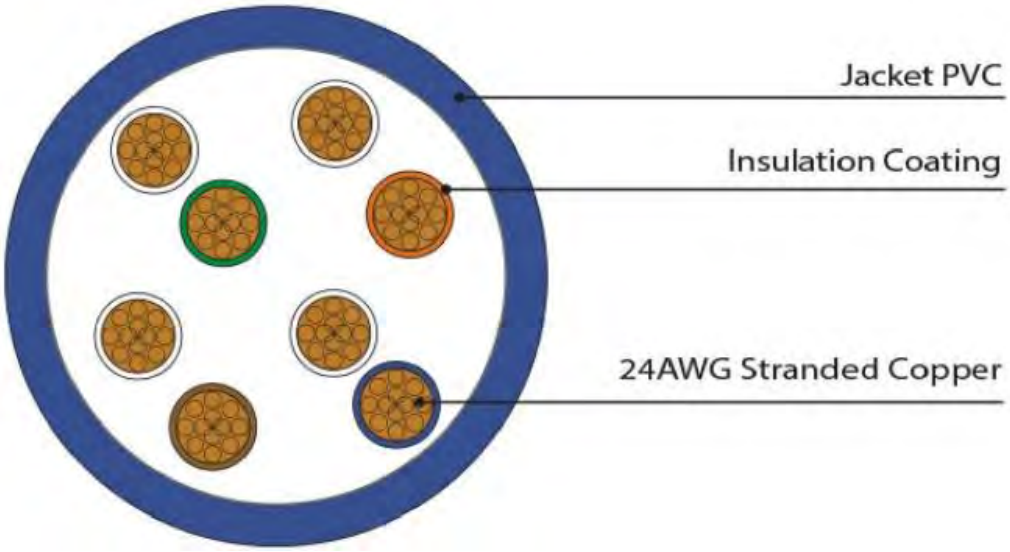
Especificaciones mecánicas

Longitud	3m
Calibre de cable americano	24

Aprobaciones

Cumplimiento/Certificaciones	2011/65/UE y 2015/863

Se cumplen los estándares	ISO/IEC 11801:2002, ANSI/EIA/TIA 568B.2:2002, ROHS, REACH.



RS Pro Stock Number	Colour	Length	Shield Type	Material
557060	Black	0.5 m	FTP	PVC
556960	Black	1 m	FTP	PVC
556972	Black	2 m	FTP	PVC
556982	Black	3 m	FTP	PVC
556988	Black	5 m	FTP	PVC
556926	Black	10 m	FTP	PVC
557026	Black	0.5 m	UTP	PVC
557115	Black	1 m	UTP	PVC
557519	Black	2 m	UTP	PVC
557036	Black	3 m	UTP	PVC
556263	Black	5 m	UTP	PVC
556516	Black	10 m	UTP	PVC

RS Pro Stock Number	Colour	Length	Shield Type	Material
556285	Blue	0.5 m	FTP	PVC
557341	Blue	1 m	FTP	PVC
557418	Blue	2 m	FTP	PVC
556954	Blue	3 m	FTP	PVC
557048	Blue	5 m	FTP	PVC
557054	Blue	10 m	FTP	PVC
557250	Blue	0.5 m	UTP	PVC
557480	Blue	1 m	UTP	PVC
556471	Blue	2 m	UTP	PVC
556477	Blue	3 m	UTP	PVC
556461	Blue	5 m	UTP	PVC
557509	Blue	10 m	UTP	PVC

RS Pro Stock Number	Colour	Length	Shield Type	Material
556225	Red	0.5 m	FTP	PVC
556736	Red	1 m	FTP	PVC
556235	Red	2 m	FTP	PVC
557200	Red	3 m	FTP	PVC
556241	Red	5 m	FTP	PVC
556742	Red	10 m	FTP	PVC
557458	Red	0.5 m	UTP	PVC
557262	Red	1 m	UTP	PVC
556320	Red	2 m	UTP	PVC
556326	Red	3 m	UTP	PVC
557272	Red	5 m	UTP	PVC
556405	Red	10 m	UTP	PVC

RS Pro Stock Number	Colour	Length	Shield Type	Material
557234	Grey	0.5 m	FTP	PVC
556724	Grey	1 m	FTP	PVC
556720	Grey	2 m	FTP	PVC
557240	Grey	3 m	FTP	PVC
557391	Grey	5 m	FTP	PVC
556730	Grey	10 m	FTP	PVC
6572090	Grey	0.5 m	UTP	PVC
557032	Grey	1 m	UTP	PVC
556657	Grey	2 m	UTP	PVC
556667	Grey	3 m	UTP	PVC
556310	Grey	5 m	UTP	PVC
557452	Grey	10 m	UTP	PVC

RS Pro Stock Number	Colour	Length	Shield Type	Material
7388455	White	0.5 m	FTP	PVC
7388464	White	1 m	FTP	PVC
7388467	White	2 m	FTP	PVC
7388461	White	3 m	FTP	PVC
7388470	White	5 m	FTP	PVC
7388473	White	10 m	FTP	PVC
7388433	White	0.5 m	UTP	PVC
7388442	White	1 m	UTP	PVC
7388445	White	2 m	UTP	PVC
7388449	White	3 m	UTP	PVC
7388458	White	5 m	UTP	PVC
7388451	White	10 m	UTP	PVC

RS Pro Stock Number	Colour	Length	Shield Type	Material
557395	Yellow	0.5 m	FTP	PVC
556247	Yellow	1 m	FTP	PVC
556746	Yellow	2 m	FTP	PVC
556257	Yellow	3 m	FTP	PVC
556297	Yellow	5 m	FTP	PVC
556994	Yellow	10 m	FTP	PVC
556415	Yellow	0.5 m	UTP	PVC
556411	Yellow	1 m	UTP	PVC
556421	Yellow	2 m	UTP	PVC
557288	Yellow	3 m	UTP	PVC
557244	Yellow	5 m	UTP	PVC
556528	Yellow	10 m	UTP	PVC

RS Pro Stock Number	Colour	Length	Shield Type	Material
557008	Green	0.5 m	FTP	PVC
557385	Green	1 m	FTP	PVC
557379	Green	2 m	FTP	PVC
557313	Green	3 m	FTP	PVC
557323	Green	5 m	FTP	PVC
557389	Green	10 m	FTP	PVC
556538	Green	0.5 m	UTP	PVC
557468	Green	1 m	UTP	PVC
556976	Green	2 m	UTP	PVC
556534	Green	3 m	UTP	PVC
556544	Green	5 m	UTP	PVC
556540	Green	10 m	UTP	PVC

CARACTERÍSTICAS

- Latiguillo de alto rendimiento
- Impedancia de 50 ohmios
- Extremos terminados

Cable coaxial RS Pro

Código RS: 488-595

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

La Marca de confianza RS Pro presenta un cable coaxial de alta calidad. Fabricados con componentes estándar de la industria, estos cables flexibles se han diseñado para transportar señales a largas distancias y son fáciles de instalar.

Este cable consta de un conector macho BNC chapado en níquel con un contacto central de plata en un extremo y dos 4mm conectores macho de pasador de estilo piggy posterior agrupados en el otro

Especificaciones

Terminado/Sin terminación	Terminado
Aplicaciones	Equipos industriales, de instrumentos y médicos

Especificaciones

Impedancia característica	50 Ohm
Frecuencia de funcionamiento máxima (MHz)	DC: 11 GHz
Tensión de funcionamiento máxima (RMS)	1000.0 V
Tensión no disruptiva (VRMS)	2500.0
Resistencia de aislamiento	5000MOhm
Resistencia de contacto	1,00 mOhm Máx.
Resistencia de contacto exterior	1,00 mOhm Máx.
VSWR a 4GHz	1.30:1 Máx
Pérdida de inserción dB @ x 4GHz	0,30 máx

Especificaciones mecánicas

Forma del cable	Coaxial
Fuerza de retención de cable	350N mín.
Par de apriete recomendado de la abrazadera	4.5N

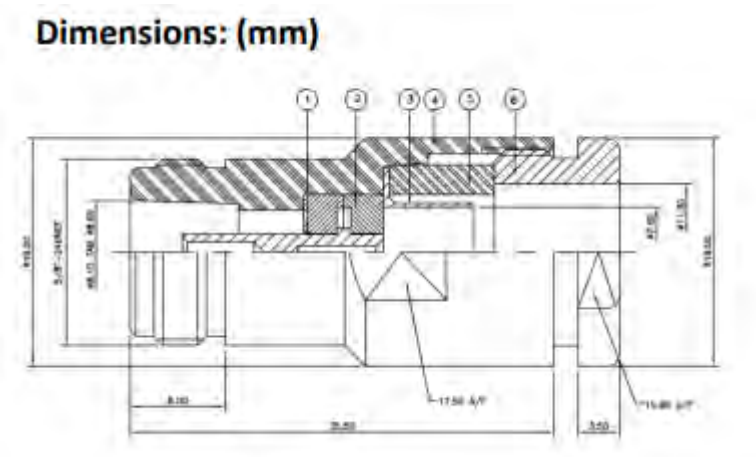
Durabilidad	500 ciclos mín

Especificaciones del entorno de funcionamiento

Rango de temperatura de funcionamiento	De -65 °C a 165 °C.
• Temperatura de funcionamiento mín.: –20 °C	-65°C
Temperatura de funcionamiento máxima; 90 °C	165°C

Aprobaciones

Cumplimiento/Certificaciones	EN61340



FAST MOVING TECHNOLOGY

STÄUBLI

MULTILAM plugs
Main catalog

Powerline | Industrial connectors

STÄUBLI ELECTRICAL CONNECTORS

Long-term solutions – Expert connections

Stäubli Electrical Connectors is a leading international manufacturer of high-quality electrical contacts and connector systems and solutions for industrial applications. We are part of the Stäubli mechatronics group, the technology leader in connection solutions, robotics and textile machinery.

Stäubli develops, produces, sells and services products for markets with the highest productivity and safety standards. As recognized specialists, our focus is always on solutions and customers. Many new developments got their start here and are now becoming established as worldwide standards.

Our customers depend on our expertise and our active support, even when dealing with unusual challenges. With Stäubli, you're entering into a long-term partnership built on reliability, dedication, and exceptional quality in both products and services.

Pioneering contact technology for increased efficiency

The entire Stäubli Electrical Connectors product range meets market expectations for high performance, the highest number of mating cycles, and long-lasting reliability for safe, durable operation. Our proven **MULTILAM technology** is ideal for all types of connections in industrial applications.

Customers in the **power transmission and distribution** sector rely on our consistent, loss-free transmission performance in all voltage ranges. The **automotive industry** depends on our high-efficiency connections for spot-welding applications in production lines. Harsh conditions in the **transportation sector** require high vibration resistance, maximum reliability, and compact design. These attributes are vitally important for railway and e-mobility applications. The safety and reliability of our products are essential for **test and measurement technology.**

In the growing field of **alternative energy**, our products have been setting standards since the 1990s. About half of the solar energy generated worldwide is transmitted through safe, long-lasting, high-performance Stäubli connectors.

Applications and advantages

Stäubli MULTILAM plugs are produced from gold or nickel-plated brass. A recess serves as a seat for the freely movable MULTILAM contact cage. The spring action of the louvers provides constant pressure in mated condition while guaranteeing excellent electrical properties. Our MULTILAM plugs are equipped with two different types of MULTILAM: twisted or straight.

They are optimally suitable for use in the following areas of application:

- Machine construction & integrators
- Medical technology
- Automotive industry
- Measurement technology
- Instruction & education
- Lighting technology
- Research & laboratory

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- Ø 4 mm

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- 1-pole connectors

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- Customized designs
- Technical information
- Index

General information

Colour code

For those items available in various colours, replace the asterisk "*" with the appropriate colour code.

20	green-yellow	26	violet
21	black	27	brown
22	red	28	grey
23	blue	29	white
24	yellow	33	transparent
25	green		

Changes / Provisos

All data, illustrations and drawings in the catalogue have been carefully checked. They are in accordance with our experience to date, but no responsibility can be accepted for errors.

We also reserve the right to make modifications for design and safety reasons. When designing equipment incorporating our components, it is therefore advisable not to rely solely on the data in the catalogue but to consult us to make sure this information is up to date. We shall be pleased to advise you.

Copyright

The use of this catalog for any other purpose, in whatever form, without our prior written consent is not permitted.

RoHS ready

Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

INTRODUCTION

Stäubli MULTILAM plugs

Stäubli MULTILAM plugs are machined from brass, and are gold- or nickel-plated. A recess serves as a seat for the freely movable MULTILAM contact cage. It is punched from rigid hard-drawn copper alloy sheet, rolled and formed so that the louvers bulge outward. The spring action of the louvers provides constant pressure in the mated condition. Our MULTILAM plugs are fitted with two different types of MULTILAM. The outstanding electrical characteristics of MULTILAM connectors are: high current-carrying capacity, minimal contact resistance, low self-heating.

Solid metal pins make Stäubli MULTILAM plugs extremely rugged and crushproof. They are also highly resistant to vibration in the mated condition.

straight

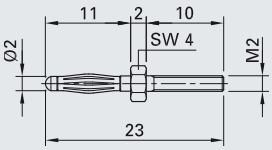
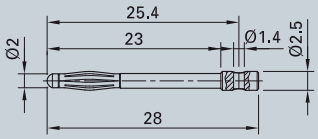
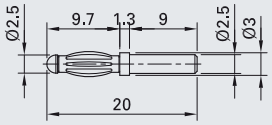
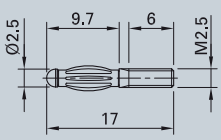
Traditional, straight form, a proven Stäubli design with very good electrical and mechanical properties for a plug connection.

twisted

“Twisted” form with even better electrical and mechanical properties for a plug connection.

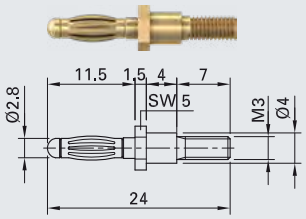
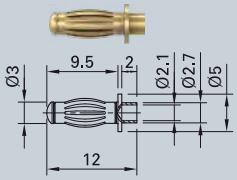
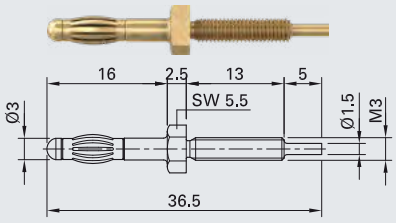
Technical data						
	MULTILAM version “straight”					**MULTILAM version “twisted”**
Nominal-Ø	Ø 2 mm	Ø 2.5 mm	Ø 2.8 mm	Ø 3 mm	Ø 4 mm	Ø 4 mm
Max. rated current	25 A	25 A	25 A	30 A	50 A	50 A
Contact resistance, gold-plated version	0.4 mΩ	0.5 mΩ	0.5 mΩ	0.5 mΩ	0.3 mΩ	0.2 mΩ
Contact resistance, nickel-plated version	2 mΩ	–	–	–	0.8 mΩ	0.4 mΩ
Upper temperature limit	150°C					150°C

Ø 2 mm – Ø 2.5 mm

Order No.	Type	Nominal-Ø	Type of termination	Metal parts / plating	Withdrawal force	Max. temperature	Rated current [1]	Contact resistance	Assembly material, order separately	
		mm			N	°C	A	mΩ		
22.1100	SA200	2	M2	CuZn, Au	~4	150	25	0.4	p. 16	
22.1102	SA200N	2	M2	CuZn, Ni	~4	150	25	2	p. 16	
22.6303	SA203	2	Soldering	CuZn, Ni	~4	150	25	2		
22.5118	SA2,5	2.5		CuZn, Au	~6	150	25	0.5		
22.5117	SA2,5-G	2.5	M2,5	CuZn, Au	~6	150	25	0.5		

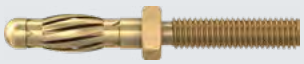
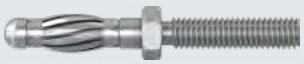
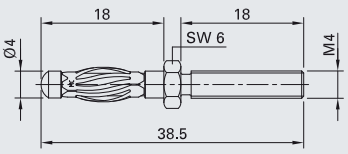
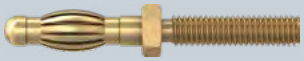
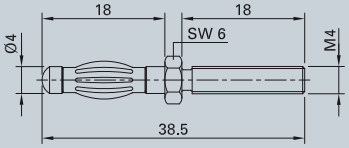
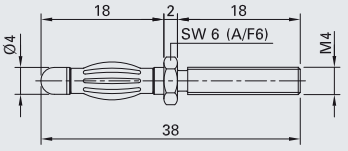
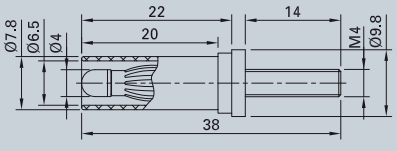
[1] According to connecting method and cross section

Ø 2.8 mm – Ø 3 mm

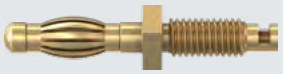
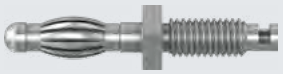
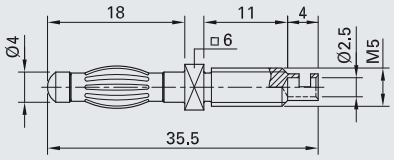
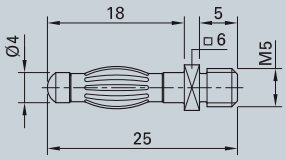
Order No.	Type	Nominal-Ø	Type of termination	Metal parts / plating	Withdrawal force	Max. temperature	Rated current [1]	Contact resistance	Assembly material, order separately	
		mm			N	°C	A	mΩ		
22.5107	SA2,8	2.8	M3	CuZn, Au	~3	150	25	0.5	p. 16	
22.1110	SA300	3	Soldering	CuZn, Au	~5	150	30	0.5		
22.1111	SA301	3	M3	CuZn, Au	~2.5	150	30	0.5	p. 16	

[1] According to connecting method and cross section

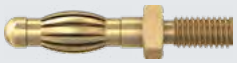
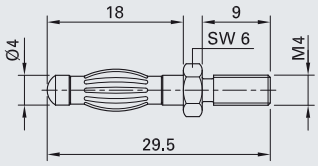
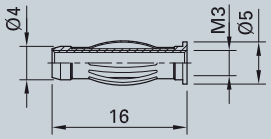
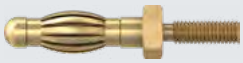
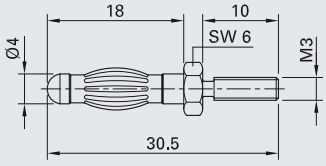
Ø 4 mm

Order No.	Type	Nominal-Ø	Type of termination	Metal parts / plating	Withdrawal force	Max. temperature	Rated current [1]	Contact resistance	Assembly material, order separately	
		mm			N	°C	A	mΩ		
22.1050	SA400	4	M4	CuZn, Au	~10	150	50	0.2	p. 17	
22.1078	SA400N	4	M4	CuZn, Ni	~10	150	50	0.4	p. 17	 
22.1070	SA400-B	4	M4	CuZn, Au	~5	150	50	0.3	p. 17	 
24.5062	SA400-V	4	M4	CuZn, Au	~12	80	50	0.3	p. 17	
24.0117-*[2]	SA400-VI	4	M4	CuZn, Au	~12	80	32	0.3	p. 17	 * Couleurs 21 22 23 24 25 26 27 28 29 Isolation: PA

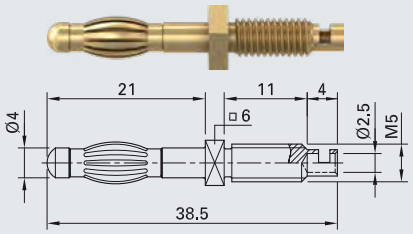
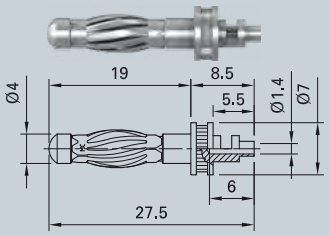
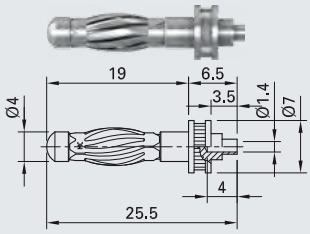
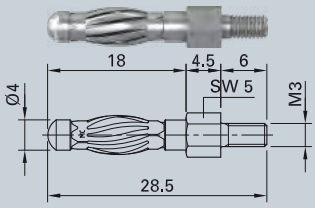
[1] According to connecting method and cross section
[2] Add the desired colour code instead of "*".

Order No.	Type	Nominal-Ø	Type of termination	Metal parts / plating	Withdrawal force	Max. temperature	Rated current [1]	Contact resistance	Assembly material, order separately	
		mm			N	°C	A	mΩ		
22.1051	SA401	4	M5/ Soldering	CuZn, Au	~5	150	50	0.3	p. 16	
22.1091	SA401N	4	M5/ Soldering	CuZn, Ni	~5	150	50	0.8	p. 16	 
22.1052	SA402	4	M5	CuZn, Au	~5	150	50	0.3	p. 16	

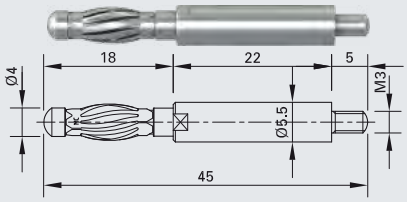
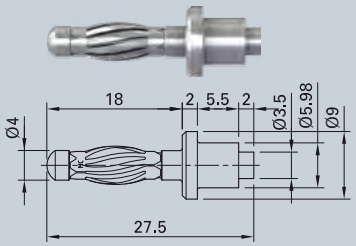
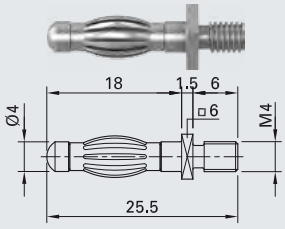
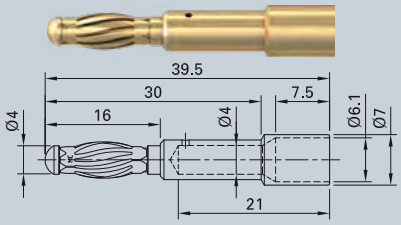
[1] According to connecting method and cross section

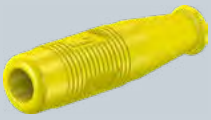
Order No.	Type	Nominal-Ø	Type of termination	Metal parts / plating	Withdrawal force	Max. temperature	Rated current [1]	Contact resistance	Assembly material, order separately	
		mm			N	°C	A	mΩ		
22.1053	SA403	4	M4	CuZn, Au	~5	150	50	0.3	p. 17	
22.1076	SA403N	4	M4	CuZn, Ni	~5	150	50	0.8	p. 17	
22.1054	SA404	4	M3	CuZn, Au	~8	150	50	0.3		
22.6012	SA404N	4	M3	CuZn, Ni	~12	150	50	0.8		
22.1055	SA405	4	M3	CuZn, Au	~5	150	50	0.3	p. 17	
22.6016	SA405N	4	M3	CuZn, Ni	~5	150	50	0.8	p. 17	

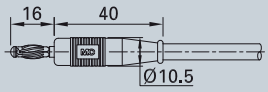
[1] According to connecting method and cross section

Order No.	Type	Nominal-Ø	Type of termination	Metal parts / plating	Withdrawal force	Max. temperature	Rated current [1]	Contact resistance	Assembly material, order separately	
		mm			N	°C	A	mΩ		
22.6205	SA479	4	M5/ Soldering	CuZn, Au	~5	150	50	0.3	p. 16	
22.1081	SA481	4	Soldering	CuZn, Ni	~10	150	50	0.4		
22.1082	SA482	4	Soldering	CuZn, Ni	~10	150	50	0.4		
22.1083	SA483	4	M3	CuZn, Ni	~10	150	50	0.4	p. 17	

[1] According to connecting method and cross section

Order No.	Type	Nominal-Ø	Type of termination	Metal parts / plating	Withdrawal force	Max. temperature	Rated current [1]	Contact resistance	Assembly material, order separately	
		mm			N	°C	A	mΩ		
22.1084	SA484	4	M3	CuZn, Ni	~10	150	50	0.4	p. 17	
22.1085	SA485	4		CuZn, Ni	~10	150	50	0.4		
22.1086	SA486	4	M4	CuZn, Ni	~5	150	50	0.8	p. 17	
22.1049	LS460-P	4	Crimping	CuZn, Au	~10	150	50	0.2		





Anti-kink sleeve T-POAG-6, TPE,
conductor cross section 6 mm², **Order No. 15.5004-***

* Colours
21 22 24

[1] According to connecting method and cross section

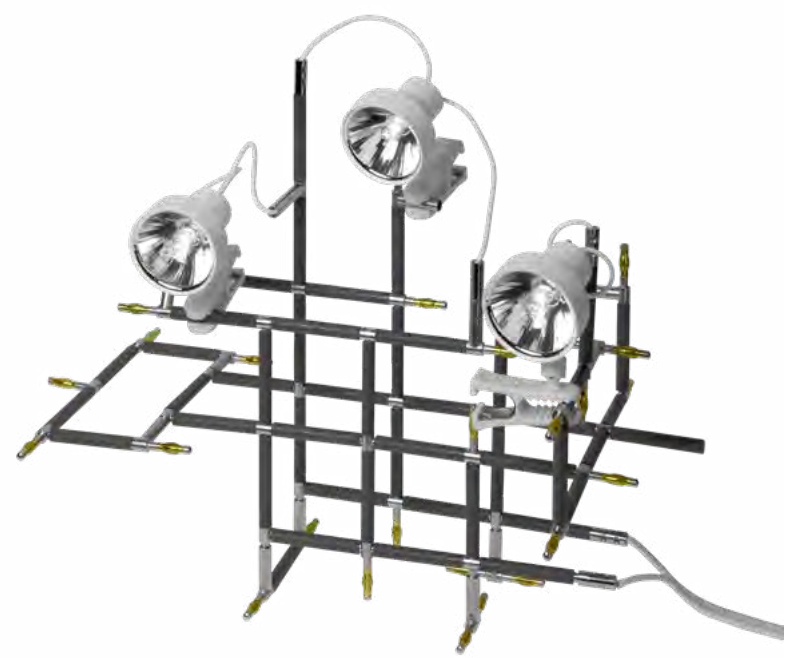
MA

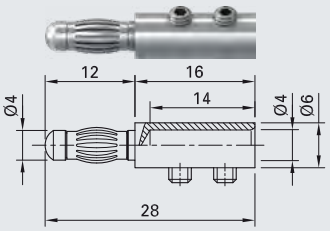
Assembly instructions MA163

www.staubli.com/electrical

1-pole connectors

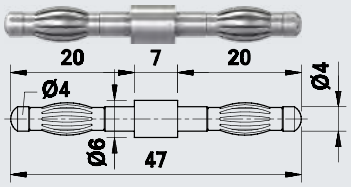
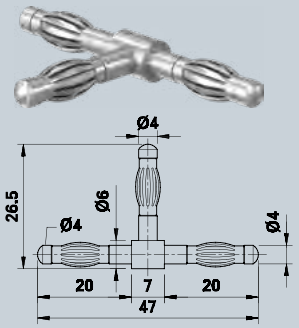
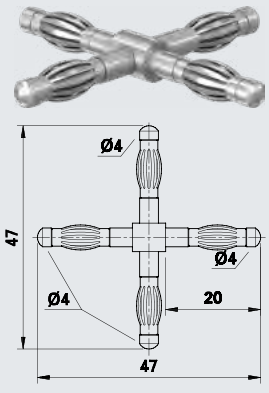
Connectors type SL4F/... Ø 4 mm are suitable for halogen low voltage lighting systems with Ø 4 mm tubular conductors.



Order No.	Type	Nominal-Ø	Type of termination	Metal parts / plating	Withdrawal force	Max. temperature	Rated current [1]	Contact resistance	
		mm			N	°C	A	mΩ	
13.0003	SL4F/G	4	Screw connection	CuZn, Ni	~10	150	50	0.8	

Connecting plug, suitable as power feed from the transformer. Can also be used (in pairs) with cable as a flexible corner connector.

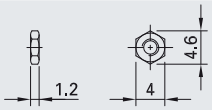
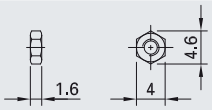
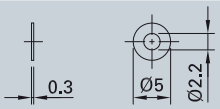
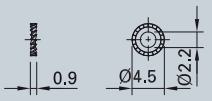
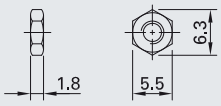
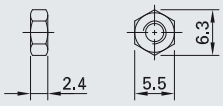
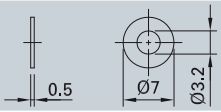
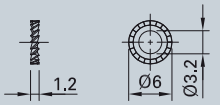
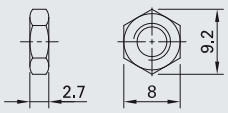
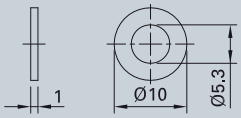
[1] According to connecting method and cross section

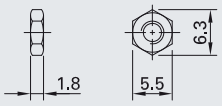
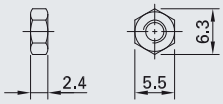
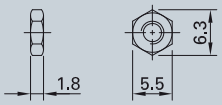
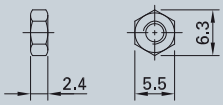
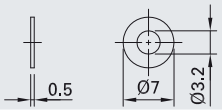
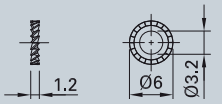
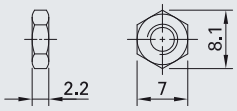
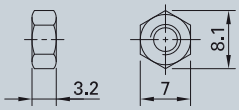
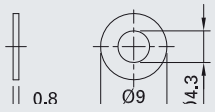
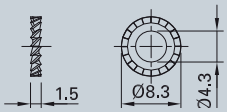
Order No.	Type	Nominal-Ø	Type of termination	Metal parts / plating	Withdrawal force	Max. temperature	Rated current [1]	Contact resistance	
		mm			N	°C	A	mΩ	
13.0001	SL4F/2	4		CuZn, Ni	~12	150	50	0.8	
In-line coupling plug, suitable for making extensions in lighting systems.									
13.0004	SL4F/3	4		CuZn, Ni	~5	150	50	0.8	
T-plug, suitable as a T-distributor or as a connector for low voltage halogen spots.									
13.0005	SL4F/4	4		CuZn, Ni	~5	150	50	0.8	
Cross-plug, suitable as in lighting systems.									

[1] According to connecting method and cross section

ACCESSORIES

Assembly material

Order No.	Type	Designation	Material	DIN	Illustration	To fit MULTILAM plugs
22.6601	MU0,5D/M2	Nut	Brass, gold plated	439		**SA200**
22.6501	MU0,8D/M2	Nut	Brass, gold plated	934		
22.6503	U/M2	U-Washer	Brass, gold plated	125		**SA200N**
22.6530	FS/M2	Serrated lock washer	Spring bronze	6798		
22.6605	MU0,5D/M3	Nut	Brass, gold plated	439		**SA2,8**
22.6505	MU0,8D/M3	Nut	Brass, gold plated	934		
22.6507	U/M3	U-Washer	Brass, gold plated	125		**SA301**
22.6532	FS/M3	Serrated lock washer	Spring bronze	6798		
22.6613	MU0,5D/M5	Nut	Brass, gold plated	439		**SA401** **SA401N**
22.6515	U/M5	U-Washer	Brass, gold plated	125		**SA402** **SA402-H** **SA479**

Order No.	Type	Designation	Material	DIN	Illustration	To fit MULTILAM plugs
22.6605	MU0,5D/M3	Nut	Brass, gold plated	439		**SA405**
22.6505	MU0,8D/M3	Nut	Brass, gold plated	934		
22.6606	MU0,5D/M3N	Nut	Brass, nickel plated	934		**SA405N**
22.6522	MU0,8D/M3N	Nut	Brass, nickel plated	934		
22.6507	U/M3	U-Washer	Brass, gold plated	125		**SA483**
22.6532	FS/M3	Serrated lock washer	Spring bronze	6798		**SA484**
22.6609	MU0,5D/M4	Nut	Brass, gold plated	439		**SA400** **SA400N**
22.6509	MU0,8D/M4	Nut	Brass, gold plated	934		**SA400-B** **SA403**
22.6511	U/M4	U-Washer	Brass, gold plated	125		**SA403N** **SA400-V**
22.6533	FS/M4	Serrated lock washer	Spring bronze	6798		**SA400-VI** **SA486**

Customized designs

A speciality of Stäubli is to develop individual solutions for special contact requirements in collaboration with the customer. Just ask us. We shall be pleased to advise you.

Examples:

Technical information

Rated current (IEC 61984)
Assigned current which the connector can carry continuously (without interruption) and simultaneously through all its wired contacts with the largest specified conductor, at an ambient temperature of 20 °C, without the upper limiting temperature being exceeded.

Protection against electric shock for unenclosed connectors
Protection against electric shock is provided by the customer by the enclosure of the equipment in which the connector is mounted. Or its use is limited to very low voltage (SELV – safety extra low voltage).

Gold plating
Gold has good electrical conductivity and affords unexcelled corrosion protection. Contact resistance is low and constant. A nickel or copper layer is applied as a diffusion barrier.

Nickel plating
In cases where electrical specifications are less demanding, nickel-plated contact elements are used. This process is also frequently used to provide a diffusion barrier prior to gold plating.

Stäubli MULTILAMs
are special contact elements developed by Stäubli with outstanding electrical and mechanical properties. The MULTILAM form a contact cage inserted between two contact surfaces.

The MULTILAMs contact the two surfaces at a large number of points, each of which acts as a “bridge” for passage of current.

Most of the Stäubli MULTILAMs are made of hard-drawn copper alloy and are gold-plated. They have high current-carrying capacity in continuous and intermittent operation and perform very reliably over a broad temperature range.

For detailed information, refer to the catalogue: **MULTILAM Technical Overview**.

Contact resistance
is the resistance occuring at the point of contact between two surfaces. Its value is calculated with the measured voltage drop and the rated current in new condition. The technical data here stated are mean values.

Withdrawal force
is the force required to pull out a connector without influence of a locking or a coupling device. The withdrawal force is determined in a polished steel socket.

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SL4F/G	13.0003	14
T-POAG-6	15.5004-*	13
U/M2	22.6503	16
U/M3	22.6507	16, 17
U/M4	22.6511	17
U/M5	22.6515	16

IS PL MLPlugs 11013983-en B 11.2019

■ Stäubli Units ○ Agents

Global presence of the Stäubli Group

www.staubli.com

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STÄUBLI

CÁMARA TÉRMICA MSX®

FLIR TG165-X™

La FLIR TG165-X reduce significativamente el tiempo de las inspecciones y los diagnósticos ayudándole a señalar visualmente el origen de los problemas eléctricos, mecánicos y de los sistemas de climatización. En lugar de tener que buscar las anomalías de temperatura con un termómetro IR de un solo punto, esta herramienta de medición de temperatura y generación de imágenes sin contacto muestra una imagen térmica de un objetivo en la que se incluyen las zonas calientes o frías que podrían indicar dónde se encuentra el problema. Gracias a la mejora de imagen MSX patentada por FLIR, que añade detalles visuales a las imágenes térmicas completas, podrá ver nítidamente el cableado y los componentes, e incluso leer las etiquetas. El láser con diana ayuda a garantizar que está enfocando al componente correcto para realizar la medición, mientras que su diseño portátil y a prueba de caídas (que incluye botones y configuraciones fáciles de usar) le ayudan a completar el trabajo rápidamente y sin problemas. Con almacenamiento interno de hasta 50 000 imágenes y una batería recargable de iones de litio, la FLIR TG165-X está lista para su uso desde el primer momento.

www.flir.com/TG165-X

DETECTE EL ORIGEN DE LOS FALLOS DEL SISTEMA

Solucione problemas eléctricos, mecánicos y del edificio con este generador de imágenes térmicas portátil.

- Descubra anomalías de temperatura de forma inmediata en la imagen térmica en lugar de tener que buscarlas con un termómetro IR de un solo punto.
- Acelere las inspecciones gracias a una visualización térmica que le proporciona información instantánea sobre si un objetivo tiene componentes demasiado calientes o fugas de aire ocultas.
- Mida un amplio rango de temperaturas, de –25°C a 300 °C (de –13 °F a 572 °F), con una precisión de ±1,5 °C (±3 °F).

REALICE INSPECCIONES DE FORMA RÁPIDA Y SENCILLA

Vea los detalles necesarios para solucionar averías y evaluar su gravedad.

- Interprete las imágenes de forma más rápida y sencilla con la tecnología de dos cámaras MSX®, que mejora las imágenes térmicas con nítidos detalles visuales.
- Identifique el área exacta que está midiendo con el puntero láser con diana.
- Capture imágenes visuales o MSX térmicas, además de lecturas de temperatura, pulsando simplemente un gatillo.
- Verifique que ha encontrado y solucionado el problema con imágenes del antes y el después.

TRABAJE CON SEGURIDAD

Lleve la TG165-X a cualquier parte gracias a su diseño portátil y su carcasa protectora IP54.

- Trabaje con seguridad y sin preocupaciones, ya que la cámara termográfica puede soportar caídas desde 2 metros.
- Vea en la oscuridad y en áreas de difícil acceso con la ayuda de la potente linterna LED.
- Vea fácilmente las imágenes térmicas o las registradas en una pantalla de 2,4 pulgadas.
- Confíe en la seguridad que proporciona la garantía FLIR 2-10 de primera categoría.

ESPECIFICACIONES

Información gráfica y óptica	
Resolución de IR	80 × 60 píxeles
Mejora digital de la imagen	No
Sensibilidad térmica/NETD	<70 mK
Campo de visión (FOV)	51° × 66°
Distancia focal mínima	0,3 m (0,98 ft)
Relación de distancia con el objeto	24:1
Pseudorrango doble	No
Frecuencia de imagen	8,7 Hz
Enfoque	Fijo

Datos del detector	
Matriz de plano focal/ rango espectral	Microbolómetro no refrigerado/de 7,5 a 14 µm
Paso del detector	17 µm

Presentación de imagen	
Resolución de la pantalla	320 × 240 píxeles
Pantalla	2,4" en vertical, ángulo de visión de 80°
Ajuste de imagen	Automático
Modos de imagen	• MSX® (imagen dinámica multiespectral) • Visual (con lectura de temperatura)
Galería	Sí

Medición y análisis	
Rango de temperatura del objeto	De –25°C a 300 °C (de –13 °F a 572 °F)
Precisión	• De 50 °C a 100 °C (de 122 °F a 212 °F): precisión de ±1,5 °C (±3 °F) • De 0 °C a 50 °C/de 100 a 300 °C (de 32 °F a 122 °F/ de 212 °F a 572 °F): precisión de ±2,5 °C (±5 °F) • De –25°C a 0 °C (de –13 °F a 32 °F): precisión de ±3 °C (±7 °F)
Distancia de medición mínima	0,26 m (0,85 ft)
Medidor puntual	Punto central sí/no
Paletas de colores	Hierro, arcoíris, blanco cálido, negro cálido, ártico, lava

Configuración	
Comandos de configuración	• Adaptación local de unidades, idioma, y formatos de fecha y hora • Brillo de pantalla (alto, medio y bajo) • Galería, eliminación de imágenes
Corrección de emisividad	Sí: 4 niveles preestablecidos con ajuste personalizado, de 0,1 a 0,99

Almacenamiento de imágenes	
Soporte de almacenamiento	4 GB
Capacidad de almacenamiento de imágenes	50 000 imágenes
Formato de archivos de imagen	JPEG con temperatura de punto en metaetiqueta

Cámara digital	
Resolución	2 MP (1600 × 1200 píxeles)
Enfoque	Fijo
Campo de visión	71° × 56°, se adapta a la lente de IR

Luz y láser	
Luz de trabajo	LED encendido/apagado
Salida de luz	100 lúmenes
Puntero láser con diana	Indica el tamaño del área de medición
Tipo de láser	Clase 1

Interfaces de comunicación de datos	
Interfaces	USB 2.0
USB estándar	USB tipo C de alta velocidad, transferencia de datos/ alimentación

Sistema de alimentación	
Tipo de batería	Batería recargable de iones de litio de 3,7 V
Duración de la batería	5 horas de análisis (brillo medio LCM) 4,5 horas con el láser encendido (brillo medio LCM)
Duración de la carga de la batería	30 días mínimo
Sistema de carga	La batería se carga dentro de la cámara; 4 horas al 90 %, 6 horas al 100 %
Gestión energética	Ajustable: apagada, 5 minutos, 15 minutos, 30 minutos

General	
Rango de temperatura operativa	De –10°C a 45 °C (de 14 °F a 113 °F)
Protección	IP54 (IEC60529)
Golpes	25 g (IEC 60068-2-27)
Vibración	2 g (IEC 60068-2-6)
Prueba de caída	Diseñada para soportar caídas de 2 m (6,56 ft)
Seguridad	CE/CB/EN61010/UL
Peso	0,394 kg (13,9 oz)
Tamaño (L. × An. × Al.)	210 × 64 × 81 mm (8,3" × 2,5" × 3,2")
Montaje en trípode	UNC ¼"-20
País de origen	Taiwán

Las especificaciones están sujetas a cambios sin previo aviso. Para consultar las especificaciones más recientes, visite www.flir.com.

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20-0707-INS-A4

FLIR® | The World's Sixth Sense®

CARACTERÍSTICAS

- **Puede soportar temperaturas de hasta 80 °C.**
- **Resistente a la mayoría de aceites y disolventes.**
- **Fácil de aplicar**

Super Glue de 20 g RS Pro

Código RS 473-449

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

El **RS PRO 473-4** es una botella de 20g de superglue transparente. Adecuada para una amplia gama de superficies, la 473-449 es perfecta para aplicaciones que requieren velocidades de secado ultrarrápidas.
Con una viscosidad baja-media de 40 cps, el Superglue 473-449 es muy fácil de aplicar en la superficie elegida. Sólo aplique una capa delgada y permita que se cure. El tiempo de curación dependerá de la superficie a la que se aplique. Woods curará más rápido en menos de 3 segundos. Sin embargo, los metales como el acero que tienen poca humedad pueden tardar hasta 20 segundos en curarse.

Especificaciones

Tamaño del paquete	20g
Formulario de producto	Líquido
Color	Transparente
Tipo de paquete	Botella
Reactivo base	Etil
Máximo tiempo de curación completa	24 horas
Olor escaso/nulo	No
Tiempo de curación	<5
Aplicaciones	madera de adhesión, corcho, cuero, cartón y superficies similares

Especificaciones mecánicas

Viscosidad	34cPs a 44cPs
Gravedad específica	1,06
Resistencia a la tracción	21N/mm^2
Vida útil a 5 °C.	12months
Relleno de espacio máximo	0.1mm
Velocidad de secado Acero (desengrasado)	<20 segundos
Velocidad de curado ABS	<10 segundos
Velocidad de curado caucho	<5 segundos
Madera de la velocidad que cura	<3 segundos

Especificaciones del entorno de funcionamiento

Temperatura de funcionamiento máxima; 90 °C	40°C
• Temperatura de funcionamiento mín.: –20 °C	-50°C
Punto de inflamación	>85°C

Aprobaciones

Cumplimiento/Certificaciones	Certificado de conformidad RoHS

RS
PRO
Superglue
20g

CARACTERÍSTICAS

- Cobre estañado
- Aislamiento de caucho de silicona
- Varios tamaños de cable
- grosor de pared de 0,8 mm

Cable para entornos hostiles RS Pro de 0,5 mm² CSA, carrete negro 25m

Código RS 359-677

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

RS Pro presenta los conductores de cobre estañado con revestimiento de caucho de silicona de 0,8 mm de grosor de pared conforme a BS 6195 tabla 4. Estos cables satisfarán un amplio número de aplicaciones relacionadas con equipos médicos, electrónicos o eléctricos que pueden funcionar en condiciones ambientales. Perfecto en situaciones en las que se puede encontrar ozono, descarga de corona, radiación, calor, intemperie o los efectos normalmente adversos de una amplia gama de aceites, disolventes, etc. Todos los modelos son muy fiables y de excelente calidad

Especificaciones

Estilo de cable	BS6195
Calibre de cable americano	20
Material aislante	Caucho de silicona
Resistente a.	Descarga de efecto corona, calor, aceites, ozono, radiación, disolventes, condiciones climatológicas
Filamentos de núcleo	16/0,2 mm
Forma del cable	Núcleo único
Material del conductor	Cobre expuesto
Número de filamentos	16
Aplicaciones	Obras, motores de coche, aviones, gasolineras

Especificaciones eléctricas

Tensión nominal	750V
Corriente nominal	3 A

Especificaciones mecánicas

Área de sección transversal	0.5mm^2
Color de la funda	Negro
Longitud	25m
Diámetro exterior	2.6mm
Espesor de pared de aislamiento	0.8mm
Tamaño de los filamentos	0.2mm
Trenzado	16/0.2mm

Especificaciones del entorno de funcionamiento

• Temperatura de funcionamiento mín.: –20 °C	-60°C
Temperatura de funcionamiento máxima; 90 °C	150 °C.
Rango de temperatura de funcionamiento	De -60 °C a 150 °C.

Aprobaciones

Cumplimiento/Certificaciones	CSA, certificado de conformidad RoHS

CARACTERÍSTICAS

- Garantía de tres años
- Cabezales giratorios para precisión y precisión
- Material durable y duradero
- Se suministra con una caja profesional, resistente al desgaste y resistente al agua

RS Pro Precision ranurado; juego de destornilladores Phillips

Código RS: 537-883

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

Nuestro juego de destornilladores de precisión en miniatura de 11 piezas RS PRO se ha diseñado y fabricado con fosfato negro de alta calidad para resistencia adicional. Todos los destornilladores del juego disponen de un mango de diseño ergonómico que favorece la facilidad de uso y una muy buena sujeción. Los destornilladores tienen un cabezal giratorio, que ayuda al usuario a lograr un control preciso y exacto. Las 11 piezas del juego tienen también ejes de acero ennegrecido, cuerpos chapados en níquel y una hoja de acero.

Especificaciones

Tipo de destornillador	Precisión
Número de piezas	11
Tipo de punta	Plano, Phillips
Contenido del juego	Plano: 1mm; 1,2 mm; 1,4 mm; 1,8 mm; 2,4 mm; 3mm, PHILLIPS: PH0; PH1; PH2; PH3; PH4
Aplicaciones	Técnicos, joyeros, fabricantes de relojes, mecánicos, ensambladores, aficionados y aquellos que desean completar tareas de bricolaje

Especificaciones mecánicas

Tamaño de punta	Plano: 1mm; 1,2 mm; 1,4 mm; 1,8 mm; 2,4 mm; 3mm, PHILLIPS: PH0; PH1; PH2; PH3; PH4
Material de la hoja	Acero
Acabado de la pala	Fosfato negro

pc.

PRECISION SCREWDRIVER

Specification of Thermoelectric Module

TEC1-12706

Description

The 127 couples, 40mmx40mm size module is a single stage module which is designed for cooling and heating up to 100℃ applications. If higher operation or processing temperature is required, please specify, we can design and manufacture the custom made module according to your special requirements.

Features

- No moving parts, no noise, and solid-state
- Compact structure, small in size, light in weight
- Environmental friendly
- RoHS compliant
- Precise temperature control
- Exceptionally reliable in quality, high performance

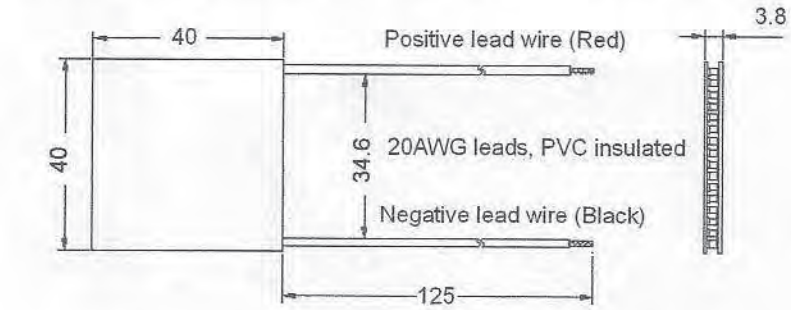
Application

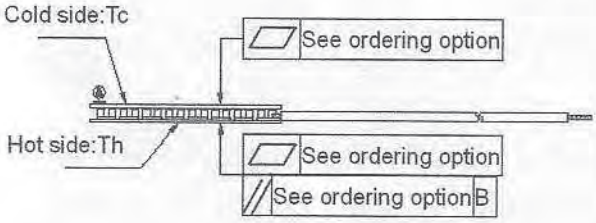
- Food and beverage service refrigerator
- Portable cooler box for cars
- Liquid cooling
- Temperature stabilizer
- CPU cooler and scientific instrument
- Photonic and medical systems

Peformance Specification Sheet

Th(℃)	27	50	Hot side temperature at environment: dry air, N_2
DT_{max}(℃)	68	76	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U_{max}(Voltage)	15.0	16.8	Voltage applied to the module at DT_{max}
I_{max}(amps)	6.4	6.4	DC current through the modules at DT_{max}
Q_{Cmax}(Watts)	65.0	71.3	Cooling capacity at cold side of the module under DT=0℃
AC resistance(ohms)	2.00	2.23	The module resistance is tested under AC

Geometric Characteristics Dimensions in millimeters





Sealing Option

Suffix	Sealant
NS	No sealing
SS	Silicone sealant
EPS	Epoxy
OS	Customer specify sealing other than above

Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:3.8±0.1	0:0.035/0.035	125±1/Specify
TF	1:3.8±0.05	1:0.025/0.025	125±1/Specify
TF	2:3.8±0.03	2:0.015/0.015	125±1/Specify
Eg. TF01: Thickness 3.8±0.1(mm) and Flatness 0.025/0.025(mm)			

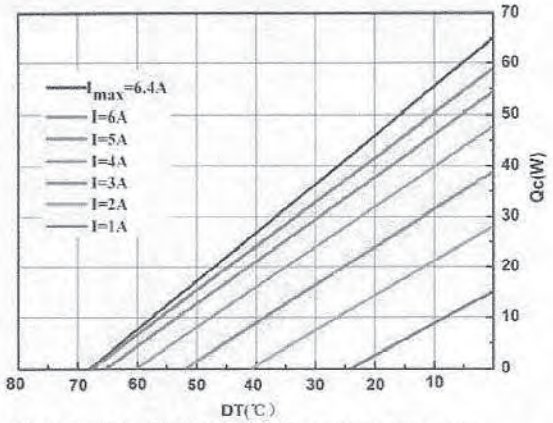
Additional

Ceramic material: Alumina (Al_2O_3,white 96%)
Solder tinning: Bismuth Tin (BiSn) M.P. 138℃

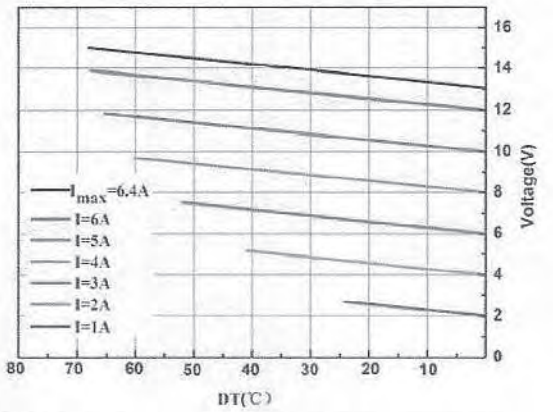
Specification of Thermoelectric Module

TEC1-12706

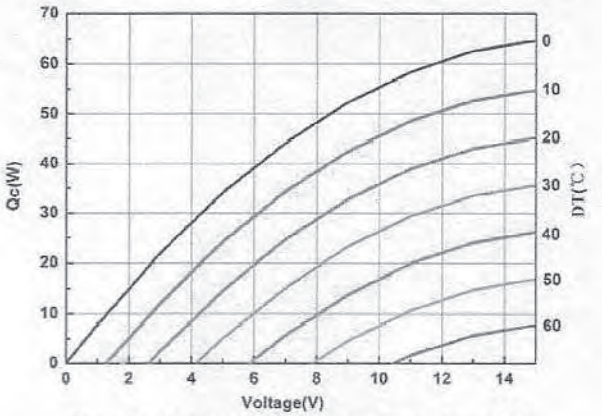
Performance Curves at Th=27℃



The chart for Q_c Vs DT under various currents

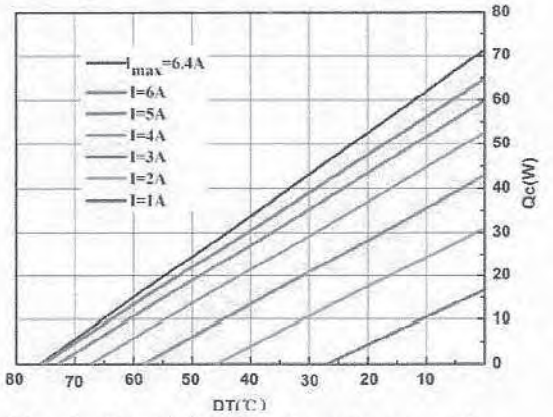


The chart for Voltage Vs DT under various currents

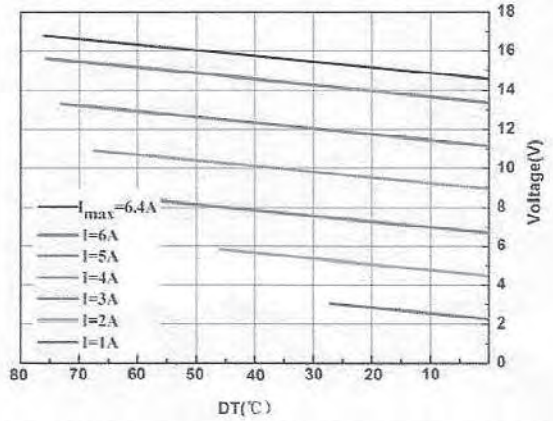


The chart for Q_c Vs Voltage under various DT

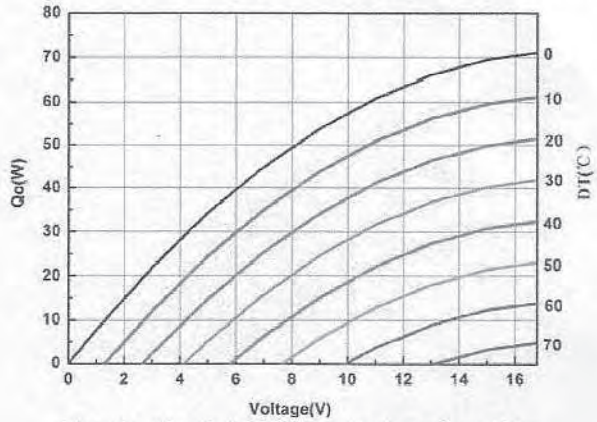
Performance Curves at Th=50℃



The chart for Qc Vs DT under various currents



The chart for Voltage Vs DT under various currents



The chart for Q_c Vs Voltage under various DT

Operation Cautions

- Cold side of the module sticked on the object being cooled
- Hot side of the module mounted on a heat radiator
- Work under DC
- Operation below I_{max} or V_{max}
- Operation or storage module below 100℃

Specification of Bi_2Te_3-Based Thermoelectric Ingot

Description

The Bi_2Te_3-based thermoelectric ingot is grown by [redacted] with the alloy of Bi, Sb, Te, Se, special doping and our unique crystallizing processes. The Bi_2Te_3-based thermoelectric ingot is used to produce thermoelectric modules for cooling and heating applications, and converting heat into electricity. Generally, the figure of merit *ZT* of our p-type and n-type ingots is larger than 1 at 300K, and the good feature attracts many high-end customers. Meanwhile, our ingot is featured with good mechanical strength and highly stable property, providing the key stone for producing the high performance and reliable Peltier cooling and power generation modules.

Features

- Silver-white Color
- p-Type and n-type ingot $ZT \geqslant 0.9$@300K

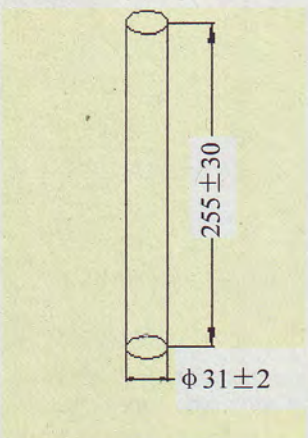
Application

- High performance and reliable Peltier cooling and power generation modules

Peformance Specification Sheet

Performance Specification	p-Type	n-Type	Note
Diameter (mm)	31±2	31±2	
Length (mm)	250±30	250±30	
Density (gcm^{-3})	6.8	7.8	
Electrical Conductivity $\sigma(10^2 Sm^{-1})$	850~1250	850~1250	300K
Seebeck Coefficient $\alpha(\mu VK^{-1})$	190~230	190~230	300K
Thermal Conductivity $\kappa(Wm^{-1}K^{-1})$	1.2~1.6	1.2~1.6	300K
Power Factor $P(WmK^{-2})$	⩾0.0036	⩾0.0036	300K
ZT value	⩾0.9	⩾0.9	300K

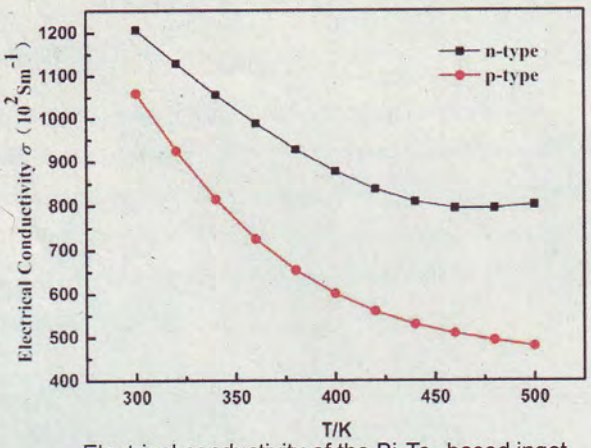
Geometric Characteristics (in millimeters)



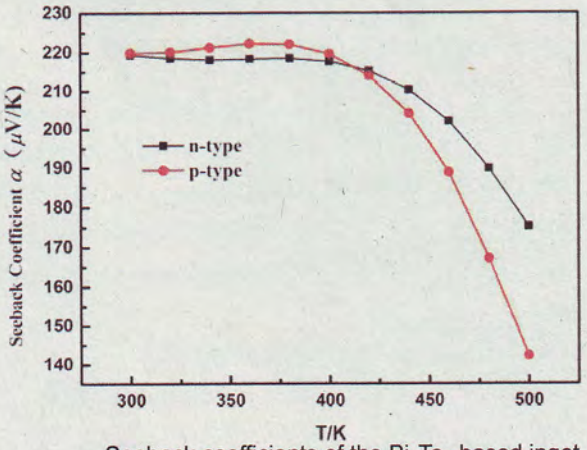
p-type Ingot

n-type Ingot

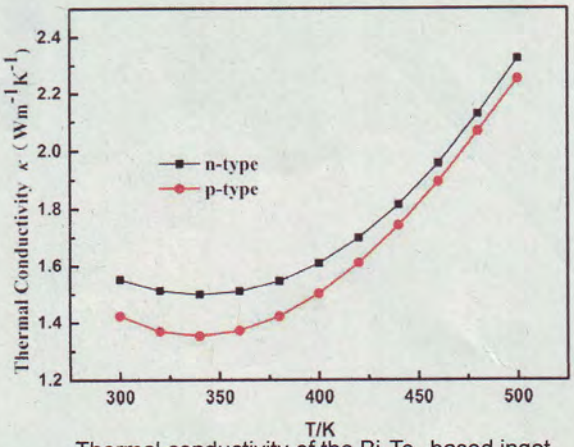
Specification of Bi_2Te_3-Based Thermoelectric Ingot



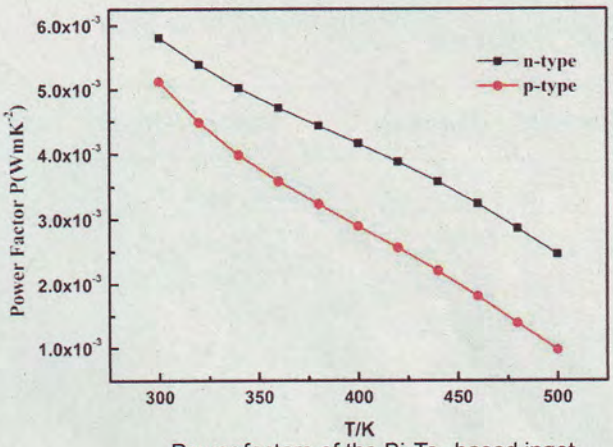
Electrical conductivity of the Bi_2Te_3-based ingot



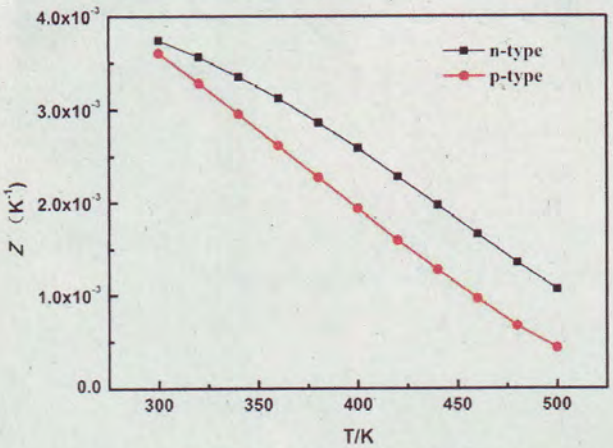
Seebeck coefficients of the Bi_2Te_3-based ingot



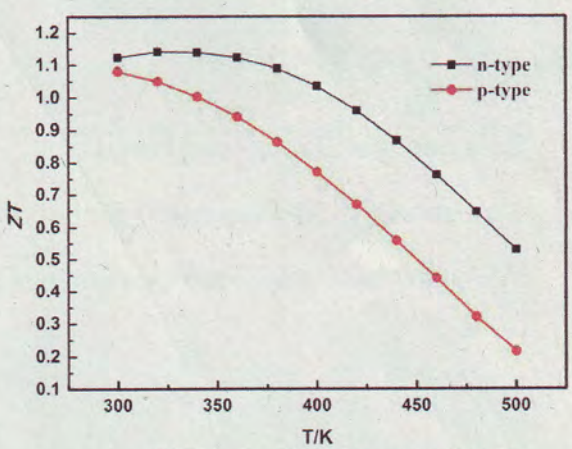
Thermal conductivity of the Bi_2Te_3-based ingot



Power factors of the Bi_2Te_3-based ingot



Z values of the Bi_2Te_3-based ingot



ZT values of the Bi_2Te_3-based ingot

Operation Cautions

- Caution on handling
- Storage in dry environment

Remarks:

Electrical conductivity σ and Seebeck coefficient α are measured by using a ZEM-1apparatus (Japan Vacuum Tech) in the temperature range from 300 to 500 K. The thermal conductivity κ is obtained from the measured thermal diffusivity *D*, specific heat *Cp* and density *d* according to the relationship $\kappa = D \times Cp \times d$. Thermal diffusivity and specific heat are determined using a laser flash method (NETZSCH:LFA 457) and a power-compensation differential scanning calorimeter (TA:DSCQ20), respectively. All measurements are performed in the temperature range from 300 to 500 K.

Specification of Thermoelectric Module

TEC1-12706

Description

The 127 couples, 40mmx40mm size module is a single stage module which is designed for cooling and heating up to 100℃ applications. If higher operation or processing temperature is required, please specify, we can design and manufacture the custom made module according to your special requirements.

Features

- No moving parts, no noise, and solid-state
- Compact structure, small in size, light in weight
- Environmental friendly
- RoHS compliant
- Precise temperature control
- Exceptionally reliable in quality, high performance

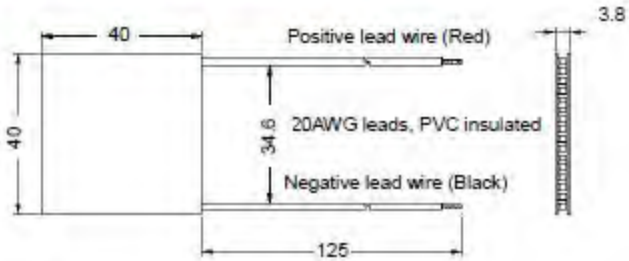
Application

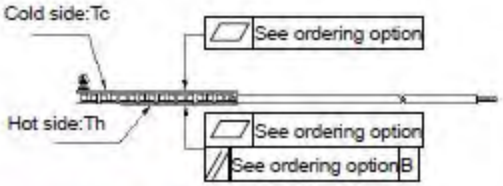
- Food and beverage service refrigerator
- Portable cooler box for cars
- Liquid cooling
- Temperature stabilizer
- CPU cooler and scientific instrument
- Photonic and medical systems

Peformance Specification Sheet

Th(℃)	27	50	Hot side temperature at environment: dry air, N_2
DT_{max}(℃)	68	76	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U_{max}(Voltage)	15.0	16.8	Voltage applied to the module at DT_{max}
I_{max}(amps)	6.4	6.4	DC current through the modules at DT_{max}
Q_{Cmax}(Watts)	65.0	71.3	Cooling capacity at cold side of the module under DT=0℃
AC resistance(ohms)	1.9~2.2	2.1~2.4	The module resistance is tested under AC

Geometric Characteristics Dimensions in millimeters





Sealing Option

Suffix	Sealant
NS	No sealing
SS	Silicone sealant
EPS	Epoxy
OS	Customer specify sealing other than above

Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:3.8±0.1	0:0.035/0.035	125±1/Specify
TF	1:3.8±0.05	1:0.025/0.025	125±1/Specify
TF	2:3.8±0.03	2:0.015/0.015	125±1/Specify
Eg. TF01: Thickness 3.8±0.1(mm) and Flatness 0.025/0.025(mm)			

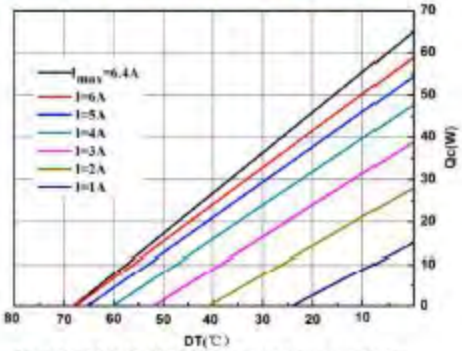
Additional

Ceramic material: Alumina (Al_2O_3,white 96%)
Solder tinning: Bismuth Tin (BiSn) M.P. 138℃

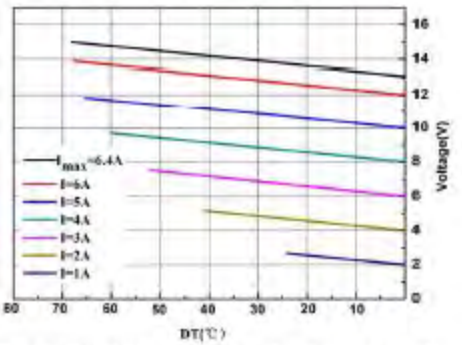
Specification of Thermoelectric Module

TEC1-12706

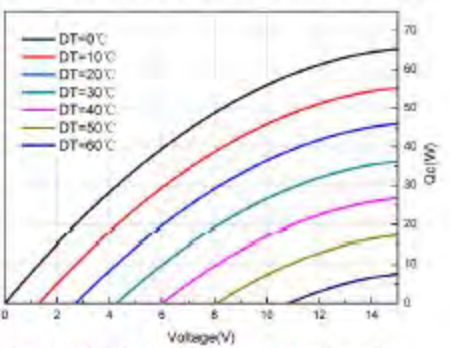
Performance Curves at Th=27℃



The chart for Q_c Vs DT under various currents

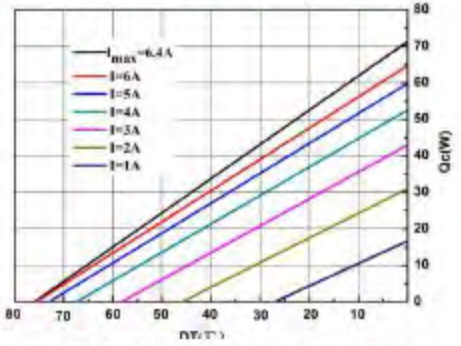


The chart for Voltage Vs DT under various currents

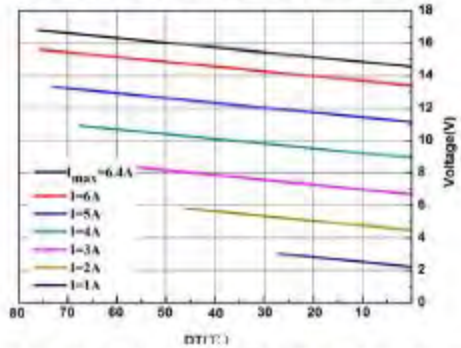


The chart for Q_c Vs Voltage under various DT

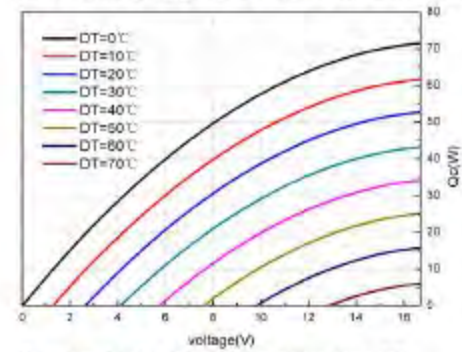
Performance Curves at Th=50℃



The chart for Qc Vs DT under various currents



The chart for Voltage Vs DT under various currents



The chart for Q_c Vs Voltage under various DT

Operation Cautions

- Cold side of the module sticked on the object being cooled
- Hot side of the module mounted on a heat radiator
- Work under DC
- Operation below I_{max} or V_{max}
- Operation or storage module below 100℃

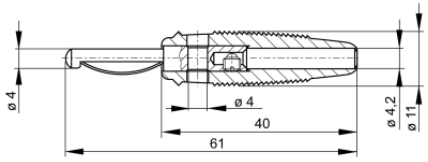
HIRSCHMANN® Test & Measurement
A BRAND OF SKS

SKS Kontakttechnik GmbH

Plugs

VQ 20

CE

Product	VQ 20
description	Fully mating connector, shatter-proof, flexible insulated sleeve with transverse hole. The tapering sleeve end also serves as kinking protection for the lead. Screw connection up to maximum cable cross-section of 1.5 mm². Nickel-plated brass contact material.
operating instruction	BA410
article-no. / *colour	9300581xx 00 black · 01 red · 02 blue · 03 yellow · 04 green · 07 white Ni
drawing	
	
technical data	
connection	screw terminal
rated voltage(1)	30 VAC / 60 VDC
measurement cat. acc. to IEC 61010	O (3)
rated current(1) (consider derating curve)	16 A
material plug	brass, nickel plated
housing material	PVC-P
temperature range acc. To IEC61010(2)	-25 °C to +70 °C
standard	IEC 61010

4 mm system

(1) for normal environmental conditions -5°C to +40°C
(2) contact the manufacturer for applications at deviating temperature ranges
(3) without rated measurement category, for other circuits that are not directly connected to mains
stand: 07.05.2019

CARACTERÍSTICAS

- El cable flexible tiene conductores de cable de cobre y cable de drenaje
- Diámetro exterior de 4mm
- Longitud de 1m
- Los conectores y contactos están fabricados de níquel y tienen un Cubierta de PVC
- No se necesita adaptador adicional

Cable USB A a Micro USB B USB macho RS Pro, 1m

Código RS: 182-8495

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

RS Pro presenta un cable USB A macho a micro USB B USB macho de alta calidad. Fabricado conforme a los estándares del sector, este USB se ha diseñado para conectar dispositivos como cámaras y teléfonos móviles a ordenadores, lo que lo convierte en una solución fantástica.

Especificaciones generales

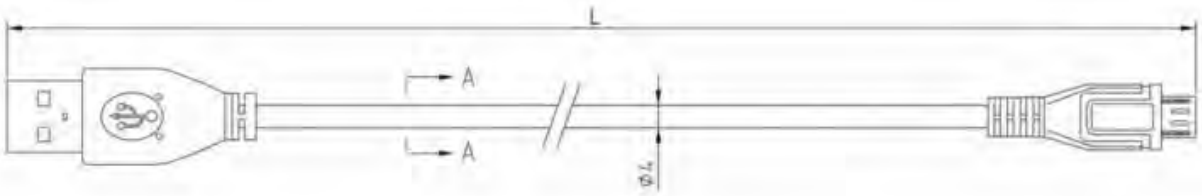
Tipo de USB	USB 2.0
Conector A	USB A macho
Tipo de conector A.	USB A
Género del conector A	Macho
Conector B	Micro USB B macho
Tipo de conector B.	USB B
Género del conector B.	Macho
Material de revestimiento exterior	PVC
Color de la funda	Negro
Chapado del conector	Níquel
Construcción del pasador	Níquel y tienen una cubierta de PVC
Aplicaciones	Controladores para juegos, cámaras, teléfonos móviles, discos duros portátiles, cámaras

Especificaciones mecánicas

Longitud	1m

Aprobaciones

Se cumplen los estándares	RoHS, CE, REACH



1	1
2	2
3	3
4	5
Shell	Shell

Item Name		Description
CONDUCTOR A	Material	7/0.12mm BCX1P
CONDUCTOR B	Material	7/0.12mm BCX2E
INSULATOR	Material	PE+PVC
SHIELD	Material	AL/FOIL
BRAID	Material	64/0.12mm ALMG
Drain wire	Material	0.25mm Cu
OUTER JACKET	OD	4mm
	COLOR	BLACK

CARACTERÍSTICAS

- El cable flexible tiene conductores de cable de cobre y cable de drenaje
- Longitud de 1m
- Los conectores son de níquel y tienen una protección contra tirones
- USB 3.1 admite suministro de alimentación de 20 V, 3 a, este cable tiene una resistencia de 56KΩ

Cable RS Pro USB macho C a USB A USB macho, 1m

Código RS: 182-8848

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

RS Pro presenta un cable USB A a mini USB B macho de alta calidad. Fabricado conforme a los estándares del sector, este USB se ha diseñado para conectar dispositivos como tabletas y teléfonos móviles a ordenadores, lo que lo convierte en una solución fantástica.

Especificaciones generales

Tipo de USB	USB 2.0
Conector A	USB-C macho
Tipo de conector A.	USB C
Género del conector A	Macho
Conector B	USB A macho
Tipo de conector B.	USB A
Género del conector B.	Macho
Material de revestimiento exterior	PVC
Color de la funda	Negro
Chapado del conector	Níquel
Aplicaciones	Teléfonos móviles, cámaras, discos duros externos, tabletas, relojes inteligentes, altavoces portátiles

Especificaciones eléctricas

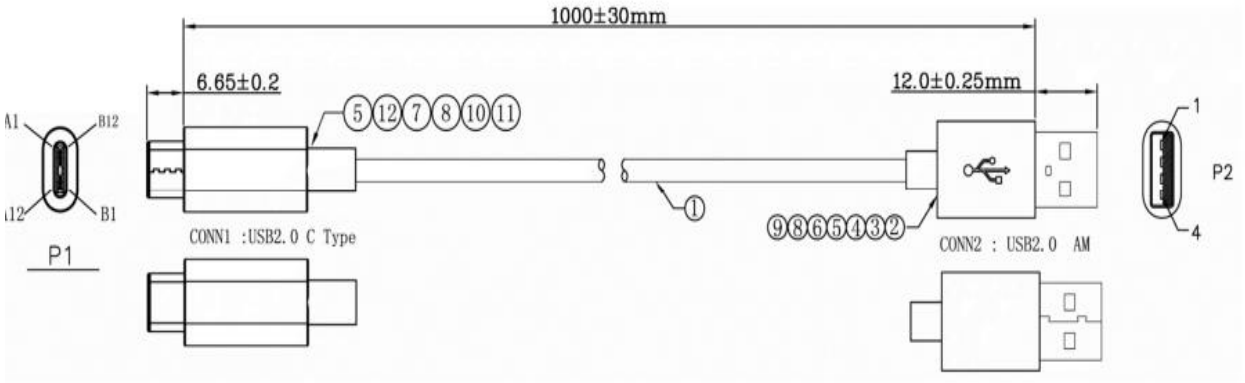
Tensión nominal	20V
Potencia máxima	3 A

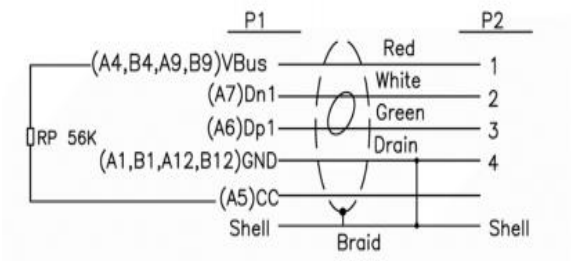
Especificaciones mecánicas

Longitud	1m

Aprobaciones

Se cumplen los estándares	RoHS, CE, REACH





12	Inside Molding:Low pressure material
11	USB TYPE C~Below Tinplate Nickel Plated
10	USB TYPE C~UP Tinplat Nickel Plated
9	W=5MM 25u Double conductive copper foil
8	H.S TUBE ∮1.0 Thick wall
7	Outside Molding 45P PVC Color:Black
6	Inside Molding:Transparent PE
5	山鼎TYPEC-USB2.0 C Type Connector With~PCBA (56KΩ)
4	USB2.0 AM UP Tinplat Nickel Plated
3	USB2.0 AM Below Tinplate Nickel Plated
2	USB2.0 AM insulation:WHITE PIN:Gold plated
1	NO-UL~30AWG*2C+24AWG+3EAB(16/9/0.06TC 95%TC)OD:3.0MM~PVC~BLACK~NO-MARKING

FEATURES

- Mixture: Propane/ Butane
- Appearance: Colourless
- Boiling Point: -42 °C
- Freezing Point: -188°C
- Flammability Limits: 2% – 11% in
- Air Auto-ignition Temperature: 450 °C
- Density 0.5 g/ml
- Specific Gravity of Vapour (Air = 1.0) 1.5 at 15 °C
- Vapour Pressure 6 – 6.5 bar at 15 °C, 11 – 12 bar at 55 °C

RS PRO Gas Torch Refill

RS Stock No.: 790-3580

RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

Product Description

Introducing a range of propane and butane gas refills from RS PRO. A mixture of propane and butane gases which acts as a fuel designed specifically for your portable gas soldering irons, gas torches and products operated by propane and butane.

General Specifications

Accessory Type	Gas Torch Refill
For Use With	Gas Blowtorches
Colour	Colourless
Gas Mixture	Propane/ Butane
Density	0.5 g/ml
Shelf Life	48 Months
Flammability Limits	2 – 11 % in Air
Application	Cooking or food preparation, Home DIY, Camping and caravanning, Welding, Soldering, Automotive repair and maintenance

Operation Environment Specifications

Boiling Point	-42°C
Freezing Point	-188°C
Auto-ignition Temperature	450°C
Specific Gravity of Vapour (Air = 1.0)	1.5 at 15 °C
Vapour Pressure	6 – 6.5 bar at 15 °C; 11 – 12 bar at 55 °C

Approvals

Standard Mets	EN417

RS
Propane
butane
gas refill

CARACTERÍSTICAS

- **Conexión sencilla de los últimos dispositivos USB tipo C a A. Puerto USB A en un dispositivo host**
- **Transferencia y carga de datos de alta velocidad**
- **Conector macho reversible tipo C.**
- **Plug and Play: No requiere software adicional**
- **Cumple el estándar USB 2.0 (velocidad de transferencia de hasta 480 Mbit/s)**

Cable USB A a USB C macho RS Pro, 2m

Código RS 895-0499

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por

ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del producto ATRIBUTO 1

RS Pro presenta un cable USB fiable de alta calidad terminado en un extremo con un conector macho tipo C compacto y versátil y el otro con un conector macho USB tipo A. Este cable es compatible con el protocolo USB 2.0 estándar, que permite una transferencia de datos de alta velocidad de hasta 480 Mbps. Con este cable puede conectar el último smartphone o portátil con puerto USB C a un PC host o cargador que utilice un puerto de tipo A.

Especificaciones generales

Tipo de USB	USB 2.0
Conector A	USB-C macho
Tipo de conector A.	USB C
Género del conector A	Macho
Conector B	USB A macho
Tipo de conector B.	USB A
Género del conector B.	Macho
Material de revestimiento exterior	PVC
Color de la funda	Negro
Aplicaciones	Este cable tipo C le permitirá conectar dispositivos portátiles con los últimos puertos USB C, como smartphones, ordenadores portátiles, tabletas y reproductores de MP3, a un dispositivo host con un puerto USB A.

Especificaciones eléctricas

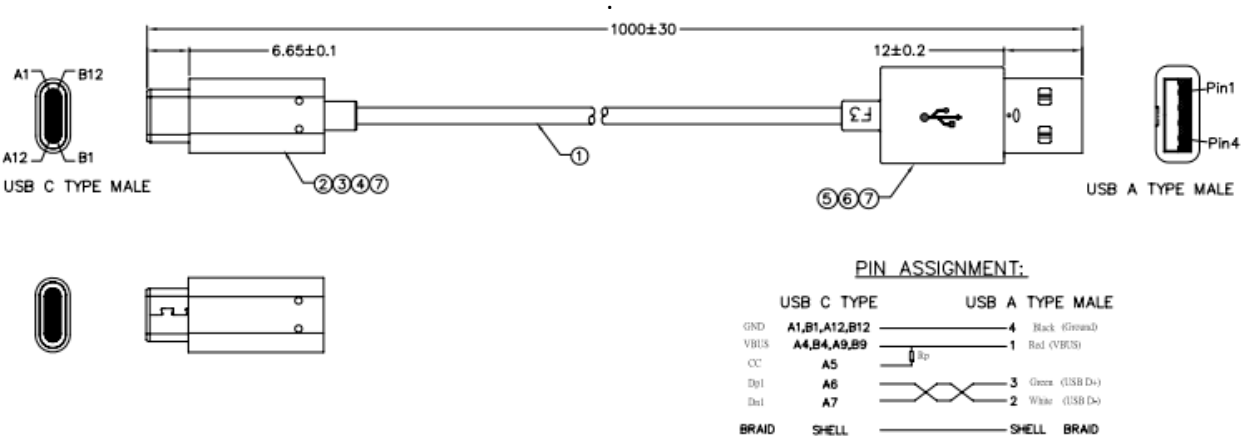
Tensión nominal	100VAC

Especificaciones mecánicas

Longitud	2m

Aprobaciones

Se cumplen los estándares	Conformidad con RoHS, UL 2725



PIN ASSIGNMENT:

	USB C TYPE		USB A TYPE MALE	
GND	A1,B1,A12,B12		4	Black (Ground)
VBUS	A4,B4,A9,B9		1	Red (VBUS)
CC	A5	Rp		
Dp1	A6		3	Green (USB D+)
Dn1	A7		2	White (USB D-)
BRAID	SHELL		SHELL	BRAID

CARACTERÍSTICAS

- Pelacables y cuchilla de acción giratoria sencilla
- Perfecto para cables de alimentación de 2 núcleos y 3 núcleos
- Produce un corte de anillo seguro para aislamiento exterior e interior en todos los tipos de cable flexible
- La hoja cerrada con seguridad no requiere ajuste de cable alguno hasta 9 mm de diámetro
- Diseño de tamaño de bolsillo compacto con cuchilla integrada

Pelacables RS Pro de 90 mm, 0,1 mm → 9mm

Código RS 663-437

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

RS Pro presenta este práctico pelacables tipo anillo ideal para usar con cables de red. El pelacables puede ajustarse automáticamente para diferentes tamaños de revestimiento exterior, lo que significa que no tendrá que perder tiempo ajustando el ajuste de la hoja. Basta con conectarlo al cable y girarlo para cortar con la hoja de anillo, eliminando el aislamiento mientras se retiene el conductor.

Especificaciones

Tipo de cable	Flexible, red eléctrica
Gama de pelado	Máximo de 9mm
Tamaño mínimo	0.1mm
Tamaño máximo	9mm
Aplicaciones	Los pelacables los utilizan principalmente electricistas o mecánicos, pero también se utilizan en casa en cualquier caja de herramientas de bricolaje.

Especificaciones mecánicas

Longitud total	90mm

Aprobaciones

Cumplimiento/certificación	ANSI/ESD S20.20:2014 Y BS EN 61340-5-1:2007
Certificado VDE	No

CARACTERÍSTICAS

- Fusible de vidrio (cuerpo de vidrio, tapa de latón chapado en níquel)
- tamaño de cartucho 5mm x 20 mm
- F velocidad nominal
- Conformidad con RoHS; sin plomo

Fusible de cartucho de vidrio RS Pro, 500mA, 5 x 20mm, velocidad F

Código RS 563-463

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

Este fusible de cartucho está diseñado conforme a las normas internacionales (IEC) para poder usarlo en cualquier lugar del mundo. Está disponible en forma de cartucho y con cable axial. Son ideales para proporcionar protección a dispositivos o circuitos internos contra cortocircuitos y sobrecorriente. Son componentes más débiles a propósito con el objetivo de fundirse cuando la corriente sea demasiado alta. Una vez que el fusible se ha fundido, será necesario sustituirlo para completar el circuito y permitir el flujo de corriente.

Especificaciones

Cable de conexión	Cobre chapado en estaño-plomo, diámetro Ø0.8mm.
Velocidad del fusible	F
Material del cuerpo	Cuerpo de vidrio/tapas de latón chapado en níquel
Aplicaciones	Industrial, Comercial, Hogar/Residencial, Automoción

Especificaciones eléctricas

Corriente nominal	500mA
Tensión nominal	250V ac

Especificaciones mecánicas

Tamaño del fusible	5 x 20mm
Longitud total	20 mm
Diámetro	5mm

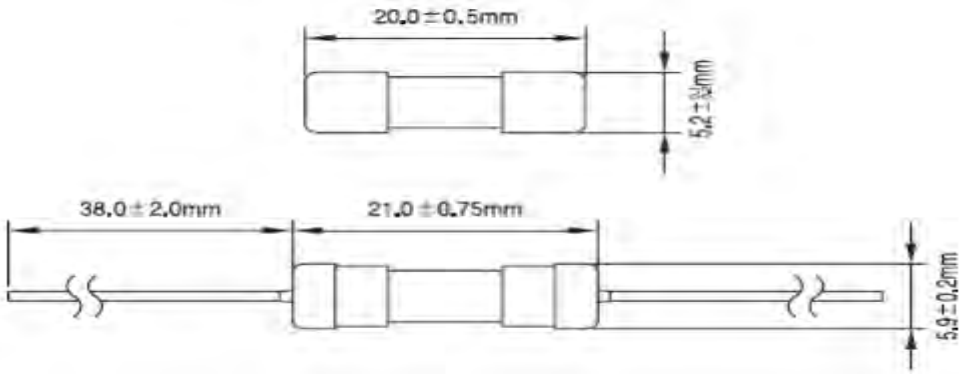
Especificaciones del entorno de

Temperatura de funcionamiento máxima; 90 °C	125 °C.
• Temperatura de funcionamiento mín.: – 20 °C	-55°C

Aprobaciones

Cumplimiento/Certificaciones	UL, BSI, VDE, SEMKO, IMQ

Drawing (mm):



Electrical Characteristic:

Rated Current	1.5In	2.1In	2.75 In		4 In		10 In
	MIN	MAX	MIN	MAX	MIN	MAX	MAX
63mA~100mA	60 min	30 min	10 ms	500 ms	3 ms	100 ms	20 ms
125mA~6.3A	60 min	30 min	50 ms	2 sec	10 ms	300 ms	20 ms
8A~10A	30 min	30 min	50 ms	2 sec	10 ms	400 ms	40 ms

CARACTERÍSTICAS

- Varios longitudes disponibles
- Tipo de blindaje UTP
- Conector chapado en oro (RJ45)
- Ejecuta aplicaciones de hasta 100 MHz

Cable U/UTP Cat5e gris RS Pro, 2m macho RJ45/macho RJ45

Código RS: 405-5385

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

RS Pro presenta una gama de cables Cat5e, perfectos para conexiones de red en el hogar, espacios de oficina o cualquier área que requiera una conexión a Internet fiable y de alto rendimiento. Los cables Ethernet se suministran en varias formas y tamaños, pero la calidad es algo que nunca debe pasarse por alto, ya que una conexión fiable puede marcar una gran diferencia en el rendimiento de la empresa. Todos los modelos son muy fiables y de excelente calidad

Especificaciones

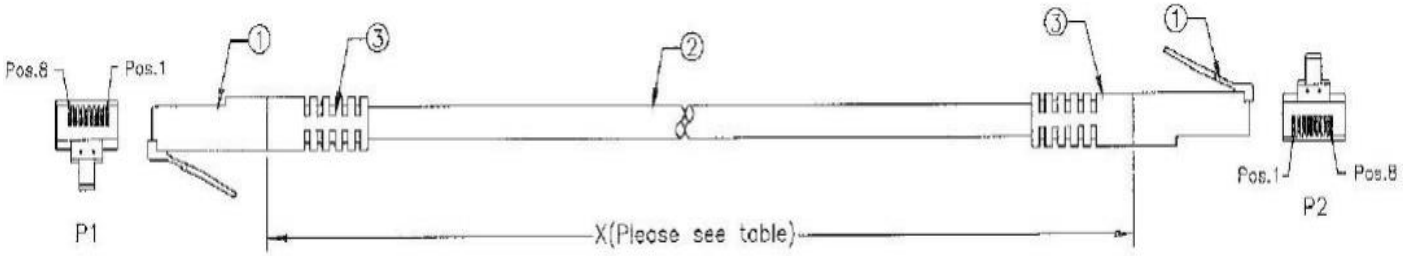
Terminado/Sin terminación	Terminado
Tipo de conector	Macho RJ45/ macho RJ45
Tipo de protección	U/UTP
Color de la funda	Gris
Aplicación	Sistemas de cableado genéricos, incluidos 10/100 base-T, ATM y Token Ring, redes informáticas como PoE (Power over Ethernet).

Especificaciones mecánicas

Longitud	2m

Aprobaciones

Cumplimiento/Certificaciones	2011/65/UE y 2015/863
Se cumplen los estándares	ANSI/ESD S20.20:2014 Y BS EN 61340-5-1:2007



PIN ASSIGNMENT :

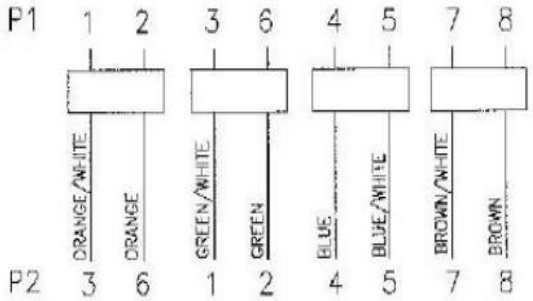


Table:

405-5379	1000^{+20}_{-5}mm
405-5385	2000^{+30}_{-10}mm
405-5391	5000^{+80}_{-20}mm

CARACTERÍSTICAS

- Varios longitudes disponibles
- Tipo de blindaje UTP
- Conector chapado en oro (RJ45)
- Ejecuta aplicaciones de hasta 100 MHz

Cable U/UTP Cat5e gris RS Pro, 2m macho RJ45/macho RJ45

Código RS: 405-5385

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

RS Pro presenta una gama de cables Cat5e, perfectos para conexiones de red en el hogar, espacios de oficina o cualquier área que requiera una conexión a Internet fiable y de alto rendimiento. Los cables Ethernet se suministran en varias formas y tamaños, pero la calidad es algo que nunca debe pasarse por alto, ya que una conexión fiable puede marcar una gran diferencia en el rendimiento de la empresa. Todos los modelos son muy fiables y de excelente calidad

Especificaciones

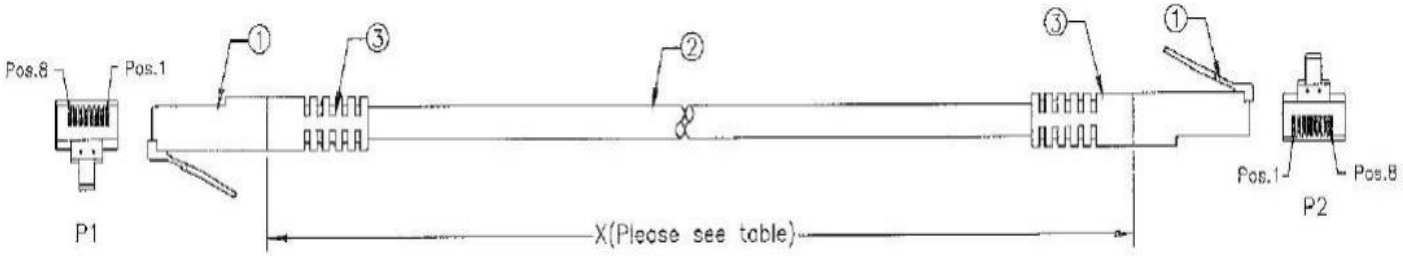
Terminado/Sin terminación	Terminado
Tipo de conector	Macho RJ45/ macho RJ45
Tipo de protección	U/UTP
Color de la funda	Gris
Aplicación	Sistemas de cableado genéricos, incluidos 10/100 base-T, ATM y Token Ring, redes informáticas como PoE (Power over Ethernet).

Especificaciones mecánicas

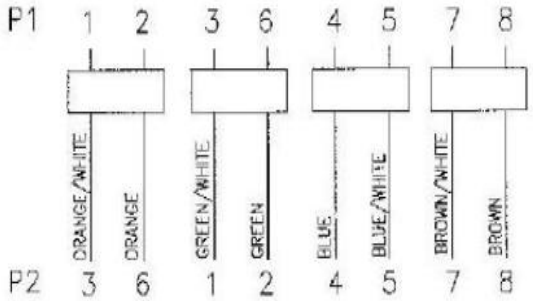
Longitud	2m

Aprobaciones

Cumplimiento/Certificaciones	2011/65/UE y 2015/863
Se cumplen los estándares	ANSI/ESD S20.20:2014 Y BS EN 61340-5-1:2007



PIN ASSIGNMENT :



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CARACTERÍSTICAS

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- Tipo de blindaje UTP
- Conector chapado en oro (RJ45)
- Ejecuta aplicaciones de hasta 100 MHz

Cable U/UTP Cat5e gris RS Pro, 2m macho RJ45/macho RJ45

RS Código RS: 405-5391

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Especificaciones

Terminado/Sin terminación	Terminado
Tipo de conector	Macho RJ45/ macho RJ45
Tipo de protección	U/UTP
Aplicación	Se ejecuta desde el origen de Internet, como un router, hasta el destino deseado. Tiene un diseño de par trenzado y destaca tanto en entornos domésticos como de trabajo.

Especificaciones mecánicas

Longitud	5m

Aprobaciones

Cumplimiento/Certificaciones	2011/65/UE y 2015/863
Se cumplen los estándares	ANSI/ESD S20.20:2014 Y BS EN 61340-5-1:2007

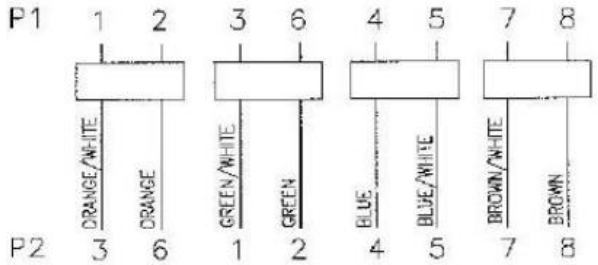
P1
1
2
3
6
4
5
7
8
ORANGE/WHITE
ORANGE
GREEN/WHITE
GREEN
BLUE
BLUE/WHITE
BROWN/WHITE
BROWN
P2
3
6
1
2
4
5
7
8

Table:

405-5379	1000^{+20}_{-5}mm
405-5385	2000^{+30}_{-10}mm
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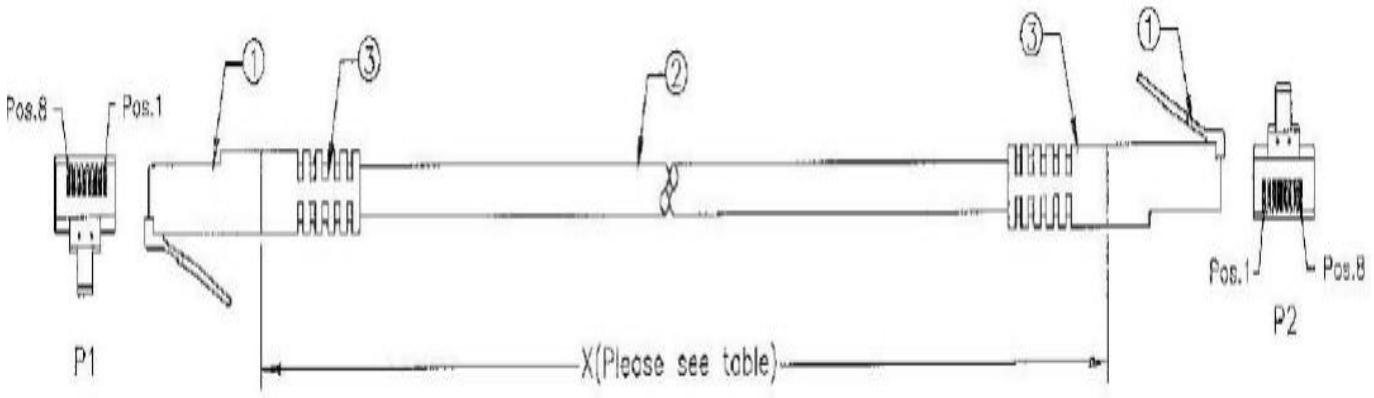


CARACTERÍSTICAS

- Pinzas de cocodrilo en miniatura, también conocidas como pinzas de resorte
- Material aislado de PE
- Chapado en níquel
- Selección de colores: Pinzas rojas y negras disponibles

Pinza de cocodrilo RS Pro, contacto de acero chapado en níquel, rojo

RS Código RS: 483-843

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Pinzas de cocodrilo

Descripción de producto

Presentadas por la marca de confianza RS Pro, estas pinzas de cocodrilo son económicas y versátiles. Las pinzas de cocodrilo chapadas en níquel se suministran con cubiertas con aislamiento de PE y están disponibles en rojo (consulte el código RS: 483-843) y negro (consulte el código rs: 483-859). Las pinzas de cocodrilo son ideales para conectar cables. La abrazadera está fijada a los componentes y establece una unión entre los dos. Como es un clip, permanecerá en su lugar, lo que libera las manos del usuario.

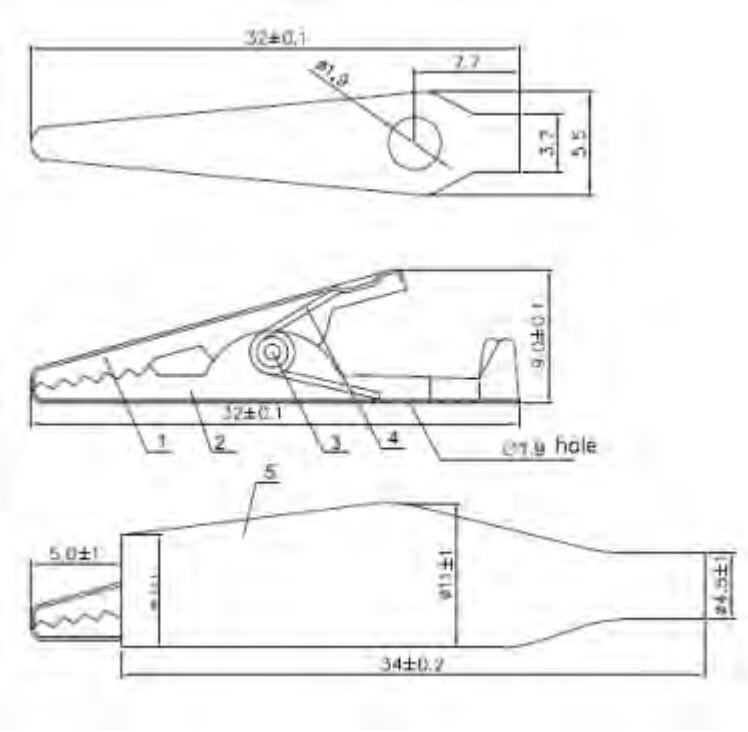
Especificaciones generales

Color	Rojo
Aislada	Sí
Aplicaciones	Baterías, bombillas o circuitos

Especificaciones mecánicas

Material de contacto	Chapado en níquel
Material aislante	PVC
Corriente nominal	5A
Apertura de mordaza	8 mm

Pinzas de cocodrilo



Pinzas de cocodrilo

CARACTERÍSTICAS

- **Corte semienrasado**
- **Herramienta de acero inoxidable sujeciones de plástico moldeadas**
- **Muelles de retorno rápido y ligeros**

Alicates de corte diagonal RS Pro 110mm

Código RS 536-420

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

Estos cortacables de alta calidad de nuestra Marca RS Pro son un complemento práctico para cualquier caja de herramientas de electricista. El mango en arco de diseño ergonómico garantiza un agarre cómodo durante largos periodos de uso y está cubierto de PVC para un agarre seguro.

Especificaciones

Tipo	Alicates de corte diagonal
Aplicaciones	Desarrollo de prototipos, montaje de dispositivos, instalación de cables

Especificaciones

Aprobación VDE/1000V	No

Especificaciones mecánicas

Longitud total	110mm
Longitud de mordaza	10mm
Material	Acero al carbono medio (s-1045c) para alicates
Capacidad máxima de corte	1.2mm
Dureza	Tratamiento térmico conforme a HRC 45-50
Acabado	Mango de color azul completamente pulido
Material de asa	PVC

RS PRO

CARACTERÍSTICAS

- Material de termopar tipo K de alta precisión en todo
- Punta sensora soldada con cordon
- Sonda de alambre fino con aislamiento de PTFE
- 1 m de longitude
- Terminado con mini enchufe moldeado

Sonda de temperatura de alambre fino RS PRO K Tipo PTFE (1m)

Código RS: 409-4908

Los productos RS Professionally Approved le ofrecen piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del producto

Este sensor está construido con un cable de termopar tipo K con aislamiento de PTFE de 1 m de longitud. Se fabrica una soldadura de cordón en un extremo del cable, mientras que el otro extremo se termina con un enchufe de mini termopar moldeado.

La sonda es ideal para monitorear la temperatura del aire y de la superficie en una variedad de aplicaciones, pero no es adecuada para líquidos.

Especificaciones generales

Serie	RSPRO
Tipo de sonda	Alambre fino
Tipo de punta de sonda	Soldadura de cordón
Tipo de sensor	Termopar tipo K
Medición de temperatura mínima	-50ºC
Medición de temperatura máxima	450ºC
Tiempo de respuesta	0,1 segundos (96 % del valor en gas en movimiento)
Mejor precisión	±1.5ºC (±0.25%)
Clase de precisión	Clase I
tipo de conector	Minienchufe
Temperatura de funcionamiento	-200 a 280ºC
Temperatura de almacenamiento	-20 a 80ºC
Aplicaciones	Industrial, Climatización

Especificaciones mecánicas

Diámetro de la sonda	0,3 mm (sin aislamiento)
Estilo de montaje	Mano
Proceso de conexión	N / A
Longitud del cable	1m
Material de aislamiento de cables	PTFE

Categoría de protección

Clasificación del IP	Resistente al agua

información adicional

EAN	5060379945390
Número de tarifa personalizada	90259000

Clasificación

eCl@ss Versión	32-12-03-90
Versión **UNSPSC**	41112219

productos similares

Parámetros	204-8391	479-1788	409-4920	479-1794
Tipo de sonda	Alambre fino (PFA)	Alambre fino (PTFE)	Alambre fino (F/G)	Alambre fino (F/G)
Tipo de sensor	Termopar tipo K	Termopar tipo K	Termopar tipo K	Termopar tipo K
Rango de medición de temperatura	-200 a 280ºC	-100 a 250ºC	-50 a 450ºC	-50 a 450ºC
Tiempo de respuesta	0,1 segundos (96 % del valor en gas en movimiento)	0,1 segundos (96 % del valor en gas en movimiento)	0,1 segundos (96 % del valor en gas en movimiento)	0,1 segundos (96 % del valor en gas en movimiento)
tipo de conector	Minienchufe	Minienchufe	Minienchufe	Minienchufe
Dimensiones	1,5 mx 0,2 mm	3 mx 0,2 mm	1 mx 0,2 mm	3 mx 0,2 mm
Estilo de montaje	Mano	Mano	Mano	Mano
Proceso de conexión	N / A	N / A	N / A	N / A
Longitud del cable	1,5 m	3m	1m	3m

CARACTERÍSTICAS

- **Baja emisión de gases del 99 % más recombinación**
- **Excelente recuperación del nivel de descarga**
- **A prueba de fugas: baterías selladas**
- **Carcasa de resina ABS con resistencia al fuego UL94-HB (prueba de encendido horizontal)**
- **Transporte en carretera según UN2800 (baterías, húmedas, sin derrames)**
- **Transporte aéreo según la provisión especial "A67" "IATA" e "ICAO". (Baterías, húmedas, sin derrames)**

Batería de plomo ácido RS Pro - 12V, 4Ah

RS Código RS: 537-5488

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

Las baterías de plomo ácido RS PRO son adecuadas para usar en una serie de industrias, así como para uso general. Están selladas y tienen muchos usos, además, son ideales para fuentes de alimentación ininterrumpida y respaldo de emergencia. Estas baterías son recargables y de larga duración.

Especificaciones

Construcción	AGM
Diseñado para aplicaciones cíclicas	Sí
Clasificación de Eurobat	3 a 5 años
Material del contenedor	A.B.S. (UL94-HB), la resistencia a la inflamabilidad de UL94-V0 puede estar disponible a petición.
Aplicación	UPS,EPS ,Industria de Automoción Industria de Aviación, Golf Carts, Iluminación de emergencia, equipos médicos, Sillas de ruedas, Forklifts, señal de ferrocarril, sistema de alarma y seguridad aparatos y equipos electrónicos, suministro de alimentación dc sistema de control automático, suministro de alimentación de comunicación

Especificaciones

Capacidad	7Ah
Tensión nominal	12V
Tipo terminal	Faston F1
Celdas por unidad	6V
Tensión por unidad	12V
máx. Corriente de descarga	129a (5 segundos)
máx. Límite de corriente de carga	2.1A
Tensión de carga de flotación	13,5 V CC a 13,8 V CC/unidad Media a 25 °C
Resistencia interna	23Ohm

Servicio de ecualización y ciclo	14,4 V CC a 15,0 V CC/unidad Promedio a 25 °C
Descarga automática	Las baterías se pueden almacenar durante más de 6 meses a las 25. Índice de autodescarga inferior al 3% mensual a 25. Cargue las pilas antes de usar.

Especificaciones mecánicas

Dimensiones	151mm x 65mm x 93,5mm mm
Altura	151mm
Longitud	65mm
Anchura	93.5mm
Peso	2.2kg

Especificaciones del entorno de

Rango de temperatura de funcionamiento	Descarga : -15 50 C (5 122 F) 0 0 Carga : 0 40 C (32 104 F) 0 0 Almacenamiento : -15 40 C (5 104 F) / - 20 → +60°C
Rango de temperatura de funcionamiento nominal	25 3°C (77 5°F)

Aprobaciones

Cumplimiento/Certificaciones	UL94-HB /UL94-V0
Pirorretardante	Sí

Drag to rotate

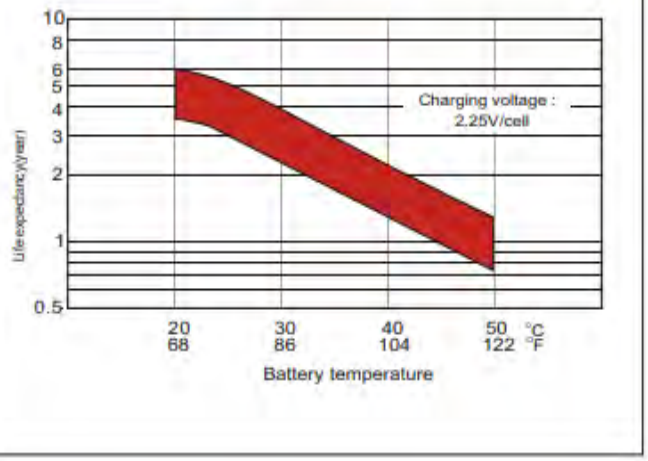
Constant Current Discharge Characteristics : A (25°C)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	16.0	11.7	9.97	8.46	6.17	4.52	3.60	2.14	1.60	1.30	1.10	0.95	0.756	0.626	0.343
1.80V/cell	19.2	13.7	11.3	9.20	6.65	4.80	3.83	2.24	1.66	1.35	1.14	0.99	0.783	0.653	0.350
1.75V/cell	21.5	14.9	12.0	9.70	6.92	4.99	3.98	2.31	1.71	1.38	1.16	1.01	0.795	0.663	0.357
1.70V/cell	23.4	15.9	12.8	10.2	7.18	5.12	4.05	2.36	1.75	1.41	1.19	1.03	0.812	0.672	0.361
1.65V/cell	25.5	16.8	13.4	10.6	7.43	5.28	4.17	2.40	1.77	1.43	1.21	1.04	0.823	0.680	0.365
1.60V/cell	26.8	17.6	13.8	10.9	7.64	5.42	4.26	2.46	1.81	1.46	1.23	1.06	0.837	0.690	0.371

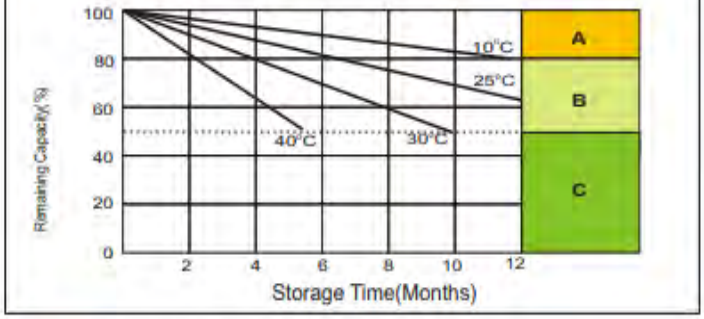
Constant Power Discharge Characteristics : W (25°C)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	30.3	22.3	19.2	16.4	12.0	8.86	7.09	4.23	3.17	2.59	2.20	1.91	1.52	1.26	0.694
1.80V/cell	35.9	25.8	21.5	17.7	12.9	9.37	7.52	4.42	3.30	2.69	2.27	1.97	1.57	1.31	0.704
1.75V/cell	39.8	28.0	22.8	18.6	13.4	9.72	7.79	4.55	3.37	2.74	2.31	2.00	1.59	1.33	0.716
1.70V/cell	42.8	29.5	24.0	19.3	13.8	9.89	7.88	4.61	3.42	2.78	2.34	2.03	1.61	1.33	0.718
1.65V/cell	45.7	30.7	24.8	19.8	14.1	10.1	8.02	4.65	3.45	2.80	2.36	2.05	1.62	1.34	0.720
1.60V/cell	47.0	31.5	25.1	20.1	14.3	10.3	8.13	4.73	3.50	2.83	2.39	2.07	1.63	1.35	0.728

Effect of Temperature on Long Term Float Life



Self Discharge Characteristics

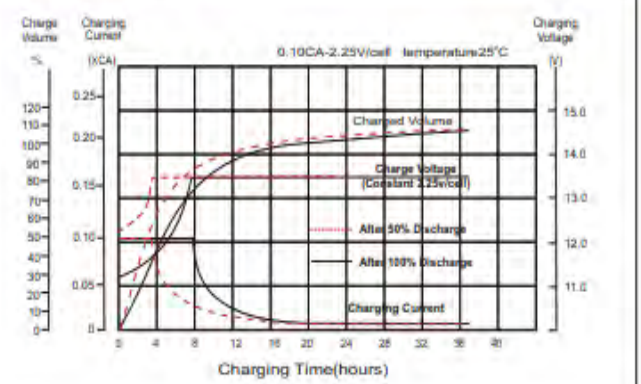


A No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required.)

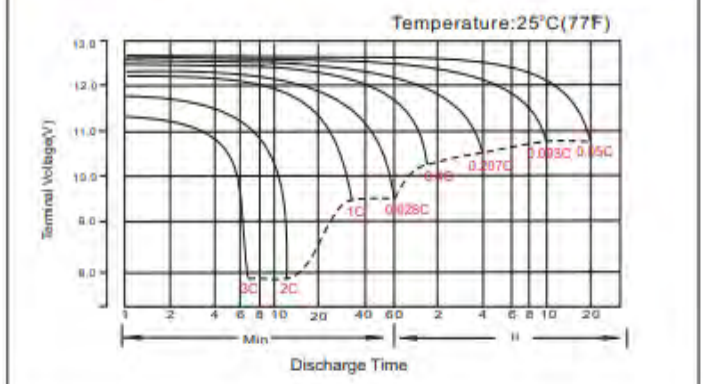
B Supplementary charge required before use.Optional charging way as below:
1.Charged for above 3 days at limted current 0.25CA and constant volatge 2.25V/cell.
2.Charged for above 20hours at limted current 0.25CA and constant volatge 2.45V/cell.
3.Charged for 8~10hours at limted current 0.05CA .

C Avoid this storage period unless regular Top charge.
Supplementary charge may often fail to recover the full capacity

Float Charging Characteristics



Discharge Characteristics



Available Capacity Subject to Temperature

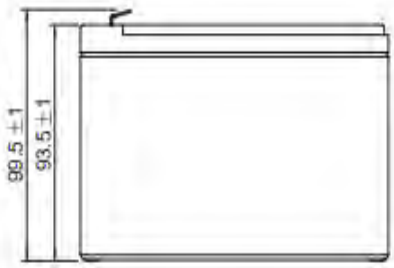
Battery Type		-20℃	-10℃	0℃	5℃	10℃	20℃	25℃	30℃	40℃	45℃
AGM Battery	6V&12V	46%	66%	86%	89%	93%	98%	100%	102%	103%	105%

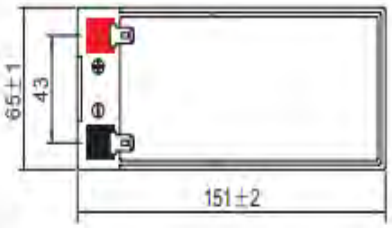
Discharge Current VS. Discharge Voltage

Final Discharge Voltage V/cell	1.80V	1.75V	1.60V
Discharge Current (A)	(A) ≤0.2C	0.2C< (A) <1.0C	(A) ≥1.0C

Dimensions

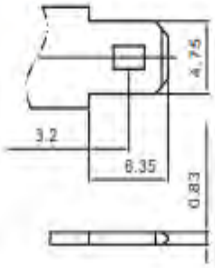
Unit: mm Dimension:151 (L)×65 (W) ×99.5(H)





■ T1 Terminal

Unit: mm



Charging Method:

Constant Voltage	-0.2Cx2h+2.4~2.45V/Cellx24h,Max. Current 0.3CA
Constant Current	0.1C until the voltage reaching 14.4V,then 0.1Cx4h

Datasheet

RS PRO USB Type C Male - USB 2.0 Micro B Female Black Adaptor

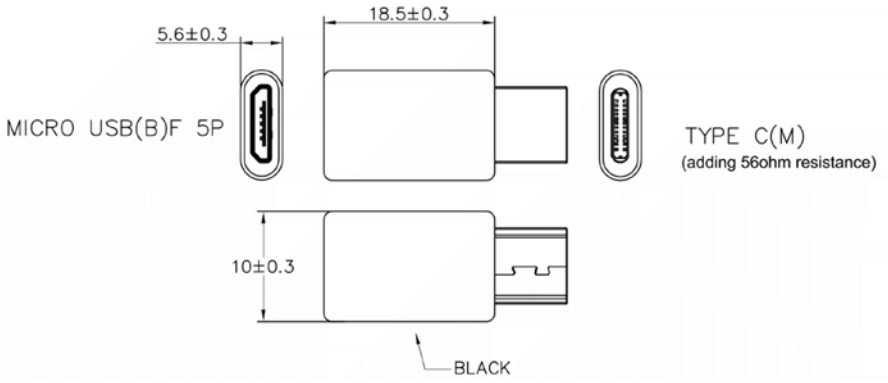
Stock number: 195-4881

EN

USB type C is a small reversible USB connector which is popular on mobile devices and laptops.

The RSPRO Type C male to USB2.0 Micro B female adaptor has a 56K ohm resistor to protect your hardware and devices, and make sure that they only take the power which the host and handle.

The USB Micro B connector is a standard legacy 480MB USB 2.0 AM connector which can be used with most USB devices. The USB connector is made from nickel and has gold plated pins.



1. CABLE:
2. LENGTH: L.
3. CONNECTORS: MICRO USB(B)F 5P ,TYPE C M*1PCS(SHELL NICKEL).
4. MOLD: MOLDING TYPE.
5. CONTACTS:
6. Test machine test condition.
   A.100% OPEN,SHORT&INTERMITANCE TEST.
   B.CONDUCTOR RESISTANCE: 3ohms MAX:
   C.INSULATION RESISTANCE: 10MΩ Min/,10ms:
7. ALL MUST BE MEET ON ROHS COMPLIANT.

RoHS / REACH / CE

CARACTERÍSTICAS

- Rango de temperaturas de funcionamiento: De -50 a 200 °C (Clase B), de -20 a 100 °C (Clase A
- Sensores PT100, PT1000 y PT500 disponibles en esta gama
- Disponible con un diámetro de sonda de 2mm o 1,4 mm
- Disponible con configuraciones de 2 o 3 cables
- Disponible en tolerancias IEC 751 Clase A y Clase B.

Sensor RS Pro de 2 cables PT1000, -20 °C mín. +100 °C máx., longitud de sonda 50mm x diámetro de sonda 5mm

RS Código RS: 896-8395

Los productos con aprobación profesional RS le proporcionan piezas de calidad profesional en todas las categorías de

productos. Nuestra gama de productos ha sido probada por ingenieros y proporciona una calidad comparable a las marcas líderes sin pagar un precio superior.

Descripción del

RS PRO RS Pro presenta una gama de sondas PRT (termómetro de resistencia de platino) PT100 de alta calidad y excelente relación calidad-precio. Fabricadas conforme a los estándares del sector, estas sondas PRT de alta temperatura son una excelente solución para la medición de temperatura.

Especificaciones

Tipo de sensor	PT100
Material de la sonda	Acero inoxidable
Número de cables	3
Precisión	Clase A
Construcción	Cable de 3 conductores, PVC/PVC aislado
Tolerancia	±0,15 + 0,002.[t°c]
Aplicaciones	Estas sondas de temperatura con resistencia de platino tienen una gran variedad de aplicaciones como: Calefacción, aire acondicionado, estufas y parrillas, procesamiento de alimentos y energía

Especificaciones mecánicas

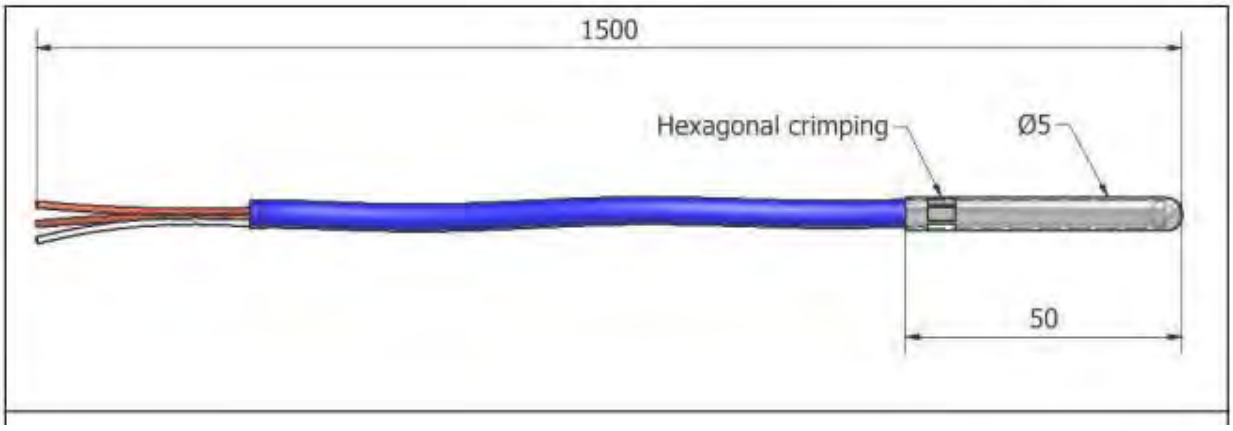
Longitud de sonda	50mm
Diámetro de la sonda	5mm
Longitud de las piernas	Longitud total (punta + cable) = 1500mm
Diámetro de las patas	0.24mm
Tipo de terminación	Cable
Longitud del cable	1.5mm
Conexión de proceso	Sonda

Especificaciones del entorno de

Temperatura mínima detectada	-20°C
Temperatura máxima detectada	100°C

Aprobaciones

Cumplimiento/Certificaciones	IEC751 Clase A y Clase B.
Certificación de zonas peligrosas	IEC751



FEATURES

- Door and window switch
- Surface mounting
- Proximity switch activation
- Normally open configuration
- Switching current of 500 (DC) mA
- Switching voltage of 50 V DC
- Operating gap of 15mm
- White-coloured
- Typical contact resistance of 1 Ohm
- Operating distance of 15 mm
- RoHS compliant for restricted hazardous substances
- Depth of 14 mm
- Height of 14 mm
- Width of 60 mm

RS PRO Door and Window Switch Surface Mount 500 (dc)mA, 50V dc

RS Stock No.: 122-0715

RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

Product Description

These RS PRO door and window switches are well-suited for use with both commercial and residential alarm systems to deter intruders away from your home or business. When a window (or door) fitted with the switch is opened, the signal it generates is broken, alerting the alarm system.

A 500 (DC) mA switching current provides a reliable power level that's unlikely to be burnt out. The switches come with a 300 mm-long cable, so you can fit them onto doors and windows without restricting where to install the actual alarm.

General Specifications

Activation Type	Proximity Switch
Colour	White
Switch Configuration	Normally Open
Operating Gap	15mm
Applications	Commercial and Residential, Home or Offices

Electrical Specifications

Switching Current	500 mA (DC)
Switching Voltage	50VDC
Maximum Power	10 W/VA
Contact Resistance	1O Typical

Mechanical Specifications

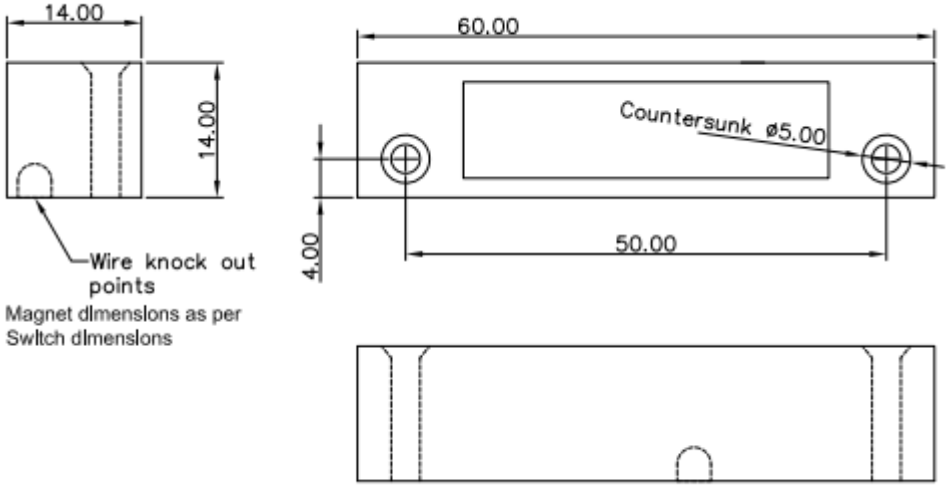
Mounting Type	Surface Mount
Dimensions	14mm x 14mm x 60mm
Depth	14mm
Height	14 mm
Width	60mm

Operation Environment Specifications

Operating Temperature	-10°C to +60°C

Approvals

Compliance/Certifications	RoHS Compliant, ANSI/ESD S20.20:2014 and BS EN 61340-5-1:2007



Pinza, Weller Erem, , Antimagnético, Acero Inoxidable

Código RS **755-3056** | Nº ref. fabric. **5SA** | Fabricante Weller Erem

Datos del Producto
Pinzas de acero inoxidable
Pinzas fabricadas de acero inoxidable
Puntas robustas
Inoxidables
El material es menos duro que el acero endurecido
Las pinzas 5SA son de precisión que se han diseñado con puntas muy afiladas y son ideales para trabajos de precisión como cortar cables muy pequeños. La forma de liberación de las pinzas las convierte en excelentes para acceder a espacios restringidos. Las pinzas 5SA se han fabricado de acero inoxidable especial. Este grado de acero es una aleación no magnética, resistente al óxido y antiácido. También tiene una resistencia a temperatura de hasta 300 °C, lo que convierte a estas pinzas en durable con una larga vida útil.
Características y ventajas:
Pinzas de alta precisión
Fabricados en acero inoxidable especial: No oxidante, a prueba de ácidos, resistente al calor y de larga duración con acabado antirreflejos
Pinzas no magnéticas: Especialmente diseñadas para aplicaciones electrónicas y tecnología de laboratorio
Puntas rectas puntiagudas: Diseñadas para trabajo de precisión
Longitud: 115 mm
Peso: 12g

Sonda de temperatura de Inmersión tipo PT100 Pico Technology SE012, hasta +250 °C ±0,03 °C, Ø 4mm x 150mm, cable de 2m

Código RS **407-0738** | Nº ref. fabric. **SE012** | Fabricante Pico Technology

Datos del Producto
Sensores PT100
El sensor PT100 se suministra con un conector listo para usar con Pico PT-104. El conector se puede extraer para utilizarse con otros dispositivos de medida PT100.

Características y ventajas
Sensores PT100 para conectar directamente a la unidad de adquisición de datos de temperatura Pico PT-104 Pt100 de 4 canales
Sonda de acero inoxidable
Conector miniDIN de 4 contactos (instalado)

Nota
El rango de temperatura de medición y las especificaciones de precisión se refieren únicamente a la punta del sensor. Es necesario añadir el error del sensor al error PT-104.