

A Selection Guide to SMD Trimmer Potentiometers

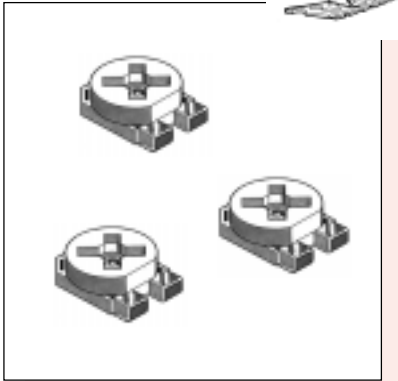
Size	Element	Adjust	Features	Product
2mm □	Cermet	Top	Auto Adjust Head	3121
3mm □	Cermet	Top	Semi-Sealed	3203
		Top	Semi-Sealed, Auto Adjust	3213
		Underside	In Line, Delta Terminals	3130
		Top	Low Cost, Plastic Rotor	3135
	Carbon	Top	End Stop, Semi-Sealed	3103
4mm □	Cermet	Top, Side	Multiturn, Fully Sealed	3240
		Top	Semi-Sealed, Dip & Wave	3204
		Top	Semi-Sealed, Reflow	3147
		Top, Underside	Delta Terminals	3150
		Top, Underside	Delta Terminals	3142
		Top, Underside	In Line Terminals	3165
5mm □	Cermet	Top, Side	Fully Sealed	3315
6mm □	Cermet	Top, Side	Multiturn, Fully Sealed	3270

For product or data not shown within this section please, contact our Sales Desk

Tel: (01793) 611666

Fax: (01793) 611777

2mm open frame potentiometer



Key features

- tiny 2mm potentiometer
- available in tape or bulk
- 50V operating maximum
- wide value range
- consumes less than 6mm²
- suited to pick and place
- stable alumina substrate
- packed in standard 8mm tape

SMD Trimmers

type 3121 series

Just 2.2mm x 2.7mm in size this tiny surface mount trimmer is offered in a range of values. The 3121 covers a board area of less than 6mm² about the same size as a 12:06 flat chip. Its adjustment rotor has an unbroken perimeter with internal drive slot allowing standard vacuum nozzles and trim tools to be used. A truly "state of the art" product.

Specification

Electrical

Resistance Range:	200R to 1M (1, 2, 5 in each decade)
Resistance Tolerance:	± 25%
Temperature Coefficient:	±250ppm°C (-20°C to +85°C)
Operating Voltage:	50V DC or AC RMS maximum
End Resistance Maximum:	< 1K ohms; 20 ohms - >1K ohms; 5%
Power Rating:	0.15 watts at 70°C
Effective Electrical Angle:	260° ± 20°

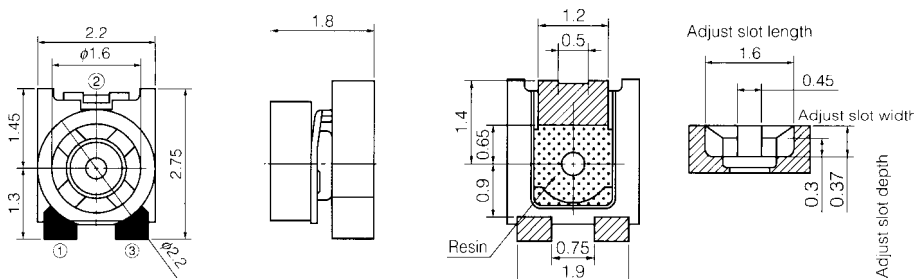
Mechanical

Rotational Torque:	1 - 15mNm
Mechanical Adjustment:	Continuous

Environmental

Temperature Range:	-20°C to +85°C
Rotational Life:	After 20 cycles ΔR ± 15%
Load Life:	ΔR ± 5% after 500 hours
Soldering Heat:	260°C 10 seconds maximum reflow

Dimensions

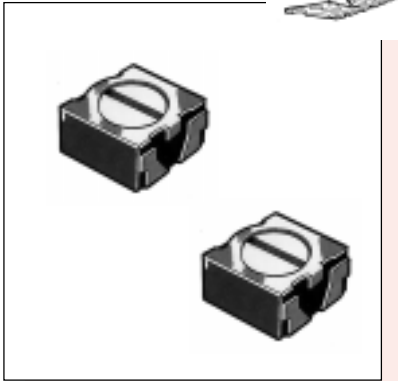


How to Order

Common Part	Orientation	Resistance Value	Tolerance
3121 - 2mm Single Turn Trimmer	X - Terminals away from sprocket holes	The first two digits are significant figures of resistance value and the third one denotes the number of zeros following Example 1K : 102 10K : 103 100K : 104	P - ± 25%

Packaging:
2000 Pieces (7" Reel)

Please Request Full Data
Sheet F0717



Key features

- tiny 3mm square size
- suited to dip and wave solder
- latest cermet technology
- suitable for solvent washing
- delta terminals prevent solder bridging
- super thin - only 2mm high
- attractively priced
- packed in standard 12mm tape

SMD Trimmers

type 3203 series

Consuming just 10.5mm² of board, the 3203 has been developed specifically for a new generation of hand held equipment, where mixed technology and double sided component placement are unavoidable. These 3mm devices are just 2mm high and sealed for IR, vapour phase and full immersion wave soldering together with solvent board washing process.

Specification

Electrical

- Resistance Range: 100R to 1M (1, 2, 5 in each decade)
- Resistance Tolerance: ± 25%
- Temperature Coefficient: ± 250ppm/°C at -20°C to +85°C
- Operating Voltage: 15V DC or AC RMS maximum
- Contact Resistance Variation: 5% of nominal maximum
- Power Rating: 0.05 watts at 70°C
- Effective Electrical Angle: 260° ± 20°

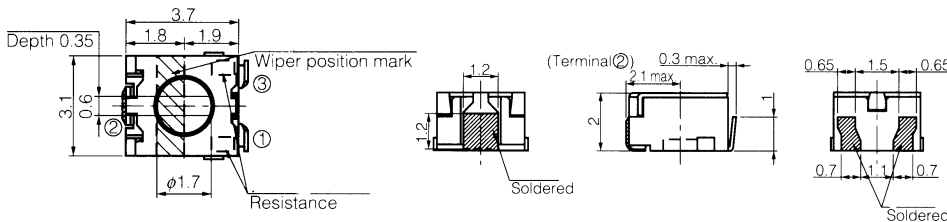
Mechanical

- Rotational Torque: 2 - 17mNm
- Mechanical Adjustment: Continuous

Environmental

- Temperature Range: -20°C to +85°C
- Rotational Life: After 10 cycles ΔR < ± 15%
- Load Life: ΔR < 5% after 500 hours
- Sealing: For dip and wave solder, prior to adjustment

Dimensions



Packaging:
1000 Pieces (7" Reel)

How to Order

3203	X	102	P
Common Part	Orientation	Resistance Value	Tolerance
3203 - 3mm Single Turn Trimmer	X - Terminals 1 & 3 away from sprocket holes	The first two digits are significant figures of resistance value and the third one denotes the number of zeros following Example 1K :102 10K :103 100K:104	P - ± 25%

Please Request Full Data Sheet F0710

3mm potentiometer

SMD Trimmers

type 3213 series

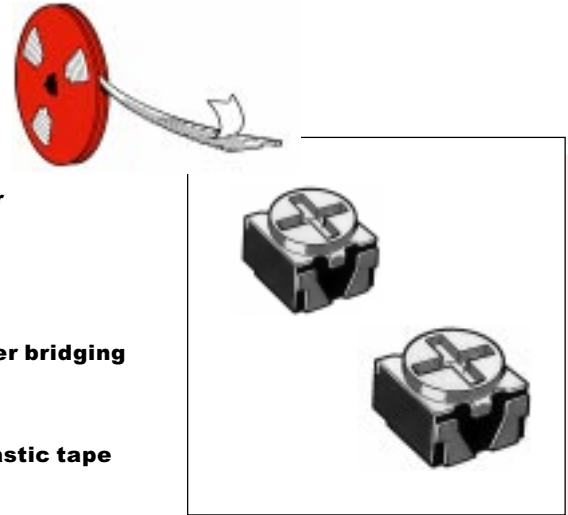
Consuming just 10.5mm² of board, the 3213 has been developed specifically for a new generation of hand held equipment, where mixed technology and high volume auto adjust setting is employed. These 3mm devices are just 2mm high and sealed for IR, vapour phase and full immersion wave soldering together with solvent board washing process until setting breaks the elastomer seal.

Packaging:
2000 Pieces (7" Reel)

Please Request Full Data
Sheet F0713

Key features

- small 3mm square size
- suited to dip and wave solder
- cermet technology
- suited to solvent washing
- delta terminals prevent solder bridging
- designed for auto adjust
- packed in standard 12mm plastic tape
- attractively priced



Specification

Electrical

Resistance Range:	1K to 1M (1, 2, 5 in each decade)
Resistance Tolerance:	± 30%
Temperature Coefficient:	± 500ppm/°C (25°C to 70°C) ± 750ppm/°C (-20°C to 25°C)
Operating Voltage:	50V DC or AC RMS maximum
Contact Resistance Variation:	5% of nominal maximum
Power Rating:	0.05W at 50°C
Effective Electrical Angle:	260° ± 20°

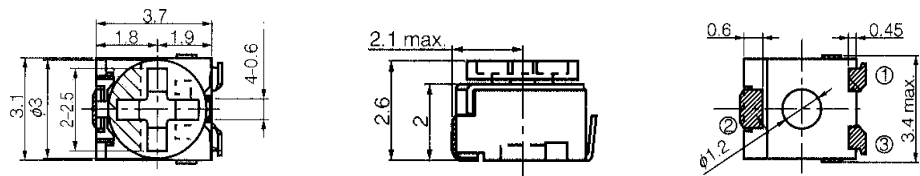
Mechanical

Rotational Torque:	1 - 15mNm
Terminal Robustness:	Horizontal 10 N, Vertical 5 N
End Stop Torque:	20mNm minimum

Environmental

Temperature Range:	-20°C to +70°C
Rotational Life:	20 cycles
Load Life:	ΔR <5% after 500 hours
Sealing:	For dip and wave solder, prior to adjustment.

Dimensions



How To Order

3213	X	102	N	
Common Part	Orientation	Resistance Value		Tolerance
3213 - 3mm Single Turn Trimmer Auto Adjust	X - Terminals 1 & 3 away from sprocket holes	The first two digits are significant figures of resistance value and the third one denotes the number of zeros following Example 1K : 102 10K : 103 100K : 104		N - ± 30%

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3mm open frame potentiometer

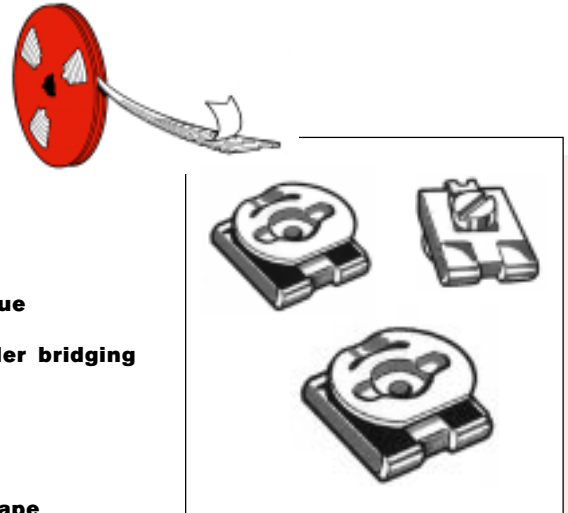
SMD Trimmers

type 3130 series

A miniaturised potentiometer, with a weight of just 40mg and a height profile of only 1.4mm. It has been developed specifically for hand held equipment, where the design specifications demand precise setting and exceptional reliability. The 3131 is an auto adjust version whilst the 3132 is suited to through board adjustment.

Key features

- tiny 3mm potentiometer
- stable cermet element
- weight of just 0.04 grams
- components marked with value
- delta terminals prevents solder bridging
- super thin only 1.4mm high
- underside adjust version
- packaged in standard 8mm tape



Specification

Electrical

Resistance Range: 100R to 1M (1, 2, 5 in each decade)
 Resistance Tolerance: $\pm 25\%$
 Temperature Coefficient: $\pm 250\text{ppm}/^\circ\text{C}$
 Operating Voltage: 50V DC maximum
 Contact Resistance Variation: 5% of nominal maximum
 Power Rating: 0.1 watts at 70°C
 Effective Electrical Angle: $260^\circ \pm 20^\circ$

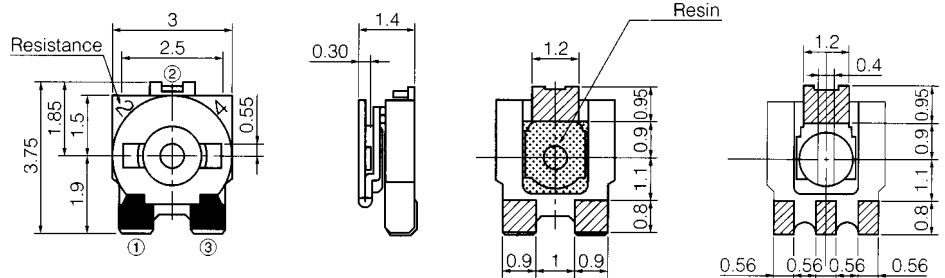
Mechanical

Rotational Torque: 0.5 - 150mNm
 Mechanical Adjustment: Continuous

Environmental

Temperature Range: -40°C to +100°C
 Rotational Life: 10 cycles $\Delta R < 10\%$
 Load Life: $\Delta R < 5\%$ after 500 hours

Dimensions



Packaging:
2000 Pieces (7" Reel)

How To Order

3130	X	102	P
Common Part	Orientation	Resistance Value	Tolerance
3130 - 3mm Trimmer 3131 - 3mm Auto Adjust Head 3132 - 3mm Underside Adjust	X - Terminals 1 & 3 away from sprocket holes	The first two digits are significant figures of resistance value and the third one denotes the number of zeros following Example 1K :102 10K :103 100K :104	P - $\pm 25\%$

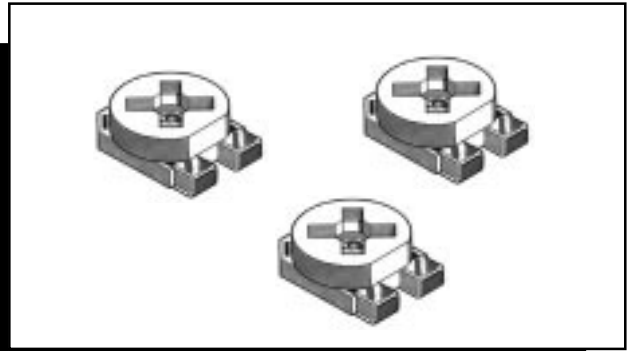
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SMD Economy Trimmers

TYPE 3135 SERIES



The 3135 miniature chip trimmer incorporates the latest technology developments and has been rigorously tested to the highest standards. It has been developed specifically for new generation handheld equipment, where the design specification demands precise setting and exceptional reliability. This tiny trimmer is supplied packaged for auto assembly in 8mm plastic blister tape on 180mm reels of 2000 units.

MEGGITT CITEC KEY FEATURES

- **TINY 3mm POTENTIOMETERS**
 - **STABLE CERMET ELEMENT**
 - **WEIGHT 0.04 GRAMS**
 - **COMPONENTS MARKED WITH VALUE**
 - **DELTA TERMINALS PREVENT SOLDER BRIDGING**
 - **ATTRACTIVELY PRICED**
 - **PACKAGED IN STANDARD 8mm TAPE**
-

ELECTRICAL

Resistance Range:	100R to 1M
Resistance Values:	1, 2, 5 in each decade
Resistance Tolerance:	± 25%
Temperature Coefficient of Resistance:	± 250ppm / °C (-40°C to 100°C)
Maximum Operating Voltage:	50V DC or AC RMS maximum
Resolution:	Essentially Infinite
Contact Resistance Variation:	<5% nominal resistance
Adjustment Range:	15% to 85% of rotation
Power Rating:	0.1W at 70°C derating to zero at 100°C
Effective Electrical Angle:	270° ± 20°

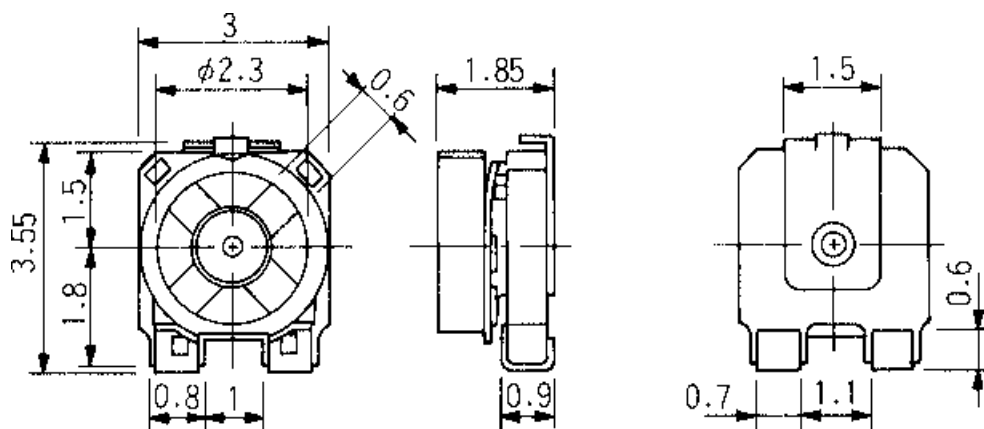
MECHANICAL

Rotational Torque:	5 to 150 gf.cm
Mechanical Adjustment:	Continuous
Weight:	0.04 grams
Marking:	2 digit resistance code on potentiometer

ENVIRONMENTAL

Temperature Range:	-40°C to +100°C
Rotational Life:	After 20 cycles DR ≤ 10%
Load Life:	DR ≤ 5% after 1000 hours at 70°C
Soldering Heat:	220°C for 40 Seconds maximum.
Humidity Load Life:	DR ≤ 5% after 1000 hours 95% RH under load
High Temperature:	DR ≤ 5% after 1000 hours at 70°C

DIMENSIONS



All Dimensions are in mm.
Please Do Not Scale

Product is supplied in 2000 pieces per 7" reel

HOW TO ORDER

3135 COMMON PART	X ORIENTATION	502 RESISTANCE VALUE	P TOLERANCE
3mm Trimmer	X - Terminals 1 and 3 away from sprocket holes	The first digits are significant figures of resistance value and the third one denotes the number of zeros following Example 1 K : 102 5 K : 502 100K : 104	P - 25%



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SMD Trimmers

type 3103 series

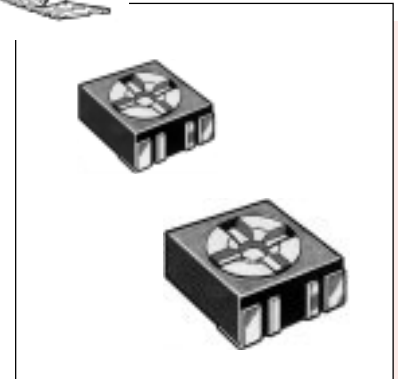
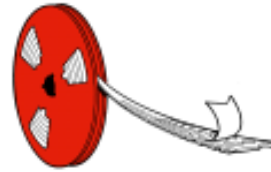
The 3103 is the very latest miniaturised sealed potentiometer available and the most cost effective. Consuming just 10.5mm² of board real estate, it has been developed specifically for new generation hand held equipment, where double sided component placement is often unavoidable. These 3mm devices are only 1.8mm high.

Packaging:
2000 Pieces (7" Reel)

Please Request Full Data
Sheet F0711

Key features

- very competitively priced
- tiny 3mm square size
- latest carbon polymer technology
- suitable for washing
- delta terminals prevent solder bridging
- super thin less than 2mm high
- packed in standard 8mm plastic tape
- integral end stop



Specification

Electrical

Resistance Range:	500R to 1M
Resistance Values:	1, 2, 5 in each decade
Resistance Tolerance:	± 30%
Temperature Coefficient:	± 500ppm/°C (25°C to 70°C) ± 750ppm/°C (-20°C to 25°C)
Operating Voltage:	50V DC or AC RMS maximum
Contact Resistance Variation:	5% of nominal maximum
Power Rating:	0.05W at 50°C
Effective Electrical Angle:	260° ± 20°

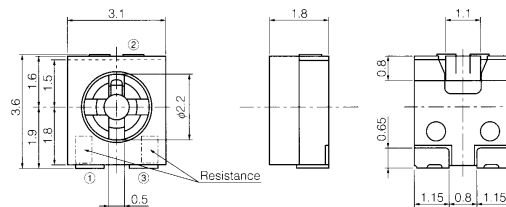
Mechanical

Rotational Torque:	1 - 15mNm
Terminal Robustness:	Horizontal 10 N, Vertical 5 N
End Stop Torque:	20mNm minimum

Environmental

Temperature Range:	-20°C to +70°C
Rotational Life:	20 cycles
Load Life:	ΔR <5% after 500 hours
Sealing:	For dip and wave solder, prior to adjustment.

Dimensions



How To Order

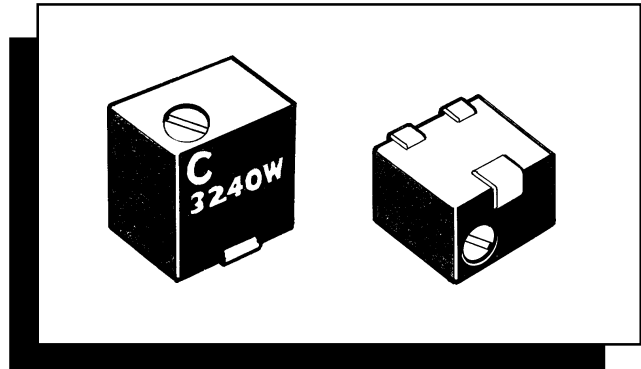
3103	X	102	N
Common Part	Orientation	Resistance Value	Tolerance
3103 - 3mm single turn trimmer	X - Terminals 1 & 3 away from sprocket holes	The first two digits are significant figures of resistance value and the third one denotes the number of zeros following Example 1K : 102 10K : 103 100K : 104	N - ± 30%

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SMD Professional Trimmers

TYPE 3240 SERIES



Meggitt Electronic Components are pleased to introduce this tiny (4mm square) multiturn trimmer potentiometer. The 3240 Series is designed with a footprint meeting EIA and other international board layout standards. It is also compatible with all surface mount manufacturing processes. It is ideally suited to small sensors where its 11 turn setability and small size enables it to stand out from most other competitors.

MEGGITT CITEC KEY FEATURES

- FULL ELEVEN TURNS
 - FULLY SEALED
 - WAVE AND REFLOW SOLDER
 - ONLY 4mm SQUARE
 - FLUSH ADJUSTMENT SCREWS
 - TOP OR LOW PROFILE STYLES
 - TAPE AND REELED (EIJ STD REELS)
 - SMOOTH TOP - GOOD PICKUP
-

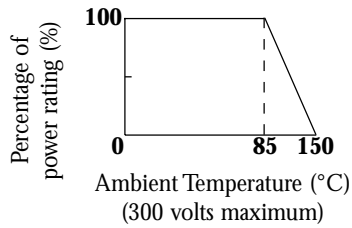
M MEGGITT
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COMPONENTS

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FAX: (01793 611777)
EMAIL: sales@megelec.co.uk
WEB SITE: www.megelec.co.uk

ELECTRICAL

Resistance Range:	10R to 2M 1, 2, 5 in each decade
Resistance Tolerance:	±10%
Power Rating (300 volts maximum):	0.25Watts at 85°C, derating to 0 at 150°C
Absolute Minimum Resistance:	1% or 2 ohms, (whichever is greater)
Contact Resistance Variation:	1% or 3 ohms, (whichever is greater)
Resolution:	Essentially infinite
Insulation Resistance:	100 Meg ohms minimum
Dielectric Strength (Sea Level):	600 V AC (1 minute)
Adjustment Angle:	11 turns

DERATING CURVE



When the ambient temperature exceeds 85°C, reduce the rated power and current in accordance with the derating curve shown.

MECHANICAL

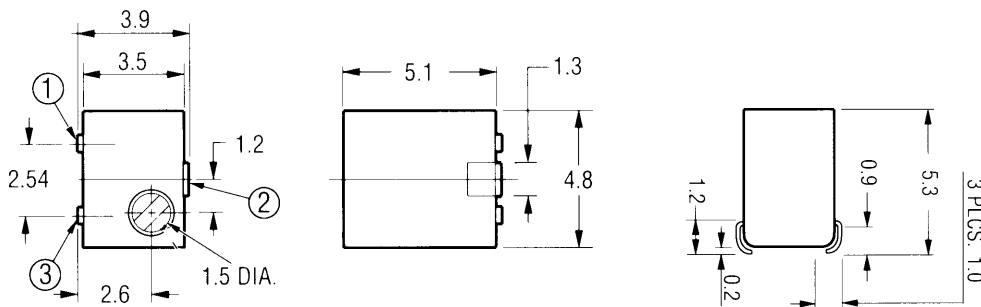
Mechanical Stop:	Wiper idles
Operating Torque:	18 mNm maximum
Weight:	0.3 gram approx
Marking	Manufacturers Code, Resistance Code, Date Code
Packaging:	500 pieces on 7" Reel (P Style) - 250 pieces on 7" Reel (W Style)

ENVIRONMENTAL

Soldering Heat:	260°C for 10 seconds, $\Delta R < \pm 1\%$
Temperature Range:	-65°C to +150°C
Temperature Coefficient:	±100ppm/°C
Humidity:	80-98% RH 10 cycles, 240 hours $\Delta R < \pm 2\%$
Vibration:	20G $\Delta R < 1\%$
Shock:	100G $\Delta R < \pm 1\%$
Load Life:	@ 85°C rated power 1000 hours TRS 3 ohms or 3% (whichever is greater)
Rotational Life:	200 cycles
Thermal Shock:	5 cycles $\Delta R < \pm 2\%$

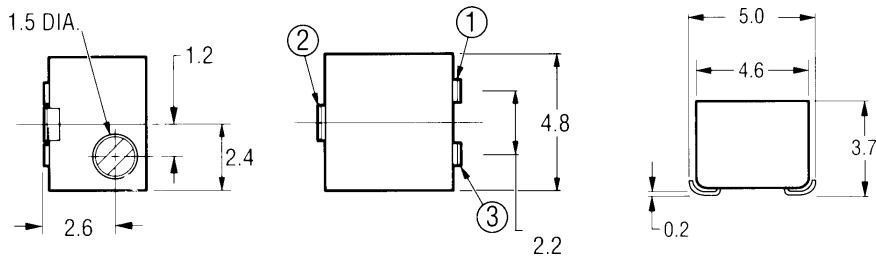
DIMENSIONS

3240W

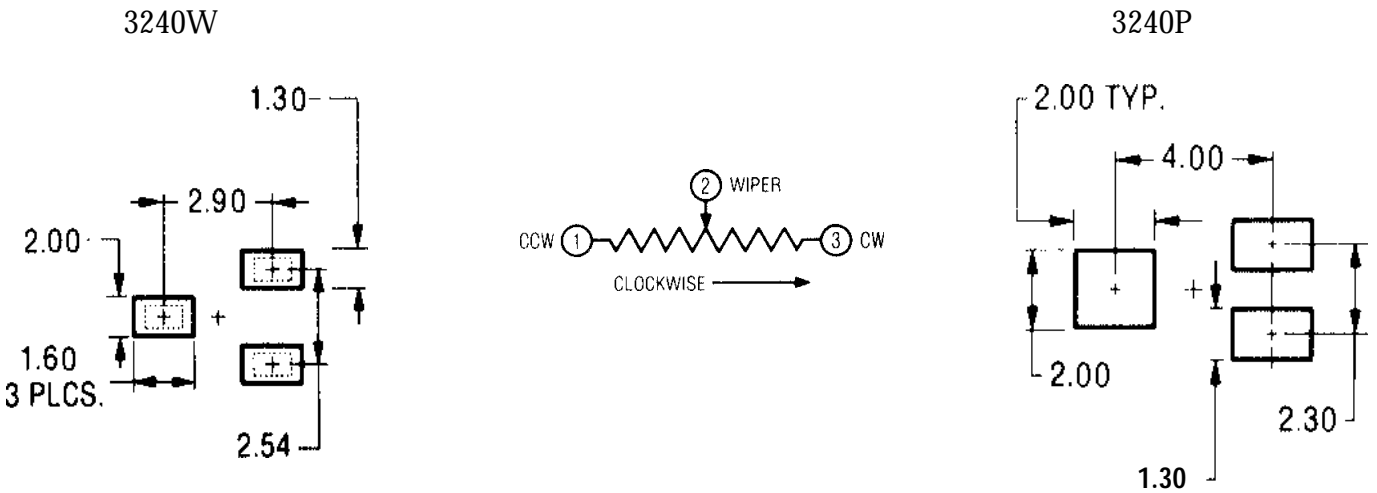


All Dimensions are nominal and in mm unless otherwise shown. Do Not Scale.

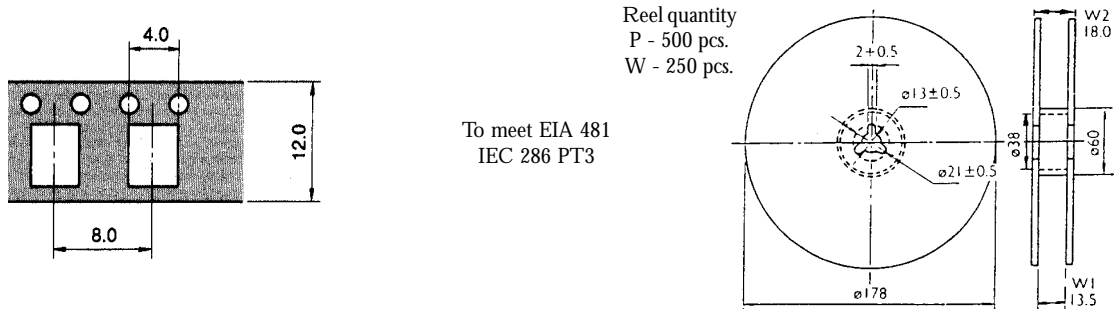
3240P



SUBSTRATE LAYOUT



PACKAGING



HOW TO ORDER

3240	P	102	K	
COMMON PART	ORIENTATION	RESISTANCE VALUE		TOLERANCE
3240 - 4mm Multiturn Trimmer	W - Top Adjustment P - Side Adjustment	The first digits are significant figures of resistance value and the third one denotes the number of zeros following	Example 1k : 102 10k : 103 100k : 104	K - $\pm 10\%$

PICK UP NOZZLE

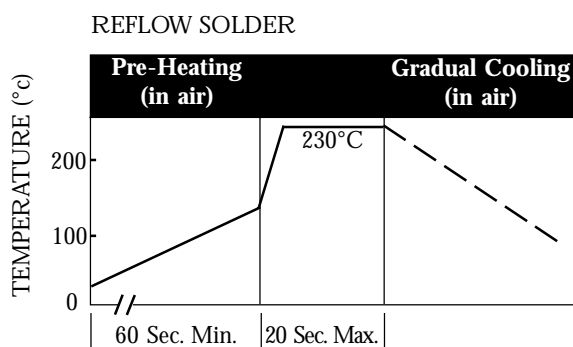
The nozzle inside diameter should not exceed 4.27mm to assure adequate suction and part alignment.

SOLDERING METHOD

The 3240 series is suitable for hot plate and infra-red vapour phase. A time/temp profile of 230°C for 20 seconds can be applied without degradation of the component. Additionally pre-tinned leads have been incorporated as a standard feature ensuring good terminal adhesion. Use Sn 63% Pb 37% solder paste. Use 8 to 10 mil thickness for solder paste print.

REFLOW SOLDERING

Pre-heat:	130°C to 160°C
Melting Temp.:	Tm = 183.3°C
Peak Temp.:	Tp < 240°C
Melting Time:	tm < 10 secs. recommended

**PROFILE OF TEMPERATURE
(REFLOW SOLDERING)**

Do not exceed time and temperature reflow profile of 240°C for 30 seconds for IR reflow and 215°C for 3 minutes for vapour phase reflow.

Minimise thermal shock by limiting temperature rise rate to 3 seconds and by stabilising board and components temperature during preheating.

**SOLDERING
WITH IRON**

The following conditions must be strictly adhered to using a soldering iron.

Soldering Iron	: 40W maximum
Tip Temperature	: 350°C maximum
Soldering Time	: 3 seconds maximum

MATERIALS

Solder:	Co-crystallized solder
Flux:	Rosin flux

**CLEANING
CONDITIONS**

After soldering use cleaning solvents such as chlorosen or dyfreon.

STORAGE

To prevent damage to the electrode, be sure to observe the following conditions for storage.

- Store in 40°C maximum ambient temperature, and 70% maximum ambient RH.
- For maximum possible shelf life do not disturb polythene sleeve until you are ready to use potentiometers.
- Store where there are no harmful gasses containing sulphur or chlorine.



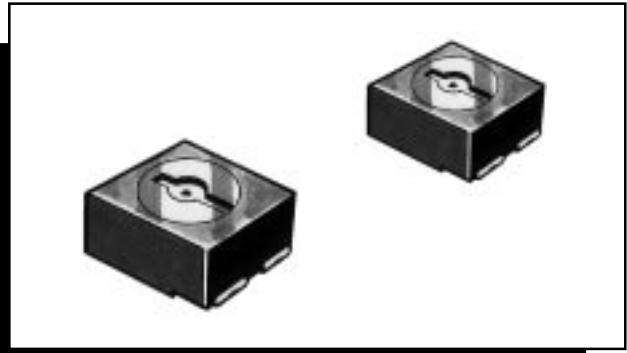
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SMD Economy Trimmers

TYPE 3204 SERIES



The 3204 miniature chip trimmer incorporates the latest technology developments and has been rigorously tested to the highest standards. Special attention during the design of the product, ensures that this component meets specific requirements of hybrids and modern surface mounting boards. It is fully sealed until you are ready to trim, so it is highly suitable for both dip and wave soldering. It can then be resealed by the use of rubber based lock paint. Issue two product data includes slight design changes to improve cost effective manufacture.

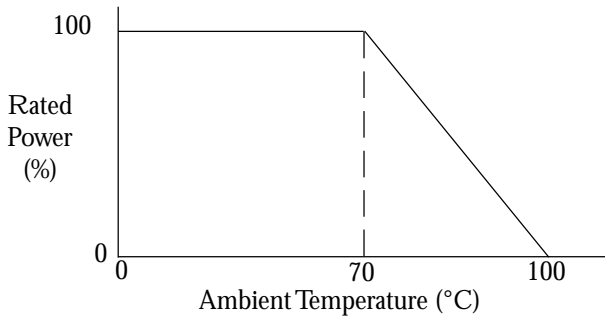
MEGGITT CITEC KEY FEATURES

- CERMET ELEMENT
 - SUITABLE FOR DIP AND WAVE SOLDERING
 - ATTRACTIVELY PRICED
 - AVAILABLE IN STD 12mm TAPE
 - AVAILABLE FROM STOCK
 - SMALL, COMPACT SIZE (4mm SQUARE)
 - TERMINAL LAYOUT STOPS SOLDER BRIDGING
 - SMOOTH TOP ASSISTS PLACEMENT
-

ELECTRICAL

Resistance Range:	100R to 1M
Standard Resistance Values:	1, 2, 5 in each decade
Resistance Tolerance:	± 25%
Temperature Coefficient of Resistance:	± 250ppm / °C (-30°C to 100°C)
Resistance Law:	Linear
Maximum Operating Voltage:	50V DC or AC RMS maximum
Resolution:	Essentially Infinite
Contact Resistance Variation:	<10R below 1K - <1% above 1K
Power Rating (Watts):	10% to 90% of Rotation
Effective Electrical Angle:	0.1W at 70°C

DERATING CURVE



When the ambient temperature exceeds 70°C, reduce the rated power and current in accordance with the derating curve shown.

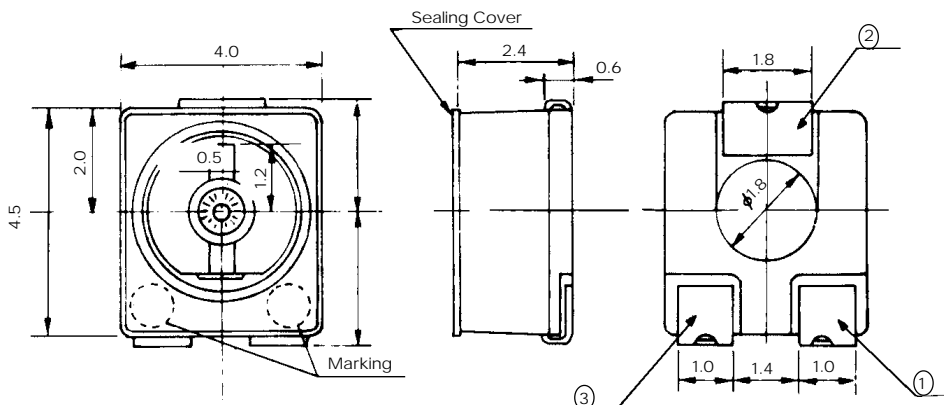
MECHANICAL

Rotational Torque:	20 to 200 gf.cm
Mechanical Adjustment:	250° ± 20°
Weight:	0.11 grams
Soldering Strength:	Horizontal 500gf minimum Vertical 500gf minimum

ENVIRONMENTAL

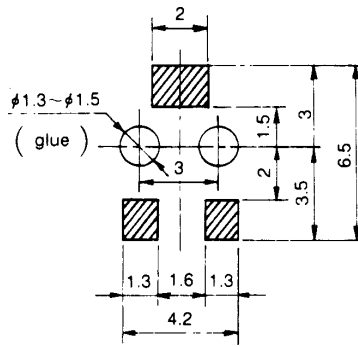
Temperature Range:	- 20°C to 85°C
Temperature Storage:	500 hours at 70°C
Rotational Life:	20 cycles (See test methods)
Load Life:	ΔR < 5% after 1000 hours
Sealing:	Sealed for dip and wave solder until silicone is removed
Soldering Heat:	250°C ± 5°C for 5 ± 1 seconds
Humidity Load Life:	ΔR ± 5% after 500 hours at 95 RH under load
High Temperature Rise:	ΔR ± 5% after 500 hours at 100°C

DIMENSIONS



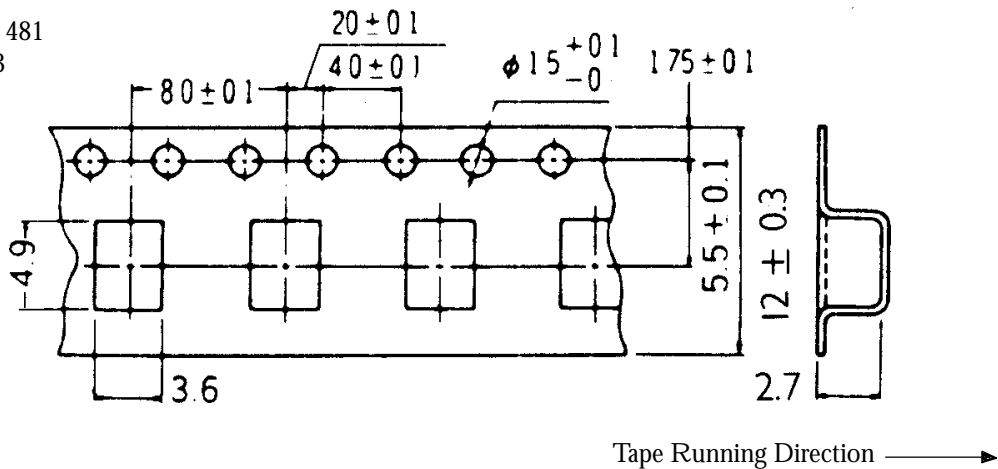
All Dimensions are in mm. Please Do Not Scale

SUBSTRATE LAYOUT



PACKAGING TAPE

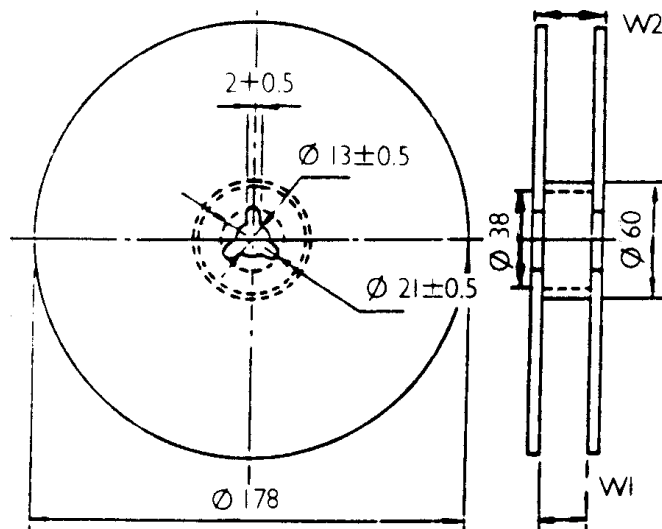
To meet EIA 481
IEC 286 PT3



PACKAGING (REEL)

Reel Qty
500 pcs

W1	W2
18.0	13.5



HOW TO ORDER

COMMON PART	ORIENTATION	RESISTANCE VALUE	TOLERANCE
3204 4mm Sealed Trimmer	X X - Terminals 1 and 3 away from sprocket holes	502 The first digits are significant figures of resistance value and the third one donates the number of zeros following	N N - 25%

Example
1 K : 102
5 K : 502
100K : 104

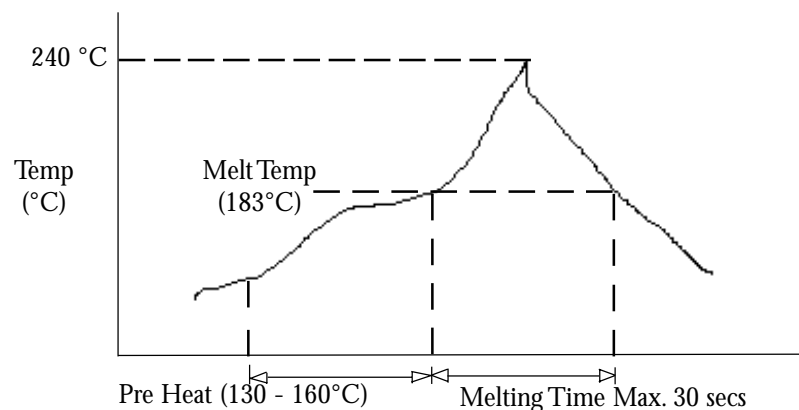
STANDARD SOLDERING METHOD

MANUAL
SOLDERING:

Preheat the land pattern fully before soldering. Ensure you do not touch the plastic case with the tip of the soldering iron. Rework can only be allowed once. Use a 20 Watt maximum soldering iron.

REFLOW
SOLDERING:

Do not remove the silicone seal before reflow soldering. Reflow soldering should take place with the wiper set at the mid point. Rework should be undertaken only once.

PROFILE OF TEMPERATURE
(REFLOW SOLDERING)

AMBIENT TEMPERATURE

Care must be taken with regard to ambient temperature of potentiometers. Load should be derated in accordance with specified derating curve, at high temperatures.

ANODE OXIDATION

When D.C. current is used and the trimmer is to remain in one set position for a long period, it is good practice to connect the negative line to the resistance element and the positive line to the wiper terminal. With the polarity reversed, particularly in moist conditions, it is possible for surface oxidation of the contact to cause a resistance increase.

STORAGE

For maximum possible shelf life do not disturb polythene sleeve until you are ready to use the potentiometer.



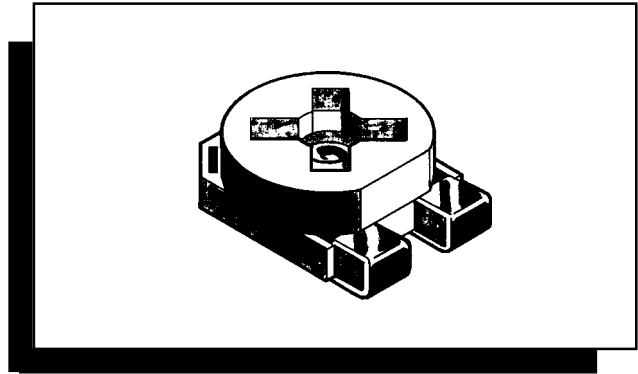
Meggitt Electronic Components Ltd. Ohmic House, Westmead Industrial Estate, Swindon, Wilts. SN5 7US
Telephone:(01793)487301(Admin.) (01793)611666 (Sales) Email:sales@megelec.co.uk Fax:(01793) 611777

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MEGGITT CITEC
POTENTIOMETERS
INDUCTORS,
SURFACE MOUNT DEVICES
SWITCHES, NETWORKS
ENCODERS, SENSORS

SMD Economy Trimmers

TYPE 3147 SERIES



This is a small surface mount trimmer designed for reflow soldering and for washing while still sealed. The elastomer seal beneath the adjustment head prevents the ingress of cleaning fluids until the seal is broken on adjustment. The cross slot adjuster makes the 3147 suitable for automatic setting and the plastic adjustment head minimises both RF and ESD concerns.

MEGGITT CITEC KEY FEATURES

- 10R - 2 MEG OHMS
- ELASTOMER SEAL UNDER ADJUSTER
- TAPED AND REELED (12mm)
- CROSS SLOT PLASTIC ADJUSTER
- DELTA TERMINALS PREVENT SOLDER BRIDGING
- SEALED FOR BOARD WASHING
- 0.25 WATTS AT 70°C
- TC 100ppm/°C (BELOW 500K)
- SENSIBLY PRICED

ELECTRICAL

Resistance Range:	10R to 2M
Resistance Values:	1, 2, 5 in each decade
Resistance Tolerance:	± 20%
End Resistance:	1% or 2 ohms maximum (whichever is greater)
Temperature Coefficient of Resistance:	±100ppm/°C up to 500K - ±150ppm/°C over 500K
Maximum Operating Voltage:	200 Volts maximum
Resolution:	Essentially Infinite
Contact Resistance Variation:	3% or 3 ohms maximum (whichever is greater)
Power Rating:	0.25 Watts at 70°C derating to zero at 125°C
Effective Electrical Angle:	240°

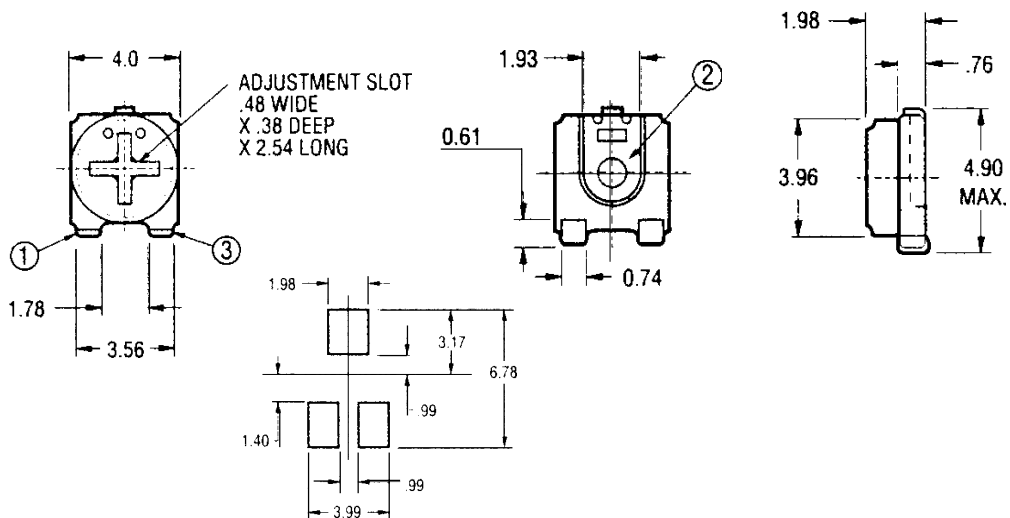
MECHANICAL

Rotational Torque:	18 to 180 gm/cm
Mechanical Adjustment:	Continuous
Marking:	2 digit resistance code on potentiometer
Packaging:	750 pieces per 7" reel

ENVIRONMENTAL

Temperature Range:	-55°C to +125°C
Seal Life:	5 turns minimum
Rotational Life:	After 100 cycles Δ R ±3%
Load Life:	Δ R ±3% after 1000 hours at 70°C
Soldering Heat:	220°C for 40 Seconds maximum.
High Temperature:	Δ R ≤ 5% after 1000 hours at 70°C

DIMENSIONS

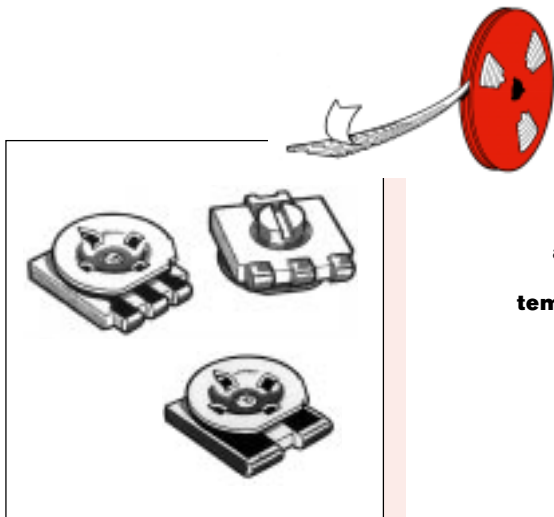


All Dimensions are nominal and in mm unless otherwise shown. Do Not Scale

HOW TO ORDER

3147	X	102	M
COMMON PART	ORIENTATION	RESISTANCE VALUE	TOLERANCE
4mm Trimmer Sealed	X - Terminals 1 and 3 away from sprocket holes	The first digits are significant figures of resistance value and the third one denotes the number of zeros following Example 1 K : 102 10 K : 103 100K : 104	M - 20%

4mm open frame potentiometer



Key features

- wide value range •
- 50V operating maximum •
- available in 12mm plastic tape •
- temperature range -20C to +85°C •
- suited to pick and place •
- stable cermet element •
- attractively priced •
- low profile •

SMD Trimmers

type 3150 series

A splendid light weight, low profile skeleton potentiometer offered in a range of terminal packages. At a weight of just 0.1g and a profile height of only 1.5mm above the board it is already the natural choice for new generation hand held equipment. The central hole is filled with resin to facilitate pick and placement. Top and underside adjust versions are available.

Specification

Electrical

- Resistance Range: 100R to 1M (1, 2, 5 in each decade)
- Resistance Tolerance: ± 25%
- Temperature Coefficient: ± 250ppm/°C
- Operating Voltage: 50V DC or AC RMS; maximum
- Contact Resistance Variation: 5% of nominal maximum
- Power Rating: 0.2 watts at 70°C derating to zero at 85°C
- Effective Electrical Angle: 260° ± 20°

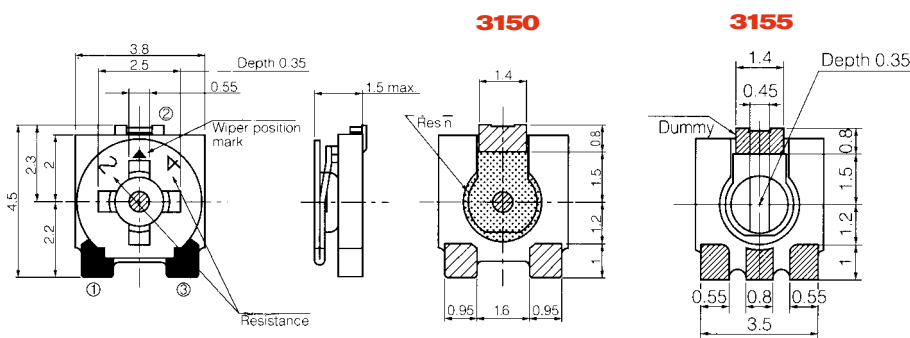
Mechanical

- Rotational Torque: 2 - 25mNm
- Mechanical Adjustment: Continuous

Environmental

- Temperature Range: - 20°C to + 85°C
- Rotational Life: 20 cycles ΔR < 15%
- Load Life: ΔR < 5% after 1000 hours
- Soldering Heat: 230°C 10 seconds, 240°C 5 seconds

Dimensions



How to Order

Common Part	Orientation	Resistance Value	Tolerance
3150 - 3 Terminals delta top adjust 3155 - 3 Terminals in line underside adjust	X - terminals away from sprocket holes	The first two digits are significant figures of resistance value and the third one denotes the number of zeros following Example 1K : 102 10K : 103 100K : 104	P - ± 25%

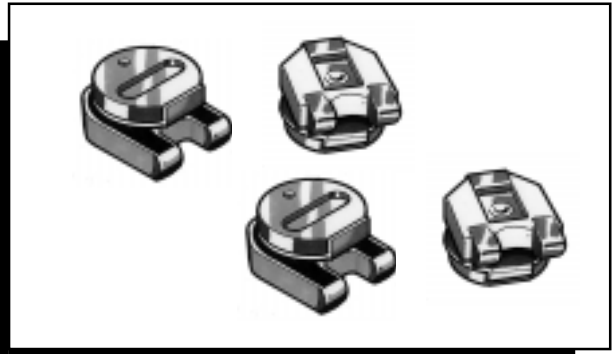
Packaging:
1000 Pieces (7" Reel)

Please Request Full Data Sheet F0708

MEGGITT CITEC
POTENTIOMETERS
INDUCTORS,
SURFACE MOUNT DEVICES
SWITCHES, NETWORKS
ENCODERS, SENSORS

SMD Economy Trimmers

TYPE 3142 SERIES



A range of small single turn trimmers suited to reflow soldering and attractively priced for volume application. The 3142 is supplied on 12mm tape on 180mm diameter reels. This product is long established, having an excellent reputation for long term stability. It is readily available from our network of distributors.

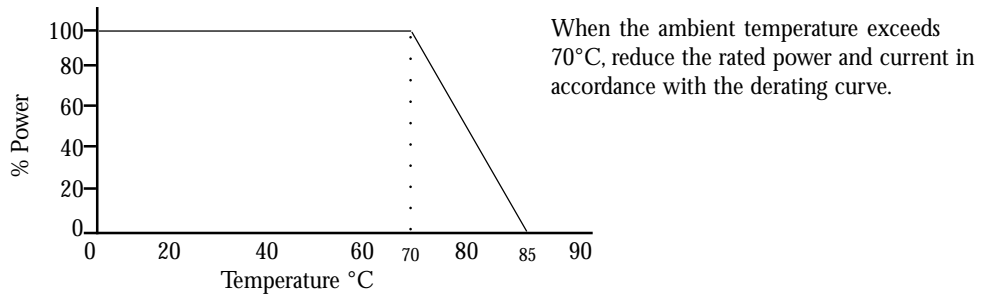
MEGGITT CITEC KEY FEATURES

- **STABLE CERMET ELEMENT**
 - **0.15W POWER RATING**
 - **PACKED IN STANDARD 12mm TAPE**
 - **SUITED TO AUTO PLACEMENT**
 - **TEMPERATURE RANGE -25°C TO +85°C**
 - **EXCELLENT VACUUM PICKUP ON ROTOR**
 - **HEIGHT PROFILE OF JUST 2.4mm FROM BOARD**
 - **ATTRACTIVELY PRICED**
-

ELECTRICAL

Resistance Range:	100R to 1M
Resistance Values:	1, 2 & 5 in each decade
Resistance Tolerance:	± 25%
Resistance Law:	Linear
Temperature Coefficient of Resistance:	± 250ppm/°C
Operating Voltage:	50 V DC maximum
Wiper Current:	50mA maximum
Resolution:	Infinite
Contact Resistance Variation:	<5% of Nominal Value
Power Rating:	0.15 Watts @ 70°C
Electrical Rotation:	270° ±10°
End Resistance:	5% maximum
Insulation Resistance:	100M (250V DC) minimum

POWER DERATING CURVE



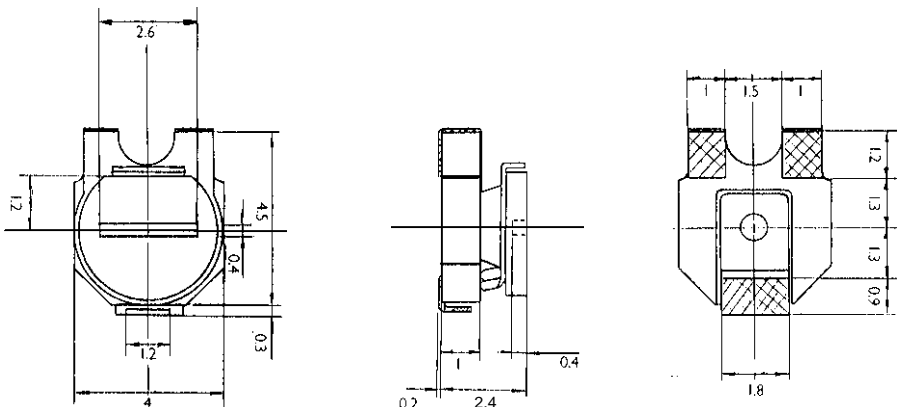
MECHANICAL

Rotation Torque:	2.0 - 20 mNm
Solder Strength:	300mNm (3 directions) minimum
Mechanical Rotation:	360° Continuous

ENVIRONMENTAL

Operating Temperature Range:	-25°C to +85°C
Humidity Load Life:	350 ±5% 40°C RH 90-95%
Load Life:	1000 ±5% @ 70°C
Temperature Cycle:	ΔR ±3% -25°C ~ +85°C
Effect of Soldering:	250°C ±10°C 3 seconds ±3%
Rotaional Life:	10 ±10%

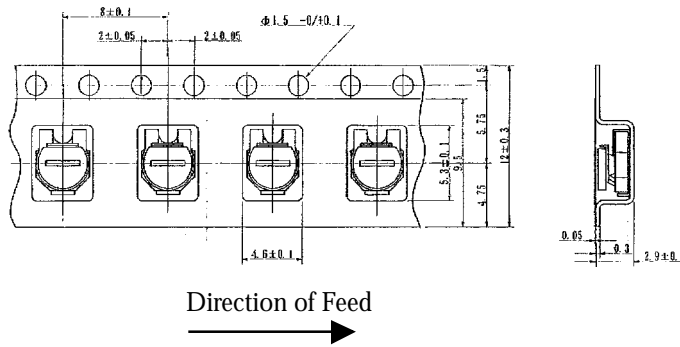
DIMENSIONS



All Dimensions are in mm and nominal. Do Not Scale.

PACKAGING (TAPE)

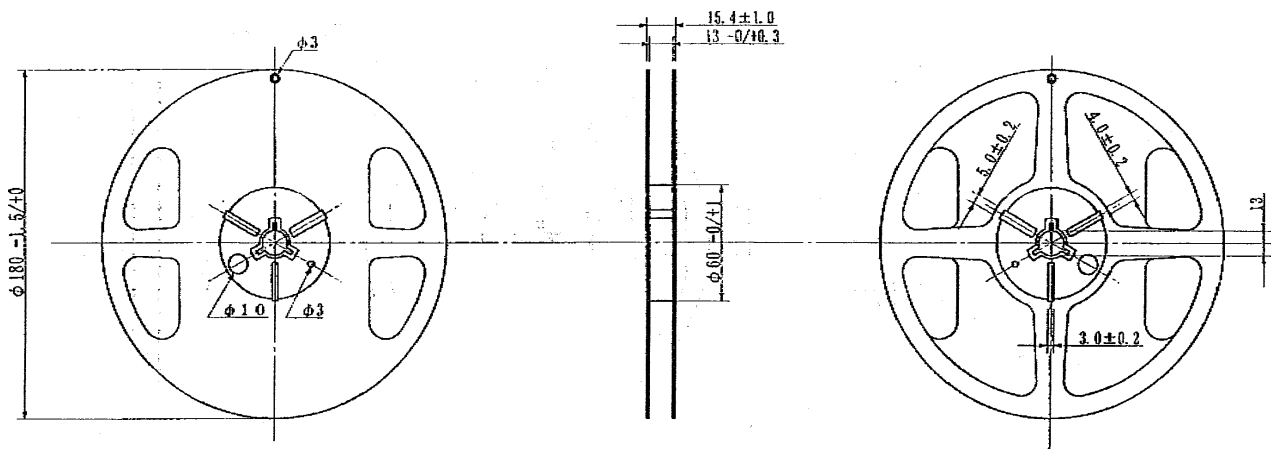
To meet EIA 481
IEC 286 PT3



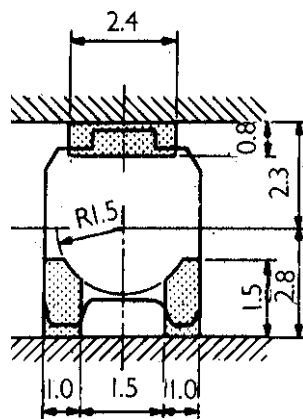
N.B.
Orientation of Terminals 1 & 3
towards sprocket holes

Tolerances unless specified: ±0.5

PACKAGING (REEL)



SUBSTRATE LAYOUT



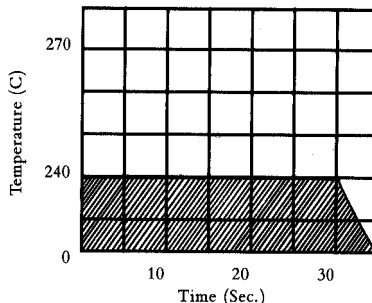
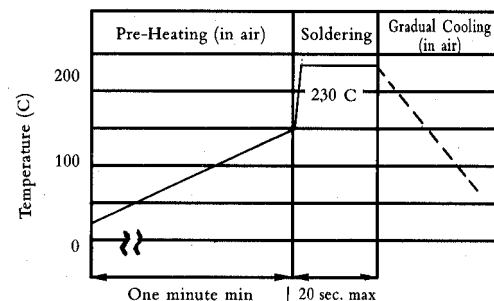
HOW TO ORDER

3142 COMMON PART	W ORIENTATION	102 RESISTANCE VALUE	P TOLERANCE
3142 - 3 Terminals	W - Terminals towards sprocket holes (1 & 3)	The first two digits are significant figures of resistance value and the third one denotes the number of zeros following	Example. 100R : 101 1K : 102 10K : 103 100K : 104 1M0 : 105 P - 25%

**SOLDERING
CONDITIONS**

If soldering is repeated, please note that the allowance time is the accumulated time.

Solder: Co Crystallized solder
Flux: Rosin Flux

**REFLOW SOLDERING
NO PRE-HEAT****REFLOW SOLDERING
RECOMMENDED****SOLDERING
WITH IRON**

The following conditions must be strictly obeyed when using a soldering iron.

Soldering Iron: 20W maximum
Tip Temperature: 280°C maximum
Soldering Time: 5 seconds maximum

**CLEANING
CONDITIONS**

After soldering, use cleaning solvents such as chlorosen or dyefreon.

**CAUTION ON
SOLDERING**

The following conditions must be strictly obeyed when using a soldering iron for rework.

Solder Iron: 20W maximum
Trip Temperature: 280°C maximum (To be used only once)
Soldering Time: 3 seconds maximum

Be careful not to cause excessive force to the potentiometer after mounting.
Reduce effects of solder temperature and time as much as possible by giving maximum allowable pre-heating.

STORAGE

To prevent damage to the electrode, be sure to observe the following cautions for storage.

Store in 40°C maximum ambient temperature and 70°C maximum ambient RH
For maximum possible shelf life do not disturb polythene sleeve until you are ready to use potentiometers
Store where there are no harmful gasses containing sulphur or chlorine



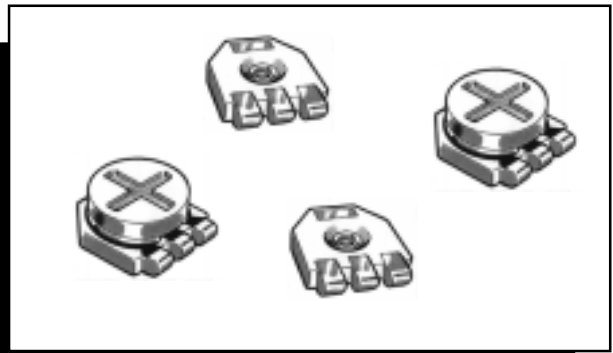
Meggitt Electronic Components Ltd. Ohmic House, Westmead Industrial Estate, Swindon, Wilts. SN5 7US
Telephone: (01793)487301 (Admin.) (01793)611666 (Sales) E-Mail: sales@megelec.co.uk Fax:(01793)611777 (Sales)

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MEGGITT CITEC
POTENTIOMETERS
INDUCTORS,
SURFACE MOUNT DEVICES
SWITCHES, NETWORKS
ENCODERS, SENSORS

SMD Economy Trimmers

TYPE 3165 SERIES



These cermet element surface mount trimmers feature a cross slot adjustment head with unbroken perimeter for ease of vacuum pick up and auto adjustment. Available in two and three terminal styles these 4mm trimmers are supplied on standard 12mm blister tape and are suitable for all reflow soldering processes.

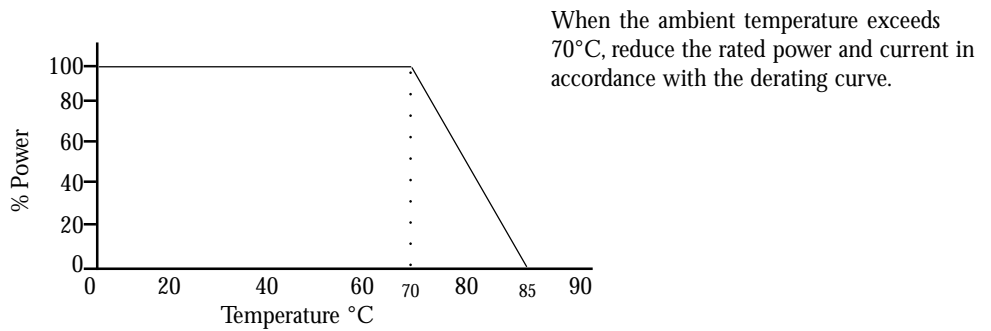
MEGGITT CITEC KEY FEATURES

- **STABLE CERMET ELEMENT**
 - **CHOICE OF ORIENTATION OPTIONS**
 - **AVAILABL ON STANDARD 12mm TAPE**
 - **LIGHT WEIGHT ONLY 0.2 GRAMS**
 - **NEW STYLE CROSS SLOT ADJUST**
 - **LOW PRICE REDUCES PRODUCTION COSTS**
 - **SMALL COMPACT SIZE (4mm SQUARE)**
 - **2 AND 3 TERMINAL OPTIONS**
-

ELECTRICAL

Resistance Range:	100R to 1M
Resistance Values:	1, 2 & 5 in each decade
Resistance Tolerance:	± 25%
Resistance Law:	Linear
Temperature Coefficient of Resistance:	± 250ppm/°C at -25°C to +85°C
Operating Voltage:	50V maximum
Resolution:	Infinite
Contact Resistance Variation:	<5% of Nominal Value
Power Rating:	0.15 Watts @ 70°C
Electrical Rotation:	270° ±10°

POWER DERATING CURVE



MECHANICAL

Rotation Torque:	2.0 - 20 mNm
Weight:	0.2 grams

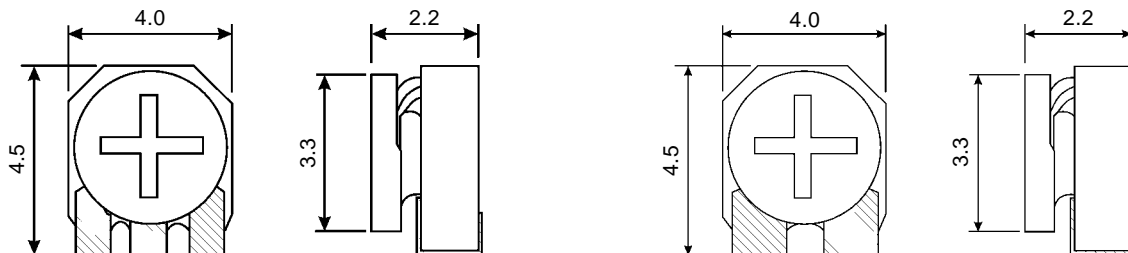
ENVIRONMENTAL

Operating Temperature Range:	-25°C to +85°C
Storage Temperature:	500 hours at 70°C
Humidity Load Life:	350 hours ±5% 40°C RH 90-95%
Load Life:	1000 hours ±5% @ 70°C
Effect of Soldering:	250°C ±10°C 3 seconds ±3%
Rotational Life:	10 cycles ΔR ±15%

DIMENSIONS

3165

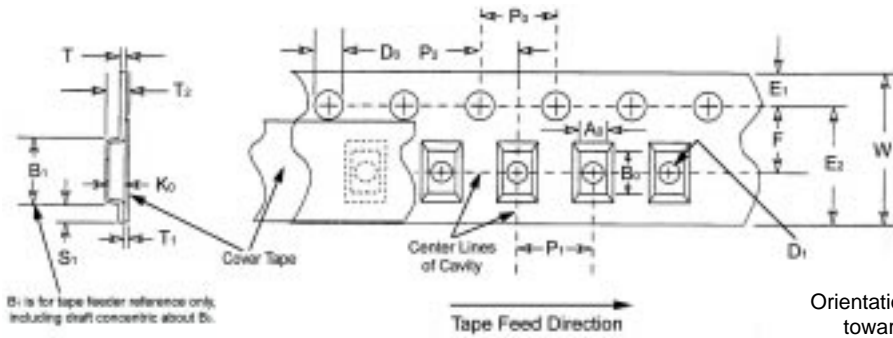
3166



All Dimensions are in mm and nominal. Do Not Scale.

PACKAGING (TAPE)

To meet EIA 481
IEC 286 PT3

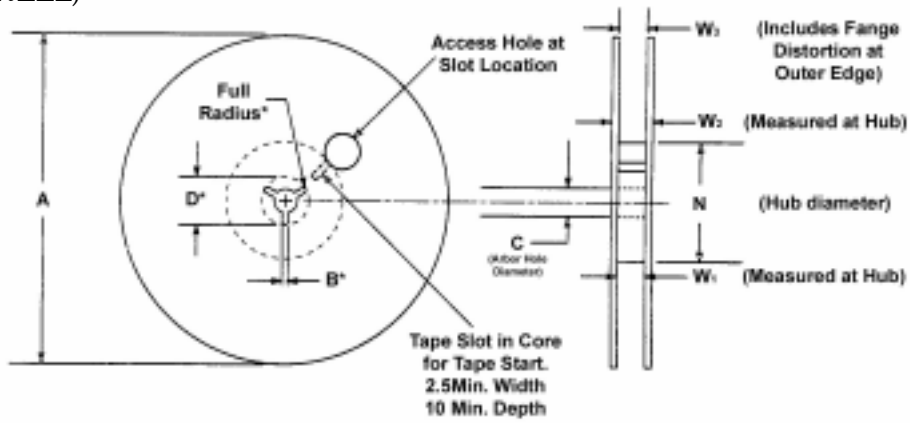


All Dimensions are
in mm and nominal.
Do Not Scale.

N.B.
Orientation of Terminals 1 & 3
towards sprocket holes

Tape Width	A ₀ max	B ₀ max	B ₁ max	D ₀	D ₁ min	E ₁	E ₂ min	F	P ₀	P ₁	P ₂	R min	S ₁ min	T max	T ₁ max	T ₂ max	W max
12mm	4.4±0.1	5.2±0.1	8.2	1.5 ^{+0.10} _{-0.20}	1.5	1.75±0.10	10.25	5.5±0.05	4.0±0.10	8.0±0.10	2.0±0.05	30.0	0.6	0.6	0.1	6.5	12.3

PACKAGING (REEL)

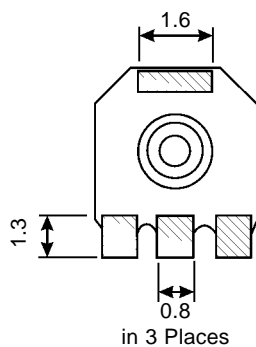


All Dimensions are
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Do Not Scale.

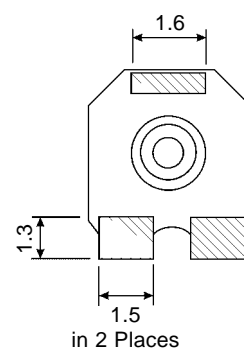
Tape Width	A Max.	B* Min.	C	D* Min.	N Min.	W ₁	W ₂ Max	W ₃ Min/Max
12mm	330	1.5	13 ^{+0.5} _{-0.2}	20.2	50.0	12.4 ^{+2.0} _{-0.0}	18.4	11.9/15.4

SUBSTRATE LAYOUT

3165



3166



All Dimensions are
in mm and nominal.
Do Not Scale.

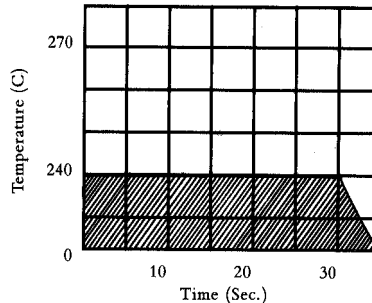
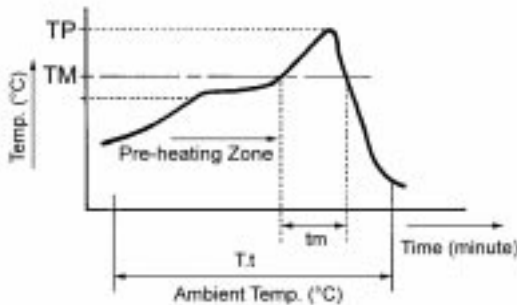
HOW TO ORDER

3165 COMMON PART	W ORIENTATION	102 RESISTANCE VALUE	P TOLERANCE
3165 - 3 Terminals 3166 - 2 Terminals	W - Terminals towards sprocket holes (1 & 3)	The first two digits are significant figures of resistance value and the third one denotes the number of zeros following Example: 100R : 101 1K : 102 10K : 103 100K : 104 1M0 : 105	P - 25%

**SOLDERING
CONDITIONS**

If soldering is repeated, please note that the allowance time is the accumulated time.

Solder: Co Crystallized solder
Flux: Rosin Flux

**REFLOW SOLDERING
NO PRE-HEAT****REFLOW SOLDERING
RECOMMENDED****SOLDERING
WITH IRON**

The following conditions must be strictly obeyed when using a soldering iron.

Soldering Iron: 20W maximum
Tip Temperature: 280°C maximum
Soldering Time: 5 seconds maximum

**CLEANING
CONDITIONS**

After soldering, use cleaning solvents such as chlorosol or dyefreon.

**CAUTION ON
SOLDERING**

The following conditions must be strictly obeyed when using a soldering iron for rework.

Solder Iron: 20W maximum
Trip Temperature: 280°C maximum (To be used only once)
Soldering Time: 3 seconds maximum

Be careful not to cause excessive force to the potentiometer after mounting.
Reduce effects of solder temperature and time as much as possible by giving maximum allowable pre-heating.

STORAGE

To prevent damage to the electrode, be sure to observe the following cautions for storage.

- ˆ Store in 40°C maximum ambient temperature and 70% maximum ambient RH.
- ˆ For maximum possible shelf life do not disturb polythene sleeve until you are ready to use potentiometers.
- ˆ Store where there are no harmful gasses containing sulphur or chlorine.



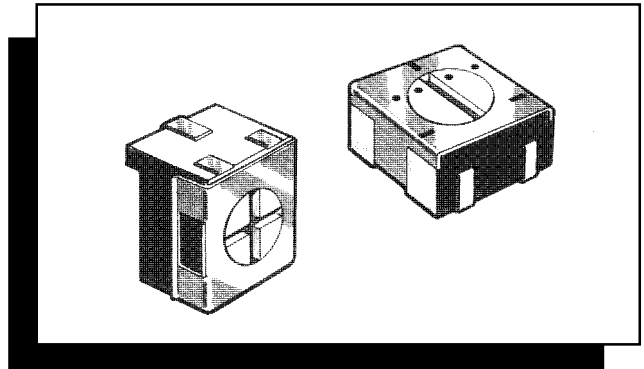
Meggitt Electronic Components Ltd. Ohmic House, Westmead Industrial Estate, Swindon, Wilts. SN5 7US
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MEGGITT CITEC
POTENTIOMETERS
INDUCTORS,
SURFACE MOUNT DEVICES
SWITCHES, NETWORKS
ENCODERS, SENSORS

SMD Professional Trimmers

TYPE 3315 SERIES



This component is an ideal choice for applications when miniaturisation is essential. Very small outline package (5.0 x 4.5 x 2.5mm), it is designed specifically for pick and place equipment. This is probably the ultimate in a sealed miniature potentiometer eminently suited to surface mounting and hybrid systems. Special radial O ring seals and state of the art materials permit circuit adjustments and readjustments even after wave soldering. The 3315 is designed to withstand temperatures up to 300°C hence providing unparalleled safety margins, regardless of the SMD process.

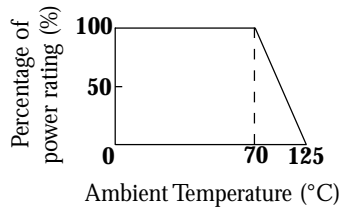
MEGGITT CITEC KEY FEATURES

- SUPPLIED ON STD EIA EMBOSSSED TAPE
- SMALL VERSATILE SIZE
- SEALED WITH AN O-RING
- SUITABLE FOR DIP AND REFLOW SOLDERING
- IDEAL FOR AUTOMATIC PLACEMENT
- SIDE ADJUST VERSION AVAILABLE
- 0.25W at 70°C
- AVAILABLE IN J HOOK AND GULL WING STYLES
- BUILT IN STANDOFFS

ELECTRICAL

Resistance Range:	10R to 2M 1, 2, 5 in each decade
Resistance Tolerance:	±20% tighter by order
Power Rating:	0.25W at 70°C, derating to 0 at 125°C
Resolution:	Essentially infinite
Input Voltage:	200V maximum
Wiper Current:	100mA maximum
Electrical Angle:	210°
End Resistance:	1% or 2 ohms, whichever is greater
Contact Resistance Variation:	1% or 3 ohms, whichever is greater
Insulation Resistance:	200 V DC 100M minimum
Dielectric Strength:	500V AC 1 minute

DERATING CURVE



When the ambient temperature exceeds 70°C, reduce the rated power and current in accordance with the derating curve shown.

MECHANICAL

Mechanical Angle:	240°
Operating Torque:	180gcm maximum
Stop Strength:	300gcm minimum
Weight:	0.3 grams approx.
Terminals:	Hot solder dipped copper, pre tinned

ENVIRONMENTAL

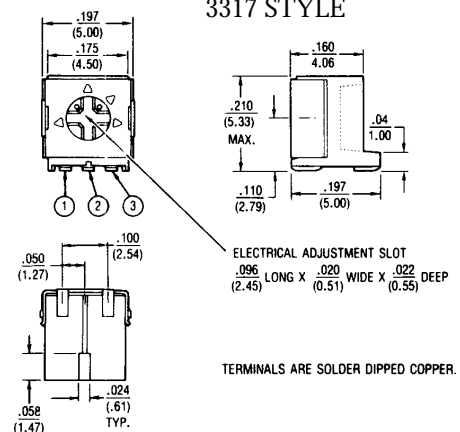
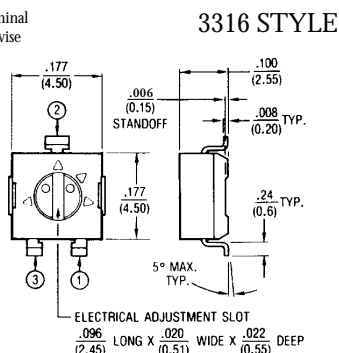
MIL-R 22097 / MIL-STD-202

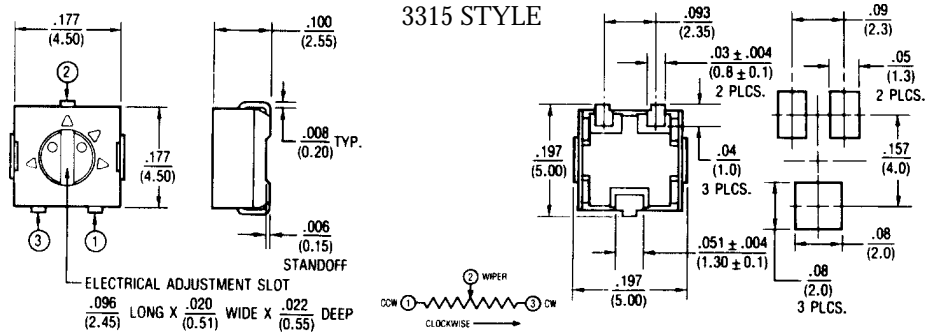
ITEM	TEST CONDITIONS	Δ R/R
Operating Temperature:	-55°C - +125°C	-
Temperature Coefficient:	100ppm/°C maximum	-
Thermal Shock:	-65°C - 125°C, 5 cycles	± 2%
Humidity:	80 - 90% RH, 10 cycles, 240 hours.	± 2%
Shock:	100G, 6 directions, 3 times	± 1%
Vibration:	20G, 10 - 2000 Hz, 12 hours.	± 1%
Soldering Heat:	260°C 20 seconds/or 215°C 35 seconds.	± 1%
Load Life:	70°C, rated power, 1000 hours.	± 3%
Low Temperature Operation:	-55°C, 2 hours.	± 2%
High temperature Operation:	125°C, 250 hours.	± 3%
Rotational Life:	100 cycles	± (2 ohm+ 3%)
Seal Test:	85°C Florinert (3 M's Company Trade Mark)	

Δ R/R: Change in total resistance, S.S: Setting Stability

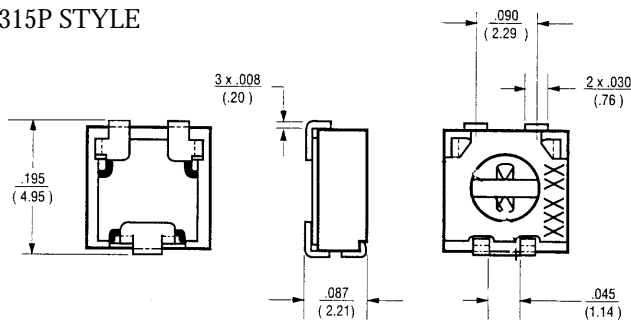
DIMENSIONS

All Dimensions are nominal and in mm unless otherwise shown. Do Not Scale.

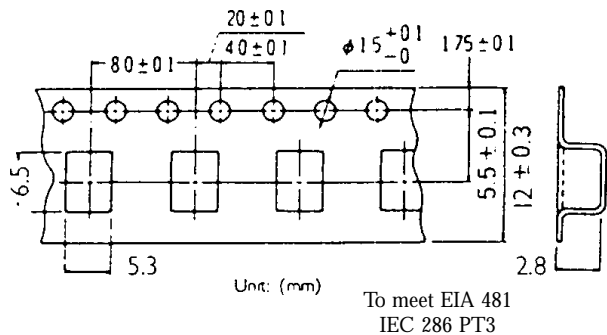
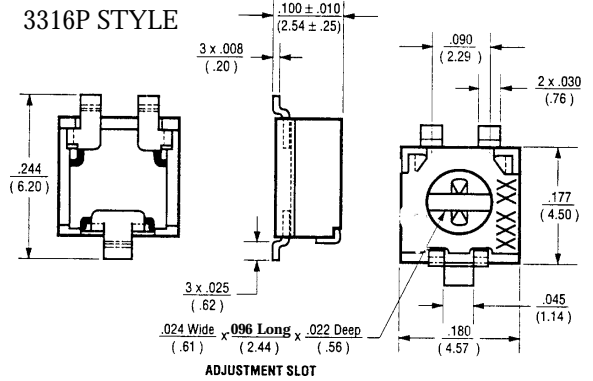




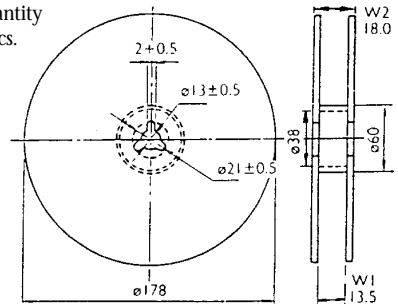
3315P STYLE



3316P STYLE

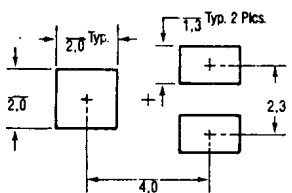


Reel quantity
500 pcs.

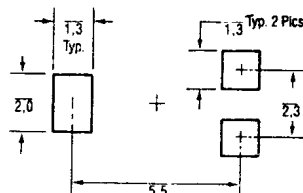


SUBSTRATE LAYOUT

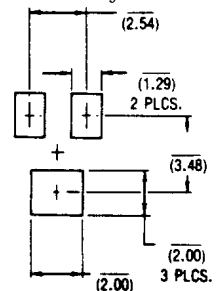
3315/3315P J Hook Style



3316/3316P Gull Wing Terminals



3317 Style



HOW TO ORDER

3315	X	502	M	
COMMON PART	ORIENTATION	RESISTANCE VALUE	TOLERANCE	
3315 - Metal Case J Hook 3315P - Plastic Case J Lead 3316 - Metal Case Gull Wing 3316P - Plastic Case Gull Wing 3317 - Side Adjust	X - Terminals 1 & 3 away from sprocket holes	The first digits are significant figures of resistance value and the third one denotes the number of zeros following	Example 1k : 102 5k : 502 100k : 104	M - ± 20% K - ± 10%

SOLDERING METHOD

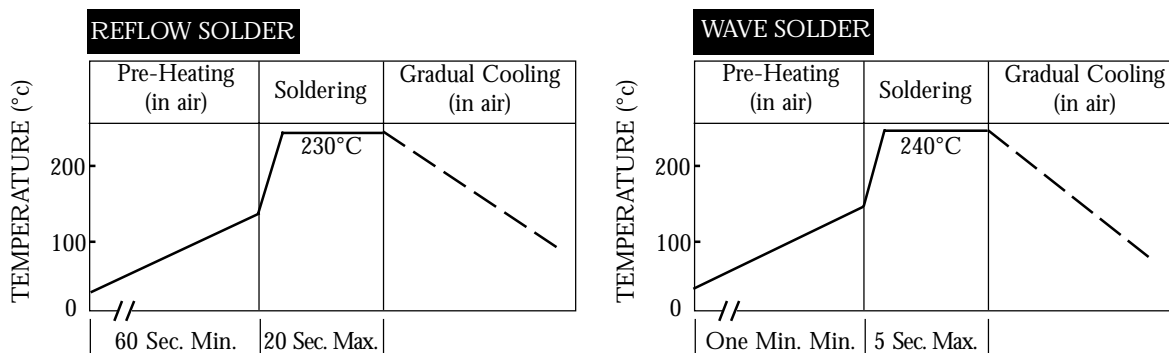
The 3315 series is suitable for all current solder systems including hot plate, infra-red vapour phase, and the difficult dual wave system. A time/temperature profile of 260°C for 20 seconds can be applied without degradation of the component. Additionally pre-tinned leads have been incorporated as a standard feature ensuring good terminal adhesion.

WAVE SOLDERING

Pre-Heat: 130°C, 10 sec
Soldering Temp.: 260°C
Soldering Time: 10 seconds recommended

REFLOW SOLDERING

Pre-heat: 130°C to 160°C
Melting Temp.: Tm = 183.3°C
Peak Temp.: Tp < 240°C
Melting Time: tm < 10 seconds recommended

PROFILE OF TEMPERATURE (REFLOW SOLDERING)**SOLDERING WITH IRON**

The following conditions must be strictly adhered to when using a soldering iron.

Soldering Iron : 40W maximum
Tip Temperature : 350°C maximum
Soldering Time : 3 seconds maximum

MATERIALS

Solder: Co-crystallized solder
Flux: Rosin flux

CLEANING CONDITIONS

After soldering use cleaning solvents such as chlorosen or dyfreon.

STORAGE

To prevent damage to the electrode, be sure to observe the following conditions for storage.

- Store in 40°C maximum ambient temperature, and 70% maximum ambient RH.
- For maximum possible shelf life do not disturb polythene sleeve until you are ready to use potentiometers.
- Store where there are no harmful gasses containing sulphur or chlorine.



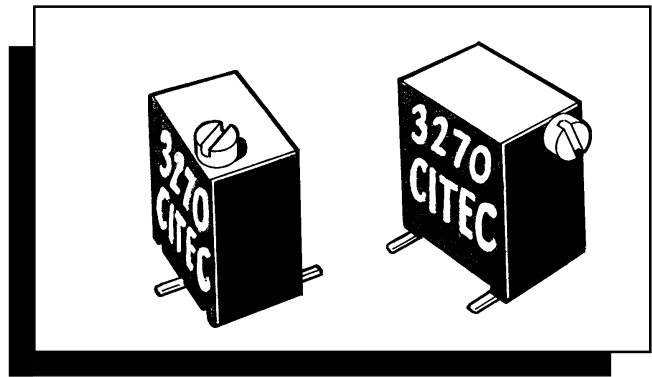
Meggitt Electronic Components Ltd. Ohmic House, Westmead Industrial Estate, Swindon, Wilts. SN5 7US
Telephone:(01793)487301(Admin.) (01793)611666 (Sales) EMail:sales@megelec.co.uk Fax:(01793) 611777

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MEGGITT CITEC
POTENTIOMETERS
INDUCTORS, SMDS
SWITCHES, NETWORKS
ENCODERS
POWER COMPONENTS

SMD Professional Trimmers

TYPE 3270 SERIES



This is the surface mount version of the popular Meggitt Citec 3270. Top adjust and low profile side adjust versions are available in special high temperature resistant packages. This multi-turn device offers good setability, infinite resolution and the other specification features typical of conventional trimmers yet now suitable for s.m. applications.

MEGGITT CITEC KEY FEATURES

- STABLE, INFINITE RESOLUTION ELEMENT
 - HIGH TEMPERATURE CONSTRUCTION
 - 0.25 WATT POWER RATING AT 85°C
 - LOW TEMPERATURE COEFFICIENT: $\pm 100\text{ppm}/^\circ\text{C}$
 - VERTICAL AND LOW PROFILE ADJUST STYLES
 - SEALED TO WITHSTAND DIP AND WAVE SOLDER
 - PACKAGED IN PLASTIC TUBES
-

ELECTRICAL

Resistance Range:	10R to 1M
Resistance Tolerance:	± 10% standard (closer tolerance available)
Absolute Minimum Resistance:	1 ohm maximum
Contact Resistance Variation:	3.0% or 3 ohms (whichever is greater)
Adjustability:	Voltage ± 0.02% : Resistance ± 0.05%
Resolution:	Infinite
Insulation Resistance:	500VDC, 1000M minimum
Dielectric Strength:	Sea level 600 VAC 80,000 feet 250 VAC
Electrical Travel:	12 turns nominal

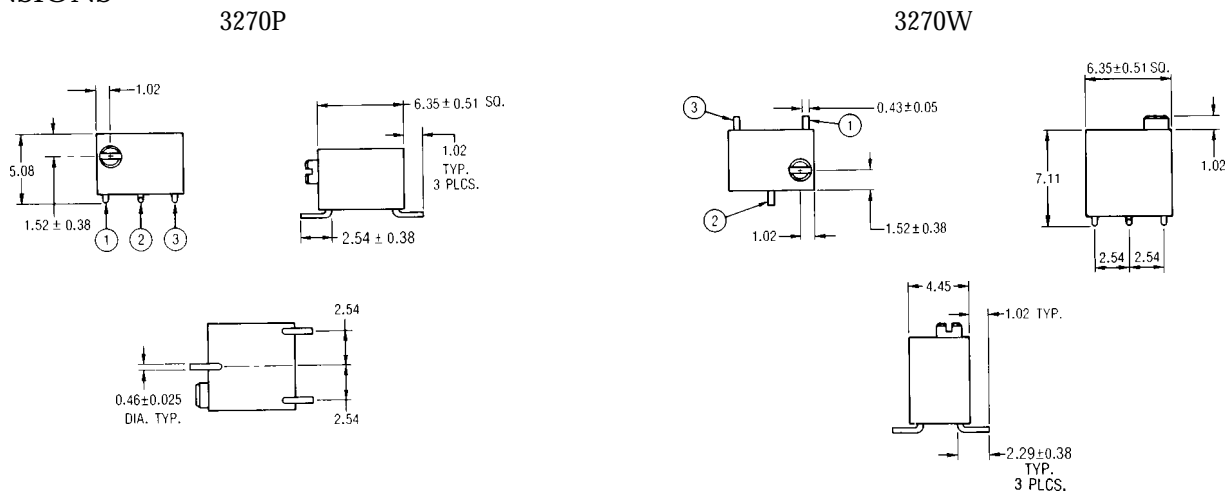
MECHANICAL

Torque:	21 mNm maximum
Mechanical Stops:	Wiper idles
Terminals:	Solderable pins
Weight:	0.4 gram maximum
Mechanical Travel:	16 turns nominal

ENVIRONMENTAL

Maximum Exposure Temperature/Time:	+215°C 3 minutes
Power Rating (300 Volts maximum):	0.25 Watt at 85°C derating to zero at 150°C
Temperature Range:	-65°C to 150°C
Temperature Coefficient of Resistance:	± 100ppm/°C maximum
Seal Test:	85°C fluorinert
Humidity:	MIL STD 202 method 106 (2% DTR, IR 100 Mw minnum)
Vibration:	30G (1% DTR % DVR)
Shock:	100G (1% DTR % DVR)
Load Life:	DR 3% (1000 hours, 0.25 Watts at 85°C)
Mechanical Life:	200 cycles

DIMENSIONS



All Dimensions are nominal and in mm, unless otherwise shown. Do Not Scale

N.B. The 3270W is supplied in tubes of 50 pieces.

HOW TO ORDER

3270	P	104	K
COMMON PART	ADJUSTMENT STYLE	RESISTANCE VALUE	TOLERANCE
3270 - 6mm Multiturn Trimmer	P - Low Profile Side Adjust W - Top Adjust	The first two digits are significant figures of resistance value and the third one denotes the number of zeros following Example 1K : 102 10K : 103 100K : 104	K - 10%



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Telephone:(01793)487301(Admin.) (01793)611666 (Sales) Email:sales@megelec.co.uk Fax:(01793) 611777

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