

# **Type TE Series**

#### **Key Features**

Up to 2500W Power rating in free air

Flameproof construction – UL94V coating

**RoHS compliant** 

Custom terminations / leads available

#### Applications

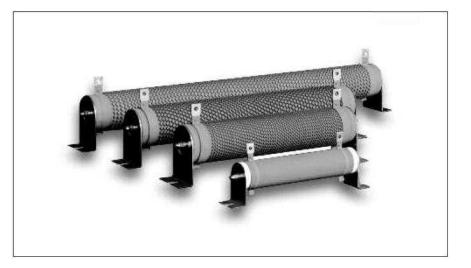
Large electrical and production machinery

Load test simulation

Motor start / stop cycles

#### Dynamic braking

Equipment discharge



TE Connectivity is a leading supplier of standard and custom-designed power resistors for industrial, control and general- purpose applications.

The TE range of flameproof coated tubular ceramic core resistors use both standard and edge wound (corrugated) winding methods to improve power handling capability. Designed for heavy duty machinery, electrical equipment, motor control etc. requiring stability and reliability.

Characteristics – Electrical

Power rating @70°C in free air	50W – 2500W (see table)
Resistance range	See table
Selection series	E12
Tolerance	±5% ±10%
Temperature Coefficient of	<20Ω ±400PPM/°C
resistance	≥20Ω ±300PPM/°C
Operating temperature range	-55 ~ +155°C
Short term overload	3 x rated power / 5 seconds
Dielectric strength	2500VAC Min.
Insulation resistance	DC500V 20MΩ min.

#### 9-1773453-2 CIS WR 12/2016

Dimensions in millimetres unless otherwise specified Dimensions Shown for reference purposes only. Specifications subject to change



# Specifications – Electrical

Power	Resistance	Resistance Tolerance D		Appearance
Rating	Value		Strength	
50W	R10 ~ 2K7	±5% ±10%	500VAC	Smooth
60W	R10 ~ 2K7	±5% ±10%	500VAC	Smooth
80W	R10 ~ 2K7	±5% ±10%	500VAC	Smooth
100W	1R0 ~ 2K7	±5% ±10%	500VAC	Smooth
120W	1R0 ~ 2K7	±5% ±10%	500VAC	Smooth
150W	1R0 ~ 2K7	±5% ±10%	500VAC	Smooth
200W	1R0~9R1	±5% ±10%	300VAC	Ribbed
20070	10R ~ 2K7	±5% ±10%	500VAC	Smooth
300W	1R0~9R1	±5% ±10%	300VAC	Ribbed
50070	10R ~ 2K7	±5% ±10%	500VAC	Smooth
400W	1R0 ~ 15R	±5% ±10%	300VAC	Ribbed
400 W	16R ~ 2K7	±5% ±10%	500VAC	Smooth
500W	1R0 ~ 20R	±5% ±10%	300VAC	Ribbed
50070	21R ~ 2K7	±5% ±10%	500VAC	Smooth
60014	1R0 ~ 20R	±5% ±10%	300VAC	Ribbed
600W	21R ~ 2K7	±5% ±10%	500VAC	Smooth
75014	1R0 ~ 75R	±5% ±10%	300VAC	Ribbed
750W	76R ~ 2K7	±5% ±10%	500VAC	Smooth
1000W	1R0 ~ 100R	±5% ±10%	300VAC	Ribbed
100010	101R ~ 2K7	±5% ±10%	500VAC	Smooth
1200W	1R0 ~ 100R	±5% ±10%	300VAC	Ribbed
120000	101R ~ 2K7	±5% ±10%	500VAC	Smooth
150014/	1R0 ~ 120R	±5% ±10%	300VAC	Ribbed
1500W	121R ~ 2K7	±5% ±10%	500VAC	Smooth
2000W	1R0 ~ 120R	±5% ±10%	300VAC	Ribbed
	121R ~ 2K7	±5% ±10%	500VAC	Smooth
2500W	1R0 ~ 120R	±5% ±10%	300VAC	Ribbed
230070	121R ~ 2K7	±5% ±10%	500VAC	Smooth

# Voltage rating:

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:

 $RCWV = VP \times R$ 

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

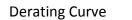
P = Power Rating (watt)

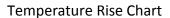
R = Nominal Resistance (ohm)

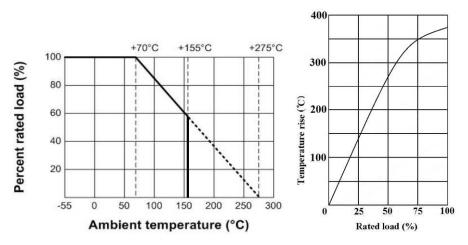
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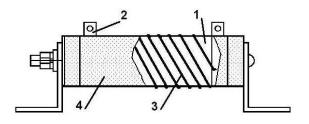




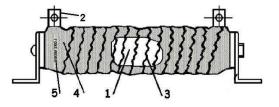


# Construction:

Smooth:



Ribbed:



No.	Name	Material	Material Generic Name
1	Basic Body	Rod Type Ceramics	Al <sub>2</sub> O <sub>3</sub> , SiO <sub>2</sub>
2	Terminal	Tin plated terminal cap	Fe : 73%, Mn : 21%, C : 5%
3	Resistance	Ni-Cr or Cu-Ni Alloy	Ni-Cr or Cu-Ni Alloy
	Wire		
4	Coating	Insulated and non-flame	Non-Flame paint UL94V
		paint	
		(Color: Green)	
5	Marking	Marking Ink	

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# **Environmental Characteristics:**

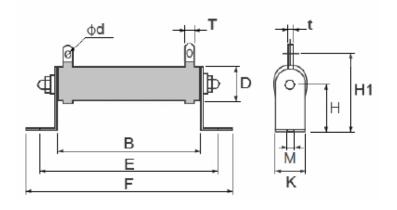
Characteristics	Limits	Test Methods				
		(JIS C 5201-1)				
Temperature	<20Ω : ± 400 PPM/°C Max.	Natural Resistance change per temperature degree				
Coefficient	≥20Ω : ± 300 PPM/°C Max.	centigrade.				
		R <sub>2</sub> -R <sub>1</sub>				
		x10 <sup>6</sup> (PPM/°C)				
		$R_1(t_2-t_1)$				
		$R_1$ : Resistance value at room temperature ( $t_1$ )				
		$R_2$ : Resistance value at room temperature +100°C ( $t_2$ )				
		(Sub-clause 4.8)				
Short term	±(2% + 0.05Ω) Max. with no	Permanent resistance change after the application of a				
overload	evidence of mechanical	potential of 3 x RCWV for 5 seconds				
	damage	(Sub-clause 4.13				
Terminal	No evidence of mechanical	Direct load :				
Strength	damage	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 a 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				
		(Sub-clause 4.16)				
Solderability	95 % coverage Min.	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				
		(Sub-clause 4.17)				
Soldering Temp.	Electrical Characteristics shall	Terminals immersed into solder bath to 3.2 ~ 4.8mm				
Reference	be satisfied without distinct	from the body. Permanent resistance change shall be				
	deformation in appearance.	checked.				
	(95% coverage Min.)	Wave soldering condition (2 cycles max.)				
		Pre-heat : $100 \sim 120 \circ C$ , $30 \pm 5 sec$ .				
		Suggested solder temp.: 235 ~ 255 °C, 10 sec. (max.)				
		Peak temp.: 260 °C				
		Hand soldering condition:				
		Hand Soldering bit temp. : $380 \pm 10 \text{ °C}$ Dwell time in solder : $3 \pm 1/-0$ sec.				
Resistance to	Resistance change rate	Permanent resistance change when terminals immersed				
soldering heat	$\pm(1\%+0.05\Omega)$ with no	to $3.2 \approx 4.8$ mm from body in $350^{\circ}$ C $\pm 10^{\circ}$ C solder for				
0.000	evidence of mechanical	3±0.5 seconds				
	damage	Sub-clause 4.18				
Load life in	Resistance change rate	Resistance change after 1,000 hours (1.5 hours "on", 0.5				
humidity	±(5%+ 0.05Ω) Max. with no	hour "off") at RCWV in a humidity test chamber				
	evidence of mechanical	controlled at 40 °C± 2 °C and 90 to 95 % relative				
	damage	humidity				
		(Sub-clause 4.24.2.1)				
Load Life	Resistance change rate	Permanent resistance change after 1,000 hours				
	±(5%+ 0.05Ω) Max. with no	operating at RCWV with duty cycle of (1.5 hours "on",				
	evidence of mechanical	0.5 hour "off") at 70°C ± 2°C ambient				
	damage	(Sub-clause 4.25.1)				

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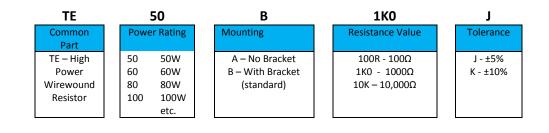


### Dimensions:



Power	Dimension										
rating	B±2	E±5	F±3	D±2	H±1	H1±3	M±0.5	K±1	T±0.5	t±0.5	Ød ±0.5
50W	102	124	146	28	28	61	6.5	28	8	1.8	4.3
60W	102	124	146	28	28	61	6.5	28	8	1.8	4.3
80W	152	174	196	28	28	61	6.5	28	8	1.8	4.3
100W	182	204	226	28	28	61	6.5	28	8	1.8	4.3
120W	182	204	226	28	28	61	6.5	28	8	1.8	4.3
150W	195	217	239	40	41	81	8	40	10	1.8	5.5
200W	195	217	239	40	41	81	8	40	10	1.8	5.5
300W	282	304	326	40	41	81	8	40	10	1.8	5.5
400W	282	304	326	40	41	81	8	40	10	1.8	5.5
500W	316	338	360	50	45	101	8	50	16	1.8	6.5
600W	345	367	389	40	41	81	8	40	10	1.8	5.5
750W	316	338	360	50	45	101	8	50	16	1.8	6.5
1000W	300	325	350	60	60	119	8.5	60	15	2	6.5
1200W	415	440	465	60	60	119	8.5	60	15	2	6.5
1500W	415	440	465	60	60	119	8.5	60	15	2	6.5
2000W	510	535	560	60	60	119	8.5	60	15	2	6.5
2500W	600	625	650	60	60	119	8.5	60	15	2	6.5

# How To Order



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# **Mouser Electronics**

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