

# **Type TE Series**

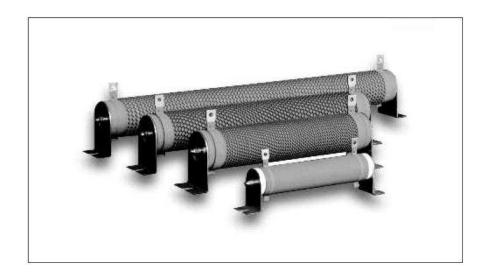
#### **Key Features**

Up to 2500W Power rating in free air

Flameproof construction – UL94V coating

**RoHS** compliant

Custom terminations / leads available



#### **Applications**

Large electrical and production machinery

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

Load test simulation

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.

Motor start / stop cycles

#### **Dynamic braking**

# Equipment discharge

#### 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.



### High Power Wire Wound Resistor

## Specifications – Electrical

Power	Resistance	Tolerance	Dielectric Appearan	
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
20000	10R ~ 2K7	±5% ±10%	500VAC	Smooth
300W	1R0~9R1	±5% ±10%	300VAC	Ribbed
30000	10R ~ 2K7	±5% ±10%	500VAC	Smooth
400W	1R0 ~ 15R	±5% ±10%	300VAC	Ribbed
40000	16R ~ 2K7	±5% ±10%	500VAC	Smooth
500W	1R0 ~ 20R	±5% ±10%	300VAC	Ribbed
30000	21R ~ 2K7	±5% ±10%	500VAC	Smooth
600W	1R0 ~ 20R	±5% ±10%	300VAC	Ribbed
00000	21R ~ 2K7	±5% ±10%	500VAC	Smooth
750W	1R0 ~ 75R	±5% ±10%	300VAC	Ribbed
75000	76R ~ 2K7	±5% ±10%	500VAC	Smooth
1000W	1R0 ~ 100R	±5% ±10%	300VAC	Ribbed
1000 VV	101R ~ 2K7	±5% ±10%	500VAC	Smooth
1200W	1R0 ~ 100R	±5% ±10%	300VAC	Ribbed
120000	101R ~ 2K7	±5% ±10%	500VAC	Smooth
1500W	1R0 ~ 120R	±5% ±10%	300VAC	Ribbed
130000	121R ~ 2K7	±5% ±10%	500VAC	Smooth
2000W	1R0 ~ 120R	±5% ±10%	300VAC	Ribbed
2000 VV	121R ~ 2K7	±5% ±10%	500VAC	Smooth
2500W	1R0 ~ 120R	±5% ±10%	300VAC	Ribbed
2300 00	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:

 $RCWV = VP \times R$ 

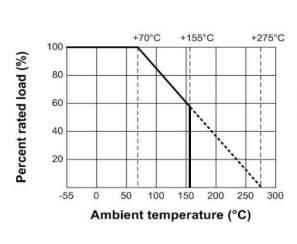
Where: RCWV = Rated DC or RMS AC continuous working voltage at commercial-line frequency and waveform (volt)

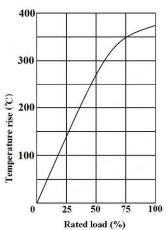
P = Power Rating (watt)

R = Nominal Resistance (ohm)

# **Derating Curve**

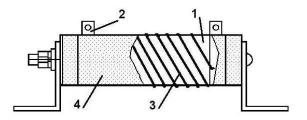
Temperature Rise Chart



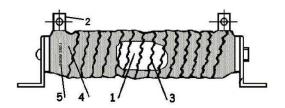


### Construction:

#### 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 Wire	Ni-Cr or Cu-Ni Alloy	Ni-Cr or Cu-Ni Alloy
4	Coating	Insulated and non-flame paint (Color: Green)	Non-Flame paint UL94V
5	Marking	Marking Ink	



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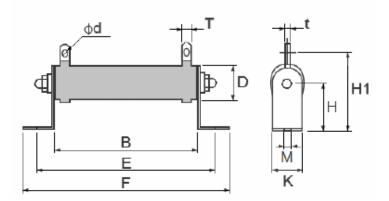
### **Environmental Characteristics:**

Characteristics	Limits	Test Methods (JIS C 5201-1)
Temperature Coefficient	<20Ω: ± 400 PPM/°C Max. ≥20Ω: ± 300 PPM/°C Max.	Natural Resistance change per temperature degree centigrade.  R <sub>2</sub> -R <sub>1</sub>
Short term overload	±(2% + 0.05Ω) Max. with no evidence of mechanical damage	Permanent resistance change after the application of a potential of 3 x RCWV for 5 seconds (Sub-clause 4.13
Terminal Strength	No evidence of mechanical damage	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 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 : $245^{\circ}C \pm 3^{\circ}C$ Dwell time in solder : $2 \approx 3$ seconds (Sub-clause 4.17)
Soldering Temp. Reference	Electrical Characteristics shall be satisfied without distinct deformation in appearance. (95% coverage Min.)	Terminals immersed into solder bath to 3.2 ~ 4.8mm from the body. Permanent resistance change shall be checked.  Wave soldering condition (2 cycles max.)  Pre-heat: 100 ~ 120 °C, 30 ± 5sec.  Suggested solder temp.: 235 ~ 255 °C, 10 sec. (max.)  Peak temp.: 260 °C  Hand soldering condition:  Hand Soldering bit temp.: 380 ± 10 °C  Dwell time in solder: 3 +1/-0 sec.
Resistance to soldering heat	Resistance change rate $\pm (1\% + 0.05\Omega)$ with no evidence of mechanical damage	Permanent resistance change when terminals immersed to 3.2 ~ 4.8mm from body in 350°C ±10°C solder for 3±0.5 seconds Sub-clause 4.18
Load life in humidity	Resistance change rate $\pm (5\% + 0.05\Omega)$ Max. with no evidence of mechanical damage	Resistance change after 1,000 hours (1.5 hours "on", 0.5 hour "off") at RCWV in a humidity test chamber controlled at 40 °C± 2 °C and 90 to 95 % relative humidity (Sub-clause 4.24.2.1)
Load Life	Resistance change rate $\pm (5\% + 0.05\Omega)$ Max. with no evidence of mechanical damage	Permanent resistance change after 1,000 hours operating at RCWV with duty cycle of (1.5 hours "on", 0.5 hour "off") at 70°C ± 2°C ambient (Sub-clause 4.25.1)



# High Power Wire Wound Resistor

#### 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

TE
Common
Part
TE – High
Power
Wirewound
Resistor

50		
Power Rating		
50	50W	
60	60W	
80	80W	
100	100W	
etc.		

В
Mounting
A – No Bracket B – With Bracket (standard)

 1K0
Resistance Value
100R - 100Ω 1K0 - 1000Ω
10K – 10,00Ω 10K – 10,000Ω

J
Tolerance
J - ±5% K - ±10%

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HD300HLR71J VK100NA-50 40/70MJ2K00BE L75J1K0E VK100NA250 L100J150E-MT1 L50J500E-MT1 SL130J100K-12

HSC1004R0F F30J20R HSC1008R0F HSX25R22J L100J40K CL65J10R HSW600 47R J HSW600 1R J L12NJ20R 75342-400 HSW600

22R J VRH320 1K K VRH320 100R K 968.15 110M C E HSW600 4R7 J 40/70MJ230R0HE L25J500E-MT1 1-2176247-6 1-2176248-5 2
2176248-0 1-2176249-3 C1500K12R FST02515E50R00KEE3 AG5NFR68E AG12NFR68E AG12NFR47E AG12NFR56E AG12NFR33E

CL25J39R AG12NFR22E 850J220E AG12NFR10E CL225J30K 810F7R7E LN100J75RE D50K100-B L225J6K0E 21025K538-5R0KE

LN80J30R C300KR75E D50K25R-B LN80J14R