

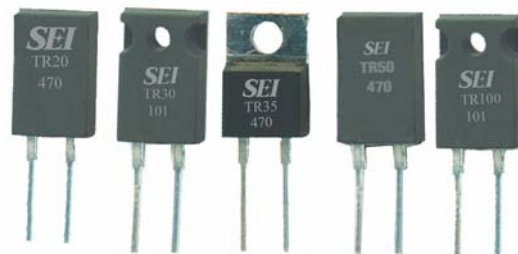
TR Series

TO-220 and TO-247 Style Power Resistor

Stackpole Electronics, Inc.

Resistive Product Solutions

- Features:
- TR20/30/35/50/50H comes in TO-220 style power package
 - TR100 available in TO-247 style power package
 - TR30/35/50H/100 has single screw mounting to heat sink
 - Molded case for environmental protection
 - Electrically isolated case
 - Non-inductive package



Electrical Specifications								
Type / Code	Power Rating (Watts) @ 25°C with Heat Sink	Package Style	Maximum Working Voltage(1)	Resistance Temperature Coefficient	Ohmic Range (Ω) and Tolerance			
					0.5%	1%	5%	10%
TR 20	20W	TO-220	350V	±50 ppm/°C	11 - 10K	11 - 10K	11 - 10K	11 - 10K
TR 30	30W	TO-220		±100 ppm/°C	11 - 10K	5 - 10K	5 - 10K	5 - 10K
TR 35	35W	TO-220		±200 ppm/°C	11 - 10K	1.1 - 10K	1.1 - 10K	1.1 - 10K
TR 50	50W	TO-220		(2)	-	0.05 - 10K	0.05 - 10K	0.05 - 10K
TR 100	100W	TO-247		±50 ppm/°C	-	10 - 10K	10 - 10K	10 - 10K
				±100 ppm/°C	-	3.1 - 10K	3.1 - 10K	3.1 - 10K
				-	-	1 - 30K	1 - 30K	1 - 30K

(1) Lesser of \sqrt{PR} or maximum working voltage

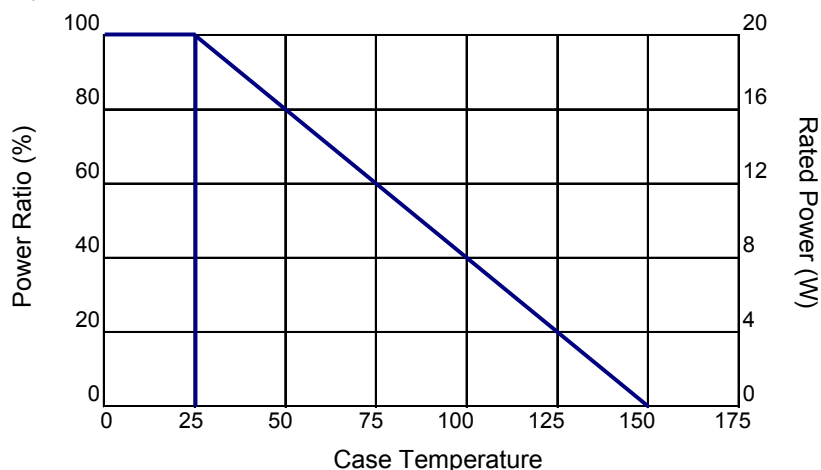
(2) Unspecified TCR. Contact Factory.

Environmental Characteristics			
Test Item	Specification		Test Method
	TR20/30/35/50	TR100	
Short Time Overload	$\Delta R \pm (0.3\% + 0.001\Omega)$	$\Delta R \pm (0.5\% + 0.001\Omega)$	2 times rated power with applied voltage not to exceed 1.5 times maximum continuous operating voltage for 5 seconds
Load Life	$\Delta R \pm (1\% + 0.001\Omega)$	$\Delta R \pm (1\% + 0.001\Omega)$	MIL-R-39009, 2000 hours at rated power
Moisture Resistance	$\Delta R \pm (0.5\% + 0.001\Omega)$	$\Delta R \pm (0.5\% + 0.001\Omega)$	MIL-STD-202, Method 103B
Thermal Shock	$\Delta R \pm (0.3\% + 0.001\Omega)$	$\Delta R \pm (0.5\% + 0.001\Omega)$	MIL-STD-202, Method 107G
Terminal Strength	$\Delta R \pm (0.2\% + 0.001\Omega)$	$\Delta R \pm (0.2\% + 0.001\Omega)$	MIL-STD-202, Method 211, Condition A (Pull Test) 2.4N
Vibration, High Frequency	$\Delta R \pm (0.2\% + 0.001\Omega)$	$\Delta R \pm (0.4\% + 0.001\Omega)$	MIL-STD-202, Method 204, Condition D
Dielectric Strength	1800VAC		
Insulation Resistance	10GΩ min.		

Operating Temperature Range: -65°C to + 150°C (TR20/30/35/50)

-65°C to + 175°C (TR100)

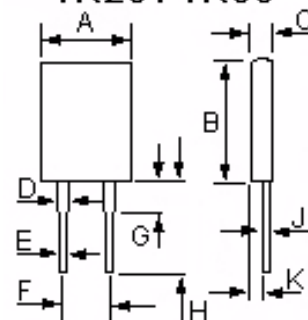
Power Derating Curve:



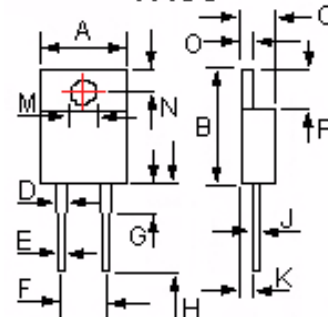
Mechanical Specifications

Type / Code	TR20	TR30	TR35	TR50	TR100	Units
A	0.41 ± 0.01 10.41 ± 0.26	0.41 ± 0.01 10.41 ± 0.26	0.4 ± 0.01 10.16 ± 0.25	0.41 ± 0.01 10.41 ± 0.26	0.62 ± 0.01 15.75 ± 0.26	inches mm
B	0.64 ± 0.01 16.26 ± 0.26	0.64 ± 0.01 16.26 ± 0.26	0.58 ± 0.01 14.75 ± 0.25	0.64 ± 0.01 16.26 ± 0.26	0.815 ± 0.01 20.7 ± 0.26	inches mm
C	0.125 ± 0.01 3.18 ± 0.26	0.125 ± 0.01 3.18 ± 0.26	0.17 ± 0.015 4.44 ± 0.38	0.125 ± 0.01 3.18 ± 0.26	0.195 ± 0.01 4.95 ± 0.26	inches mm
D	0.05 ± 0.005 1.27 ± 0.13	0.05 ± 0.005 1.27 ± 0.13	0.05 ± 0.005 1.27 ± 0.13	0.05 ± 0.005 1.27 ± 0.13	0.143 ± 0.007 3.63 ± 0.18	inches mm
E	0.03 ± 0.004 0.76 ± 0.1	0.03 ± 0.004 0.76 ± 0.1	0.031 ± 0.003 0.78 ± 0.08	0.03 ± 0.004 0.76 ± 0.1	0.06 ± 0.004 1.52 ± 0.1	inches mm
F	0.2 ± 0.01 5.08 ± 0.26	0.2 ± 0.01 5.08 ± 0.26	0.2 ± 0.01 5.08 ± 0.26	0.2 ± 0.01 5.08 ± 0.26	0.4 ± 0.01 10.16 ± 0.26	inches mm
G	0.13 ± 0.03 3.3 ± 0.76	0.13 ± 0.03 3.3 ± 0.76	0.13 ± 0.03 3.3 ± 0.76	0.13 ± 0.03 3.3 ± 0.76	0.11 ± 0.03 2.79 ± 0.76	inches mm
H	0.5 ± 0.05 12.7 ± 1.27	0.5 ± 0.05 12.7 ± 1.27	0.539 ± 0.04 13.7 ± 1	0.5 ± 0.05 12.7 ± 1.27	0.57 ± 0.05 14.48 ± 1.27	inches mm
J	0.019 ± 0.004 0.5 ± 0.1	0.019 ± 0.004 0.5 ± 0.1	0.024 ± 0.003 0.62 ± 0.08	0.019 ± 0.004 0.5 ± 0.1	0.032 ± 0.01 0.81 ± 0.26	inches mm
K	0.07 ± 0.01 1.78 ± 0.26	0.07 ± 0.01 1.78 ± 0.26	0.09 ± 0.01 2.28 ± 0.25	0.07 ± 0.01 1.78 ± 0.26	0.095 ± 0.01 2.41 ± 0.26	inches mm
M	-	0.125 ± 0.004 3.18 ± 0.1	0.144 ± 0.004 3.65 ± 0.1	-	0.143 ± 0.004 3.63 ± 0.18	inches mm
N	-	0.125 ± 0.01 3.18 ± 0.26	0.116 ± 0.004 2.95 ± 0.1	-	0.21 ± 0.01 5.33 ± 0.26	inches mm
O	-	-	0.051 ± 0.004 1.3 ± 0.1	-	-	inches mm
P	-	-	0.24 ± 0.004 6.1 ± 0.1	-	-	inches mm

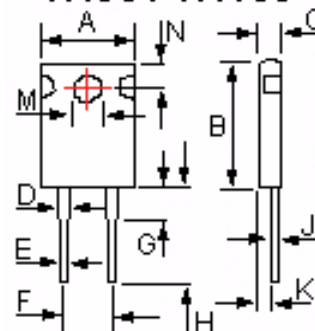
TR20 / TR50



TR35



TR30 / TR100



Mounting Note: When mounting ensure entire ceramic portion of case is mounted on a clean, flat heat sink with an appropriate thermal interface, such as thermal grease. For screw mounting use of a compression washer at a force of 150 to 300lbs (665 to 1330N) is recommended without exceeding mounting torque of 8 in-lbs (0.9 N-m) to avoid package damage. For clip mounting use of a round or smooth clip in contact area is recommended to avoid a concentrated hot spot on package.

Electrical Thermal Characteristics

	TR20	TR30	TR35	TR50	TR100
Free Air Power Rating	3W in free air at 25°C	2.25W in free air at 25°C	2.5W in free air at 25°C	3W in free air at 25°C	3.5W in free air at 25°C
The case temperature is to be used for the definition of the applied power limit					
The case temperature measurement must be made with a thermocouple contacting the center of the component mounted on the designed heat sink					
TR50/100 must be mounted to head sink using proper mounting clip for efficient heat dissipation					

How to Order

SEI Type		Code		TCR		Nominal Resistance	Tolerance	Packaging (1)			
TR		20		T1		1K	1%	B			
Type	Description	Code	Wattage	Code	TCR			Style	Qty	Description	Code
TR	Standard	20	20W	-	Unspecified		±0.5%	TR 20, 30, 50	1,000	Box	B
		30	30W	T2	50 ppm		±1%	TR 35, 100	600		
		35	35W	T1	100 ppm		±5%				
		50	50W	T0	200 ppm		±10%				
		100	100W								

(1) Tube Packaging may be available for large volumes. Please contact factory for details.

New part number format starting January 3rd, 2011:

How to Order

1	2	3	4	5	6	7	8	9	10	11		
T	R	2	0	F	B	D	1	K	0	0		
Product Series		Size	Power	Tolerance		Packaging			TCR		Resistance Value	
TR	Standard	20	20W	Code	Tol	Code	Description	Size	Quantity	Code	ppm	Four characters with the multiplier used as the decimal holder. 11 ohm = 11R0 1 Kohm = 1K00 10 Kohm = 10K0
		30	30W	D	0.5%	B	bulk	TR 20, 30, 50	1,000	-	unspecified	
		35	35W	F	1%			TR 35, 100	600	C	50	
		50	50W	J	5%					D	100	
		100	100W	K	10%					L	200	