

TF223 Series

TO220 High Power Thick Film Resistors



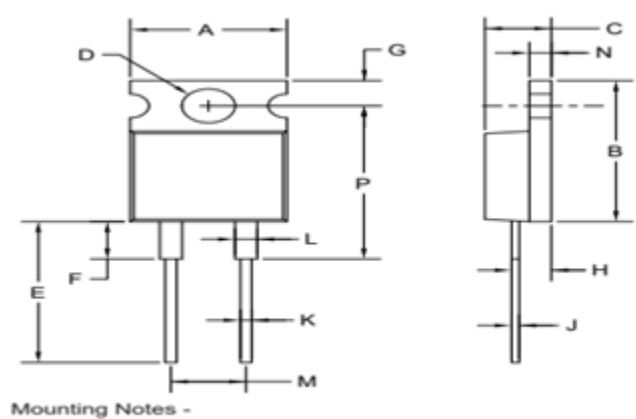
- 35 Watts at 25°C Case Temperature On Heat Sink
- Single Screw Mounting To Heat Sink
- Moulded Case For Protection And Easy To Mount
- Non-Inductive Design
- Resistances From 0.01Ohm to 500KOhms
- Resistance Tolerances to $\pm 1\%$
- TCR To $\pm 50\text{ppm}/^\circ\text{C}$
- Load Stability to 1%
- Low Ohm Values For Current Sense Applications
- Exceptional Pulse Performance
- Solder Reflow Secure at 250°C / 30s
- Electrically Isolated From Back Plate
- RoHS Compliant
- Flammability UL94V-0

■ SPECIFICATIONS

ITEM	SPECIFICATIONS
Power Rating	35W (heat sink)
Temperature Range	-55°C to +175°C
Dielectric Strength	2000VDC
Insulation Resistance	Over 4000MΩ
Load Life	$\pm 1\%$ (25°C, 90 min ON, 30 min OFF, 1000 hr)
Humidity Resistance	$\pm 1\%$ (40°C, 90-95% RH, DC 0.1W, 1000 hr)
Temperature Cycle	$\pm 0.25\%$ (-55°C for 30 min, +155°C for 30 min, 5 cycles)
Vibration	$\pm 0.25\%$ (5G 10~2Khz . 20min /12cycle)
Solder Heat	350°C / $\pm 5^\circ\text{C}$ 3s ($\pm 0.1\%$)
Pulse Energy Durability	10Ω $\pm 1\%$, Voltage : 17.70dcv , Current:1.87A , Duty 0.01
Max. Operating Voltage	$\sqrt{P * R}$ (500V MAX)
Inductance	<u>0.1μh maximum</u>
Voltage Proof	2.0KVDC
Resistor Material	Thick Film
Flammability	UL94 V-0
Reflow soldering	250°C /30s / 3cycles (sufficient cooling between each cycles)
Moisture Sensitivity Level	MSL-1
Mass	2.1g

Type	Power Rating		Thermal Resistance	Resistance Range		Tolerances	Temperature Coefficients
	Heat sink	Free Air		Min	Max		
TF223	35W	1W	3.4°C/W	0.01Ω	100KΩ	±1% and ±5% ±5% below 0.1Ω	±50ppm/°C (R≥10Ω) ±100ppm/°C (0.1≤R<10Ω) ±250ppm/°C (R<0.1Ω)
TF222	20W	1W	5.9°C/W	0.01Ω	100KΩ	±1% and ±5% ±5% below 0.1Ω	±50ppm/°C (R≥10Ω) ±100ppm/°C (0.1≤R<10Ω) ±250ppm/°C (R<0.1Ω)

■
 DIMENSIONS

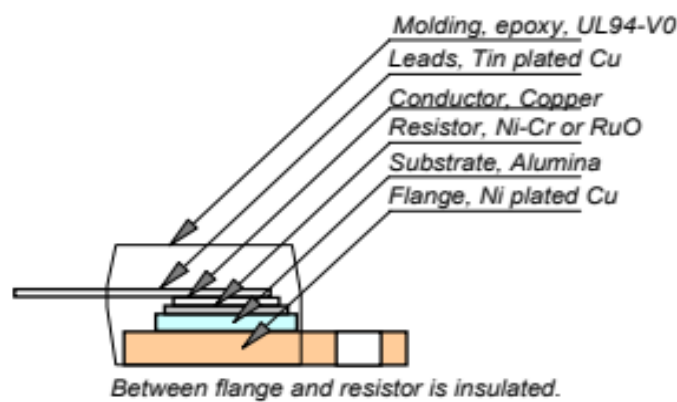


Dimension	mm	Tol (±mm)	inches	Tol (±inches)
A	10.1	0.2	0.400	0.008
B	15.0	0.2	0.590	0.008
C	4.5	0.2	0.180	0.008
D	3.6	0.1	0.140	0.004
E	15.5	1.0	0.61	0.04
F	4.0	0.5	0.16	0.02
G	3.0	0.2	0.120	0.008
H	2.5	0.2	0.100	0.008
J	0.5	0.05	0.020	0.002
K	0.75	0.05	0.030	0.002
L	1.5	0.05	0.060	0.002
M	5.08	0.1	0.200	0.004
N	1.5	0.05	0.060	0.002
P	16.0	0.50	0.63	0.02

The TF 223 Series Thick Film Resistors must be attached to a suitable heat sink. Mount resistor using thermal grease to a clean, flat surface. Use a compression washer to provide 150 to 300 pounds (665 to 1330N) of mounting force. Torque mounting screw to 8 in-lbs(0.9 N-m)

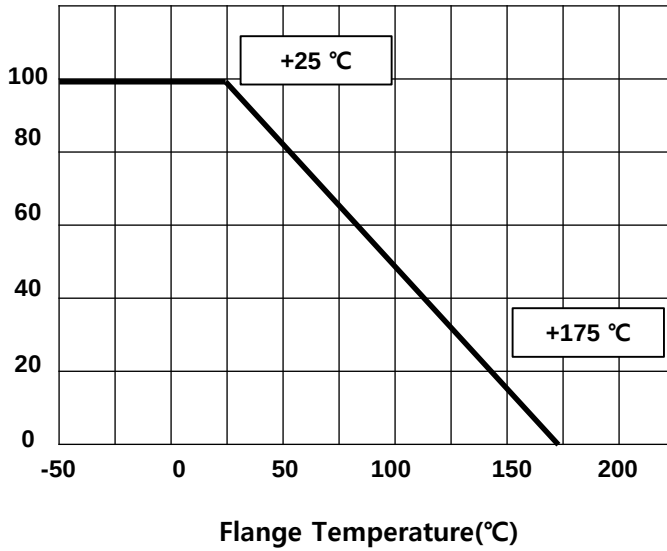
Mounting tab is isolated from both pins.

Structure and Materials



■ DERATING CURVES

% Power



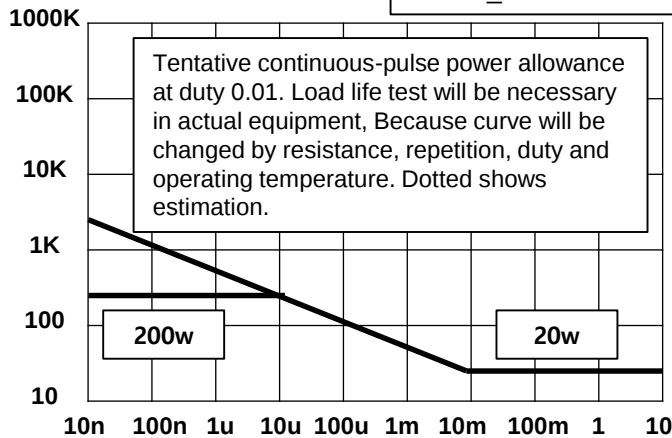
The TF223 Series Thick Film Resistors must be attached to a suitable heat sink. Without a heat sink the maximum power rating is 1 W. The maximum internal resistor temperature is 175 °C.

$$R_{\theta H} = \frac{T_{MAX} - (P * R_{\theta R}) - T_A}{P}$$

Where: $R_{\theta H}$ = Thermal Resistance of Heat sink (°C/W)
 $R_{\theta R}$ = Thermal Resistance of Resistor (°C/W)
 T_{MAX} = Maximum Temperature of Resistor
 T_A = Ambient Temperature of Heat sink (°C)
 P = Power Through Resistor (W)

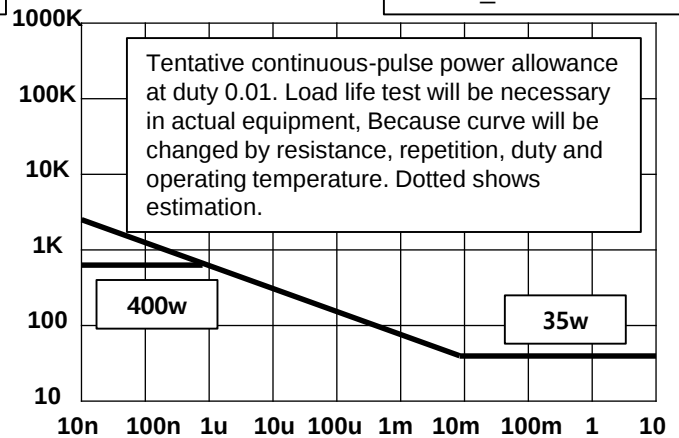
Pulse Energy Durability
Pulse Peak Power(W)

TF222_10ohm-1%



Pulse Energy Durability
Pulse Peak Power(W)

TF223_10ohm-1%



■ HOW TO ORDER

TF223	10KΩ	±1%	NOTE
TYPE	RESISTANCE	TOLERANCE ±1% ±5%	TUBE 50Pcs Packaging

www.resistors.co.kr

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