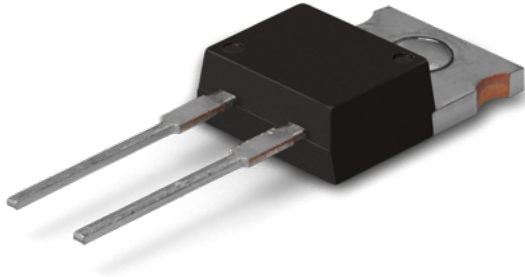


Data Sheet for Precision Resistors

Power Resistor (thin film)

Series M220



- Power rating up to 50 Watt (with heat-sink)
- Resistance range from 0.05Ω..100kΩ
- Resistance tolerance $\pm 0.5\%$
- TCR up to $\pm 50\text{ppm}/^\circ\text{C}$
- TO-220 housing

Electrical Specification	M220-3	M220-5
Resistance range	0.05Ω..100kΩ	
Resistance tolerance	$\pm 0.5\%$ up to $\pm 5\%$	
Power rating @ 25°C (0W @ +175°C)	35 W with heat-sink 2.5 W without heat-sink	50 W with heat-sink 2.5 W without heat-sink
Max. working voltage	350 V oder $\sqrt{P \cdot R}$	
TCR-rate	$\pm 50\text{ppm}/^\circ\text{C}$ @ $R > 10\Omega$ $\pm 100\text{ppm}/^\circ\text{C}$ @ $R > 1\Omega$ $\pm 300\text{ppm}/^\circ\text{C}$ @ $R \geq 0.1\Omega - 1\Omega$ $\pm 300\text{ppm}/^\circ\text{C} \approx \pm 700\text{ppm}/^\circ\text{C}$ @ 0.05Ω - 0.1Ω	
Working temperature range (max.)	-55 °C up to +175 °C	

Mechanical Specification

Resistance technology / material	Thin film
Housing material	Epoxy moulded
Design	TO-220
Connections	Radial cooper tinned

Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	Referenced to 25°C, ΔR taken at +105°C
Short Time Overload	$\Delta R \pm 0.3\%$	2 times rated power with applied voltage not to exceed 1.5 times maximum continuous operating voltage for 5 seconds
Load Life	$\Delta R \pm 1.0\%$	2,000 hours at rated power
Damp Heat with Load	$\Delta R \pm 0.5\%$	40 \pm 2°C, 90~95% R.H., RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"
Solderability	90% min. coverage	245 \pm 5°C for 3 seconds
Thermal Shock	$\Delta R \pm 0.3\%$	-65 P ~ 150°C, 100 cycles
Terminal Strength	$\Delta R \pm 0.2\%$	(Pull Test) 2.4N
Vibration, High Frequency	$\Delta R \pm 0.2\%$	20g peak

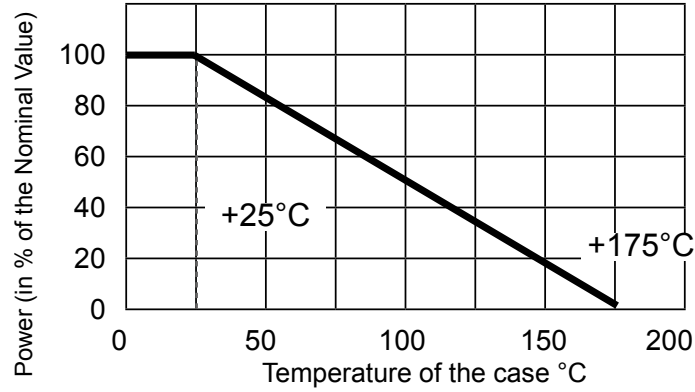
- Maximum Torque: 0.9 N-m
- The Case Temperature is to be used for the Definition of the Applied Power Limit
- The Case Temperature Measurement must be made with a Thermocouple Contacting the Center of the Component mounted on the Designed Heat Sink.
- Thermal Grease should be Applied Properly.
- Storage Temperature: 25 \pm 5°C; Humidity: < 75%RH
- Shelf life: 1 years Max
- Dielectric Strength: 1800VAC
- Insulation Resistance: 10GΩ min.

Data Sheet for Precision Resistors

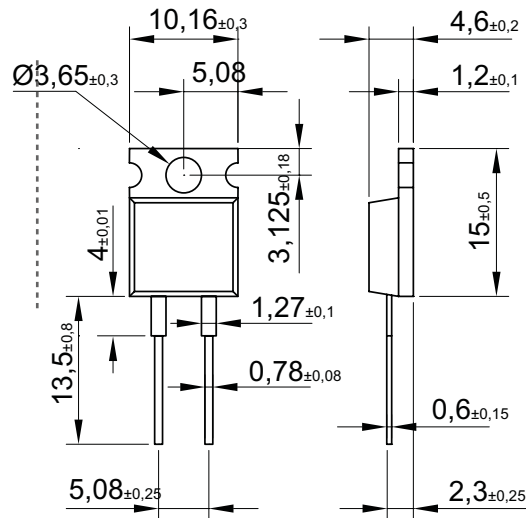
Power Resistor (thin film)

Series M220

Power Derating Curve



Technical Drawing



Dimensions in mm

Data Sheet for Precision Resistors

Power Resistor (thin film)

Series M220

Order code

Description					
Series:	M220				
Power rating: Type 3 @ 35W Type 5 @ 50W					
		-3			
		-5			
Resistance tolerance: ±0,5% @ R>5Ω ±1% @ R>0.1Ω ±5% @ R>0.05Ω					
			W0.5%		
			W1%		
			W5%		
Temperature coefficient: ±50ppm/C @ R>10Ω ±100ppm/C @ R>1Ω ±300ppm/C @ R≥0.1Ω -1Ω ±300ppm/C ≈ ±700ppm/C @ 0.05Ω -0.1Ω					
				TK50	
				TK100	
				TK300	
Resistance value - please choose: From 0,05Ω to ≤ 100kΩ					
					xxxkxxx

Order Example	Series	Power Rating	Resistance tolerance	Temperature coefficient	Resistance value
Choice	M220	30W	±1%	50ppm/°C	10,1kΩ
Code	M220	-3	W1%	TK50	10k100