

## ● Features

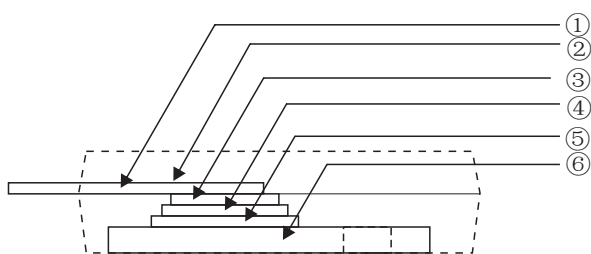
- I TO-220 housing
- II Low inductance
- III Resistor electrically isolated from the backplate
- IV High power rating
- V AEC-Q200 compliant
- VI RoHS compliant\*

## ● Application

- I Switching Power Supplies
- II Snubbers Circuits
- III Automated Machine Controller
- IV RF Power Amplifiers

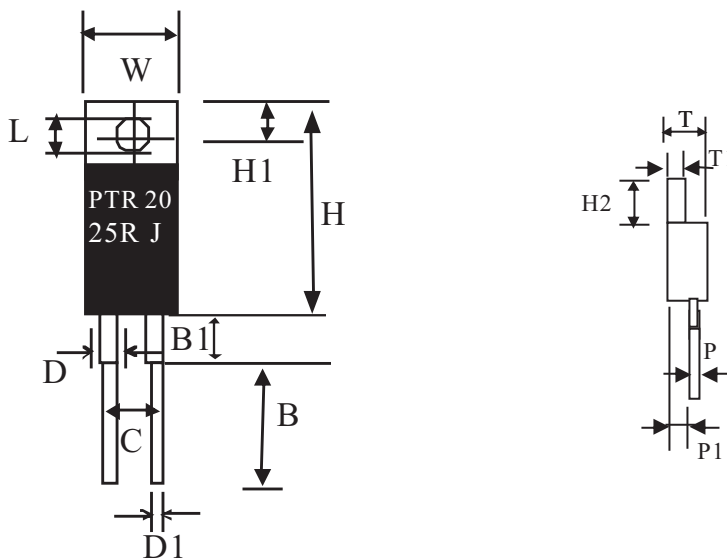
- V Low Energy Pulse Loading
- VI UPS
- VII Voltage Regulation

## ● Construction



①	Leads, Tin plated Cu
②	Mold, epoxy, UL94-V0
③	Conductor, Cu
④	Resistor, NiCr or RuO
⑤	Substrate, Alumina
⑥	Flange, Ni plated Cu

## ● Dimensions



Type	Power	Dimensions(mm)													
		W	H	H1	B	B1	D	D1	L	C	T	T1	H2	P	P1
PTR 20	20W	10.10±0.10	15.0±0.5	2.8±0.15	12.00±0.5	2.8±0.2	1.30±0.1	0.8±0.06	3.70±0.1	5.08±0.05	4.2±0.3	1.25±0.03	6.20±0.20	0.51±0.05	2.0±0.10

## ● Reference Standards

JIS C 5201-1

## ● Ordering Information

Example:

PTR	20	D	10R0	C	B
(1)	(2)	(3)	(4)	(5)	(6)
Series Name	Power Rating	Resistance Tolerance	Resistance	T.C.R	Packaging

(1)Type:PTR SERIES

(2)Power Rating: 20=20W

(3)Tolerance: F=±1%,J=±5%

(4)Resistance Value:10R0=10Ω

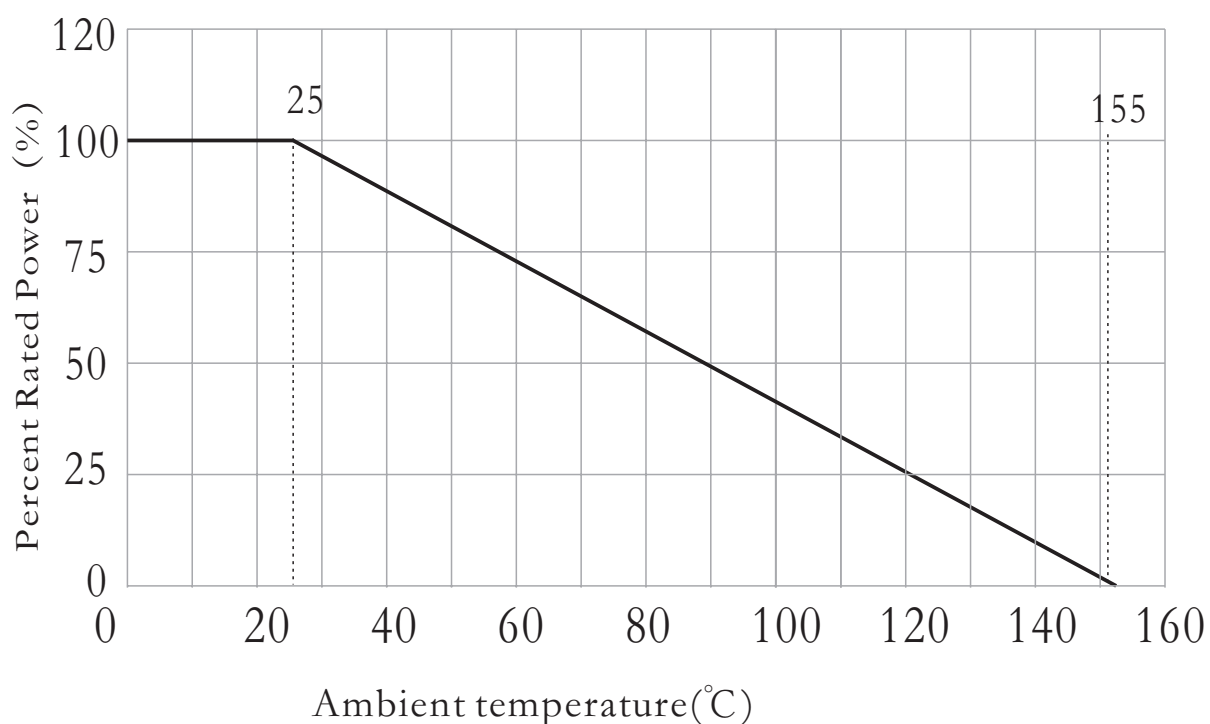
(5)T.C.R: C=±100ppm/°C

(6)Packaging:B=Box 50PCS/tube

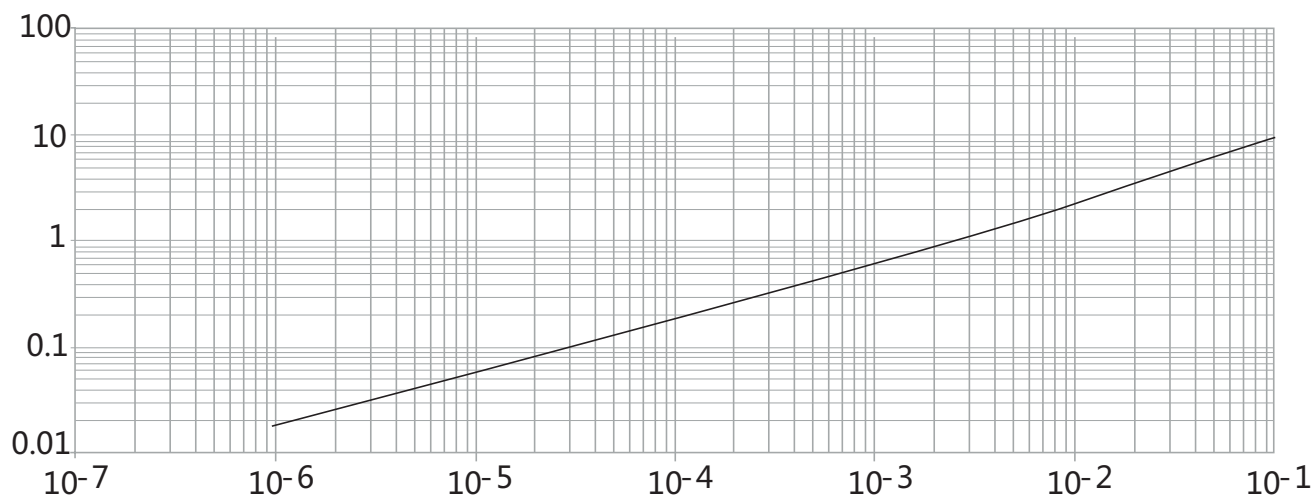
## ● Applications And Ratings

Type	Power (25°C)	Thermal resistance (°C/W)	Resistance Range (Ω)	Tolerance	T.C.R	Max working Voltage (V)	Climatic category
PTR	20	6.5	0.02~130KΩ	±1% ±5%	±100ppm/°C	250V	55/125/56

## ● Derating Curve

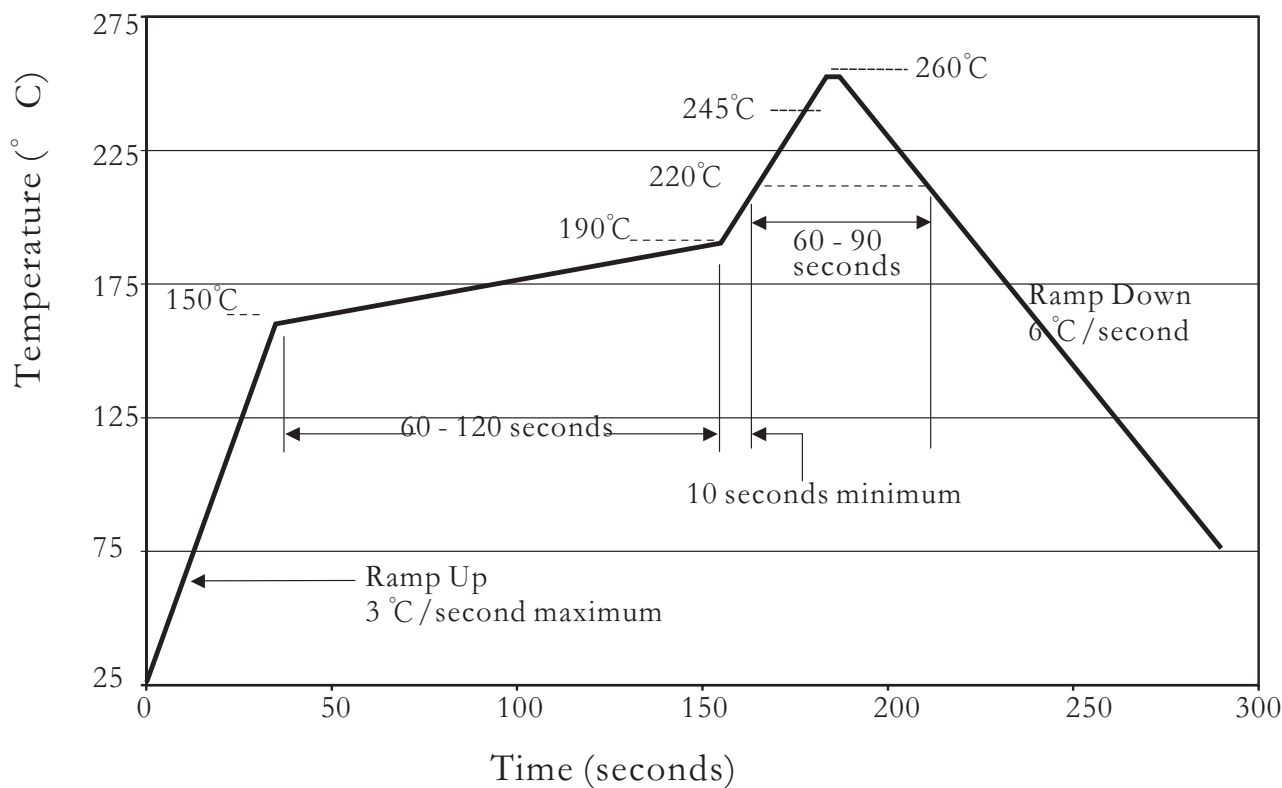


## ● Pulse Power Rating



The energy absorbed by the resistor expressed in Joules can be calculated by multiplying the peak power of the pulse in watts times the length of the pulse in seconds. The energy should not exceed the limits shown in the graph. The overload voltage should not exceed 1.5 times the maximum operating voltage.

## ● Soldering Profile



Power dissipation is 2.8 W at an ambient temperature of 25 °C when mounted on a double-sided copper board using FR4 standard, 70 μm of copper, 39 x 30 x 1.6 mm.

## ● Performance

### Electrical & Thermal Characteristics

Parameter	Value(s)
Resistance (See Popular Resistance Values table)	0.02 $\Omega$ to 130 K $\Omega$
Power Rating @ 25 °C Case Temperature	20 W
Tolerance	$\pm 1$ %**, $\pm 5$ %
TCR 0.02 $\Omega$ < R < 130.0K $\Omega$	$\pm 100$ PPM/°C
Thermal Resistance - Rthj	6.5 °C/W
Inductance	0.1 $\mu$ H maximum
Operating Voltage	$\sqrt{P \cdot R}$ with a maximum of 250 V
Dielectric Strength	2 KV AC
Insulation Resistance	10 G $\Omega$
Operating Temperature	-55 °C to 155 °C

\* Available for most values. Check Popular Resistance Values table.

### Reliability Characteristics

Parameter	Specification
Short Term Overload (2x Pr for R < 2 $\Omega$ , 1.6 x Pr for R $\geq$ 2 $\Omega$ , V < 1.5 x Operating Voltage)	$\Delta R$ $\pm 0.25$ %
Load Life (1000 hours at rated power)	$\Delta R$ $\pm 1.0$ %
Thermal Shock (-55 °C to 155 °C, 5 cycles)	$\Delta R$ $\pm 0.5$ %
Resistance to Soldering Heat (10 seconds at 270 °C)	$\Delta R$ $\pm 0.5$ %
Vibration (20 G 10-2000 Hz .06 " D.A.)	$\Delta R$ $\pm 0.25$ %
Terminal Strength (MIL-STD-202, Method 211 Test A1)	$\Delta R$ $\pm 0.2$ %
Shock (Saw Tooth: 100 g/6 ms)	$\Delta R$ $\pm 0.5$ %
Humidity (Steady State) 1000 hrs. 85 ° C/85 % RH	$\Delta R$ $\pm 0.5$ %
High Temperature Exposure (100 hrs - 40 % Pr @ +125 ° C)	$\Delta R$ $\pm 0.5$ %