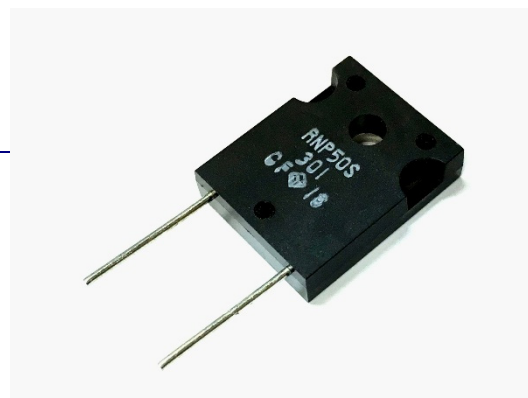


TO247 100-140W HIGH POWER RESISTORS

RNP-50S/RNP-100S

Features

- 100-140W Power rating, TO247 package
- RoHS2 Compliant
- UL94 V-0 certified material
- 175°C maximum operating temperature
- Heat Resistance: 1.3°C/W
- Inductive and capacitive characteristics



Applications

- Power Supply Units
- Motor-Driven Equipment
- Inverter Circuit
- Electronic Load Device
- UPS
- Testing/Measuring Equipment
- Filter
- Bleeder
- Snubber
- Damping Resistor

Ordering Information

Model	TCR*	Resistance	Tolerance	Packaging
RNP-50S	C	100 ohm	F	Z03

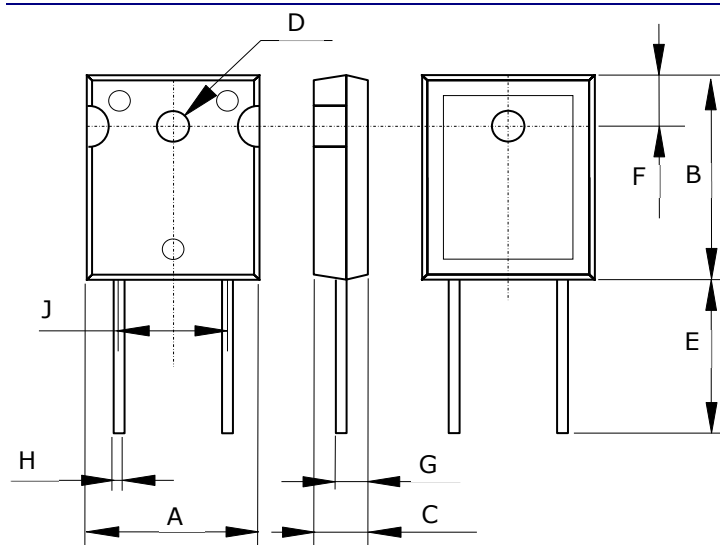
Model	TCR (ppm/°C)	Symbol	Value Range (Ohms)	Tolerance (%)	Symbol	Packaging	Symbol
RNP-50S	50	C	10~51k	1	F	PVC Stick	Z03
RNP-100S	100	A	0.1~510k	5	J	25pcs/stick	
	150	P	560k~1M				
	250	H	0.01~0.09				

Resistance value (*) is available following modified E24, +E24.

1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.2	2.4	2.5	2.7	3.0	3.3
3.6	3.9	4.0	4.3	4.7	5.0	5.1	5.6	6.2	6.8	7.5	8.0	8.2	9.1

*TCR and tolerance are determined by the resistance value.

Dimensional Specifications (mm)



	Dimensions (mm)
A	16.0+/-0.2
B	20.0+/-0.5
C	4.80+/-0.2
D	3.55+/-0.1
E	14.5+/-0.5
F	5.10+/-0.5
G	3.63+/-0.2
H	0.80+/-0.05
J	10.9+/-0.1

Specifications

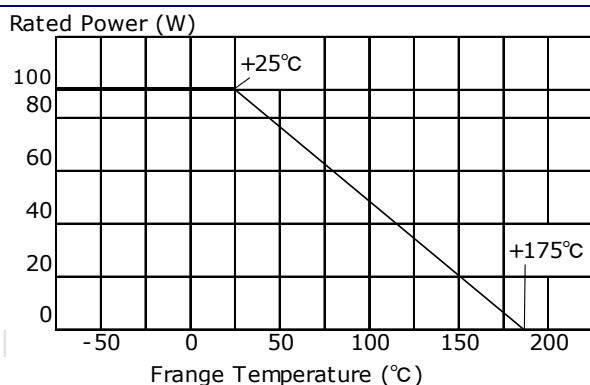
Parameter	RNP-50S	RNP-100S	Test Conditions
Rated Power	100 W	140W	-55°C to +25°C at flange
Rated Power	3.0 W		Free air
Max. Operating Volt.	Smaller value either 750V or $\sqrt{P \cdot R}$		Maximum input current: 20A
Operation Temperature Range	-55 °C~+175 °C		

Note: In some of high ohmic and low ohmic cases, the rated power cannot be input due to the limitation of the maximum operation voltage or current value. Please use under 750V in the case over 5.5k Ohms. Please use below 20A in the case under 0.4 Ohms.

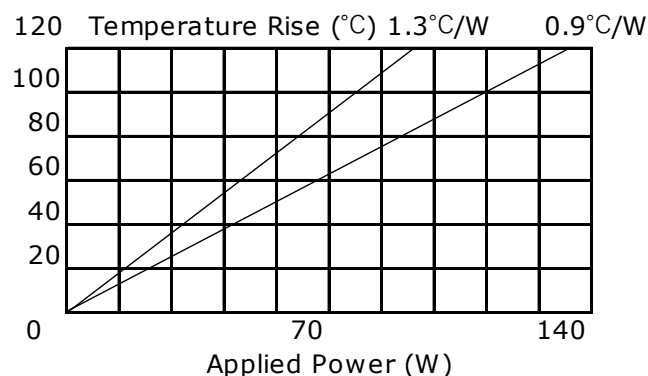
Reliability

Parameter	RNP-50S	RNP-100S	Test Conditions
Heat Resistance	1.3 °C/W	0.9 °C/W	Between resistive material and flange *Typical value
Capacitance	2.35 pF	3.68 pF	Between terminal and flange *Typical value
Inductance	11.72 nH	12.52 nH	Between terminals *Typical value
Insulation Resistance	$\geq 1,000$ Mohm		Between terminal and flange
Insulation Voltage	$\geq 2,500$ VAC		Between terminal and flange, 1min.
Weight	6.4 g	7.2g	
Temp. Cycle	+/- (0.25 % + 0.05ohm)		-55 °C 30 minutes, +155 °C 30 C15 minutes, 5 cycles
Load Life	+/- (1.00 % + 0.05ohm)		25 °C, 90-min energization / 30-min de-energization cycle, total 1,000h, rated power
Humidity	+/- (1.00 % + 0.05ohm)		+85 °C, 85% RH, 1000 hours, 0.1 W
Terminal Strength	+/- (0.25 % + 0.05ohm)		Tensile Force: 4.9 N (1-5 s)
Vibration	+/- (1.00 % + 0.05ohm)		Vibration: 10-2,000 Hz, 0.75 mm amplitude, X/Y/Z directions, 20 min, 12 cycles
Solder ability	≥ 95 %		JIS C 60068-2-20 (Solder Bath): 245 ± 3 °C for 3 s
Soldering Heat	+/- 0.25 %		350 +/- 3 °C, 3seconds

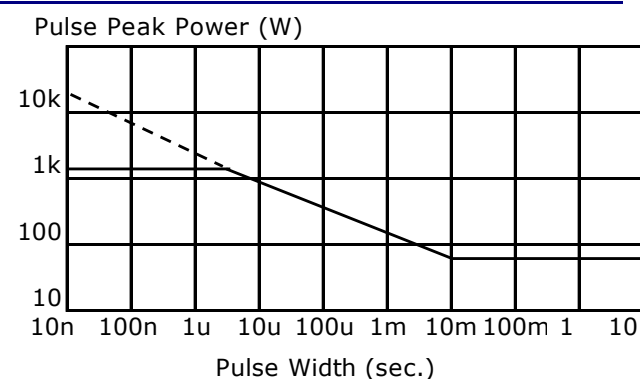
Derating



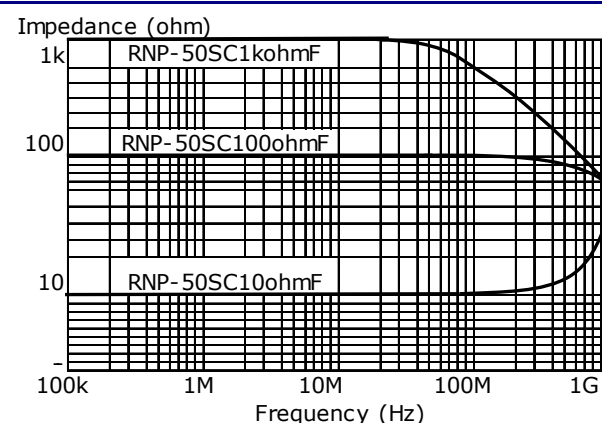
Temperature Rise



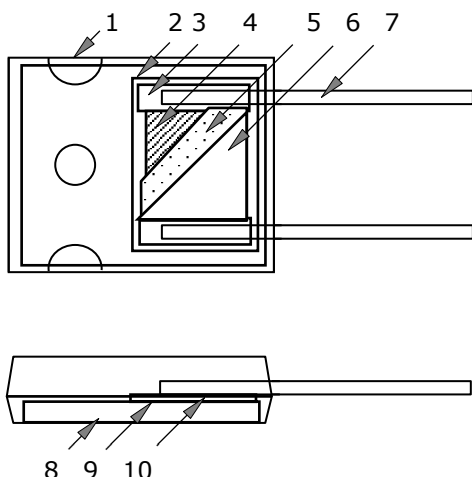
Pulse Energy Durability



Frequency Characteristics



Structure and Material



No.	Part	Material
1	Exterior resin	Epoxy resin-UL94V-0
2	Substrate	96% Alumina
3	Electrode	Thin-film: Cu Thick-film: Ag-Pd
4	Resistive material	Thin-film: NiCr Thick-film: RuO
5	Glass	Only in thick-film
6-1	Internal protective layer 1	Epoxy resin
6-2	Internal protective layer 2	Silicone resin *Only in thick-film
7	Terminal	Cu-Sn plating
8	Flange	Cu-Ni plating
9	Flange joint	Sn 97% Solder -Ag-Cu
10	Terminal joint	Pb 90% Solder -Sn-Ag

*Thin-film: 10-51k Ohms, Thick-film: 0.01-1M Ohms

Note:

- (1) The resistance value and the tolerance are selectable not only from E24 as customization. Please contact to our factory for detail.
- (2) Flange is insulated from the internal resistive elements.
- (3) The resistance value is defined at 2.54mm +/-1 mm from the bottom surface of external molding.
- (4) TCR value of low resistance values are depend on the TCR of copper terminals.
The TCR will shows the following values;
300ppm/0.02ohm, 200ppm/0.05ohm, 140ppm/0.1ohm, 80ppm/0.2ohm
- (5) Recommended screw torque is 0.5-0.6Nm
- (6) Tentative continuous-pulse power allowance at duty 0.01.

Instruction for Use

- (1) If the resistor is not mounted on a heatsink, please operate it at 3 W or less in ambient room temperature.
- (2) For effective heat conduction, please apply appropriate thermal interface materials such as grease or sheets.
- (3) This product is not designed for use in the special environments listed below.
 - Direct sunlight, outdoor exposure, or dusty environments"
 - Areas with corrosive gases such as sea breeze, Cl₂, NO₂, NH₃, H₂S, or SO₂"
 - Environments with strong electrostatic discharge or electromagnetic interference"
 - Installation in close proximity to heat-generating components"
 - Mounting methods where the product is isolated from the heat-dissipation system and encapsulated or coated with resin"
 - Environments with continuous condensation"
- (4) Please handle the product with care, as it may be damaged if subjected to impacts such as dropping.
- (5) This product is not designed for radiation resistant operation or for use in vacuum environments.
- (6) Please verify the product's performance and reliability when it is mounted in the actual equipment. In particular, when transient loads such as pulses are applied, be sure to confirm performance and reliability.
- (7) Any failure caused by operating the product beyond the conditions stated in the datasheet is excluded from our warranty.