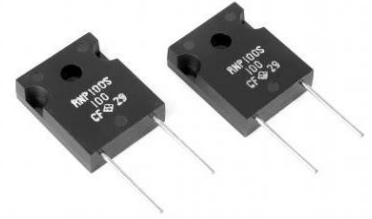


Power Thin Film Resistors (TO247)

This series of power film resistors offers a high power handling capability in a compact, non-inductive format. Both the TNP50S and the TNP100S are TO-247 models handling 100W and 140W respectively, depending on the ohmic value. This entire range is constructed using high thermal conduction alloys resulting in excellent heat transfer when mounted on heatsinks. Applications for these models include : UPS, power units of machines, motor control, drive circuits, automotive, measurements, industrial computers and high frequency electronics.



GENERAL SPECIFICATIONS

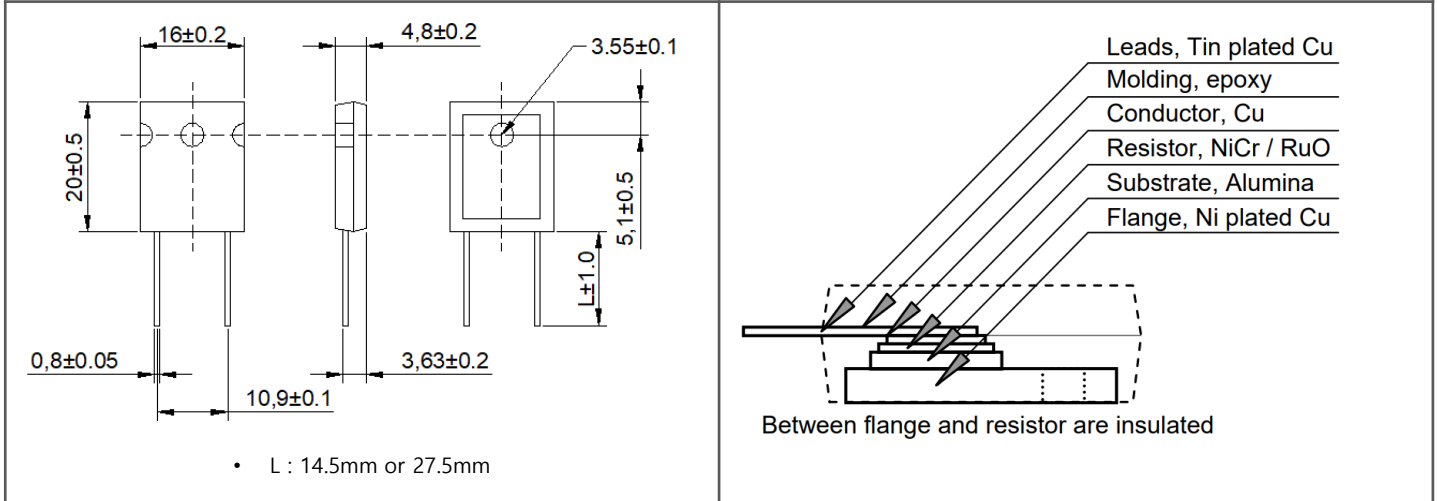
Model	Resistance Range [Ω]	T.C.R [ppm/ $^{\circ}$ C]	Tolerance [%]	Rating Power [See note 1]
TNP50S	0.02 ~ 0.09	> \pm 250 [H]	J [\pm 5]	100W (-55 $^{\circ}$ C to +25 $^{\circ}$ C flange temp.) 3W (in free air)
	0.1 ~ 9.1	\pm 100 [A]	F [\pm 1], J [\pm 5]	
	10 ~ 51K	\pm 50 [C]	F [\pm 1]	
TNP100S	0.02 ~ 0.09	> \pm 250 [H]	J [\pm 5]	140W (-55 $^{\circ}$ C to +25 $^{\circ}$ C flange temp.) 3W (in free air)
	0.1 ~ 9.1	\pm 100 [A]	F [\pm 1], J [\pm 5]	
	10 ~ 51K	\pm 50 [C]	F [\pm 1]	

Note 1) Rating power : Flange Temperature of -55 $^{\circ}$ C to +25 $^{\circ}$ C

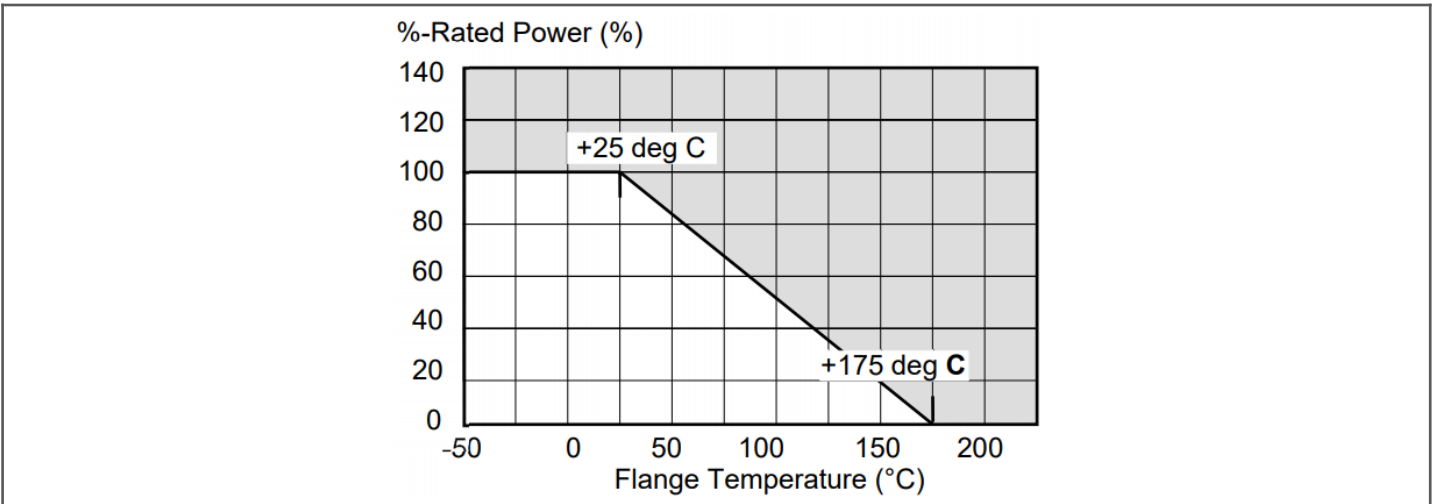
CHARACTERISTICS

Item	Spec.		Test Method
Heat Resistance	TNP50S	1.3 $^{\circ}$ C/W	Hot spot to flange
	TNP100S	0.9 $^{\circ}$ C/W	
Capacitance	TNP50S	2.35pF	Equivalent parallel capacitance
	TNP100S	3.68pF	
Inductance	TNP50S	11.72nH	Equivalent series inductance
	TNP100S	12.25nH	
Operating Temperature Range			-55 $^{\circ}$ C ~ +175 $^{\circ}$ C
Maximum Working Voltage			Less than 750V or $E = \sqrt{P \times R}$ (Max. operating current 20A)
Dielectric Withstanding Voltage	AC 2500V		Terminal and flange for 60 seconds, 1mA
Load Life	\pm [1.0%+0.05 Ω]		25 $^{\circ}$ C, 90 minutes on, 30 minutes off, 1000 hours
Humidity	\pm [1.0%+0.05 Ω]		40 $^{\circ}$ C, 90-95% RH, DC 0.1 \times Power rating, 1000 hours
Temperature Cycle	\pm [0.25%+0.05 Ω]		-55 $^{\circ}$ C, 30 minutes, +175 $^{\circ}$ C 30 minutes, 5 cycles
Soldering Heat	\pm [0.25%+0.05 Ω]		350 \pm 5 $^{\circ}$ C, 3 seconds
Solder ability	TNP50S & TNP100S	Over 95% area of round	245 \pm 5 $^{\circ}$ C, 5 seconds
	27.5mm lead length	Over 3/4 of round	
Insulation Resistance	Over 1000 M Ω		Between terminals and flange
Vibration	\pm [0.25%+0.05 Ω]		IEC60068-2-6, see note 4
Flammability	UL94V-0		
Weight			TNP50S & TNP100S : 6.4 grams TNP50S(27.5mm) & TNP100S(27.5mm) : 7.2 grams

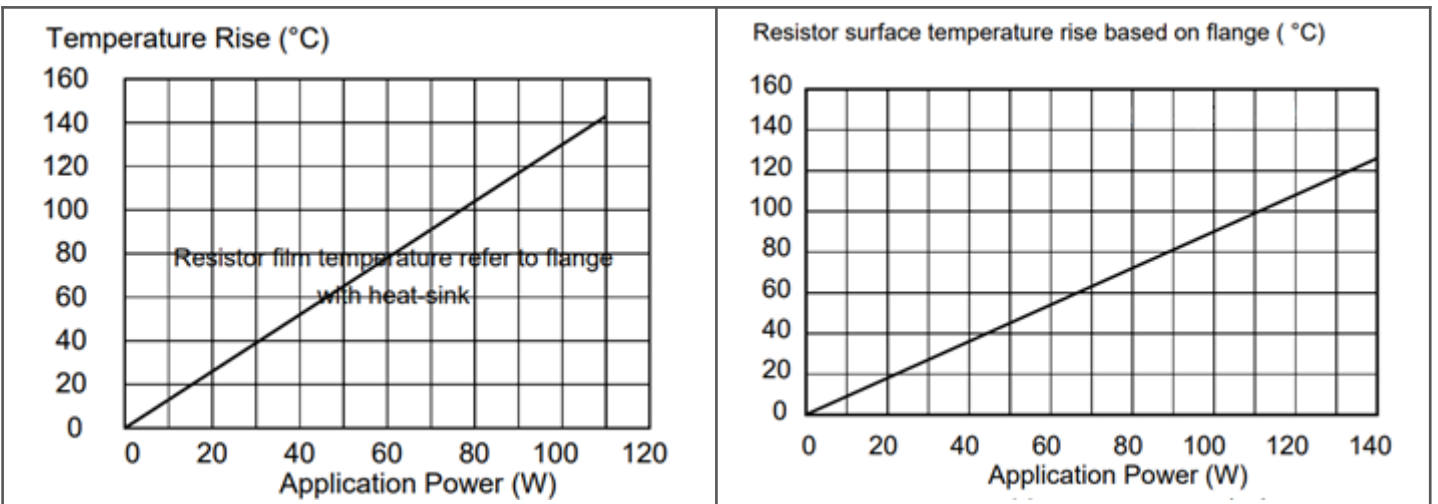
DIMENSIONS [mm] AND STRUCTURE



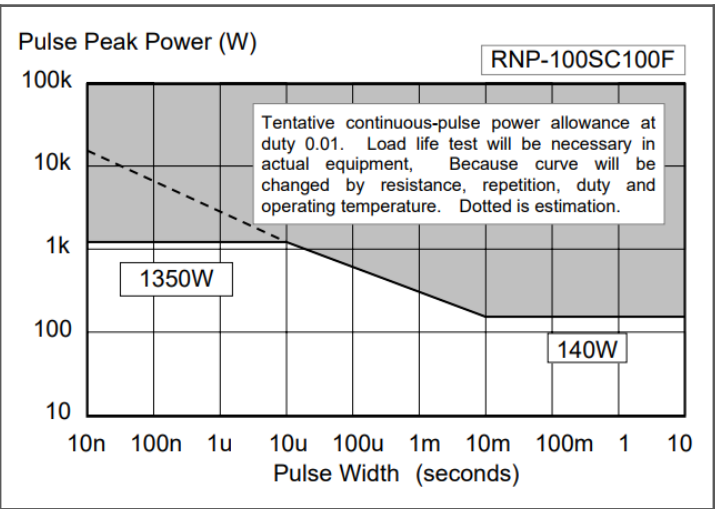
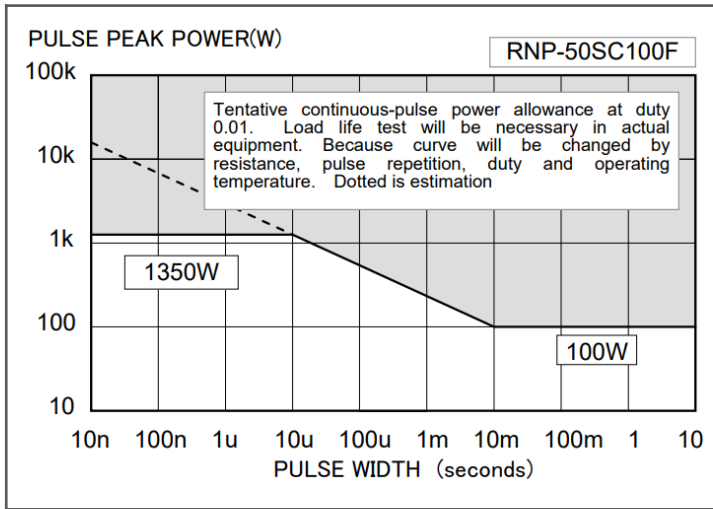
DERATING CURVES



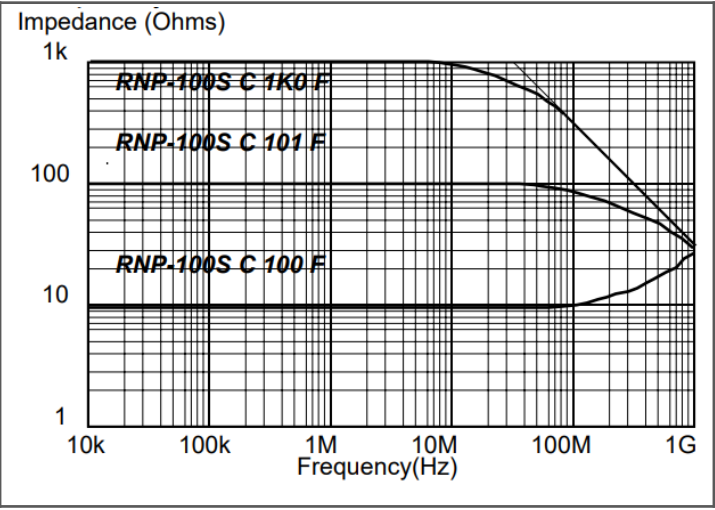
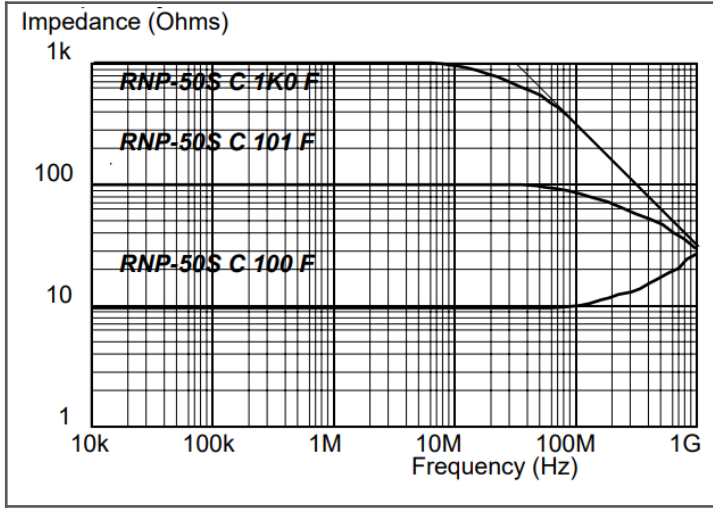
TEMPERATURE RISE CURVES



PULSE ENERGY DURABILITY



FREQUENCY CHARACTERISTICS



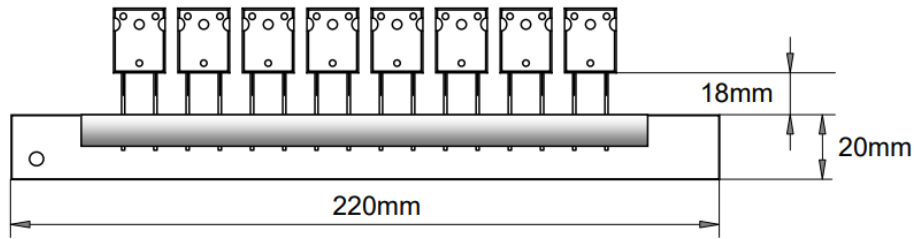
Note :

- (1) Insulation material is unnecessary between flange and heat-sink, flange and resistor is separated by alumina substrate.
- (2) Resistance measurement shall be made at a point 2.54mm+/-1.0mm from the resistor body.
- (3) TCR of low resistance will be increased as 300ppm/0.02ohm, 200ppm/0.05ohm, 140ppm/0.1ohm and 80ppm/0.2ohm typically. Testing point is at 2.54mm from bottom of molding of terminals.
- (4) Test method is IEC60068-2-6, and specification is sine sweep wave form, 100Hz-2000Hz, 10 cycles, amplitude 0.75mm or 100m/s², 90minutes. direction x-y z, Amplitude 0.75mm will be applied under break point Frequency (about 60Hz) and 100m/s² over break point
- (5) When mounting resistor on heat-sink by screw, clip and pressure strip with using heat conduction grease on back side of resistor are recommended. Recommended screw torque is 0.5-0.6Nm. In case of screw mount, ISO M3 screw is necessary, 1/8" screw cannot be acceptable.
- (6) Standard packaging is anti-static PE tube, which contains 25pcs / tube.

ORDERING PROCEDURE EXAMPLE

Model#	T.C.R	Resistance	Tolerance	Note
TNP50S	H : > 250ppm/°C A : ±100ppm/°C C : ±50ppm/°C	50Ω	F : ±1% J : ±5%	Z00 : 27.5mm lead Z03 : Tube/25pcs Z05 : Tray / 50pcs

PACKAGING (Only 27.5mm lead length)



Up to 8 pieces are attached to the mount paper with adhesive paper tape with a width of 10mm to prevent the leads from bending.