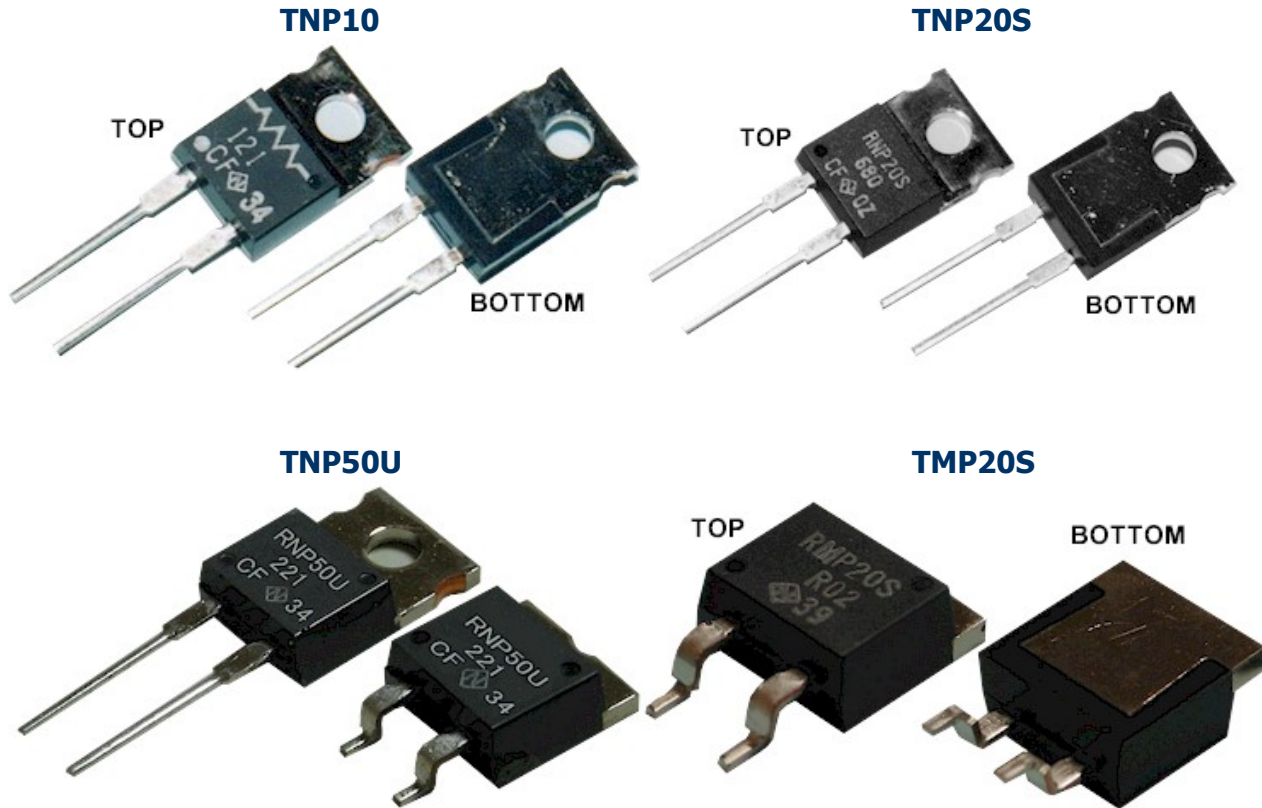


**TNP10/TNP20S/TNP50U/TMP20S  
 POWER THIN FILM RESISTORS**

# TO220



**INTRODUCTION**

This series of TO220 resistors offers many possibilities. The 30W TMP20S is a surface mounted, high power resistor in a molded package. This model has a large resistance range of 100mΩ to 51KΩ. The TNP10 is a 20W resistor suitable for high frequency applications and high speed pulse circuits. The TNP20S can handle 30W(surface mount) and 35W(through hole) in a compact molded package. The TNP50U are 50W high power resistors in a molded housing. Available in through hole or surface mount. The low 2.3C/W heat resistance from the resistor hot spot to the flange is made possible with thin film metallization technology. All of these models are non-inductive and offer excellent heat dissipation.

**GENERAL SPECIFICATIONS**

Model	Resistance Range [ohms]	TCR[ppm/C]	Tolerance[%]	Power Rating [W]
TNP10 Through-hole and SMD Types	0.01-0.91	+/-250	+/-1[F], +/-5[J]	20
	0.1-9.1	+/-100	+/-1[F], +/-5[J]	
	10-220	+/-50	+/-1[F]	10
	220-51K	+/-50	+/-1[F]	
TNP20S Through-hole and SMD Types	0.01-0.91	+/-250	+/-5[J], +/-1[F]	35
	1-9.1	+/-100	+/-5[J], +/-1[F]	
	10-220	+/-50	+/-1[F]	20
	220-51K	+/-50	+/-1[F]	
TNP50U Through-hole and SMD Types	0.1-9.1	+/-100	+/-5[J], +/-1[F]	50
	10-220	+/-50	+/-1[F]	
	220-51K	+/-50	+/-1[F]	30

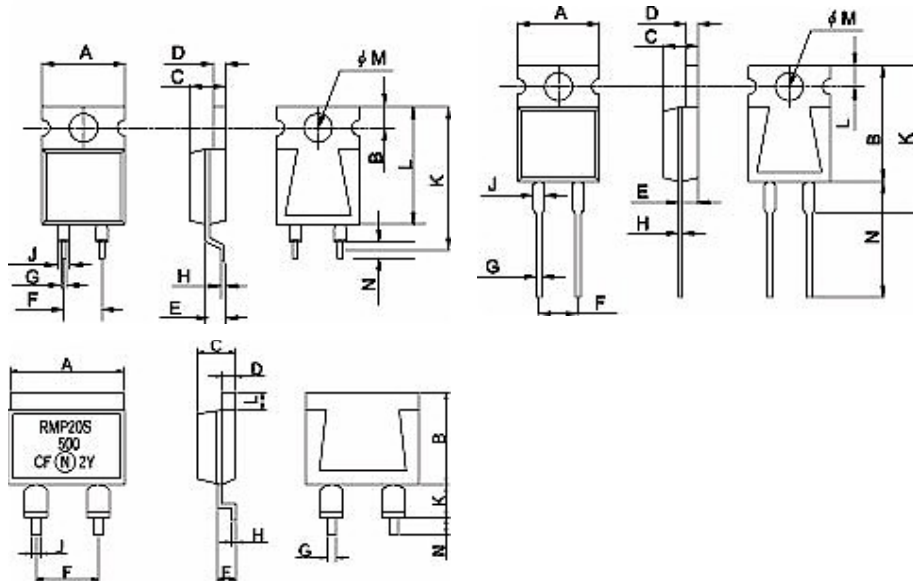
**Note:** TO220 Package power rating is 1W in free air

### CHARACTERISTICS

Test	Limit	Condition
Temperature range	-55 to +155C	
Temperature cycle	+-(0.25%+0.05ohm)	-55C, 30min., +155C, 30min., 20 cycles.
Insulating resistance	1000Mohm minimum	Between terminals and tab.
Short time overload	+-(0.25%+0.05ohm)	40W power 5seconds.
Load life	+-(1.0%+0.05ohm)	25C, 90min. ON, 30min.OFF, 1000hours.
Humidity	+-(1.0%+0.05ohm)	40C, 90 to 96% RH, DC 0.1W, 1000hours.
Soldering heat	+-(0.1%+0.05ohm)	350+-5C, 3 seconds.
Solderability	Over 95% of surface	230+-5C, 3 seconds.
Vibration	+-(0.2%+0.05ohm)	

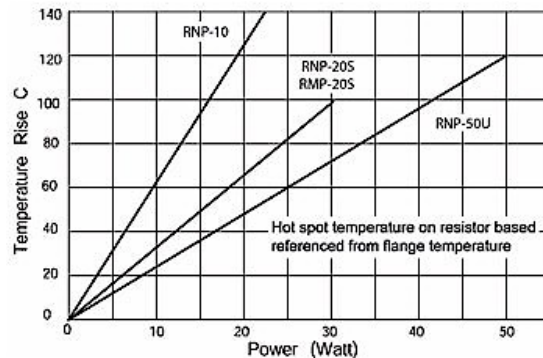
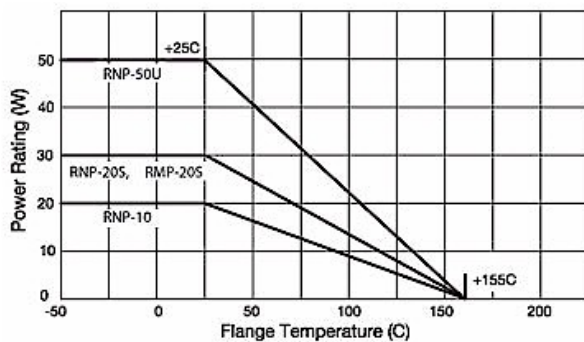
**NOTE:** At resistances from 220 to 51Kohms, the rated power should be restricted to 20W.

### DIMENSIONS



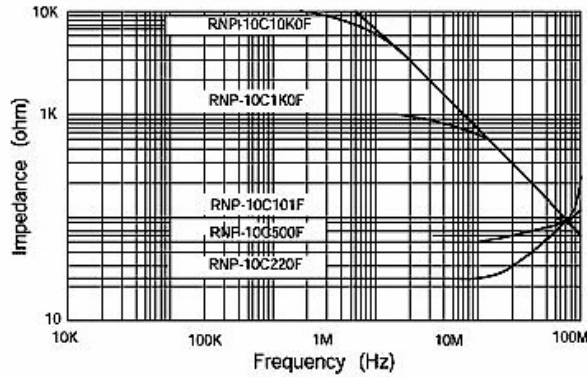
Model	Type	A	B	C	D	E	F	G	H	J	K	L	M	N
TNP10	000	10.6	15.0	4.5	1.5	2.7	5.08	0.75	0.5	1.5	19.0	2.7	3.6	15.0
TNP20S	001	10.6	15.0	4.5	1.5	2.7	5.08	0.75	0.5	1.5	14.0	2.7	3.6	2.0
TNP50U														
TMP20S	/	10.6	15.0	4.5	1.5	2.7	5.08	0.75	0.5	1.5	3.0	2.7	/	2.0

### CHARACTERISTIC CURVES

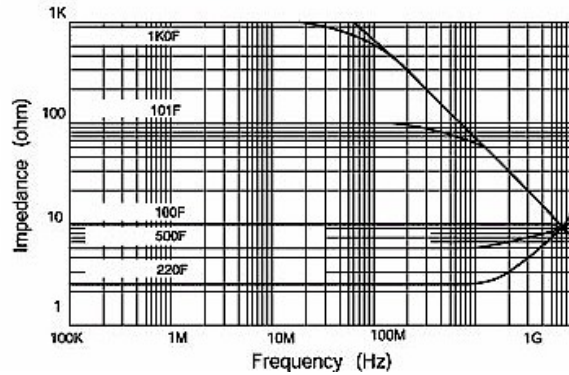


**PULSE ENERGY DURABILITY AND FREQUENCY CHARACTERISTICS**

**TNP10**

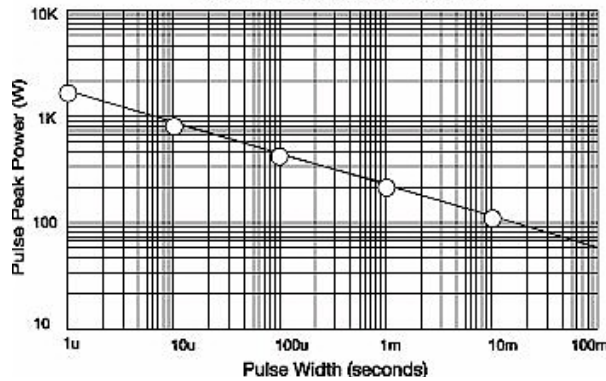


**TNP20S, TNP50U, TMP20S**



**TNP10, TNP20S, TNP50U, TMP20S**

One time rectangular impulse.



**NOTES**

- 1/ Insulating material is unnecessary between flange and resistor. The flange and resistor is separated by an alumina substrate.
- 2/ When surface mount soldering, care should be taken not to exceed 220C.
- 3/ Using a heat conduction grease on the surface of the flange is recommended.

**ORDERING PROCEDURE EXAMPLE**

