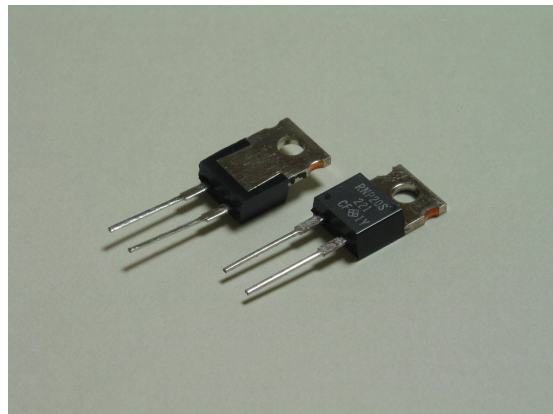


TO220 35W HIGH POWER RESISTORS RNP20S



Features and Applications

35W high power resistors in TO220 style molded package for through-hole (35W) and surface mount (20W).

Non-inductive design suits high frequency applications and high-speed pulse circuits.

Low, 3.3 C/W heat resistance from resistor hot spot to flange presented by thin film metallization technology.

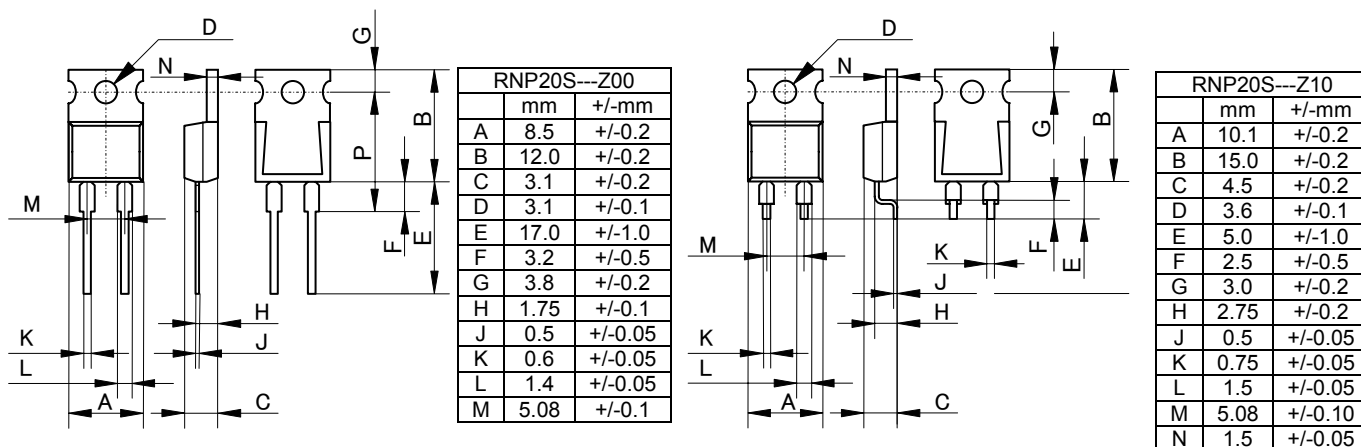
Wide, 20 milliohm to 220 ohm resistance range, non-inductive impedance characteristic and heat venting through insulated metal tab aids circuit designers.

Small size and thin profile suits high-density compact installations.

Complete thermal conduction, heat dissipation design and vibration durable design to be available.

Application in SW PS, power unit of machines, motor control, drive circuits, automobiles, measurements, and industrial computers.

Dimensional Specifications (mm)



Ordering Information

P/N	Type	TC	Resistance (1)	Tolerance	Additional Code(3)
RNP20SH0R05JZ00	RNP20S	H(100ppm and more)	0.05ohm	J(5%)	Z00 (through-hole)
RNP20SA0R1JZ00	RNP20S	A(100ppm)	0.1ohm	J(5%)	Z00 (through-hole)
RNP20SC101FZ00	RNP20S	C(50ppm)	100ohm	F(1%)	Z00 (through-hole)
RNP20SC221FZ00	RNP20S	C(50ppm)	220ohm	F(1%)	Z00 (through-hole)
RNP20SC100FZ10	RNP20S	C(50ppm)	10ohm	F(1%)	Z10 (surface mount)
RNP20SC221FZ10	RNP20S	C(50ppm)	220ohm	F(1%)	Z10 (surface mount)

Note: (1) When ordering, additional ohmic resistance notation is recommended.

(2) First digit of additional code, "Z" shows compliance with RoHS, its terminals are Tin plated. Second digit "0" shows normal, "1" is surface mount style.

(3) Standard packaging is RoHS PS/PE tube packaging, which contains 50pcs / tube. When ordering, note (Tube) or (Tray) are recommended.

(4) Power rating of SMD, RNP20S--Z10 and (4) 220 ohm resistance are restricted in 20W.

30W HIGH POWER RESISTORS

RNP20S

Specifications

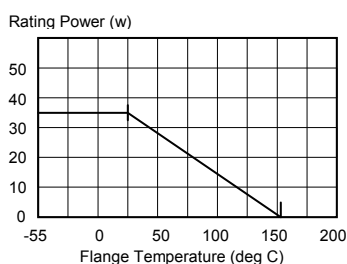
Items	Specification-Performance			Test Conditions
Rating Power	35 Watt *1			-55 to 25 deg C flange temperature
Rating Power	1 Watt			Free air.
Heat Resistance	3.3 C/W			Hot spot to flange
Resistance Range	0.02-0.091ohm	0.1-9.1ohm	10-220ohm	220-51k ohm are available, see Note
Nominal Resistance	E6	E24	E24	Include 2.5 and 5.0
TCR(ppm/K)	250(H) *3	100 (A)*3	50 (C)	-55 to +155 deg C
Tolerance	5%(J)	1% (F) 5% (J)	+/-1% (F)	
Operation Temp.	-55C to+155C			
Max. Operating Volt.	500V or $\sqrt{P \cdot R}$			
Withstanding Volt.	DC2200 Volt. (AC1500V)			Between terminal and flange, 60 seconds.
Load Life	+/-1.0%	+/- (1.0 % + 0.05 ohm)		25C, 90 min.ON, 30 min.OFF, 1000 hours.
Humidity	+/-1.0%	+/- (1.0 % + 0.05 ohm)		40C, 90-95%RH, DC 0.1W, 1000 hours.
Temp. Cycle	+/-1.0%	+/- (0.25 % + 0.05 ohm)		-55 C, 30 min., +155 C, 30 min., 5cycles
Soldering Heat	+/-0.5%	+/- (0.1 % + 0.05 ohm)		350+/-5 deg C, 3seconds,
Solder ability	Over 95% of surface			230+/-5 deg C, 3seconds.
Insulation Resistance	Over 1,000 Meg ohm			Between terminals and flange.
Vibration	+/-0.5%	+/- (0.25 % + 0.05 ohm)		

Note: (*1) At resistance from 220 to 51kohms rating power shall be restricted in 20W.

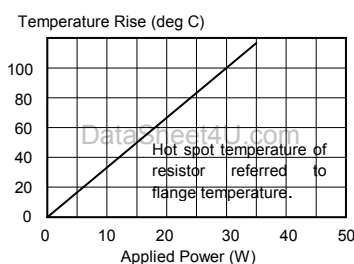
Note: (*2) Resistance measuring position is at low end of stand-off.

Note: (*3) TC in range from 0.01ohm to 0.10 ohm exceed 100 - 250ppm/deg C, but shows by symbol A or H.

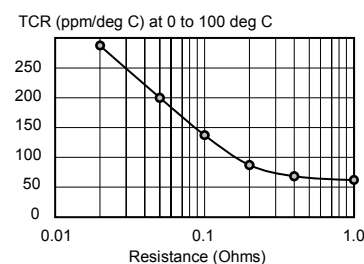
Derating



Temperature Rise

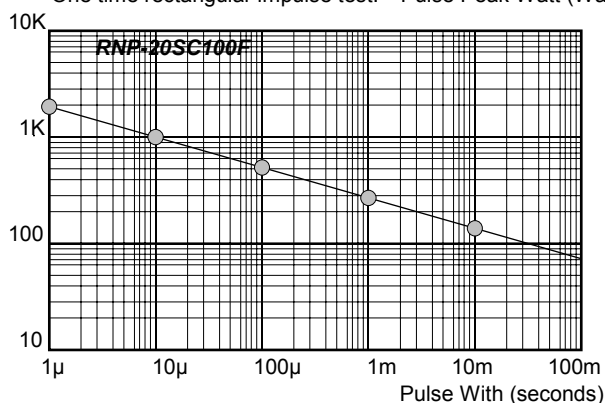


Typical TCR in Low Ohms



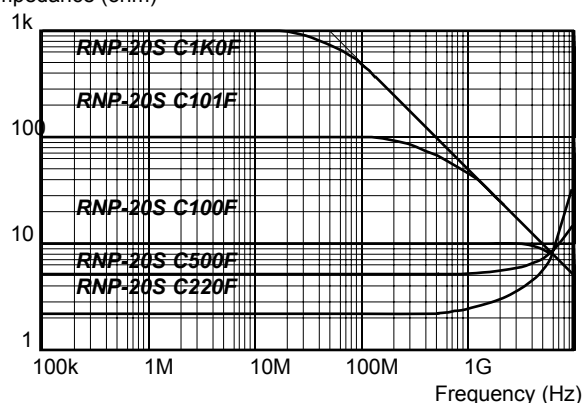
Pulse Energy Durability

One time rectangular impulse test. Pulse Peak Watt (Watts)



Frequency Characteristics

Impedance (ohm)



Note:

- Insulating material is unnecessary between flange and resistors, flange and resistor are separated by alumina substrate.
- At surface mount soldering, temperature profile in flange shall not exceed 220C.
- At screw mounting, using heat conduction grease on surface of flange is recommended.
- Heat resistance between resistor and flange is 3.3 C/W. Heat design will be done, as resistor temperature shall be under 155 deg C in operation.
- 0.1% tolerance 5ppm TCR resistors and over 220ohm resistance are available, please call factory.
- Please note, terminal material is Tin plated copper, but inside of resistor contains Pb-Ag high melting solder that is exempted by RoHS directive 2002/95/EC.
- Tube packaging material, Polystyrene/Polyethylene is also with RoHS compliance.