NPR NHR 2-T220 T221

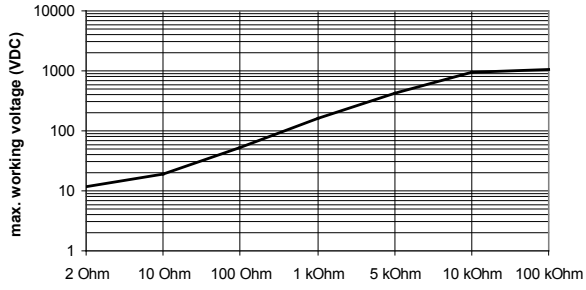
FEATURES

- Resistances from 0.02Ohm to 100kOhms
- Power Rating to 50Watt
- Resistance Tolerances to ±1%
- TCR to ±50ppm/K
- Load Stability to 0.5%
- TO-220 Housing
- Convenient SMD D2Pak Available

Pb-free Available

RoHS* COMPLIANT

TABLE 1—SPECIFICATIONS

TYPE		NPR 2-T220 NPR 2-T221	NHR 2-T220 NHR 2-T221
Resistance Range		0.02 Ohms to 100kOhms	0.02 Ohms to 15kOhms
Power Rating	**Free air 70°C**	1.5 W	
	With heatsink	30 W	50 W
Tolerances **from 0.02 Ohms** **from 1.0 Ohms**		 2% / 5% 1% / 2% / 5%	
Thermal Resistance		3.5 K/W	2.1 K/W
Stability (1000h)		0.5%	
Temperature Coefficient **0.02 to 0.049 Ohms** **0.05 to 0.099 Ohms** **0.1 Ohms to 100 kOhms**		 ±600 ppm/K ±300 ppm/K ±100 ppm/K upon request ±50 ppm/K	
Voltage Proof		2.0 kVDC	1.5 kVDC
Max. Voltage **depending on resistance value**			
Operating Temperature Range		-40 to 155°C	
Resistor Material		Thick Film	
Substrate		Al_2O_3	
Housing		PPS	
Connector Material		Cu / tinned	
Terminals		2	
Max. Torque		T220: 1 Nm T221: 0.8 Nm	

ORDERING INFORMATION

Part Number - Resistance - Contact - Tolerance
NHR 2-T221 1K100 C 1%

FIGURE 1—TEMPERATURE COEFFICIENT

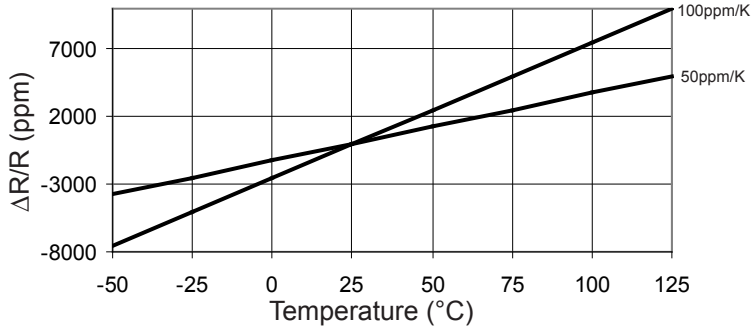
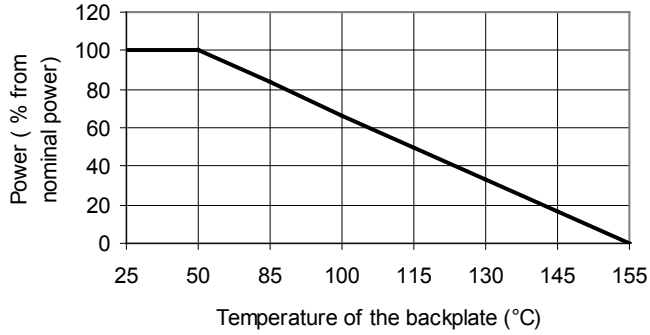


FIGURE 2—DERATING



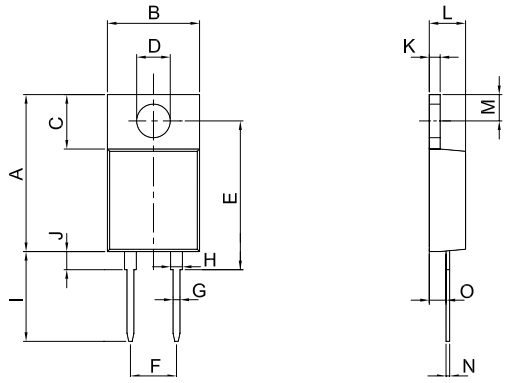
Power Rating Notes -
The NPR / NHR Series Resistors must be attached to a suitable heatsink.
The maximum internal resistor temperature is 155°C.
To specify an appropriate heatsink use the following formula :

$$R_{\theta H} = \frac{T_{MAX} - (P \times R_{\theta R}) - T_A}{P}$$

Where: $R_{\theta H}$ = Thermal Resistance of Heatsink (K/W)
$R_{\theta R}$ = Thermal Resistance of Resistor (K/W)
T_{MAX} = Maximum Temperature of Resistor
T_A = Ambient Temperature of Heatsink (°C)
P = Power Through Resistor (W)

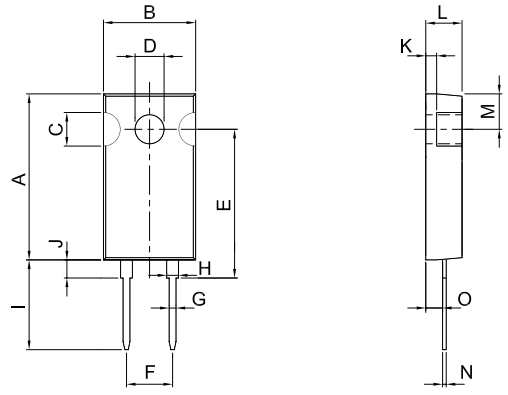
FIGURE 3—DIMENSIONS in mm (inches)

NPR 2-T220



Dimension	S-contact	C-contact
A ±0.2 (±0.008)	17.30 (0.68)	
B ±0.2 (±0.008)	10.16 (0.40)	
C ±0.1 (±0.004)	6.00 (0.24)	
D ±0.1 (±0.004)	Ø3.7 (Ø0.146)	
E ±0.2 (±0.008)	16.40 (0.65)	
F ±0.1 (±0.004)	5.08 (0.20)	
G ±0.1 (±0.004)	0.76 (0.03)	
H ±0.1 (±0.004)	1.30 (0.05)	
I ±0.2 (±0.008)	10.00 (0.39)	13.80 (0.54)
J ±0.1 (±0.004)	2.00 (0.08)	
K ±0.1 (±0.004)	1.20 (0.05)	
L ±0.1 (±0.004)	4.00 (0.16)	
M ±0.1 (±0.004)	2.90 (0.11)	
N ±0.1 (±0.004)	0.40 (0.02)	
O ±0.1 (±0.004)	1.85 (0.07)	

NHR 2-T221



Dimension	S-contact	C-contact
A ±0.2 (±0.008)	18.30 (0.72)	
B ±0.2 (±0.008)	10.16 (0.40)	
C ±0.1 (±0.004)	3.70 (0.15)	
D ±0.1 (±0.004)	Ø3.2 (Ø0.126)	
E ±0.2 (±0.008)	16.40 (0.65)	
F ±0.1 (±0.004)	5.08 (0.20)	
G ±0.1 (±0.004)	0.76 (0.03)	
H ±0.1 (±0.004)	1.30 (0.05)	
I ±0.2 (±0.008)	10.00 (0.39)	13.80 (0.54)
J ±0.1 (±0.004)	2.00 (0.08)	
K ±0.1 (±0.004)	1.20 (0.05)	
L ±0.1 (±0.004)	4.00 (0.16)	
M ±0.1 (±0.004)	3.90 (0.15)	
N ±0.1 (±0.004)	0.40 (0.02)	
O ±0.1 (±0.004)	1.85 (0.07)	

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