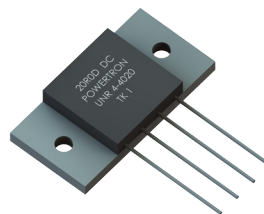


FEATURES

- Resistances from 0.05Ohm to 500Ohms
- Power Rating to 50Watt
- Resistance Tolerances to $\pm 0.01\%$
- TCR to $\pm 1\text{ppm/K}$
- Load Stability to 0.01%



Pb-free
Available
RoHS*
COMPLIANT

TABLE 1 – SPECIFICATIONS			
TYPE		USR 4-4020	UNR 4-4020
Resistance Range other resistance values upon request power rating depending on resistance value		0.05 to 100 Ohms	
Power Rating	Free air 70°C	2.5W	2.5W
	With heatsink	30W	50W
Tolerances from 0.05 Ohms from 10.0 Ohms from 50.0 Ohms		0.1% / 0.25% / 0.5% / 1% 0.05% / 0.1% / 0.25% / 0.5% / 1% 0.01% / 0.02% / 0.05% / 0.1% / 0.25% / 0.5% / 1%	
Thermal Resistance		3.6 K/W	2.2 K/W
Stability (1000h)		0.01%	
Temperature Coefficient		max. $\pm 5\text{ppm/K}$ (-55 to 155°C) typ. $\pm 3\text{ppm/K}$ (-55 to 125°C) upon request $\pm 1\text{ppm/K}$ (0 to 60°C)	
Voltage Proof		750 VDC	
Maximum Current		15A	
Thermal EMF		< 0.1 $\mu\text{V/K}$	
Operating Temperature Range		-55 to 155°C	
Resistor Material		NiCr-Foil	
Substrate		Al ₂ O ₃	AlN
Housing		Epoxy + Al-heatsink	
Connector Material		Cu / tinned	
Terminals		4 (standard contact D)	
Max. Torque		1.0 Nm	
Notes		Specially designed for applications with fast changing electrical load	

ORDERING INFORMATION
Part Number - Resistance - Contact - Tolerance - TCR (if not standard)
USR 4-4020 10R000 D 0.5%

FIGURE 1 – TEMPERATURE COEFFICIENT

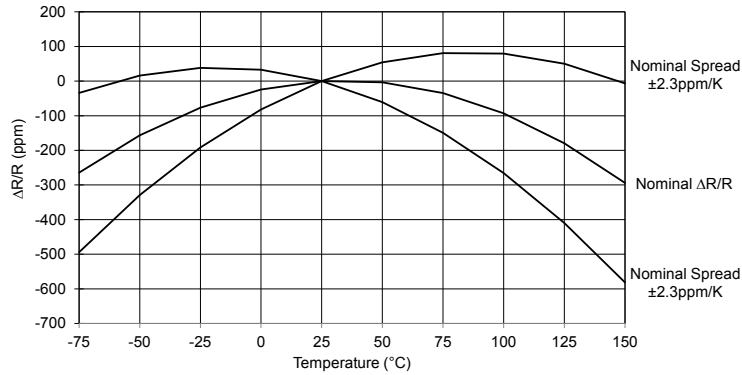
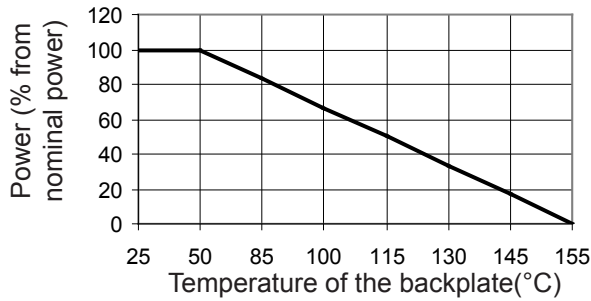


FIGURE 2 – DERATING



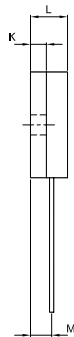
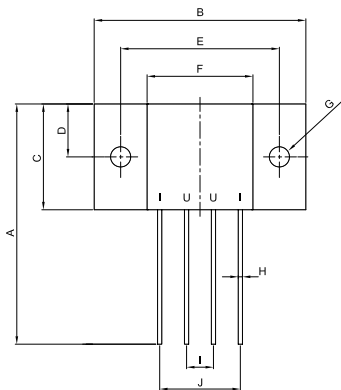
Power Rating Notes -

The U-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)



Dimension	
A ±2.0 (±0.079)	45.40 (1.79)
B ±0.3 (±0.012)	40.00 (1.57)
C ±0.2 (±0.008)	20.00 (0.79)
D ±0.2 (±0.008)	10.00 (0.39)
E ±0.2 (±0.008)	30.00 (1.18)
F ±0.2 (±0.008)	20.00 (0.79)
G ±0.1 (±0.004)	Ø3.80 (Ø0.15)
H ±0.1 (±0.004)	Ø0.8 (Ø0.031)
I ±0.1 (±0.004)	5.08 (0.20)
J ±0.2 (±0.008)	15.24 (0.60)
K ±0.1 (±0.004)	3.00 (0.12)
L ±0.1 (±0.004)	7.00 (0.28)
M ±0.1 (±0.004)	4.00 (0.16)



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