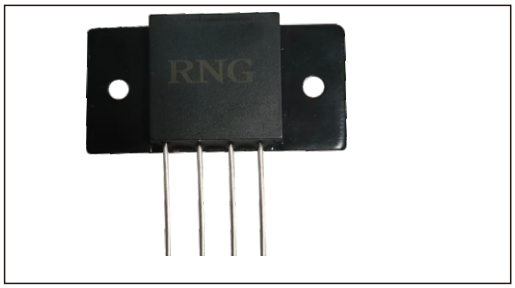
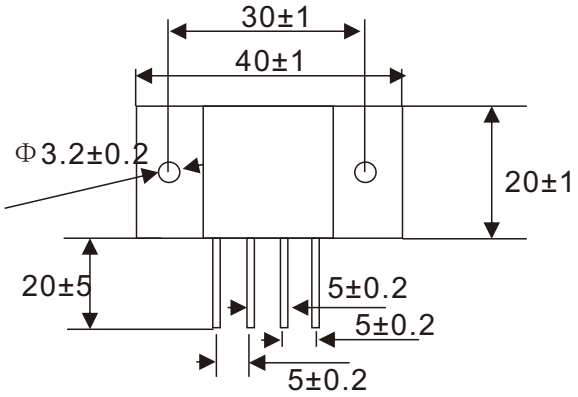
RNG4020 Precision Shunt Resistors

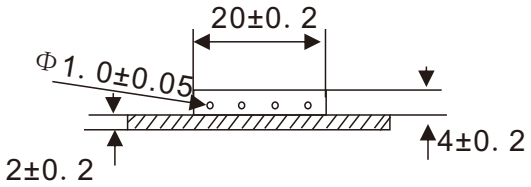


Features

-Resistance from 0.005 Ohm to 80K Ohms
-Power Rating to10 Watts
-Resistance Tolerances to ±0. 01%
-TCR to ±2ppm/K
-Low Stability to 0.02%
- Non-Inductive product design
-Compliant with ROHS and REACH

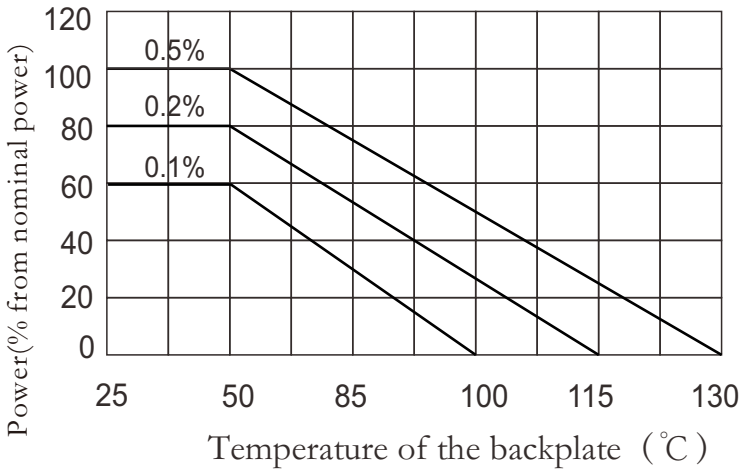
Dimensions





Note: Two lead-wire diameters are available according to the actual operating power and current of customers: 1.0±0.05 mm and 1.2±0.05 mm.For resistance values less than 10 mΩ, a 1.2 mm lead-wire shall be applied; for resistance values equal to or greater than 10 mΩ, a 1.0 mm lead-wire shall be adopted. Our standard supplied lead-wire length is 20±5 mm. It is recommended to reserve a lead-wire length of 5-6 mm during application to reduce the additional resistance caused by the leads.

Derating Curve



Power Rating Notes-
the RNG4020 series resistors must be attached to a suitable heat-sink,the maximum internal resistor temperature is 130C. To specify an appropriate heatsink use the following formula:

$$RgH = \frac{TMAX - (P \times RgR) - TA}{P}$$

Where:
RgH=Thermal resistance of heatsink(K/W)
RgR =Maximum temperature of resistor
TMAX=Maximum temperature of resistor
TA=Ambient temperature of heatsink(℃)
P =Power through resistor(W)

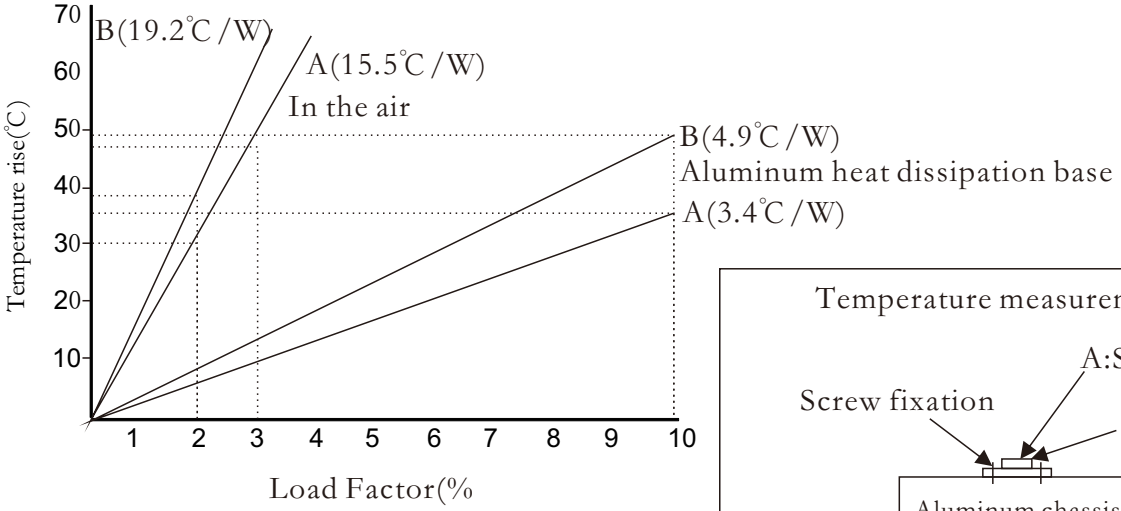
Ordering Information

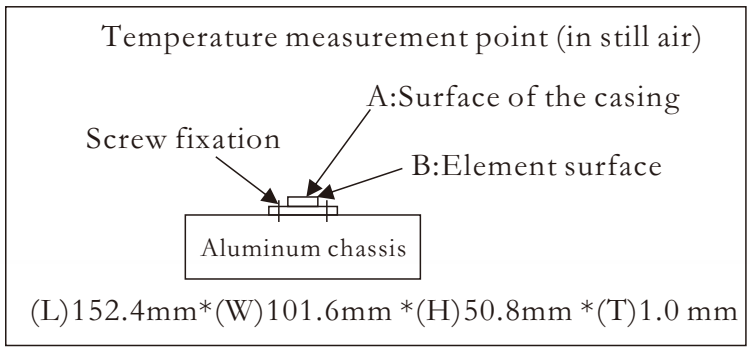
Example:

RNG4020	3W	10R0	B	C8	T
(1)	(2)	(3)	(4)	(5)	(6)
Series Name	Power Rating	Resistance	Resistance Tolerance	TCR	Packaging

(1)Type: RNG4020 SERIES
(2)Power Rating: 3=3W、10W=10W
(3)Resistance Value:10R0=10R、R10=0.1Ω、47R0=47Ω
(4)Tolerance: P=±0.02%、W=±0.05%、B=±0.1%、D=±0.5%、
(5))TCR: C8=±2ppm/℃;C7=±5ppm/℃;C6=±10ppm/℃;
(6)Packaging: B=bulk, T=Tape&Reel

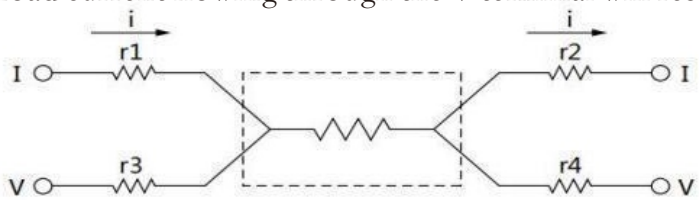
Surface Temperature Rise



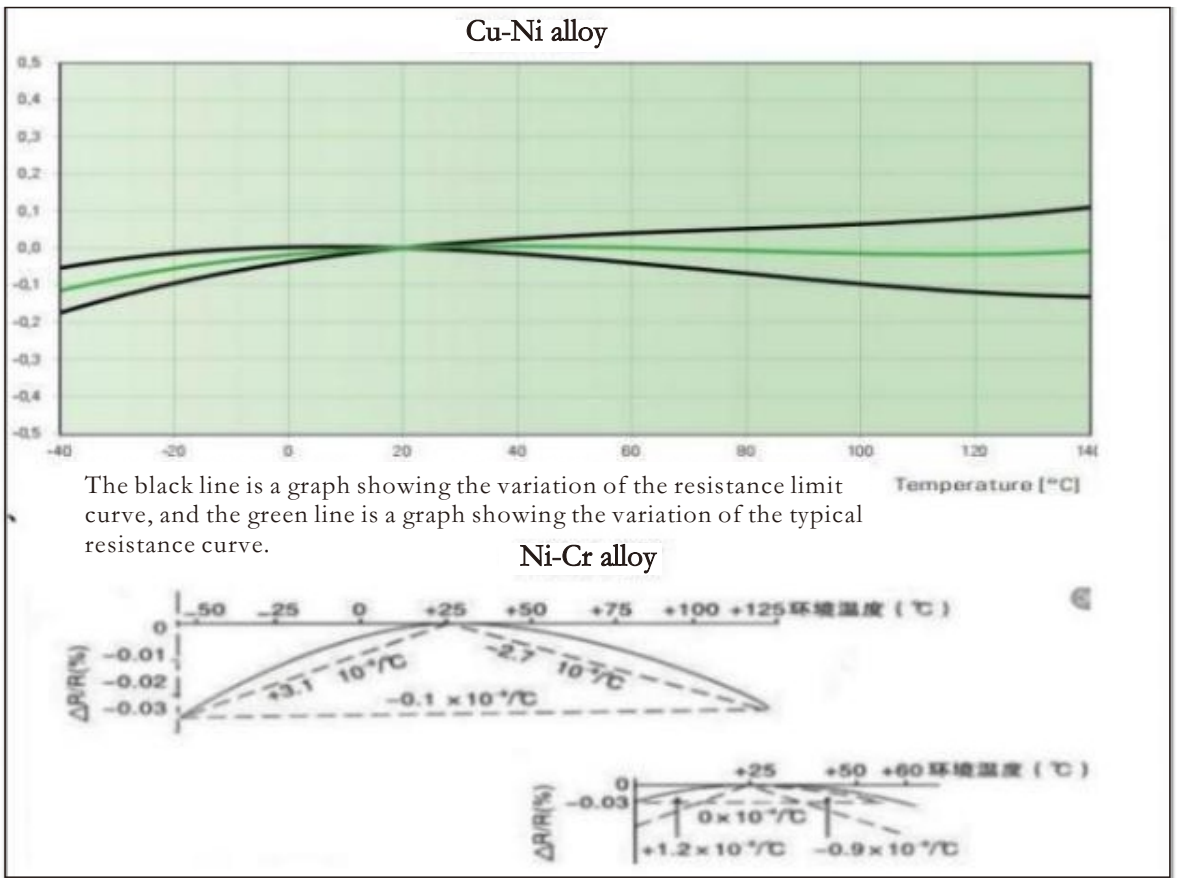


Four-line connection

For low-value resistors (＜10Ω), the resistance rise and temperature coefficient introduced by copper leads exceed those of the resistor element itself. A four-terminal Kelvin connection as shown in the figure below is recommended. Load current flowing through the V terminal will result in measurement errors.



Temperature coefficient



Performance

Item	Performance(JIS C 5201-1)
Resistance Range	0.005~80KΩ
Power Rating free air 70℃	3W
with heatsink	10W
Tolerances	0.01%、0.02%、0.05%、0.1%、
Thermal Resistance Rthj-c	16K/W
Stability	0.02%
Temperature Coefficient Cu-Ni alloy(0.005R-0.05R) Ni-Cr alloy （0.05-80KR）	± 10 ppm/K (20~ 60℃) ± 5 ppm/K (20 ~ 60℃) ± 2 ppm/K (20~ 60℃)
Voltage Proof	350 V
Max. Current	45A
Thermal EMF	< 1 μV/ K
Operating Temperature Range	-40~130 ° C
Resistor Material	Cu-Ni alloy ,NiCr-alloy
substrate	Anodized aluminum
Outer protective laye	Epoxy resin coating
Electrode material	Tin-plated copper
Terminals	4
Max. torque	1 N m
Load life stability target:	Under a load of 3W power and at an ambient temperature of 25℃, the resistance change rate should be ±0.01% after 2,000 hours.
Thermal dissipation system load life target:	When a resistor is placed on the thermal dissipation system and a power load of 3W is applied, the resistance value change rate should be ±0.005% after 2,000 hours.
Short-term Overload:	5 times the rated power for 5 seconds, resistance change ⩽ 0.02%
ESD Capability:	At least 25 kV