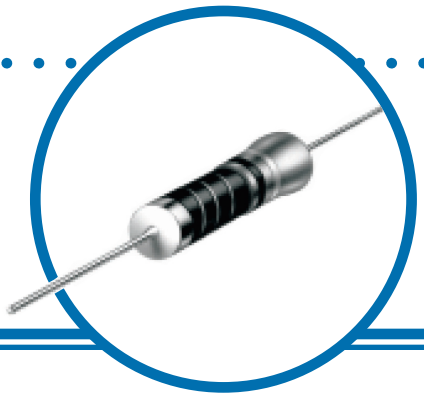
Precision Metal Film Resistors

TT electronics

GP Series

- Meets requirements of MIL-R-10509
- Flame-retardant coatings are standard
- 10 ohm - 10 megohm resistance range
- Resistance range tolerance of ±0.1% - 1%
- Temperature coefficients from ±25 to ±100ppm/°C



Electrical Data

IRC Type	IRC Power Rating (watts)		MIL Reference	Maximum Working Voltage	Resistance Temperature Coefficient (±ppm/°C)	Tolerance & Resistance Range		
	@ 70°C	@ 125°C				+1%	±.5%	±.25 and ±0.1%
GP-50 (T0)	1/8	1/10	RN50	200	100	10 - 2.37 Meg	10 ohm - 499K ohm	100 ohm - 100K ohm
GP-50 (T2)	1/8	1/10	RN50	200	50	10 ohm - 1 Meg	10 ohm - 499K ohm	100 ohm - 100K ohm
GP-50 (T9)	1/8	1/10	RN50	200	25	49.9 ohm - 499K ohm	49.9 ohm - 499K ohm	100 ohm - 100K ohm
GP-55 (T0)	1/4	1/8	RN55	250	100	10 ohm - 10 Meg	10 ohm - 499K ohm	30 ohm - 300K ohm
GP-55 (T2)	1/4	1/8	RN55	250	50	10 ohm - 4.99 Meg	10 ohm - 499K ohm	30 ohm - 300K ohm
GP-55 (T9)	1/4	1/8	RN55	250	25	30 ohm - 499K ohm	30 ohm - 499K ohm	30 ohm - 300K ohm
GP-60 (T0)	1/2	1/4	RN60	350	100	10 ohm - 10 Meg	10 ohm - 499K ohm	100 ohm - 100K ohm
GP-60 (T2)	1/2	1/4	RN60	350	50	10 ohm - 4.99 Meg	10 ohm - 499K ohm	100 ohm - 100K ohm
GP-60 (T9)	1/2	1/4	RN60	350	25	49.9 ohm - 499K ohm	49.9 ohm - 499K ohm	100 ohm - 100K ohm

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IRC
A subsidiary of
TT electronics plc

Thick Film
Metal Glaze™ Resistor

Environmental Data

Environmental (%ΔR)	MIL-R-10509		Char. C	EIA RS-196 Class 1
	Typical	Char. D		
Moisture Resistance	±0.5	±1.5	±0.5	±1.5
Thermal Shock	±0.25	±0.5	±0.25	-
Load life @ 70°C - 1000 hours	±0.5	±1.0	±0.5	±2.0
Shock and Vibration	±0.25	±0.5	±0.25	-
Resistance to Soldering Heat	±0.1	±0.5	±0.1	-
Terminal Strength	±0.2	±0.2	±0.2	-
Dielectric Withstand Voltage	±0.25	±0.5	±0.25	±0.5
Short Time Overload	±0.25	±0.5	±0.25	±0.5
Operating Temperature Range	-55°C to +165°C	-55°C to +165°C	-55°C to +165°C	
Maximum Pulse Voltage	GP50 400V, GP55 500V, GP60 600V			
Insulation Resistance	10,000 meg min.			
Voltage Coefficient	100ppm/V			

Thick Film
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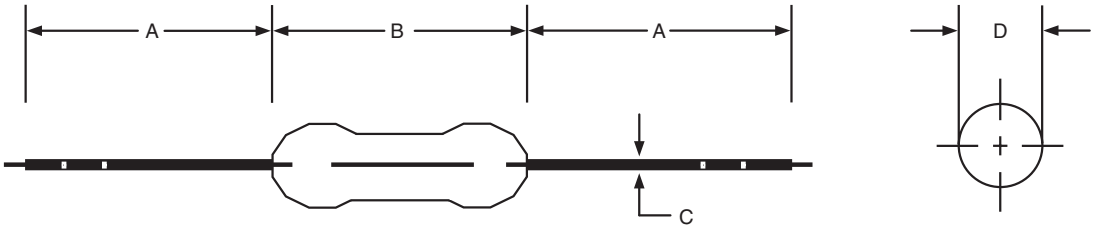
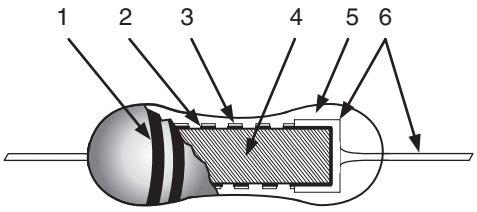
Physical Data



Dimensions (inches and (mm))			
Dimension	**GP50**	**GP55**	**GP60**
A	1.10 ± .08 (28.0 ± 2.0)	1.10 ± .08 (28.0 ± 2.0)	1.10 ± .08 (28.0 ± 2.0)
B	0.13 + .01/-.00 (3.2 + 0.2/-0.0)	0.24 ± .01 (6.0 ± 0.3)	0.33 ± .02 (8.5 ± 0.5)
C	0.018 ± .001 (0.45 ± 0.02)	0.023 ± .002 (0.60 ± 0.05)	0.027 ± .002 (0.70 ± 0.05)
D	0.073 ± .006 (1.85 ± 0.15)	0.09 ± .01 (2.4 ± 0.2)	0.11 ± .01 (2.8 ± 0.3)

Construction



1. COLOR BANDS.
The resistors are permanently color banded for resistance value and tolerance in accordance with EIA specifications.

2. HELIXING.
The units are helixed to a predetermined base to final value ratio to obtain the best TCR, noise and stability characteristics.

3. FILM.
Carbon-film resistors have a homogeneous film of pure carbon deposited by a pyrolitic process at carefully controlled temperatures.

4. SUBSTRATES.
The substrates are of a proprietary non alkaline ceramic, prepared and processed under exacting conditions to guarantee the utmost in uniformity and surface characteristics.

5. INSULATION.
The resistors are coated with multiple layers of a baked-on fire-retardant synthetic resin which provides the units with a high degree of mechanical and electrical protection in the most adverse operating conditions.

6. TERMINATIONS.
Positive contact is provided to the resistance element by precision-made end caps. The lead wires are attached by using proprietary welding techniques.

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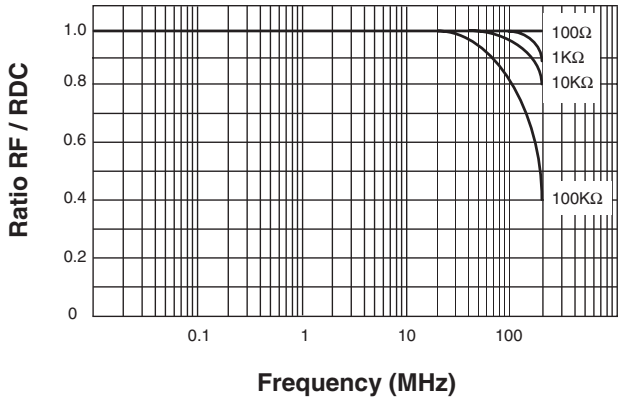
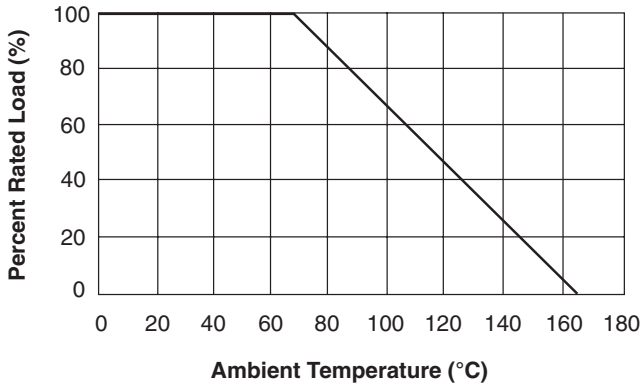
Performance Curves

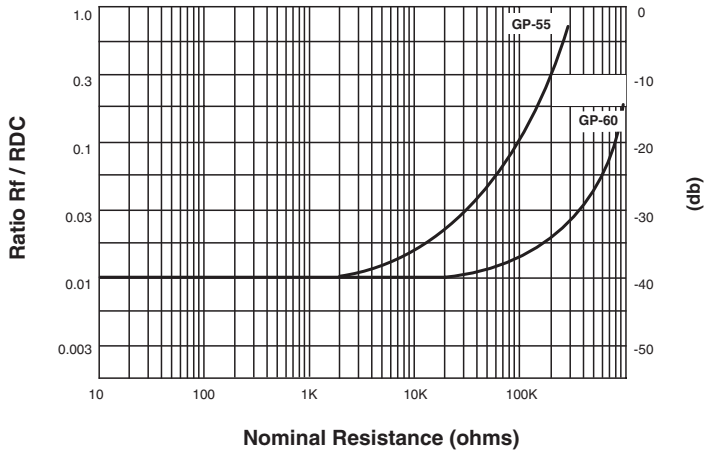
High-Frequency Characteristics (Typical)



Derating Curve (Typical)



Current Noise (Typical)



Ordering Data