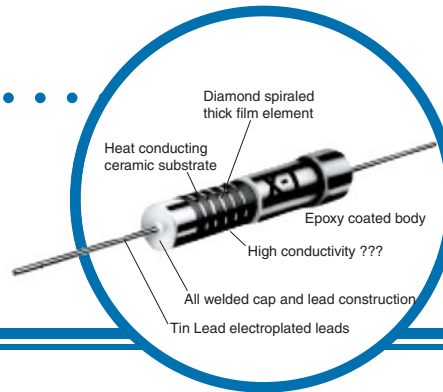


# Precision High-Voltage Thick Film Resistors

## CGH Series

- 1/4 watt to 5 watt
- TCR of  $\pm 50$  or  $\pm 100$  ppm/ $^{\circ}\text{C}$
- 100K ohm to 2000 megohm range
- $\pm 0.5\%$ ,  $\pm 1\%$ ,  $\pm 2\%$  or  $\pm 5\%$  tolerance



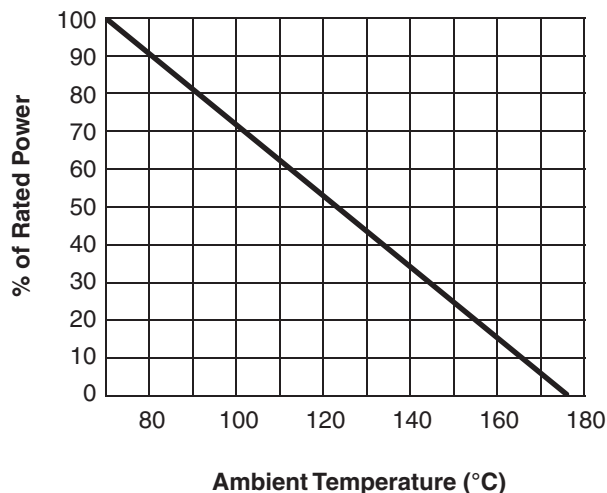
## Electrical Data

| IRC Type  | Power Rating at 70°C (watts) <sup>1</sup> | Voltage Rating (volts) <sup>2</sup> | Resistance Range (ohms) <sup>3</sup> | Tolerance ( $\pm\%$ ) <sup>4</sup> | Maximum TCR ( $\pm$ ppm/ $^{\circ}\text{C}$ ) <sup>4</sup> | VCR (ppm/V) <sup>5</sup> |
|-----------|-------------------------------------------|-------------------------------------|--------------------------------------|------------------------------------|------------------------------------------------------------|--------------------------|
| CGH - 1/4 | 1/4                                       | 750                                 | 100K - 100M                          | .5, 1, 2, 5                        | 50, 100                                                    | 0 - -5                   |
| CGH - 1/2 | 1/2                                       | 1,500                               | 100K - 500M                          |                                    |                                                            |                          |
| CGH - 1   | 1                                         | 3,000                               | 50K - 750M                           |                                    |                                                            |                          |
| CGH - 2   | 2                                         | 5,000                               | 100K - 1500M                         |                                    |                                                            |                          |
| CGH - 3   | 3                                         | 10,000                              | 200K - 2000M                         |                                    |                                                            |                          |
| CGH - 5   | 5                                         | 20,000                              | 300K - 2000M                         |                                    |                                                            |                          |

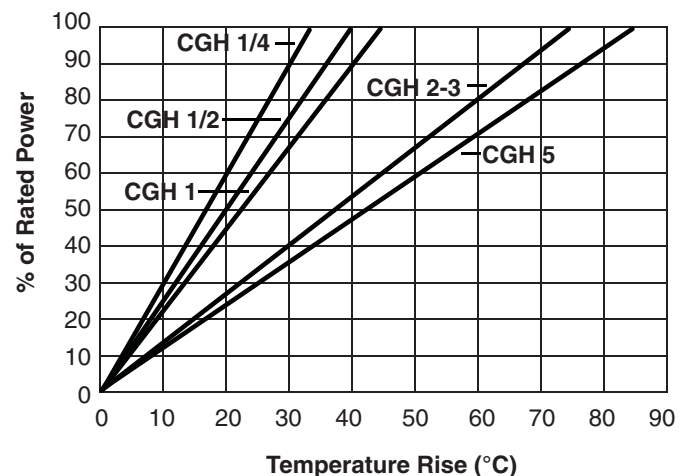
### Notes:

1. For power rating above 70°C, see derating curve.
2. Voltage rating shown is the rated DC continuous working voltage or the sine-wave RMS absolute maximum voltage at commercial line frequency. For DC applications the absolute maximum permissible voltage is 1.5 times the value shown for low repetition short-time-overload or pulse conditions of 10 seconds or less duration.
3. Contact factory for higher resistance values.
4. For CGH-1 and 2 above 500 meg and CGH-3 and 5 above 1000M only 2 and 5% tolerance and 100 ppm/ $^{\circ}\text{C}$  TCR available.
5. Typical voltage coefficient of resistance is -1 to -2 ppm/V measured at full rated voltage and 10% rated voltage.

## Power Derating Curve



## Temperature Rise Chart



### General Note

IRC reserves the right to make changes in product specification without notice or liability. All information is subject to IRC's own data and is considered accurate at time of going to print.

# Precision High-Voltage Thick Film Resistors



## Environmental Data

| Test Condition <sup>1</sup>                                                               | Maximum $\Delta R$<br>( $\pm 3\sigma$ ) | Typical <sup>2</sup> $\Delta R$ |
|-------------------------------------------------------------------------------------------|-----------------------------------------|---------------------------------|
| Temperature Shock                                                                         | $\pm 0.25\%$                            | $\pm 0.10\%$                    |
| Short-Time Overload (1.5 times rated V for 10 sec)                                        | $\pm 0.20\%$                            | $\pm 0.10\%$                    |
| Solder Effect                                                                             | $\pm 0.015\%$                           | $\pm 0.05\%$                    |
| Terminal Strength                                                                         | $\pm 0.20\%$                            | $\pm 0.05\%$                    |
| Moisture Resistance (no load or polar)                                                    | $\pm 0.50\%$                            | $\pm 0.20\%$                    |
| Load Life (1000 hours at 70°C)                                                            | $\pm 1.00\%$                            | $\pm 0.25\%$                    |
| Shelf Life (1 year at 25°C)                                                               | $\pm 0.10\%$                            | $\pm 0.03\%$                    |
| High-Temperature Exposure (150°C for 2000 hours)<br>(175°C for 2000 hours)                | $\pm 0.75\%$                            | $\pm 0.30\%$                    |
|                                                                                           | $\pm 0.01\%$                            | $\pm 0.40\%$                    |
| Dielectric Breakdown <sup>3</sup> (1/4 and 1/2 watt size)<br>(1 watt through 5 watt size) | 2000 VDC, 1500 VAC                      |                                 |
|                                                                                           | 3500 VDC, 2500 VAC                      |                                 |
| Dielectric Strength <sup>4</sup>                                                          | $\pm 0.15\%$                            | $\pm 0.05\%$                    |
| Insulation Resistance at 500 VDC                                                          | $10^9$ ohms typ.                        | $10^{11}$ ohms typ.             |

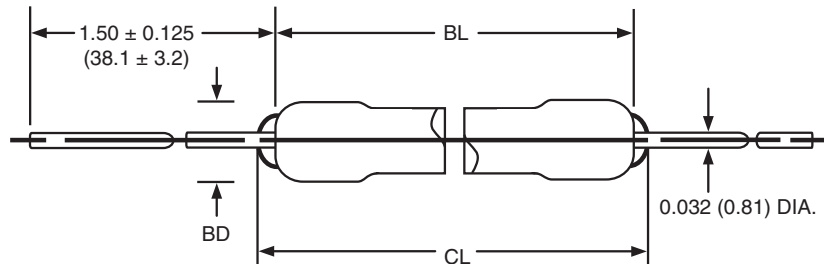
### Notes:

1. Test method per MIL-STD-202 unless otherwise indicated.
2. Typical defined as that percent change which will include a minimum of 50% of the measured changes in resistance from a variety of lots representing various unit sizes and ranges.
3. Values shown are the maximum safe dielectric voltage applied from a V block or foil wrapping which extends the complete body length of the resistor under test.
4. Percent change after the maximum safe dielectric voltage is applied for 1 minute.

# Precision High-Voltage Thick Film Resistors



## Physical Data



Dimensions (Inches and (mm))

| IRC Type  | Body Length - BL             | Body Diameter - BD          | Clean Lead to Clean Lead - CL |
|-----------|------------------------------|-----------------------------|-------------------------------|
| CGH - 1/4 | 0.275 ± 0.031 (6.98 ± 0.79)  | 0.088 ± 0.010 (2.22 ± 0.25) | 0.400 (10.16)                 |
| CGH - 1/2 | 0.400 ± 0.031 (10.16 ± 0.79) | 0.138 ± 0.016 (3.51 ± 0.41) | 0.525 (13.34)                 |
| CGH - 1   | 0.690 ± 0.062 (17.53 ± 1.57) | 0.297 ± 0.031 (7.54 ± 0.79) | 0.900 (22.86)                 |
| CGH - 2   | 1.062 ± 0.062 (26.97 ± 1.57) | 0.297 ± 0.031 (7.54 ± 0.79) | 1.250 (31.75)                 |
| CGH - 3   | 2.062 ± 0.062 (52.37 ± 1.57) | 0.297 ± 0.031 (7.54 ± 0.79) | 2.250 (57.15)                 |
| CGH - 5   | 3.062 ± 0.062 (77.77 ± 1.57) | 0.297 ± 0.031 (7.54 ± 0.79) | 3.250 (82.55)                 |

## Ordering Data

Sample Part No. .... **CGH 3** - **100** - **2205** - **F** - **LF**

**IRC Type** .....  
CGH 1/4, CGH 1/2, CGH 1, CGH 2, CGH 3, CGH 5

**Temperature Coefficient** .....  
(±100 ppm/°C, ±50 ppm/°C)

**Resistance** - .....

**Tolerance** .....

D = ±0.5%  
F = ±1%  
G = ±2%  
J = ±5%

**RoHS Indicator** .....  
LF indicates RoHS compliance