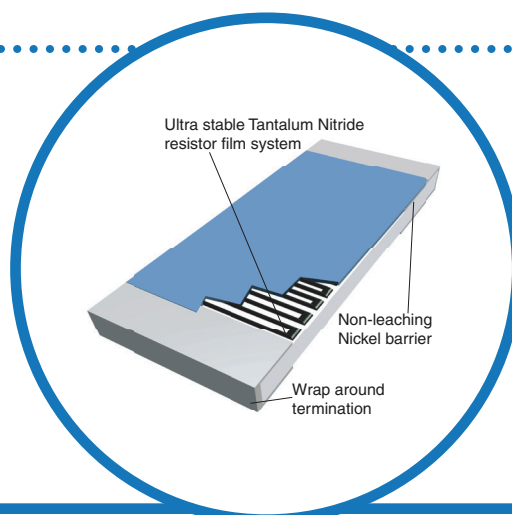


# Precision Thin Film Chip Resistors

## PFC Series

- **Standard 60/40 Sn/Pb and Pb-free (RoHS compliant) terminations available**
- **Available in 0402, 0603, 0805 and 1206**
- **Tested for COTS applications**
- **Absolute TCR to  $\pm 10\text{ppm}/^\circ\text{C}$**
- **MIL screening available**
- **Superior anti-sulfuration characteristics**



The IRC TaNFilm® PFC chip resistor series provides the high precision and ultra stable performance of our Tantalum Nitride resistive film system in 0402, 0603, 0805 and 1206 sizes. The unique characteristics of the passivated Tantalum Nitride film ensure long term life stability and reliability in most environments. Qualified for resistance to sulfur bearing gases, the PFC series is an excellent solution for automotive and heavy equipment applications where precision, exceptional reliability with anti-sulfuration characteristics is imperative.

Using the same manufacturing line as the PFC Military Series, IRC's precision chips maintain the same superior environmental performance. Specially selected materials and processes insure initial precision is maintained in the harshest surface mount soldering environment. Wrap-around terminations with leach-resistant nickel barriers insure high integrity solder connections.

## Electrical Data

| Model | Power Rating (70°C) | Max Voltage Rating ( $\leq \sqrt{P \times R}$ ) | Temperature Range | ESD Sensitivity  | Noise  | Termination                                                | Substrate     |
|-------|---------------------|-------------------------------------------------|-------------------|------------------|--------|------------------------------------------------------------|---------------|
| W0402 | 50mW                | 75V                                             | -65°C to +150°C   | 2KV to 4KV (HBM) | <-25dB | 100% matte tin (RoHS compliant) plated over nickel barrier | 99.5% Alumina |
| W0603 | 100mW               | 75V                                             |                   |                  |        |                                                            |               |
| W0805 | 250mW               | 100V                                            |                   |                  |        |                                                            |               |
| W1206 | 333mW               | 200V                                            |                   |                  |        |                                                            |               |

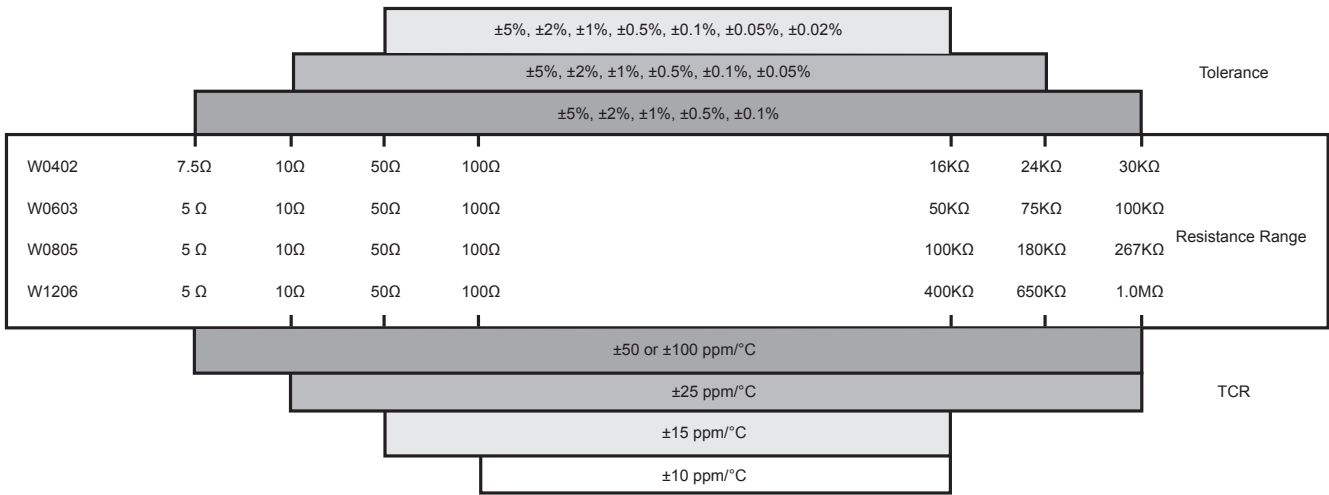
## Environmental Data

| Environmental Test        | Test Method                                 | Performance  |              |
|---------------------------|---------------------------------------------|--------------|--------------|
|                           |                                             | Typical      | Maximum      |
| Sulfuration Test          | ASTM B-809 (Modified) 105°C Dry, 1000 Hours | $\pm 0.02\%$ | $\pm 0.05\%$ |
| Thermal Shock             | MIL-PRF-55342                               | $\pm 0.02\%$ | $\pm 0.10\%$ |
| Low Temperature Operation | MIL-PRF-55342                               | $\pm 0.01\%$ | $\pm 0.05\%$ |
| Short Time Overload       | MIL-PRF-55342                               | $\pm 0.01\%$ | $\pm 0.05\%$ |
| High Temperature Exposure | MIL-PRF-55342                               | $\pm 0.03\%$ | $\pm 0.10\%$ |
| Effects of Solder         | MIL-PRF-55342                               | $\pm 0.01\%$ | $\pm 0.10\%$ |
| Moisture Resistance       | MIL-PRF-55342                               | $\pm 0.03\%$ | $\pm 0.10\%$ |
| Life                      | MIL-PRF-55342                               | $\pm 0.03\%$ | $\pm 0.10\%$ |

### General Note

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

# Manufacturing Capabilities Data



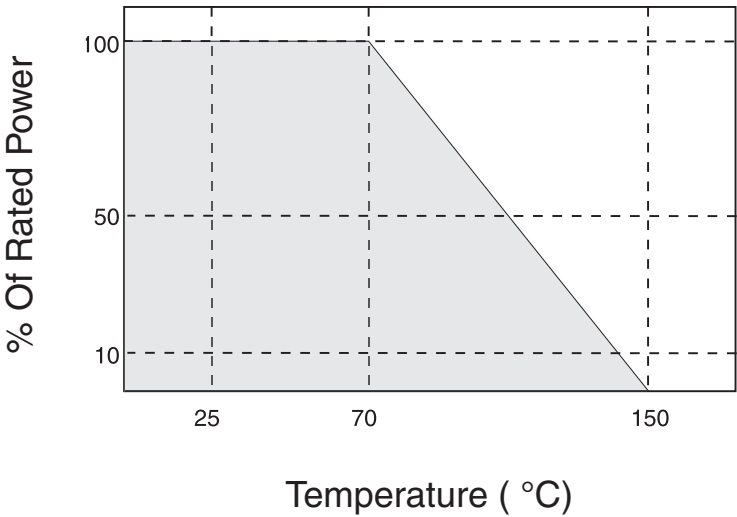
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Environmental Data

| Environmental Test MIL-PRF-55342 | Maximum $\Delta R$ per Characteristic E | Performance  |              |
|----------------------------------|-----------------------------------------|--------------|--------------|
|                                  |                                         | Typical      | Maximum      |
| Thermal Shock                    | $\pm 0.10\%$                            | $\pm 0.02\%$ | $\pm 0.10\%$ |
| Low Temperature Operation        | $\pm 0.10\%$                            | $\pm 0.01\%$ | $\pm 0.05\%$ |
| Short Time Overload              | $\pm 0.10\%$                            | $\pm 0.01\%$ | $\pm 0.05\%$ |
| High Temperature Exposure        | $\pm 0.10\%$                            | $\pm 0.03\%$ | $\pm 0.10\%$ |
| Effects of Solder                | $\pm 0.20\%$                            | $\pm 0.01\%$ | $\pm 0.10\%$ |
| Moisture Resistance              | $\pm 0.20\%$                            | $\pm 0.03\%$ | $\pm 0.10\%$ |
| Life                             | $\pm 0.50\%$                            | $\pm 0.03\%$ | $\pm 0.10\%$ |

Power Derating Curve



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## Physical Data

| Model | L             | W             | H             | a             | b             |
|-------|---------------|---------------|---------------|---------------|---------------|
| W0402 | 0.040" ±0.002 | 0.021" ±0.002 | 0.012" ±0.003 | 0.008" ±0.002 | 0.010" ±0.002 |
| W0603 | 0.063" ±0.004 | 0.031" ±0.004 | 0.020" ±0.004 | 0.012" ±0.005 | 0.015" ±0.005 |
| W0805 | 0.081" ±0.005 | 0.050" ±0.005 | 0.020" ±0.006 | 0.015" ±0.008 | 0.016" ±0.008 |
| W1206 | 0.126" ±0.006 | 0.063" ±0.005 | 0.024" ±0.004 | 0.025" ±0.010 | 0.025" ±0.010 |

## MIL Screened Precision Chip Resistors

IRC's PFC chip resistors are available with MIL screening. These chips are manufactured on the same production line as our Mil-qualified chip resistors and screened in accordance with MIL-PRF-55342.

These chips are identified with IRC's ordering information and not with MIL marking.

### Commercial Ordering Data

|                 |                                                                                      |       |   |    |      |   |
|-----------------|--------------------------------------------------------------------------------------|-------|---|----|------|---|
| Prefix          | PFC                                                                                  | W1206 | R | 01 | 1001 | B |
| Model           | W0402; 0603; W0805; W1206                                                            |       |   |    |      |   |
| Termination     | R = 60/40 Sn/Pb plated solder<br>LF = 100% tin plated (Pb-free)                      |       |   |    |      |   |
| TCR Code        | 01 = ±100ppm/°C; 02 = ±50ppm/°C; 03 = ±25ppm/°C<br>11 = ±15ppm/°C; 12 = ±10ppm/°C    |       |   |    |      |   |
| Resistance Code | 4-Digit resistance code.<br>Ex: 10R0 = 10Ω; 1000 = 100Ω<br>1001 = 1000Ω; 1002 = 10KΩ |       |   |    |      |   |
| Tolerance Code  | J = ±5%; G = ±2%; F = ±1%; D = ±0.5%<br>B = ±0.1%; A = ±0.05%; Q = ±0.02%            |       |   |    |      |   |

For additional information or to discuss your specific requirements, please contact our Applications Team using the contact details below.

### Mil Screened Ordering Data\*

|                       |                                                                                                                         |       |   |    |      |   |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|-------|---|----|------|---|
| Prefix                | PFC                                                                                                                     | W1206 | R | 04 | 1001 | B |
| Model                 | W0402; W0603; W0805; W1206                                                                                              |       |   |    |      |   |
| Termination           | R = 60/40 Sn/Pb plated solder                                                                                           |       |   |    |      |   |
| MIL-Screened TCR Code | 04 = ±300ppm/°C; 05 = ±100ppm/°C;<br>06 = ±50ppm/°C; 07 = ±25ppm/°C<br>14 = ±20ppm/°C; 15 = ±15ppm/°C<br>16 = ±10ppm/°C |       |   |    |      |   |
| Resistance Code       | 4-Digit resistance code.<br>Ex: 10R0 = 10Ω; 1000 = 100Ω<br>1001 = 1000Ω; 1002 = 10KΩ                                    |       |   |    |      |   |
| Tolerance Code        | J = ±5%; G = ±2%; F = ±1%; D = ±0.5%<br>B = ±0.1%; A = ±0.05%; Q = ±0.02%                                               |       |   |    |      |   |

\*Please refer to our MIL-Chip Series datasheet to order parts qualified to MIL-PRF-55342.

### Anti-Sulfuration Ordering Data

|                 |                                                                                         |       |      |    |      |   |
|-----------------|-----------------------------------------------------------------------------------------|-------|------|----|------|---|
| Prefix          | PFC                                                                                     | W1206 | ASLF | 01 | 1001 | B |
| Model           | W0402; 0603; W0805; W1206                                                               |       |      |    |      |   |
| Termination     | ASLF = Anti-sulfuration chip resistor with 100% matte tin finish (Pb-free) terminations |       |      |    |      |   |
| TCR Code        | 01 = ±100ppm/°C; 02 = ±50ppm/°C; 03 = ±25ppm/°C<br>11 = ±15ppm/°C; 12 = ±10ppm/°C       |       |      |    |      |   |
| Resistance Code | 4-Digit resistance code.<br>Ex: 10R0 = 10Ω; 1000 = 100Ω<br>1001 = 1000Ω; 1002 = 10KΩ    |       |      |    |      |   |
| Tolerance Code  | J = ±5%; G = ±2%; F = ±1%; D = ±0.5%<br>B = ±0.1%; A = ±0.05%                           |       |      |    |      |   |

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