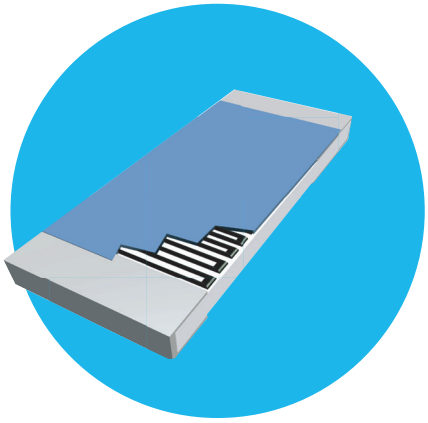
# Precision Thin Film Chip Resistors

**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 ±10ppm/°C
- MIL screening available
- Superior anti-sulfuration characteristics



All Pb-free parts comply with EU Directive 2011/65/EU (RoHS2)

The 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, these 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 (ASLF terminations only)** | ASTM B-809 (Modified) 105°C Dry, 1000 Hours | ±0.02% | ±0.05% |
| **Thermal Shock** | MIL-PRF-55342 | ±0.02% | ±0.10% |
| **Low Temperature Operation** | MIL-PRF-55342 | ±0.01% | ±0.05% |
| **Short Time Overload** | MIL-PRF-55342 | ±0.01% | ±0.05% |
| **High Temperature Exposure** | MIL-PRF-55342 | ±0.03% | ±0.10% |
| **Effects of Solder** | MIL-PRF-55342 | ±0.01% | ±0.10% |
| **Moisture Resistance** | MIL-PRF-55342 | ±0.03% | ±0.10% |
| **Life** | MIL-PRF-55342 | ±0.03% | ±0.10% |

**General Note**
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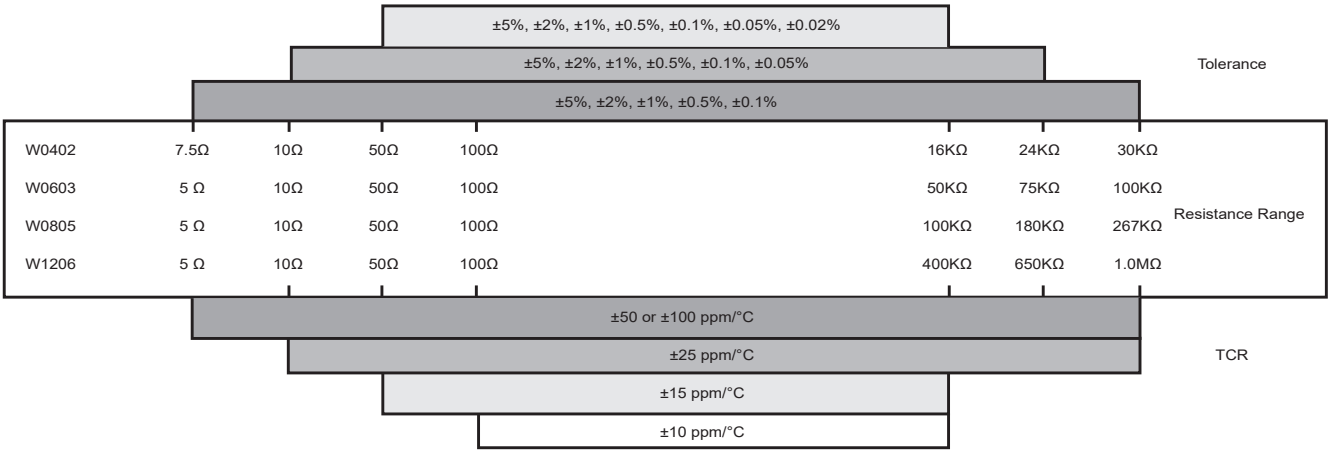
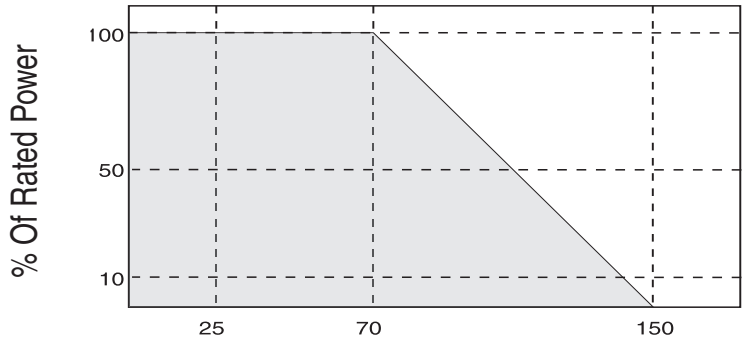
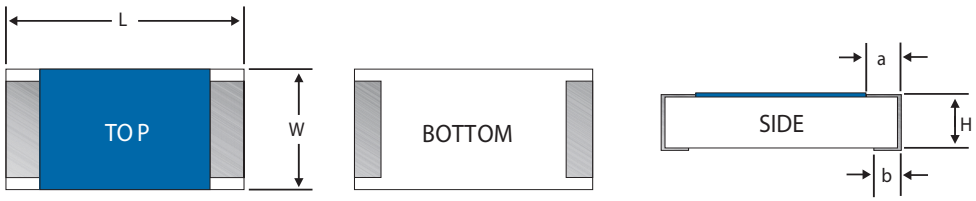
# Manufacturing Capabilities Data




## Power Derating Curve




# Physical Data




| Model | L | W | H | a | b |
|---|---|---|---|---|---|
| **W0402** | 0.04 ±0.002 (1.02 ±0.05) | 0.021 ±0.002 (0.53 ±0.05) | 0.012 ±0.003 (0.3 ±0.08) | 0.008 ±0.002 (0.2 ±0.05) | 0.01 ±0.002 (0.25 ±0.05) |
| **W0603** | 0.063 ±0.004 (1.6 ±0.1) | 0.031 ±0.004 (0.79 ±0.1) | 0.02 ±0.004 (0.51 ±0.1) | 0.012 ±0.005 (0.3 ±0.13) | 0.015 ±0.005 (0.38 ±0.13) |
| **W0805** | 0.081 ±0.005 (2.06 ±0.13) | 0.05 ±0.005 (1.27 ±0.13) | 0.02 ±0.006 (0.51 ±0.15) | 0.015 ±0.008 (0.38 ±0.2) | 0.016 ±0.008 (0.41 ±0.2) |
| **W1206** | 0.126 ±0.006 (3.2 ±0.15) | 0.063 ±0.005 (1.6 ±0.13) | 0.024 ±0.004 (0.61 ±0.1) | 0.025 ±0.01 (0.64 ±0.25) | 0.025 ±0.01 (0.64 ±0.25) |

# 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.

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# Ordering Procedure

This product has two valid part numbers:

**European (Welwyn) Part Number: W1206R-01-1K0BI** (1206, 100ppm/°C, 1 kilohm ±0.1%, Pb-free)

| W | 1 | 2 | 0 | 6 | R | - | 0 | 1 | - | 1 | K | 0 | B | I | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | | | 3 | | | | | 4 | | | 5 | 6 | |

| 1<br>Type | 2<br>Size | 3<br>TCR | 4<br>Value | 5<br>Tolerance | 6<br>Termination & Packing | |
|---|---|---|---|---|---|---|
| W=PFC | 0402 | R-12 = ±10ppm/°C | E24 = 3/4 characters<br>E96 = 3/4 characters<br>R = ohms<br>K = kilohms<br>M = megohms | Q = ±0.02% | I = Pb-free, Standard pack | |
| | 0603 | R-11 = ±15ppm/°C | | A = ±0.05% | PB = SnPb finish, Standard pack | |
| | 0805 | R = ±25ppm/°C | | B = ±0.1% | All sizes | 1000/reel |
| | 1206 | R-02 = ±50ppm/°C | | D = ±0.5% | | |
| | | R-01 = ±100ppm/°C | | F = ±1% | | |
| | | | | G = ±2% | | |
| | | | | J = ±5% | | |

**USA (IRC) Commercial Part Number: PFC-W1206LF-01-1001-B** (1206, 100ppm/°C, 1 kilohm ±0.1%, Pb-free)

| P | F | C | - | W | 1 | 2 | 0 | 6 | L | F | | | - | 0 | 1 | - | 1 | 0 | 0 | 1 | - | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | 2 | | | | | 3 | | | | | 4 | | | 5 | | | | | 6 |

| 1<br>Family | 2<br>Model | 3<br>Termination | 4<br>TCR | 5<br>Value | 6<br>Tolerance | Packing | |
|---|---|---|---|---|---|---|---|
| PFC | W0402 | R = SnPb (60/40) | 12 = ±10ppm/°C | 3 digits + multiplier | Q = ±0.02% | All sizes | 1000/reel |
| | W0603 | LF = Pb-free (100%Sn) | 11 = ±15ppm/°C | R = ohms for values <100 ohms | A = ±0.05% | | |
| | W0805 | ASLF = Anti-sulfur & Pb-free (100%Sn) | 03 = ±25ppm/°C | | B = ±0.1% | | |
| | W1206 | | 02 = ±50ppm/°C | | D = ±0.5% | | |
| | | | 01 = ±100ppm/°C | | F = ±1% | | |
| | | | | | G = ±2% | | |
| | | | | | J = ±5% | | |

**USA (IRC) Mil Screened Part Number*: PFC-W1206R-05-1001-B** (1206, 100ppm/°C, 1 kilohm ±0.1%,)

| P | F | C | - | W | 1 | 2 | 0 | 6 | R | - | 0 | 5 | - | 1 | 0 | 0 | 1 | - | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | 2 | | | | | 3 | | 4 | | | 5 | | | | | 6 |

| 1<br>Family | 2<br>Model | 3<br>Termination | 4<br>TCR | 5<br>Value | 6<br>Tolerance | Packing | |
|---|---|---|---|---|---|---|---|
| PFC | W0402 | R = SnPb (60/40) | 16 = ±10ppm/°C | 3 digits + multiplier | B = ±0.1% | All sizes | 1000/reel |
| | W0603 | | 15 = ±15ppm/°C | R = ohms for values <100 ohms | D = ±0.5% | | |
| | W0805 | | 14 = ±20ppm/°C | | F = ±1% | | |
| | W1206 | | 07 = ±25ppm/°C | | G = ±2% | | |
| | | | 06 = ±50ppm/°C | | J = ±5% | | |
| | | | 05 = ±100ppm/°C | | | | |
| | | | 04 = ±300ppm/°C | | | | |

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Authorized Distributor

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PFC-W0805R-12-7501-A W0805R033902B-R1 W1206R033972B-R1 PFC-W0805LF-03-1870-B PFC-W0805LF-03-14R0-B PFC-W0805LF-03-3401-B PFC-W1206LF-03-8453-B PFC-W1206LF-03-2670-B PFC-W0805LF-03-68R1-B PFC-W0805LF-03-9312-B PFC-W1206LF-03-1583-B PFC-W0805LF-03-3162-B PFC-W1206LF-03-5761-B PFC-W1206LF-03-2372-B PFC-W1206LF-03-1372-B PFC-W1206LF-03-8062-B PFC-W1206LF-03-4422-B PFC-W1206LF-03-2493-B PFC-W0805LF-03-1910-B PFC-W0805LF-03-4421-B PFC-W1206LF-03-3093-B PFC-W1206LF-03-1071-B PFC-W0805LF-03-1400-B PFC-W0805LF-03-4420-B PFC-W1206LF-03-2373-B PFC-W0805LF-03-2553-B PFC-W1206LF-03-1870-B PFC-W0805LF-03-1331-B PFC-W1206LF-03-1400-B PFC-W1206LF-03-8253-B PFC-W1206LF-03-11R8-B PFC-W1206LF-03-4420-B PFC-W1206LF-03-1912-B PFC-W0805LF-03-26R1-B PFC-W0805LF-03-2002-B PFC-W1206LF-03-1652-B PFC-W1206LF-03-3652-B PFC-W1206LF-03-6652-B PFC-W1206LF-03-42R2-B PFC-W1206LF-03-1910-B PFC-W0805LF-03-1003-B PFC-W1206LF-03-8661-B PFC-W1206LF-03-3921-B PFC-W1206LF-03-69R8-B PFC-W0805LF-03-2150-B PFC-W1206LF-03-1693-B PFC-W0805LF-03-10R0-B PFC-W0805LF-03-2670-B PFC-W1206LF-03-27R4-B PFC-W0805LF-03-80R6-B PFC-W1206LF-03-3403-B PFC-W1206LF-03-11R0-B PFC-W1206LF-03-1000-B PFC-W1206LF-03-3743-B PFC-W1206LF-03-7680-B PFC-W1206LF-03-2552-B PFC-W1206LF-03-6191-B PFC-W0805LF-03-7870-B PFC-W1206LF-03-1003-B PFC-W0805LF-03-3161-B PFC-W1206LF-03-52R3-B PFC-W1206LF-03-2672-B PFC-W0805LF-03-7680-B PFC-W1206LF-03-18R2-B PFC-W0805LF-03-4122-B PFC-W0805LF-03-4991-B PFC-W0805LF-03-8061-B PFC-W0805LF-03-1000-B PFC-W1206LF-03-15R0-B PFC-W1206LF-03-24R3-B PFC-W1206LF-03-8872-B PFC-W1206LF-03-9531-B PFC-W0805LF-03-2373-B PFC-W1206LF-03-4023-B PFC-W1206LF-03-9091-B PFC-W1206LF-03-7870-B PFC-W0805LF-03-2261-B PFC-W1206LF-03-4640-B PFC-W0805LF-03-38R3-B PFC-W0805LF-03-1582-B PFC-W1206LF-03-5230-B PFC-W1206LF-03-2210-B PFC-W1206LF-03-1180-B PFC-W1206LF-03-4120-B PFC-W1206LF-03-1100-B PFC-W0805LF-03-1020-B PFC-W0805LF-03-84R5-B PFC-W1206LF-03-3570-B PFC-W0805LF-03-6342-B PFC-W1206LF-03-13R0-B PFC-W1206LF-03-4643-B PFC-W0805LF-03-3570-B PFC-W1206LF-03-1020-B PFC-W0805LF-03-5230-B PFC-W0805LF-03-2210-B PFC-W0805LF-03-4751-B PFC-W0805LF-03-1180-B PFC-W0805LF-03-1073-B PFC-W1206LF-03-30R1-B PFC-W1206LF-03-30R9-B