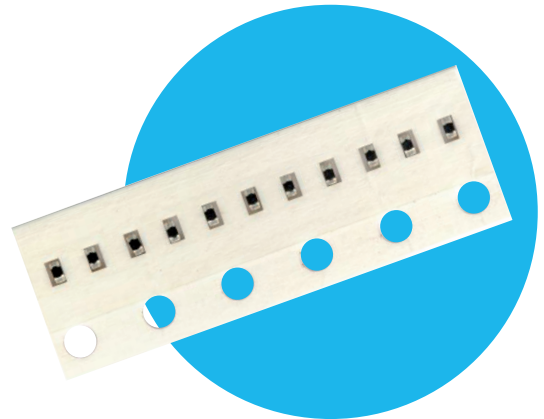


# Precision Thin Film Chip Resistors

## PFC Commercial Series

- High stability tantalum nitride film
- Available in 0402, 0603, 0805 and 1206
- AEC-Q200 qualified
- Absolute TCR to  $\pm 10\text{ppm}/^\circ\text{C}$
- Sulfur resistant to ASTM B809-95



 All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

PFC chip resistor series provides the high precision and ultra stable performance of 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.

## 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	96.5% Alumina
W0603	100mW	75V					
W0805	250mW	100V					
W1206	333mW	200V					

## Environmental Data

Environmental Test	Test Method	Performance	
		Typical	Maximum
Sulfuration Test	ASTM B809-95 humid vapor	$\pm 0.02\%$	$\pm 0.05\%$
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	$\pm 0.03\%$	$\pm 0.10\%$

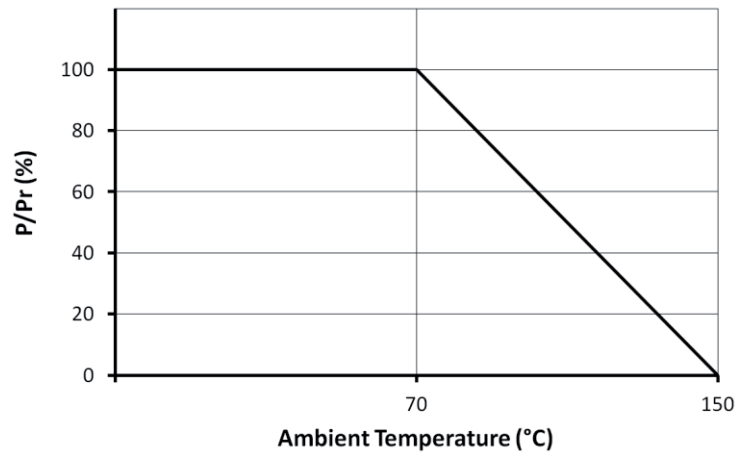
### General Note

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## Manufacturing Capabilities Data

TCR ppm/°C	Tolerance 0.1% to 5%			
	W0402	W0603	W0805	W1206
10	100Ω-16kΩ	100Ω-50kΩ	100Ω-100kΩ	100Ω-400kΩ
15	50Ω-16kΩ	50Ω-50kΩ	50Ω-100kΩ	50Ω-400kΩ
25	15Ω-30kΩ	10Ω-100kΩ	10Ω-267kΩ	10Ω-1MΩ
50, 100	15Ω-30kΩ	5Ω-100kΩ	5Ω-267kΩ	5Ω-1MΩ

## Power Derating Curve



## Physical Data

Model	L	W	H	a	b
W0402	0.04 ±0.003 (1.02 ±0.07)	0.021 ±0.005 (0.53 ±0.12)	0.012 ±0.003 (0.3 ±0.08)	0.008 -0.004, +0.008 (0.2 -0.1/+0.2)	0.01 ±0.006 (0.25 ±0.15)
W0603	0.063 ±0.004 (1.6 ±0.1)	0.031 ±0.004 (0.79 ±0.11)	0.02 ±0.004 (0.51 ±0.11)	0.012 ±0.008 (0.3 ±0.2)	0.015 ±0.009 (0.38 ±0.23)
W0805	0.081 ±0.006 (2.06 ±0.16)	0.05 ±0.007 (1.27 ±0.18)	0.02 ±0.006 (0.51 ±0.14)	0.015 ±0.009 (0.38 ±0.23)	0.016 ±0.008 (0.41 ±0.21)
W1206	0.126 ±0.008 (3.2 ±0.2)	0.063 ±0.004 (1.6 ±0.1)	0.024 ±0.006 (0.61 ±0.16)	0.025 ±0.017 (0.64 ±0.44)	0.025 ±0.017 (0.64 ±0.44)

For PCB mounting pad recommendations see

<http://www.ttelectronics.com/sites/default/files/resistors/TN006%20-%20Recommended%20Layouts%20for%20SMD%20Resistors.pdf>

## Construction

Conductors and tantalum nitride resistive element are applied to an alumina substrate. The product is laser trimmed to value, and a protective black epoxy coat is applied. The product is then metallized and plated to provide a wrap-around solderable termination with a 100% matte tin finish on a nickel barrier layer. It is 100% tested and provided on standard paper carrier tape.

## Marking

The 0402 chips are not marked. 3 digit marking is used on the 0603 size and 4 digit marking on larger sizes and E96 values.

## Special Variants

For PFC resistors with tighter tolerances, SnPb terminations or MIL screening, refer to the separate PFC Special Series datasheet.

### General Note

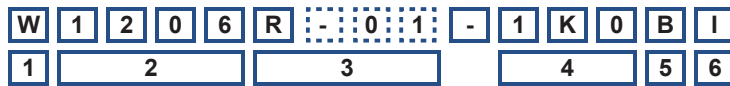
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## Ordering Procedure

This product has two valid part numbers:

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



1 Type	2 Size	3 TCR	4 Value	5 Tolerance	6 Termination & Packing
W=PFC	0402	R-12 = ±10ppm/°C	E24 = 3/4 characters	B = ±0.1%	I = Pb-free, Standard pack All sizes 5000/reel*
	0603	R-11 = ±15ppm/°C	E96 = 3/4 characters	D = ±0.5%	
	0805	R = ±25ppm/°C	R = ohms	F = ±1%	
	1206	R-02 = ±50ppm/°C	K = kilohms	G = ±2%	
		R-01 = ±100ppm/°C	M = megohms	J = ±5%	

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



1 Family	2 Model	3 Termination	4 TCR	5 Value	6 Tolerance	Packing
PFC	W0402	LF = Pb-free (100%Sn)	12 = ±10ppm/°C	3 digits + multiplier R = ohms for values <100 ohms	B = ±0.1%	All sizes 5000/reel*
	W060		11 = ±15ppm/°C		D = ±0.5%	
	W0805		03 = ±25ppm/°C		F = ±1%	
	W1206		02 = ±50ppm/°C		G = ±2%	
			01 = ±100ppm/°C		J = ±5%	

\* Non-standard pack quantity 1000/reel may be available by special request – contact factory.

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