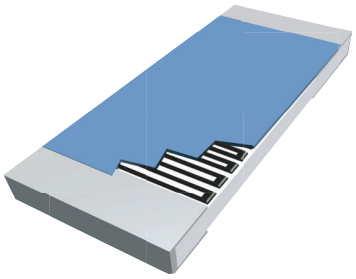
Precision Thin Film Chip Resistors

PFC Special 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 amended by (EU) 2015/863 (RoHS3)

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 ensure initial precision is maintained in the harshest surface mount soldering environment. Wrap-around terminations with leach-resistant nickel barriers ensure 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

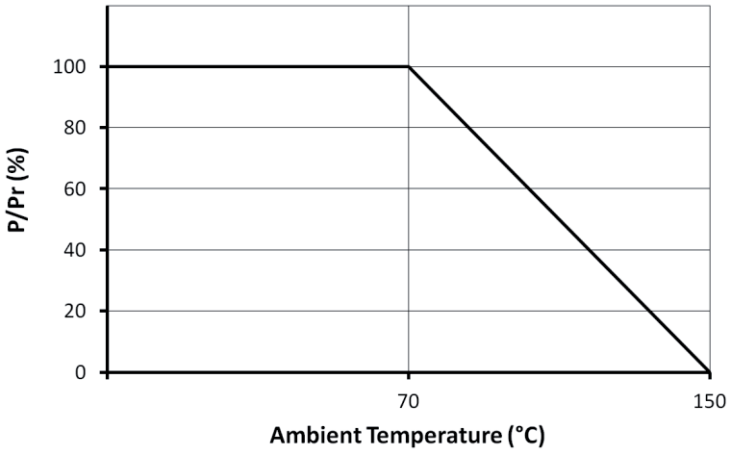
Environmental Test	Test Method	Performance	
		Typical	Maximum
Sulfuration Test (ASLF terminations only)	ASTM B-809 (Modified) 105°C Dry, 1000 Hours EIA-977 Condition B, 105°C Dry, 750 Hours	±0.02%	±0.05%
Thermal Shock	MIL-PRF-55342	±0.02%	±0.10%
Low Temperature Operation	MIL-PRF-55342	±0.01%	±0.05%
Short 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%

Manufacturing Capabilities Data

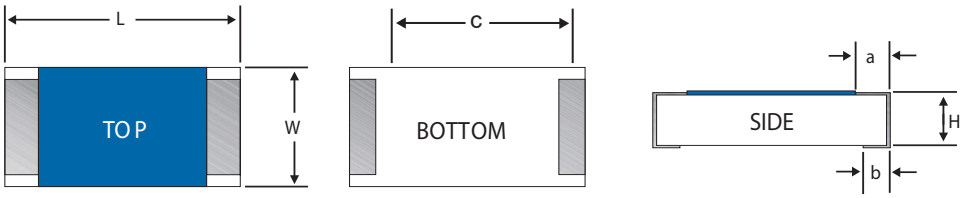
TCR ppm/°C	Tolerance %											
	W0402			W0603			W0805			W1206		
	0.02	0.05	0.1-5	0.02	0.05	0.1-5	0.02	0.05	0.1-5	0.02	0.05	0.1-5
10	100Ω-16kΩ		100Ω-16kΩ[1]	100Ω-50kΩ		100Ω-50kΩ[1]	100Ω-100kΩ		100Ω-125kΩ[3]	100Ω-400kΩ		100Ω-400kΩ[1]
15	50Ω-16kΩ		50Ω-16kΩ[1]	50Ω-50kΩ		50Ω-50kΩ[1]	50Ω-100kΩ		50Ω-125kΩ[3]	50Ω-400kΩ		50Ω-400kΩ[1]
25	50Ω-16kΩ	10Ω-24kΩ	10Ω-30kΩ[2]	50Ω-50kΩ	10Ω-75kΩ	10Ω-100kΩ[1]	50Ω-100kΩ	10Ω-180kΩ	10Ω-267kΩ[1]	50Ω-400kΩ	10Ω-650kΩ	10Ω-1MΩ[1]
50, 100			7.5Ω-30kΩ[2]			5Ω-100kΩ[1]			5Ω-267kΩ[1]			5Ω-1MΩ[1]

Notes
1. For Pb-free, unscreened PFC chips see separate PFC Commercial Series datasheet
2. For Pb-free, unscreened PFC chips at values ≥15R see separate PFC Commercial Series datasheet
3. For Pb-free, unscreened PFC chips at values ≤100K see separate PFC Commercial Series datasheet
4. The anti-sulfur (AS / ASLF) option is only available at values of 100R and higher.

Power Derating Curve



Physical Data



Model	L	W	H	a	b	c (min.)
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)	0.017 (0.43)
W0603	0.063 ±0.004 (1.6 ±0.1)	0.031 ±0.004 (0.79 ±0.1)	0.02 ±0.006 (0.51 ±0.15)	0.012 ±0.005 (0.3 ±0.13)	0.015 ±0.005 (0.38 ±0.13)	0.03 (0.76)
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)	0.046 (1.17)
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)	0.085 (2.16)

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.

See separate MIL-CHIP datasheet.

Ordering Procedure

This product has two valid part numbers:

European (Welwyn) Part Number: W1206R-01-1K0AI (1206, 100ppm/°C, 1 kilohm ±0.05%, Pb-free)

W	1	2	0	6	R		-	0	1	-	1	K	0	A	I	
1	2				3		4				5			6	7	

1 Type	2 Size	3 Option	4 TCR	5 Value	6 Tolerance	7 Termination & Packing	
W=PFC	0402	R=Standard	-12 = ±10ppm/°C	E24 = 3/4 characters E96 = 3/4 characters R = ohms K = kilohms M = megohms	Q = ±0.02%	I[1] = Pb-free, Standard pack	
	0603	AS=Anti-sulfur	-11 = ±15ppm/°C		A = ±0.05%	PB[2] = SnPb finish, Standard pack	
	0805	(values ≥100R only)	Blank = ±25ppm/°C		B = ±0.1%	All sizes	1000/reel
	1206		-02 = ±50ppm/°C		D = ±0.5%		
			-01 = ±100ppm/°C		F = ±1%		
					G = ±2%		
					J = ±5%		

Note 1 – Alternative code PI is also valid
Note 2 – Alternative code PP is also valid

USA (IRC) Commercial Part Number: PFC-W1206LF-01-1001-A (1206, 100ppm/°C, 1 kilohm ±0.05%, Pb-free)

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

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

Note 1 – Alternative code PR is also valid
Note 2 – Alternative code PLF is also valid

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 Family	2 Model	3 Termination	4 TCR	5 Value	6 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				

* Please refer to the MIL-CHIP datasheet to order parts qualified to MIL-PRF-55342.