

PCS Series

Low Resistance Value Chip Resistors



FEATURES

- Low Resistance to 0.5mΩ
- Low TCR to ±50ppm
- Excellent long term stability
- RoHs compliant and halogen free
- Lead free
- High precision current sensing and voltage division

SERIES SPECIFICATIONS

Type	Power Rating @70°C	Max. Rated Current	Max. Overload Current	Resistance Range (mΩ) ±1.0% (F), ±0.5% ±2.0% (G), ±5.0% (J)			Material
PCS1206	1W	31.62A	63.25A	7~50	1~50	R001: MnCuSn R002~R007: MnCu R008~R050: FeCrAl	
PCS2512	1W	44.72A	100.00A	7~450	0.5~500	R0005: MnCuSn	
	2W	63.25A	141.42A		0.5~450	R001~R006: MnCu R007~R500: FeCrAl	
PCS2728	4W	31.62A	54.77A	7~450	4~450	R004~R450: FeCrAl	

CHARACTERISTICS

Rated current $\sqrt{P/R}$ may be used to determine the DC (Direct Current) or AC (Alternating Current) (RMS, root mean square value) of normal rated power. However, if the result value exceeds the highest current of regulated standards (paragraph 5), the highest normal rated power is to be used.

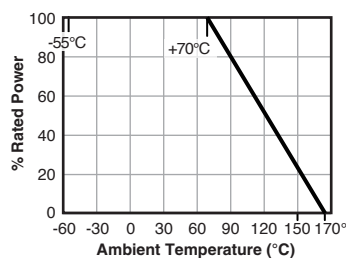
TCR $\pm 50 \text{ ppm}/^{\circ}\text{C}$

Oper. Temp. Range -55 ~ +170°C

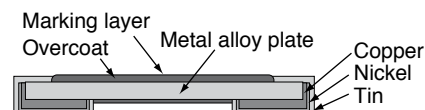
Storage 25°C ±5; humidity 60% ±20%

Plating thickness Ni: 2μm; Sn: 3μm

Derating



Construction



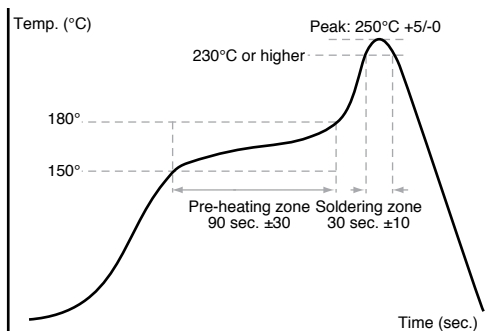
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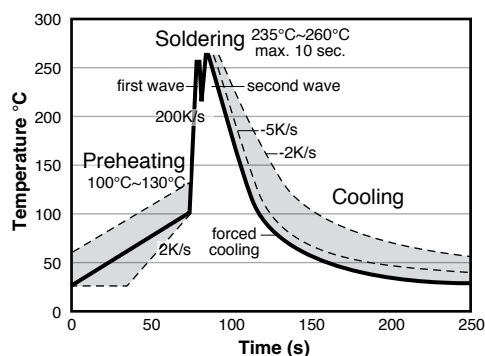
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SOLDERING

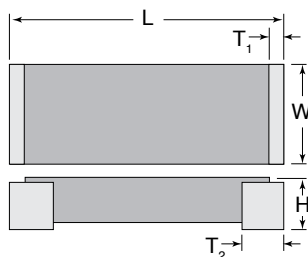
IR Reflow Soldering



Wave Soldering (Flow Soldering)

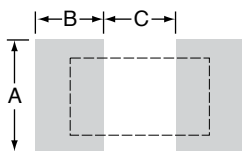


DIMENSIONS



Type	Power Rating	L	W	T1	Res. Range	H	T2
PCS1206	1W	3.200 ±.254	1.650 ±.254	0~0.200	1~2mΩ 3~50mΩ	0.630 ±.254 0.430 ±.254	0.508 ±.254 0.508 ±.254
PCS2512	1W, 2W	6.350 ±.254	3.050 ±.254	0.200~1.000	0.5~1mΩ 1.5mΩ 2mΩ 2.5~100mΩ 101~500mΩ	0.650 ±.254 0.410 ±.254 0.410 ±.254 0.410 ±.254 0.410 ±.254	2.200 ±.254 2.000 ±.254 1.400 ±.254 1.100 ±.254 0.850 ±.254
PCS2728	4W	6.600 ±.254	6.700 ±.254	0.200~1.000	4~450mΩ	0.620 ±.254	1.200 ±.254

Land pattern



Type	Res. Range	A	B	C
PCS1206	1mΩ~50mΩ	2.18	1.60	0.66
PCS2512	0.5mΩ~1.5mΩ	3.68	3.05	1.27
	2mΩ~3.5mΩ	3.68	2.11	3.18
	3.6mΩ~500mΩ	3.68	1.90	3.50
PCS2728	4mΩ~450mΩ	7.82	2.75	3.51

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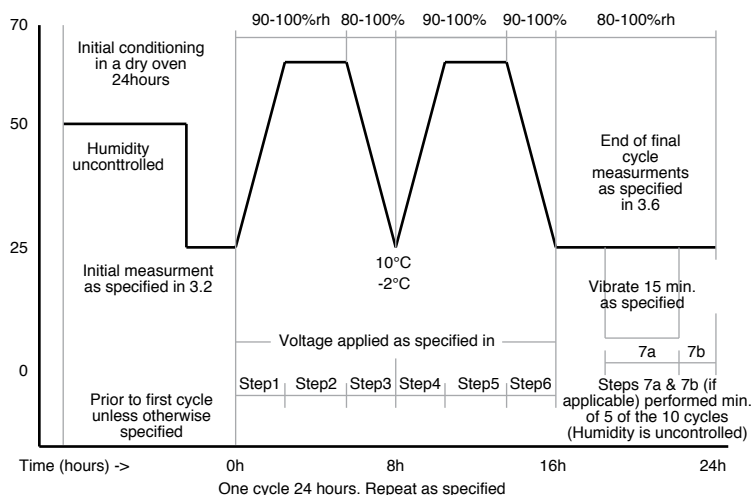
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PERFORMANCE

TCR JIS C 5201-1 clause 4.8 Refer to Ratings, $\pm 50\text{ppm}$
 $\text{T.C.R. (ppm/}^{\circ}\text{C)} = ((R_2 - R_1) / R_1(T_2 - T_1)) \times 10^6$
 R1: resistance at room temperature (T1)
 R2: resistance at 150°C (T2)

Short Time Overload	JIS C 5201-1 clause 4.13 Overload power as follows: PCS1206: 4x; PCS2512-1W: 5x; PCS2512-2W: 5x; PCS2512-3W: 4x; PCS2728-4W: 3x; Rated power duration: 5secs	$\Delta R/R_1 \pm 0.5\%$
High Temperature Exposure	JIS C 5201-1 clause 4.23.2; 1,000hrs at +170°C	$\Delta R/R_1 \pm 1.0\%$
Soldering Heat	JIS C 5201-1 clause 4.18; 260°C ± 5 for 10 seconds.	$\Delta R/R_1 \pm 0.5\%$
Temperature Cycling	JIS C 5201-1 clause 4.19, -55°C to +150°C, 1,000cycles, 15min at each extreme	$\Delta R/R_1 \pm 0.5\%$
Bias Humidity	JIS C 5201-1 clause 4.24, 1,000hrs@+85°C/85%RH, 10%Bias 1.5hrs "ON", 0.5hrs "OFF"	$\Delta R/R_1 \pm 0.5\%$
Load at Rated Power	JIS C 5201-1 clause 4.25, 1,000hrs@70 °C, 1.5hrs "ON", 0.5hrs "OFF"	$\Delta R/R_1 \pm 1.0\%$
Solderability	JIS C 5201-1 clause 4.17, 245 ± 5 °C for 2 ± 0.5 secs	>95% coverage
Dielectric Withstanding Voltage	JIS-C5201-1 clause 4.7, Applied 500VAC for 1 minute, and Limit surge current 50 mA (max.)	No short or burned appearance
Core Body Strength	JIS-C5201-1 clause 4.15, Central part pressurizing force 5N ,10 seconds	No breakage
Terminal Strength	JIS-C5201-1 clause 4.32, Pressurizing force 17.7N,10 seconds	No breakage
Terminal Bending Strength	JIS-C5201-1 clause 4.33, Bending once for 2mm,10 seconds	$\Delta R/R_1 \pm 0.5\%$; No breakage
Moisture Resistance (Climatic Sequence)	MIL-STD 202 Method 106, T=24 hours/cycle ,10 cycles. Steps 7a& 7b not required. Unpowered. (see figure)	$\Delta R/R_1 \pm 0.5\%$

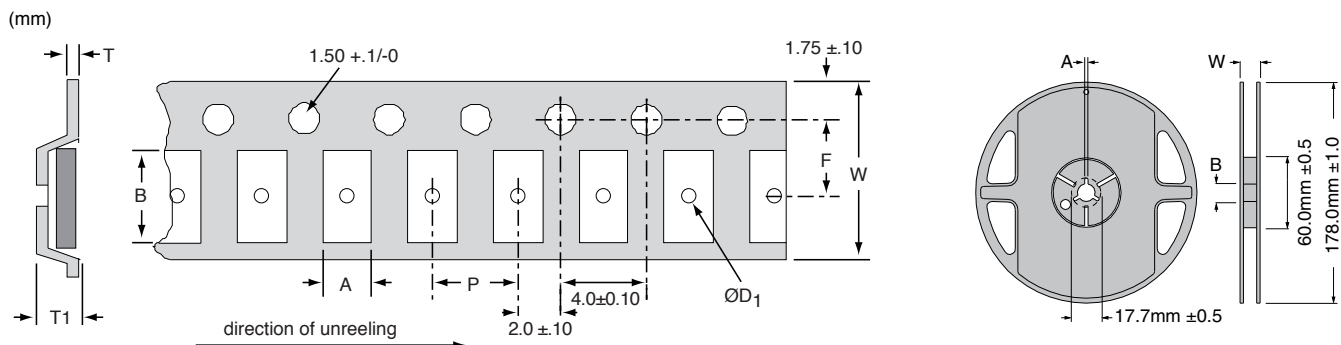


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TAPE AND REEL



Item	W	P	F	D1	H	A	B	T1	T	Qty./reel	tape size	A	B	W
PCS1206	8.0 ±.30	4.0 ±.10	3.5 ±.10	1.0 ±.10	2.0 ±.10	2.03 ±.10	3.55 ±.10	0.70 ±.10	0.20 ±.05	5,000	8mm	2.0 ±.5	13.2 ±.5	12.0 ±.5
PCS2512	12.0 ±.30	4.0 ±.10	5.5 ±.10	1.55 ±.10	2.0 ±.10	3.50 ±.10	6.75 ±.10	0.90 ±.10	0.20 ±.05	4,000	12mm	2.5 ±.5	13.5 ±.5	16.2 ±.5
PCS2728	12.0 ±.30	8.0 ±.10	5.5 ±.10	1.55 ±.10	2.0 ±.10	7.10 ±.10	7.05 ±.10	0.95 ±.10	0.20 ±.05	2,000	12mm	2.5 ±.5	13.5 ±.5	16.2 ±.5

ORDERING INFORMATION

Series	Size	Tolerance	Resistance	RoHS	Tape and reel
PCS	1206	D = 0.5%		Compliant	
	2512	F = 1%			
	2728				

Standard part numbers

Part number	Wattage	Resistance	Tol.
PCS1206FR0010ET	1	1mΩ	1%
PCS1206FR0020ET	1	2mΩ	1%
PCS1206FR0030ET	1	3mΩ	1%
PCS1206FR0050ET	1	5mΩ	1%
PCS1206DR0100ET	1	10mΩ	0.50%
PCS1206DR0200ET	1	20mΩ	0.50%
PCS1206DR0500ET	1	50mΩ	0.50%
PCS2512FR0005ET	2	0.5mΩ	1%
PCS2512FR0010ET	2	1mΩ	1%
PCS2512FR0020ET	2	2mΩ	1%
PCS2512FR0050ET	2	5mΩ	1%
PCS2512DR0100ET	2	10mΩ	0.50%
PCS2512DR0200ET	2	20mΩ	0.50%
PCS2512DR0500ET	2	50mΩ	0.50%
PCS2512DR1000ET	2	100mΩ	0.50%
PCS2512FR5000ET	1	500mΩ	1%
PCS2728DR0100ET	4	10mΩ	0.50%
PCS2728DR0250ET	4	25mΩ	0.50%
PCS2728DR0500ET	4	50mΩ	0.50%
PCS2728DR1000ET	4	100mΩ	0.50%

Marking

"R" designates the decimal location in ohms, e.g. R001=1m, R025=25m, R100=100m

"m" designates the decimal location in milliohms, e.g. 0m25=0.25m, 0m50=0.5m, 5m50=5.5m, 25m5=25.5m

All the other products marking are 4 digits