

DATA SHEET

High Power Rating Chip Resistor

CPW Series

0.1% TO 5%, TCR -200 TO +400

SIZE: 0201/0402/0603/0805/1206/1210/2010/2512

RoHs Compliant



HIGH POWER RATING CHIP RESISTOR

CPW Series

DS-ENG-010

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1. SCOPE

- 1.1 This specification is applicable to lead and halogen free CPW series high power thick film chip resistors.
- 1.2 Lead free products mean lead free termination meets RoHS requirement. Pb contained in glass material of resistor element is exempted by RoHS directive.
- 1.3 The products are tested and passed based on the test conditions and methods defined in AEC-Q200.

2 PART NUMBERING SYSTEM

Part Numbering is made in accordance with the following system:

Ordering Code / Information

CPW	10	-	XXXX	-	F	K
Type	Size (Inch / mm)	Nominal Resistance		Resistance Tolerance	Packaging	
High Power Rating Chip Resistors	05(0201/0603)	Resistors	3-Digit	E24 Series 2.2Ω=2R2 100Ω=101 JUMPER=000	F=±1% G=±2% J=±5% Z=Zero Ohm	E = 4000 pcs Lead Free L = 5000 pcs Lead Free K = 10000 pcs Lead Free Y = 20000 pcs Lead Free
	10(0402/1005)		4-Digit			
	16(0603/1608)					
	21(0805/2012)					
	32(1206/3216)					
	40(1210/3225)					
	50(2010/5025)					
	63(2512/6432)					

3 RATING

3.2 Rated Power

3.1.1 Resistor Rated Power

Type	Rated Power at 70°C	Max.Working Voltage	Max.Overload Voltage
CPW05 (0201)	1/16 W	25V	50V
CPW10 (0402)	1/10 W	50V	100V
CPW16 (0603)	1/8 W	75V	150V
CPW21 (0805)	1/4 W	150V	300V
CPW32 (1206)	1/2 W	200V	400V
CPW40 (1210)	3/4 W	200V	400V
CPW50 (2010)	1W	200V	400V
CPW63 (2512)	2W	200V	400V



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3.2 Power Derating Characteristics

Rated Power shall be the load power corresponding to nominal wattage suitable for continuous use at 70°C ambient temperatures. In case the ambient temperature exceeds 70°C, reduce the load power in accordance with Derating curve in Fig. 1.

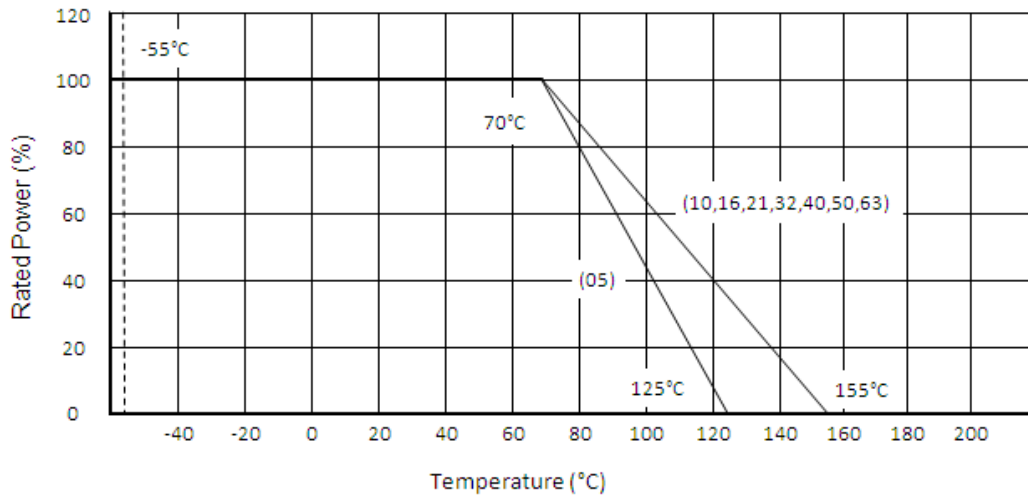


Fig.1 Power Derating Characteristics

3.3 Standard Atmospheric Condition

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests is as follows:

Ambient Temperature = + 5°C to +35°C

Relative Humidity = < 85% RH

Air Pressure = 86 kPa to 106kPa

If there may be any doubt about the results, measurement shall be made within the following limits:

Ambient Temperature = 20 ± 2°C

Relative Humidity = 60 to 70% RH

Air Pressure = 86 kPa to 106kPa

3.4 Operating Temperature Range -55°C to +155°C (Except CR05 is -55°C to +125°C)

3.5 Storage Temperature Range -5°C to + 40°C

3.6 Flammability Rating Tested in accordance to UL-94, V-0

3.7 Moisture Sensitivity Level Rating: Level 1

3.8 Product Assurance ASJ resistors shall warranty 24 months from the date of shipment.

3.9 ASJ resistors are RoHS compliance in accordance to RoHS Directive 2011/65/EU.

3.10 Resistance, Resistance Tolerance and Temperature Coefficient of Resistance.

Type	Rated Power at 70°C	Max. Working Voltage	Max. Overload Voltage	T.C.R (ppm/°C)	Resistance Range				Jumper Rated Power		Jumper Resistance Value	
					B(±0.1%) E-24, E-96	D(±0.5%) E-24, E-96	F(±1%) E-24, E-96	G(±2%), J(±5%) E-24	J (±5%)	F (±1%)	J (±5%)	F (±1%)
CPW05 0201(0603)	1/16W	25V	50V	-200 +400	-----	10Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω	--	--	--	--
				±200	-----	10Ω ≤ R ≤ 10MΩ	10Ω ≤ R ≤ 10MΩ	10Ω ≤ R ≤ 10MΩ				
CPW10 0402(1005)	1/10W	50V	100V	±100	100Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	10Ω ≤ R ≤ 20MΩ	1.5A	2A	50mΩ Max.	20mΩ Max.
				±200	-----	-----	10Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω				
CPW16 0603(1608)	1/8W	75V	150V	±100	100Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	10Ω ≤ R ≤ 20MΩ	2.5A	3.0A	50mΩ Max.	20mΩ Max.
				±200	-----	10Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω				
CPW21 0805(2012)	1/4W	150V	300V	±100	100Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	10Ω ≤ R ≤ 10MΩ	10Ω ≤ R ≤ 20MΩ	2.5A	3.5A	50mΩ Max.	20mΩ Max.
				±200	-----	10Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω				
CPW32 1206(3216)	1/2W	200V	400V	±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	10Ω ≤ R ≤ 10MΩ	10Ω ≤ R ≤ 20MΩ	3A	5A	50mΩ Max.	20mΩ Max.
				±200	3Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω				
CPW40 1210(3225)	3/4W	200V	400V	±100	100Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	10Ω ≤ R ≤ 10MΩ	10Ω ≤ R ≤ 20MΩ	4A	6A	50mΩ Max.	20mΩ Max.
				±200	-----	-----	10Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω				
CPW50 2010(5025)	1W	200V	400V	±100	-----	-----	10Ω ≤ R ≤ 10MΩ	10Ω ≤ R ≤ 10MΩ	4.5A	7A	50mΩ Max.	20mΩ Max.
				±200	-----	-----	10Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω				
CPW63 2512(6432)	2W	200V	400V	±100	-----	-----	10Ω ≤ R ≤ 10MΩ	10Ω ≤ R ≤ 10MΩ	6A	10A	50mΩ Max.	20mΩ Max.
				±200	-----	-----	10Ω ≤ R < 10Ω	10Ω ≤ R < 10Ω				
Operating Temperature Range				-55°C ~ +155°C (CPW05: -55°C ~ +125°C)								

3.11 Rated Voltage

The rated voltage is calculated from the rated power and nominal resistance by the following formula:

$$E = \sqrt{P \cdot R}$$

Where E : Rated Voltage (V)
 P : Rated Power (W)
 R : Nominal Resistance (Ω)

In case the value calculated by the formula exceeds the maximum working voltage given in Section 3.1.1, the maximum working voltage in Section 3.1.1 shall be regarded as the rated voltage.

3.12 All product, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise.

4 MARKING ON PRODUCT

The nominal resistance shall be marked on the surface of each resistor



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Part Number	Color	Marking on Product
CPW05 (0201)	-	No marking
CPW10 (0402)	-	No marking
CPW16 (0603)	Light Yellow	1) Tolerance : $\pm 1.0\%$ (F) ° Four Numerals Marking (E96 Series) ° 0603 Three Characters Marking based on E-96 marking standard. 2) Tolerance; $\pm 2.0\%$ (G), $\pm 5.0\%$ (J) Three Numerals Marking 3) Zero ohm jumper resistor The marking used shall be 0
CPW21 (0805)	Light Yellow	
CPW32 (1206)	Light Yellow	
CPW40 (1210)	Light Yellow	
CPW63 (2512)	Light Yellow	

4.1 Numeric Numbering

4.1.1 1% Tolerance : *Four Numerals Marking*

First 3 digits are significant figures; fourth digit is number of zeros.

Examples:

Nominal Resistance	Marking	Remarks
1 Ω	1R00	$1 \times 10^0 = 1$
10 Ω	10R0	$10 \times 10^0 = 10$
100 Ω	1000	$100 \times 10^0 = 100$
4.7K Ω	4701	$470 \times 10^1 = 4700$
47K Ω	4702	$470 \times 10^2 = 47000$
470K Ω	4703	$470 \times 10^3 = 470000$
1M Ω	1004	$100 \times 10^4 = 1000000$

4.1.2 0603 1% Tolerance: *Three Character E-96 Marking Standard*.

The first 2 digits for the 3 digits E-96 part marking standard, (Refer Table 2 & 3).

The third character is a letter multiplier:

Nominal resistance	Marking	Remark
33.2 Ω	51 X	$332 \times 10^{-1} \Omega$
150 Ω	18 A	$150 \times 10^0 \Omega$
4.99K Ω	68 B	$499 \times 10^1 \Omega$
10.2K Ω	02 C	$102 \times 10^2 \Omega$
100K Ω	01 D	$100 \times 10^3 \Omega$

4.1.2.1 EIA-96 Marking Scheme

Table 2 Significant figures



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Significant Figures	Symbol	Significant Figures	Symbol	Significant Figures	Symbol	Significant Figures	Symbol
100	01	178	25	316	49	562	73
102	02	182	26	324	50	576	74
105	03	187	27	332	51	590	75
107	04	191	28	340	52	604	76
110	05	196	29	348	53	619	77
113	06	200	30	357	54	634	78
115	07	205	31	365	55	649	79
118	08	210	32	374	56	665	80
121	09	215	33	383	57	681	81
124	10	221	34	392	58	698	82
127	11	226	35	402	59	715	83
130	12	232	36	412	60	732	84
133	13	237	37	422	61	750	85
137	14	243	38	432	62	768	86
140	15	249	39	442	63	787	87
143	16	255	40	453	64	806	88
147	17	261	41	464	65	825	89
150	18	267	42	475	66	845	90
154	19	274	43	487	67	866	91
158	20	280	44	499	68	887	92
162	21	287	45	511	69	909	93
165	22	294	46	523	70	931	94
169	23	301	47	536	71	953	95
174	24	309	48	549	72	976	96

Table 3 Multiplier

Symbol	Multiplier	Symbol	Multiplier
A	10^0	G	10^6
B	10^1	H	10^7
C	10^{-2}	X	10^{-1}
D	10^{-3}	Y	10^{-2}
E	10^4		
F	10^5		

5 DIMENSIONS, CONSTRUCTIONS AND MATERIALS

5.1 Dimensions



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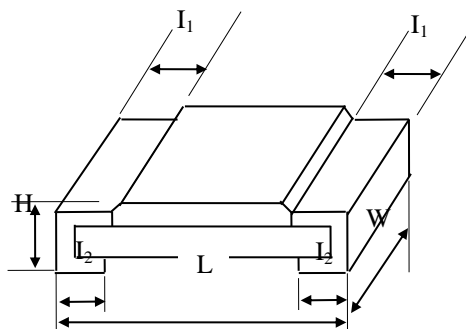
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Unit: Inches (Millimeters)

CODE	L	W	H	I ₁	I ₂
CPW05 (0201/0603)	0.024±0.001 (0.60±0.03)	0.001±0.001 (0.30±0.03)	0.009±0.001 (0.23±0.03)	0.006±0.002 (0.15±0.05)	0.006±0.002 (0.15±0.05)
CPW10 (0402/1005)	0.040±0.004 (1.00±0.10)	0.020±0.002 (0.50±0.05)	0.014±0.002 (0.30±0.05)	0.008±0.004 (0.20±0.10)	0.010±0.004 (0.25±0.10)
CPW16 (0603/1608)	0.061±0.004 (1.55±0.10)	0.031±0.004 (0.80±0.10)	0.018±0.004 (0.45±0.10)	0.012±0.006 (0.30±0.15)	0.012±0.006 (0.30±0.15)
CPW21 (0805/2012)	0.079±0.004 (2.00±0.10)	0.049±0.004 (1.25±0.10)	0.020±0.004 (0.50±0.10)	0.014±0.008 (0.35±0.20)	0.014±0.006 (0.35±0.15)
CPW32 (1206/3216)	0.120±0.004 (3.05±0.10)	0.061±0.004 (1.55±0.10)	0.020±0.004 (0.50±0.10)	0.018±0.008 (0.45±0.20)	0.014±0.006 (0.35±0.15)
CPW40 (1210/3225)	0.120±0.004 (3.05±0.10)	0.100±0.004 (2.55±0.10)	0.022±0.004 (0.55±0.10)	0.020±0.008 (0.50±0.20)	0.020±0.008 (0.50±0.20)
CPW50 (2010/5025)	0.195±0.004 (4.95±0.10)	0.096±0.004 (2.45±0.10)	0.028±0.004 (0.70±0.10)	0.026±0.008 (0.65±0.20)	0.024±0.008 (0.60±0.20)
CPW63 (2512/6432)	0.252±0.008 (6.40±0.20)	0.126±0.008 (3.20±0.20)	0.027±0.004 (0.70±0.10)	0.024±0.008 (0.60±0.20)	0.049±0.008 (1.25±0.20)

6 ELECTRICAL CHARACTERISTICS AND TEST CONDITIONS



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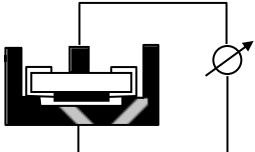
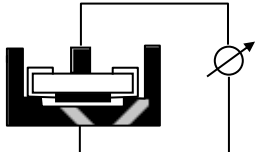
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CHARACTERISTICS		SPECIFICATIONS	
		Resistance	
		TESTING CONDITIONS	
1	Resistance Temperature Coefficient	Refer Section 3.10 Table 1	<p>MIL-STD-202 Method 304 Measure R at $t_0=25^{\circ}\text{C}$ and after 45 minutes measure R at $t=125^{\circ}\text{C}$. Calculation : $\text{TCR}(\text{ppm}/^{\circ}\text{C}) = \frac{R - R_0}{R_0} \times \frac{1}{t - t_0} \times 10^6$</p>
2	Short Time Overload	1%: $\pm(1.0\%+0.05\Omega)$ 2%, 5%: $\pm(2.0\%+0.10\Omega)$	<p>JIS C 5201-1 4.13 Apply at 2.5 times rated voltage for 5 seconds. Applied voltage shall not exceed maximum overload voltage or current.</p>
3	Insulation Resistance	> 10G Ω	<p>JIS C 5201-1 4.6 Apply (100 \pm15) VDC for 1 minute. Measured the insulation resistance between electrodes and insulating enclosure or between electrodes and base.</p> 
4	Dielectric Withstanding Voltage	No failure of resistor such as short-circuit, burning, breakdown.	<p>JIS C 5201-1 4.7 Apply 500VAC for 1 minute \pm 5secs. for chip \geq 0805. Apply 300VAC for 1 minute \pm 5secs. for chip 0402 & 0603 Apply 50Vac for 1 minute \pm 5secs for 0201</p>  <p>The variation in relation to the initial resistance shall be within \pm 1%.</p>



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5	Core Body Strength	$\pm(1.0\%+0.05\Omega)$		<p>JIS-C5201-1 4.15 Applied R0.5 test probe at its central part then pushing 10N {1.02Kgf} force on the sample for 10 sec.</p>
6	Noise	1~9 10~99 100~999 1K~9.9K 10K~99.9K 100K~999.9K >1M	-10dB(0.32 μ v/v) - 5 dB(0.52 μ v/v) 0 dB(1.0 μ v/v) 10 dB(3.2 μ v/v) 18 dB(5.6 μ v/v) 20 dB(10 μ v/v) 30 dB(32 μ v/v)	<p>JIS C 5201-1 4.12 $V_0(\text{dB}) = T-f(T-S)-D$</p>
7	Terminal Strength	Test 1: No evidence of mechanical damage. Test 2 : CPW05 $\geq 3\text{N}$ Other type: $\geq 5\text{N}$		<p>JIS C 5201-1 4.16 Test 1 : The resistor mounted on the board applied 5N pushing force on the sample rear for 10sec. Test 2 : The resistor mounted on the board slowly add force on the sample rear until the sample termination is breakdown.</p>
8	Resistance to Solvent	CPW05: $\pm(1.0\%+0.05\Omega)$ Other type: $\pm(0.5\%+0.05\Omega)$		<p>JIS-C5201-1 4.29 The tested resistor be immersed into isopropyl alcohol of 20~25°C for 5 minutes, then the resistor is left in the room for 48 hrs, and measured its resistance variance rate.</p>
		No evidence of mechanical damage. No G2 over coating and Sn layer by leaching.		
9	Solderability	$\geq 95\%$ Coverage at all terminal		<p>JIS-C5201-1 4.17 Preconditioning: Put the tested resistor in the apparatus of PCT, at a temperature of 105°C, humidity of 100% RH, and pressure of 1.22$\times 10^5$ Pa for a duration of 4 hours. Then after left the tested resistor in room temperature for 2 hours or more. Test method: The resistor be immersed into solder pot in temperature 235$\pm 5^\circ\text{C}$ for 2 sec, then the resistor is left as placed under microscope to observed its solder area.</p>
10	Resistance to soldering heat	$\Delta R\% = \pm(1.0\%+0.05\Omega)$		<p>JIS-C5201-1 4.18 Solder bath method Resistor dipped entirely in solder bath of 260$\pm 5^\circ\text{C}$ for 10 sec. After which the sample shall be left at ambient temperature for 1~ 2 hrs before measurement.</p>



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11	Vibration	1%: $\pm(0.5\%+0.05\Omega)$ 2%, 5%: $\pm(1.0\%+0.05\Omega)$	JIS-C5201-1 4.22 The resistor shall be mounted by its terminal leads to the supporting terminals on the solid table. The entire frequency range: from 10 Hz to 55 Hz and return to 10 Hz, shall be transferred in 1 min. Amplitude :1.5 mm This motion shall be applied for a period of 2 hours in each 3 mutually perpendicular directions (a total of 6 hrs)
12	Low Temperature Operation	1%: $\pm(0.5\%+0.05\Omega)$ 2%, 5%: $\pm(1.0\%+0.05\Omega)$	MIL-R-55342D 4.7.4 Put the tested resistor in the chamber at room temperature 25°C. Decreasing the temperature to -55°C and keep the temperature at -55°C for 1 hour. Then load the rated voltage for 45 minutes on, and 15 minutes off. Then leaving the tested resistor in room temperature for 8±1 hours, and measure its resistance variance rate.
13	Resistance Dry Heat	1%: $\pm(1.0\%+0.05\Omega)$ 2%, 5%: $\pm(2.0\%+0.10\Omega)$	JIS-C5201-1 4.25 Put tested resistor in chamber under temperature 155±5°C for 1000 +48/-0 hours. Then leaving the tested resistor in room temperature for 60 minutes, and measure its resistance variance rate.
14	Loadlife	1%: $\pm(0.5\%+0.05\Omega)$ 2%, 5%: $\pm(2.0\% + 0.10\Omega)$	JIS-C5201-1 4.25 At 70±2°C Apply DC rated voltage at 90minutes On, 30minutes Off for 1000 hours Sample shall be left at ambient temperature for 1~ 2 hrs after test before measuring final resistance.
15	Loading Life in Moisture	1%: $\pm(0.5\%+0.05\Omega)$ 2%, 5%: $\pm(2.0\% + 0.10\Omega)$	JIS-C5201-1 4.24 Put the tested resistor in the chamber under temperature 40±2°C, relative humidity 90~95% and load the rated voltage for 90 minutes on, 30 minutes off, total 1000 hours. Then leaving the tested resistor in room temperature for 60 minutes, and measure its resistance variance rate.



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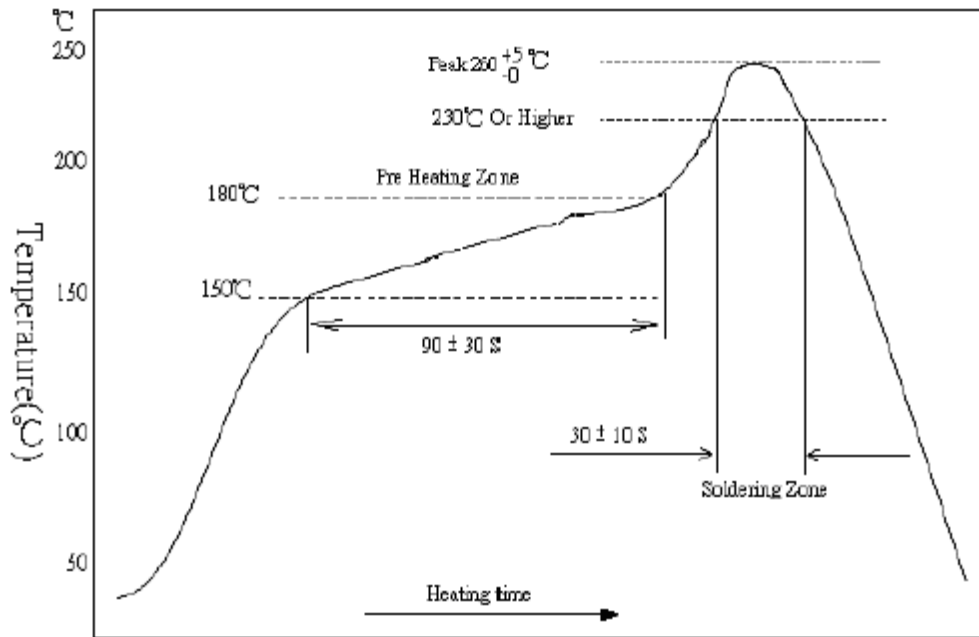
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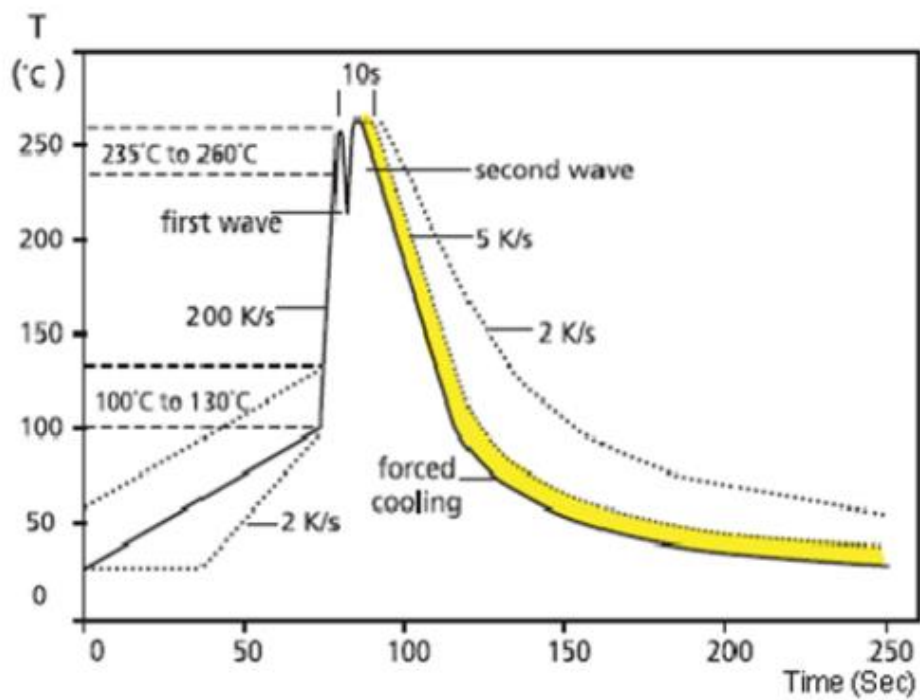
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6.1 Soldering Profile

6.1.1 IR Reflow



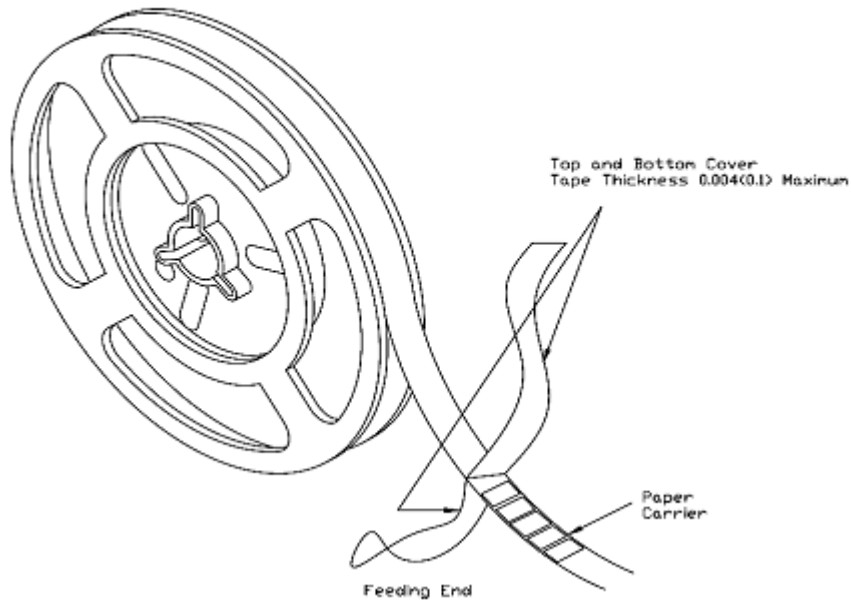
6.1.2 Wave Soldering



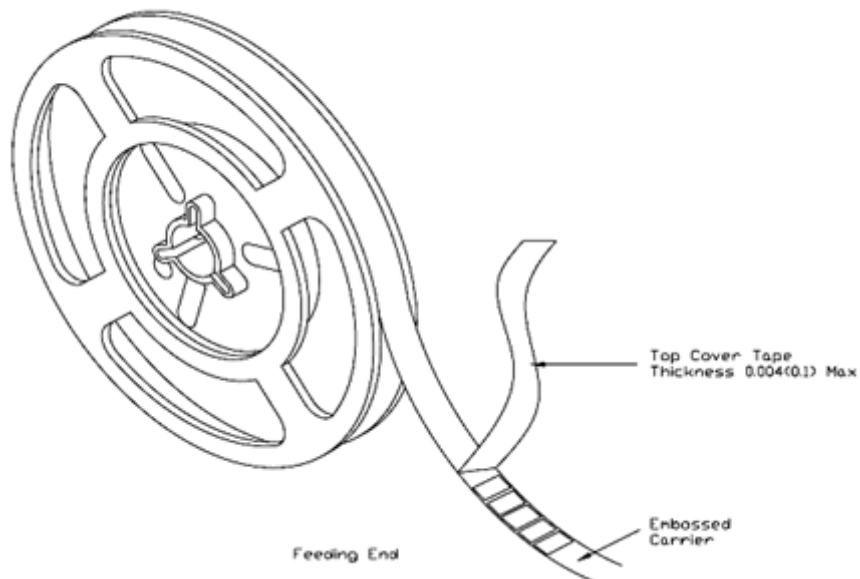
7 TAPING

7.1 Structure of Taping

Paper Carrier

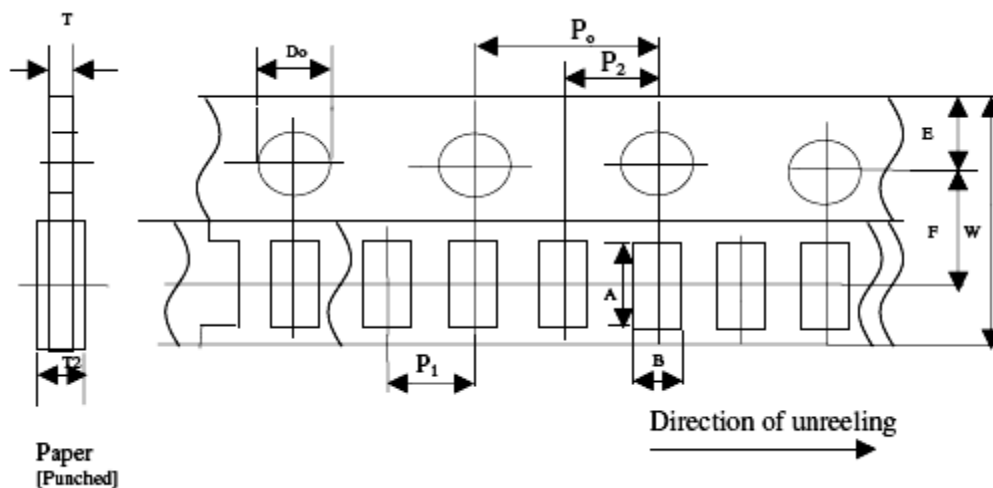


Embossed Plastic Carrier



7.2 Dimension

7.5.1 Dimension of Punched Paper Tape Carrier System (CPW – 05, 10)



Remark : Pitch tolerance over any 10 pitches of P_0 is ± 0.2 mm

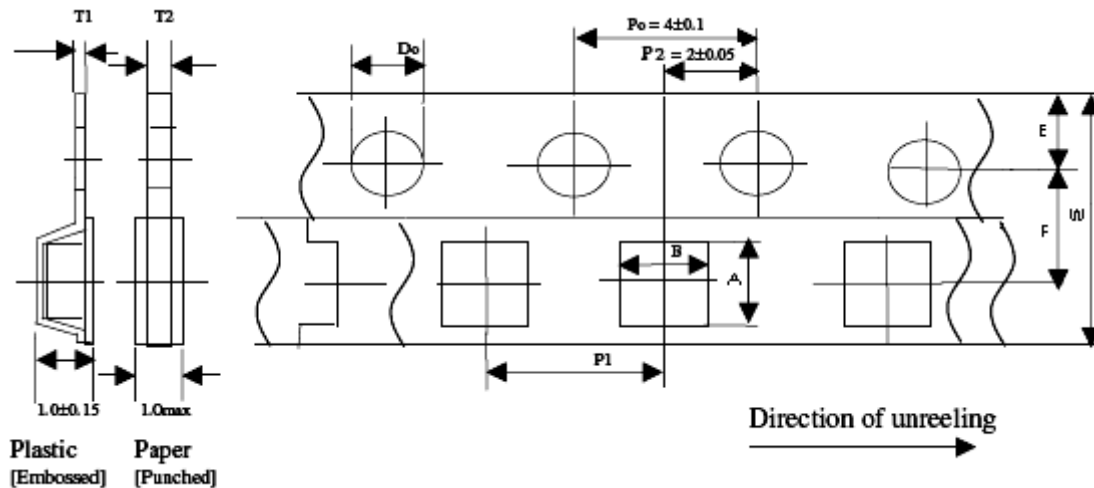
Dimension of Punched Paper Tape Carrier System (CPW- 05, 10)

(Unit: mm)

Code	A	B	W	E	F	P_1
CPW05	0.68 ± 0.5	0.38 ± 0.03	8.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	2.0 ± 0.05
CPW10	1.15 ± 0.1	0.65 ± 0.05	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	2.0 ± 0.05

Code	P_2	P_0	D_0	T_2	T
CPW05	2.0 ± 0.05	4.0 ± 0.5	$1.5^{+0.1}_{-0}$	0.28 ± 0.02	$0.42 + 0.1/-0$
CPW10	2.0 ± 0.05	4.0 ± 0.5	$1.5^{+0.1}_{-0}$	0.40 ± 0.5	$0.42 + 0.2/-0$

7.5.2 Dimension of Punched Paper Tape Carrier System /Plastic Embossed Carrier System
(CPW-16, 21, 32, 40, 50, 63)



Remark : Pitch tolerance over any 10 pitches of P0 is ± 0.2 mm

Dimension of Punched Paper Tape Carrier System (CPW - 16, 21, 32, 40)

Code	A	B	W	E	F	P1	Do	T2
CPW16	1.9 ± 0.1	1.1 ± 0.1	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	1.5 ^{+0.1} ₀	0.60 ± 0.1
CPW21	2.4 ± 0.1	1.65 ± 0.1						0.75 ± 0.1
CPW32	3.5 ± 0.1	1.9 ± 0.1						0.75 ± 0.1
CPW40	3.5 ± 0.1	2.8 ± 0.1						0.75 ± 0.1

Dimension of Plastic Embossed Carrier System (CPW -50, 63)

Code	A	B	W	E	F	P1	Do	T1
CPW50	5.4 ± 0.2	2.9 ± 0.2	12 ± 0.2	1.75 ± 0.1	5.5 ± 0.05	4.0 ± 0.1	1.5 ^{+0.1} ₀	0.2 ± 0.10
CPW63	6.6 ± 0.2	3.6 ± 0.1						

7.7 Packaging

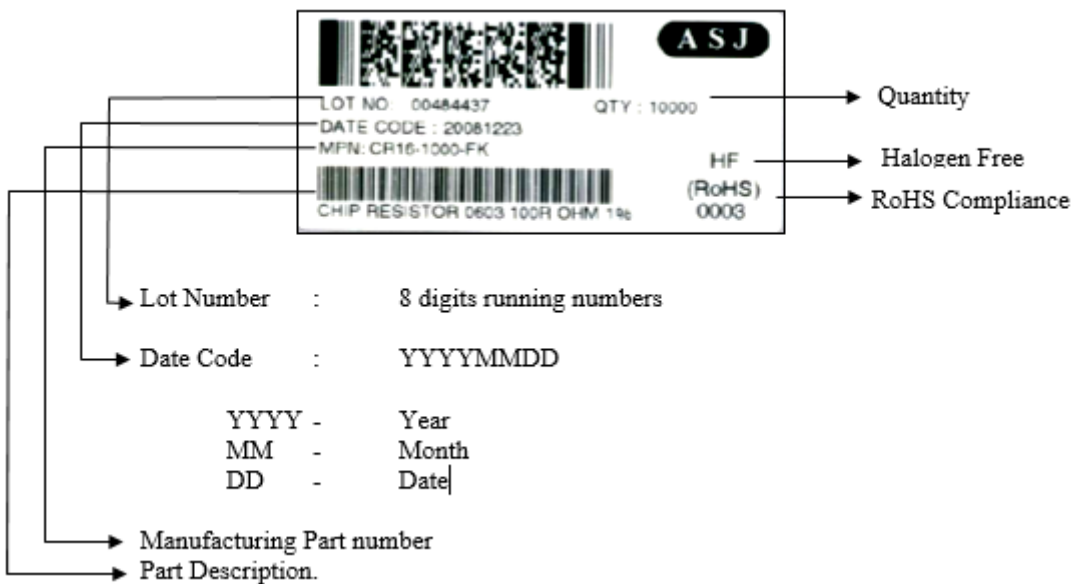
7.7.1 Taping

7.7.1.1 Quantity – Tape and Reels

Code	Quantity	Remarks
CPW05	10000 pcs	20 000 or 50 000 pcs on request
CPW10		
CPW16	5000 pcs	10 000 or 20 000 pcs on request
CPW21		
CPW32		
CPW40	5000 pcs	-
CPW50	4000 pcs	-
CPW63	4000 pcs	-

7.7.2 Identification

Production label that indicates the 8 digits lot number, product type, resistance value and tolerance shall be pasted on the surface of each reel.



7.7.3 Packaging Reel Box

Dimension	Reel Box	Number of Reels
185 × 60 × 186 mm	25K Box	5
185 × 120 × 186 mm	50K Box	10

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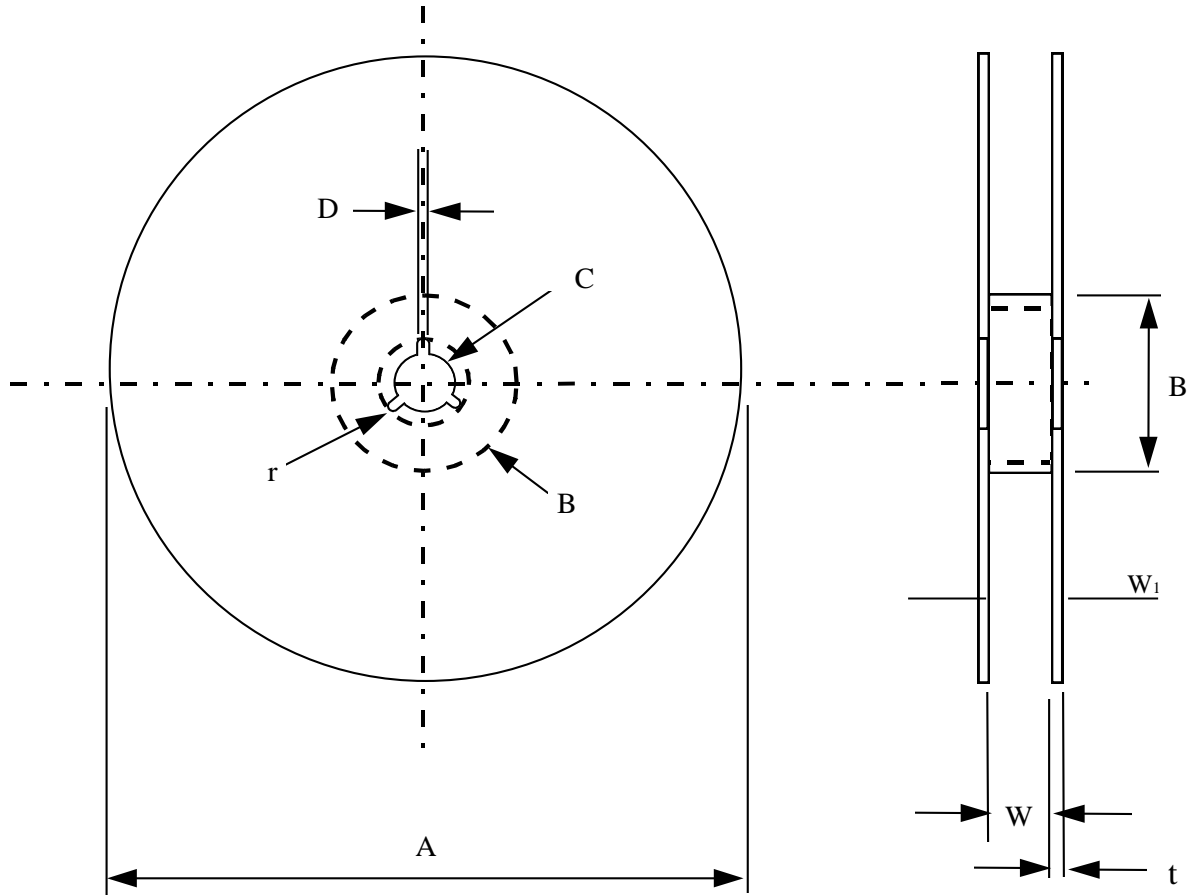
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7.7.4 Reel Dimensions



Model	A	B	C	D	W	W ₁	t	r
7" Reel (5K) (except 0402 10K)	$\phi 178 \pm 2.0$	$\phi 80 \text{min}$	13 ± 0.2	$\phi 2.0 \pm 0.5$	11 ± 0.1	14.4 max	1.0 ± 0.1	1.0
7" Reel (4K)	$\phi 178 \pm 2.0$	$\phi 60 \text{min}$	13 ± 0.2	$\phi 2.0 \pm 0.5$	13 ± 1.0	14.4 max	1.2 ± 0.1	1.0
7" Reel (2K) (for 2512)	$\phi 178 \pm 2.0$	$\phi 60 \text{min}$	13.5 ± 0.5	$\phi 2.0 \pm 0.5$	13.8 ± 0.5	14.4 max	1.2 ± 0.1	1.0
10" Reel (10K)	$\phi 254 \pm 2.0$	$\phi 60 \text{min}$	13 ± 0.2	$\phi 2.0 \pm 0.5$	11 ± 1.0	14.4 max	1.5 ± 0.1	1.0
13" Reel (20K)	$\phi 330 \pm 2.0$	$\phi 60 \text{min}$	13 ± 0.2	$\phi 2.0 \pm 0.5$	11 ± 1.0	14.4 max	2.1 ± 0.1	-
13" Reel (20K)	$\phi 330 \pm 1.0$	$\phi 100 \pm 1$	13.5 ± 0.5	$2 \sim 3 \pm 0.5$	10 ± 0.5	-	-	-



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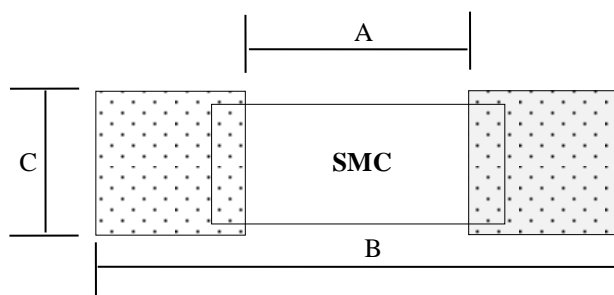
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8 SURFACE MOUNT LAND PATTERNS



Unit: Inch (mm)

Product (Type)	Land Dimension		
	A	B	C
CPW05 (0201)	0.012 [0.30]	0.04 [1.00]	0.016 [0.40]
CPW10 (0402)	0.020 [0.50]	0.059 [1.50]	0.024 [0.60]
CPW16 (0603)	0.031 [0.80]	0.083 [2.10]	0.035 [0.90]
CPW21 (0805)	0.047 [1.20]	0.118 [3.00]	0.051 [1.30]
CPW32 (1206)	0.087 [2.20]	0.165 [4.20]	0.063 [1.60]
CPW40 (1210)	0.087 [2.20]	0.165 [4.20]	0.110 [2.80]
CPW50 (2010)	0.138 [3.50]	0.240 [6.10]	0.110 [2.80]
CPW63 (2512)	0.150 [3.80]	0.315 [8.00]	0.138 [3.50]

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9 REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version.1	February 13,2015		Initial Release
Version.2	December 15,2015		Surface Mount Land Pattern updated
Version.3	May 23,2016	ECO No.: 002/2016	Revise clause 2 and 7.7.1.1, change CPW63 packaging from 2000 pcs to 4000 pcs , Revise clause 5.1, change Chip dimension CPW63 (H) from 1.05±0.1 to 0.70±0.10,
Version.4	October 28,2016		Update clause 2, Part Numbering System Update clause 3.10, Resistance, Resistance Tolerance and TCR information
Version.5	October 24, 2017	PCN-ECO: 01/2016	Update clause 7.7.4, 13” reel information Typo error on clause 2 Typo error on 3.10



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