ASJ *Towards Excellence in Quality, Service & Innovation*

DATA SHEET

Thick Film Chip Resistor Array (Convex)

YCN Series

0.5% TO 5%, TCR ±200 TO ±500

SIZE: 052/102/104/108/162/164

RoHs Compliant

1. SCOPE

1.1 This specification specifies fixed thick film chip resistor array (convex terminations) for use in electronic equipment. In case there are discrepancies in specifications between this specification and the Customer's specifications, the latter shall precede.

1.2 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:

YCN	102	-	XXXX	-	F	K

Type	Size (Configuration)	Nominal Resistance			Resistance Tolerance	Packaging
Thick Film Chip Resistor Array	052 - 0201 X 2 102 - 0402 X 2 104 - 0402 X 4 108 - 0402 X 8 162 - 0603 X 2 164 - 0603 X 4	Resistors	3-Digit	E24 Series 2.2Ω=2R2 100Ω=101	D = ± 0.5% F = ± 1% G = ± 2% J = ± 5%	L = 5,000 pcs Lead Free K = 10,000 pcs Lead Free
			4-Digit	E96 Series 10.2Ω=10R2 10KΩ=1002		
		Jumper	000			

3. RATING

3.1 Rated Power

3.1.1 Resistor Rated Power

Type	Rated Power at 70℃	Max. Working Voltage	Max. Overload Voltage	JUMPER (0Ω) Rated	JUMPER (0Ω) Reisistance Value
YCN052 (0201x2)	1/32 W	12.5V	25V	0.5A	50mΩ MAX
YCN102 (0402x2)	1/16 W	25V	50V	1A	50mΩ MAX..
YCN104 (0402x4)	1/16 W	25V	50V	1A	50mΩ MAX.
YCN108 (0402x8)	1/16 W	25V	50V	1A	50mΩ MAX.
YCN162 (0603x2)	1/16 W	50V	100V	1A	50mΩ MAX..
YCN164 (0603x4)	1/16 W	50V	100V	1A	50mΩ MAX.

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.

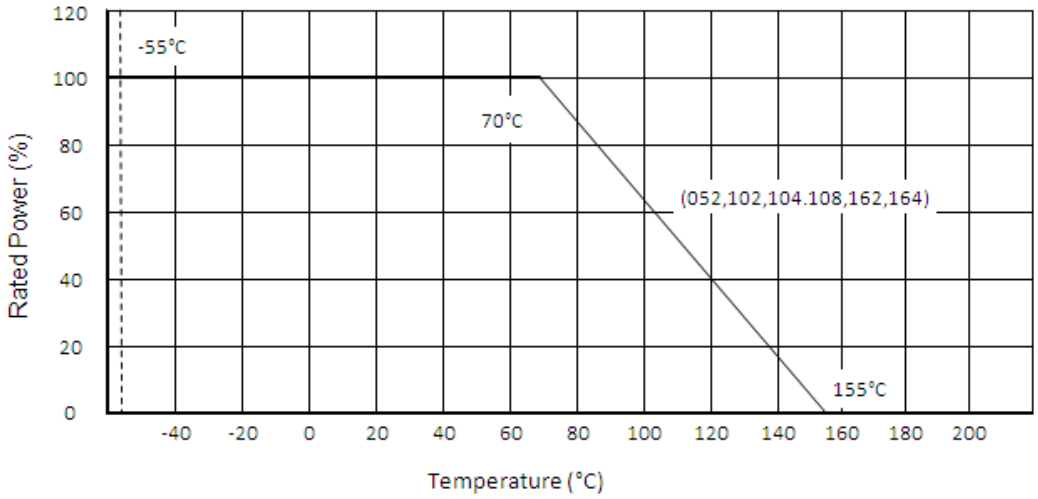


Fig.1 Power Derating Characteristics

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

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℃	T.C.R. (ppm/℃)	Resistance Range			JUMPER (0Ω) Rated	JUMPER (0Ω) Reisistance Value	Operating Temperature Range
			D(±0.5%)	F(±1%)	G(±2%) , J(±5%)			
			E-24、E-96	E-24、E-96	E-24			
YCN052 (0201x2)	1/32 W	±500	------	------	3Ω≤R<10Ω	0.5A	50mΩ MAX	− 55℃ ~ + 155℃
		±300	------	------	10Ω≤R<1K Ω			
		±200	------	------	1KΩ≤R≤1 MΩ			
YCN102 (0402x2)	1/16 W	±300	------	1Ω≤R<10Ω	1Ω≤R<10Ω	1A	50mΩ MAX..	
		±200	------	10Ω≤R≤10MΩ	10Ω≤R≤10MΩ			
YCN104 (0402x4)	1/16 W	±300	------	1Ω≤R<10Ω	1Ω≤R<10Ω	1A	50mΩ MAX.	
		±200	------	10Ω≤R≤10MΩ	10Ω≤R≤10MΩ			
YCN108 (0402x8)	1/16 W	±250	------	10Ω≤R≤10MΩ	1Ω≤R≤10MΩ	1A	50mΩ MAX.	
YCN162 (0603x2)	1/16 W	±200	------	10Ω≤R≤10MΩ	1Ω≤R≤10MΩ	1A	50mΩ MAX..	
YCN164 (0603x4)	1/16 W	±200	22Ω≤R≤470KΩ	1Ω≤R≤10MΩ	1Ω≤R≤10MΩ	1A	50mΩ MAX.	

3.11 Rated Voltage

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

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

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 3.1.2, the maximum working voltage in Section 3.1.2 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.

Part Number	Color	Marking on Product
YCN052	-	No marking
YCN102	-	No marking
YCN104	White	1) Tolerance : ±0.5% (D), ±1.0% (F) ° Four Numerals Marking (E96 Series) ° 0603 Three Characters Marking based on EIA-96 part marking scheme. 2) Tolerance; ± 2.0% (G), ±5.0% (J) Three Numerals Marking
YCN108	White	
YCN162	White	
YCN164	White	

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 X 10^0 = 1
10 Ω	10R0	10 X 10^0 = 10
100 Ω	1000	100 X 10^0 = 100
4.7K Ω	4701	470 X 10^1 = 470 0
47K Ω	4702	470 X 10^2 = 470 00
470K Ω	4703	470 X 10^3 = 470 000
1M Ω	1004	100 X 10^4 = 100 0000

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 X 10^{-1} Ω
150 Ω	18 A	150 X 10^0 Ω
4.99K Ω	68 B	499 X 10^1 Ω
1 0.2K Ω	02 C	102 X 10^2 Ω
100K Ω	01 D	100 X 10^3 Ω

4.1.2.1 EIA-96 Marking Scheme

Table 2 Significant figures

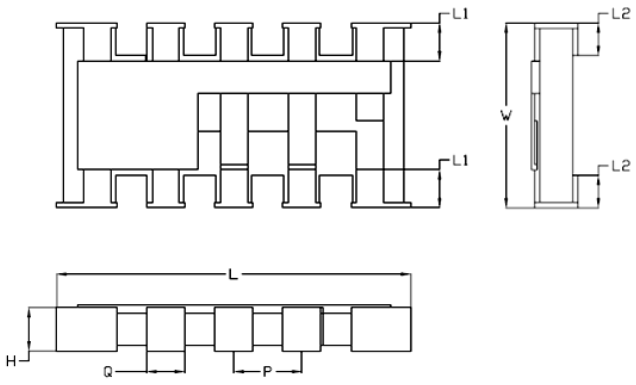
Significant Figures	Symbol	Significant Figures	Symbol	Significant Figures	Symbol	Significant Figures	Symbol
100	01	178	25	316	49	562	73
102	02	182	26	324	50	576	74
105	03	187	27	332	51	590	75
107	04	191	28	340	52	604	76
110	05	196	29	348	53	619	77
113	06	200	30	357	54	634	78
115	07	205	31	365	55	649	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

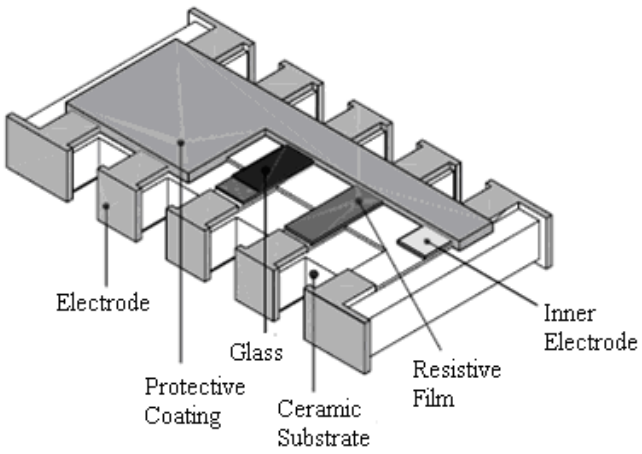
5.1 Dimensions



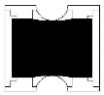
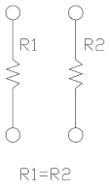
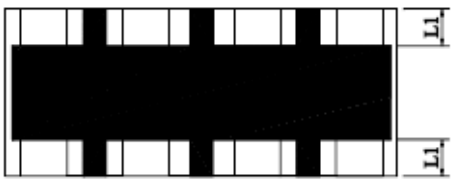
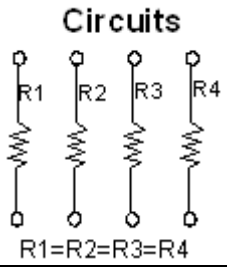
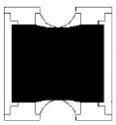
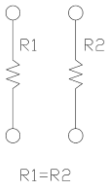
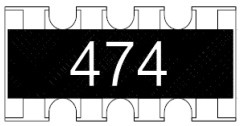
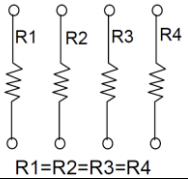
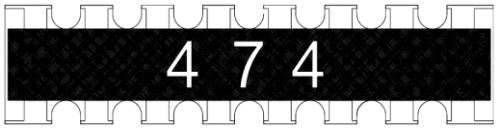
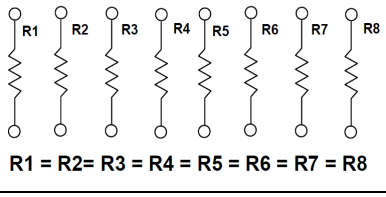
Unit: Inches (Millimeters)

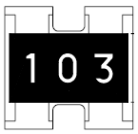
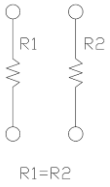
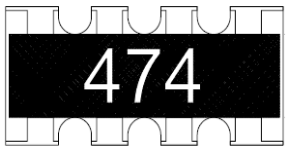
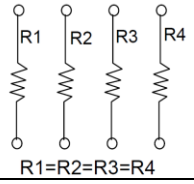
Type	Dimensions						
	Inches (Millimeters)						
	L	W	H	L_1	L_2	P	Q
YCN052 (0201 X 2)	0.031±0.004 (0.80±0.10)	0.024±0.004 (0.60±0.10)	0.012±0.002 (0.30±0.05)	0.006±0.004 (0.15±0.10)	0.006±0.002 (0.15±0.05)	0.02 (0.50)	0.014±0.004 (0.35±0.10)
YCN102 (0402 X 2)	0.040±0.004 (1.00±0.10)	0.040±0.004 (1.00±0.10)	0.012±0.002 (0.30±0.05)	0.006 ± 0.004 (0.15 ± 0.10)	0.010 ± 0.004 (0.25 ± 0.10)	0.03 (0.67)	0.013±0.004 (0.33±0.10)
YCN104 (0402 X 4)	0.078±0.004 (2.00 ± 0.10)	0.040±0.004 (1.00±0.10)	0.016±0.004 (0.40±0.10)	0.008 ± 0.004 (0.20 ± 0.10)	0.010 ± 0.004 (0.25±0.10)	0.02 (0.50)	0.012±0.004 (0.30±0.10)
YCN108 (0402 X 8)	0.157±0.008 (4.00±0.20)	0.063±0.004 (1.60±0.10)	0.016±0.004 (0.40±0.1)	0.012 ± 0.006 (0.30 ± 0.15)	0.012 ± 0.004 (0.30±0.10)	0.02 (0.50)	0.010±0.004 (0.25±0.10)
YCN162 (0603 X 2)	0.063 ± 0.006 (1.60±0.15)	0.063±0.006 (1.60±0.15)	0.018±0.004 (0.45±0.10)	0.012 ± 0.006 (0.30 ± 0.15)	0.012 ± 0.006 (0.30±0.15)	0.031 (0.80)	0.024±0.004 (0.60±0.10)
YCN164 (0603 X 4)	0.126±0.008 (3.20±0.20)	0.063±0.006 (1.60 ± 0.15)	0.020±0.004 (0.50±0.10)	0.012 ± 0.006 (0.30 ± 0.15)	0.012±0.006 (0.30±0.15)	0.031 (0.80)	0.020±0.004 (0.50±0.10)

5.2 Construction

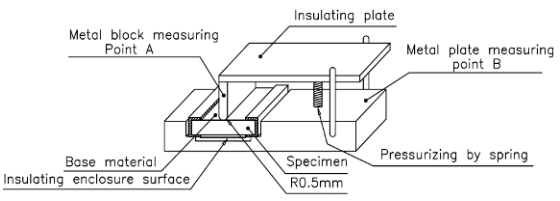


5.2 Circuit

Type	Circuit	
YCN052		
YCN054		
YCN102		
YCN104		
YCN108		

YCN162		
YCN164		

6. ELECTRICAL CHARACTERISTICS AND TEST CONDITIONS

CHARACTERISTICS		RESISTANCE SPECIFICATION		TESTING CONDITIONS
		Zero Ohm	Resistance	
1	Temperature Coefficient of Resistance	Refer Clause 3.10		***JIS C 5202 5.2*** TCR(ppm/^{0}C) = $\frac{(R2-R1)}{R1\ (T2-T1)} \times 10^6$ R1: Resistance at room temperature R2: Resistance at -55ºC or +125ºC T1: Room temperature T2: Temperature -55ºC or +125ºC
2	Short Time Overload	< 50mΩ	0.5%, 1% : ±(1.0% + 0.05Ω) 2%, 5%: ±(2.0% + 0.10Ω)	***JIS C 5202 5.3*** Applied 2.5 times rated voltage for 5 seconds and release the lead for about 30 minutes, then measure its resistance variance rate. (Rated voltage refer to clause 3.8 - Resistance, Resistance Tolerance and Temperature Coefficient of Resistance)
		No evidence of mechanical damage		
3	Insulation Resistance	≥10^9Ω		***JIS C 5201-1 4.6*** Put the resistor in the fixture, add 100 VDC in +, - terminal for 60 sec then measured the insulation resistance between electrodes and insulating enclosure or between electrodes and base material. 
4	Dielectric Withstand Voltage	No short or burned on the appearance.		***JIS C 5201-1 4.7*** Put the resistor in the fixture, add 300 VAC in +, - terminal for 60 sec.

<table>
<tr><td>5</td><td>Intermittent Overload</td><td>< 50mΩ</td><td>±(5.0% + 0.10Ω)</td><td>JIS C 5201-1 4.13
Put the tested resistor in chamber under temperature 25 ± 2ºC and load 2.5 times rated DC voltage for 1 sec on, 25 sec off, 10 000 $^{+400}_{-0}$ test cycles, then it be left at no-load for 1 hour, then measure its resistance variance rate.</td></tr>
<tr><td>6</td><td>Noise Level</td><td colspan="2">Note: Not applicable for Zero ohm</td><td>JIS C 5201-1 4.12
<table>
<tr><th>Resistance</th><th>Noise</th></tr>
<tr><td>R < 100Ω</td><td>≦-10db(0.32 uV/V)</td></tr>
<tr><td>100Ω≦R<1KΩ</td><td>≦0db(1.0 uV/V)</td></tr>
<tr><td>1KΩ≦R<10KΩ</td><td>≦10db(3.2 uV/V)</td></tr>
<tr><td>10KΩ≦R<100KΩ</td><td>≦15db(5.6 uV/V)</td></tr>
<tr><td>100KΩ≦R<1MΩ</td><td>≦20db(10 uV/V)</td></tr>
<tr><td>1MΩ≦R</td><td>≦30db(32 uV/V)</td></tr>
</table></td></tr>
<tr><td>7</td><td>Resistance to Solvent</td><td>< 50mΩ</td><td>YCN052:± (1.0%+0.05Ω)

Other:± (0.5%+0.05Ω)</td><td rowspan="2">JIS C 5201-1 4.29
The tested resistor be immersed into isorophyl alcohol of 20~25ºC for 5 minutes, then the resistor is left in the room for 48 hr, then measure its resistance variance rate.</td></tr>
<tr><td colspan="2">No evidence of mechanical damage, no overcoating and Sn layer by leaching.</td></tr>
<tr><td>8</td><td>Resistance to Soldering Heat</td><td>< 50mΩ</td><td>± (1.0%+0.05Ω)</td><td rowspan="2">JIS C 5201-1 4.18
• Test method 1 (Reflow test):
The tested resistor should be subject in the following procedure, and after finish each step, it should be left for a duration of 2 hours or longer at a temperature of 30ºC or lower and a humidity of 70% RH or lower.
<table>
<tr><th>Step</th><th>Procedure</th><th>Environmental test condition</th></tr>
<tr><td>1</td><td>Resistance measuring</td><td>Room temperature</td></tr>
<tr><td>2</td><td>Baking</td><td>125ºC, 24 hours</td></tr>
<tr><td>3</td><td>Humidification</td><td>85ºC, 85%, 168 hours</td></tr>
<tr><td>4</td><td>Reflow (1)</td><td>Reflow temperature curve and component surface temperature Table 1</td></tr>
<tr><td>5</td><td>Humidification</td><td>85ºC, 65%, 24 hours</td></tr>
<tr><td>6</td><td>Reflow (2)</td><td>Reflow temperature curve and component surface temperature Table 2</td></tr>
<tr><td>7</td><td>Resistance measuring</td><td>Room temperature</td></tr>
</table></td></tr>
<tr><td colspan="2">No evidence of electrode damage.
No side conductive peel off</td></tr>
</table>

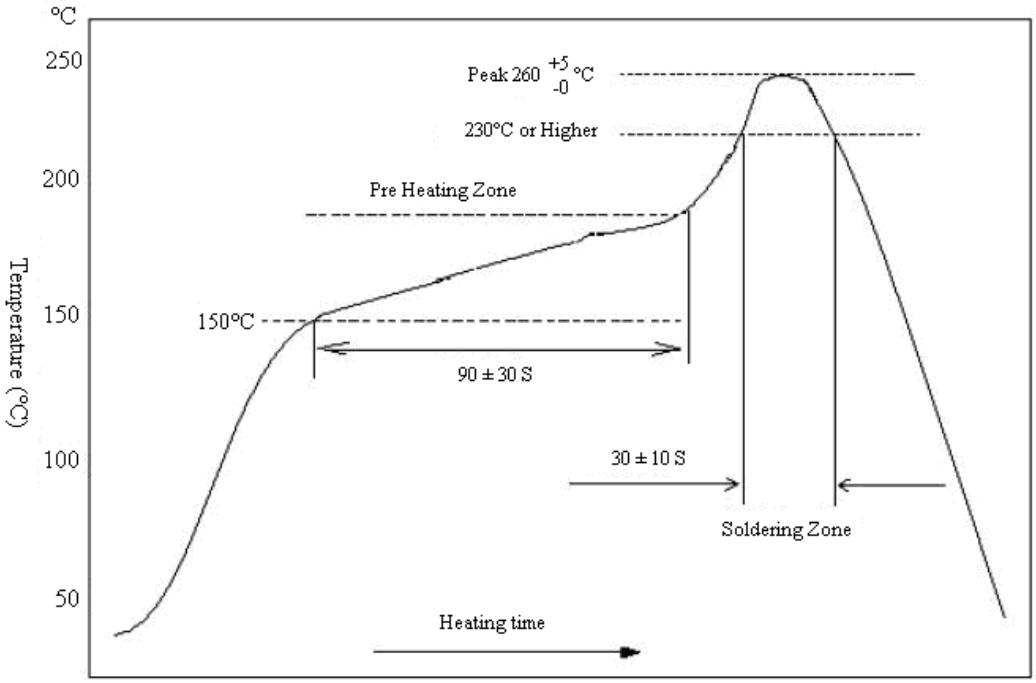
<table>
<tr>
<td>9</td>
<td>Solderability</td>
<td>Test item 1:
Solder coverage over 95%</td>
<td>JIS C 5201-1 4.17
Preconditioning:
Put the tested resistor in the apparatus of PCT, at a temperature of 105ºC, humidity of 100% RH, and pressure of 1.22x 10^5 Pa for a duration of 4 hours. Then after left the tested resistor in room temperature for 2 hours or more.
Test method:
• Test item 1 (solder pot test):
The resistor be immersed into solder pot in temperature 235± 5ºC for 2 sec, then the resistor is left as placed under microscope to observed its solder area.
• Test item 3 (Endurance measurement):
Put the tested resistor in the chamber under the temperature cycle which shown in table 1 shall be repeated 1000±4 times consecutively. Then separate follow test item 1 and test item 2 50% condition to test, measured its resistance variance rate.
<table>
<tr><td colspan="2">Table 1 Temperature cycle test condition</td></tr>
<tr><td></td><td>Testing condition</td></tr>
<tr><td>Lowest temperature</td><td>-35± 5ºC</td></tr>
<tr><td>Highest temperature</td><td>105± 5ºC</td></tr>
<tr><td>Temperature-retaining time</td><td>15 minutes each</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr>
<td>10</td>
<td>Leaching Test</td>
<td>1. Solder coverage over 95%.
2. The underlying material (such as ceramic) shall not be visible at the crest corner area of the electrode.</td>
<td>The tested resistor is immersed into molten solder of 260± 5ºC for 30 seconds. Then the resistor is left as placed under microscope to observe its solder area.</td>
</tr>
<tr>
<td>11</td>
<td>Resistance to Dry Heat</td>
<td>0.5%, 1% : ±(1.0% + 0.05Ω)
2%, 5%: ±(2.0% + 0.10Ω)
No evidence of mechanical damage.</td>
<td>JIS C 5201-1 4.25
Put the tested resistors in chamber under temperature 155± 5 ºC for 96± 4 hours. Then leaving in room temperature for 60 minutes, and measure its resistance variance rate.</td>
</tr>
<tr>
<td>12</td>
<td>Thermal Shock</td>
<td>< 50mΩ ±(1.0% + 0.05Ω)
No evidence of mechanical damage.</td>
<td>MIL-STD 202 Method 107
Put the tested resistor in the thermal shock chamber under the temperature cycle which shown in the following table shall be repeated 300 times consecutively. Then leaving the tested resistor in the room temperature for 1 hour, and measure its resistance variance rate.
<table>
<tr><td></td><td>Testing condition</td></tr>
<tr><td>Lowest temperature</td><td>-55± 5ºC</td></tr>
<tr><td>Highest temperature</td><td>125± 5ºC</td></tr>
<tr><td>Temperature-retaining time</td><td>15 minutes each</td></tr>
</table>
</td>
</tr>
</table>

13	Loading Life in Moisture	< 50mΩ	0.5%, 1% : ±(2.0% + 0.10Ω) 2%, 5%: ±(3.0% + 0.10Ω)	***JIS C 5201-1 4.24*** Put the tested resistor in chamber under temperature 40± 2ºC, 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.
		No evidence of mechanical damage.		
14	Load Life	< 50mΩ	0.5%, 1% : ±(2.0% + 0.10Ω) 2%, 5%: ±(3.0% + 0.10Ω)	***JIS C 5201-1 4.25*** Put the tested resistor in chamber under temperature 70± 2ºC 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.
		No evidence of mechanical damage, no short or burned on the appearance.		
15	Low Temperature Operation	< 50mΩ	0.5%, 1% : ±(0.5% + 0.05Ω) 2%, 5%: ±(1.0% + 0.05Ω)	***MIL-R-55342D 4.7.4*** Put the tested resistor in the chamber at room temperature 25ºC. Decreasing the temperature to -55ºC and keep the temperature at -55ºC for 1 hour. Then load the rated voltage for 45 minutes on, and 15 minute off. Then leaving the tested resistor in room temperature for 8± 1 hour, and measure its resistance variance rate.
		No evidence of mechanical damage.		

6.1 Soldering Profile

6.1.1 IR Reflow

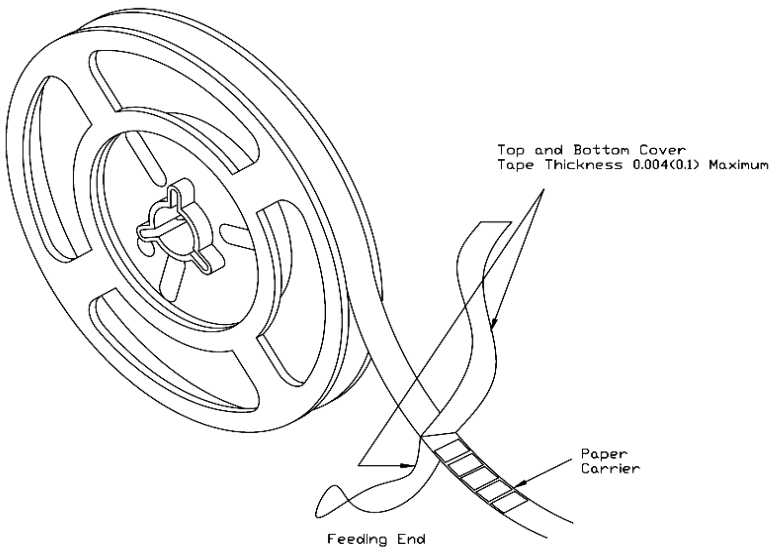


6.1.2 Wave Soldering

7. TAPING

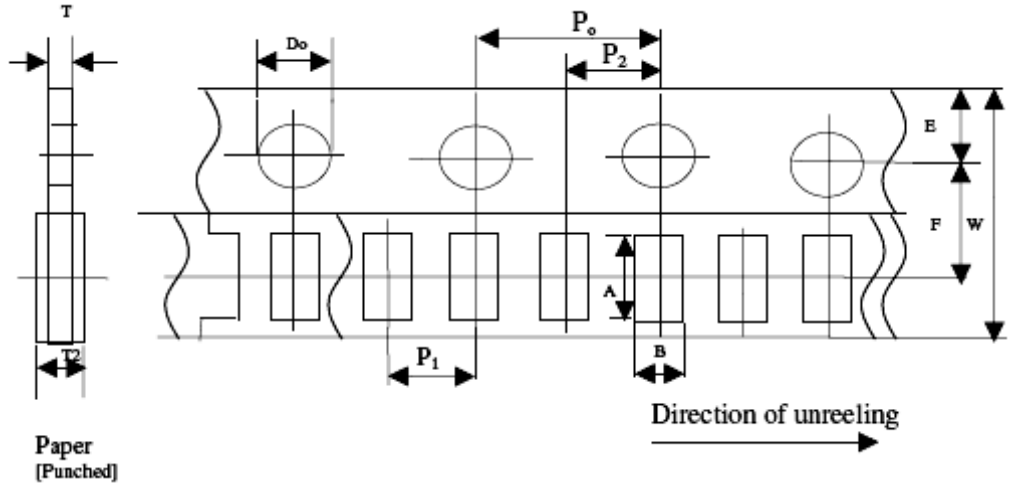
7.1 Structure of Taping

Paper Carrier



7.2 Dimension

7.5.1 Dimension of Punched Paper Tape Carrier System



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

Inches (Millimeters)						
Dimensions	**A**	**B**	**W**	**E**	**F**	**P_1**
YCN052	0.035 ± 0.004	0.028 ± 0.004	0.315 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	0.079 ± 0.004
0201 X 2	(0.9 ± 0.1)	(0.7 ± 0.1)	(8.0 ± 0.2)	(1.75 ± 0.1)	(3.5 ± 0.05)	(2.0 ± 0.1)
YCN102	0.047 ± 0.004	0.047 ± 0.004	0.315 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	0.079 ± 0.004
0402 X 2	(1.2 ± 0.1)	(1.2 ± 0.1)	(8.0 ± 0.2)	(1.75 ± 0.1)	(3.5 ± 0.05)	(2.0 ± 0.1)
YCN104	0.087 ± 0.004	0.047 ± 0.004	0.315 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	0.079 ± 0.004
0402 X 4	(2.2 ± 0.1)	(1.2 ± 0.1)	(8.0 ± 0.2)	(1.75 ± 0.1)	(3.5 ± 0.05)	(2.0 ± 0.1)
YCN108	0.169 ± 0.008	0.075 ± 0.008	0.472 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004
0402 X 8	(4.3 ± 0.2)	(1.9 ± 0.2)	(12.0 ± 0.2)	(1.75 ± 0.1)	(3.5 ± 0.05)	(4.0 ± 0.1)
YCN162	0.075 ± 0.004	0.075 ± 0.004	0.315 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004
0603 X 2	(1.9 ± 0.1)	(1.9 ± 0.1)	(8.0 ± 0.2)	(1.75 ± 0.1)	(3.5 ± 0.05)	(4.0 ± 0.1)
YCN164	0.136 ± 0.004	0.075 ± 0.004	0.315 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004
0603 X 4	(3.45 ± 0.1)	(1.9 ± 0.1)	(8.0 ± 0.2)	(1.75 ± 0.1)	(3.5 ± 0.05)	(4.0 ± 0.1)

Inches (Millimeters)					
Dimensions	**P2**	**P0**	**D0**	**T2**	**T**

YCN054 **0201 X 4**	2.00 ± 0.05	4.00 ± 0.05	-	0.40 ± 0.10	0.50 ± 0.10
YCN052 **0201 X 2**	0.079 ± 0.002 (2.0 ± 0.05)	0.157 ± 0.002 (4.0 ± 0.05)	$0.059^{+0.004}_{-0}$ $(1.5^{+0.10}_{-0})$	$0.018^{+0.008}_{-0}$ $(0.45^{+0.2}_{-0})$	0.017 ± 0.004 (0.43 ± 0.1)
YCN102 **0402 X 2**	0.079 ± 0.002 (2.0 ± 0.05)	0.157 ± 0.002 (4.0 ± 0.05)	$0.059^{+0.004}_{-0}$ $(1.5^{+0.10}_{-0})$	$0.018^{+0.008}_{-0}$ $(0.45^{+0.2}_{-0})$	0.017 ± 0.004 (0.43 ± 0.1)
YCN104 **0402 X 4**	0.079 ± 0.002 (2.0 ± 0.05)	0.157 ± 0.002 (4.0 ± 0.05)	$0.059^{+0.004}_{-0}$ $(1.5^{+0.10}_{-0})$	$0.025^{+0.008}_{-0}$ $(0.60^{+0.2}_{-0})$	0.024 ± 0.004 (0.6 ± 0.1)
YCN108 **0402 X 8**	0.079 ± 0.002 (2.0 ± 0.05)	0.157 ± 0.002 (4.0 ± 0.05)	$0.059^{+0.004}_{-0}$ $(1.5^{+0.10}_{-0})$	$0.025^{+0.008}_{-0}$ $(0.60^{+0.2}_{-0})$	0.024 ± 0.004 (0.6 ± 0.1)
YCN162 **0603 X 2**	0.079 ± 0.002 (2.0 ± 0.05)	0.157 ± 0.002 (4.0 ± 0.05)	$0.059^{+0.004}_{-0}$ $(1.5^{+0.10}_{-0})$	$0.025^{+0.008}_{-0}$ $(0.60^{+0.2}_{-0})$	0.024 ± 0.004 (0.6 ± 0.1)
YCN164 **0603 X 4**	0.079 ± 0.002 (2.0 ± 0.05)	0.157 ± 0.002 (4.0 ± 0.05)	$0.059^{+0.004}_{-0}$ $(1.5^{+0.10}_{-0})$	$0.03^{+0.008}_{-0}$ $(0.75^{+0.2}_{-0})$	0.030 ± 0.004 (0.75 ± 0.1)
YCN158 **0612 (1632)**	0.079 ± 0.002 (2.0 ± 0.05)	0.157 ± 0.004 (4.0 ± 0.1)	$0.059^{+0.004}_{-0}$ $(1.5^{+0.10}_{-0})$	$0.033^{+0.004}_{-0}$ $(0.85^{+0.10}_{-0})$	-
YCN358 **1225 (3264)**	0.079 ± 0.002 (2.0 ± 0.05)	0.157 ± 0.004 (4.0 ± 0.1)	$0.059^{+0.004}_{-0}$ $(1.5^{+0.10}_{-0})$	-	-

7.7 Packaging

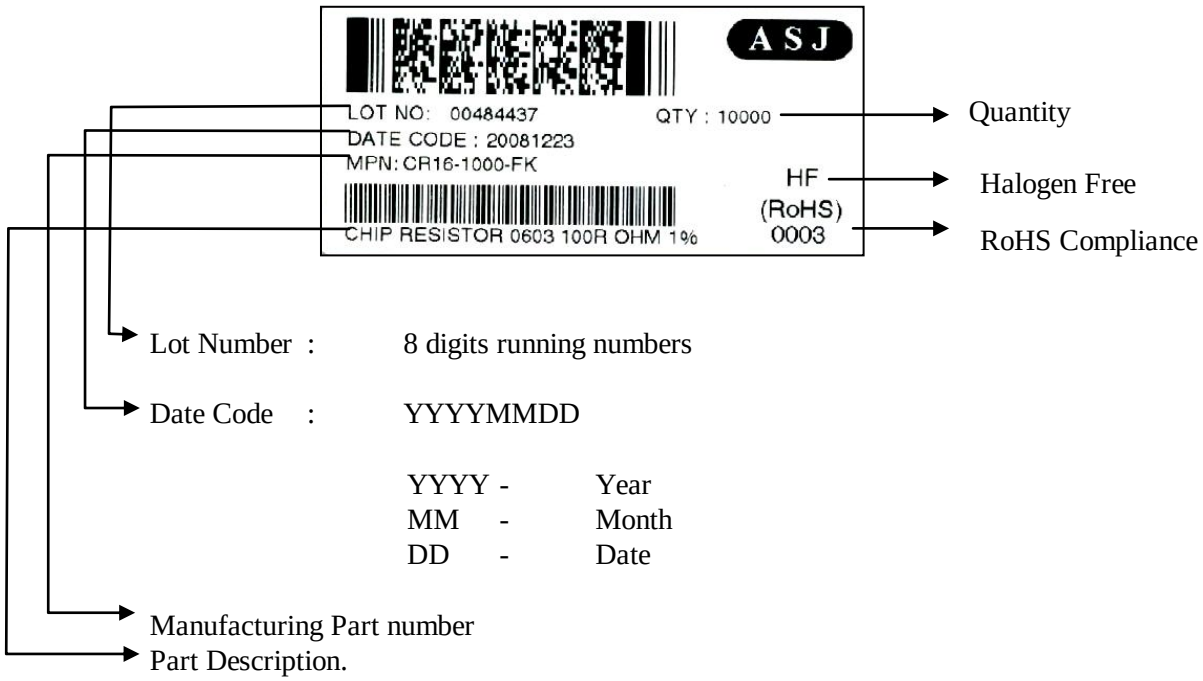
7.7.1 Taping

7.7.1.1 Quantity – Tape and Reels

Array & Networks		
Reels (Diameter A)	**Component / Reel**	
	Paper Carrier	
	YCN054 / YCN052 / YCN102 / YCN104 (2mm Pitch)	**YCN108 / YCN162 / YCN164 (4mm Pitch)**
7" (178 ± 2.0mm)	10,000	5,000
10" (254 ± 2.0mm)	20,000	10,000
13" (330 ± 2.0mm)	30,000	15,000

7.7.2 Identification

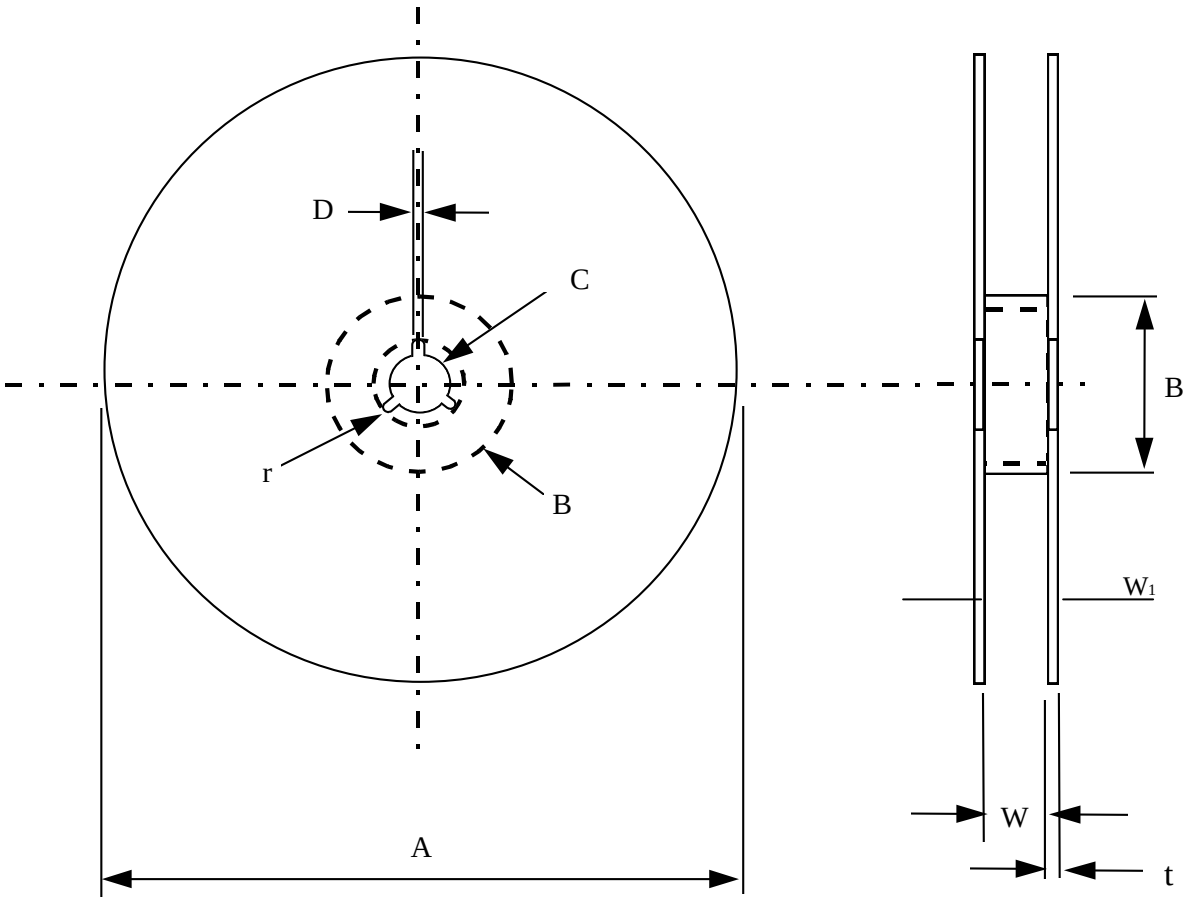
Production label that indicates the 8 digits lot number, product type, resistance value and tolerance shall be pasted on the surface of each reel.



7.7.3 Packaging Reel Box

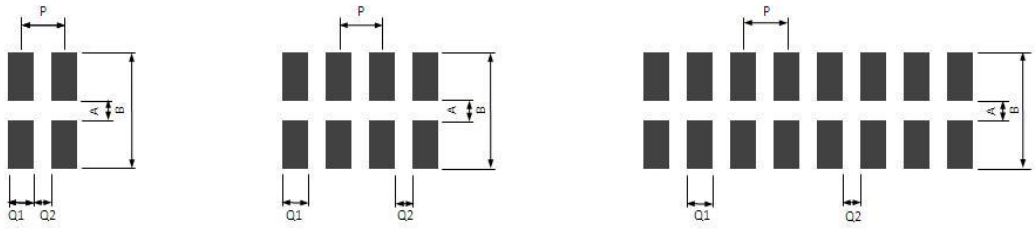
Dimension	Reel Box	Number of Reels
185 × 60 × 186 mm	25K Box	5
185 × 120 × 186 mm	50K Box	10

7.7.4 Reel Dimensions



Model	A	B	C	D	W	W_1	t	r
7"Reel (5K) (except 0402 10K)	ϕ178±2.0	ϕ60min	13± 0.2	ϕ2.0± 0.5	11± 0.1	14.4 max	1.0± 0.1	1.0
7"Reel (4K)	ϕ178±2.0	ϕ60min	13± 0.2	ϕ2.0± 0.5	13±1.0	14.4 max	1.2± 0.1	1.0
10"Reel (10K)	ϕ254±2.0	ϕ60min	13± 0.2	ϕ2.0± 0.5	11± 1.0	14.4 max	1.5± 0.1	1.0
13"Reel (20K, 50K)	ϕ330±2.0	ϕ60min	13± 0.2	ϕ2.0± 0.5	11± 1.0	14.4 max	2.1± 0.1	-

8. SURFACE MOUNT LAND PATTERNS



Product (Type)	Land Dimensions - Inches (mm)				
	A	**B**	**P**	**Q1**	**Q2**
YCN052	0.012 (0.3)	0.035 (0.9)	0.02 (0.5)	0.012 (0.3)	0.012 (0.3)
YCN102	0.02 (0.5)	0.079 (2.0)	0.026 (0.67)	0.013 (0.33)	0.013 (0.34)
YCN104	0.02 (0.5)	0.079 (2.0)	0.02 (0.5)	0.011 (0.28)	0.009 (0.22)
YCN108	0.039 (1.0)	0.079 (2.0)	0.02 (0.5)	0.010 (0.25)	0.010 (0.25)
YCN162	0.039 (1.0)	0.102 (2.6)	0.031 (0.8)	0.016 (0.4)	0.016 (0.4)
YCN164	0.039 (1.0)	0.102 (2.6)	0.031 (0.8)	0.016 (0.4)	0.016 (0.4)

9. REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version. 1	**February 13,2015**		**Initial Release**