



Thick Film Chip Resistor Arrays (CN Series Standard) Halogen-Free

Document No.

TCN-XX0S001X

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2024/07/17

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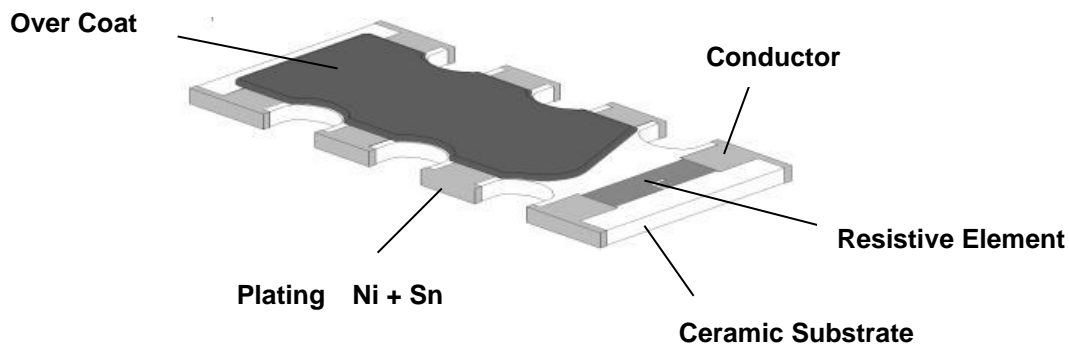
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1. Scope :

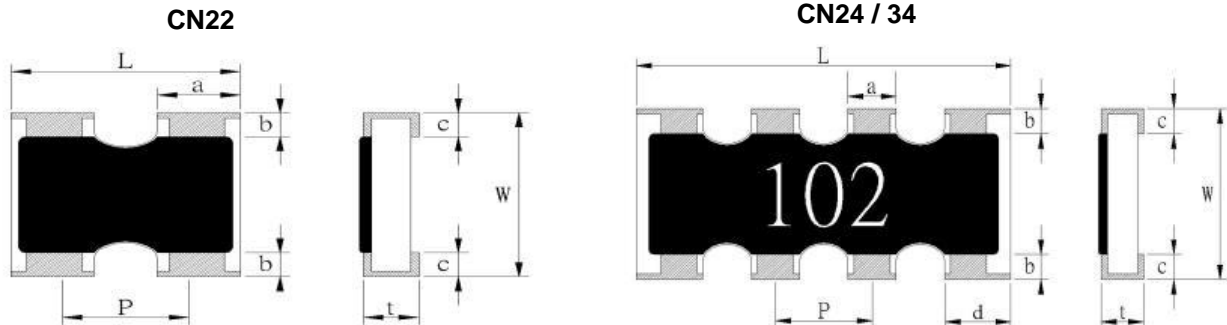
This specification applies for the CN series of thick film chip resistor arrays made by TA-I.

2. Construction , Dimensions , Schematic :

2.1 Construction :



2.1.1 Chip Resistor Arrays :



2.2 Dimension :

UNIT: mm

Type	L	W	t	P	a	b	c	d
CN22	1.0 ± 0.1	1.0 ± 0.1	0.35 ± 0.1	0.65 ± 0.1	0.33 ± 0.1	0.15 ± 0.1	0.25 ± 0.1	0.33 ± 0.1
CN24	2.0 ± 0.1	1.0 ± 0.1	0.4 ± 0.1	0.5 ± 0.05	0.3 ± 0.1	0.15 ± 0.1	0.25 ± 0.1	0.4 ± 0.1
CN34	3.2 ± 0.2	1.6 ± 0.15	0.5 ± 0.1	0.8 ± 0.05	0.45 ± 0.1	0.3 ± 0.2	0.3 ± 0.2	0.6 ± 0.1



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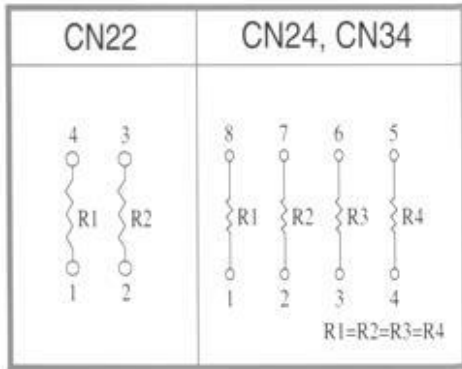
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2.3 Schematic :

R TYPE



3. Type Designation :

3.1 Chip Resistor Arrays

CN

34

J

TN

103

Product Code
CN : Chip Resistor Array

size
Power Rating

Tolerance

Packaging

Nominal
Resistance

22-0402*2
24-0402*4
34-0603*4

J-±5%
G-±2%
F-±1%

T- Paper Tape
N : normal (RoHS Exclusion clause)
W : Totally Lead free

3 digits E.G.:
(E-24) 103 = 10KΩ
5R6 = 5.6Ω
0 = 0Ω
4 digits E.G. :
(E-96) 1540 = 154Ω
43R2 = 43.2Ω

Note :

TN : Lead-Free products packaged by paper tape.



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4. Ratings & Characteristics :

Type	Power Rating at 70°C	Rating Voltage	Max. Working Voltage	Max. Over Load Voltage	Operating Temp. (°C)	Resistance Tolerance (%)	Resistance Range (Ω)	Temp Co-efficient PPM/°C
CN22	1/16W	Refer 4.2	25V	50V	-55 ∩ +125°C	±5%	10Ω~1MΩ	±250
CN24			50V	100V		±2%	10Ω~1MΩ	±200
CN34			50V	100V		±1%	10Ω~1MΩ	±400
CN34			25V	50V	±5%	3.0Ω~9.1Ω	±400	
CN22			25V	50V	±5%	3.0Ω~9.1Ω	±500	
CN24			25V	50V	±5%	3.0Ω~9.1Ω	±500	

0Ω THICK FILE CHIP RESISTOR ARRAYS			
Type	Rate Current	Max Overload Current	Resistance Range
CN Series	1A	2.5A	50mΩ MAX

4.1 Derating Curve :

For resistors operated at ambient temperature over 70°C , power rating shall be derated in accordance with figure 1.

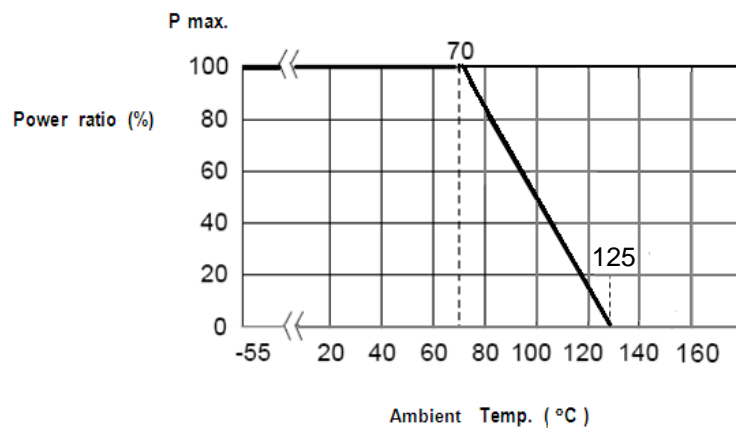


Figure 1

4.2 Rated Voltage:

The rated voltage is calculated by the following formula:

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

E=Rated Voltage(V)
 P=Rated Power(W)
 R=Resistance Value(Ω)

E.G. : What is CN34JTN102 the rated voltage ?

CN34JTN102 P:1/16W ; R:102 = 1KΩ = 1000Ω

$$E = \sqrt{0.0625(W) * 1000(\Omega)} = 7.9 (V)$$



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5. Reliability Tests:

Test Items	Reference standard	Condition of Test	Test Limits (ΔR)
Temperature Coefficient of Resistance	IEC60115-1-4.8 JIS-C5201-1-4.8	-55~ +125 °C	Refer 4.0
Short Time Overload	IEC60115-1-4.13 JIS-C5201-1-4.13	2.5 X rated voltage for 5 sec	$\pm(2.0\% + 0.1\Omega)$ 0Ω : 50 mΩ or less
Intermittent Overload	IEC60115-1-4.39 JIS-C5201-1-4.39	2.5X rated voltage or Max Overloading Voltage , 1 sec "ON" 25 sec "OFF" , 10000 cycles	$\pm(5.0\% + 0.1\Omega)$ 0Ω : 50mΩ or less
Load Life	IEC60115-1-4.25.1 JIS-C5201-1-4.25.1	1000 hours at rated voltage , 70°C , 1.5hours "ON " , 0.5hour "OFF"	1% : $\pm(1.0\% + 0.05\Omega)$ 5% : $\pm(3.0\% + 0.1\Omega)$ 0Ω : 100 mΩ or less
Load Life with Humidity	IEC60115-1-4.24 JIS-C5201-1-4.24	1000 hours at rated voltage , 40±2°C, 90~95% RH 1.5hours "ON " , 0.5hour "OFF"	1% : $\pm(1.0\% + 0.05\Omega)$ 5% : $\pm(3.0\% + 0.1\Omega)$ 0Ω : 100 mΩ or less
Rapid Change of Temperature	IEC60115-1-4.19 JIS-C5201-1-4.19	-55°C (30 min.) / +155 °C(30 min.) 5 cycles	1% : $\pm(0.5\% + 0.05\Omega)$ 5% : $\pm(1.0\% + 0.05\Omega)$ 0Ω : 50 mΩ or less
Solderability	IEC60115-1-4.17 JIS-C5201-1-4.17	245±5°C solder, 2±0.5 sec dwell. Solder : Sn96.5 / Ag3.0 / Cu0.5	At least 95% of surface area of electrode shall be covered with new solder.
Core body	IEC60115-1-4.15 JIS-C5201-1-4.15	Pressure 1.0 kgf a R0.5 pressure rod for 10 sec	Without mechanical damage such as breaks. Electrical characteristics shall be satisfied
Dielectric Withstanding Voltage (Voltage Proof)	IEC60115-1-4.7 JIS-C5201-1-4.7	Applying voltage 100V for 1 minute.	No abnormalities such as flashover, burning dielectric breakdown shall appear.
Resistance to Solder Heat	IEC60115-1-4.18 JIS-C5201-1-4.18	270 ±5°C solder , 10 ±1 sec dwell .	0.5%,1% : $\pm(1.0\% + 0.05\Omega)$ 2%,5% : $\pm(2.0\% + 0.1\Omega)$ 0Ω : 50mΩ or less

Note* : RCWV : Rated continuous working voltage .



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6. Marking

6.1 $\pm 2\%$ & $\pm 5\%$ (E24) : CN24 / 34

Resistance value is expressed by 3 digits, the first two digits represent the significant figures of nominal resistance value in Ω , and the third digit represents exponent for base of 10.

E.G. $472 = 47 \times 10^2 = 4700 \Omega = 4.7K \Omega$

6.2 $\pm 1\%$ (E96) : CN24 / 34

Resistance value is expressed by 4 digits, the first three digits represent the significant figures of nominal resistance value in Ω , and the fourth digit represents exponent for base of 10.

E.G. $4701 = 470 \times 10^1 = 4700 \Omega = 4.7k \Omega$

6.3 CN24 / 34

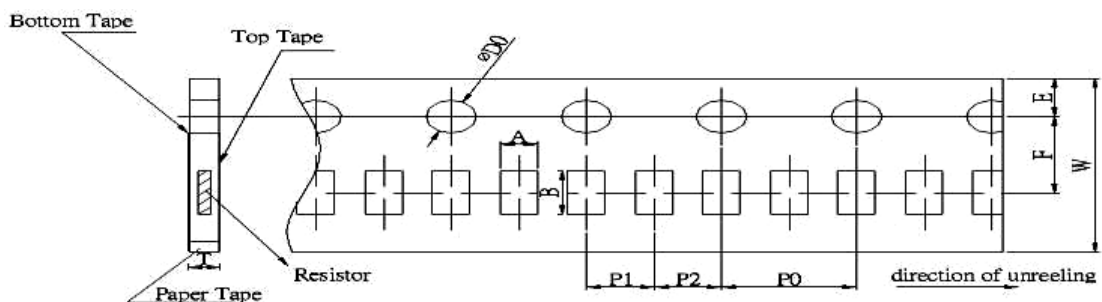
E.G. : $0 = 0 \Omega$

6.4 No Marking for CN22

7. Taping & Reel

7.1 Taping Dimensions

7.1.1 2 mm pitch paper



UNIT: mm

Type	A	B	W	F	E	P1	P2	P0	ϕ D0	T0
CN22	1.2 \pm 0.15	1.2 \pm 0.1	8.0 \pm 0.2	3.5 \pm 0.05	1.75 \pm 0.1	2.0 \pm 0.1	2.0 \pm 0.05	4.0 \pm 0.1	+0.1	0.45 \pm 0.1
CN24		2.2 \pm 0.2							ϕ 1.5	-0



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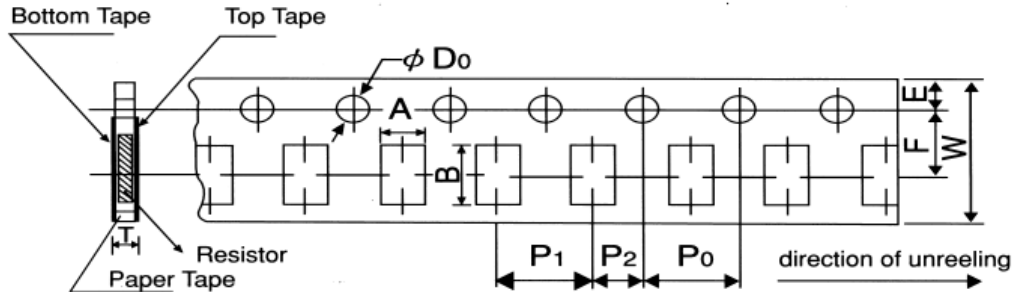
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7.1.2 4 mm pitch paper

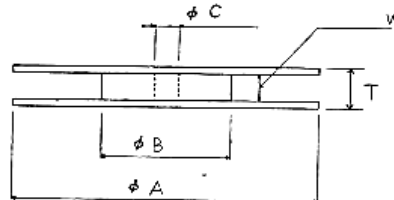
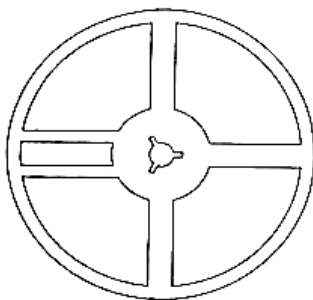


UNIT: mm

Type	A	B	W	F	E	P1	P2	P0	$\phi D0$	T
CN34	2.0±0.15	3.6±0.2	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.1	$\phi 1.5$ +0.1 -0	0.84±0.1

Package Type	Paper Tape			
	4 mm pitch		2 mm pitch	
	178mm/R	250mm/R	178mm/R	250mm/R
CN22			10000	20000
CN24			10000	20000
CN34	5000	10000		

7.2 Reel Specifications



UNIT: mm

Type	ϕA	ϕB	ϕC	W	T
CN 22/24/34	178.0 ± 2.0	60.0 ± 1.0	13.0 ± 1.0	9.0 ± 1.0	11.5 ± 1.0



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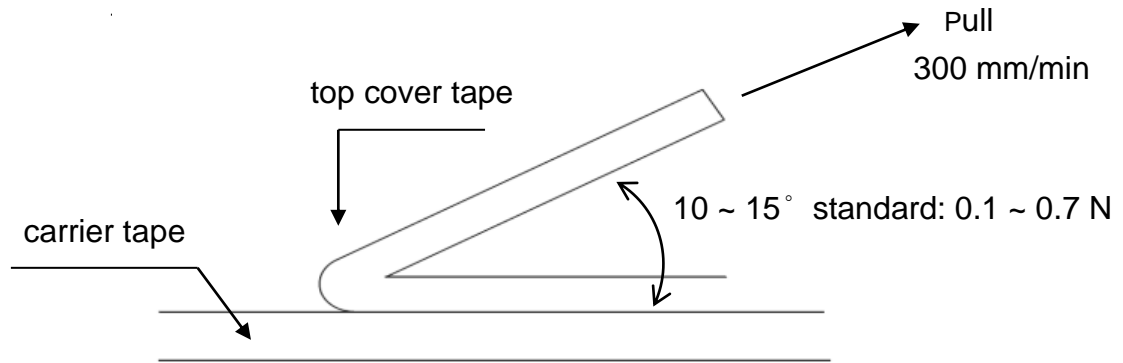
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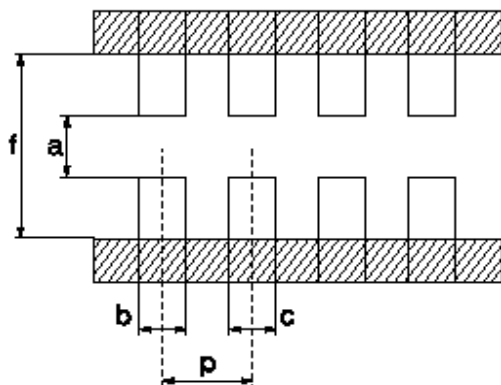
7.3 Peel off Strength:

Peel –off force of paper and blister tape is in accordance with “JIS-C5202” that is , 0.1 to 0.7 N at a peel-off speed of 300 mm / minute.



8. Recommended land patterns :

8.1 CN22, CN34



Type	Size	Land pattern	Dimension (mm)				
			a	b	c	p	f
CN	22		0.5	0.35~0.4	0.35~0.4	0.65	1.4~1.5
CN	34		0.7~0.9	0.4~0.5	0.4~0.5	0.8	2.2~2.6



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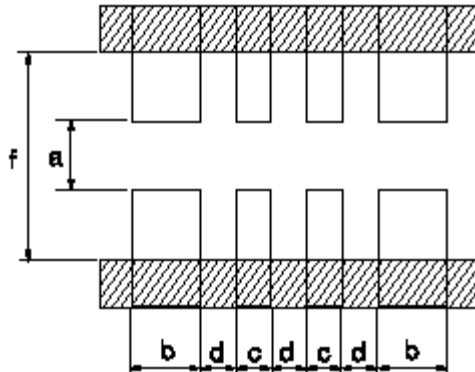
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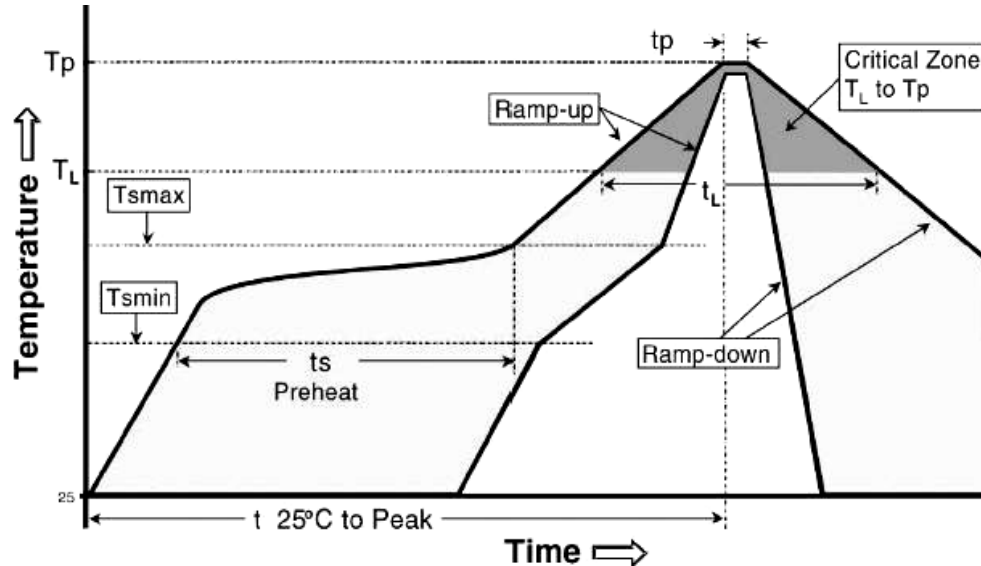
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8.2 CN24



Type	Size	Land pattern	Dimension (mm)				
			a	b	c	d	f
CN	24		0.4	0.525	0.25	0.25	1.4

9. Recommend IR – Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Profile Feature	Lead (Pb)-Free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C / second max.
Preheat - Temperature Min (Tsmin) - Temperature Max (Tsmax) - Time (Tsmin to Tsmax) (ts)	150°C 200°C 60 -120 seconds



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Time maintained above : - Temperature (T _L) - Time (T _L)	217°C 60-150 seconds
Peak Temperature (T _p)	260°C
Time within $\begin{matrix} +0 \\ -5 \end{matrix}$ °C of actual Peak Temperature (t _p) ²	10 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8mimutes max.

Allowed Re-flow times : 3 times

Remark : To avoid discoloration phenomena of chip on terminal electrodes,
please use N2 Re-flow furnace.

10. Storage Conditions:

Temperature : 5 to 35 °C

Related Humidity :40 to 75% RH

11. Shelf Life :

2 Years from manufacturing date.

12. ECN :

Engineering Change Notice: The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.



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13. Manufacturing Country & City :

TA-I TECHNOLOGY CO., LTD. (Taiwan– Tao Yuan)
Tel: 886-3-3246169 Fax : 886-3-3246167

Associated companies :

(1) TA-I TECHNOLOGY (SU ZHOU) CO., LTD. (China – Su Zhou)

Tel :(+86) 512-63457879 Fax : (+86) 512-63457869

(2) TA-I TECHNOLOGY ELECTRONIC (DONGGUAN) CO., LTD. (China –Dongguan)

Tel : (+86) 769-8339-4790~3 Fax : (+86) 769-8339-4794

(3) FORTUNE TASK ENTERPRISES LIMITED.(China – Dongguan)

Tel : (+86) 769-8339-4790~3 Fax : (+86) 769-8339-4794

(4) TAI OHM ELECTRONICS (M) SDN. BHD. (Malaysia – Penang)

Tel :(+60) 4- 3900480 Fax : (+60) 4-3901481

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