Data Sheet

Customer:	
Product:	Thick Film Array Chip Resistor - CN Series
Size:	0201x2(Flat) / 0201x4(Flat) / 0402x4 / 0402x4(Concave) / 0603x4(Concave)
Issued Date:	08-Jul-25
Edition:	REV.B9

RoHS Compliant

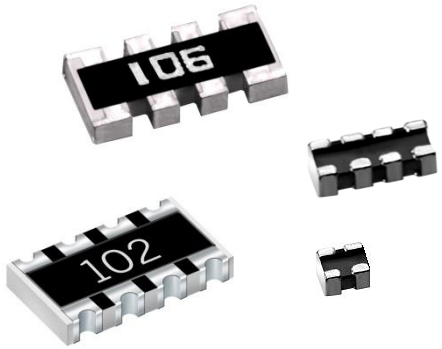
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Produced by (QC)	Checked (QC)	Approved by (QC)	Prepared by (Sales)	Accepted by (Customer)
08-Jul-25	08-Jul-25	08-Jul-25		
Alice Hsiao	***Susan Huang***	***Susan Huang***		

Thick Film Array Chip Resistor



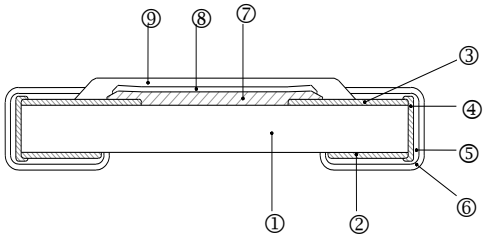
Scope

– This specification applies to all sizes of rectangular-type fixed chip resistors with Ruthenium-base as material.

Features

– Small size and light weight
– Reduction of assembly costs and matching with placement machines
– Reliability, high quality
– Suitable for IR reflow soldering and wave soldering
– MSL: Level 1

Construction

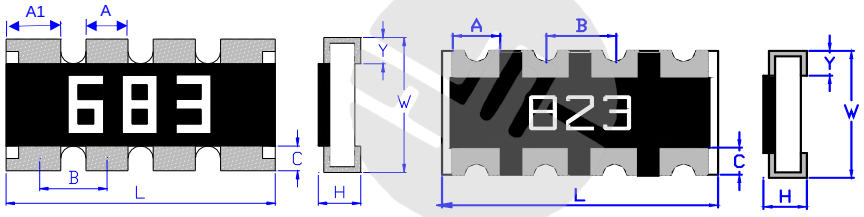


Applications

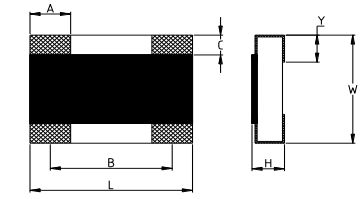
– Entertainment
– Computer & Related Products
– Communication Equipment
– Power Equipment
– Measuring Instrument

①	Alumina Substrate	④	Edge Electrode	⑦	Resistor Layer
②	Bottom Electrode	⑤	Barrier Layer	⑧	Primary Overcoat
③	Top Electrode	⑥	External Electrode	⑨	Secondary Overcoat

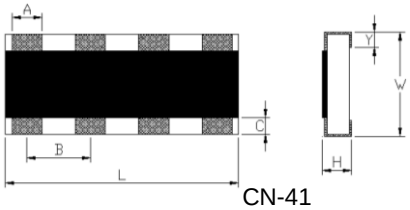
Dimensions



CN-42 CNA42/43



CN-21



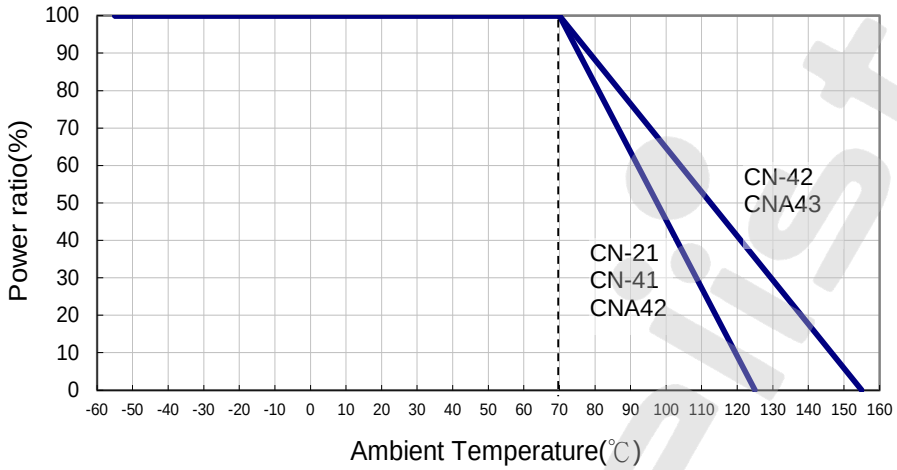
CN-41

Type	Number of Resistors	L (mm)	W (mm)	H (mm)	A (mm)	A1 (mm)	B (mm)	C (mm)	Y (mm)	Weight (g) (1000pcs)
CN-21	2	0.80±0.10	0.60±0.10	0.35±0.10	0.30±0.10	-	0.50±0.10	0.15±0.10	0.15±0.10	0.500
CN-41	4	1.40±0.10	0.60±0.10	0.35±0.10	0.20±0.10	-	0.40±0.10	0.10±0.07	0.15±0.05	0.833
CN-42	4	2.00±0.10	1.00±0.10	0.45±0.10	0.30±0.10	0.40±0.10	0.50±0.05	0.22±0.15	0.22±0.15	2.817
CNA42	4	2.00±0.10	1.00±0.10	0.40±0.10	0.30±0.10	-	0.50±0.05	0.20±0.10	0.25±0.10	3.003
CNA43	4	3.20±0.15	1.60±0.15	0.60±0.10	0.60±0.15	-	0.80±0.05	0.30±0.15	0.30±0.15	10.115

■Part Numbering

CN-	42	J	L	7	- - - 1 0 R
Product Type	Dimensions	Resistance Tolerance	Function Code	Packaging Code	Resistance
CN- (Flat/Convex) CNA (Concave)	21: 0201x2 41: 0201x4 42: 0402x4 43: 0603x4	F: ±1% J: ±5%	L: 4P2R/8P4R	6: 7" Reel 10Kpcs 7: 7" Reel 5Kpcs A: 10" Reel 10Kpcs B: 10" Reel 20Kpcs C: 13" Reel 40Kpcs D: 13" Reel 20Kpcs	- - - 1R2: 1.2Ω - - - 3K3: 3.3KΩ - - - 10K: 10KΩ - - 100K: 100KΩ "-" to fill up 6 spaces

■Derating Curve

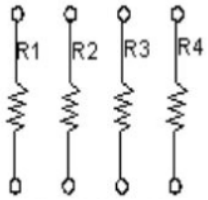


■Standard Electrical Specifications

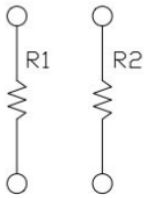
Item / Type	Power Rating at 70℃ Jumper Rated Current	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Number of Resistors	Resistance Range ±1% (E24,E96)	Resistance Range ±5% (E24)	TCR (PPM/℃)
CN-21	1/32W	-55 ~ +125°C	12.5V	25V	2	-	3Ω – 9.1Ω	±300
						10Ω - 1MΩ		±200
	Jumper: 0.5A					-	0Ω (<50mΩ)	-
CN-41	1/32W	-55 ~ +125°C	12.5V	25V	4	10Ω - 1MΩ		±200
	Jumper: 0.5A					-	0Ω (<50mΩ)	-
CN-42	1/16W	-55 ~ +155°C	25V	50V	4	10Ω - 1MΩ	1Ω - 1MΩ	±200
	Jumper: 1A					-	0Ω (<50mΩ)	-
CNA42	1/16W	-55 ~ +125°C	50V	100V	4	10Ω - 1MΩ		±200
	Jumper: 1A					-	0Ω (<50mΩ)	-
CNA43	1/16W	-55 ~ +155°C	50V	100V	4	10Ω - 1MΩ		±200
	Jumper: 1A					-	0Ω (<50mΩ)	-

Operating Voltage=$\sqrt{}$(P*R) or Max. Operating Voltage listed above, whichever is lower.
Overload Voltage=2.5*$\sqrt{}$(P*R) or Max. Overload Voltage listed above, whichever is lower.
■ Viking is capable of manufacturing the optional spec based on customer's requirement.

■Equivalent Circuit Diagram

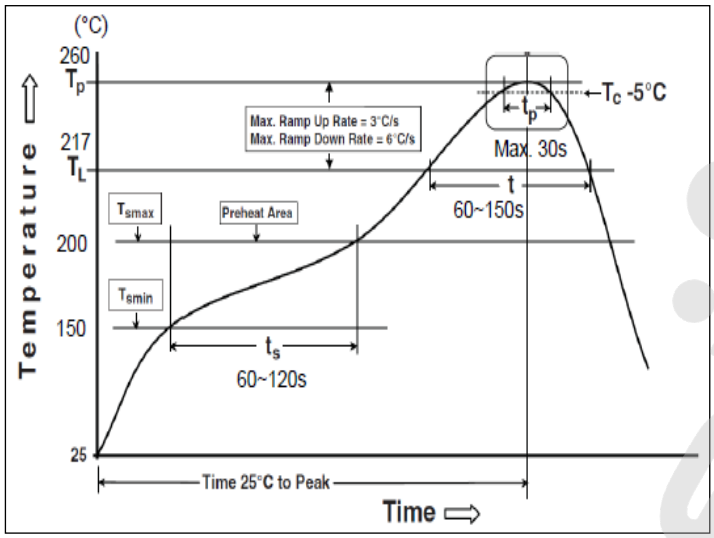


CN-41/CN-42/CNA42/CNA43



CN-21

■Soldering Condition (Ref. IPC/JEDEC J-STD-020 & J-STD-002)



Reflow Profiles	
Profile Feature	**Pb-Free Assembly**
Preheat Min. Temperature (Tsmin) Max Temperature (Tsmax) Preheating time (ts) from (Tsmin to Tsmax)	 150 °C 200 °C 60-120 seconds
Ramp-up rate (T_L to Tp)	3 °C/second max.
Liquidous temperature (T_L) Time (t_L) maintained above T_L	217 °C 60-150 seconds
Min. Peak temperature (Tp min)	235°C
Max. Peak temperature (Tp max)	260°C
Time (tp) within 5 °C of the specified classification temperature (Tc)	30 seconds max.
Ramp-down rate (Tp to T_L)	6 °C/second max.
Time 25 °C to peak temperature	8 minutes max.

■Environmental Characteristics

Item	Requirement			Test Method
	±1%	±5%	Jumper	
Temperature Coefficient of Resistance (T.C.R.)	As Spec.			**JIS-C-5201-1 4.8** **IEC-60115-1 4.8** At 25°C/-55°C and 25°C/+125°C, 25°C is the reference temperature
Short Time Overload	±(1.0%+0.05Ω) CNA42/43: ±(2.0%+0.05Ω)	±(2.0%+0.05Ω)	<50mΩ	**JIS-C-5201-1 4.13** **IEC-60115-1 4.13** RCWV*2.5 or Max. Overload Voltage whichever is lower for 5 seconds
Insulation Resistance	≥10G			**JIS-C-5201-1 4.6** **IEC-60115-1 4.6** Max. Overload Voltage for 1 minute
Endurance	±(2.0%+0.10Ω)	±(3.0%+0.10Ω)	<50mΩ CN-21/41& CNA42/43: <100mΩ	**JIS-C-5201-1 4.25** **IEC-60115-1 4.25.1** 70±2°C, RCWV for 1000 hrs with 1.5 hrs “ON” and 0.5 hr “OFF”
Damp Heat with Load	±(2.0%+0.10Ω)	±(3.0%+0.10Ω)	<50mΩ CNA42/43: <100mΩ	**JIS-C-5201-1 4.24** **IEC-60115-1 4.24** 40±2°C, 90~95% R.H., RCWV for 1000 hrs with 1.5 hrs “ON” and 0.5 hr “OFF”

Thick Film Array Chip Resistor

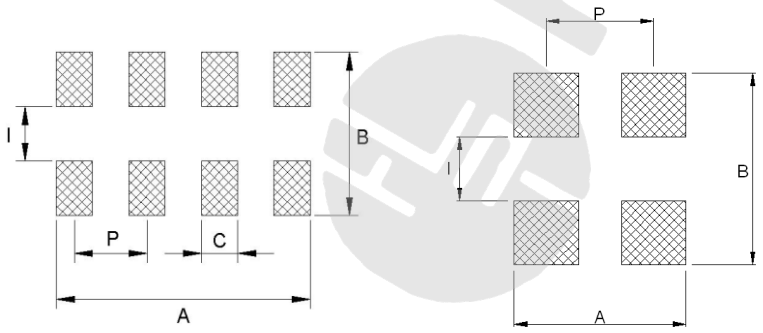
Item	Requirement			Test Method
	±1%	±5%	Jumper	
Dry Heat	±(1.0%+0.05Ω)	±(1.5%+0.10Ω) CN-21/41: ±(3.0%+0.10Ω)	<50mΩ CN-21/41: <100mΩ	**JIS-C-5201-1 4.23** **IEC-60115-1 4.23.2** at +125/+155°C for 1000 hrs
Bending Strength	±(1.0%+0.05Ω)	±(1.0%+0.05Ω)	<50mΩ	**JIS-C-5201-1 4.33** **IEC-60115-1 4.33** Bending once for 60 seconds with 3mm
Solderability	95% min. coverage			**JIS-C-5201-1 4.17** **IEC-60115-1 4.17** 245±5°C for 3 seconds
Resistance to Soldering Heat	±(0.5%+0.05Ω) CNA42/43: ±(1%+0.05Ω)	±(1.0%+0.05Ω)	<50mΩ	**JIS-C-5201-1 4.18** **IEC-60115-1 4.18** 260±5°C for 10 seconds
Voltage Proof	No breakdown or flashover			**JIS-C-5201-1 4.7** **IEC-60115-1 4.7** 1.42 times Max. Operating Voltage for 1 minute
Leaching	Individual leaching area ≦5% Total leaching area ≦ 10%			**JIS-C-5201-1 4.18** **IEC-60068-2-58 8.2.1** 260±5°C for 30 seconds
Rapid Change of Temperature	±(0.5%+0.05Ω)	±(1.0%+0.05Ω)	<50mΩ	**JIS-C-5201-1 4.19** **IEC-60115-1 4.19** -55°C to +125/+155°C, 5 cycles

RCWV(Rated Continuous Working Voltage)=√(P*R) or Max. Operating Voltage whichever is lower.

■Storage Temperature: 15~28°C; Humidity < 80%RH

■Shelf Life: 2 years from production date.

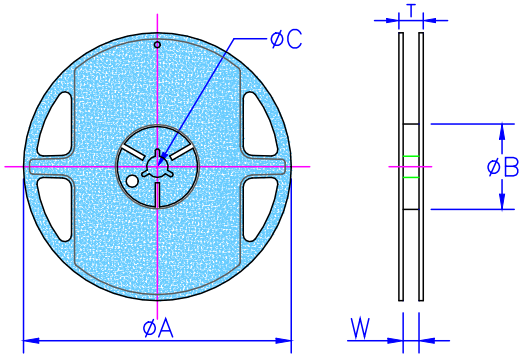
■Recommend Land Pattern



Type	A (mm)	B (mm)	C (mm)	I (mm)	P (mm)
CN-21	0.80	0.90	--	0.30	0.50
CN-41	1.40	0.90	0.20	0.30	0.40
CN-42	2.10	1.80	0.30	0.50	0.50
CNA42	2.10	1.80	0.30	0.50	0.50
CNA43	3.10	2.85	0.45	0.80	0.80

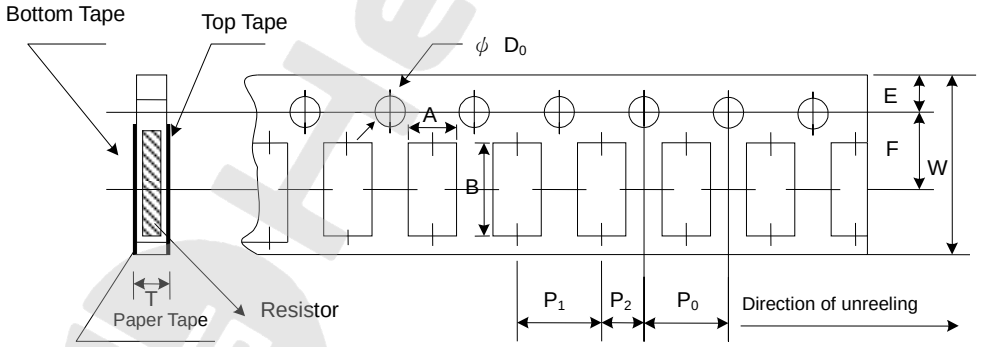
■Packaging

Reel Specifications & Packaging Quantity



Type	Packaging Quantity		Tape Width	Reel Diameter	ΦA (mm)	ΦB (mm)	ΦC (mm)	W (mm)	T (mm)
CN-21 CN-41	Paper	10K	8mm	7 inch	178.5±1.5	$60^{+1/-0}$	13.0±0.2	9.0±0.5	12.5±0.5
CN-42 CNA42	Paper	10K	8mm	7 inch	178.5±1.5	$60^{+1/-0}$	13.0±0.2	9.0±0.5	12.5±0.5
		20K	8mm	10 inch	254±1.0	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5
		40K	8mm	13 inch	330±1.0	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5
CNA43	Paper	5K	8mm	7 inch	178.5±1.5	$60^{+1/-0}$	13.0±0.2	9.0±0.5	12.5±0.5
		10K	8mm	10 inch	254±1.0	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5
		20K	8mm	13 inch	330±1.0	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5

Paper Tape Specifications



Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P_0 (mm)	P_1 (mm)	P_2 (mm)	ΦD_0 (mm)	T (mm)
CN-21	0.77±0.05	0.97±0.05	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	2.0±0.05	1.50+0.1,-0	0.50±0.1
CN-41	0.77±0.05	1.57±0.05	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	2.0±0.05	1.50+0.1,-0	0.50±0.1
CN-42	1.20±0.1	2.20±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	2.0±0.05	1.50+0.1,-0	0.70±0.1
CNA42	1.20±0.1	2.20±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	2.0±0.05	1.50+0.1,-0	0.70±0.1
CNA43	1.95±0.1	3.50±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.50+0.1,-0	0.85±0.1

■Marking

No Marking for CN-21/CN-41/CNA42

Jumper for all: Letter “0”

1% for CN-42/CNA43: 4 digits marking (non-including E24 series)

Example:

Resistance	102Ω	2.49KΩ	30K1Ω	49.9KΩ	121KΩ
marking	1020	2491	3012	4992	1213

1% & 5% for CN-42/CNA43: 3 digits marking in E24

Example: 101=100Ω 102=1KΩ (1^{st} and 2^{nd} are E24 code and 3^{rd} code is multiplier)

E24 code	10	11	12	13	15	16	18	20	22	24	27	30	33	36	39	43	47	51	56	62	68	75	82	91

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version A9	Jun 03, 2014	-	- Recommend Land Pattern updated - Environmental Characteristics updated
Version B	May 05, 2015	-	- CNA43 Dimensions updated - Derating Curve updated - CNA42 Electrical Specifications updated - Environmental Characteristics updated - CNA42 Marking updated
Version B1	Jul 15, 2016	-	- Remove Material Description - Modify Storage Temperature
Version B2	Jan 12, 2018	-	- Modify Electrical Specifications (0R)
Version B3	May 20, 2019	-	- Modify TCR Test description
Version B4	Sep 24, 2020	-	- Add CN-42/CN-43 Dimension A1 - Environmental Characteristics updated
Version B5	Mar 10, 2021	-	- Modify Soldering Condition
Version B6	Nov 15, 2021	-	- Increase the shelf life description
Version B7	Feb 15, 2022	-	- Derating Curve changes the temperature range
Version B8	Jun 15, 2022	-	- Modify Soldering Condition
Version B9	Jul 08, 2025	-	- Modify the descriptions in the Features - EOL for CN-43 Series