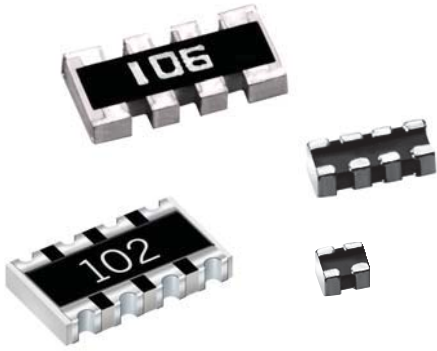


Viking Tech Corporation

Thick Film Array Chip Resistor



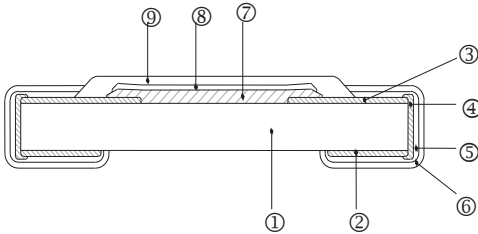
Scope

- 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

Construction

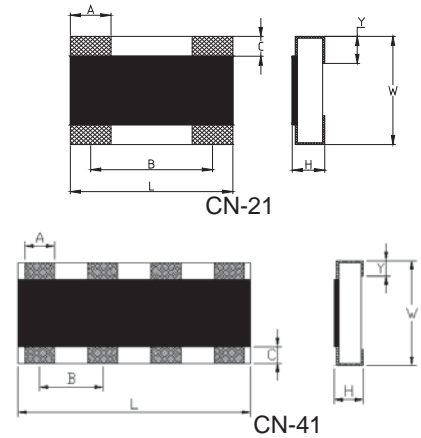
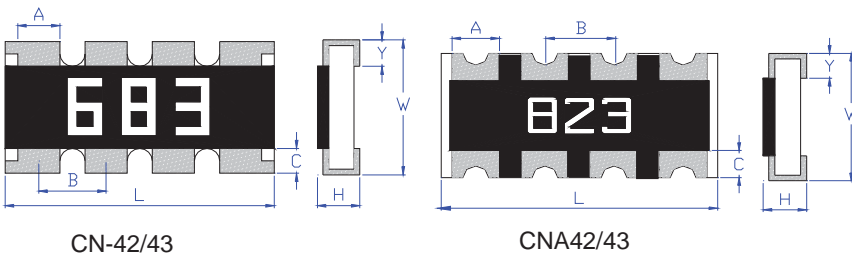


Applications

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

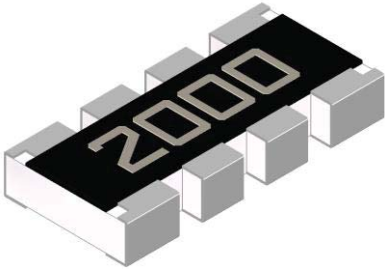
① Alumina Substrate	④ Edge Electrode (Ag)/(NiCr)	⑦ Resistor Layer (RuO ₂ /Ag)
② Bottom Electrode (Ag)	⑤ Barrier Layer (Ni)	⑧ Primary Overcoat (Glass)
③ Top Electrode (Ag-Pd)	⑥ External Electrode (Sn)	⑨ Secondary Overcoat (Epoxy)

Dimensions



Type	Number of Resistors	L (mm)	W (mm)	H (mm)	A (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	0.50±0.05	0.22±0.15	0.22±0.15	2.817
CN-43	4	3.20±0.15	1.60±0.15	0.55±0.10	0.50±0.15	0.80±0.05	0.30±0.15	0.30±0.15	8.288
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	0.55±0.10	0.50±0.15	0.80±0.05	0.30±0.15	0.40±0.15	10.115

Thin Film Array Chip Resistor (TFAN Series)



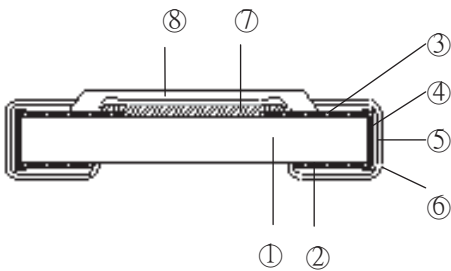
■ Features

- Advanced thin film technology
- Very tight tolerance down to $\pm 0.1\%$
- Extremely low TCR down to $\pm 10\text{PPM}/\text{C}$
- TCR tracking down to $15\text{ppm}(\pm 7.5\text{ppm})$ and tolerance matching down to $0.1\%(\pm 0.05\%)$
- RoHS compliant component, compatible with lead (Pb)-free

■ Applications

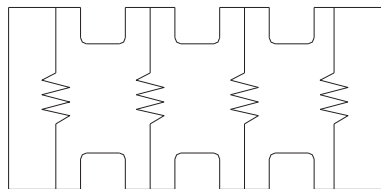
- Voltage divider
- Feedback circuits
- Signal conditioning

■ Construction



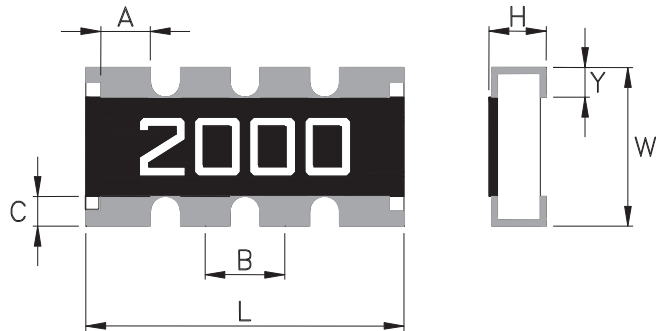
①	Alumina Substrate	④	Edge Electrode (Ag)	⑦	Resistor Layer (NiCr)
②	Bottom Electrode (Ag)	⑤	Barrier Layer (Ni)	⑧	Overcoat (Epoxy)
③	Top Electrode (Ag-Pd)	⑥	External Electrode (Sn)		

■ Equivalent Circuit Diagram



TFAN

■ Dimensions



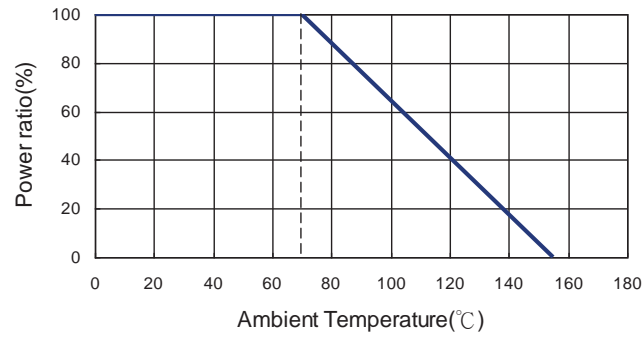
Type	Number of Resistors	L	W	H	A	B	C	Y
TFAN43	4	3.20±0.15	1.60±0.15	0.55±0.10	0.50±0.15	0.80±0.05	0.30±0.15	0.30±0.15

■ Part Numbering

TFAN	43	B0	T	C0	Y	1001	N
Product Type	Dimensions	Tolerance Grade	Packaging Code	TCR Grade	Power Rating	Resistance	Marking Code
	0603X4	Reference Tolerance Grade Table	T: Taping Reel B: Bulk	Reference TCR Grade Table	: Standard Y: 1/16W	0010: 1Ω 4R70: 4.7Ω 1001: 1KΩ 1004: 1MΩ	: Standard Marking for E96 N: No Marking

Accuracy Grade Table							
Tolerance Grade				TCR Grade			
Code	Absolute Tolerance	Tolerance Matching	Resistance Value	Code	Absolute TCR	TCR Tracking	Resistance Value
B0	±0.1%	N/A	100~33K	B0	±10ppm	N/A	100~2K
B3	±0.1%	0.1%	100~33K	B3	±10ppm	15ppm	100~2K
C0	±0.25%	N/A	100~33K	N0	±15ppm	N/A	100~2K
C2	±0.25%	0.25%	100~33K	N3	±15ppm	15ppm	100~2K
C3	±0.25%	0.1%	100~33K	C0	±25ppm	N/A	100~33K
D0	±0.5%	N/A	100~33K	C2	±25ppm	25ppm	100~33K
D1	±0.5%	0.5%	100~33K	C3	±25ppm	15ppm	100~33K
D2	±0.5%	0.25%	100~33K	D0	±50ppm	N/A	100~33K
F0	±1%	N/A	100~33K	D1	±50ppm	50ppm	100~33K
F1	±1%	0.5%	100~33K	D2	±50ppm	25ppm	100~33K

Derating Curve



Electrical Specifications

Type	Item	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range			TCR (PPM/°C)
						±0.1%	±0.25%	±0.5%	
TFAN 43		1/16W	-55 ~ +155°C	50V	100V	100Ω~33KΩ			±25 ±50

Special Specifications

Type	Item	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range			TCR (PPM/°C)
						±0.1%	±0.25%	±0.5%	
TFAN 43		1/16W	-55 ~ +155°C	50V	100V	100Ω~2KΩ			±10 ±15

Operating Voltage= $\sqrt{P \cdot R}$ or Max. operating voltage listed above, whichever is lower.

Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$ or Max. overload voltage listed above, whichever is lower.

■Viking is capable of manufacturing the optional spec based on customer's requirement.

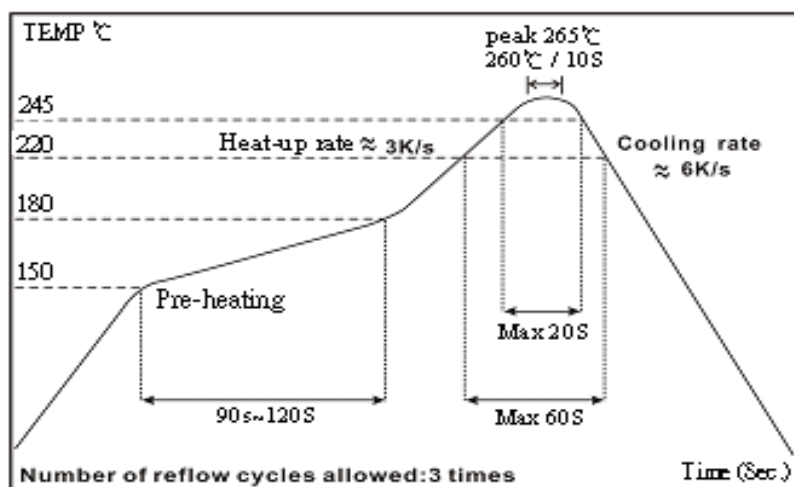
Environmental Characteristics

Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	MIL-STD-202 Method 304 +25/-55/+25/+125/+25 C
Short Time Overload	$\Delta R \pm 0.1\%$	JIS-C-5201-1 5.5 RCWV*2.5 or Max. overload voltage whichever is lower for 5 seconds
Insulation Resistance	>1000 M Ω	MIL-STD-202 Method 302 Apply 100V _{DC} for 1 minute
Endurance	1000Hr : $\Delta R \pm 0.15\%$ 8000Hr : $\Delta R \pm 0.3\%$	MIL-STD-202 Method 108A 70 \pm 2 C, RCWV with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	$\Delta R \pm 0.25\%$	MIL-STD-202 Method 103B 40 \pm 2 C, 90~95% R.H., RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load(85 C/85% R.H)	$\Delta R \pm 0.5\%$	85 \pm 2 C, 80~90% R.H. 10% of RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Dry Heat	1000Hr : $\Delta R \pm 0.25\%$ 8000Hr : $\Delta R \pm 0.5\%$	At +125 $^{\circ}$ C
Bending Strength	$\Delta R \pm 0.2\%$	JIS-C-5201-1 6.1.4 Bending amplitude 3 mm for 10 seconds
Solderability	95% min. coverage	MIL-STD-202 Method 208H 245 \pm 5 C for 3 seconds
Resistance to Soldering Heat	$\Delta R \pm 0.2\%$	MIL-STD-202 Method 210E 260 \pm 5 C for 10 seconds
Dielectric Withstand Voltage	100V	MIL-STD-202 Method 301 Max. overload voltage for 1 minute
Thermal Shock	$\Delta R \pm 0.25\%$	MIL-STD-202 Method 107G -55 C ~150 C, 100 cycles
Low Temperature Operation	$\Delta R \pm 0.25\%$	JIS-C-5201-1 7.1 1 hour, -65 C, followed by 45 minutes of RCWV

RCWV(Rated continuous working voltage)= $\sqrt{P \cdot R}$ or Max. Operating voltage whichever is lower

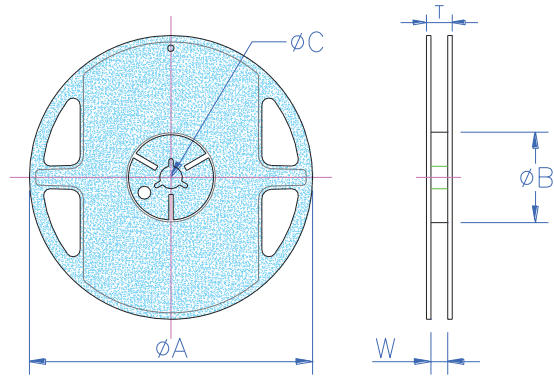
■ Storage Temperature: 25 \pm 3 $^{\circ}$ C; Humidity < 80%RH

Reflow



■ Packaging

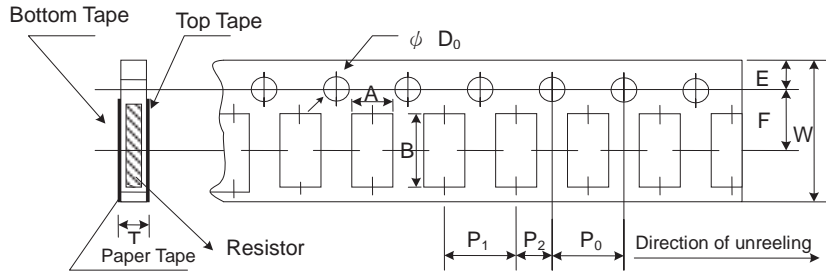
Reel Specifications & Packaging Quantity



Unit: mm

Type	Packaging Quantity	Tape width	Reel Diameter	ΦA	ΦB	ΦC	W	T
TFAN 43	Paper	5K	7 inch	178.5±1.5	60 ^{+1/-0}	13.0±0.2	9.0±0.5	12.5±0.5

Paper Tape Specifications



Unit: mm

Type	A	B	W	E	F	P ₀	P ₁	P ₂	ΦD ₀	T
TFAN-43	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	1.5 ^{+0.1/-0}	0.85±0.1

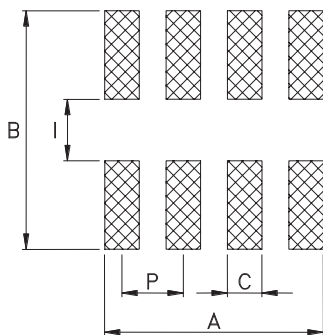
■ Marking

TFAN 43: 4 digits marking

Example:

Resistance	100Ω	2.2KΩ	10KΩ	49.9KΩ	100KΩ
marking	1000	2201	1002	4992	1003

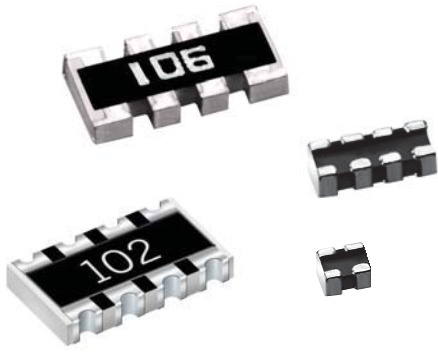
■ Recommend Land Pattern



Unit: mm

Type	A	B	C	I	P
TFAN-43	2.85	3.10	0.45	0.80	0.80

Thick Film Array Chip Resistor



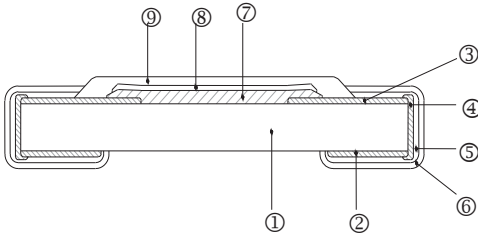
Scope

- 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

Construction

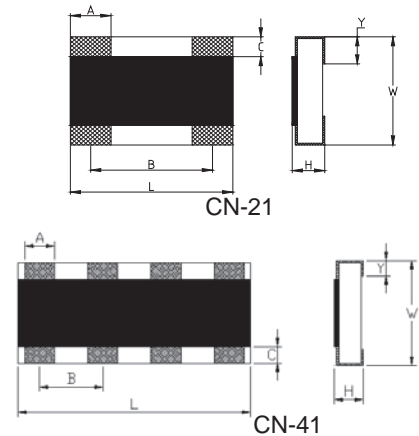
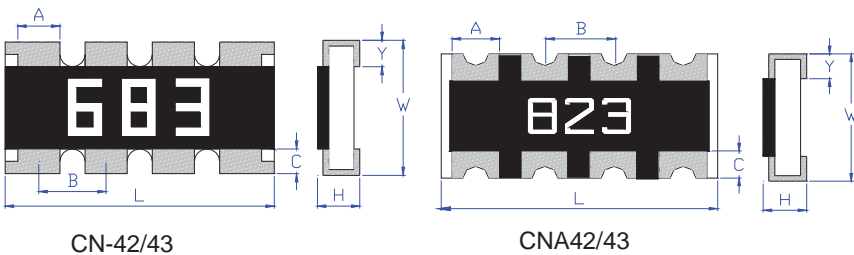


Applications

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

① Alumina Substrate	④ Edge Electrode (Ag)/(NiCr)	⑦ Resistor Layer (RuO ₂ /Ag)
② Bottom Electrode (Ag)	⑤ Barrier Layer (Ni)	⑧ Primary Overcoat (Glass)
③ Top Electrode (Ag-Pd)	⑥ External Electrode (Sn)	⑨ Secondary Overcoat (Epoxy)

Dimensions

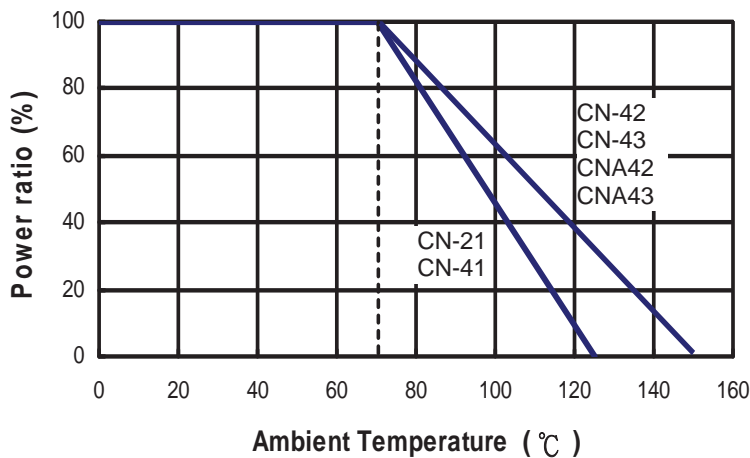


Type	Number of Resistors	L (mm)	W (mm)	H (mm)	A (mm)	B (mm)	C (mm)	Y (mm)	Weight (g) (1000pcs)
CN-21	2	0.80±0.10	0.60±0.10	0.35±0.10	0.30±0.10	0.50±0.10	0.15±0.10	0.15±0.10	0.500
CN-41	4	1.40±0.10	0.60±0.10	0.35±0.10	0.20±0.10	0.40±0.10	0.10±0.07	0.15±0.05	0.833
CN-42	4	2.00±0.10	1.00±0.10	0.45±0.10	0.30±0.10	0.50±0.05	0.22±0.15	0.22±0.15	2.817
CN-43	4	3.20±0.15	1.60±0.15	0.55±0.10	0.50±0.15	0.80±0.05	0.30±0.15	0.30±0.15	8.288
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	0.55±0.10	0.50±0.15	0.80±0.05	0.30±0.15	0.40±0.15	10.115

Part Numbering

CN-	43	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 F: Bulk	--- 1R2: 1.2Ω --- 3K3: 3.3KΩ --- 10K: 10KΩ -- 100K: 100KΩ “-“ to fill up 6 spaces

Derating Curve



Standard Electrical Specifications

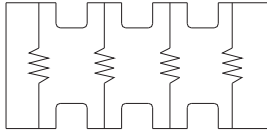
Item Type	Power Rating at 70°C Jumper Rated Current	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Number of Resistors	Resistance Range		TCR (PPM/°C)
						±1%	±5%	
CN-21	1/32W	-55 ~ +125°C	12.5V	25V	2	-	3Ω - 9.1Ω	±300
	Jumper: 0.5A					10Ω - 1MΩ	±200	
						0Ω (<50mΩ)	-	
CN-41	1/32W	-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)	-	
CN-43	1/10W	-55 ~ +155°C	50V	100V	4	10Ω - 1MΩ	1Ω - 1MΩ	±200
	Jumper: 1A					0Ω (<50mΩ)	-	
CNA42	1/16W	-55 ~ +155°C	25V	50V	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= $\sqrt{P \cdot R}$ or Max. operating voltage listed above, whichever is lower.

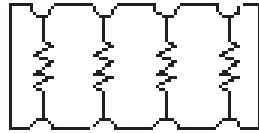
Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$ or Max. overload voltage listed above, whichever is lower.

■ Viking is capable of manufacturing the optional spec based on customer's requirement.

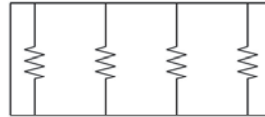
Equivalent Circuit Diagram



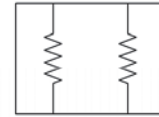
CN-42/43



CNA42/43

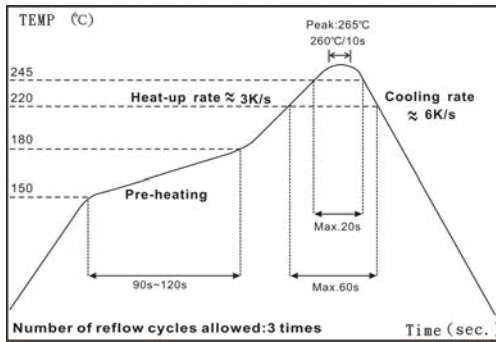


CN-41

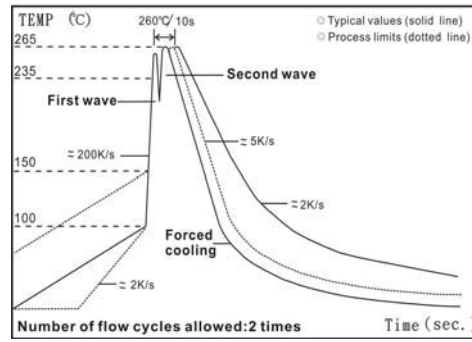


CN-21

Soldering Condition



IR Reflow Soldering



Wave Soldering (Flow Soldering)

- (1) Time of IR reflow soldering at maximum temperature point 260°C : 10s
- (2) Time of wave soldering at maximum temperature point 260°C : 10s
- (3) Time of soldering iron at maximum temperature point 410°C : 5s

Environmental Characteristics

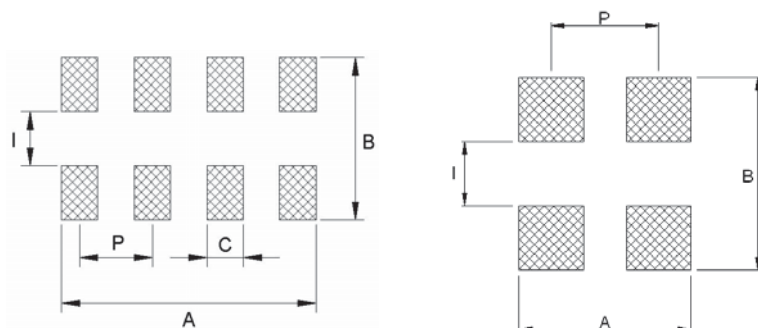
Item	Requirement			Test Method
	±1%	±5%	Jumper	
Temperature Coefficient of Resistance (T.C.R.)	As Spec.			JIS-C-5201-1 4.8 IEC-60115-1 4.8 -55°C~+125°C, 25°C is the reference temperature
Short Time Overload	±(1.0%+0.05Ω)	±(2.0%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.13 IEC-60115-1 4.13 RCWV*2.5 or Max. Overload 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: <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 hrs "OFF"
Damp Heat with Load	±(2.0%+0.10Ω)	±(3.0%+0.10Ω)	<50mΩ	JIS-C-5201-1 4.24 40±2°C, 90~95% R.H., RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
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 2.23.2 at +125/+155°C for 1000 hrs

Item	Requirement			Test Method
	±1%	±5%	Jumper	
Bending Strength	$\pm(1.0\%+0.05\Omega)$	$\pm(1.0\%+0.05\Omega)$	<50m Ω	JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending once for 5 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	$\pm(0.5\%+0.05\Omega)$	$\pm(1.0\%+0.05\Omega)$	<50m Ω	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 $\leq 5\%$ Total leaching area $\leq 10\%$			JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1 260±5°C for 30 seconds
Rapid Change of Temperature	$\pm(0.5\%+0.05\Omega)$	$\pm(1.0\%+0.05\Omega)$	<50m Ω	JIS-C-5201-1 4.18 IEC-60115-1 4.18 -55°C to +125/+155°C, 5 cycles

RCWV(Rated continuous working voltage)= $\sqrt{P \cdot R}$ or Max. Operating voltage whichever is lower.

■ **Storage Temperature: 25±3°C; Humidity < 80%RH**

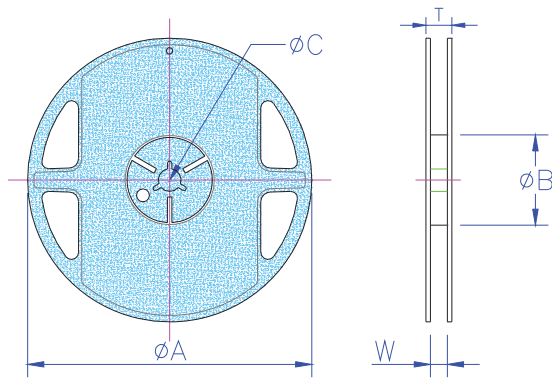
■ Recommend Land Pattern



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	1.80	2.10	0.30	0.50	0.50
CN-43	2.85	3.10	0.45	0.80	0.80
CNA42	1.80	2.10	0.30	0.50	0.50
CNA43	2.85	3.10	0.45	0.80	0.80

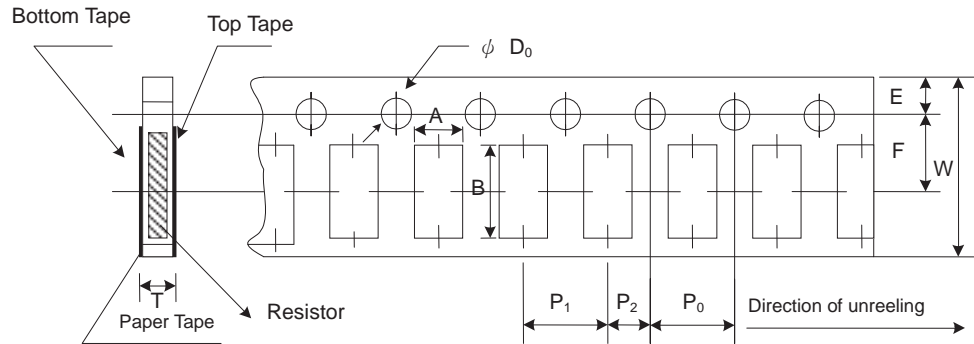
■ Packaging

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
CN-43 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
CN-43	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
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 and CN-41

Jumper for all: Letter "0"

1% for CN-42/CN-43/CNA42/CNA43: 4 digits marking (non-including E24 series)

Example:

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

5% for CN-42/CN-43/CNA42/CNA43: 3 digits marking in E24

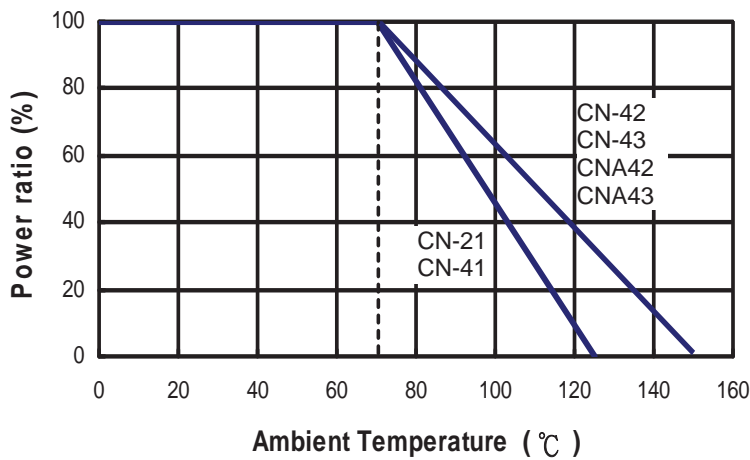
Example: 101=100Ω 102=1KΩ (1st and 2nd are E24 code and 3rd code is multiplier)

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
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Part Numbering

CN-	43	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 F: Bulk	--- 1R2: 1.2Ω --- 3K3: 3.3KΩ --- 10K: 10KΩ -- 100K: 100KΩ “-“ to fill up 6 spaces

Derating Curve



Standard Electrical Specifications

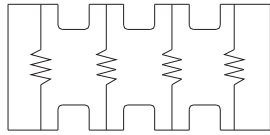
Item Type	Power Rating at 70°C Jumper Rated Current	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Number of Resistors	Resistance Range		TCR (PPM/°C)
						±1%	±5%	
CN-21	1/32W	-55 ~ +125°C	12.5V	25V	2	-	10Ω - 1MΩ	±200
	Jumper: 0.5A					0Ω (<50mΩ)		-
CN-41	1/32W	-55 ~ +125°C	12.5V	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)		-
CN-43	1/10W	-55 ~ +155°C	50V	100V	4	10Ω - 1MΩ	1Ω - 1MΩ	±200
	Jumper: 1A					0Ω (<50mΩ)		-
CNA42	1/16W	-55 ~ +155°C	25V	50V	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= $\sqrt{P \cdot R}$ or Max. operating voltage listed above, whichever is lower.

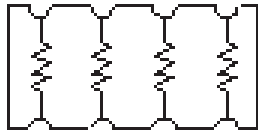
Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$ or Max. overload voltage listed above, whichever is lower.

■ Viking is capable of manufacturing the optional spec based on customer's requirement.

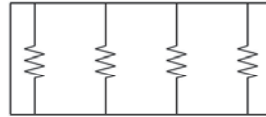
Equivalent Circuit Diagram



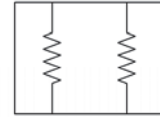
CN-42/43



CNA42/43

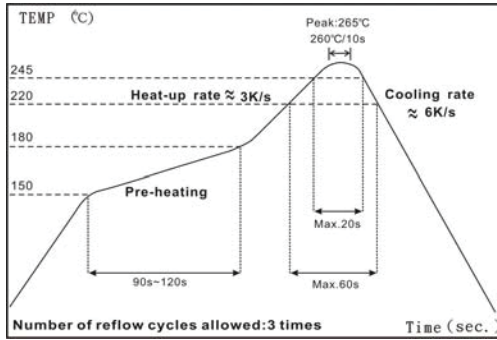


CN-41

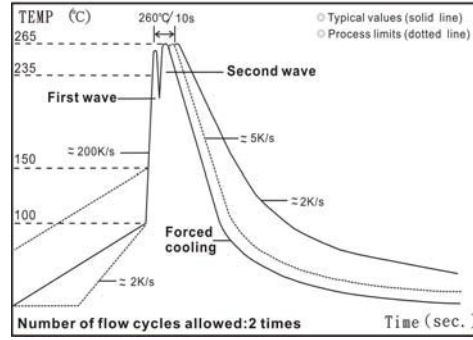


CN-21

Soldering Condition



IR Reflow Soldering



Wave Soldering (Flow Soldering)

- (1) Time of IR reflow soldering at maximum temperature point 260°C : 10s
- (2) Time of wave soldering at maximum temperature point 260°C : 10s
- (3) Time of soldering iron at maximum temperature point 410°C : 5s

Environmental Characteristics

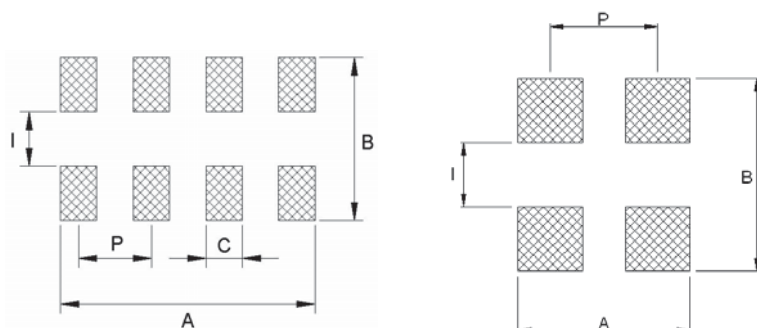
Item	Requirement			Test Method
	±1%	±5%	Jumper	
Temperature Coefficient of Resistance (T.C.R.)	As Spec.			JIS-C-5201-1 4.8 IEC-60115-1 4.8 -55°C~+125°C, 25°C is the reference temperature
Short Time Overload	±(1.0%+0.05Ω)	±(2.0%+0.05Ω) CN-21/41: ±(2.0%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.13 IEC-60115-1 4.13 RCWV*2.5 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: <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 hrs "OFF"
Damp Heat with Load	±(2.0%+0.10Ω)	±(3.0%+0.10Ω)	<50mΩ	JIS-C-5201-1 4.24 40±2°C, 90~95% R.H., RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
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 2.23.2 at +125/+155°C for 1000 hrs

Item	Requirement			Test Method
	±1%	±5%	Jumper	
Bending Strength	$\pm(1.0\%+0.05\Omega)$	$\pm(1.0\%+0.05\Omega)$	<50mΩ	JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending once for 5 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	$\pm(0.5\%+0.05\Omega)$	$\pm(1.0\%+0.05\Omega)$	<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 $\leq 5\%$ Total leaching area $\leq 10\%$			JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1 260±5°C for 30 seconds
Rapid Change of Temperature	$\pm(0.5\%+0.05\Omega)$	$\pm(1.0\%+0.05\Omega)$	<50mΩ	JIS-C-5201-1 4.18 IEC-60115-1 4.18 -55°C to +125/+155°C, 5 cycles

RCWV(Rated continuous working voltage)= $\sqrt{P \cdot R}$ or Max. Operating voltage whichever is lower.

■ **Storage Temperature: 25±3°C; Humidity < 80%RH**

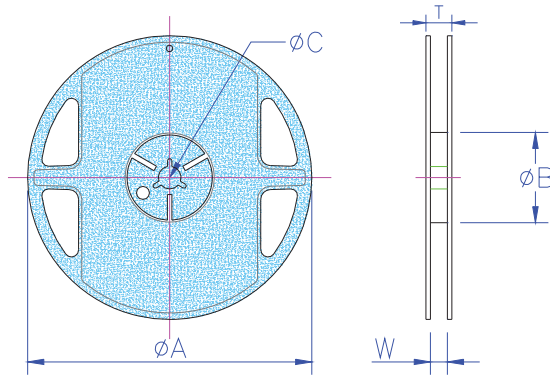
■ Recommend Land Pattern



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	1.80	2.10	0.30	0.50	0.50
CN-43	2.85	3.10	0.45	0.80	0.80
CNA42	1.80	2.10	0.30	0.50	0.50
CNA43	2.85	3.10	0.45	0.80	0.80

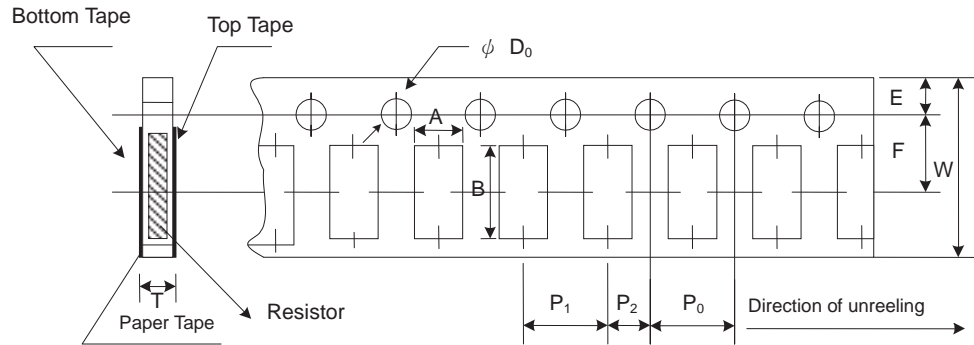
■ Packaging

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
CN-43 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
CN-43	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
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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 and CN-41

Jumper for all: Letter "0"

1% for CN-42/CN-43/CNA42/CNA43: 4 digits marking (non-including E24 series)

Example:

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

5% for CN-42/CN-43/CNA42/CNA43: 3 digits marking in E24

Example: 101=100Ω 102=1KΩ (1st and 2nd are E24 code and 3rd 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
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