

Chip Networks Resistors

Type CNB & CND Series

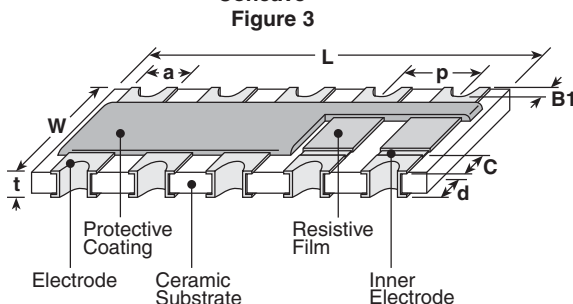
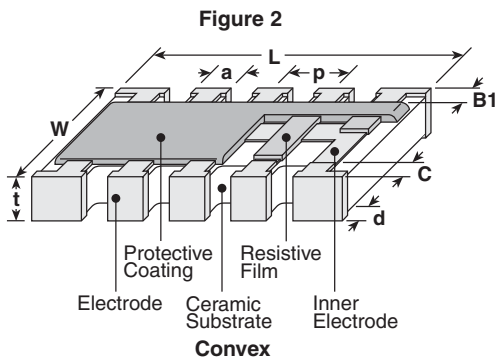
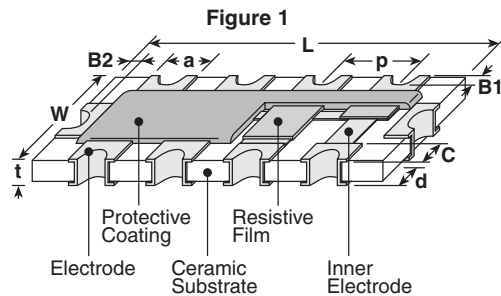
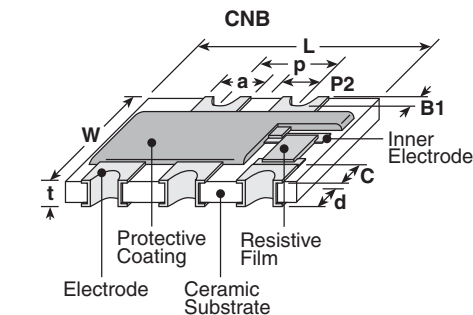
ISO 9001:2000
TS-16949

1. Features

- Manufactured to type RK73 standards
- Concave or convex terminations
- Four or eight bussed resistor elements included in one array
- Products with lead-free terminations meet RoHS requirements.
Pb located in glass material, electrode and resistor element is exempt per Annex 1, exception 5 of EU direction 2005/95/EC

2. Dimensions

Size Code	Figure No.	Dimensions inches (mm)										
		L	W	C	d	t	a	B1	B2	p	P2	
CNB 2B9Z	—	.252±.008 (6.4±0.2)	.126±.008 (3.2±0.2)	.018 (0.45)	.024±.006 (0.6±0.15)	.024±.004 (0.6±0.1)	.033 (0.85)	.006 (0.15)	—	.051 (1.3)	.026±.004 (0.65±0.1)	
CNB 2E5Z	—	.126±.008 (3.2±0.2)	.098±.008 (2.5±0.2)	.012 (0.3)	.020±.006 (0.5±0.15)	.024±.004 (0.6±0.1)	.026 (0.65)	.006 (0.15)		.039 (1.0)	.020±.004 (0.50±0.1)	
CND 1J10K	2	.126±.004 (3.2±0.1)	.063±.004 (1.6±0.1)	—	.010±.004 (0.25±0.1)	.020±.004 (0.5±0.1)	.016±.004 (0.4±0.1)	.012±.008 (0.3±0.2)		.008±.004 (0.2±0.1)	.025 (0.64)	—
CND 1J10Y	1				.014±.004 (0.35±0.1)	.022±.004 (0.55±0.1)	.013±.006 (0.33±0.15)	.008±.004 (0.20±0.1)				
CND 2A10Y		.157±.008 (4.0±0.2)	.083±.008 (2.1±0.2)		.016±.008 (0.4±0.2)	.024±.004 (0.6±0.1)	.020±.008 (0.5±0.2)	.010±.008 (0.25±0.2)	.004±.008 (0.1±0.2)		.031 (0.8)	
CND 2B10V	3	.252±.008 (6.4±0.2)	.122±.008 (3.1±0.2)	.014±.006 (0.35±0.15)	.022±.006 (0.55±0.15)	.024±.004 (0.6±0.1)	.024 (0.6)	.006 (0.1)	—	0.05 (1.27)		
CND 2B10												

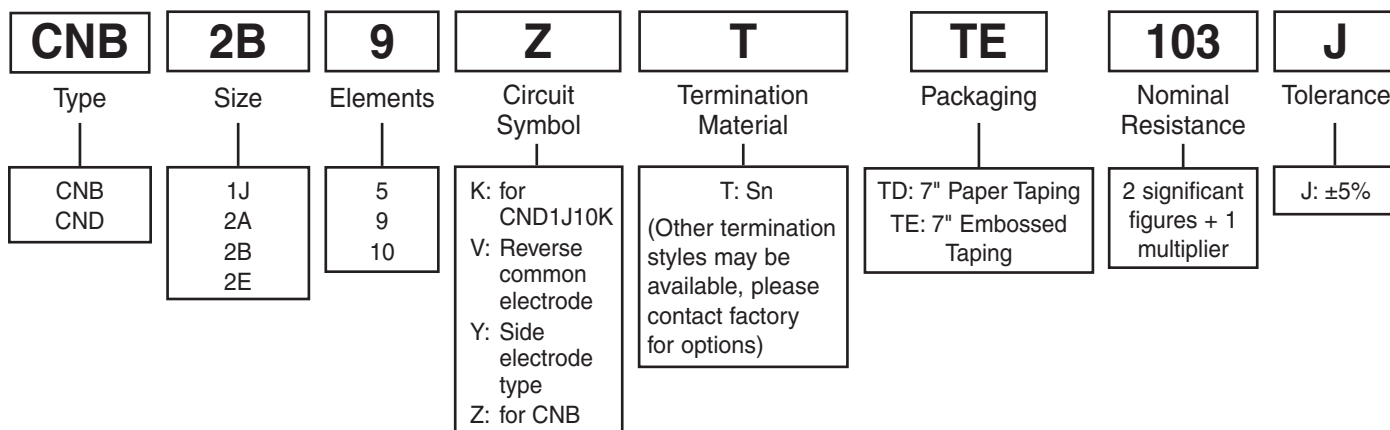


Convex

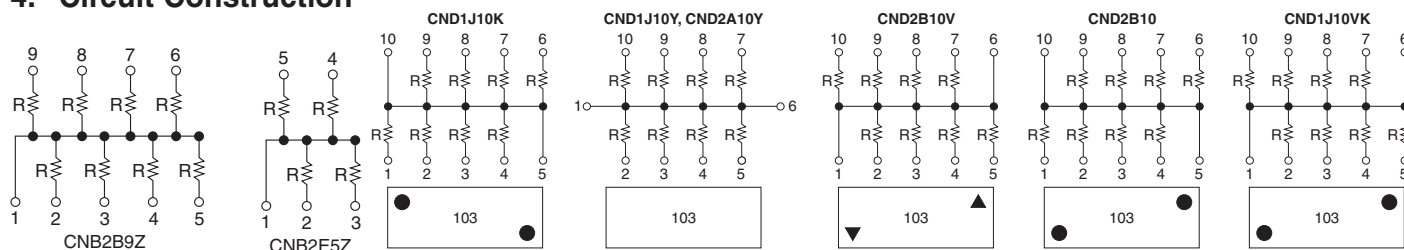
Concave

3. Type Designation

The type designation shall be the following form:



4. Circuit Construction



5. Standard Applications

Part Designation	Power Rating @ 70°C (Per Element)	T.C.R. (ppm/°C) Max.	Resistance Range E-3*, E-12**	Resistance Tolerance	Absolute Maximum Working Voltage	Maximum Overload Voltage (5 Secs. Max.)	Operating Temperature Range	
CNB2B9Z	1/16W (.063W)	±200	1KΩ - 470KΩ*	J: ±5%	50V	100V	-55°C to +125°C	
CNB2E5Z								
CND1J10K	32mW	±200	47Ω - 39kΩ**	J: ±5%	25V	50V	-55°C to +125°C	
CND1J10Y	50mW		22Ω - 39KΩ**					
CND2A10Y	63mW		100Ω - 100KΩ**		50V	100V		
CND2B10V								
CND2B10								

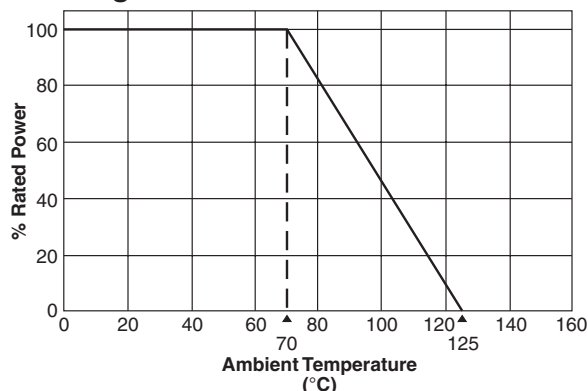
* E-3 significant figures (per decade) are 1.0, 2.2 and 4.7.

** E-12 CND only

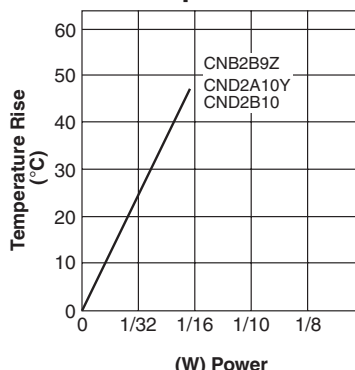
6. Environmental Applications

For temperature in excess of 70°C, the load shall be derated in accordance with the following figure.

Derating Curve



Surface Temperature Rise



6-2 Voltage Rating

Resistors shall have a rated direct-current (DC) continuous working voltage or approximate sine-wave root-mean-square (R.M.S.) continuous working voltage at commercial-line frequency and wave-form corresponding the power rating as determined from the following formula:

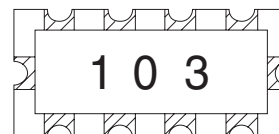
$$E = \sqrt{P \cdot R}$$

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

However, if the rated voltage thus obtained surpasses the specified maximum working voltage, it shall be considered the rated voltage.

7. Body Color and Marking

Body Color: Black
Marking Color: White



103
Nominal resistance at 3-digit numbers

3-digit numbers
The first and the second numbers show 2 effective numbers, the third number shows a multiple of 10.

Example: 103 → 10,000Ω → 10kΩ
472 → 4,700Ω → 4.7kΩ

8. Performance

Parameter	Maximum Δ R	Test Method
Thermal Shock	±(1.0% + 0.1Ω)	MIL-STD-202, Method 107, -55°C to +125°C, 5 cycles
Low Temperature Operation		MIL-R-55342 π 4.7.4, 1 hour @ -55°C followed by 45 minutes of RCWV*
High Temperature Exposure		MIL-R-55342 π 4.7.6, 100 hours @ 125°C
Short Time Overload	±(2.0% + 0.05Ω)	MIL-R-55342 π 4.7.5, 2.5 x RCWV for 5 seconds
Resistance to Solder Heat	±(1.0% + 0.1Ω)	MIL-R-55342 π 4.7.7, 260°C for 10 seconds
Terminal Strength-Push		1.2 Kg for 1 minute
Terminal Strength-Bend	±(0.5% + 0.05Ω)	5mm deflection in either direction for 10 seconds
Moisture Resistance	±5.0%	MIL-STD-202, Method 103, 40°C, 90 - 95% RH, 1000 hours
Life		MIL-STD-202, Method 108, 70°C, 1000 hours @ RCWV, 1.5 hr ON, 0.5 hr OFF
Pulse		2.5 x RCWV, not exceeding max. overload voltage, 1 sec. ON, 25 sec. OFF, 10,000 cycles
Temperature Cycling	±1.0%	30 min. @ -55°C, 15 min. @ +25°C, 30 min. @ +125°C, 15 min. @ +25°C, 5 cycles
Terminal Adhesion	15 Grams Minimum	Axial pull, one terminal at a time
Dielectric Withstanding Voltage	400V	1 minute minimum, MIL-STD-202, Method 301
Insulation Resistance	1,000 MΩ Minimum	—

* RCWV = Rated Continuous Working Voltage.

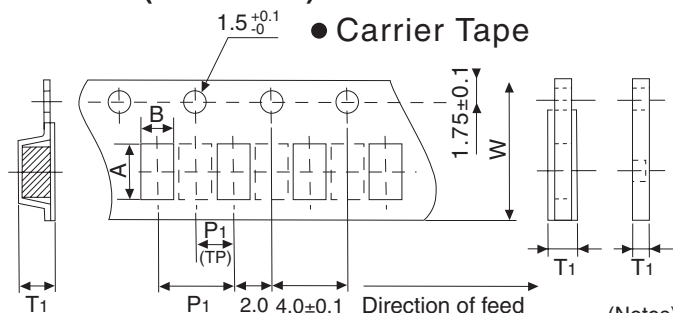
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9. Taping

Tape material and quantity per reel

Tape material	Tape width	Quantity/Reel (pcs.)
Embossed	.472 in. (12 mm)	4,000

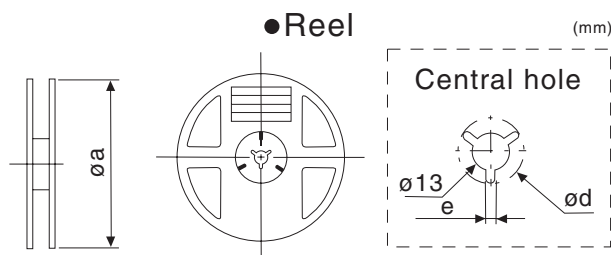
9.1 Taping Dimension (Embossed)



(Notes) Dotted lines are applicable to only "TP" and "TB."

Type	Component Size (mm)				Carrier Tape	Quantity/Reel (Pieces)	Taping (mm)					Reel Size
	L	W	T				A	B	W	P1	T1	
CND	2B10	6.40	3.1	0.6	TE	4000	6.6±0.2	3.4±0.2	12.0±0.1	4.0±0.1	1±0.15	178
	1J10	3.20	1.6	0.55	TD	5000	3.5±0.1	2.0±0.1	8.0±0.2	4.0±0.1	0.75±0.2/-0	178
	2A10	4.00	2.1	0.6	TE	4000	4.45±0.2	2.5±0.2	12.0±0.1	4.0±0.1	1±0.15	178
CNB	2B5Z	3.2	2.5	0.6	TE	4000	3.5±0.2	3.0±0.2	8.0±0.2	4.0±0.1	1±0.15	178
	2E9Z	6.40	3.2		TE	4000	6.7±0.2	3.5±0.2	12.0±0.1	4.0±0.1	1±0.15	178

10. Reel (Polystyrene Reel)



Type	ød (mm)	e (mm)
All	21	2

(Notes) Reel holes, shapes and design are examples

11. Reel Marking

The reel must be marked as follows:

- (1) Type designation
- (2) Nominal resistance
- (3) Quantity
- (4) Production lot number
- (5) Manufacturer's name
- (6) Customer's code number
- (7) Order number

Lot Number

Lot number (8 digits)

53	11	8	001
Production year, month	Date	Factory	Continuous number
		8 KT & T factory	

17~28	January 2004 ~ December 2004
29~40	January 2005 ~ December 2005
41~52	January 2006 ~ December 2006
53~64	January 2007 ~ December 2007

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