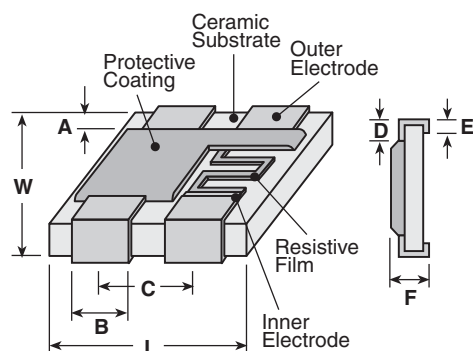




features

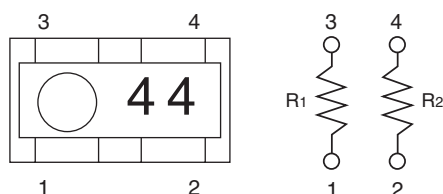
- Metal film chip network resistors
- Excellent in relative T.C.R. and relative accuracy
- Pair resistors for high precision OP-amplifiers
- As custom products, any pairs between 1kΩ and 100kΩ are available on request
- Products with lead-free terminations meet EU RoHS and China RoHS requirements

dimensions and construction



Size Code	Dimensions inches (mm)							
	A	B	C	D	E	F	L	W
CNN	.016±.012 (0.4±0.3)	.028±.006 (0.7±0.15)	.050 (1.27)	.016±.012 (0.4±0.3)	.012±.008 (0.3±0.2)	.020±.004 (0.5±0.1)	.10±.008 (2.54±0.2)	.079±.008 (2.0±0.2)

circuit schematic



	Resistance					
R1	1kΩ	1kΩ	1kΩ	10kΩ	10kΩ	100kΩ
R2	1kΩ	10kΩ	100kΩ	10kΩ	100kΩ	100kΩ

CNN: Custom products of any pairs between 1kΩ and 100kΩ are available on request

	Marking					
R1*	3	3	3	4	4	5
R2**	3	4	5	4	5	5

* First marking number

** Second marking number

ordering information

CNN	2A	2	T	TE	103/103	B	A
Type	Style	Number of Elements	Termination Material	Packaging	Nominal Resistance	Resistance Tolerance	Resistance Ratio
CNN		2	T: Sn (Other termination styles may be available, please contact factory for options)	TE: 4 mm pitch embossed plastic	2 significant figures + multiplier	B: ±0.1% C: ±0.25%	A: 0.05% B: 0.1%

For further information on packaging, please refer to Appendix A.

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

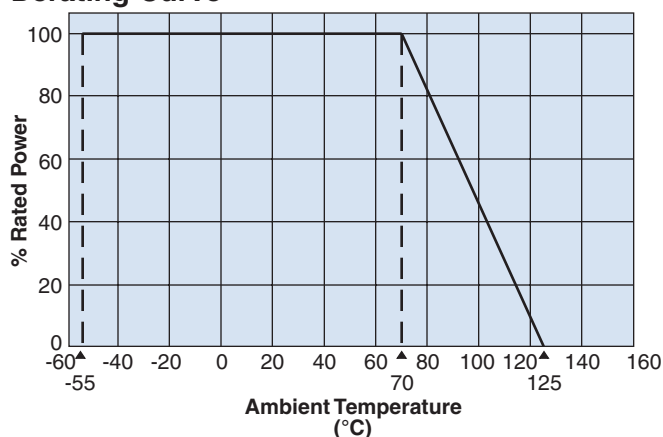
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applications and ratings

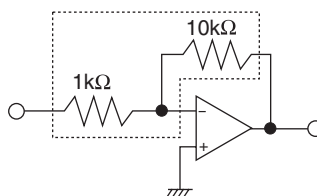
Part Designation	Power Rating w/Element	Resistance (Ω)	Resistance Tolerance		T.C.R. (ppm/ $^{\circ}$ C)		Maximum Working Voltage	Maximum Overload Voltage	Rated Ambient Temperature	Operating Temperature Range
			Absolute	Relative	Absolute	Relative				
CNN	0.05	1K, 10k, 100k	B: $\pm 0.1\%$ C: $\pm 0.25\%$	A: $\pm 0.05\%$ B: $\pm 0.1\%$	± 25	5	50V	100V	+70 $^{\circ}$ C	-55 $^{\circ}$ C to +125 $^{\circ}$ C

environmental applications

Derating Curve



Application Example



Performance Characteristics

Parameter	Requirement $\Delta R \pm(\% \pm 0.05\Omega)$		Test Method
	Limit	Typical	
Resistance	Within specified tolerance	—	25 $^{\circ}$ C
T.C.R.	Within specified T.C.R.	—	+25 $^{\circ}$ C/-55 $^{\circ}$ C, +25 $^{\circ}$ C/+125 $^{\circ}$ C
Overload (Short time)	$\pm 0.1\%$	$\pm 0.01\%$	Rated voltage x 2.5 or Max. overload volume, whichever is less, for 5 seconds
Resistance to Soldering Heat	$\pm 0.1\%$	$\pm 0.02\%$	260 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C, 10 seconds $\pm$ 1 second
Rapid Change of Temperature	$\pm 0.25\%$	$\pm 0.01\%$	-55 $^{\circ}$ C (30 minutes), +125 $^{\circ}$ C (30 minutes), 5 cycles
Moisture Resistance	$\pm 0.25\%$	$\pm 0.03\%$	40 $^{\circ}$ C $\pm$ 2 $^{\circ}$ C, 90 - 95% RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle
Endurance at 70 $^{\circ}$ C	$\pm 0.25\%$	$\pm 0.03\%$	70 $^{\circ}$ C $\pm$ 2 $^{\circ}$ C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle
High Temperature Exposure	$\pm 0.25\%$	$\pm 0.02\%$	+125 $^{\circ}$ C, 100 hours