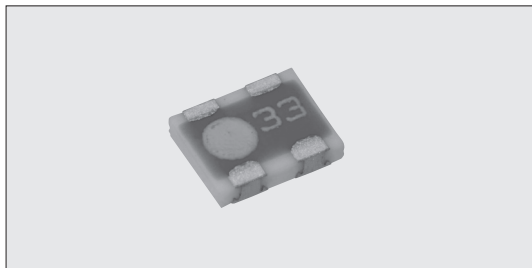
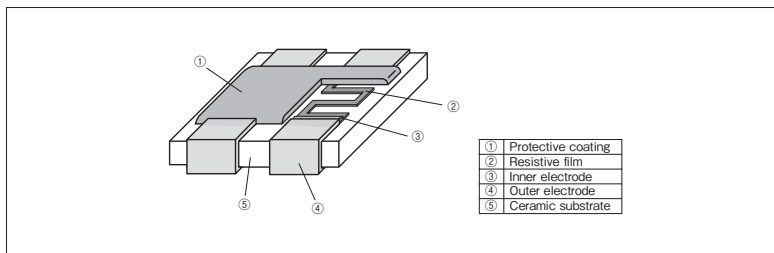


CNN Thin Film Chip Networks



Coating color : Green

Construction



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.
- Suitable for reflow soldering.
- Products with lead free termination meet EU-RoHS requirements.

Reference Standards

IEC 60115-1
JIS C 5201-1

Type Designation

Example

CNN	2A	2	T	TE	103/103	B	A
Product Code	Style	Number of Elements	Terminal Surface Material	Taping	Nominal Resistance	Absolute Resistance Tolerance	Resistance Ratio
CNN		2	T:Sn	TE: 4mm pitch plastic embossed BK: Bulk	3 digits/ 3 digits	B: ±0.1% C: ±0.25%	A : 0.05% B : 0.1%

The terminal surface material lead free is standard.

Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

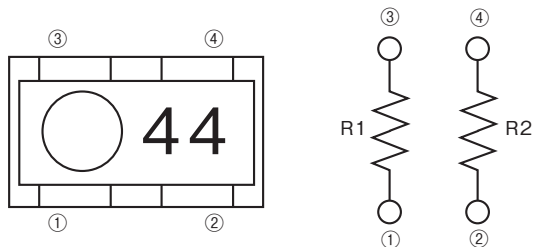
For further information on taping, please refer to APPENDIX C on the back pages.

Ratings

Type (Inch size)	POWER Rating	Resistance (Ω)	Resistance Tolerance		T.C.R. (×10 ⁻⁶ /K)		Max. Working Voltage	Max. Overload Voltage	Rated Ambient Temperature	Operating Temperature Range	Taping & Q'ty/Reel (pcs)
			Absolute	Relative	Absolute	Relative					TE
CNN2A (0805×2)	0.05W/Element	1k, 10k, 100k	B: ±0.1% C: ±0.25%	A: 0.05% B: 0.1%	±25	5	50V	100V	+70°C	-55°C~+125°C	4,000

Rated voltage = $\sqrt{\text{Power Rating} \times \text{Resistance value}}$ or Max. working voltage, whichever is lower.

Circuit Construction



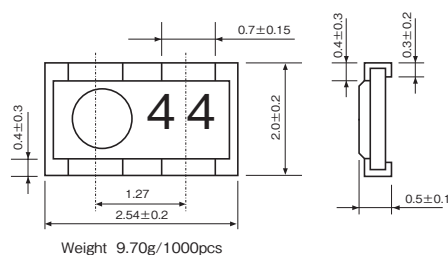
Standard

	Resistance						
	R1	1kΩ	1kΩ	1kΩ	10kΩ	10kΩ	100kΩ
R2	1kΩ	10kΩ	100kΩ	10kΩ	100kΩ	100kΩ	
First marking number	3	3	3	4	4	5	
Second marking number	3	4	5	4	5	5	

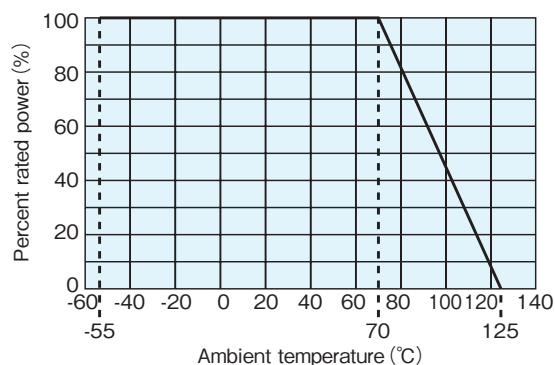
Custom

Custom products of any pairs between 1kΩ and 100kΩ are available on request. Please ask us beforehand for the custom products.

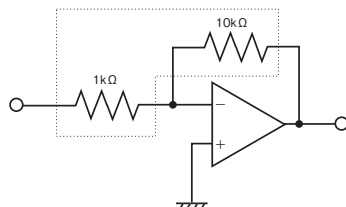
■Dimensions (mm)



■Derating Curve



■Example of Application



For resistors operated at an ambient temperature of 70°C or higher, the power shall be derated in accordance with the above derating curve.

■Performance

Test Items	Performance Requirements Absolute $\Delta R \pm (\% + 0.05 \Omega)$		Test Methods
	Limit	Typical	
Resistance	Within specified tolerance	—	25°C
T.C.R.	Within specified T.C.R.	—	+25°C/-55°C and +25°C/+125°C
Overload (Short time)	0.1	0.01	Rated voltage $\times 2.5$ or Max. overload vol., whichever less, for 5s
Resistance to soldering heat	0.1	0.02	260°C $\pm 5^\circ\text{C}$, 10s ± 1 s
Rapid change of temperature	0.25	0.01	-55°C (30min.) / +125°C (30min.) 5 cycles
Moisture resistance	0.25	0.03	40°C $\pm 2^\circ\text{C}$, 90%~95%RH, 1000h 1.5h ON/0.5h OFF cycle
Endurance at 70°C	0.25	0.03	70°C $\pm 2^\circ\text{C}$, 1000h 1.5h ON/0.5h OFF cycle
High temperature exposure	0.25	0.02	125°C, 100h

■Precautions for Use

- The properly and electrostatically measured taping materials are used for the components, but attention should be paid to the fact that there is some danger the parts absorb on the top tapes to cause a failure in the mounting and the parts are destructed by static electricity (1kV and more, Human Body Model 100pF 1.5kΩ) to change the resistance in the conditions of an excessive dryness or after the parts are given vibration for a long time as they are packaged on the tapes. Similarly, care should be given not to apply the excessive static electricity when mounting on the boards.
- Ionic impurities such as flux etc. that are attached to these products or those mounted onto a PCB, negatively affect their moisture resistance, corrosion resistance, etc. The flux may contain ionic substances like chlorine, acid, etc. while perspiration and saliva include ionic impurities like sodium (Na^+), chlorine (Cl^-) etc. Therefore these kinds of ionic substances may induce electrical corrosion when they invade into the products. Either thorough washing or using RMA solder and flux are necessary since lead free solder contains ionic substances. Washing process is needed, before putting on moisture proof material in order to prevent electrical corrosion.
- When heat-resistant masking tapes are attached to the chip resistors at the time of mounting and then detached, there is a possibility of exfoliation of the top electrodes. It is known that the heat applied in the mounting process will enhance the adhesion strength of the tape adhesive so please avoid the use. If the use of masking tapes are unavoidable, then please be sure not to attach the tape adhesives directly on the products.
When high-pressure shower cleaning is implemented, there is a possibility of exfoliation of the top electrodes caused by the water pressure stress so please avoid the implementation.
If the implementation is unavoidable, then please evaluate the products beforehand.