

# THICK FILM ARRAY CHIP RESISTOR

## - CNP SERIES -

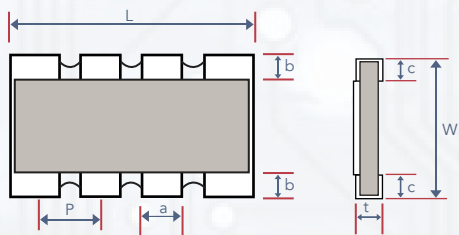
### FEATURES

- Advanced thin film technology
- Very tight tolerance down to  $\pm 0.1\%$
- Extremely low TCR down to  $\pm 10\text{PPM}/^\circ\text{C}$
- 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

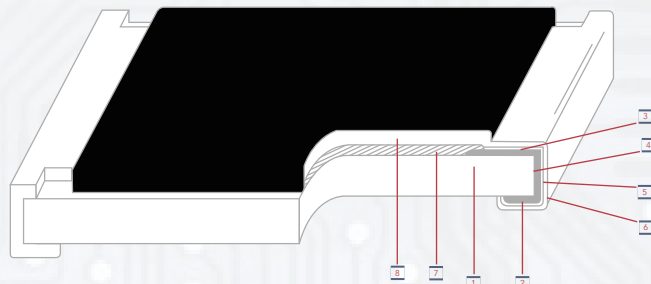
### DIMENSIONS



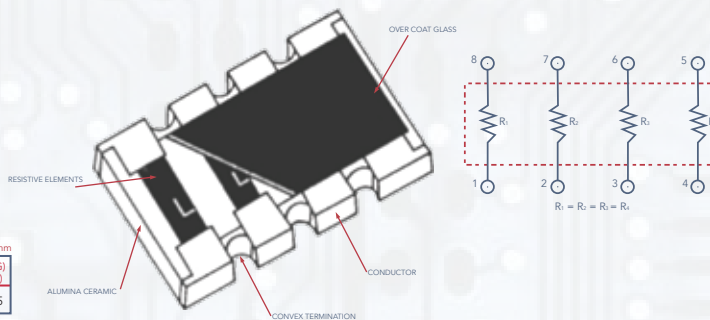
TYPE	NO. OF RESISTORS	L	W	H	A	B	C	Y	WEIGHT (G) (1000 PCS)
CNP34	4	3.20 $\pm$ 0.15	1.60 $\pm$ 0.15	0.55 $\pm$ 0.10	0.50 $\pm$ 0.15	0.80 $\pm$ 0.05	0.30 $\pm$ 0.15	0.30 $\pm$ 0.15	0.30 $\pm$ 0.15

UNIT=mm

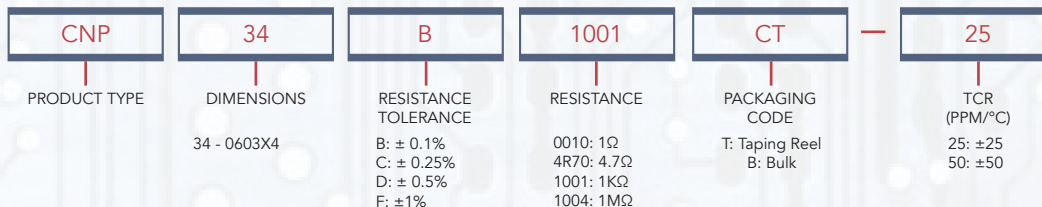
### CONSTRUCTION



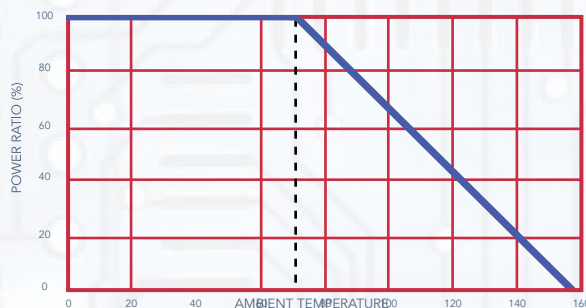
- |                         |                            |
|-------------------------|----------------------------|
| 1 Alumina Substrate     | 5 Barrier Layer (Ni)       |
| 2 Bottom Electrode (Ag) | 6 External Electrode (Sn)  |
| 3 Top Electrode (Ag-Pd) | 7 Resistor Layer           |
| 4 Edge Electrode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



### PART NUMBER GUIDE



### DERIVATIVE CURVE



## SPECIAL ELECTRICAL SPECIFICATIONS

TYPE/ ITEM	POWER RATING AT 70° C	OPERATING TEMP. RANGE	MAX OPERATING VOLTAGE	MAX OVERLOAD VOLTAGE	NUMBER OF RESISTORS	RESISTANCE RANGE				TCR (PPM/°C)
						±0.1%	±0.25%	±0.5%	±1%	
CNP 34	1/16W	-55 ~ +155°C	50V	100V	4	24.9Ω~100KΩ				±25 ±50

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.

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CNP 34	1/16W	-55 ~ +155°C	50V	100V	4	24.9Ω~100KΩ				±10 ±15

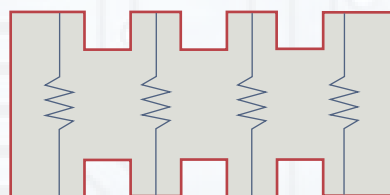
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## ENVIRONMENTAL CHARACTERISTICS

ITEM	REQUIREMENT		TEST METHODS
Temperature Coefficient of Resistance (T.C.R.)	As Spec.		MIL-STD-202F Method 304 +25/-55/+25/+125/+25°C
Short Time Overload	ΔR±0.1%		JIS-C-5201-1 5.5 RCWV*2.5 or Max. overload voltage for 5 seconds
Insulation Resistance	>1000MΩ		MIL-STD-202F Method 302 Apply 100V <sub>DC</sub> for 1 minute
Endurance	1000Hr: ΔR±0.15% 8000Hr: ΔR±0.3%		MIL-STD-202F Method 108A 70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	ΔR±0.25%		MIL-STD-202F Method 103B 40±2°C, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Bending Strength	ΔR±0.25%	ΔR±0.5%	JIS-C-5201-1 6.1.4 Bending amplitude 3 mm for 10 seconds
Solderability	95% coverage min.		MIL-STD-202F Method 208H 245±5°C for 3 seconds
Resistance to Soldering Heat	ΔR±0.25%	ΔR±0.5%	MIL-STD-202F Method 210E 260±5°C for 10 seconds
Dielectric Withstanding Voltage	100V		MIL-STD-202F Method 301 Max. overload voltage for 1 minute
Thermal Shock	ΔR±0.25%	ΔR±0.5%	MIL-STD-202F Method 107G -55°C ~150°C, 100 cycles
Low Temperature Operation	ΔR±0.25%	ΔR±0.5%	JIS-C-5201-1 7.1 1 hour, -65°C, followed by 45 minutes of RCWV

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

## EQUIVALENT CIRCUIT DIAGRAM

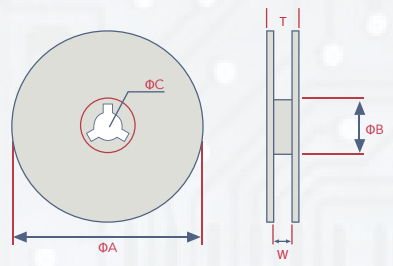


CNP



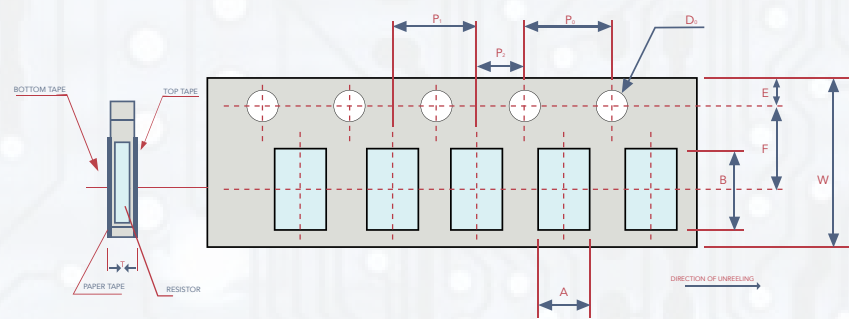
## PACKAGING

### REEL SPECIFICATIONS & PACKAGING QUANTITY



UNIT=mm

TYPE	PACKAGING QUANTITY		TAPE WIDTH	REEL DIAMETER	ΦA	ΦB	ΦC	W	T
CNP 34	PAPER	5K	8mm	7 inch	178±1.5	60 <sup>+1/-0</sup>	13.0±0.2	9.0±0.05	12.5±0.5



UNIT=mm

TYPE	A	B	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	ΦD <sub>0</sub>	T
CNP 34	1.95±0.1	3.50±0.1	8.0±0.1	1.75±0.1	3.5±0.05	4.0±0.05	4.0±0.05	2.0±0.05	1.5 <sup>+0.1</sup>	0.85±0.1

## MARKING

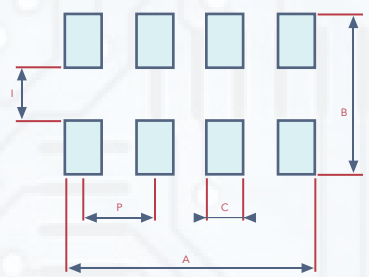
Jumper for all: Letter "0"

CNP34: 4 digits marking

Example:

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

## RECOMEND LAND PATTERN



UNIT=mm

TYPE	A	B	C	C1	I	I1	P	P1
CNP 34	2.85	3.10	0.45	---	0.80	---	0.80	---