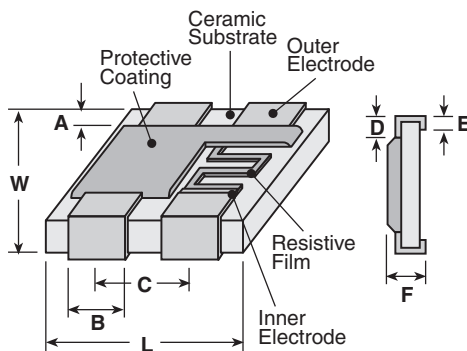


features

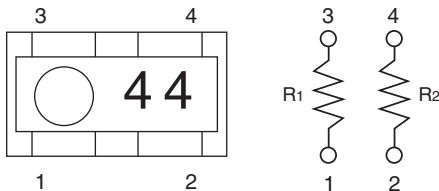
- Metal film chip network resistors
- Excellent in relative T.C.R. and relative accuracy
- Pair resistors for high precision OP-amplifiers
- As custom products, any pairs between 1kΩ and 100kΩ are available on request
- Suitable for reflow soldering
- Marking: Green body color
- Products with lead-free 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

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

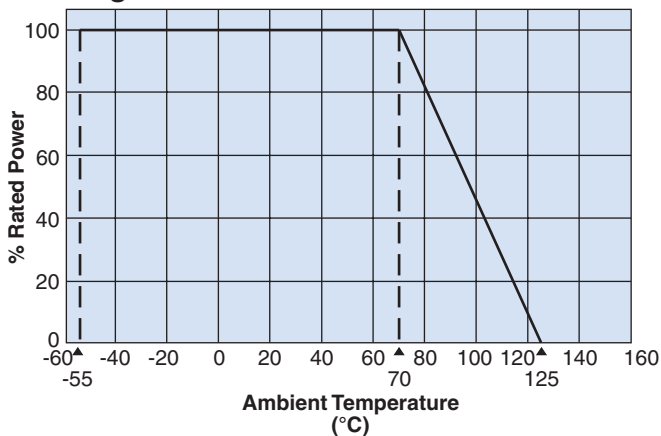
11/14/08

applications and ratings

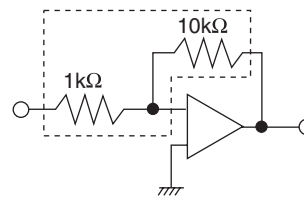
| Part Designation | Power Rating w/Element | Resistance (Ω) | Resistance Tolerance | | T.C.R. (ppm/ $^{\circ}$ C) | | Maximum Working Voltage | Maximum Overload Voltage | Rated Ambient Temperature | Operating Temperature Range |
|------------------|------------------------|-------------------------|-----------------------------------|-----------------------------------|----------------------------|----------|-------------------------|--------------------------|---------------------------|---------------------------------------|
| | | | 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 | Maximum $\Delta R \pm$ (%+0.05 Ω) | Test Method |
|------------------------------|---|--|
| Resistance | Within specified tolerance | 25 $^{\circ}$ C |
| T.C.R. | Within specified T.C.R. | +25 $^{\circ}$ C/-55 $^{\circ}$ C and +25 $^{\circ}$ C/+125 $^{\circ}$ C |
| Short Time Overload | $\pm 0.1\%$ | Rated voltage times 2.5 or maximum overload voltage, whichever is lower, for 5 seconds |
| Resistance to Soldering Heat | $\pm 0.1\%$ | 260 $^{\circ}$ C $\pm 5^{\circ}$ C, 10 seconds ± 1 second |
| Rapid Change of Temperature | $\pm 0.25\%$ | -55 $^{\circ}$ C (30 min.)/+125 $^{\circ}$ C (30 min.) 5 cycles |
| Moisture Resistance | $\pm 0.25\%$ | 40 $^{\circ}$ C $\pm 2^{\circ}$ C, 90%-95% RH, 1000h 1.5h ON/0.5h OFF cycle |
| Endurance at 70 $^{\circ}$ C | $\pm 0.25\%$ | 70 $^{\circ}$ C $\pm 2^{\circ}$ C, 1000h 1.5h ON/0.5h OFF cycle |