

## convex termination with square corners resistor array

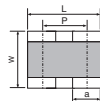


### features

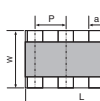
- Manufactured to type RK73 standards
- Less board space than individual chips
- Isolated resistor elements
- Convex terminations with square corners (CN\_K)
- Flat termination with square corners (CN\_N)
- Marking: Body color black
  - 1FN8K, 1H, 1E no marking
  - 1F8K:  $\pm 1\%$ : white four-digit marking,  $\pm 5\%$ : white three-digit marking
  - 1J white three-digit marking
- Products with lead-free terminations meet EU RoHS requirements. EU RoHS regulation is not intended for Pb-glass contained in electrode, resistor element and glass.
- AEC-Q200 Qualified: CN1J4K only

### dimensions and construction

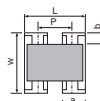
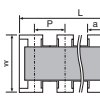
CN1H2N



CN1H4N



CN1E2K, CN1J2K

CN1E4K, CN1J4K,  
CN1F8K, CN1FN8K

| Size Code                 | Dimensions inches (mm)              |                                     |                                     |                                     |                                     |                                     |                                      |                                      |                |
|---------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|----------------|
|                           | L                                   | W                                   | c                                   | d                                   | t                                   | a                                   | a 2                                  | b                                    | P              |
| 1H2N<br>(0201x2)          | .031 $\pm$ .004<br>(0.8 $\pm$ 0.1)  | .024 $\pm$ .004<br>(0.6 $\pm$ 0.1)  | .006 $\pm$ .004<br>(0.15 $\pm$ 0.1) | .006 $\pm$ .004<br>(0.15 $\pm$ 0.1) | .014 $\pm$ .004<br>(0.35 $\pm$ 0.1) | .012 $\pm$ .004<br>(0.3 $\pm$ 0.1)  | —                                    | —                                    | .020<br>(0.5)  |
| 1H4N<br>(0201x4)          | .055 $\pm$ .004<br>(1.4 $\pm$ 0.1)  | .024 $\pm$ .003<br>(0.6 $\pm$ 0.08) | .004 $\pm$ .003<br>(0.1 $\pm$ 0.08) | .008 $\pm$ .003<br>(0.2 $\pm$ 0.08) | .014 $\pm$ .004<br>(0.35 $\pm$ 0.1) | .008 $\pm$ .004<br>(0.2 $\pm$ 0.1)  | —                                    | —                                    | .016<br>(0.4)  |
| 1E2K<br>(0402x2)          | .039 $\pm$ .004<br>(1.0 $\pm$ 0.1)  | .039 $\pm$ .004<br>(1.0 $\pm$ 0.1)  | .006 $\pm$ .004<br>(0.15 $\pm$ 0.1) | .010 $\pm$ .004<br>(0.25 $\pm$ 0.1) | .014 $\pm$ .004<br>(0.35 $\pm$ 0.1) | .013 $\pm$ .004<br>(0.33 $\pm$ 0.1) | —                                    | .007 $\pm$ .002<br>(0.17 $\pm$ 0.05) | .026<br>(0.67) |
| 1E4K<br>(0402x4)          | .079 $\pm$ .004<br>(2.0 $\pm$ 0.1)  | .039 $\pm$ .004<br>(1.0 $\pm$ 0.1)  | .006 $\pm$ .004<br>(0.15 $\pm$ 0.1) | .010 $\pm$ .008<br>(0.25 $\pm$ 0.2) | .014 $\pm$ .004<br>(0.35 $\pm$ 0.1) | .012 $\pm$ .006<br>(0.3 $\pm$ 0.15) | .016 $\pm$ .006<br>(0.4 $\pm$ 0.15)  | .006 $\pm$ .004<br>(0.15 $\pm$ 0.1)  | .020<br>(0.5)  |
| 1J2K<br>(0603x2)          | .063 $\pm$ .006<br>(1.6 $\pm$ 0.15) | .063 $\pm$ .006<br>(1.6 $\pm$ 0.15) | .012 $\pm$ .008<br>(0.3 $\pm$ 0.2)  | .010 $\pm$ .004<br>(0.25 $\pm$ 0.1) | .020 $\pm$ .004<br>(0.5 $\pm$ 0.1)  | .024 $\pm$ .006<br>(0.6 $\pm$ 0.15) | —                                    | .012 $\pm$ .004<br>(0.3 $\pm$ 0.1)   | 0.031<br>(0.8) |
| 1J4K<br>(0603x4)          | .126 $\pm$ .006<br>(3.2 $\pm$ 0.15) | .063 $\pm$ .006<br>(1.6 $\pm$ 0.15) | .012 $\pm$ .008<br>(0.3 $\pm$ 0.2)  | .010 $\pm$ .004<br>(0.25 $\pm$ 0.1) | .020 $\pm$ .004<br>(0.5 $\pm$ 0.1)  | .020 $\pm$ .006<br>(0.5 $\pm$ 0.15) | .026 $\pm$ .006<br>(0.65 $\pm$ 0.15) | .012 $\pm$ .004<br>(0.3 $\pm$ 0.1)   | 0.031<br>(0.8) |
| 1F8K<br>1FN8K<br>(0602x8) | .149 $\pm$ .004<br>(3.8 $\pm$ 0.1)  | .063 $\pm$ .004<br>(1.6 $\pm$ 0.1)  | .012 $\pm$ .004<br>(0.3 $\pm$ 0.1)  | .012 $\pm$ .004<br>(0.3 $\pm$ 0.1)  | .018 $\pm$ .004<br>(0.45 $\pm$ 0.1) | .012 $\pm$ .004<br>(0.30 $\pm$ 0.1) | —                                    | .006<br>(0.15)                       | .020<br>(0.5)  |

### ordering information

| New Part # | CN   | 1J             | 4        | K                                                                      | T                                                                                                | TD                                             | 101                                                                                                      | J                            |
|------------|------|----------------|----------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------|------------------------------|
| Type       | Type | Size           | Elements | Terminal Convex                                                        | Termination Material                                                                             | Packaging                                      | Nominal Resistance                                                                                       | Tolerance                    |
|            |      | 1H<br>1E<br>1J | 2<br>4   | K: Convex type with square corners<br>N: Flat type with square corners | T: Sn<br>(1E, 1J: Other termination styles may be available, please contact factory for options) | TD:<br>7" paper tape<br>TDD:<br>10" paper tape | 2 significant figures + 1 multiplier for $\pm 5\%$<br>3 significant figures + 1 multiplier for $\pm 1\%$ | F: $\pm 1\%$<br>J: $\pm 5\%$ |

| New Part # | CN   | 1F   | N                                  | 8        | K                                  | T                                                                                        | TD                   | 101                                                                                                      | J                            |
|------------|------|------|------------------------------------|----------|------------------------------------|------------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------|------------------------------|
| Type       | Type | Size | Marking                            | Elements | Terminal Convex                    | Termination Material                                                                     | Packaging            | Nominal Resistance                                                                                       | Tolerance                    |
|            |      |      | Blank:<br>Marking<br>N: No Marking |          | K: Convex type with square corners | T: Sn<br>(Other termination styles may be available, please contact factory for options) | TD:<br>7" paper tape | 2 significant figures + 1 multiplier for $\pm 5\%$<br>3 significant figures + 1 multiplier for $\pm 1\%$ | F: $\pm 1\%$<br>J: $\pm 5\%$ |

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.

2/26/15

## applications and ratings

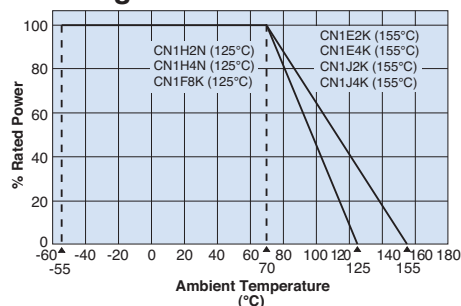
| Part Designation | Power Rating @ 70°C (Per Element) | Resistance Range  |             | T.C.R. (ppm/°C) Max. |                          | Absolute Maximum Working Voltage | Maximum Overload Voltage (5 Secs. Max.) | Rated Terminal Temperature | Operating Temperature Range |
|------------------|-----------------------------------|-------------------|-------------|----------------------|--------------------------|----------------------------------|-----------------------------------------|----------------------------|-----------------------------|
|                  |                                   | E-24, E-96 (F±1%) | E-24 (J±5%) | E-24, E-96 (F±1%)    | E-24 (J±5%)              |                                  |                                         |                            |                             |
| CN1H2N           | 1/32W (.031W)                     | —                 | 10Ω - 1MΩ   | —                    | ±200:R>10Ω<br>±400:R<10Ω | 12.5V                            | 25V                                     | —                          | -55°C to +125°C             |
| CN1H4N           | 1/16W (.063W)                     | 10Ω - 100kΩ       |             | ±200:R≥10Ω           |                          | 25V                              | 50V                                     | +125°C                     | -55°C to +155°C             |
| CN1E2K           |                                   |                   |             | ±100:R≥10Ω           |                          | 50V                              | 100V                                    |                            |                             |
| CN1E4K           |                                   |                   |             |                      |                          |                                  |                                         |                            |                             |
| CN1J2K           |                                   |                   |             |                      |                          |                                  |                                         |                            |                             |
| CN1J4K           |                                   | 1Ω - 1MΩ          |             |                      |                          |                                  |                                         |                            |                             |
| CN1F8K           | 1/16W (.063W)                     | 10Ω - 100kΩ       | 10Ω - 1MΩ   | ±200:R≥10Ω           |                          | 25V                              | 50V                                     | —                          | -55°C to +125°C             |
| CN1FN8K          | 0.25W per package                 |                   |             |                      |                          |                                  |                                         |                            |                             |

Rated ambient temperature: +70°C

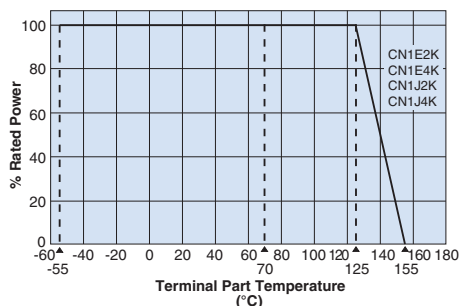
Note that network resistors generate higher heat rather than single flat chip resistor under rated power output

## environmental applications

### Derating Curve



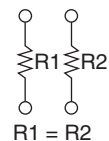
For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the above derating curve.



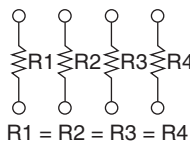
For resistors operated at a terminal part temperature of described for each size or above, a power rating shall be derated in accordance with the derating curve. Please refer to "Introduction of the derating curve based on the terminal part temperature" on the beginning of our catalog before use.

## circuit schematic

CN1H2N, CN1E2K, CN1H4N, CN1E4K, CN1J2K, CN1J4K



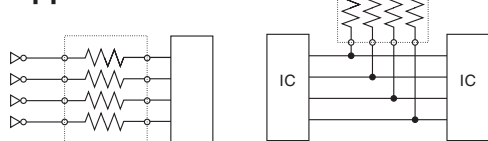
CN1H4N, CN1E4K, CN1J4K



CN1F8K, CN1FN8K



### Circuit Board Application



## Performance Characteristics

| Parameter                   | Requirement Δ R            |                                                     | Test Method                                                                                    |
|-----------------------------|----------------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------|
|                             | Limit                      | Typical                                             |                                                                                                |
| Resistance                  | Within regulated tolerance | —                                                   | 25°C                                                                                           |
| T.C.R.                      | Within specified T.C.R.    | —                                                   | +25°C/-55°C, +25°C/+125°C                                                                      |
| Overload (Short time)       | ±2.0%                      | ±0.25%                                              | Rated voltage x 2.5 for 5 seconds                                                              |
| Resistance to Solder Heat   | ±1.0%                      | ±0.75%                                              | 260°C ± 5°C, 10 seconds ± 1 second                                                             |
| Rapid Change of Temperature | ±1.0%                      | ±0.5%                                               | -55°C (30 minutes), +125°C (30 minutes), 5 cycles                                              |
| Moisture Resistance         | ±5.0%                      | ±1.0%                                               | 40°C ± 2°C, 90 - 95% RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle                               |
| Endurance at 70°C           | ±5.0%                      | ±0.5%                                               | 70°C ± 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle                                            |
| High Temperature Exposure   | ±1.0%                      | ±0.15%: CN1H2N, CN1H4N, CN1F8K<br>+0.25: All others | +125°C, 100 hours: CN1H2N, CN1H4N, CN1F8K<br>+155°C, 100 hours: CN1E2K, CN1E4K, CN1J2K, CN1J4K |

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

2/23/15