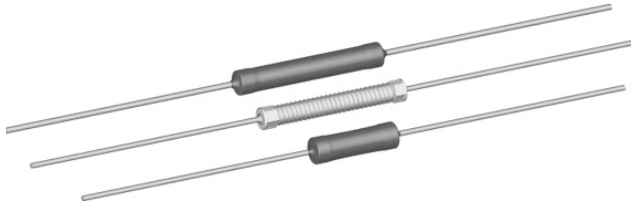


## Wirewound Resistors, Commercial Power, Axial Lead



### FEATURES

- High performance for low cost
- Auto insertable
- CA0001, CA0002 and CA5000 models are supplied with a high temperature silicone coating for additional environmental protection
- Lead forming available



### APPLICATIONS

Kitchen appliances: Percolators, blenders, mixers, ranges, toasters, deep fryers. Automotive devices: Horns, ignitions, windshield wipers, voltage regulators, instrument gauges. Entertainment devices: Radios, televisions, computers and power supplies.

**RoHS\***  
COMPLIANT

### STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL <sup>(1)</sup><br>MODEL | HISTORICAL <sup>(1)</sup><br>MODEL | POWER RATING<br>$P_{25^{\circ}\text{C}}$ W | RESISTANCE RANGE $\Omega$<br>$\pm 10\%$ Standard, $\pm 5\%$ Available | WEIGHT<br>(Typical) g |
|--------------------------------|------------------------------------|--------------------------------------------|-----------------------------------------------------------------------|-----------------------|
| CA0001                         | CA-1                               | 1.0                                        | 0.1 - 1K                                                              | 0.65                  |
| CA0002                         | CA-2                               | 2.0                                        | 0.1 - 2.4K                                                            | 0.80                  |
| CA4050/CA5050                  | CA-4050/CA-5050                    | 2.0/2.5                                    | 0.1 - 170/0.1 - 2.7K                                                  | 0.64/0.78             |
| CA4055/CA5055                  | CA-4055/CA-5055                    | 2.2/2.75                                   | 0.1 - 195/0.1 - 3.1K                                                  | 0.65/0.80             |
| CA4060/CA5060                  | CA-4060/CA-5060                    | 2.4/3.0                                    | 0.1 - 220/0.1 - 3.5K                                                  | 0.66/0.82             |
| CA4070/CA5070                  | CA-4070/CA-5070                    | 2.8/3.5                                    | 0.1 - 270/0.1 - 4.3K                                                  | 0.68/0.86             |
| CA4080/CA5080                  | CA-4080/CA-5080                    | 3.2/4.0                                    | 0.1 - 320/0.1 - 5.1K                                                  | 0.70/0.90             |
| CA4090/CA5090                  | CA-4090/CA-5090                    | 3.6/4.5                                    | 0.1 - 370/0.1 - 5.9K                                                  | 0.72/0.94             |
| CA4100/CA5100                  | CA-4100/CA-5100                    | 4.0/5.0                                    | 0.15 - 420/0.15 - 6.7K                                                | 0.74/0.98             |
| CA4150/CA5150                  | CA-4150/CA-5150                    | 6.0/7.5                                    | 0.2 - 630/0.2 - 7K                                                    | 0.84/1.19             |
| CA4200/CA5200                  | CA-4200/CA-5200                    | 8.0/10.0                                   | 0.2 - 920/0.2 - 7K                                                    | 0.94/1.40             |
| CA4220/CA5220                  | CA-4220/CA-5220                    | 8.8/11.0                                   | 0.2 - 1.02K/0.2 - 7K                                                  | 0.98/1.48             |

#### Note

<sup>(1)</sup> CA4000 and CA5000 model numbers are calculated from the CA4000 power rating of 4 W per inch and CA5000 power rating of 5 W per inch. The last three digits of the model number are the body length of the resistor in inches (decimal is between the first and second digit). Example: CA5150 = 1.50 inches x 5 W per inch = 7.5 W.

### TECHNICAL SPECIFICATIONS

| PARAMETER                       | UNIT                    | CA0001                                                      | CA0002     | CA4000     | CA5000     |
|---------------------------------|-------------------------|-------------------------------------------------------------|------------|------------|------------|
| Temperature Coefficient         | ppm/ $^{\circ}\text{C}$ | $\pm 600$ below 1 $\Omega$ , $\pm 300$ 1 $\Omega$ and above |            |            |            |
| Power Rating                    | W                       | 1                                                           | 2          | 4 per inch | 5 per inch |
| Short Time Overload             | -                       | 5 x rated power for 5 s                                     |            |            |            |
| Maximum Working Voltage         | V                       | $(P \times R)^{1/2}$                                        |            |            |            |
| Dielectric Withstanding Voltage | $V_{AC}$                | 1000                                                        | 1000       | 1000       | 1000       |
| Operating Temperature Range     | $^{\circ}\text{C}$      | - 65/+ 275                                                  | - 65/+ 275 | - 65/+ 275 | - 65/+ 275 |
| Terminal Strength (minimum)     | lb                      | 10                                                          | 10         | 10         | 10         |

#### Note

- Wirewound CA resistors can reliably function as a fuse and as a resistor. Such components involve compromise between fusing and resistive functions; therefore, each design should be tailored to the application to ensure optimum performance. Contact factory by using the e-mail address at the bottom of this page for design assistance.

### GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: CA000150R00JR05 (preferred part number format)

C A 0 0 0 1 5 0 R 0 0 J R 0 5

| GLOBAL MODEL                                                             | VALUE                                                                         | TOLERANCE                                              | PACKAGING                                                                                                                  | SPECIAL                                                      |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| (See Standard Electrical Specifications Global Model column for options) | R = Decimal<br>K = Thousand<br>R1500 = 0.15 $\Omega$<br>1K500 = 1500 $\Omega$ | H = $\pm 3.0\%$<br>J = $\pm 5.0\%$<br>K = $\pm 10.0\%$ | E14 = Lead (Pb)-free bulk<br>E05 = Lead (Pb)-free tape and reel<br><br>B14 = Tin/lead bulk<br>R05 = Tin/lead tape and reel | (Dash Number) (up to 3 digits)<br>From 1 - 999 as applicable |

Historical Part Number example: CA-1 50  $\Omega$  5 % R05 (will continue to be accepted for tin/lead product only)

|                  |                  |                |           |
|------------------|------------------|----------------|-----------|
| CA-1             | 50 $\Omega$      | 5 %            | R05       |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

\* Pb containing terminations are not RoHS compliant, exemptions may apply

## DIMENSIONS in inches [millimeters]

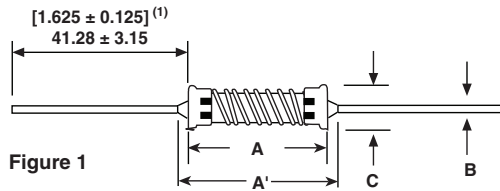


Figure 1

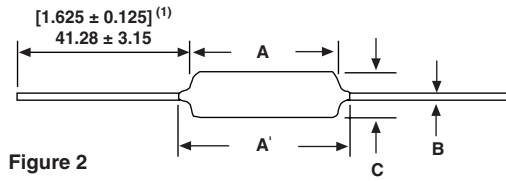


Figure 2

### Note

(1) On some standard reel pack methods, the leads may be trimmed to a shorter length than shown.

| GLOBAL MODEL | DIMENSIONS in inches [millimeters] |               |                   |                              | FIGURE |
|--------------|------------------------------------|---------------|-------------------|------------------------------|--------|
|              | A ± 0.031 [0.794]                  | A' (Maximum)  | B ± 0.001 [0.025] | C                            |        |
| CA0001       | 0.400 [10.16]                      | 0.460 [11.68] | 0.032 [0.813]     | 0.170 maximum [4.32 maximum] | 2      |
| CA0002       | 0.570 [14.48]                      | 0.630 [16.00] | 0.032 [0.813]     | 0.170 maximum [4.32 maximum] | 2      |
| CA4050       | 0.500 [12.70]                      | 0.594 [15.09] | 0.032 [0.813]     | 0.140 ± 0.031 [3.56 ± 0.794] | 1      |
| CA4055       | 0.550 [13.97]                      | 0.644 [16.36] | 0.032 [0.813]     | 0.140 ± 0.031 [3.56 ± 0.794] | 1      |
| CA4060       | 0.600 [15.24]                      | 0.694 [17.63] | 0.032 [0.813]     | 0.140 ± 0.031 [3.56 ± 0.794] | 1      |
| CA4070       | 0.700 [17.78]                      | 0.794 [20.17] | 0.032 [0.813]     | 0.140 ± 0.031 [3.56 ± 0.794] | 1      |
| CA4080       | 0.800 [20.32]                      | 0.894 [22.71] | 0.032 [0.813]     | 0.140 ± 0.031 [3.56 ± 0.794] | 1      |
| CA4090       | 0.900 [22.86]                      | 0.994 [25.25] | 0.032 [0.813]     | 0.140 ± 0.031 [3.56 ± 0.794] | 1      |
| CA4100       | 1.00 [25.40]                       | 1.094 [27.79] | 0.032 [0.813]     | 0.140 ± 0.031 [3.56 ± 0.794] | 1      |
| CA4150       | 1.50 [38.10]                       | 1.594 [40.49] | 0.032 [0.813]     | 0.140 ± 0.031 [3.56 ± 0.794] | 1      |
| CA4200       | 2.00 [50.80]                       | 2.094 [53.19] | 0.032 [0.813]     | 0.140 ± 0.031 [3.56 ± 0.794] | 1      |
| CA4220       | 2.20 [55.88]                       | 2.294 [58.27] | 0.032 [0.813]     | 0.140 ± 0.031 [3.56 ± 0.794] | 1      |
| CA5050       | 0.500 [12.70]                      | 0.625 [15.88] | 0.036 [0.914]     | 0.170 ± 0.031 [4.32 ± 0.794] | 2      |
| CA5055       | 0.550 [13.97]                      | 0.675 [17.15] | 0.036 [0.914]     | 0.170 ± 0.031 [4.32 ± 0.794] | 2      |
| CA5060       | 0.600 [15.24]                      | 0.725 [18.42] | 0.036 [0.914]     | 0.170 ± 0.031 [4.32 ± 0.794] | 2      |
| CA5070       | 0.700 [17.78]                      | 0.825 [20.96] | 0.036 [0.914]     | 0.170 ± 0.031 [4.32 ± 0.794] | 2      |
| CA5080       | 0.800 [20.32]                      | 0.925 [23.50] | 0.036 [0.914]     | 0.170 ± 0.031 [4.32 ± 0.794] | 2      |
| CA5090       | 0.900 [22.86]                      | 1.025 [26.04] | 0.036 [0.914]     | 0.170 ± 0.031 [4.32 ± 0.794] | 2      |
| CA5100       | 1.00 [25.40]                       | 1.125 [28.58] | 0.036 [0.914]     | 0.170 ± 0.031 [4.32 ± 0.794] | 2      |
| CA5150       | 1.50 [38.10]                       | 1.625 [41.28] | 0.036 [0.914]     | 0.170 ± 0.031 [4.32 ± 0.794] | 2      |
| CA5200       | 2.00 [50.80]                       | 2.125 [53.98] | 0.036 [0.914]     | 0.170 ± 0.031 [4.32 ± 0.794] | 2      |
| CA5220       | 2.20 [55.88]                       | 2.325 [59.06] | 0.036 [0.914]     | 0.170 ± 0.031 [4.32 ± 0.794] | 2      |

## MATERIAL SPECIFICATIONS

**Element:** Copper-nickel alloy or nickel-chrome alloy, depending on resistance value

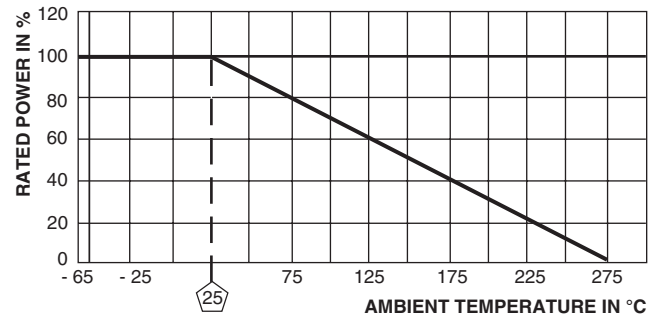
**Core:** Woven fiberglass

**Coating:** Special high temperature silicone (CA4000 series is not coated)

**Terminals:** Tin/lead electroplated copper (Lead (Pb)-free will be 100 % tin)

**End Caps:** Tin plated steel

**Part Marking:** DALE, model, wattage, value, tolerance, date code



Derating

| PERFORMANCE                     |                                                                     |                          |
|---------------------------------|---------------------------------------------------------------------|--------------------------|
| TEST                            | CONDITIONS OF TEST                                                  | TEST LIMITS (EIA RS-344) |
| Thermal Shock                   | - 55 °C to + 275 °C, 5 cycles, 30 min dwell time                    | ± (5.0 % + 0.05 Ω) ΔR    |
| Short Time Overload             | 5 x rated power for 5 s                                             | ± (4.0 % + 0.05 Ω) ΔR    |
| Dielectric Withstanding Voltage | 600 V <sub>AC</sub> , (CA0001, CA0002) for 1 min                    | ± (2.0 % + 0.05 Ω) ΔR    |
| Low Temperature Storage         | - 65 °C, full rated working voltage for 45 min                      | ± (3.0 % + 0.05 Ω) ΔR    |
| Humidity                        | 75 °C, 90 % - 100 % RH, 240 h                                       | ± (5.0 % + 0.05 Ω) ΔR    |
| Load Life                       | 1000 h at rated power, + 25 °C, 1.5 h "ON", 0.5 h "OFF"             | ± (10.0 % + 0.05 Ω) ΔR   |
| Terminal Strength               | 10 pounds for 30 s; body twisted about axis, 3 360° rotations       | ± (2.0 % + 0.05 Ω) ΔR    |
| Resistance to Solder Heat       | Terminal immersed 3.5 s in molten solder at 1/8" to 3/16" from body | ± (4.0 % + 0.05 Ω) ΔR    |



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