

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
- Compliant to RoHS Directive 2002/95/EC


RoHS*
 COMPLIANT

GREEN
 (5-2008)**
 Available

APPLICATIONS

Kitchen appliances: Percolators, blenders, mixers, ranges, toasters, deep fryers.
 Entertainment devices: Radios, televisions, computers and power supplies.

STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL (1) | HISTORICAL MODEL (1) | POWER RATING $P_{25^\circ\text{C}}$ W | RESISTANCE RANGE Ω | TOLERANCE $\pm \%$ | WEIGHT (typical) g |
|------------------|----------------------|--|------------------------------|-----------------------|-----------------------|
| CA0001 | CA-1 | 1.0 | 0.1 to 1K | 5, 10 | 0.65 |
| CA0002 | CA-2 | 2.0 | 0.1 to 2.4K | 5, 10 | 0.80 |
| CA4000 | CA-4xxx | 2.0 to 8.8 | 0.1 to 1.02K | 5, 10 | See below |
| CA5000 | CA-5xxx | 2.5 to 11.0 | 0.1 to 7K | 5, 10 | See below |

Note

(1) 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.

EXAMPLES

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

TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | CA RESISTOR CHARACTERISTICS |
|---------------------------------|-----------------------|--|
| Temperature Coefficient | ppm/ $^\circ\text{C}$ | ± 300 1 Ω and above, ± 600 below 1 Ω |
| Short Time Overload | - | 5 x rated power for 5 s |
| Maximum Working Voltage | V | $(P \times R)^{1/2}$ |
| Dielectric Withstanding Voltage | V_{AC} | 600 (CA0001, CA0002 and CA5xxx only) |
| Operating Temperature Range | $^\circ\text{C}$ | - 65 to + 275 |
| Terminal Strength (minimum) | lb | 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

Global Part Numbering example: CA000150R00JR05

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|
| 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 K = Thousand R1500 = 0.15 Ω 1K500 = 1500 Ω | H = ± 3.0 % J = ± 5.0 % K = ± 10.0 % | E14 = Lead (Pb)-free bulk E05 = Lead (Pb)-free tape and reel B14 = Tin/lead bulk R05 = Tin/lead tape and reel | (Dash Number) (up to 3 digits) From 1 to 999 as applicable |

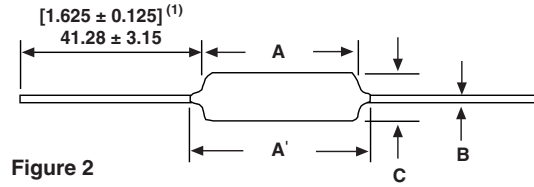
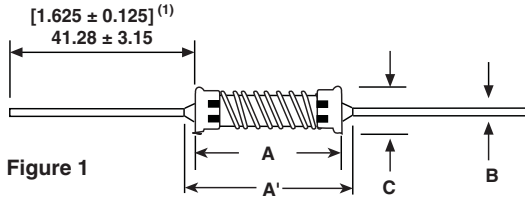
 Historical Part Numbering example: CA-1 50 Ω 5 % R05

| | | | |
|------------------|------------------|----------------|-----------|
| CA-1 | 50 Ω | 5 % | R05 |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

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

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

DIMENSIONS in inches [millimeters]



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

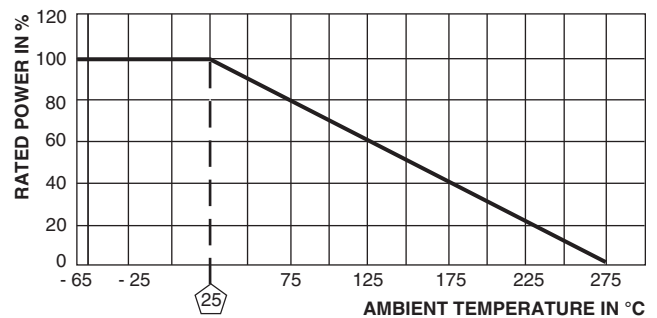
Coating: Special high temperature silicone (CA4000 series is not coated)

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

End Caps: Tin plated steel

Part Marking: CA0001 and CA0002 are printed with value and tolerance

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 _{AC} for 1 min (CA0001, CA0002 and CA5xxx only) | ± (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 % to 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 x 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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