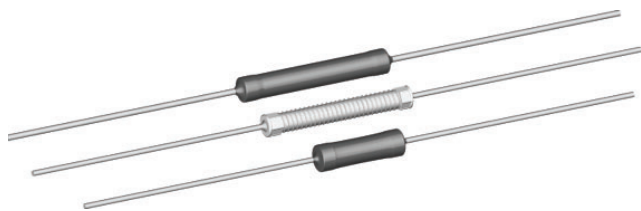




# Wirewound Resistors, Commercial Power, Axial Lead



## 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
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



RoHS\* Available

HALOGEN FREE Available

GREEN (5-2008) Available

## APPLICATIONS

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

### Note

\* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

STANDARD ELECTRICAL SPECIFICATIONS					
GLOBAL MODEL (1)	HISTORICAL MODEL (1)	POWER RATING $P_{25^{\circ}\text{C}}$ W	RESISTANCE RANGE $\Omega$	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 $\Omega$	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/ $^{\circ}\text{C}$	$\pm 300$ 1 $\Omega$ and above, $\pm 600$ below 1 $\Omega$
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

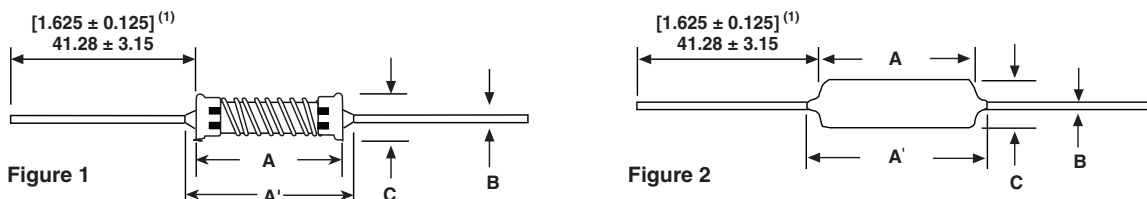
### Note

• 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 (See Standard Electrical Specifications Global Model column for options)		VALUE R = Decimal K = Thousand R1500 = 0.15 $\Omega$ 1K500 = 1500 $\Omega$		TOLERANCE H = $\pm 3.0 \%$ J = $\pm 5.0 \%$ K = $\pm 10.0 \%$		PACKAGING E14 = Lead (Pb)-free bulk E05 = Lead (Pb)-free tape and reel B14 = Tin/lead bulk R05 = Tin/lead tape and reel			SPECIAL (Dash Number) (up to 3 digits) From 1 to 999 as applicable								
Historical Part Numbering example: CA-1 50 $\Omega$ 5 % R05																	
CA-1 HISTORICAL MODEL		50 $\Omega$ RESISTANCE VALUE		5 % TOLERANCE CODE			R05 PACKAGING										



**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

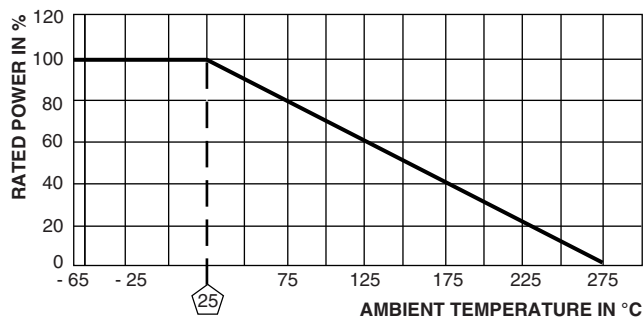
**Coating:** Special high temperature silicone (CA4000 series is not coated)

**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 <sub>AC</sub> 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



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.