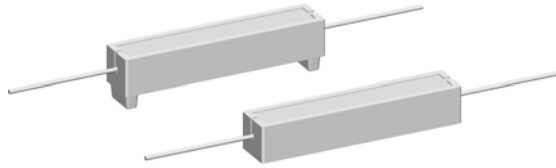




# Wirewound/Metal Oxide Resistors, Commercial Power, Axial Lead



### FEATURES

- High performance for low cost
- High power to size ratio
- Ceramic cases are available with circuit board stand-offs (designated with a ...3 model ending)
- Special cement potting compound and ceramic case provide high thermal conductivity in a fireproof package
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

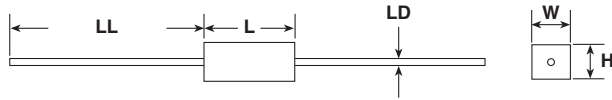
STANDARD ELECTRICAL SPECIFICATIONS					
GLOBAL MODEL	POWER RATING $P_{40\text{ }^\circ\text{C}}$ W	RESISTANCE RANGE $\Omega$ WIREWOUND (1)	RESISTANCE RANGE $\Omega$ METAL OXIDE (1)	TOLERANCE $\pm$ %	WEIGHT (typical) g
CP0002	2	0.1 to 100	101 to 30K	5, 10	2.0
CP0003	3	0.1 to 100	101 to 33K	5, 10	3.4
CP0005	5	0.1 to 100	101 to 50K	5, 10	3.6
CP0005...3	5	0.1 to 100	101 to 50K	5, 10	4.8
CP0007	7	0.1 to 100	101 to 50K	5, 10	5.0
CP0007...3	7	0.1 to 100	101 to 50K	5, 10	6.8
CP0010	10	0.1 to 100	101 to 50K	5, 10	9.5
CP0010...3	10	0.1 to 100	101 to 50K	5, 10	9.9
CP0015	15	0.1 to 100	101 to 50K	5, 10	16.8
CP0020	20	0.1 to 100	101 to 50K	5, 10	22.8

TECHNICAL SPECIFICATIONS			
PARAMETER	UNIT	WIREWOUND CHARACTERISTICS	METAL OXIDE CHARACTERISTICS
Temperature Coefficient	ppm/°C	$\pm$ 400	$\pm$ 400
Short Time Overload	-	5 x rated power for 5 s	5 x rated power for 5 s
Terminal Strength	lb	10 minimum	10 minimum
Operating Temperature Range	°C	-65 to +275	-65 to +225
Dielectric Withstanding Voltage	$V_{AC}$	1000	1000
Maximum Working Voltage	V	$(P \times R)^{1/2}$	$(P \times R)^{1/2}$

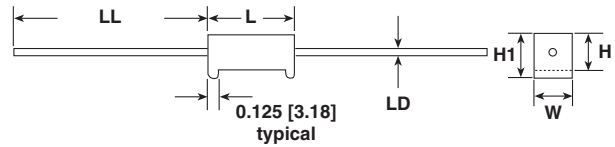
GLOBAL PART NUMBER INFORMATION																	
Global Part Numbering example: CP000515R00JE663																	
C	P	0	0	0	5	1	5	R	0	0	J	E	6	6	3		
GLOBAL MODEL (See Standard Electrical Specifications Global Model column for options)		VALUE R = Decimal K = Thousand R1500 = 0.15 $\Omega$ 1K500 = 1500 $\Omega$		TOLERANCE J = $\pm$ 5.0 % K = $\pm$ 10.0 %		PACKAGING E66 = Lead (Pb)-free bulk pack			SPECIAL (Dash Number) (up to 3 digits) From 1 to 999 as applicable								

**DIMENSIONS** in inches [millimeters]

CPxxxx



CPxxxx...3



GLOBAL MODEL	DIMENSIONS in inches [millimeters]					
	L <sup>(1)</sup> ± 0.060 [1.5]	W ± 0.040 [1.0]	H ± 0.040 [1.0]	H1 ± 0.060 [1.5]	LD ± 0.002 [0.05]	LL ± 0.120 [3.0]
CP0002	0.71 [18]	0.276 [7]	0.276 [7]	-	0.0256 [0.65]	1.378 [35]
CP0003	0.87 [22]	0.315 [8]	0.315 [8]	-	0.031 [0.8]	1.378 [35]
CP0005	0.87 [22]	0.394 [10]	0.354 [9]	-	0.031 [0.8]	1.378 [35]
CP0005...3	0.87 [22]	0.394 [10]	0.354 [9]	0.413 [10.5]	0.031 [0.8]	1.378 [35]
CP0007	1.38 [35]	0.394 [10]	0.354 [9]	-	0.031 [0.8]	1.378 [35]
CP0007...3	1.38 [35]	0.394 [10]	0.354 [9]	0.472 [12]	0.031 [0.8]	1.378 [35]
CP0010	1.89 [48]	0.394 [10]	0.354 [9]	-	0.031 [0.8]	1.378 [35]
CP0010...3	1.89 [48]	0.394 [10]	0.354 [9]	0.472 [12]	0.031 [0.8]	1.378 [35]
CP0015	1.89 [48]	0.492 [12.5]	0.453 [11.5]	-	0.031 [0.8]	1.378 [35]
CP0020	2.36 [60]	0.551 [14]	0.531 [13.5]	-	0.031 [0.8]	1.378 [35]

**Notes**

(1) Potting compound may extend outside of ceramic case up to 0.060 [1.52] maximum per side.

**MATERIAL SPECIFICATIONS**

**Element:** Wirewound = copper-nickel alloy or nickel-chrome alloy, depending on resistance value.  
Metal oxide = high temperature fired metal oxide film.

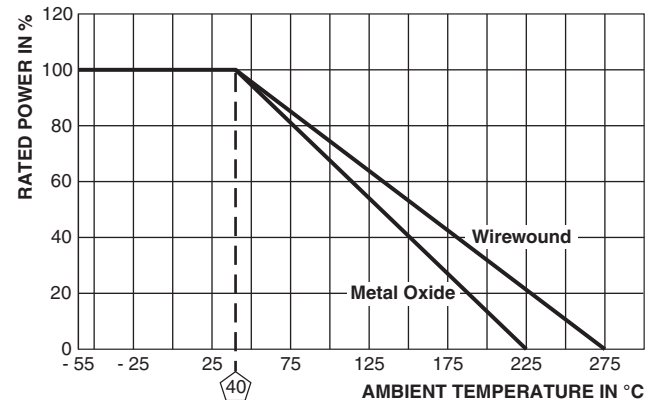
**Core:** Wirewound = ceramic  
Metal Oxide = ceramic

**Body:** Steatite ceramic case with inorganic potting compound

**End Caps:** Tin plated steel

**Terminals:** Tinned copper

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

**DERATING**


PERFORMANCE		
TEST	CONDITIONS OF TEST	TEST LIMITS (EIA-344)
Thermal Shock	-55 °C to +275 °C (+225 °C for Metal Oxide), 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	1000 V <sub>RMS</sub> , 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 % 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	5 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.

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.