

# Wirewound Resistors, Commercial Power, Surface Mount



## FEATURES

- Direct mounting on printed circuit board
- High wattage capabilities, low board temperatures
- Meets or exceeds EIA-RS-344 requirements
- Special inorganic potting compound and ceramic case provide high thermal conductivity in a fireproof package
- Superior surge capability
- Compliant to RoHS Directive 2002/95/EC



## Notes

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

\*\* Please see document "Vishay Material Category Policy": [www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

## STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	HISTORICAL MODEL	POWER RATING $P_{40^\circ\text{C}}$ W	RESISTANCE RANGE $\Omega$	TOLERANCE $\pm \%$	WEIGHT (typical) g
CPSM03	CPSM-3	3	0.1 to 1K	5, 10	5.5
CPSM05	CPSM-5	5	0.1 to 1K	5, 10	6.5

## TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CPSM RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/ $^\circ\text{C}$	$\pm 300$ for 1.0 $\Omega$ and above; $\pm 600$ below 1.0 $\Omega$
Short Time Overload	-	5 x rated power for 5 s
Operating Temperature	$^\circ\text{C}$	- 65 to + 275
Dielectric Withstanding Voltage	$V_{AC}$	1000
Maximum Working Voltage	V	$(P \times R)^{1/2}$

## GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: CPSM0315R00JB31



GLOBAL MODEL  
CPSM03  
CPSM05

VALUE  
R = Decimal  
K = Thousand  
R1500 = 0.15  $\Omega$   
100R0 = 100  $\Omega$   
1K000 = 1 k $\Omega$

TOLERANCE  
H =  $\pm 3.0 \%$   
J =  $\pm 5.0 \%$   
K =  $\pm 10 \%$

PACKAGING  
E31 = Lead(Pb)-free,  
4 layer bulk  
B31 = Tin/lead,  
4 layer bulk

SPECIAL  
(Dash number)  
(Up to 3 digits)  
From 1 to 999  
as applicable

Historical Part Numbering example: CPSM-3 15  $\Omega$  5 % B31

CPSM-3  
HISTORICAL MODEL

15  $\Omega$   
RESISTANCE VALUE

5 %  
TOLERANCE CODE

B31  
PACKAGING

**DIMENSIONS**


MODEL	DIMENSIONS in inches [millimeters]				
	L ± 0.032 [0.813]	W ± 0.031 [0.787]	L <sub>1</sub> ± 0.062 [1.57]	W <sub>1</sub> + 0.032 [0.813] - 0.012 [0.305]	H ± 0.031 [0.787]
CPSM03	0.906 [23.01]	0.374 [9.50]	0.480 [12.19]	0.287 [7.29]	0.374 [9.50]
CPSM05	1.060 [26.92]	0.374 [9.50]	0.590 [14.99]	0.287 [7.29]	0.374 [9.50]

MODEL	SOLDER PAD DIMENSIONS in inches [millimeters]		
	a	b	l
CPSM03	0.420 [10.67]	0.340 [8.64]	0.380 [9.65]
CPSM05	0.440 [11.18]	0.340 [8.64]	0.490 [12.45]

**TEMPERATURE RISE**

**DERATING**

**MATERIAL SPECIFICATIONS**

Element	Copper-nickel alloy or nickel-chrome alloy, depending on resistance value
Core	Woven fiberglass
Body	Steatite ceramic case with inorganic potting compound
Terminals	Tin/lead plated steel (lead (Pb)-free version will be 100 % tin)
Part Marking	DALE, model, wattage, value, tolerance, date code

**PERFORMANCE**

TEST	CONDITIONS OF TEST	TEST LIMITS (EIA RS-344)
Thermal shock	- 55 °C to + 165 °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	1000 V <sub>RMS</sub> for one min	± (2.0 % + 0.05 Ω) ΔR
Low temperature operation	- 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, + 40 °C, 1.5 h "ON", 0.5 h "OFF"	± (10.0 % + 0.05 Ω) ΔR
Resistance to solder heat	+ 260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± (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.

## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**