

# 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: <b>CPSM0315R00JB31</b>					
<b>C</b>	<b>P</b>	<b>S</b>	<b>M</b>	<b>0</b>	<b>3</b>
<b>1</b>	<b>5</b>	<b>R</b>	<b>0</b>	<b>0</b>	<b>J</b>
<b>B</b>	<b>3</b>	<b>1</b>			
GLOBAL MODEL <b>CPSM03</b> <b>CPSM05</b>		VALUE R = Decimal K = Thousand <b>R1500</b> = 0.15 $\Omega$ <b>100R0</b> = 100 $\Omega$ <b>1K000</b> = 1 k $\Omega$		TOLERANCE <b>H</b> = $\pm 3.0 \%$ <b>J</b> = $\pm 5.0 \%$ <b>K</b> = $\pm 10 \%$	
		PACKAGING <b>E31</b> = Lead(Pb)-free, 4 layer bulk <b>B31</b> = Tin/lead, 4 layer bulk		SPECIAL (Dash number) (Up to 3 digits) From <b>1 to 999</b> as applicable	
Historical Part Numbering example: <b>CPSM-3 15 <math>\Omega</math> 5 % B31</b>					
<b>CPSM-3</b>		<b>15 <math>\Omega</math></b>		<b>5 %</b>	
HISTORICAL MODEL		RESISTANCE VALUE		TOLERANCE CODE	
				<b>B31</b>	
				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



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## Material Category Policy

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**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.**

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