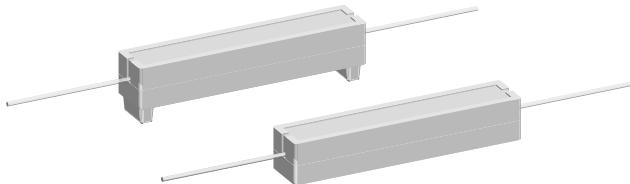


## Wirewound Resistors, Commercial Power, Axial Lead



### FEATURES

- High power to size ratio
- Ceramic cases are available with circuit board stand-offs (designated with a -3 model ending)
- Superior surge capability
- Complete welded construction
- Available in non-inductive styles with Aryton-Perry winding (CPWN in lieu of CPW, maximum resistance is one-half CPW range)
- Special inorganic potting compound and ceramic case provide high thermal conductivity in a fireproof package
- Compliant to RoHS Directive 2002/95/EC



**RoHS\***  
COMPLIANT  
**GREEN**  
(5-2008)\*\*  
Available

### 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
CPW02	CPW-2	2	0.1 to 7K	1, 2, 3, 5	2.0
CPW02...3	CPW-2-3	2	0.1 to 7K	1, 2, 3, 5	2.2
CPW03	CPW-3	3	0.1 to 7.5K	1, 2, 3, 5	3.4
CPW03...3	CPW-3-3	3	0.1 to 7.5K	1, 2, 3, 5	3.6
CPW05	CPW-5	5	0.1 to 8.5K	1, 2, 3, 5	4.8
CPW05...3	CPW-5-3	5	0.1 to 8.5K	1, 2, 3, 5	5.0
CPW07	CPW-7	7	0.1 to 18K	1, 2, 3, 5	6.8
CPW07...3	CPW-7-3	7	0.1 to 18K	1, 2, 3, 5	7.0
CPW10	CPW-10	10	0.12 to 30K	1, 2, 3, 5	9.5
CPW10...3	CPW-10-3	10	0.12 to 30K	1, 2, 3, 5	9.9
CPW15	CPW-15	15	0.12 to 30K	1, 2, 3, 5	16.8
CPW15...3	CPW-15-3	15	0.12 to 30K	1, 2, 3, 5	17.4
CPW20	CPW-20	20	0.18 to 45K	1, 2, 3, 5	22.8
CPW20...3	CPW-20-3	20	0.18 to 45K	1, 2, 3, 5	23.6

### TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CPW RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/ $^\circ\text{C}$	$\pm 30$ for 10 $\Omega$ and above; $\pm 50$ for 1.0 $\Omega$ to 9.9 $\Omega$ ; $\pm 90$ for 0.5 $\Omega$ to 0.99 $\Omega$
Short Time Overload	-	5 x rated power for 5 s
Maximum Working Voltage	V	$(P \times R)^{1/2}$
Operating Temperature Range	$^\circ\text{C}$	- 65 to + 275
Terminal Strength	lb	10 minimum
Dielectric Withstanding Voltage	V <sub>AC</sub>	1000

### GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: CPW0515R00JB313

C	P	W	0	5	1	5	R	0	0	J	B	3	1	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**  
D =  $\pm 0.5\%$   
F =  $\pm 1.0\%$   
G =  $\pm 2.0\%$   
H =  $\pm 3.0\%$   
J =  $\pm 5.0\%$   
K =  $\pm 10.0\%$

**PACKAGING**  
E14 = Lead (Pb)-free bulk  
E31 = Lead (Pb)-free four layer bulk  
E01 = Lead (Pb)-free skin pack

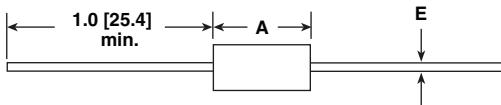
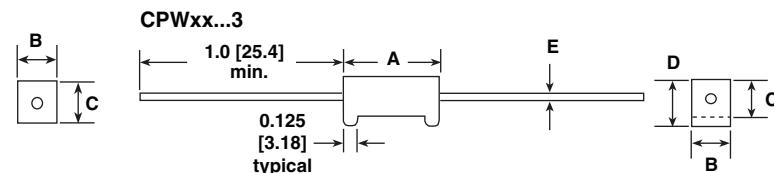
B14 = Tin/lead bulk  
B31 = Tin/lead four layer bulk  
J01 = Tin/lead skin pack

**SPECIAL**  
(Dash Number)  
(up to 3 digits)  
From 1 to 999  
as applicable

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

CPW-5-3	15 $\Omega$	5 %	B31
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING

**DIMENSIONS** in inches [millimeters]

**CPWxx**

**CPWxx...3**


GLOBAL MODEL	DIMENSIONS in inches [millimeters]				
	A <sup>(1)</sup> ± 0.031 [0.794]	B ± 0.031 [0.794]	C ± 0.031 [0.794]	D ± 0.031 [0.794]	E ± 0.001 [0.025]
<b>CPW02</b>	0.688 [17.46]	0.250 [6.35]	0.250 [6.35]	-	0.032 [0.813]
<b>CPW02...3</b>	0.688 [17.46]	0.250 [6.35]	0.250 [6.35]	0.313 [7.94]	0.032 [0.813]
<b>CPW03</b>	0.875 [22.22]	0.313 [7.94]	0.313 [7.94]	-	0.032 [0.813]
<b>CPW03...3</b>	0.875 [22.22]	0.313 [7.94]	0.313 [7.94]	0.375 [9.52]	0.032 [0.813]
<b>CPW05</b>	0.875 [22.22]	0.375 [9.52]	0.344 [8.73]	-	0.032 [0.813]
<b>CPW05...3</b>	0.875 [22.22]	0.375 [9.52]	0.344 [8.73]	0.406 [10.32]	0.032 [0.813]
<b>CPW07</b>	1.391 [35.32]	0.375 [9.52]	0.344 [8.73]	-	0.032 [0.813]
<b>CPW07...3</b>	1.391 [35.32]	0.375 [9.52]	0.344 [8.73]	0.469 [11.91]	0.032 [0.813]
<b>CPW10</b>	1.875 [47.62]	0.375 [9.52]	0.344 [8.73]	-	0.032 [0.813]
<b>CPW10...3</b>	1.875 [47.62]	0.375 [9.52]	0.344 [8.73]	0.469 [11.91]	0.032 [0.813]
<b>CPW15</b>	1.875 [47.62]	0.500 [12.70]	0.500 [12.70]	-	0.032 [0.813]
<b>CPW15...3</b>	1.875 [47.62]	0.500 [12.70]	0.500 [12.70]	0.625 [15.87]	0.032 [0.813]
<b>CPW20</b>	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	-	0.032 [0.813]
<b>CPW20...3</b>	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	0.625 [15.87]	0.032 [0.813]

**Note**
<sup>(1)</sup> Potting compound may extend outside of ceramic case up to 0.060 [1.52] maximum per side.

**MATERIAL SPECIFICATIONS**
**Element:** Copper-nickel alloy or nickel-chrome alloy, depending on resistance value

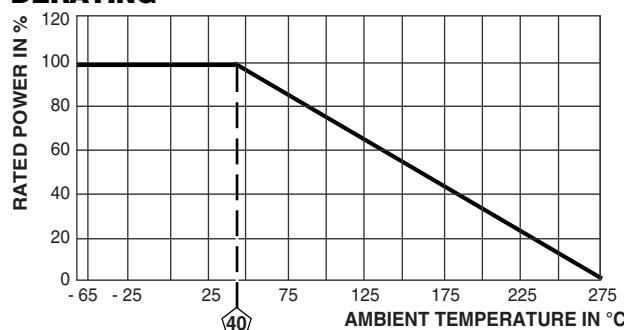
**Core:** Ceramic

**End Caps:** Tin plated steel

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

**Terminals:** Tinned Copperweld®

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

**DERATING**

**PERFORMANCE**

TEST	CONDITIONS OF TEST	TEST LIMITS (EIA RS-344)
Thermal Shock	- 55 °C to + 275 °C, 5 cycles, 30 min dwell time	± (2.0 % + 0.05 Ω) ΔR
Short Time Overload	5 x rated power for 5 s	± (2.0 % + 0.05 Ω) ΔR
Dielectric Withstanding	1000 V <sub>RMS</sub> for 1 min	± (0.1 % + 0.05 Ω) ΔR
Low Temperature Storage	- 65 °C, full rated working voltage for 45 min	± (2.0 % + 0.05 Ω) ΔR
Bias Humidity	75 °C, 90 % to 100 % RH, 240 h	± (2.0 % + 0.05 Ω) ΔR
Load Life	1000 h at rated power, + 40 °C, 1.5 h "ON", 0.5 h "OFF"	± (3.0 % + 0.05 Ω) ΔR
Terminal Strength	5 s to 10 s 10 pound pull test, torsion test - 3 alternating directions, 360° each	± (1.0 % + 0.05 Ω) ΔR
Resistance to Solder Heat	Terminal immersed 3.5 s in molten solder at 1/8" to 3/16" from body	± (1.0 % + 0.05 Ω) ΔR

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**Офис по работе с юридическими лицами:**

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru  
moschip.ru\_4

moschip.ru\_6  
moschip.ru\_9