# **CPW, CPWN**

Vishay Dale





www.vishay.com

#### **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 HALOGEN in a fireproof package



• Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

#### (5-2008) Available

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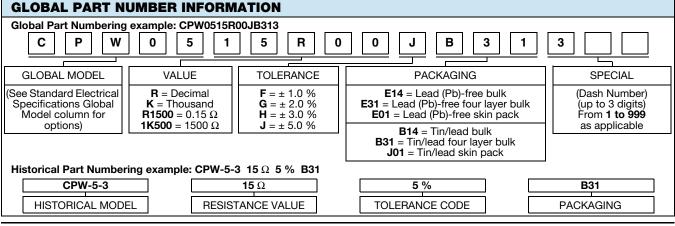
**RoHS**<sup>3</sup>

#### 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	HISTORICAL MODEL	POWER RATING P <sub>40 °C</sub> W	$\frac{\textbf{RESISTANCE RANGE}}{\Omega}$	TOLERANCE ± %	WEIGHT (typical) g
CPW02	CPW-2	2	0.1 to 7K	1, 2, 3, 5	2.0
CPW023	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
CPW033	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
CPW053	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
CPW073	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
CPW103	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
CPW153	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
CPW203	CPW-20-3	20	0.18 to 45K	1, 2, 3, 5	23.6

TECHNICAL SPECIFICATIONS					
PARAMETER	UNIT	CPW RESISTOR CHARACTERISTICS			
Temperature Coefficient	ppm/°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	°C	-65 to +275			
Terminal Strength	lb	10 minimum			
Dielectric Withstanding Voltage	V <sub>AC</sub>	1000			



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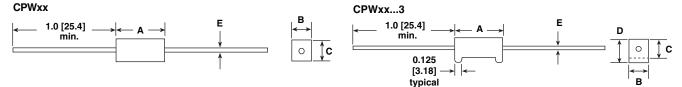
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1



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**DIMENSIONS** in inches [millimeters]



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]	
CPW02	0.688 [17.46]	0.250 [6.35]	0.250 [6.35]	-	0.032 [0.813]	
CPW023	0.688 [17.46]	0.250 [6.35]	0.250 [6.35]	0.313 [7.94]	0.032 [0.813]	
CPW03	0.875 [22.22]	0.313 [7.94]	0.313 [7.94]	-	0.032 [0.813]	
CPW033	0.875 [22.22]	0.313 [7.94]	0.313 [7.94]	0.375 [9.52]	0.032 [0.813]	
CPW05	0.875 [22.22]	0.375 [9.52]	0.344 [8.73]	-	0.032 [0.813]	
CPW053	0.875 [22.22]	0.375 [9.52]	0.344 [8.73]	0.406 [10.32]	0.032 [0.813]	
CPW07	1.391 [35.32]	0.375 [9.52]	0.344 [8.73]	-	0.032 [0.813]	
CPW073	1.391 [35.32]	0.375 [9.52]	0.344 [8.73]	0.469 [11.91]	0.032 [0.813]	
CPW10	1.875 [47.62]	0.375 [9.52]	0.344 [8.73]	-	0.032 [0.813]	
CPW103	1.875 [47.62]	0.375 [9.52]	0.344 [8.73]	0.469 [11.91]	0.032 [0.813]	
CPW15	1.875 [47.62]	0.500 [12.70]	0.500 [12.70]	-	0.032 [0.813]	
CPW153	1.875 [47.62]	0.500 [12.70]	0.500 [12.70]	0.625 [15.87]	0.032 [0.813]	
CPW20	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	-	0.032 [0.813]	
CPW203	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

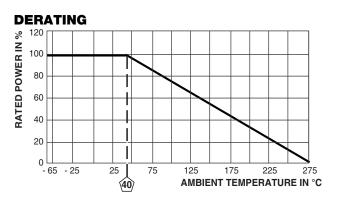
Core: ceramic

End Caps: stainless steel

Body: steatite ceramic case with inorganic potting compound

Terminals: tinned copperweld®

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



PERFORMANCE				
TEST	CONDITIONS OF TEST	TEST LIMITS (EIA RS-344)		
Thermal Shock	-55 °C to +275 °C, 5 cycles, 30 min dwell time	$\pm$ (2.0 % + 0.05 $\Omega) \Delta R$		
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	$\pm$ (2.0 % + 0.05 $\Omega) \Delta R$		
Bias Humidity	75 °C, 90 % to 100 % RH, 240 h	$\pm$ (2.0 % + 0.05 $\Omega) \Delta R$		
Load Life	1000 h at rated power, +40 °C, 1.5 h "ON", 0.5 h "OFF"	$\pm$ (3.0 % + 0.05 $\Omega) \Delta R$		
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	$\pm$ (1.0 % + 0.05 $\Omega) \Delta R$		

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2

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1