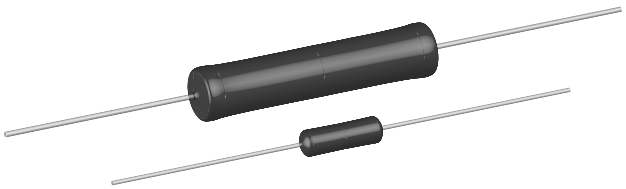
Wirewound Resistors, Commercial Coated, Axial Lead



FEATURES

- High performance for low cost
- High temperature silicone coating
- Complete welded construction
- Excellent stability in operation
- High power to size ratio
- Lead (Pb)-free version is RoHS compliant

Pb-free Available

RoHS* COMPLIANT

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	HISTORICAL MODEL	POWER RATING** $P_{25\ °C}$ W		RESISTANCE RANGE Ω ± 5 %, ± 10 %***	WEIGHT (Max.) g
		Characteristic U + 250 °C	Characteristic V + 350 °C		
CW1/2	CW-1/2	0.5	-	0.1 - 1.77K	0.21
CW001	CW-1	1.0	-	0.1 - 6.37K	0.34
CW01M	CW-1M	1.0	-	0.1 - 3.3K	0.3
CW002	CW-2	4.0	5.5	0.1 - 28.7K	2.1
CW02M	CW-2M	3.0	3.75	0.1 - 12K	0.65
CW02B	CW-2B	3.0	3.75	0.1 - 15K	0.7
CW02B...13	CW-2B-13	4.0	6.0	0.1 - 6.8K	0.9
CW02C	CW-2C	2.5	3.25	0.1 - 19.9K	1.8
CW02C...14	CW-2C-14	2.5	3.25	0.1 - 19.9K	1.2
CW005	CW-5	5.0	6.5	0.1 - 58.5K	4.2
CW005...2	CW-5-2	4.0	5.0	0.1 - 40.3K	4.2
CW005...3	CW-5-3	5.0	6.5	0.1 - 58.5K	4.2
CW007	CW-7	7.0	9.0	0.1 - 95.2K	4.7
CW010	CW-10	10.0	13.0	0.1 - 167K	9.0
CW010...3	CW-10-3	10.0	13.0	0.1 - 167K	9.0

** Vishay Dale CW models have two power ratings, depending on operating temperature and stability requirements
*** 3 % tolerance available
• Shaded areas indicate most popular models

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CW RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/°C	± 90 for below 1.0 Ω, ± 50 for 1.0 Ω to 9.9 Ω, ± 30 for 10 Ω and above
Dielectric Withstanding Voltage	V_{AC}	1000
Short Time Overload	-	5 × rated power for 5 sec. for 3.75 W size and smaller, 10 × rated power for 5 sec. for 4 W size and greater
Terminal Strength	lb	10 minimum
Maximum Working Voltage	V	$(P \times R)^{1/2}$
Operating Temperature Range	°C	Characteristic U = - 65/+ 250, Characteristic V = - 65/+ 350
Power Rating	-	Characteristic U = + 250 °C max. hot spot temperature, ± 0.5 % max. ΔR in 2000 hrs. load life Characteristic V = + 350 °C max. hot spot temperature, ± 3.0 % max. ΔR in 2000 hrs. load life

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: CW02C10K00JB1214 (preferred part numbering format)

C	W	0	2	C	1	0	K	0	0	J	B	1	2	1	4	

GLOBAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING	SPECIAL
(See Standard Electrical Specifications Global Model column for options)	**R** = Decimal **K** = Thousand **1R500** = 1.5 Ω **1K500** = 1.5 kΩ	**H** = ± 3 % **J** = ± 5 % **K** = ± 10 %	**E70** = Lead (Pb)-free, Tape/Reel 1k pcs **E73** = Lead (Pb)-free, Tape/Reel 500 pcs **E12** = Lead (Pb)-free, Bulk **D18** = Lead (Pb)-free, R1R80 Tape/Reel CW02B...13 pack code for Europe use only **S70** = Tin/Lead, Tape/Reel 1k pcs **S73** = Tin/Lead, Tape/Reel 500 pcs **B12** = Tin/Lead, Bulk	(Dash Number) (up to 3 digits) From **1-999** as applicable

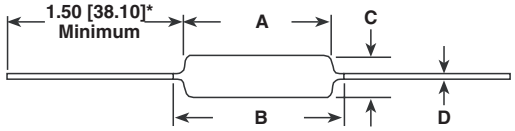
Historical Part Number example: CW-2C-14 10 kΩ 5 % B12 (will continue to be accepted)

CW-2C-14	10 kΩ	5 %	B12
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING

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

For technical questions, contact: ww2aresistors@vishay.com

DIMENSIONS



* On some standard reel pack methods, the leads may be trimmed to a shorter length than shown.

MATERIAL SPECIFICATIONS

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

Core: Ceramic: Steatite or alumina, depending on physical size

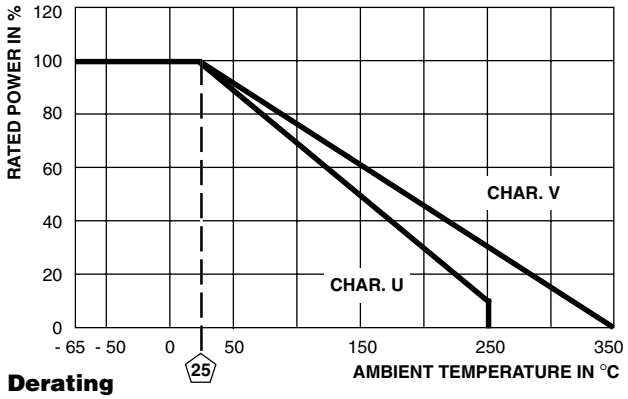
Coating: Special high temperature silicone

Standard Terminals: Tinned Copperweld®

End Caps: Stainless steel

Part Marking: DALE, Model, Wattage**, Value, Tolerance, Date Code

** Wattage marked on resistor will be "V" characteristic, CW1/2 will not be marked with wattage



Derating

MODEL	DIMENSIONS in inches [millimeters]			
	A	B (Maximum)***	C	D
CW1/2	0.250 ± 0.031 [6.35 ± 0.787]	0.281 [7.14]	0.085 ± 0.020 [2.16 ± 0.508]	0.020 ± 0.002 [0.508 ± 0.051]
CW001	0.406 ± 0.031 [10.31 ± 0.787]	0.437 [11.10]	0.094 ± 0.031 [2.39 ± 0.787]	0.020 ± 0.002 [0.508 ± 0.051]
CW01M	0.285 ± 0.025 [7.24 ± 0.635]	0.311 [7.90]	0.110 ± 0.015 [2.79 ± 0.381]	0.020 ± 0.002 [0.508 ± 0.051]
CW002	0.625 ± 0.062 [15.87 ± 1.57]	0.765 [19.43]	0.250 ± 0.032 [6.35 ± 0.813]	0.040 ± 0.002 [1.02 ± 0.051]
CW02M	0.500 ± 0.062 [12.70 ± 1.57]	0.562 [14.27]	0.185 ± 0.015 [4.70 ± 0.381]	0.032 ± 0.002 [0.813 ± 0.051]
CW02B	0.562 ± 0.062 [14.27 ± 1.57]	0.622 [15.80]	0.188 ± 0.032 [4.78 ± .813]	0.032 ± 0.002 [0.813 ± 0.051]
CW02B...13	0.500 ± 0.062 [12.70 ± 1.57]	0.563 [14.30]	0.188 ± 0.032 [4.78 ± 0.813]	0.032 ± 0.002 [0.813 ± 0.051]
CW02C	0.500 ± 0.062 [12.70 ± 1.57]	0.593 [15.06]	0.218 ± 0.032 [5.54 ± 0.813]	0.040 ± 0.002 [1.02 ± 0.051]
CW02C...14	0.500 ± 0.062 [12.70 ± 1.57]	0.593 [15.06]	0.218 ± 0.032 [5.54 ± .813]	0.032 ± 0.002 [0.813 ± 0.051]
CW005	0.875 ± 0.062 [22.22 ± 1.57]	1.0 [25.40]	0.312 ± 0.032 [7.92 ± 0.813]	0.040 ± 0.002 [1.02 ± 0.051]
CW005...2	0.875 ± 0.062 [22.22 ± 1.57]	1.0 [25.40]	0.250 ± 0.032 [6.35 ± .813]	0.032 ± 0.002 [0.813 ± 0.051]
CW005...3	0.875 ± 0.062 [22.22 ± 1.57]	1.0 [25.40]	0.312 ± 0.032 [7.92 ± 0.813]	0.032 ± 0.002 [0.813 ± 0.051]
CW007	1.218 ± 0.062 [30.94 ± 1.57]	1.281 [32.54]	0.312 ± 0.032 [7.92 ± 0.813]	0.040 ± 0.002 [1.02 ± 0.051]
CW010	1.781 ± 0.062 [45.24 ± 1.57]	1.875 [47.62]	0.375 ± 0.032 [9.52 ± 0.813]	0.040 ± 0.002 [1.02 ± 0.051]
CW010...3	1.781 ± 0.062 [45.24 ± 1.57]	1.875 [47.62]	0.375 ± 0.032 [9.52 ± 0.813]	0.032 ± 0.002 [0.813 ± 0.051]

*** B (Maximum) dimension is clean lead to clean lead.

PERFORMANCE****

TEST	CONDITIONS OF TEST	TEST LIMITS (CHARACTERISTIC V)
Thermal Shock	Rated power applied until thermally stable, then a minimum of 15 minutes at - 55 °C	± (2.0 % + 0.05 Ω) ΔR
Short Time Overload	5 x rated power (3.75 W and smaller), 10 × rated power (4 W and larger) for 5 sec.	± (2.0 % + 0.05 Ω) ΔR
Dielectric Withstanding Voltage	1000 V_{rms}, one minute	± (0.1 % + 0.05 Ω) ΔR
Low Temperature Storage	- 65 °C for 24 hours	± (2.0 % + 0.05 Ω) ΔR
High Temperature Exposure	250 hours at + 350 °C	± (4.0 % + 0.05 Ω) ΔR
Moisture Resistance	MIL-STD-202 Method 106, 7b not applicable	± (2.0 % + 0.05 Ω) ΔR
Shock, Specified Pulse	MIL-STD-202 Method 213, 100 g's for 6 milliseconds, 10 shocks	± (0.2 % + 0.05 Ω) ΔR
Vibration, High Frequency	Frequency varied 10 to 2000 Hz, 20 g peak, 2 directions 6 hours each	± (0.2 % + 0.05 Ω) ΔR
Load Life	2000 hours at rated power, + 25 °C, 1.5 hours "ON", 0.5 hours "OFF"	± (3.0 % + 0.05 Ω) ΔR
Terminal Strength	5 to 10 second 10 pound pull test; torsion test - 3 alternating directions, 360 °C each	± (1.0 % + 0.05 Ω) ΔR

**** All ΔR figures shown are maximum, based upon testing requirements per MIL-PRF-26 at a maximum operating temperature of + 350 °C. ΔR maximum figures are considerably lower when tested at a maximum operating temperature of + 250 °C.

Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.