Wirewound Resistors, High Energy, Silicone Coated, Axial Lead

FEATURES

- High continuous energy handling, > 106.5 J
- High temperature silicone coating
- Complete welded construction
- Excellent stability in operation
- High power to size ratio
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free Available

e3

RoHS COMPLIANT

HALOGEN FREE Available

GREEN (5-2008) Available

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	POWER RATING [1] $P_{25\,°C}$ W CHARACTERISTIC U +250 °C	POWER RATING [1] $P_{25\,°C}$ W CHARACTERISTIC V +350 °C	RESISTANCE RANGE Ω	MAX. CONTINUOUS ENERGY J	TOLERANCE ± %	WEIGHT (max.) g
CW02B...HE	3.0	3.75	2 to 87.5	10.4	5	0.7
CW005...HE	5.0	6.5	7.6 to 343	39.1	5	4.2
CW010...HE	10.0	13.0	20.7 to 938	106.5	5	9.0

Note

[1] Vishay Dale CW models have two power ratings, depending on operating temperature and stability requirements.

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CW RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/°C	± 30 for 10 Ω and above, ± 50 for 1.0 Ω to 9.9 Ω, ± 90 for 0.5 Ω to 0.99 Ω
Short Time Overload	-	5x rated power for 5 s for CW02B...HE 10x rated power for 5 s for CW005...HE and CW010...HE
Terminal Strength	lb	10 minimum
Maximum Working Voltage	V	$(P \times R)^{1/2}$
Operating Temperature Range	°C	Characteristic U = -65 to +250, characteristic V = -65 to +350
Power Rating	-	Characteristic U = +250 °C max. hot spot temperature, ± 0.5 % max. ΔR in 2000 h load life Characteristic V = +350 °C max. hot spot temperature, ± 3.0 % max. ΔR in 2000 h load life

GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: CW02B10R00JE12HE (preferred part number format)

C	W	0	2	B	1	0	R	0	0	J	E	1	2	H	E	

GLOBAL MODEL (5 digits)	VALUE (5 digits)	TOLERANCE (1 digit)	PACKAGING (3 digits)	SPECIAL (2 digits)
CW02B **CW005** **CW010**	**R** = Decimal **K** = Thousand **1R500** = 1.5 Ω **1K500** = 1.5 kΩ	**H** = ± 3.0 % **J** = ± 5.0 % **K** = ± 10.0 %	**E70** = Lead (Pb)-free, tape/reel, 1K pcs. (CW02B only) **E73** = Lead (Pb)-free, tape/reel, 500 pcs. **E12** = Lead (Pb)-free, bulk **S70** = Tin/lead, tape/reel, 1K pcs. (CW02B only) **S73** = Tin/lead, tape/reel, 500 pcs. **B12** = Tin/lead, bulk	**HE** = High energy

For technical questions, contact: ww2aresistors@vishay.com

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STANDARD ENERGY PERFORMANCE CHARACTERISTICS

GLOBAL MODEL	RES. Ω	MAX. CONT. ENERGY J	FUSING ENERGY J	CURRENT TO FUSE (1) A	POWER TO FUSE (1) W
CW02B...HE	2.0	10.4	42.3	14.54	422.60
	2.8	9.2	37.5	11.58	375.28
	4.0	8.0	32.8	9.06	328.37
	5.6	7.1	29.1	7.20	290.55
	7.6	6.4	25.9	5.84	259.16
	10.8	5.6	22.8	4.59	227.94
	15.4	5.0	20.2	3.62	201.54
	21.8	4.4	17.8	2.86	178.41
	30.5	3.7	15.9	2.28	158.54
	41.7	3.5	14.2	1.85	142.20
	59.1	3.1	12.6	1.46	125.82
	87.5	2.7	10.9	1.12	108.87
CW005...HE	7.6	39.1	159.0	14.46	1590.00
	10.5	34.9	142.3	11.64	1422.54
	15.1	30.8	125.5	9.12	1255.28
	21.4	27.4	111.4	7.21	1113.71
	29.3	24.5	99.9	5.84	999.14
	41.8	21.7	88.2	4.59	882.20
	59.6	19.2	78.0	3.62	779.99
	84.6	17.0	69.2	2.86	692.37
	118.6	14.2	61.6	2.28	616.48
	162.3	13.6	55.3	1.85	553.45
	230.6	12.1	49.1	1.46	490.94
	343.6	10.5	42.8	1.12	427.51
CW010...HE	20.7	106.5	433.1	14.46	4330.65
	28.6	95.2	387.5	11.64	3874.65
	41.0	83.5	340.8	9.12	3408.72
	58.0	74.3	302.6	7.21	3025.53
	79.7	66.6	271.8	5.84	2717.79
	113.6	58.8	239.8	4.59	2397.57
	162.3	52.2	212.4	3.62	2124.04
	230.5	46.3	188.6	2.86	1886.43
	323.2	38.7	168.0	2.28	1679.99
	442.7	37.0	151.0	1.85	1509.62
	629.3	32.9	134.0	1.46	1339.76
	938.0	28.7	116.7	1.12	1167.06

Note

(1) Time to fuse is 0.1 s.

Maximum Continuous Energy (J)

Fusing Energy (J)

Fusing Current (A) (1)

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DIMENSIONS in inches (millimeters)

MODEL	DIMENSIONS in inches [millimeters]			
	A	B [MAXIMUM] (2)	C	D
CW02B...HE	0.562 ± 0.062 [14.27 ± 1.57]	0.622 [15.80]	0.188 ± 0.032 [4.78 ± 0.813]	0.032 ± 0.002 [0.813 ± 0.051]
CW005...HE	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]
CW010...HE	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]

Notes

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

(2) B (maximum) dimension is clean lead to clean lead.

MATERIAL SPECIFICATIONS

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

Core: Ceramic: Steatite

Coating: Special high temperature silicone

Standard Terminals: Tinned Copperweld®

End Caps: Stainless steel

Part Marking: DALE, model, wattage (3), value, tolerance, date code

Note

(3) Wattage marked on resistor will be “V” characteristic.

DERATING

PERFORMANCE		
TEST	**CONDITIONS OF TEST**	**TEST LIMITS (4) (CHARACTERISTIC V)**
Thermal Shock	Rated power applied until thermally stable, then a minimum of 15 min at -55 °C	± (2.0 % + 0.05 Ω) Δ*R*
Short Time Overload	5x rated power for CW02B, 10 x rated power for CW005 and CW010 for 5 s	± (2.0 % + 0.05 Ω) Δ*R*
High Temperature Exposure	250 h at +350 °C	± (4.0 % + 0.05 Ω) Δ*R*
Load Life	2000 h at rated power, +25 °C, 1.5 h “ON”, 0.5 h “OFF”	± (3.0 % + 0.05 Ω) Δ*R*

Note

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

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