

# Wirewound Resistors, Precision Power, Surface Mount



## FEATURES

- All welded construction
- Molded encapsulation
- Wraparound terminations
- Excellent stability at different environmental conditions
- High power ratings (up to 3 W)
- Superior surge capability
- Available in non-inductive styles with Ayrton-Perry winding (WSN in lieu of WSC, maximum resistance is one-half WSC range)
- AEC-Q200 qualified available <sup>(1)</sup>
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

AUTOMOTIVE GRADE


**RoHS\***  
Available

 HALOGEN  
**FREE**  
Available

**GREEN**  
(5-2008)  
Available

### Note

- <sup>(1)</sup> Flame retardance test may not be applicable to some resistor technologies.

## STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	HISTORICAL MODEL	SIZE	POWER RATING $P_{70^\circ\text{C}}$ W	RESISTANCE RANGE $\Omega$	TOLERANCE $\pm \%$	WEIGHT (typical) g/1000 pieces	ENCAPSULATION
WSC01/2	WSC-1/2	2012	0.5	0.1 to 4.99	0.5, 1, 5	90	Epoxy
WSC0001 <sup>(3)</sup>	WSC-1	2515	1	0.1 to 2.77K	0.5, 1, 5	165	Thermoplastic <sup>(2)</sup>
WSC2515	WSC2515	2515	1	0.1 to 2.5K	0.5, 1, 5	165	Thermoplastic
WSC0002	WSC-2	4527	2	0.1 to 4.92K	0.5, 1, 5	760	Thermoplastic <sup>(2)</sup>
WSC4527	WSC4527	4527	2	0.1 to 4.92K	0.5, 1, 5	760	Thermoplastic
WSC6927	WSC6927	6927	3	0.1 to 8K	0.5, 1, 5	1675	Thermoplastic

### Notes

- Part marking: 1/2 W - DALE, value; 1 W - model, value, tolerance, date code; 2 W and 3 W - DALE, model, value, tolerance, date code.
- <sup>(2)</sup> As of 1/1/2010, the WSC0001 and WSC0002 are molded with thermoplastic in lieu of epoxy. Reference PCN-DR-002-2009 and PCN-DR-003-2009
- <sup>(3)</sup> As of February 19, 2016, the WSC0001 was obsoleted by PCN-DR-013-2015; the WSC2515 is a drop-in replacement. You may contact your sales representative or submit an inquiry via [ww2bresistors@vishay.com](mailto:ww2bresistors@vishay.com) for supporting information.

## TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	WSC01/2	WSC2515	WSC0002	WSC4527/WSC6927
Temperature Coefficient	ppm/ $^\circ\text{C}$	$\pm 50 = 1.0 \Omega$ to 4.99 $\Omega$ ; $\pm 90 = 0.1 \Omega$ to 0.99 $\Omega$	$\pm 20 = 26.51 \Omega$ and above; $\pm 50 = 1.0 \Omega$ to 26.5 $\Omega$ ; $\pm 90 = 0.31 \Omega$ to 0.99 $\Omega$ ; $\pm 150 = 0.1 \Omega$ to 0.3 $\Omega$	$\pm 20 = 10.0 \Omega$ and above; $\pm 50 = 1.0 \Omega$ to 9.9 $\Omega$ ; $\pm 90 = 0.1 \Omega$ to 0.99 $\Omega$	$\pm 20 = 10 \Omega$ and above; $\pm 50 = 1.0 \Omega$ to 9.9 $\Omega$ ; $\pm 90 = 0.31 \Omega$ to 0.99 $\Omega$ ; $\pm 150 = 0.1 \Omega$ to 0.3 $\Omega$
Dielectric Withstanding Voltage	$V_{AC}$	> 500			
Insulation Resistance	$\Omega$	> $10^9$			
Operating Temperature Range	$^\circ\text{C}$	-65 to +175	-65 to +275		
Maximum Working Voltage	V	$(P \times R)^{1/2}$			

## GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: WSC2515R7000FEA (visit [www.vishay.net](http://www.vishay.net) Vishay Dale parts numbering manual for all options)

W S C 2 5 1 5 R 7 0 0 0 F E A

GLOBAL MODEL	SIZE	VALUE	TOLERANCE	PACKAGING	SPECIAL
WSC WSN	01/2 2515 0002 4527 6927	R = decimal K = thousand R7000 = 0.70 $\Omega$ 1K500 = 1.5 k $\Omega$	D = $\pm 0.5 \%$ F = $\pm 1.0 \%$ G = $\pm 2.0 \%$ H = $\pm 3.0 \%$ J = $\pm 5.0 \%$ K = $\pm 10 \%$	EA = lead (Pb)-free, tape / reel EK = lead (Pb)-free, bulk TA = tin / lead, tape / reel (R86) BA = tin / lead, bulk (B43)	(dash number) (up to 2 digits) from 1 to 99 as applicable

Historical Part Numbering example: WSC-2 0.7  $\Omega$  1% R86

WSC-2	0.7 $\Omega$	1%	R86
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE	PACKAGING

### Note

- Packaging code: EB (lead (Pb)-free) and TB (tin / lead) are non-standard packaging codes designating 1000 piece reels. These non-standard packaging codes are identical to our standard EA (lead (Pb)-free) and TA (tin / lead), except that they have a package quantity of 1000 pieces.

**DIMENSIONS** in inches (millimeters)


GLOBAL MODEL	DIMENSIONS					SOLDER PAD DIMENSIONS		
	L	H	T	W	W <sub>1</sub>	a	b	L
WSC01/2	0.200 ± 0.020 (5.08 ± 0.508)	0.096 ± 0.015 (2.44 ± 0.381)	0.040 ± 0.010 (1.02 ± 0.254)	0.125 ± 0.005 (3.18 ± 0.127)	0.050 ± 0.010 (1.27 ± 0.254)	0.085 (2.16)	0.070 (1.78)	0.080 (2.03)
WSC2515	0.250 ± 0.020 (6.35 ± 0.508)	0.110 ± 0.015 (2.79 ± 0.381)	0.045 ± 0.010 (1.14 ± 0.254)	0.150 ± 0.005 (3.81 ± 0.127)	0.098 ± 0.005 (2.49 ± 0.127)	0.090 (2.29)	0.115 (2.92)	0.120 (3.05)
WSC0002	0.455 ± 0.020 (11.56 ± 0.508)	0.167 ± 0.010 (4.24 ± 0.254)	0.100 ± 0.010 (2.54 ± 0.254)	0.275 ± 0.005 (6.98 ± 0.127)	0.215 ± 0.005 (5.46 ± 0.127)	0.155 (3.94)	0.230 (5.84)	0.205 (5.21)
WSC4527	0.455 ± 0.020 (11.56 ± 0.508)	0.167 ± 0.010 (4.24 ± 0.254)	0.100 ± 0.010 (2.54 ± 0.254)	0.275 ± 0.005 (6.98 ± 0.127)	0.215 ± 0.005 (5.46 ± 0.127)	0.155 (3.94)	0.230 (5.84)	0.205 (5.21)
WSC6927	0.690 ± 0.032 (17.53 ± 0.813)	0.280 ± 0.015 (7.11 ± 0.381)	0.100 ± 0.010 (2.54 ± 0.254)	0.275 ± 0.005 (6.98 ± 0.127)	0.215 ± 0.015 (5.46 ± 0.381)	0.155 (3.94)	0.235 (5.97)	0.470 (11.94)

**TEMPERATURE RISE**

**DERATING**

**Note**

(1) As of 1/1/2010, WSC0002 will be molded with thermoplastic and have the higher 275 °C temperature derating.

PERFORMANCE		
TEST	CONDITIONS OF TEST	TEST LIMITS
Thermal Shock	-55 °C to +150 °C, 1000 cycles, 15 min at each extreme	± (0.5 % + 0.05 Ω) ΔR
Short Time Overload	5 x rated power for 5 s	± (0.2 % + 0.05 Ω) ΔR
Low Temperature Storage	-65 °C for 24 h	± (0.2 % + 0.05 Ω) ΔR
High Temperature Exposure	1000 h at + 275 °C (+175 °C for WSC01/2)	± (0.5 % + 0.05 Ω) ΔR
Bias Humidity	+85 °C, 85 % RH, 10 % bias, 1000 h	± (0.2 % + 0.05 Ω) ΔR
Mechanical Shock	100 g's for 6 ms, 5 pulses	± (0.1 % + 0.05 Ω) ΔR
Vibration	Frequency varied 10 Hz to 500 Hz in 1 min, 3 directions, 9 h	± (0.1 % + 0.05 Ω) ΔR
Load Life	1000 h at rated power, +70 °C, 1.5 h "ON", 0.5 h "OFF"	± (1.0 % + 0.05 Ω) ΔR
Resistance to Solder Heat	+260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± (0.5 % + 0.05Ω) ΔR

PACKAGING				
MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSC01/2	12 mm/embossed plastic	330 mm/13"	2000	EA/TA
WSC2515	16 mm/embossed plastic	330 mm/13"	2000	EA/TA
WSC0002/WSC4527	24 mm/embossed plastic	330 mm/13"	1200	EA/TA
WSC6927	32 mm/embossed plastic	330 mm/13"	725	EA/TA

**Note**

- Embossed Carrier Tape per EIA-481.



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