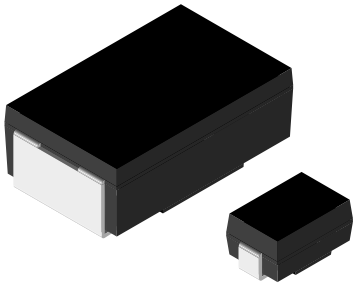
Wirewound Resistors, Precision Power, Surface Mount



LINKS TO ADDITIONAL RESOURCES

3D Models

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 [1]
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE
Pb-free Available
e3
RoHS* Available
HALOGEN FREE Available
GREEN (5-2008) Available

Notes
- 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
- Follow link to Overview of Automotive Grade Products for more details: www.vishay.com/doc?49924

(1) Flame retardance test may not be applicable to some resistor technologies

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	HISTORICAL MODEL	SIZE	POWER RATING $P_{70\,°C}$ W	RESISTANCE RANGE Ω	TOLERANCE ± %	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 [2]	WSC-1	2515	1	0.1 to 2.77K	0.5, 1, 5	165	Thermoplastic [1]
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 [1]
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

(1) 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

(2) 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 for supporting information

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	WSC01/2	WSC2515	WSC0002	WSC4527, WSC6927
Temperature coefficient measured from -55 °C to +150 °C	ppm/°C	± 50 = 1.0 Ω to 4.99 Ω; ± 90 = 0.1 Ω to 0.99 Ω	± 20 = 26.51 Ω and above; ± 50 = 1.0 Ω to 26.5 Ω; ± 90 = 0.31 Ω to 0.99 Ω; ± 150 = 0.1 Ω to 0.3 Ω	± 20 = 10.0 Ω and above; ± 50 = 1.0 Ω to 9.9 Ω; ± 90 = 0.1 Ω to 0.99 Ω	± 20 = 10 Ω and above; ± 50 = 1.0 Ω to 9.9 Ω; ± 90 = 0.31 Ω to 0.99 Ω; ± 150 = 0.1 Ω to 0.3 Ω
Dielectric withstanding voltage	V_{AC}	> 500			
Insulation resistance	Ω	> 10^9			
Operating temperature range	°C	-65 to +175	-65 to +275		
Maximum working voltage	V	$(P \times R)^{1/2}$			

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GLOBAL PART NUMBER INFORMATION

Global Part Numbering Example: WSC2515R7000FEA (visit 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		

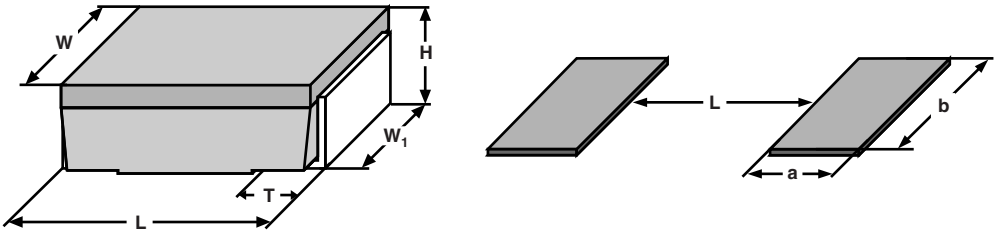
GLOBAL MODEL	SIZE	VALUE [1]	TOLERANCE	PACKAGING	SPECIAL
WSC **WSN**	**01/2** **2515** **0002** **4527** **6927**	**R** = decimal **K** = thousand **R7000** = 0.70 Ω **1K500** = 1.5 kΩ	**D** = ± 0.5 % **F** = ± 1.0 % **G** = ± 2.0 % **H** = ± 3.0 % **J** = ± 5.0 % **K** = ± 10 %	**EA** = lead (Pb)-free, 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

Notes

[1] WSC / WSN marking (www.vishay.com/doc?30327)

- 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)

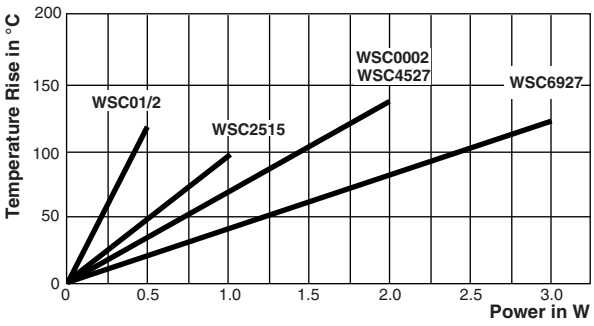


GLOBAL MODEL	DIMENSIONS					SOLDER PAD DIMENSIONS		
	L	H	T	W	W_1	a	b	L
WSC01/2	0.200 ± 0.020 (5.08 ± 0.508)	0.096 ± 0.015 (2.44 ± 0.381)	0.040 ± 0.010 (1.02 ± 0.254)	0.125 ± 0.005 (3.18 ± 0.127)	0.050 ± 0.010 (1.27 ± 0.254)	0.085 (2.16)	0.070 (1.78)	0.080 (2.03)
WSC2515	0.250 ± 0.020 (6.35 ± 0.508)	0.110 ± 0.015 (2.79 ± 0.381)	0.045 ± 0.010 (1.14 ± 0.254)	0.150 ± 0.005 (3.81 ± 0.127)	0.098 ± 0.010 (2.49 ± 0.254)	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)

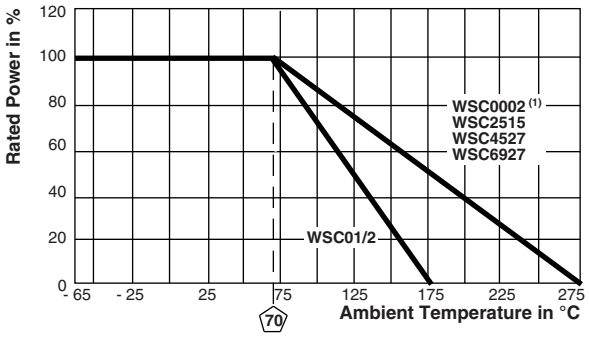
Notes

- 3D models available: www.vishay.com/doc?30328
- Surface mount solder profile recommendations: www.vishay.com/doc?31052
- Refer to WSC, WSN conversion guide for detailed construction drawings: www.vishay.com/doc?49616
- For WSC2515 0.5 % tolerance parts, W_1 terminal dimension will be 0.090" ± 0.015"

TEMPERATURE RISE



DERATING



Note

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

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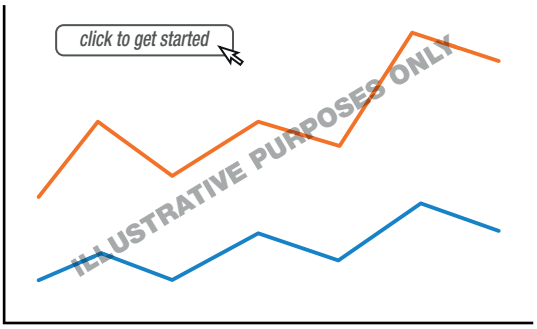
PULSE CAPABILITY



www.vishay.com/resistors/SMD-wirewound-pulse-capability-calculator/

Note

- Pulse capability increases based on the amount of wire for the resistance value and construction. The WSC0002 has greater pulse capability than WSC4527 due to differences in internal construction. The non-inductive WSN has greater pulse capability for the same size WSC because the second layer of wire increases the wire mass available to withstand pulse energy without exceeding temperature limits. Follow pulse graphic link for more information regarding capability

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
Short time overload	5 x rated power for 5 s	± 0.2 % + 0.05 Ω
Low temperature storage	-65 °C for 24 h	± 0.2 % + 0.05 Ω
High temperature exposure	2000 h at +275 °C	± 2.0 % + 0.05 Ω
Bias humidity	+85 °C, 85 % RH, 10 % bias, 1000 h	± 0.2 % + 0.05 Ω
Mechanical shock	100 *g*'s for 6 ms, 5 pulses	± 0.1 % + 0.05 Ω
Vibration	Frequency varied 10 Hz to 500 Hz in 1 min, 3 directions, 9 h	± 0.1 % + 0.05 Ω
Load life	1000 h at rated power, +70 °C, 1.5 h "ON", 0.5 h "OFF"	± 1.0 % + 0.05 Ω
Resistance to solder heat	+260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± 0.5 % + 0.05 Ω

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

Notes

- Embossed carrier tape per EIA-481
- Additional packaging details at www.vishay.com/doc?20051

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