

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

AUTOMOTIVE GRADE


RoHS*
Available

 HALOGEN
FREE
Available

GREEN
(5-2008)
Available

Note

- ⁽¹⁾ 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 Ω | 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 ⁽³⁾ | WSC-1 | 2515 | 1 | 0.1 to 2.77K | 0.5, 1, 5 | 165 | Thermoplastic ⁽²⁾ |
| 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 ⁽²⁾ |
| 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.
- ⁽²⁾ 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
- ⁽³⁾ 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 | ppm/ $^\circ\text{C}$ | $\pm 50 = 1.0 \Omega$ to 4.99 Ω ; $\pm 90 = 0.1 \Omega$ to 0.99 Ω | $\pm 20 = 26.51 \Omega$ and above; $\pm 50 = 1.0 \Omega$ to 26.5 Ω ; $\pm 90 = 0.31 \Omega$ to 0.99 Ω ; $\pm 150 = 0.1 \Omega$ to 0.3 Ω | $\pm 20 = 10.0 \Omega$ and above; $\pm 50 = 1.0 \Omega$ to 9.9 Ω ; $\pm 90 = 0.1 \Omega$ to 0.99 Ω | $\pm 20 = 10 \Omega$ and above; $\pm 50 = 1.0 \Omega$ to 9.9 Ω ; $\pm 90 = 0.31 \Omega$ to 0.99 Ω ; $\pm 150 = 0.1 \Omega$ to 0.3 Ω |
| Dielectric Withstanding Voltage | V_{AC} | > 500 | | | |
| Insulation Resistance | Ω | > 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 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 Ω 1K500 = 1.5 k Ω | 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 Ω 1% R86

| | | | |
|------------------|------------------|-----------|-----------|
| WSC-2 | 0.7 Ω | 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 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 ± 0.005 (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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Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.