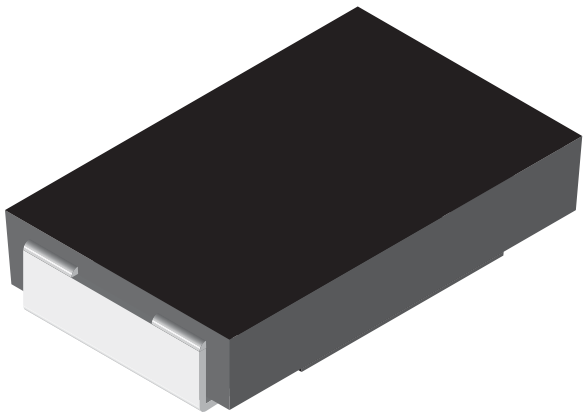
# Power Metal Strip® Resistors, Low Value, Surface Mount



## FEATURES

- Molded high temperature encapsulation
- Ideal for all types of current sensing, voltage division and pulse applications including switching and linear power supplies, instruments, power amplifiers
- Proprietary processing technique produces extremely low resistance values
- All welded construction
- Solid metal Nickel-chrome or Manganese-copper alloy resistive element with low TCR (< 20 ppm°C)
- Solderable terminations
- Very low inductance 0.5ηH to 5ηH
- Excellent frequency response
- Low thermal EMF
- Lead (Pb)-Free version is RoHS Compliant

Pb-free Available

RoHS* COMPLIANT

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | SIZE | POWER RATING $P_{70°C}$ W | RESISTANCE RANGE Ω | |
|---|---|---|---|---|
| | | | ± 0.5% | ± 1.0% |
| WSR2 | 4527 | 2.0 | 0.01 - 1.0 | 0.001 - 1.0 |
| WSR3 | 4527 | 3.0* | 0.01 - 0.2 | 0.001 - 0.2 |

*The WSR3 requires a minimum of 1050 sq. mil. circuit traces connecting to the recommended solder pad
• Part Marking: DALE, Model, Value, Tolerance, Date Code

## TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | WSR2 & WSR3 |
|---|---|---|
| Temperature Coefficient | ppm/°C | 0.005Ω - 0.0099Ω = ± 110<br>0.010Ω - 1.0Ω = ± 75 |
| Dielectric Withstanding Voltage | $V_{AC}$ | > 500 |
| Insulation Resistance | Ω | > $10^9$ |
| Operating Temperature Range | °C | - 65/+ 275 |
| Maximum Working Voltage | V | $(P \times R)^{1/2}$ |
| Weight/1000 pieces (typical) | g | 440 |

## GLOBAL PART NUMBER INFORMATION

**New Global Part Numbering: WSR25L000FEA (preferred part numbering format)**

| W | S | R | 2 | 5 | L | 0 | 0 | 0 | F | E | A | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| GLOBAL MODEL | VALUE | TOLERANCE | PACKAGING | SPECIAL |
|---|---|---|---|---|
| **WSR2** | **L** = Miliohm<br>**R** = Decimal<br>**5L000** = 0.005Ω<br>**R0100** = 0.01Ω | **D** = ± 0.5%<br>**F** = ± 1.0%<br>**J** = ± 5.0% | **EA** = Lead Free, tape/reel<br>**EK** = Lead Free, Bulk<br>**TA** = Tin/Lead, tape/reel (R86)<br>**BA** = Tin/Lead, bulk (B43) | (Dash Number)<br>(up to 3 digits)<br>From **1-999** as applicable |

**Historical Part Number example: WSR2 0.005Ω 1% EA (will continue to be accepted)**

| WSR2 | 0.005Ω | 1% | EA |
|---|---|---|---|
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

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


For technical questions contact: ww2bresistors@vishay.com
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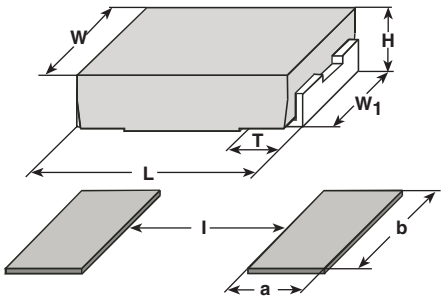
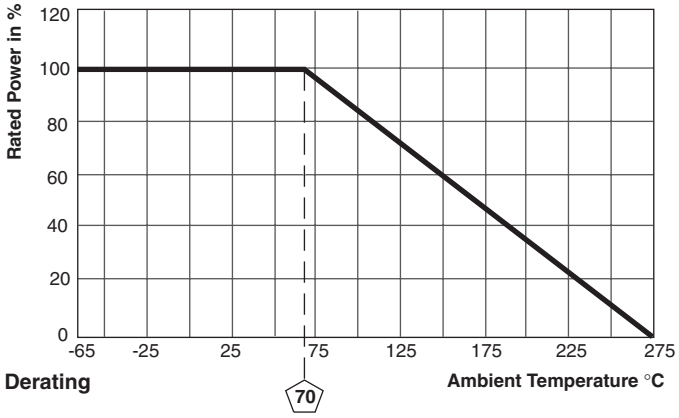
## DIMENSIONS




| MODEL | DIMENSIONS in inches [millimeters] | | | | |
|---|---|---|---|---|---|
| | L | H | T | W | $W_1$ |
| WSR2<br>WSR3 | 0.455 ± 0.032<br>[11.56 ± 0.813] | 0.095 ± 0.005<br>[2.41 ± 0.127] | 0.100 ± 0.010<br>[2.54 ± 0.254] | 0.275 ± 0.005<br>[6.98 ± 0.127] | 0.215 ± 0.005<br>[5.46 ± 0.127] |

| MODEL | SOLDER PAD DIMENSIONS in inches [millimeters] | | |
|---|---|---|---|
| | a | b | l |
| WSR2<br>WSR3 | 0.155<br>[3.94] | 0.230<br>[5.84] | 0.205<br>[5.21] |




## PERFORMANCE

| TEST | CONDITIONS OF TEST | TEST LIMITS | |
|---|---|---|---|
| | | WSR2 | WSR3 |
| Thermal Shock | - 55°C to + 150°C, 1000 cycles, 15 minutes at each extreme | ± (0.5% + 0.0005Ω) ΔR | ± (0.5% + 0.0005Ω) ΔR |
| Short Time Overload | WSR2: 5 x rated power for 5 sec. WSR3: 4 x rated power for 5 sec. | ± (0.5% + 0.0005Ω) ΔR | ± (2.0% + 0.0005Ω) ΔR |
| Low Temperature Storage | - 65°C for 24 hours | ± (0.5% + 0.0005Ω) ΔR | ± (0.5% + 0.0005Ω) ΔR |
| High Temperature Exposure | 1000 hours @ + 275°C | ± (1.0% + 0.0005Ω) ΔR | ± (1.0% + 0.0005Ω) ΔR |
| Bias Humidity | + 85°C, 85% RH, 10% Bias, 1000 hours | ± (0.5% + 0.0005Ω) ΔR | ± (0.5% + 0.0005Ω) ΔR |
| Mechanical Shock | 100g's for 6 milliseconds, 5 pulses | ± (0.5% + 0.0005Ω) ΔR | ± (0.5% + 0.0005Ω) ΔR |
| Vibration | Frequency varied 10 to 2000Hz in one minute, 3 directions, 12 hours | ± (0.5% + 0.0005Ω) ΔR | ± (0.5% + 0.0005Ω) ΔR |
| Load Life | 1000 hours @ rated power, + 70°C, 1.5 hours "ON", 0.5 hours "OFF" | ± (1.0% + 0.0005Ω) ΔR | ± (2.0% + 0.0005Ω) ΔR |
| Resistance to Solder Heat | + 260°C Solder, 10 -12 second dwell, 25mm/second emergence | ± (0.5% + 0.0005Ω) ΔR | ± (0.5% + 0.0005Ω) ΔR |
| Moisture Resistance | MIL-STD-202 Method 106, 0% power, 7a and 7b not required | ± (0.5% + 0.0005Ω) ΔR | ± (0.5% + 0.0005Ω) ΔR |

## PACKAGING

| MODEL | REEL | | | |
|---|---|---|---|---|
| | TAPE WIDTH | DIAMETER | PIECES/REEL | CODE |
| WSR2 & WSR3 | 24mm/Embossed Plastic | 330mm/13" | 1500 | EA |

Embossed Carrier Tape per EIA-481-2.

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