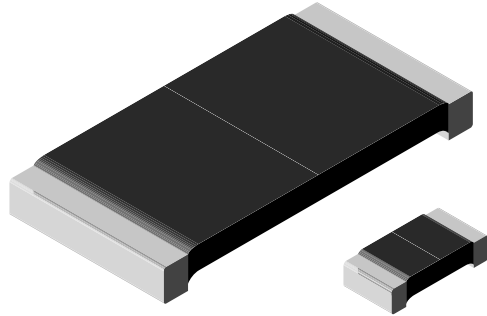


Power Metal Strip® Resistors, Low Value (down to 0.001 Ω), Surface Mount



FEATURES

- 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 (down to 0.001 Ω)
- All welded construction
- Solderable terminations
- Solid metal Nickel-Chrome or Manganese-Copper alloy resistive element with low TCR (< 20 ppm/°C)
- Very low inductance 0.5 nH to 5 nH
- Excellent frequency response to 50 MHz
- Low thermal EMF (< 3 μV/°C)
- Compliant to RoHS directive 2002/95/EC



| STANDARD ELECTRICAL SPECIFICATIONS | | | | |
|------------------------------------|---|-----------------------|--------------|--------------------------------------|
| GLOBAL MODEL | POWER RATING $P_{70\text{ }^\circ\text{C}}$ W | RESISTANCE RANGE Ω | | WEIGHT (typical) g/1000 pieces |
| | | ± 0.5 % | ± 1.0 % | |
| WSL0603 | 0.1 | 0.01 to 0.1 | 0.01 to 0.1 | 1.9 |
| WSL0805 | 0.125 | 0.01 to 0.2 | 0.01 to 0.2 | 4.8 |
| WSL1206 | 0.25 | 0.006 to 0.2 | 0.001 to 0.2 | 16.2 |
| WSL2010 | 0.5 | 0.004 to 0.5 | 0.001 to 0.5 | 38.9 |
| WSL2512 | 1.0 ⁽¹⁾ | 0.003 to 0.5 | 0.001 to 0.5 | 63.6 |
| WSL2816 | 2.0 | 0.01 to 0.1 | 0.01 to 0.1 | 118 |

Notes

- ⁽¹⁾ For values above 0.1 Ω derate linearly to 80 % rated power at 0.5 Ω
- Part Marking: Value; Tolerance: Due to resistor size limitations some resistors will be marked with only the resistance value

| TECHNICAL SPECIFICATIONS | | |
|-----------------------------|--------|--|
| PARAMETER | UNIT | WSL RESISTOR CHARACTERISTICS |
| Temperature Coefficient | ppm/°C | ± 275 for 1 mΩ to 2.9 mΩ, ± 150 for 3 mΩ to 4.9 mΩ ± 110 for 5 mΩ to 6.9 mΩ, ± 75 for 7 mΩ to 0.5 Ω |
| Operating Temperature Range | °C | - 65 to + 170 |
| Maximum Working Voltage | V | $(P \times R)^{1/2}$ |

GLOBAL PART NUMBER INFORMATION

NEW GLOBAL PART NUMBERING: WSL25124L000FTA (PREFERRED PART NUMBERING FORMAT)

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|
| W | S | L | 2 | 5 | 1 | 2 | 4 | L | 0 | 0 | 0 | F | T | A | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|

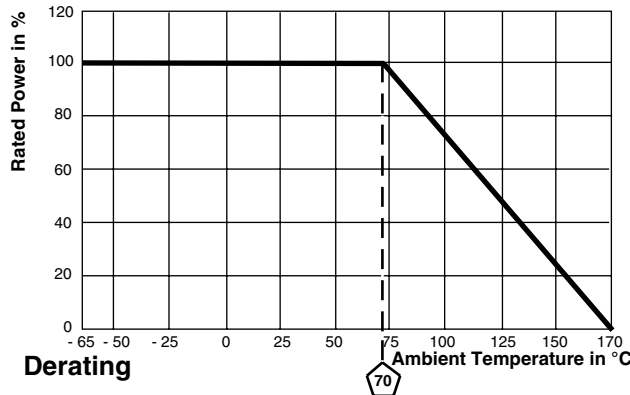
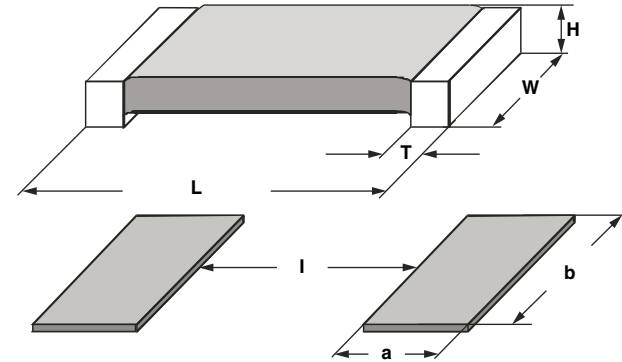
| GLOBAL MODEL | VALUE | TOLERANCE CODE | PACKAGING | SPECIAL |
|--|---|---|--|---|
| WSL0603 WSL0805 WSL1206 WSL2010 WSL2512 WSL2816 | L = mΩ* R = Decimal 5L000 = 0.005 Ω R0100 = 0.01 Ω * use "L" for resistance values < 0.01 Ω | D = ± 0.5 % F = ± 1.0 % J = ± 5.0 % | EA = Lead (Pb)-free, tape/reel EK = Lead (Pb)-free, bulk TA = Tin/lead, tape/reel (R86) TG = Tin/lead, tape/reel (RT1) BA = Tin/lead, bulk (B43) | (Dash Number) (up to 2 digits) From 1 to 99 as applicable |

HISTORICAL PART NUMBER EXAMPLE: WSL2512 0.004 Ω 1 % R86 (WILL CONTINUE TO BE ACCEPTED)

| | | | |
|------------------|------------------|----------------|-----------|
| WSL2512 | 0.004 Ω | 1 % | R86 |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

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

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

DIMENSIONS


| MODEL | DIMENSIONS in inches [millimeters] | | | | |
|---------|------------------------------------|---------------------------------|---------------------------------|----------------------------------|----------------------------------|
| | RESISTANCE RANGE Ω | L | W | H | T |
| WSL0603 | 0.01 to 0.1 | 0.060 ± 0.010 [1.52 ± 0.254] | 0.030 ± 0.010 [0.76 ± 0.254] | 0.013 ± 0.005 [0.330 ± 0.127] | 0.015 ± 0.010 [0.381 ± 0.254] |
| WSL0805 | 0.01 to 0.2 | 0.080 ± 0.010 [2.03 ± 0.254] | 0.050 ± 0.010 [1.27 ± 0.254] | 0.013 ± 0.005 [0.330 ± 0.127] | 0.015 ± 0.010 [0.381 ± 0.254] |
| WSL1206 | 0.001 to 0.0019 | 0.126 ± 0.010 [3.20 ± 0.254] | 0.063 ± 0.010 [1.60 ± 0.254] | 0.025 ± 0.010 [0.635 ± 0.254] | 0.041 ± 0.010 [1.04 ± 0.254] |
| | 0.002 to 0.0059 | 0.126 ± 0.010 [3.20 ± 0.254] | 0.063 ± 0.010 [1.60 ± 0.254] | 0.025 ± 0.010 [0.635 ± 0.254] | 0.025 ± 0.010 [0.635 ± 0.254] |
| | 0.006 to 0.20 | 0.126 ± 0.010 [3.20 ± 0.254] | 0.063 ± 0.010 [1.60 ± 0.254] | 0.025 ± 0.010 [0.635 ± 0.254] | 0.020 ± 0.010 [0.508 ± 0.254] |
| WSL2010 | 0.001 to 0.0069 | 0.200 ± 0.010 [5.08 ± 0.254] | 0.100 ± 0.010 [2.54 ± 0.254] | 0.025 ± 0.010 [0.635 ± 0.254] | 0.058 ± 0.010 [1.47 ± 0.254] |
| | 0.007 to 0.5 | 0.200 ± 0.010 [5.08 ± 0.254] | 0.100 ± 0.010 [2.54 ± 0.254] | 0.025 ± 0.010 [0.635 ± 0.254] | 0.020 ± 0.010 [0.508 ± 0.254] |
| WSL2512 | 0.001 to 0.0049 | 0.250 ± 0.010 [6.35 ± 0.254] | 0.125 ± 0.010 [3.18 ± 0.254] | 0.025 ± 0.010 [0.635 ± 0.254] | 0.087 ± 0.010 [2.21 ± 0.254] |
| | 0.005 to 0.0069 | 0.250 ± 0.010 [6.35 ± 0.254] | 0.125 ± 0.010 [3.18 ± 0.254] | 0.025 ± 0.010 [0.635 ± 0.254] | 0.047 ± 0.010 [1.19 ± 0.254] |
| | 0.007 to 0.5 | 0.250 ± 0.010 [6.35 ± 0.254] | 0.125 ± 0.010 [3.18 ± 0.254] | 0.025 ± 0.010 [0.635 ± 0.254] | 0.030 ± 0.010 [0.762 ± 0.254] |
| WSL2816 | 0.01 to 0.1 | 0.280 ± 0.010 [7.1 ± 0.254] | 0.165 ± 0.010 [4.2 ± 0.254] | 0.025 ± 0.010 [0.635 ± 0.254] | 0.062 ± 0.010 [1.57 ± 0.254] |

| MODEL | SOLDER PAD DIMENSIONS in inches [millimeters] | | | |
|---------|---|--------------|--------------|--------------|
| | RESISTANCE RANGE Ω | a | b | l |
| WSL0603 | 0.01 to 0.1 | 0.040 [1.01] | 0.040 [1.01] | 0.020 [0.50] |
| WSL0805 | 0.01 to 0.2 | 0.040 [1.02] | 0.050 [1.27] | 0.020 [0.50] |
| WSL1206 | 0.001 to 0.2 | 0.062 [1.57] | 0.070 [1.78] | 0.030 [0.76] |
| WSL2010 | 0.001 to 0.0069 | 0.093 [2.36] | 0.120 [3.05] | 0.055 [1.40] |
| | 0.007 to 0.5 | 0.055 [1.40] | 0.120 [3.05] | 0.130 [3.30] |
| WSL2512 | 0.001 to 0.0049 | 0.120 [3.05] | 0.145 [3.68] | 0.050 [1.27] |
| | 0.005 to 0.0069 | 0.083 [2.11] | 0.145 [3.68] | 0.125 [3.18] |
| | 0.007 to 0.5 | 0.065 [1.65] | 0.145 [3.68] | 0.160 [4.06] |
| WSL2816 | 0.01 to 0.1 | 0.096 [2.45] | 0.185 [4.7] | 0.125 [3.20] |

PERFORMANCE

| TEST | CONDITIONS OF TEST | TEST LIMITS |
|---------------------------|--|-------------------------|
| Thermal Shock | - 55 °C to + 150 °C, 1000 cycles, 15 min at each extreme | ± (0.5 % + 0.0005 Ω) ΔR |
| Short Time Overload | 5 x rated power for 5 s | ± (0.5 % + 0.0005 Ω) ΔR |
| Low Temperature Operation | - 65 °C for 24 h | ± (0.5 % + 0.0005 Ω) ΔR |
| High Temperature Exposure | 1000 h at + 170 °C | ± (1.0 % + 0.0005 Ω) ΔR |
| Bias Humidity | + 85 °C, 85 % RH, 10 % Bias, 1000 h | ± (0.5 % + 0.0005 Ω) ΔR |
| Mechanical Shock | 100 g's for 6 ms, 5 pulses | ± (0.5 % + 0.0005 Ω) ΔR |
| Vibration | Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h | ± (0.5 % + 0.0005 Ω) ΔR |
| Load Life | 1000 h at rated power, + 70 °C, 1.5 h "ON", 0.5 h "OFF" | ± (1.0 % + 0.0005 Ω) ΔR |
| Resistance to Solder Heat | + 260 °C Solder, 10 s to 12 s dwell, 25 mm/s emergence | ± (0.5 % + 0.0005 Ω) ΔR |
| Moisture Resistance | MIL-STD-202, Method 106, 0 % power, 7a and 7b not required | ± (0.5 % + 0.0005 Ω) ΔR |

PACKAGING

| MODEL | REEL | | | |
|---------|------------------------|------------|-------------|------|
| | TAPE WIDTH | DIAMETER | PIECES/REEL | CODE |
| WSL0603 | 8 mm/Punched Paper | 178 mm/7" | 5000 | EA |
| WSL0805 | 8 mm/Punched Paper | 178 mm/7" | 5000 | EA |
| WSL1206 | 8 mm/Embossed Plastic | 178 mm/7" | 4000 | EA |
| WSL2010 | 12 mm/Embossed Plastic | 178 mm/7" | 4000 | EA |
| WSL2512 | 12 mm/Embossed Plastic | 178 mm/7" | 2000 | EA |
| WSL2816 | 16 mm/Embossed Plastic | 330 mm/13" | 5000 | EA |

Note

- Embossed carrier tape per EIA-481-1A



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