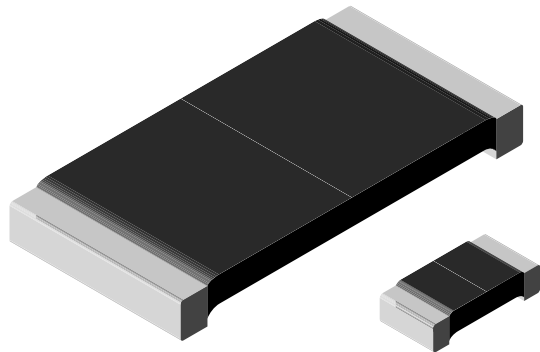


## Power Metal Strip® Resistors, High Power (2 x Standard WSL), Low Value (down to 0.001 $\Omega$ ), Surface Mount



### 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  $\Omega$ )
- Specially selected and stabilized materials allow for high power ratings (2 x standard WSL rating)
- All welded construction
- Solid metal Nickel-Chrome or Manganese-Copper alloy resistive element with low TCR (< 20 ppm/°C)
- Solderable terminations
- Very low inductance 0.5 nH to 5 nH
- Excellent frequency response to 50 MHz
- Low thermal EMF (< 3  $\mu$ V/°C)
- Lead (Pb)-free version is RoHS compliant



**RoHS\***  
COMPLIANT

### STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | POWER RATING<br>$P_{70^\circ\text{C}}$<br>W | RESISTANCE RANGE<br>$\Omega$ |              | WEIGHT<br>(typical)<br>g/1000 pieces |
|--------------|---------------------------------------------|------------------------------|--------------|--------------------------------------|
|              |                                             | $\pm 0.5\%$                  | $\pm 1.0\%$  |                                      |
| WSL0603...18 | 0.20                                        | 0.015 - 0.1                  | 0.015 - 0.1  | 1.9                                  |
| WSL0805...18 | 0.25                                        | 0.01 - 0.2                   | 0.01 - 0.2   | 4.8                                  |
| WSL1206...18 | 0.5                                         | 0.006 - 0.2                  | 0.001 - 0.2  | 16.2                                 |
| WSL2010...18 | 1.0                                         | 0.004 - 0.5                  | 0.001 - 0.5  | 38.9                                 |
| WSL2512...18 | 2.0                                         | 0.003 - 0.02                 | 0.001 - 0.02 | 63.6                                 |

#### Note

- 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 | $\pm 275$ for 1 m $\Omega$ to 2.9 m $\Omega$ , $\pm 150$ for 3 m $\Omega$ to 4.9 m $\Omega$<br>$\pm 110$ for 5 m $\Omega$ to 6.9 m $\Omega$ , $\pm 75$ for 7 m $\Omega$ to 0.5 $\Omega$ |
| Operating Temperature Range | °C     | - 65 to + 170                                                                                                                                                                           |
| Maximum Working Voltage     | V      | $(P \times R)^{1/2}$                                                                                                                                                                    |

### GLOBAL PART NUMBER INFORMATION

#### NEW GLOBAL PART NUMBERING: WSL25124L000FTA18 (PREFERRED PART NUMBERING FORMAT)

|                                                     |   |   |                                                                                                                                       |   |   |                                                       |   |   |                                                                                                                                                              |   |   |                          |   |   |   |   |
|-----------------------------------------------------|---|---|---------------------------------------------------------------------------------------------------------------------------------------|---|---|-------------------------------------------------------|---|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|--------------------------|---|---|---|---|
| W                                                   | S | L | 2                                                                                                                                     | 5 | 1 | 2                                                     | 4 | L | 0                                                                                                                                                            | 0 | 0 | F                        | T | A | 1 | 8 |
| GLOBAL MODEL                                        |   |   | VALUE                                                                                                                                 |   |   | TOLERANCE CODE                                        |   |   | PACKAGING                                                                                                                                                    |   |   | SPECIAL                  |   |   |   |   |
| WSL0603<br>WSL0805<br>WSL1206<br>WSL2010<br>WSL2512 |   |   | L = m $\Omega$ *<br>R = Decimal<br>5L000 = 0.005 $\Omega$<br>R0100 = 0.01 $\Omega$<br>* use "L" for resistance values < 0.01 $\Omega$ |   |   | D = $\pm 0.5\%$<br>F = $\pm 1.0\%$<br>J = $\pm 5.0\%$ |   |   | EA = Lead (Pb)-free, tape/reel<br>EK = Lead (Pb)-free, bulk<br>TA = Tin/lead, tape/reel (R86)<br>TG = Tin/lead, tape/reel (RT1)<br>BA = Tin/lead, bulk (B43) |   |   | 18 = "High Power" option |   |   |   |   |

#### HISTORICAL PART NUMBER EXAMPLE: WSL2512-18 0.004 $\Omega$ 1% R86 (WILL CONTINUE TO BE ACCEPTED)

|                  |                  |                |           |
|------------------|------------------|----------------|-----------|
| WSL2512-18       | 0.004 $\Omega$   | 1%             | R86       |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

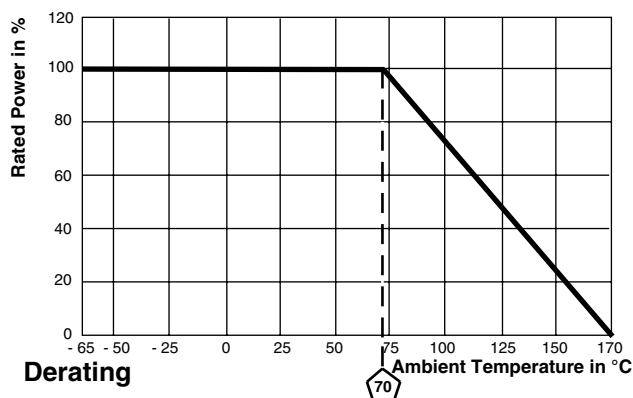
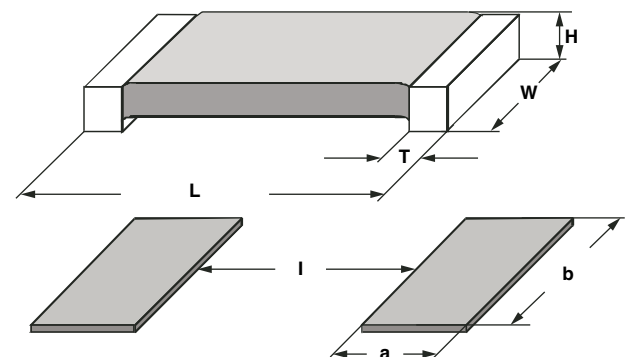
\* Pb containing terminations are not RoHS compliant, exemptions may apply



# WSL...18 High Power

Power Metal Strip® Resistors, High Power (2 x Standard WSL), Vishay Dale  
Low Value (down to 0.001 Ω), Surface Mount

## DIMENSIONS



| MODEL      | DIMENSIONS in inches [millimeters] |                                 |                                 |                                  |                                  |
|------------|------------------------------------|---------------------------------|---------------------------------|----------------------------------|----------------------------------|
|            | RESISTANCE RANGE Ω                 | L                               | W                               | H                                | T                                |
| WSL0603-18 | 0.015 - 0.1                        | 0.060 ± 0.010<br>[1.52 ± 0.254] | 0.030 ± 0.010<br>[0.76 ± 0.254] | 0.013 ± 0.005<br>[0.330 ± 0.127] | 0.015 ± 0.010<br>[0.381 ± 0.254] |
| WSL0805-18 | 0.01 - 0.2                         | 0.080 ± 0.010<br>[2.03 ± 0.254] | 0.050 ± 0.010<br>[1.27 ± 0.254] | 0.013 ± 0.005<br>[0.330 ± 0.127] | 0.015 ± 0.010<br>[0.381 ± 0.254] |
| WSL1206-18 | 0.002 - 0.2                        | 0.126 ± 0.010<br>[3.20 ± 0.254] | 0.063 ± 0.010<br>[1.60 ± 0.254] | 0.025 ± 0.010<br>[0.635 ± 0.254] | 0.020 ± 0.010<br>[0.508 ± 0.254] |
| WSL2010-18 | 0.001 - 0.0069                     | 0.200 ± 0.010<br>[5.08 ± 0.254] | 0.100 ± 0.010<br>[2.54 ± 0.254] | 0.025 ± 0.010<br>[0.635 ± 0.254] | 0.058 ± 0.010<br>[1.47 ± 0.254]  |
|            | 0.007 - 0.5                        | 0.200 ± 0.010<br>[5.08 ± 0.254] | 0.100 ± 0.010<br>[2.54 ± 0.254] | 0.025 ± 0.010<br>[0.635 ± 0.254] | 0.020 ± 0.010<br>[0.508 ± 0.254] |
| WSL2512-18 | 0.001 - 0.0049                     | 0.250 ± 0.010<br>[6.35 ± 0.254] | 0.125 ± 0.010<br>[3.18 ± 0.254] | 0.025 ± 0.010<br>[0.635 ± 0.254] | 0.087 ± 0.010<br>[2.21 ± 0.254]  |
|            | 0.005 - 0.0069                     | 0.250 ± 0.010<br>[6.35 ± 0.254] | 0.125 ± 0.010<br>[3.18 ± 0.254] | 0.025 ± 0.010<br>[0.635 ± 0.254] | 0.047 ± 0.010<br>[1.19 ± 0.254]  |
|            | 0.007 - 0.02                       | 0.250 ± 0.010<br>[6.35 ± 0.254] | 0.125 ± 0.010<br>[3.18 ± 0.254] | 0.025 ± 0.010<br>[0.635 ± 0.254] | 0.030 ± 0.010<br>[0.762 ± 0.254] |

| MODEL      | SOLDER PAD DIMENSIONS in inches [millimeters] |              |              |              |
|------------|-----------------------------------------------|--------------|--------------|--------------|
|            | RESISTANCE RANGE Ω                            | a            | b            | l            |
| WSL0603-18 | 0.015 - 0.1                                   | 0.040 [1.01] | 0.040 [1.01] | 0.020 [0.50] |
| WSL0805-18 | 0.01 - 0.2                                    | 0.040 [1.02] | 0.050 [1.27] | 0.020 [0.50] |
| WSL1206-18 | 0.002 - 0.2                                   | 0.050 [1.27] | 0.070 [1.78] | 0.055 [1.40] |
| WSL2010-18 | 0.001 - 0.0069                                | 0.093 [2.36] | 0.120 [3.05] | 0.055 [1.40] |
|            | 0.007 - 0.5                                   | 0.055 [1.40] | 0.120 [3.05] | 0.130 [3.30] |
| WSL2512-18 | 0.001 - 0.0049                                | 0.120 [3.05] | 0.145 [3.68] | 0.050 [1.27] |
|            | 0.005 - 0.0069                                | 0.083 [2.11] | 0.145 [3.68] | 0.125 [3.18] |
|            | 0.007 - 0.02                                  | 0.065 [1.65] | 0.145 [3.68] | 0.160 [4.06] |

## 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 Storage   | - 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 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 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 |
| WSL0603-18 | 8 mm/Punched Paper     | 178 mm/7" | 5000        | EA   |
| WSL0805-18 | 8 mm/Punched Paper     | 178 mm/7" | 5000        | EA   |
| WSL1206-18 | 8 mm/Embossed Plastic  | 178 mm/7" | 4000        | EA   |
| WSL2010-18 | 12 mm/Embossed Plastic | 178 mm/7" | 4000        | EA   |
| WSL2512-18 | 12 mm/Embossed Plastic | 178 mm/7" | 2000        | EA   |

### Note

- Embossed carrier tape per EIA-481-1A



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