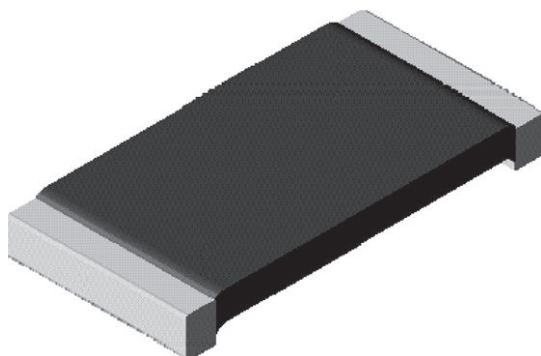




## Power Metal Strip® Resistors, High Temperature (275 °C), Low Value (Down to 0.01 Ω), Surface-Mount



### LINKS TO ADDITIONAL RESOURCES



### FEATURES

- Ideal for all types of current sensing, voltage division and pulse applications including switching and linear power supplies, instruments and power amplifiers
- Proprietary processing technique produces extremely low resistance values
- All welded construction of the Power Metal Strip® resistors are ideal for all types of current sensing, voltage division and pulse applications
- Sulfur resistance by construction that is unaffected by high sulfur environments
- Specially selected and stabilized materials allow for high temperature derating (to +275 °C)
- Solid metal nickel-chrome alloy resistive element with low TCR (< 20 ppm/°C)
- Very low inductance (< 5 nH)
- Excellent frequency response to 50 MHz
- Low thermal EMF (< 3 μV/°C)
- AEC-Q200 qualified <sup>(1)</sup>
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### 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](http://www.vishay.com/doc?49924)
- "SMD Current Sense: AEC-Q200 vs. Vishay Qualification" technical note: [www.vishay.com/doc?30416](http://www.vishay.com/doc?30416)
- <sup>(1)</sup> Flame retardance test may not be applicable to some resistor technologies

### STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | SIZE | POWER RATING<br>$P_{70\text{ °C}}$<br>W | TOLERANCE<br>± % | RESISTANCE<br>VALUE RANGE<br>Ω | WEIGHT<br>(typical)<br>g/1000 pieces |
|--------------|------|-----------------------------------------|------------------|--------------------------------|--------------------------------------|
| WSLT2512     | 2512 | 1.0 <sup>(1)</sup>                      | 0.5, 1.0         | 0.01 to 0.50                   | 63.6                                 |

### Notes

- Part marking: DALE, value, tolerance code
- "Thermal Management for Surface-Mount Devices" white paper: [www.vishay.com/doc?30380](http://www.vishay.com/doc?30380)
- <sup>(1)</sup> For values above 0.1 Ω derate linearly to 80 % rated power at 0.5 Ω

### GLOBAL PART NUMBER INFORMATION

Global Part Numbering Example: WSLT2512R0100FEA (visit [www.vishay.net](http://www.vishay.net) Vishay Dale parts numbering manual for all options)

|              |   |   |   |                                 |   |   |   |                            |   |                                                               |   |   |   |                              |   |  |  |
|--------------|---|---|---|---------------------------------|---|---|---|----------------------------|---|---------------------------------------------------------------|---|---|---|------------------------------|---|--|--|
| W            | S | L | T | 2                               | 5 | 1 | 2 | R                          | 0 | 1                                                             | 0 | 0 | F | E                            | A |  |  |
| GLOBAL MODEL |   |   |   | RESISTANCE VALUE <sup>(1)</sup> |   |   |   | TOLERANCE CODE             |   | PACKAGING CODE <sup>(2)</sup>                                 |   |   |   | SPECIAL                      |   |  |  |
| WSLT2512     |   |   |   | R = decimal<br>R0100 = 0.01 Ω   |   |   |   | D = ± 0.5 %<br>F = ± 1.0 % |   | EA = lead (Pb)-free, tape / reel<br>EK = lead (Pb)-free, bulk |   |   |   | Reserved for future specials |   |  |  |

### Notes

- Per PCN-DR-00009-2022-REV-0, WSL marking will be removed effective March 1st, 2023
- <sup>(1)</sup> WSL marking ([www.vishay.com/doc?30327](http://www.vishay.com/doc?30327))
- <sup>(2)</sup> 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

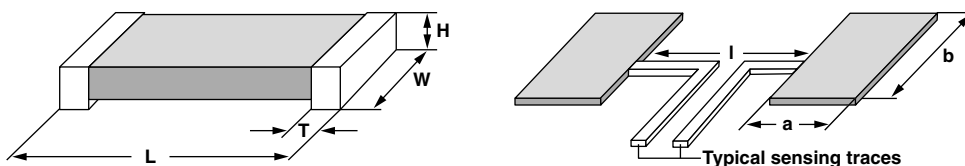
## TECHNICAL SPECIFICATIONS

| PARAMETER                                                                                             | UNIT   | WSL RESISTOR CHARACTERISTICS |
|-------------------------------------------------------------------------------------------------------|--------|------------------------------|
| Component temperature coefficient (including terminal) <sup>(1)</sup> measured from -55 °C to +150 °C | ppm/°C | ± 75                         |
| Element TCR <sup>(2)</sup>                                                                            | ppm/°C | < 20                         |
| Operating temperature range                                                                           | °C     | -65 to +275                  |
| Maximum working voltage <sup>(3)</sup>                                                                | V      | $(P \times R)^{1/2}$         |

### Notes

- “Temperature Coefficient of Resistance for Current Sensing” white paper: [www.vishay.com/doc?30405](http://www.vishay.com/doc?30405)
- (1) Component TCR - total TCR that includes the TCR effects of the resistor element and the copper terminal
- (2) Element TCR - only applies to the alloy used for the resistor element; refer to item 1 in the construction illustration on the following page
- (3) Maximum working voltage - the WSL is not voltage sensitive, but is limited by power / energy dissipation and is also not ESD sensitive

## DIMENSIONS in inches (millimeters)

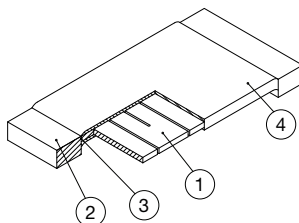


### Notes

- 3D models available: [www.vishay.com/doc?30338](http://www.vishay.com/doc?30338)
- Surface-mount solder profile recommendations: [www.vishay.com/doc?31052](http://www.vishay.com/doc?31052)

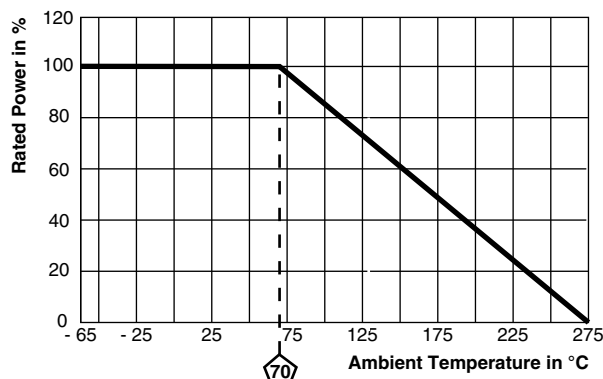
| MODEL    | DIMENSIONS                      |                                 |                                  |                                  | SOLDER PAD DIMENSIONS |                 |                 |
|----------|---------------------------------|---------------------------------|----------------------------------|----------------------------------|-----------------------|-----------------|-----------------|
|          | L                               | W                               | H                                | T                                | a                     | b               | l               |
| WSLT2512 | 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) | 0.065<br>(1.65)       | 0.145<br>(3.68) | 0.160<br>(4.06) |

## WELDED CONSTRUCTION 2512

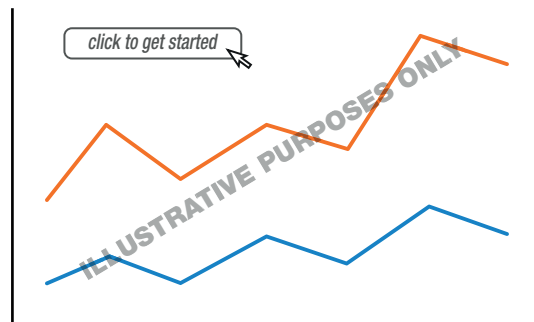


- 1) Resistive element: solid metal nickel-chrome or manganese-copper alloy resistive element with low TCR (< 20 ppm/°C)
- 2) Plated terminal: Solid copper, 100 % Sn (100 μ" min.) with 100 % Ni (20 μ" min.) under layer finish
- 3) Terminal / element weld
- 4) Silicone coating with ink print

## DERATING



## PULSE CAPABILITY



[www.vishay.com/resistors/power-metal-strip-calculator](http://www.vishay.com/resistors/power-metal-strip-calculator)



| <b>PERFORMANCE</b>        |                                                                |                    |
|---------------------------|----------------------------------------------------------------|--------------------|
| <b>TEST</b>               | <b>CONDITIONS OF TEST</b>                                      | <b>TEST LIMITS</b> |
| Thermal shock             | -55 °C to +150 °C, 1000 cycles, 15 min at each extreme         | ± 0.5 %            |
| Short time overload       | 5 x rated power for 5 s                                        | ± 0.5 %            |
| Low temperature operation | -65 °C for 24 h                                                | ± 0.5 %            |
| High temperature exposure | 1000 h at +275 °C                                              | ± 1.0 %            |
| Bias humidity             | +85 °C, 85 % RH, 10 % bias, 1000 h                             | ± 0.5 %            |
| Mechanical shock          | 100 g's for 6 ms, 5 pulses                                     | ± 0.5 %            |
| Vibration                 | Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h | ± 0.5 %            |
| Load life at 70 °C        | 1000 h, 1.5 h "ON", 0.5 h "OFF"                                | ± 1.0 %            |
| Load life at 150 °C       | 1000 h, 1.5 h "ON", 0.5 h "OFF"                                | ± 1.0 %            |
| Resistance to solder heat | 260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence           | ± 0.5 %            |
| Moisture resistance       | MIL-STD-202, method 106, 0 % power, 7b not required            | ± 1.0 %            |

| <b>PACKAGING</b> |                          |                 |                    |             |
|------------------|--------------------------|-----------------|--------------------|-------------|
| <b>MODEL</b>     | <b>REEL</b>              |                 |                    |             |
|                  | <b>TAPE WIDTH</b>        | <b>DIAMETER</b> | <b>PIECES/REEL</b> | <b>CODE</b> |
| WSLT2512         | 12 mm / embossed plastic | 178 mm / 7"     | 2000               | EA          |

**Notes**

- Embossed carrier tape per EIA-481
- (1) Additional packaging details at [www.vishay.com/doc?20051](http://www.vishay.com/doc?20051)



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