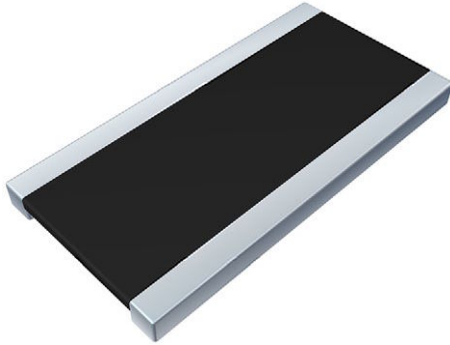


Power Metal Strip® Resistors, Wide Terminal, Low Inductance (< 1 nH), Surface-Mount



FEATURES

- Wide side terminal construction that yields high power to foot print size ratio (2 W in 1020 and 1 W in 0612 package)
- All welded construction of the Power Metal Strip® resistors are ideal for all types of current sensing, voltage division and pulse applications
- Proprietary processing technique produces low resistance values (down to 0.00075 Ω)
- Sulfur resistance by construction that is unaffected by high sulfur environments
- Very low inductance < 1 nH
- Low thermal EMF (< 3 μV/°C)
- AEC-Q200 qualified ⁽¹⁾
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



LINKS TO ADDITIONAL RESOURCES



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

⁽¹⁾ Flame retardance test may not be applicable to some resistor technologies

| STANDARD ELECTRICAL SPECIFICATIONS | | | | | |
|------------------------------------|------|---|------------------|-----------------------------|-----------------------------------|
| GLOBAL MODEL | SIZE | POWER RATING $P_{70^\circ\text{C}}$ W | TOLERANCE ± % | RESISTANCE VALUE RANGE Ω | WEIGHT (typical) g/1000 pieces |
| WSL0612 | 0612 | 1.0 | 1.0, 5.0 | 0.75m to 5m | 8.5 |
| WSL1020 | 1020 | 2.0 | 0.5, 1.0, 5.0 | 1m to 6m | 38.74 |

| GLOBAL PART NUMBER INFORMATION | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|--|---|---|---|---|---|---|--|--|
| Global Part Numbering Example: WSL10206L000FEA (visit www.vishay.net Vishay Dale parts numbering manual for all options) | | | | | | | | | | | | | | | | |
| W | S | L | 1 | 0 | 2 | 0 | 6 | L | 0 | 0 | 0 | F | E | A | | |
| GLOBAL MODEL (7 digits) | | | RESISTANCE VALUE ⁽¹⁾ (5 digits) | | | TOLERANCE CODE (1 digit) | | PACKAGING CODE ⁽²⁾ (2 digits) | | | SPECIAL ⁽³⁾ (up to 2 digits) | | | | | |
| WSL0612 WSL1020 | | | L = mΩ* 1L000 = 0.001 Ω 2L000 = 0.002 Ω 3L000 = 0.003 Ω 4L000 = 0.004 Ω 5L000 = 0.005 Ω 6L000 = 0.006 Ω * Use "L" for resistance values < 0.01 Ω | | | D = ± 0.5 % F = ± 1.0 % J = ± 5.0 % | | EA = lead (Pb)-free, tape / reel | | | (dash number) From 1 to 99 as applicable | | | | | |

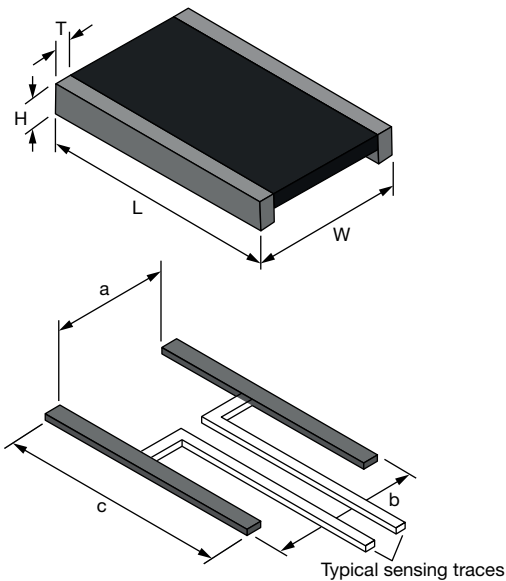
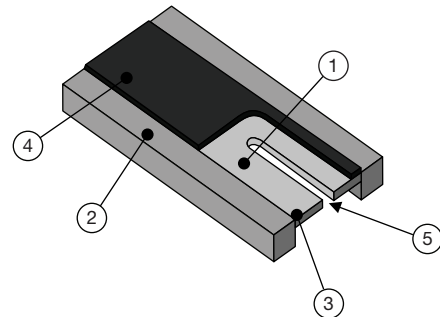
Notes

- (1) WSL marking (www.vishay.com/doc?30327); WSL decade values (www.vishay.com/doc?30117)
- (2) EB (lead (Pb)-free) is a non-standard packaging code designated for 1000 piece reels. The non-standard packaging code is identical to our standard EA (lead (Pb)-free), except that it has a package quantity of 1000 pieces
- (3) Follow link for customization capabilities: www.vishay.com/doc?48163

| TECHNICAL SPECIFICATIONS | | | |
|---|--------|--|---------|
| PARAMETER | UNIT | RESISTOR CHARACTERISTICS | |
| | | WSL0612 | WSL1020 |
| Component temperature coefficient (including terminal) ⁽¹⁾ | ppm/°C | +250 ⁽⁴⁾ for 0.75 mΩ and 1.9 mΩ +150 ⁽⁴⁾ for 2 mΩ to 6 mΩ | < 50 |
| Element TCR ⁽²⁾ | ppm/°C | < 20 | |
| Operating temperature range | °C | -65 to +170 | |
| Maximum working voltage ⁽³⁾ | V | $(P \times R)^{1/2}$ | |

Notes

- (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
- (4) Typical TCR is positive, for more details contact factory

DIMENSIONS

WELDED CONSTRUCTION


- ① Resistive element: nickel-chrome or manganese-copper alloy with low TCR (< 20 ppm/°C)
- ② Terminal: solid copper with 100 % Sn finish 100 % Sn (100 μ" min.) with 100 % Ni (20 μ" min.) under layer finish
- ③ Terminal / element weld (electron beam weld)
- ④ High temperature encapsulant: "siliconized polyester" coating material
- ⑤ Laser calibration

Notes

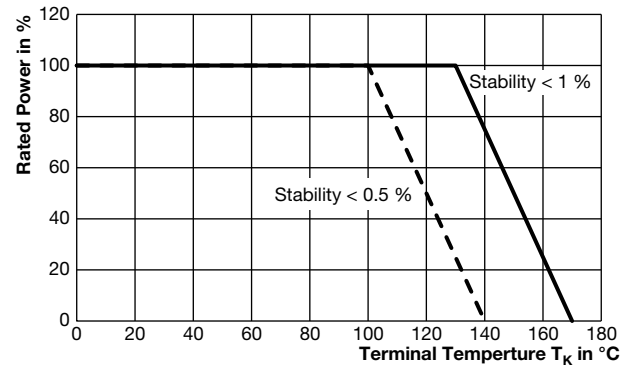
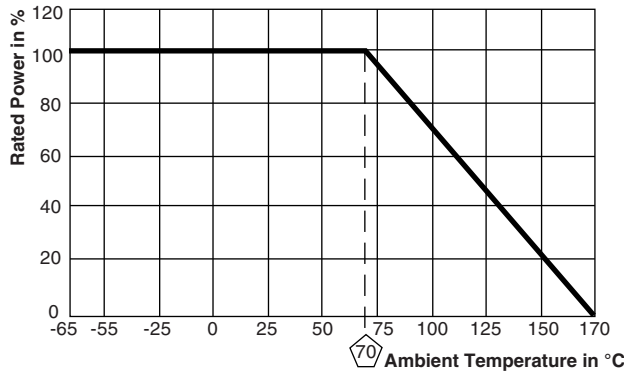
- 3D models available: www.vishay.com/doc?30348
- Surface mount solder profile recommendations: www.vishay.com/doc?31052

| MODEL | DIMENSIONS in inches (millimeters) | | | |
|---------|------------------------------------|---------------------------------|----------------------------------|----------------------------------|
| | L | W | H | T |
| WSL0612 | 0.120 ± 0.005 (3.05 ± 0.127) | 0.060 ± 0.005 (1.50 ± 0.127) | 0.018 ± 0.010 (0.457 ± 0.254) | 0.015 ± 0.010 (0.381 ± 0.254) |
| WSL1020 | 0.200 ± 0.005 (5.08 ± 0.127) | 0.100 ± 0.005 (2.54 ± 0.127) | 0.025 ± 0.005 (0.635 ± 0.127) | 0.022 ± 0.008 (0.558 ± 0.203) |

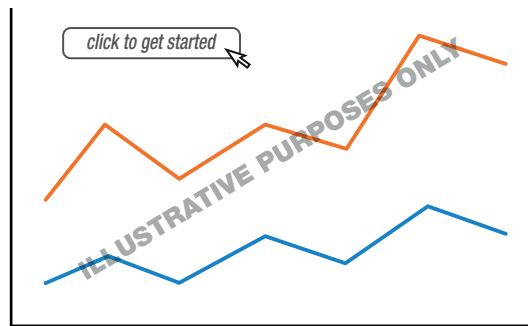
| MODEL | SOLDER PAD DIMENSIONS in inches (millimeters) | | |
|---------|---|-----------------|-----------------|
| | a | b | c |
| WSL0612 | 0.030 (0.76) | 0.078 (1.98) | 0.134 (3.40) |
| WSL1020 | 0.039 (1.00) | 0.138 (3.50) | 0.222 (5.65) |



DERATING



PULSE CAPABILITY



www.vishay.com/resistors/power-metal-strip-calculator

| PERFORMANCE | | |
|---------------------------|--|-------------|
| TEST | CONDITIONS OF TEST | TEST LIMITS |
| Thermal shock | -55 °C to +150 °C, 1000 cycles, 15 min at each extreme | ± 0.5 % |
| Low temperature operation | -65 °C for 24 h | ± 0.5 % |
| High temperature exposure | 1000 h at +170 °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 | 1000 h at 70 °C, 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 | ± 0.5 % |

| PACKAGING | | | | |
|-----------|--------------------------|-------------|-------------|------|
| MODEL | REEL | | | |
| | TAPE WIDTH | DIAMETER | PIECES/REEL | CODE |
| WSL0612 | 8 mm / embossed plastic | 178 mm / 7" | 4000 | EA |
| WSL1020 | 12 mm / embossed plastic | 178 mm / 7" | 4000 | EA |

Notes

- Embossed carrier tape per EIA-481-2
- (1) Additional packaging details at www.vishay.com/doc?20051



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