

## Power Metal Strip® Resistors, High Power, Surface-Mount, 4-Terminal



### FEATURES

- 4-terminal design
- Ideal for all types of current sensing, voltage division and pulse applications
- Proprietary processing technique produces extremely low resistance values
- Sulfur resistance by construction that is unaffected by high sulfur environments
- Durable with all-welded construction
- All welded construction
- Solid metal nickel-chrome or manganese-copper resistive element with low TCR (< 20 ppm/°C)
- Low thermal EMF (< 3 μV/°C)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### LINKS TO ADDITIONAL RESOURCES



| STANDARD ELECTRICAL SPECIFICATIONS |      |   |                                 |                   |                  |                  |                                   |
|------------------------------------|------|---|---------------------------------|-------------------|------------------|------------------|-----------------------------------|
| GLOBAL MODEL                       | SIZE | POWER RATING<br>$P_{70\text{ }^\circ\text{C}}$<br>W | RESISTANCE VALUE RANGE $\Omega$ |                   |                  |                  | WEIGHT (typical)<br>g/1000 pieces |
|                                    |      |   | TOL. $\pm 0.1\%$                | TOL. $\pm 0.25\%$ | TOL. $\pm 0.5\%$ | TOL. $\pm 1.0\%$ |                                   |
| WSK1206...18                       | 1206 | 0.5   | 0.04 to 0.05                    | 0.02 to 0.05      | 0.01 to 0.05     | 0.01 to 0.05     | 16                                |

#### Notes

- Part marking: due to resistor size limitation, parts will be marked with only the resistance value
- Resistance values are available per WSL decade table ([www.vishay.com/doc?30117](http://www.vishay.com/doc?30117))

| GLOBAL PART NUMBER INFORMATION   |   |   |                                      |   |   |   |   |   |   |   |   |   |                          |   |   |   |
|--|---|---|--------------------------------------|---|---|---|---|---|---|---|---|---|--------------------------|---|---|---|
| Global Part Numbering Example: WSK1206R0150FEA (visit <a href="http://www.vishay.net">www.vishay.net</a> Vishay Dale parts numbering manual for all options) |   |   |                                      |   |   |   |   |   |   |   |   |   |                          |   |   |   |
| W  | S | K | 1                                    | 2 | 0 | 6 | R   | 0 | 1 | 5   | 0 | F | E                        | A | 1 | 8 |
| GLOBAL MODEL   |   |   | RESISTANCE VALUE                     |   |   |   | TOLERANCE CODE  |   |   | PACKAGING CODE (1)  |   |   | SPECIAL                  |   |   |   |
| WSK1206  |   |   | R = decimal<br>R0100 = 0.01 $\Omega$ |   |   |   | B = $\pm 0.1\%$<br>C = $\pm 0.25\%$<br>D = $\pm 0.5\%$<br>F = $\pm 1.0\%$ |   |   | EA = lead (Pb)-free, tape / reel<br>EK = lead (Pb)-free, bulk |   |   | 18 = "high power" option |   |   |   |

#### Notes

- Per PCN-DR-00009-2022-REV-0, WSL marking will be removed effective March 1st, 2023
- (1) 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

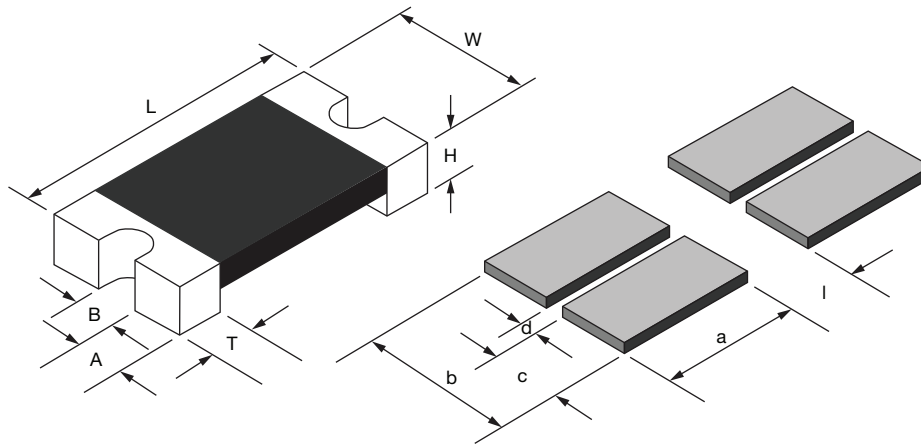


| TECHNICAL SPECIFICATIONS  |        |                          |
|---|--------|--------------------------|
| PARAMETER   | UNIT   | RESISTOR CHARACTERISTICS |
| Component temperature coefficient (including terminal) <sup>(1)</sup> | ppm/°C | ± 35                     |
| Element TCR <sup>(2)</sup>  | ppm/°C | < 20                     |
| Operating temperature range   | °C     | -65 to +170              |
| Maximum working voltage <sup>(3)</sup>                                | V      | $(P \times R)^{1/2}$     |

Notes

- <sup>(1)</sup> Component TCR - total TCR that includes the TCR effects of the resistor element and the copper terminal
- <sup>(2)</sup> Element TCR - only applies to the alloy used for the resistor element; refer to item 1 in the construction illustration on the following page
- <sup>(3)</sup> Maximum working voltage - the WSL is not voltage sensitive, but is limited by power / energy dissipation and is also not ESD sensitive

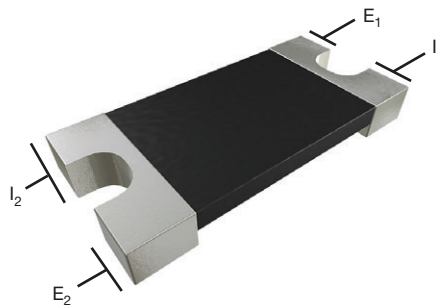
DIMENSIONS



| MODEL        | DIMENSIONS in inches (millimeters) |                                 |                                  |                                  |                                  |                                  |
|--------------|------------------------------------|---------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
|              | L                                  | W                               | H                                | T                                | A                                | B                                |
| WSK1206...18 | 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) | 0.023 ± 0.010<br>(0.584 ± 0.254) | 0.018 ± 0.010<br>(0.457 ± 0.254) |

| MODEL        | SOLDER PAD DIMENSIONS in inches (millimeters) |                  |                  |                 |                  |
|--------------|---|------------------|------------------|-----------------|------------------|
|              | a   | b                | c                | d               | l                |
| WSK1206...18 | 0.040<br>(1.01)                               | 0.070<br>(1.778) | 0.030<br>(0.762) | 0.01<br>(0.254) | 0.070<br>(1.778) |

ELECTRICAL CONNECTION

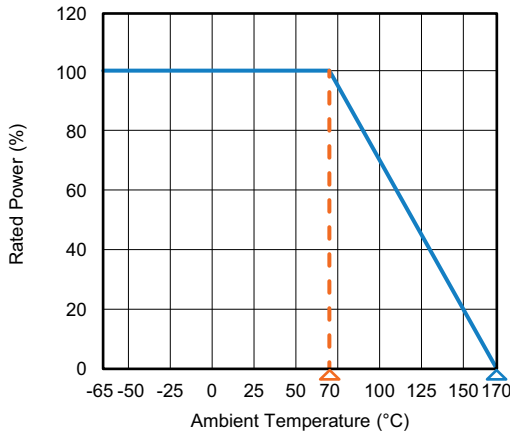


Notes

- E<sub>1</sub> and E<sub>2</sub>: voltage sense connections
- I<sub>1</sub> and I<sub>2</sub>: current connection



## DERATING



## PULSE CAPABILITY



[www.vishay.com/en/resistors/joulewizard/](http://www.vishay.com/en/resistors/joulewizard/)

| PERFORMANCE               |  |              |
|---------------------------|--|--------------|
| TEST                      | CONDITIONS OF TEST   | TEST LIMITS  |
| Thermal shock             | -55 °C to +150 °C, 1000 cycles, 15 min at each extreme   | ± (0.5 %) ΔR |
| Short time overload       | Refer to link for short time overload performance and pulse capability; <a href="http://www.vishay.com/en/resistors/power-metal-strip-calculator/">www.vishay.com/en/resistors/power-metal-strip-calculator/</a> | ± (0.5 %) ΔR |
| Low temperature operation | -65 °C for 45 min  | ± (0.5 %) ΔR |
| High temperature exposure | 1000 h at +170 °C  | ± (1.0 %) ΔR |
| Bias humidity             | +85 °C, 85 % RH, 10 % bias, 1000 h   | ± (0.5 %) ΔR |
| Mechanical shock          | 100 g's for 6 ms, 5 pulses   | ± (0.5 %) ΔR |
| Vibration                 | Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h   | ± (0.5 %) ΔR |
| Load life                 | 1000 h at +70 °C, 1.5 h "ON", 0.5 h "OFF"  | ± (1.0 %) ΔR |
| Resistance to solder heat | +260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence  | ± (0.5 %) ΔR |
| Moisture resistance       | MIL-STD-202, method 106, 0 % power, 7b not required  | ± (0.5 %) ΔR |

### Note

- Contact [ww2bresistors@vishay.com](mailto:ww2bresistors@vishay.com) for application specific performance requirements or qualification data. Typical performance is better than stated test limits

| PACKAGING    |                       |             |             |      |
|--------------|-----------------------|-------------|-------------|------|
| MODEL        | REEL                  |             |             |      |
|              | TAPE WIDTH            | DIAMETER    | PIECES/REEL | CODE |
| WSK1206...18 | 8 mm/embossed plastic | 178 mm / 7" | 4000        | EA   |

### Notes

- Embossed carrier tape per EIA-481
- Wirewound, Metal Film, and Power Metal Strip® Packaging ([www.vishay.com/doc?20051](http://www.vishay.com/doc?20051))

| LINKS TO RELATED DOCUMENTS                                |  |
|---|--|
| <b>SELECTOR GUIDE</b>                                     |  |
| Overview of Automotive Grade Products                     | <a href="http://www.vishay.com/doc?49924">www.vishay.com/doc?49924</a> |
| <b>TECHNICAL NOTES</b>                                    |  |
| SMD Current Sense: AEC-Q200 vs. Vishay Qualification      | <a href="http://www.vishay.com/doc?30416">www.vishay.com/doc?30416</a> |
| MIL-PRF vs. AEC-Q200: Do You Know What You Are Getting?   | <a href="http://www.vishay.com/doc?11000">www.vishay.com/doc?11000</a> |
| <b>WHITE PAPER</b>  |  |
| Thermal Management for Surface-Mount Devices              | <a href="http://www.vishay.com/doc?30380">www.vishay.com/doc?30380</a> |
| Temperature Coefficient of Resistance for Current Sensing | <a href="http://www.vishay.com/doc?30405">www.vishay.com/doc?30405</a> |



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