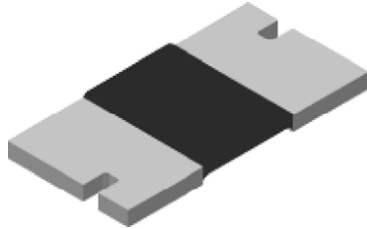


Power Metal Strip® Resistors, Low Value (Down to 0.0005 Ω), Surface-Mount, 4-Terminal



LINKS TO ADDITIONAL RESOURCES



FEATURES

- 4-terminal design allows for 1 % tolerance down to 0.0005 Ω and 0.5 % tolerance down to 0.001 Ω
- 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 extremely low resistance values (down to 0.0005 Ω)
- Sulfur resistance by construction that is unaffected by high sulfur environments
- 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
- AEC-Q200 qualified ⁽¹⁾
- Material categorization: for definitions of compliance please see 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
- ⁽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 | RESISTANCE VALUE RANGE Ω | | | WEIGHT (typical) g/1000 pieces |
| | | | TOL. ± 0.1 % | TOL. ± 0.5 % | TOL. ± 1.0 % | |
| WSK2512 | 2512 | 1.0 | 0.01 to 0.2 | 0.001 to 0.2 | 0.0005 to 0.2 | 63.6 |

Notes

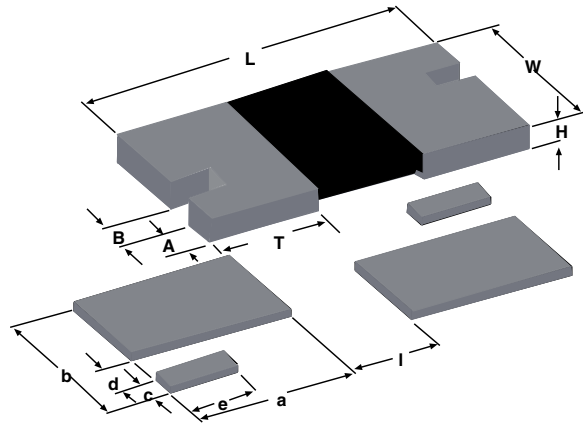
- Part marking: value, tolerance; due to resistor size limitations some resistance values will be marked with only the resistance value
- Qualified to AEC-Q200 rev. D

| GLOBAL PART NUMBER INFORMATION | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|--|---|---|--|--|
| Global Part Numbering Example: WSK25125L000FTA (visit www.vishay.net Vishay Dale parts numbering manual for all options) | | | | | | | | | | | | | | | | |
| W | S | K | 2 | 5 | 1 | 2 | 5 | L | 0 | 0 | 0 | F | T | A | | |
| GLOBAL MODEL WSK2512 | | | RESISTANCE VALUE ⁽¹⁾ L = mΩ * R = decimal 5L000 = 0.005 Ω R0100 = 0.01 Ω * Use "L" for resistance values < 0.01 Ω | | | TOLERANCE CODE B = ± 0.1 % D = ± 0.5 % F = ± 1.0 % | | | PACKAGING CODE ⁽²⁾ EA = lead (Pb)-free, tape / reel EK = lead (Pb)-free, bulk TA = tin / lead, tape / reel (R86) BA = tin / lead, bulk (B43) | | | SPECIAL (dash number) (up to 2 digits) From 1 to 99 as applicable | | | | |

Notes

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

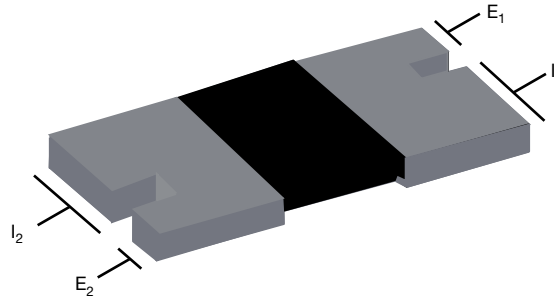
| TECHNICAL SPECIFICATIONS | | |
|-----------------------------|--------|--|
| PARAMETER | UNIT | RESISTOR CHARACTERISTICS |
| Temperature coefficient | ppm/°C | ± 350 for 0.5 mΩ to 0.99 mΩ, ± 250 for 0.001 Ω to 0.0029 Ω, ± 75 for 0.003 Ω to 0.0049 Ω, ± 35 for 0.005 Ω to 0.2 Ω |
| Operating temperature range | °C | -65 to +170 |
| Maximum working voltage | V | $(P \times R)^{1/2}$ |

DIMENSIONS in inches (millimeters)

Notes

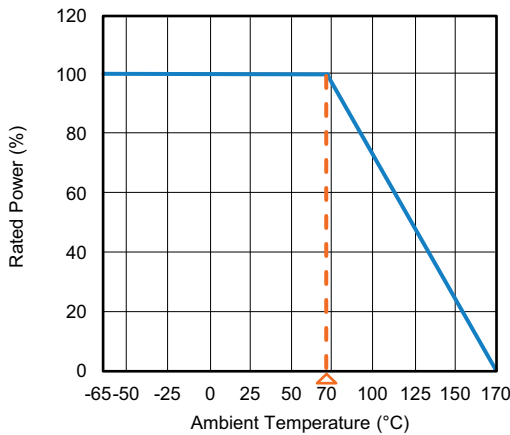
- 3D models available: www.vishay.com/doc?30323
- Surface-mount solder profile recommendations: www.vishay.com/doc?31052

| MODEL | DIMENSIONS | | | | | | |
|---------|-----------------------|---------------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|----------------------------------|
| | RESISTANCE RANGE Ω | L | W | H | T | A | B |
| WSK2512 | 0.0005 to 0.00099 | 0.250 ± 0.010 (6.35 ± 0.254) | 0.125 ± 0.010 (3.18 ± 0.254) | 0.025 ± 0.010 (0.635 ± 0.254) | 0.105 ± 0.010 [2.66 ± 0.254] | 0.030 ± 0.010 (0.762 ± 0.254) | 0.020 ± 0.010 (0.508 ± 0.254) |
| | 0.001 to 0.0049 | | | | 0.087 ± 0.010 (2.21 ± 0.254) | | |
| | 0.005 to 0.2 | | | | 0.047 ± 0.010 (1.19 ± 0.254) | | |

| MODEL | SOLDER PAD DIMENSIONS | | | | | | |
|---------|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | RESISTANCE RANGE Ω | a | b | c | d | e | l |
| WSK2512 | 0.0005 to 0.0049 | 0.130 (3.30) | 0.130 (3.30) | 0.030 (0.76) | 0.020 (0.51) | 0.067 (1.70) | 0.065 (1.65) |
| | 0.005 to 0.2 | 0.090 (2.29) | | | | | 0.145 (3.68) |

ELECTRICAL CONNECTION

Notes

- E1 and E2: voltage sense connections
- I1 and I2: current connection

DERATING

PULSE CAPABILITY


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 % + 0.0005 Ω |
| Short time overload | Refer to link for short time overload performance and pulse capability; www.vishay.com/en/resistors/power-metal-strip-calculator/ | ± 0.5 % + 0.0005 Ω |
| Low temperature operation | -65 °C for 24 h | ± 0.5 % + 0.0005 Ω |
| High temperature exposure | 1000 h at +170 °C | ± 1.0 % + 0.0005 Ω |
| Bias humidity | +85 °C, 85 % RH, 10 % bias, 1000 h | ± 0.5 % + 0.0005 Ω |
| Mechanical shock | 100 g's for 6 ms, 5 pulses | ± 0.5 % + 0.0005 Ω |
| Vibration | Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h | ± 0.5 % + 0.0005 Ω |
| Load life | 1000 h at rated power, +70 °C, 1.5 h "ON", 0.5 h "OFF" | ± 1.0 % + 0.0005 Ω |
| Resistance to solder heat | +260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence | ± 0.5 % + 0.0005 Ω |
| Moisture resistance | MIL-STD-202, method 106, 0 % power, 7a and 7b not required | ± 0.5 % + 0.0005 Ω |

Note

- Contact ww2bresistors@vishay.com for application specific performance requirements or qualification data. Typical performance is better than stated test limits



| PACKAGING (1) | | | | |
|---------------|--------------------------|-------------|---------------|------|
| MODEL | REEL | | | |
| | TAPE WIDTH | DIAMETER | PIECES / REEL | CODE |
| WSK2512 | 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

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



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