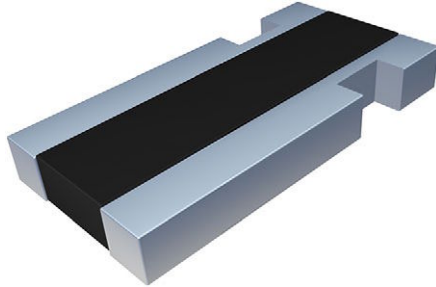


Power Metal Strip® Resistors, High Power, Surface-Mount, 4-Terminal



LINKS TO ADDITIONAL RESOURCES



FEATURES

- 4-terminal design
- 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
- Solid metal nickel-chrome and manganese-copper alloy resistive element with low TCR (< 20 ppm/°C)
- Sulfur resistance by construction that is unaffected by high sulfur environments
- Very low inductance 0.5 nH to 5 nH
- Low thermal EMF (< 3 μV/°C)
- AEC-Q200 qualified ⁽¹⁾
- PATENT(S): www.vishay.com/patents
- 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
- Follow link to Overview of Automotive Grade Products for more details: www.vishay.com/doc?49924
- “SMD Current Sense: AEC-Q200 vs. Vishay Qualification” technical note: www.vishay.com/doc?30416
- ⁽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 ⁽¹⁾ Ω | WEIGHT (typical) g/1000 pieces |
| WSKW0612 | 0612 | 1.0 | 1.0, 5.0 | 0.5m to 5m | 8.5 |

Notes

- “Thermal Management for Surface-Mount Devices” white paper: www.vishay.com/doc?30380
- ⁽¹⁾ Other values may be available, contact factory

| GLOBAL PART NUMBER INFORMATION | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|----------------------------|---|---|---|---|---|--|---|--|--|
| Global Part Numbering Example: WSKW0612L000FEA (visit www.vishay.net Vishay Dale parts numbering manual for all options) | | | | | | | | | | | | | | | | | |
| W | S | K | W | 0 | 6 | 1 | 2 | 1 | L | 0 | 0 | 0 | F | E | A | | |
| GLOBAL MODEL (8 digits) | | | RESISTANCE VALUE ⁽¹⁾ (5 digits) | | | | | TOLERANCE CODE (1 digit) | | PACKAGING CODE ⁽²⁾ (2 digits) | | | | SPECIAL ⁽³⁾ (up to 2 digits) | | | |
| WSKW0612 | | | L = mΩ L5000 = 0.0005 Ω 5L000 = 0.005 Ω | | | | | F = ± 1.0 % J = ± 5.0 % | | EA = lead (Pb)-free, tape / reel EK = lead (Pb)-free, bulk | | | | (dash number) 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) are non-standard packaging codes designating 1000 piece reels. These non-standard packaging codes are identical to our standard EA (lead (Pb)-free), except that they have a package quantity of 1000 pieces
- ⁽³⁾ Follow link for customization capabilities: www.vishay.com/doc?48163

PATENT(S): www.vishay.com/patents

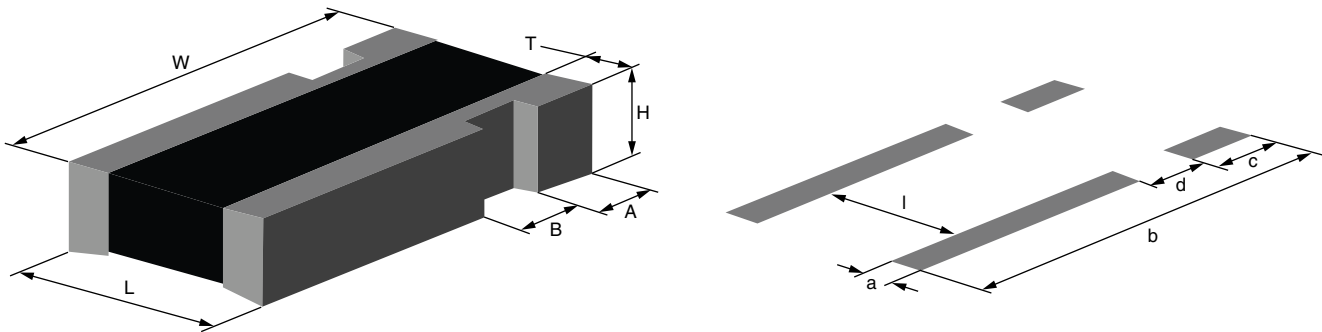
This Vishay product is protected by one or more United States and international patents.

| TECHNICAL SPECIFICATIONS | | |
|---|--------|----------------------------------|
| PARAMETER | UNIT | RESISTOR CHARACTERISTICS |
| Component temperature coefficient (including terminal) ⁽¹⁾ TCR measured from -55 °C to 150 °C | ppm/°C | -300 / +50 for 0.5 mΩ to 0.99 mΩ |
| | | ± 150 for 1 mΩ and 2 mΩ |
| | | ± 75 for 3 mΩ to 5 mΩ |
| Element TCR ⁽²⁾ | ppm/°C | < 20 |
| Operating temperature range | °C | -65 to +170 |
| Maximum working voltage ⁽³⁾ | V | $(P \times R)^{1/2}$ |

Notes

- TCR for Current Sensing (white paper): 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
- (3) Maximum working voltage - the WSL is not voltage sensitive, but is limited by power / energy dissipation and is also not ESD sensitive

DIMENSIONS



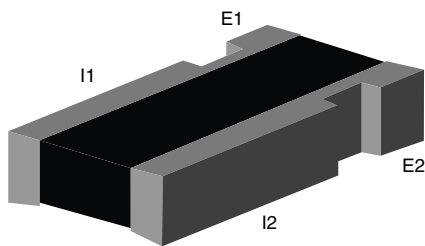
Note

- Surface-mount solder profile recommendations: www.vishay.com/doc?31052

| MODEL | DIMENSIONS in inches (millimeters) | | | | | |
|----------|------------------------------------|---------------------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|
| | L | W | H | T | A | B |
| WSKW0612 | 0.060 ± 0.010 (1.50 ± 0.254) | 0.120 ± 0.010 (3.05 ± 0.254) | 0.018 ± 0.010 (0.457 ± 0.254) | 0.015 ± 0.010 (0.381 ± 0.254) | 0.020 ± 0.005 (0.51 ± 0.127) | 0.020 ± 0.005 (0.51 ± 0.127) |

| MODEL | SOLDER PAD DIMENSIONS in inches (millimeters) | | | | |
|----------|---|--------------|---------------|---------------|--------------|
| | a | b | c | d | l |
| WSKW0612 | 0.040 (1.01) | 0.135 (3.43) | 0.030 (0.762) | 0.015 (0.381) | 0.030 (0.76) |

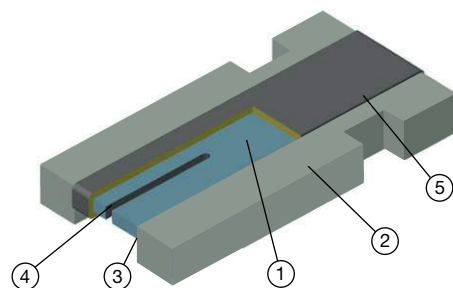
4 TERMINAL KELVIN CONNECTIONS



Notes

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

CONSTRUCTION OUTLINE

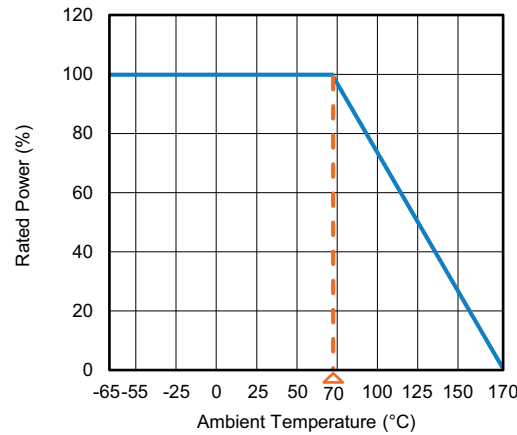


Notes

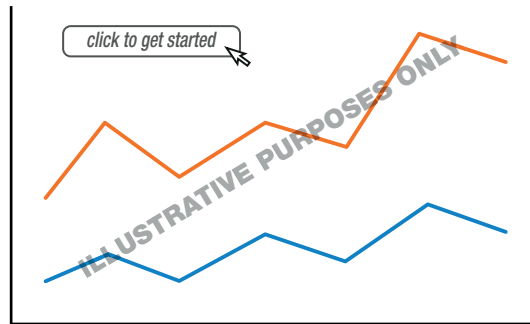
1. Resistive element: Mn-Cu
2. Terminal: solid copper and element with 100 % Sn finish
3. Terminal to element weld
4. Laser calibration
5. High temperature encapsulant: siliconized polyester coating material



DERATING



PULSE CAPABILITY



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

| PERFORMANCE | | | |
|---------------------------|--|-------------|--------------|
| TEST | CONDITIONS OF TEST | TEST LIMITS | TYPICAL |
| Thermal shock | -55 °C to +150 °C, 1000 cycles, 15 min at each extreme | ± 1.0 % | 0.20 % |
| Low temperature storage | -65 °C for 24 h | ± 0.5 % | 0.1 % (24 h) |
| High temperature exposure | 2000 h at +170 °C | ± 1.0 % | ± 0.2 % |
| Bias humidity | +85 °C, 85 % RH, 10 % bias, 1000 h | ± 0.5 % | 0.20 % |
| Mechanical shock | 100 g's for 6 ms, 5 pulses | ± 0.5 % | 0.01 % |
| Vibration | Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h | ± 0.5 % | 0.01 % |
| Load life | 2000 h at +70 °C, 1.5 h "ON", 0.5 h "OFF" | ± 1.0 % | -0.20 % |
| Resistance to solder heat | +260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence | ± 0.5 % | 0.05 % |
| Moisture resistance | MIL-STD-202, method 106, 0 % power, 7b not required | ± 1.0 % | 0.01 % |

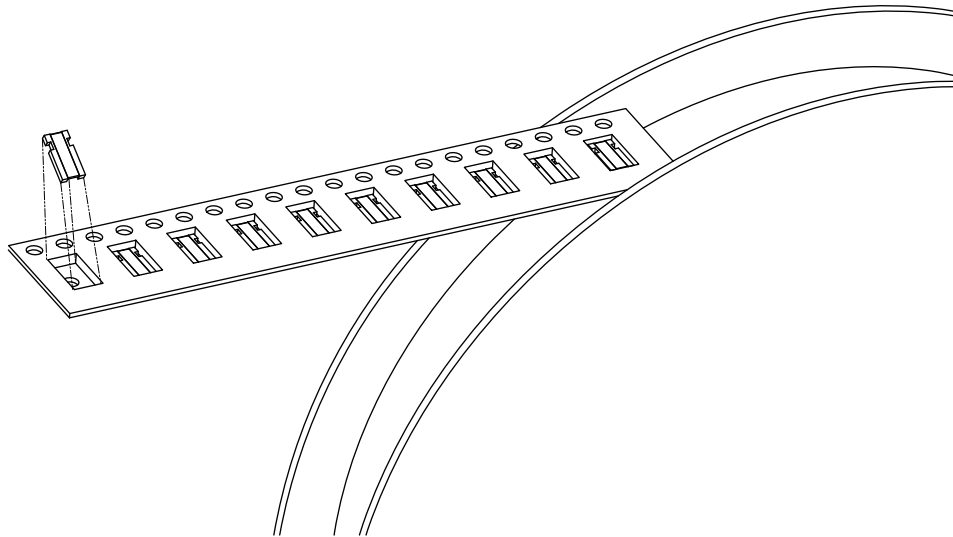


| PACKAGING (1) | | | | |
|---------------|-------------------------|-------------|-------------|------|
| MODEL | REEL | | | |
| | TAPE WIDTH | DIAMETER | PIECES/REEL | CODE |
| WSKW0612 | 8 mm / embossed plastic | 178 mm / 7" | 4000 | EA |

Notes

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

REEL ORIENTATION





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