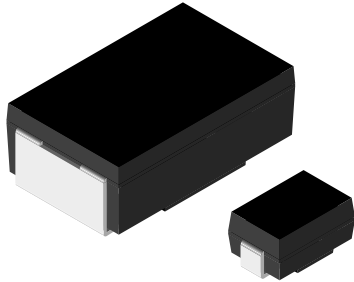


Metal Film Resistors, Power, Surface Mount


Note

* 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

FEATURES

- Molded encapsulation
- Wraparound compliant terminations eliminate risk of solder fillet cracking
- Solderable terminations
- Excellent stability at different environmental conditions
- High power ratings (up to 2 W)
- AEC-Q200 qualified ⁽¹⁾
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


Note

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

STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | SIZE INCH | POWER RATING $P_{70^\circ\text{C}}$ W | TOLERANCE $\pm \%$ | RESISTANCE RANGE Ω | TEMPERATURE COEFFICIENT ⁽²⁾ $\pm \text{ppm}/^\circ\text{C}$ | ENCAPSULATION |
|--------------|-----------|---|-----------------------|------------------------------|---|---------------|
| WSF2515 | 2515 | 1.0 | 0.5, 1, 5 | 10 to 10K | 100 | Thermoplastic |
| WSF4527 | 4527 | 2.0 ⁽³⁾ | 0.5, 1, 5 | 10 to 100K | 100 | Thermoplastic |

Notes

- WSF2012 has been obsoleted; PTN-DR-00013-2018 Rev. 0 - July 20, 2018. WSF2515 and WSF4527 sizes are **not** affected
- ⁽¹⁾ E96 values only
- ⁽²⁾ $\pm 50 \text{ ppm}/^\circ\text{C}$ and $\pm 25 \text{ ppm}/^\circ\text{C}$ available
- ⁽³⁾ Resistance values above 31.25 k Ω are limited to 250 V maximum working voltage

TECHNICAL SPECIFICATIONS

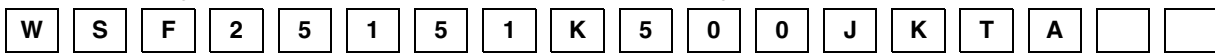
| PARAMETER | UNIT | WSF2515 | WSF4527 |
|---------------------------------|------------------|----------------------|-------------------------------------|
| Dielectric withstanding voltage | V_{AC} | > 500 | > 500 |
| Insulation resistance | Ω | | > 10 ⁹ |
| Operating temperature range | $^\circ\text{C}$ | -65 / +175 | -65 / +150 |
| Maximum working voltage | V | $(P \times R)^{1/2}$ | $(P \times R)^{1/2}$ ⁽¹⁾ |
| Weight/1000 pieces (typical) | g | 165 | 760 |

Notes

- Part marking: 1/2 W - DALE, value; 1 W - model, value, tolerance, date code; 2 W - DALE, model, value, tolerance, date code
- ⁽¹⁾ Resistance values above 31.25 k Ω are limited to 250 V maximum working voltage

GLOBAL PART NUMBER INFORMATION

Global Part Numbering Example: WSF25151K500JKTA (preferred numbering format)



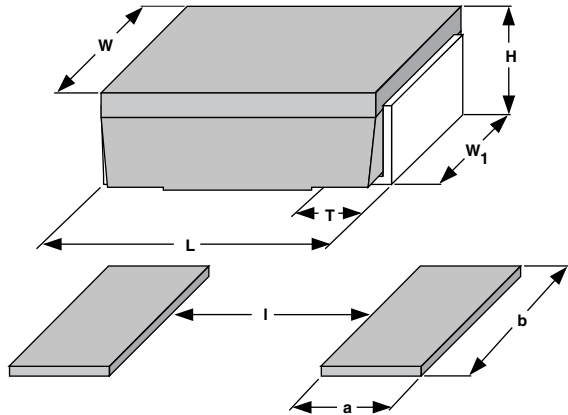
| GLOBAL MODEL | VALUE | TOLERANCE | TCR | PACKAGING | SPECIAL |
|--------------------|---|---|--|---|---|
| WSF2515 WSF4527 | R = decimal K = thousand 100R0 = 100 Ω 1K000 = 1 k Ω | D = $\pm 0.5 \%$ F = $\pm 1.0 \%$ G = $\pm 2.0 \%$ H = $\pm 3.0 \%$ J = $\pm 5.0 \%$ K = $\pm 10 \%$ | E = $\pm 25 \text{ ppm}/^\circ\text{C}$ H = $\pm 50 \text{ ppm}/^\circ\text{C}$ K = $\pm 100 \text{ ppm}/^\circ\text{C}$ | EA = lead (Pb)-free, tape / reel EK = lead (Pb)-free, bulk TA = tin / lead, tape / reel (R86) BA = tin / lead, tape / reel, bulk (B43) | (dash number) (up to 2 digits) from 1 to 99 as applicable |

Historical Part Numbering Example: WSF2515 1.5 k Ω 5% 100 ppm/ $^\circ\text{C}$ R86 (will continue to be accepted for tin/lead product only)

| | | | | |
|------------------|------------------|----------------|---------------------------|-----------|
| WSF2515 | 1.5 k Ω | 5% | 100 ppm/ $^\circ\text{C}$ | R86 |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | TEMPERATURE COEFFICIENT | PACKAGING |

Note

- WSF2012 has been obsoleted; PTN-DR-00013-2018 Rev. 0 - July 20, 2018. WSF2515 and WSF4527 sizes are **not** affected

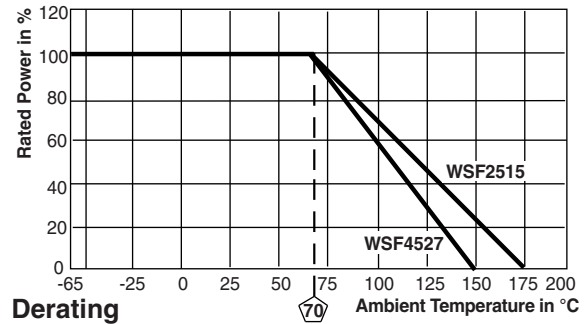
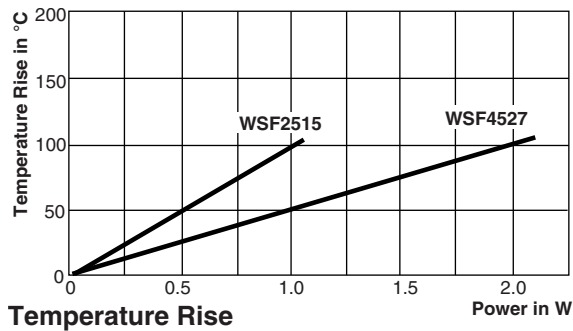
DIMENSIONS


| MODEL | DIMENSIONS in inches (millimeters) | | | | |
|---------|------------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| | L | H | T | W | W ₁ |
| WSF2515 | 0.250 ± 0.020 (6.35 ± 0.508) | 0.110 ± 0.015 (2.79 ± 0.381) | 0.045 ± 0.010 (1.14 ± 0.254) | 0.150 ± 0.005 (3.81 ± 0.127) | 0.098 ± 0.005 (2.49 ± 0.127) |
| WSF4527 | 0.455 ± 0.020 (11.56 ± 0.508) | 0.167 ± 0.010 (4.24 ± 0.254) | 0.100 ± 0.010 (2.54 ± 0.254) | 0.275 ± 0.005 (6.98 ± 0.127) | 0.215 ± 0.005 (5.46 ± 0.127) |

| MODEL | SOLDER PAD DIMENSIONS in inches (millimeters) | | |
|---------|---|--------------|--------------|
| | a | b | l |
| WSF2515 | 0.090 (2.29) | 0.115 (2.92) | 0.120 (3.05) |
| WSF4527 | 0.155 (3.94) | 0.230 (5.94) | 0.205 (5.21) |

Note

- WSF2012 has been obsoleted; PTN-DR-00013-2018 Rev. 0 - July 20, 2018. WSF2515 and WSF4527 sizes are **not** affected



| PERFORMANCE | | |
|---------------------------|--|-----------------------|
| TEST | CONDITIONS OF TEST | TEST LIMITS |
| Thermal shock | -55 °C to +150 °C, 1000 cycles, 15 min at each extreme | ± (1.0 % + 0.05 Ω) ΔR |
| Short time overload | 5 x rated power for 5 s | ± (0.5 % + 0.05 Ω) ΔR |
| Low temperature storage | -65 °C for 24 h | ± (0.5 % + 0.05 Ω) ΔR |
| High temperature exposure | 1000 h at +175 °C (150 °C for WSF4527) | ± (1.0 % + 0.05 Ω) ΔR |
| Bias humidity | +85 °C, 85 % RH, 10 % bias, 1000 h | ± (0.5 % + 0.05 Ω) ΔR |
| Moisture resistance | MIL-STD-202 method 106, 0 % power, 7a and 7b not required | ± (0.5 % + 0.05 Ω) ΔR |
| Mechanical shock | 100 g's for 6 ms, 5 pulses | ± (0.5 % + 0.05 Ω) ΔR |
| Vibration | Frequency varied 10 Hz to 500 Hz in one min, 3 directions, 9 h | ± (0.5 % + 0.05 Ω) ΔR |
| Load life | 1000 h at rated power, +70 °C, 1.5 h "ON", 0.5 h "OFF" | ± (1.0 % + 0.05 Ω) ΔR |
| Resistance to solder heat | +260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence | ± (0.5 % + 0.05 Ω) ΔR |

| PACKAGING | | | | |
|-----------|--------------------------|--------------|-------------|-------|
| MODEL | REEL | | | |
| | TAPE WIDTH | DIAMETER | PIECES/REEL | CODE |
| WSF2515 | 16 mm / embossed plastic | 330 mm / 13" | 2000 | EA/TA |
| WSF4527 | 24 mm / embossed plastic | 330 mm / 13" | 1200 | EA/TA |

Notes

- Embossed carrier tape per EIA-481
- WSF2012 has been obsoleted; PTN-DR-00013-2018 Rev. 0 - July 20, 2018. WSF2515 and WSF4527 sizes are **not** affected
- Additional packaging details at www.vishay.com/doc?20051



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