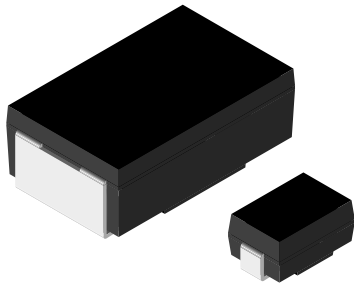


## Metal Film Resistors, Power, Surface Mount



### 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)


**RoHS\***  
COMPLIANT

### STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	SIZE INCH	POWER RATING $P_{70^\circ\text{C}}$ W	TOLERANCE $\pm \%$	RESISTANCE RANGE $\Omega$	ENCAPSULATION
WSF2012	2012	0.5	0.5, 1, 5	5.0 - 1.43K <sup>1)</sup>	Epoxy
WSF2515	2515	1.0	0.5, 1, 5	10 - 10K	Thermoplastic
WSF4527	4527	2.0 <sup>2)</sup>	0.5, 1, 5	10 - 100K	Thermoplastic

#### Notes

- 1) E96 values only
  - 2) Resistance values above 31 250  $\Omega$  are limited to 250 maximum working voltage
- Part Marking: 1/2 W - DALE, Value; 1 W - Model, Value, Tolerance, Date Code; 2 W - DALE, Model, Value, Tolerance, Date Code.

### TECHNICAL SPECIFICATIONS

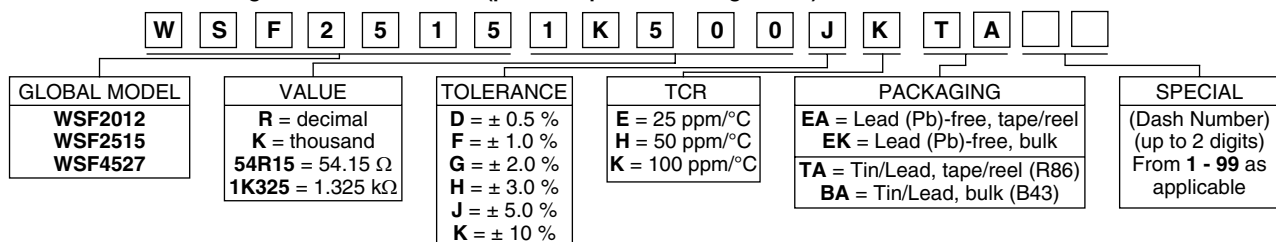
PARAMETER	UNIT	WSF2012	WSF2515	WSF4527
Temperature Coefficient	ppm/ $^\circ\text{C}$	$\pm 100$ <sup>3)</sup>	$\pm 100$ <sup>3)</sup>	$\pm 100$ <sup>3)</sup>
Dielectric Withstanding Voltage	$V_{AC}$	> 500	> 500	> 500
Insulation Resistance	$\Omega$	> 10 <sup>9</sup>		
Operating Temperature Range	$^\circ\text{C}$	- 65/+ 175	- 65/+ 175	- 65/+ 150
Maximum Working Voltage	V	$(P \times R)^{1/2}$	$(P \times R)^{1/2}$	$(P \times R)^{1/2}$ <sup>4)</sup>
Weight/1000 pieces (typical)	g	90	165	760

#### Notes

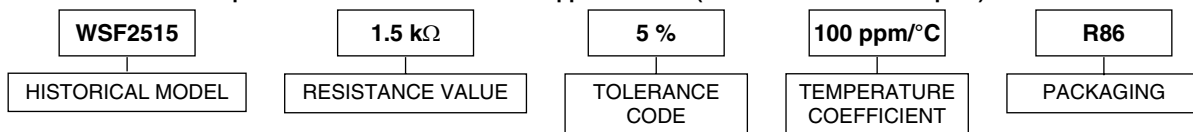
- 3)  $\pm 50$  ppm/ $^\circ\text{C}$  and  $\pm 25$  ppm/ $^\circ\text{C}$  available
- 4) Resistance values above 31 250  $\Omega$  are limited to 250 V maximum working voltage

### GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: WSF2515K500JKTA (preferred part numbering format)

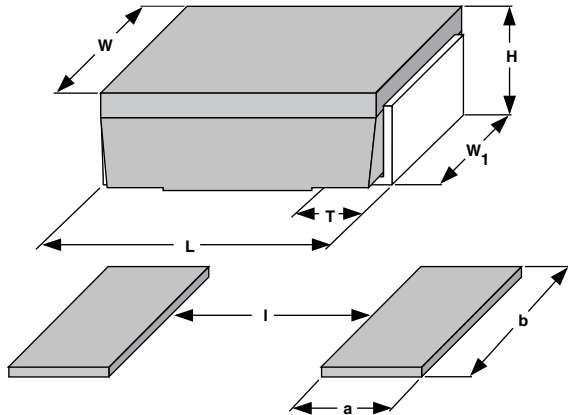


Historical Part Number example: WSF2515 1.5 k $\Omega$  5% 100 ppm/ $^\circ\text{C}$  R86 (will continue to be accepted)



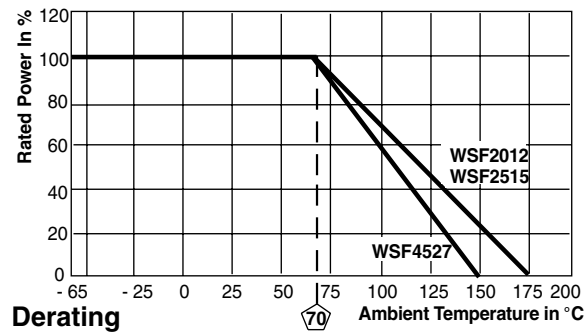
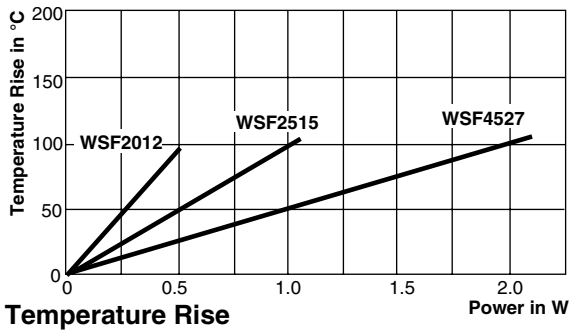
\* Pb containing terminations are not RoHS compliant, exemptions may apply

**DIMENSIONS**



MODEL	DIMENSIONS in inches [millimeters]				
	L	H	T	W	W <sub>1</sub>
WSF2012	0.200 ± 0.020 [5.08 ± 0.508]	0.096 ± 0.015 [2.44 ± 0.381]	0.040 ± 0.010 [1.02 ± 0.254]	0.125 ± 0.005 [3.18 ± 0.127]	0.050 ± 0.005 [1.27 ± 0.127]
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
WSF2012	0.085 [2.16]	0.070 [1.78]	0.080 [2.03]
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]



PERFORMANCE		
TEST	CONDITIONS OF TEST	TEST LIMITS
Thermal Shock	- 55 °C to + 150 °C, 1000 cycles, 15 minutes at each extreme	± (1.0 % + 0.05 Ω) ΔR
Short Time Overload	5 x rated power for 5 seconds	± (0.5 % + 0.05 Ω) ΔR
Low Temperature Storage	- 65 °C for 24 hours	± (0.5 % + 0.05 Ω) ΔR
High Temperature Exposure	1000 hours at + 175 °C (150 °C for WSF4527)	± (1.0 % + 0.05 Ω) ΔR
Bias Humidity	+ 85 °C, 85 % RH, 10 % Bias, 1000 hours	± (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 11 milliseconds, 5 pulses	± (0.5 % + 0.05 Ω) ΔR
Vibration	Frequency varied 10 to 500 Hz in one minute, 3 directions, 9 hours	± (0.5 % + 0.05 Ω) ΔR
Load Life	1000 hours at rated power, + 70 °C, 1.5 hours "ON", 0.5 hours "OFF"	± (1.0 % + 0.05 Ω) ΔR
Resistance to Solder heat	+ 260 °C solder, 10 - 12 second dwell, 25 mm/second emergence	± (0.5 % + 0.05 Ω) ΔR

PACKAGING				
MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSF2012	12 mm/Embossed Plastic	330 mm/13"	2000	EA/TA
WSF2515	16 mm/Embossed Plastic	330 mm/13"	2000	EA/TA
WSF4527	24 mm/Embossed Plastic	330 mm/13"	1200	EA/TA

Embossed Carrier Tape per EIA 481-1, 2.



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