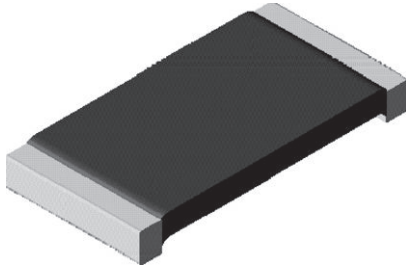




## Power Metal Strip® Resistors, Improved Stability (0.25 % and 0.5 %), Low Value, Surface-Mount



### LINKS TO ADDITIONAL RESOURCES



### FEATURES

- Current sensing in high-temperature (+125 °C) applications
- Greater stability with maximum resistance change of 0.25 % or 0.5 % through 2000 h workload
- 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 (0.01 Ω to 0.1 Ω)
- Solid metal nickel-chrome 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 2 nH
- Low thermal EMF (< 3 μV/°C)
- AEC-Q200 qualified <sup>(1)</sup>
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://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](http://www.vishay.com/doc?49924)
- “SMD Current Sense: AEC-Q200 vs. Vishay Qualification” technical note: [www.vishay.com/doc?30416](http://www.vishay.com/doc?30416)
- <sup>(1)</sup> Flame retardance test may not be applicable to some resistor technologies

STANDARD ELECTRICAL SPECIFICATIONS					
GLOBAL MODEL	SIZE	POWER RATING $P_{70\text{ }^\circ\text{C}}$ W	TOLERANCE ± %	RESISTANCE VALUE RANGE Ω	WEIGHT (typical) g/1000 pieces
WSLS2512	2512	1.0	0.5, 1.0, 5.0	0.01 to 0.1	63.6

### Notes

- Part marking: value, RTC / stability code
- “Thermal Management for Surface-Mount Devices” white paper: [www.vishay.com/doc?30380](http://www.vishay.com/doc?30380)

GLOBAL PART NUMBER INFORMATION																	
Global Part Numbering example: <b>WSLS2512R0100FHEA</b> (visit <a href="http://www.vishay.net">www.vishay.net</a> Vishay Dale parts numbering manual for all options)																	
W	S	L	S	2	5	1	2	R	0	1	0	0	F	H	E	A	
GLOBAL MODEL		RESISTANCE VALUE <sup>(1)</sup>			TOLERANCE CODE			RTC / STABILITY		PACKAGING CODE <sup>(2)</sup>			SPECIAL				
WSLS2512		R = decimal R0100 = 0.01 Ω			D = ± 0.5 % F = ± 1.0 % J = ± 5.0 %			G = 75 ppm, 0.25 % stability H = 75 ppm, 0.5 % stability		EA = lead (Pb)-free, tape / reel EK = lead (Pb)-free, bulk			(dash number) (single digit) from 1 to 9				

### Notes

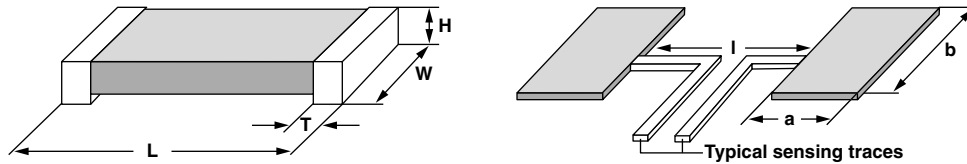
- Per PCN-DR-00009-2022-REV-0, WSL marking will be removed effective March 1st, 2023
- <sup>(1)</sup> WSL marking ([www.vishay.com/doc?30327](http://www.vishay.com/doc?30327)); WSL Decade Values ([www.vishay.com/doc?30117](http://www.vishay.com/doc?30117))
- <sup>(2)</sup> Packaging code: EB (lead (Pb)-free) 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	± 75
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**

- “Temperature Coefficient of Resistance for Current Sensing” white paper: [www.vishay.com/doc?30405](http://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; refer to item 1 in the construction illustration on the following page
- (3) Maximum working voltage - the WSL is not voltage sensitive, but is limited by power / energy dissipation and is also not ESD sensitive

**DIMENSIONS** in inches (millimeters)

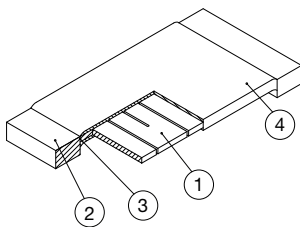


**Notes**

- 3D models available: [www.vishay.com/doc?30306](http://www.vishay.com/doc?30306)
- Surface-mount solder profile recommendations: [www.vishay.com/doc?31052](http://www.vishay.com/doc?31052)

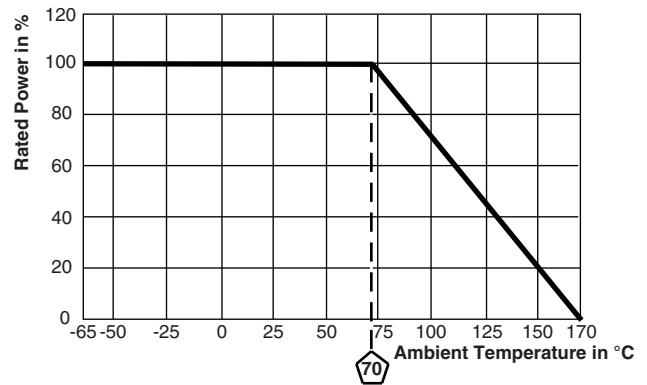
MODEL	DIMENSIONS				SOLDER PAD DIMENSIONS		
	L	W	H	T	a	b	l
WSLS2512	0.250 ± 0.010 (6.35 ± 0.254)	0.125 ± 0.010 (3.18 ± 0.254)	0.025 ± 0.010 (0.635 ± 0.254)	0.030 ± 0.010 (0.762 ± 0.254)	0.065 (1.65)	0.145 (3.68)	0.160 (4.06)

**WELDED CONSTRUCTION** 2512



- 1) Resistive element: solid metal nickel-chrome or manganese-copper alloy resistive element with low TCR (< 20 ppm/°C)
- 2) Plated terminal
- 3) Terminal / element weld
- 4) Silicone coating with ink print

**DERATING**



PERFORMANCE			
TEST	CONDITIONS OF TEST	TEST LIMITS	
		0.25 %	0.5 %
Thermal shock	-55 °C to +150 °C, 1000 cycles, 15 min at each extreme	± 0.5 % + 0.005 Ω	
Short time overload	5 x rated power for 5 s for WSL2512 size or smaller	± 0.5 % + 0.005 Ω	
Low temperature operation	-65 °C for 24h	± 0.5 % + 0.005 Ω	
High temperature exposure	1000 h at +170 °C	± 1.0 % + 0.005 Ω	
Bias humidity	+85 °C, 85 % RH, 10 % bias, 1000 h	± 0.5 % + 0.005 Ω	
Mechanical shock	100 g's for 6 ms, 5 pulses	± 0.5 % + 0.005 Ω	
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	± 0.5 % + 0.005 Ω	
Load life	2000 h at 70 °C, 1.5 h “ON”, 0.5 h “OFF”	± 0.25 %	± 0.5 %
Resistance to solder heat	+260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± 0.5 % + 0.005 Ω	
Moisture resistance	MIL-STD-202, method 106, 0 % power, 7b not required	± 0.5 % + 0.005 Ω	



PACKAGING (1)				
MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSLS2512	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](http://www.vishay.com/doc?20051)



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