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Vishay Dale

AUTOMOTIVE

Available

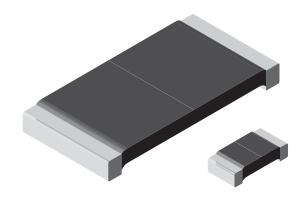
RoHS<sup>3</sup>

COMPLIANT

**GREEN** 

(5-2008)\*\*

# Power Metal Strip<sup>®</sup> Resistors, High Power (2 x Standard WSL), Low Value (Down to 0.0005 $\Omega$ ), Surface Mount



#### **FEATURES**

- Ideal for all types of current sensing, voltage division and pulse applications including switching and linear power supplies, instruments, power amplifiers
- Proprietary processing technique produces extremely low resistance values (down to  $0.0005~\Omega$ )
- Specially selected and stabilized materials allow for high power ratings (2 x standard WSL rating)
- All welded construction
- Solderable terminations
- Very low inductance 0.5 nH to 5 nH
- Excellent frequency response to 50 MHz
- Solid metal nickel-chrome or manganese-copper alloy resistive element with low TCR (< 20 ppm/°C)</li>
- Low thermal EMF (< 3 μV/°C)</li>
- AEC-Q200 qualified availablé
- Compliant to RoHS Directive 2002/95/EC

#### Notes

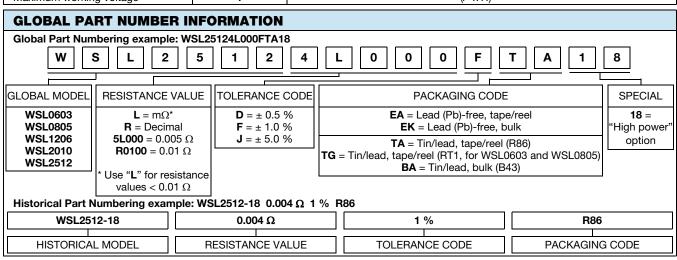
- \* Pb containing terminations are not RoHS compliant, exemptions may apply
- \*\* Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

STANDARD ELECTRICAL SPECIFICATIONS						
GLOBAL MODEL	SIZE	POWER RATING P <sub>70°C</sub> W	RESISTANCE VALUE RANGE $\Omega$		WEIGHT (typical)	
			Tol. ± 0.5 %	Tol. ± 1.0 %	g/1000 pieces	
WSL060318	0603	0.20	0.01 to 0.1	0.01 to 0.1	1.9	
WSL080518	0805	0.25	0.005 to 0.2	0.005 to 0.2	4.8	
WSL120618	1206	0.5	0.005 to 0.2	0.001 to 0.2	16.2	
WSL201018	2010	1.0	0.004 to 0.5	0.001 to 0.5	38.9	
WSL251218	2512	2.0	0.003 to 0.04	0.0005 to 0.04	63.6	

## Note

• Part marking: Value; tolerance: Due to resistor size limitations some resistors will be marked with only the resistance value.

TECHNICAL SPECIFICATIONS						
PARAMETER	UNIT	RESISTOR CHARACTERISTICS				
Temperature coefficient	ppm/°C	$\pm$ 400 for 0.5 m $\Omega$ to 0.99 m $\Omega$ , $\pm$ 275 for 1 m $\Omega$ to 2.9 m $\Omega$ , $\pm$ 150 for 3 m $\Omega$ to 4.9 m $\Omega$ $\pm$ 110 for 5 m $\Omega$ to 6.9 m $\Omega$ , $\pm$ 75 for 7 m $\Omega$ to 0.5 $\Omega$				
Operating temperature range	°C	- 65 to + 170				
Maximum working voltage	V	$(P \times R)^{1/2}$				

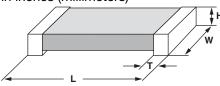


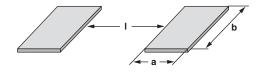
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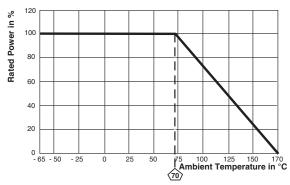
# **DIMENSIONS** in inches (millimeters)





MODEL	RESISTANCE RANGE (Ω)	DIMENSIONS				SOLDER PAD DIMENSIONS		
WODEL		L	W	Н	T	а	b	I
WSL060318	0.01 to 0.1	$0.060 \pm 0.010$ (1.52 ± 0.254)	$0.030 \pm 0.010$ (0.76 ± 0.254)	$0.013 \pm 0.010$ $(0.330 \pm 0.254)$	$0.015 \pm 0.005$ $(0.381 \pm 0.127)$	0.040 (1.01)	0.040 (1.01)	0.020 (0.50)
WSL080518	0.005 to 0.2	$0.080 \pm 0.010$ (2.03 ± 0.254)	0.050 ± 0.010 (1.27 ± 0.254)	$0.013 \pm 0.010$ $(0.330 \pm 0.254)$	$0.015 \pm 0.005$ $(0.381 \pm 0.127)$	0.040 (1.02)	0.050 (1.27)	0.020 (0.50)
WSL120618	0.001 to 0.0019	0.126 ± 0.010 (3.20 ± 0.254)	0.063 ± 0.010 (1.60 ± 0.254)	0.025 ± 0.010 (0.635 ± 0.254)	0.041 ± 0.010 (1.04 ± 0.254)	0.062 (1.57)	0.070 (1.78)	0.030 (0.76)
	0.002 to 0.0059				$0.025 \pm 0.010$ $(0.635 \pm 0.254)$			
	0.006 to 0.20				$0.020 \pm 0.010$ $(0.508 \pm 0.254)$			
WSL201018	0.001 to 0.0069	0.200 ± 0.010 (5.08 ± 0.254)	0.100 ± 0.010 (2.54 ± 0.254)	0.025 ± 0.010 (0.635 ± 0.254)	0.058 ± 0.010 (1.47 ± 0.254)	0.093 (2.36)	0.120 (3.05)	0.055 (1.40)
	0.007 to 0.5				$0.020 \pm 0.010$ $(0.508 \pm 0.254)$	0.055 (1.40)	0.120 (3.05)	0.130 (3.30)
WSL251218	0.0005 to 0.00099		0.125 ± 0.010	0.025 ± 0.010 (0.635 ± 0.254)	0.107 ± 0.010 (2.72 ± 0.254)	0.120 (3.05) 0.083 (2.11)		0.050
	0.001 to 0.0049				0.087 ± 0.010 (2.21 ± 0.254)		0.145	(1.27)
	0.005 to 0.0069		(3.18 ± 0.254)		0.047 ± 0.010 (1.19 ± 0.254)		(3.68)	0.125 (3.18)
	0.007 to 0.04				$0.030 \pm 0.010  (0.762 \pm 0.254)$	0.065 (1.65)		0.160 (4.06)

### **DERATING**



PERFORMANCE					
TEST	CONDITIONS OF TEST	TEST LIMITS			
Thermal shock	- 55 °C to + 150 °C, 1000 cycles, 15 min at each extreme	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$			
Short time overload	5 x rated power for 5 s	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$			
Low temperature storage	- 65 °C for 24 h	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$			
High temperature exposure	1000 h at + 170 °C	$\pm$ (1.0 % + 0.0005 $\Omega$ ) $\Delta R$			
Bias humidity	+ 85 °C, 85 % RH, 10 % bias, 1000 h	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$			
Mechanical shock	100 g's for 6 ms, 5 pulses	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$			
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$			
Load life	1000 h at rated power, + 70 °C, 1.5 h "ON", 0.5 h "OFF"	$\pm$ (1.0 % + 0.0005 $\Omega$ ) $\Delta R$			
Resistance to solder heat	+ 260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$			
Moisture resistance	MIL-STD-202, method 106, 0 % power, 7a and 7b not required	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$			

PACKAGING						
MODEL	REEL					
MODEL	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE		
WSL060318	8 mm/punched paper	178 mm/7"	5000	EA		
WSL080518	8 mm/punched paper	178 mm/7"	5000	EA		
WSL120618	8 mm/embossed plastic	178 mm/7"	4000	EA		
WSL201018	12 mm/embossed plastic	178 mm/7"	4000	EA		
WSL251218	12 mm/embossed plastic	178 mm/7"	2000	EA		

Note • Er Embossed Carrier Tape per EIA-481.





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