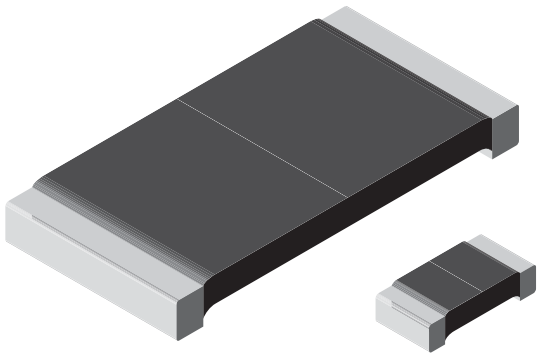
Power Metal Strip® Resistors, High Power (2 x Standard WSL), Low Value (Down to 0.0005 Ω), Surface Mount



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 Ω)
- 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)
- Low thermal EMF (< 3 µV/°C)
- AEC-Q200 qualified available
- Compliant to RoHS Directive 2002/95/EC

AUTOMOTIVE GRADE Available

Pb-free Available

e3

RoHS* COMPLIANT

GREEN (5-2008)** Available

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 $P_{70\,°C}$ W	RESISTANCE VALUE RANGE Ω		WEIGHT (typical) g/1000 pieces
			Tol. ± 0.5 %	Tol. ± 1.0 %	
WSL0603...18	0603	0.20	0.01 to 0.1	0.01 to 0.1	1.9
WSL0805...18	0805	0.25	0.005 to 0.2	0.005 to 0.2	4.8
WSL1206...18	1206	0.5	0.005 to 0.2	0.001 to 0.2	16.2
WSL2010...18	2010	1.0	0.004 to 0.5	0.001 to 0.5	38.9
WSL2512...18	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	± 400 for 0.5 mΩ to 0.99 mΩ, ± 275 for 1 mΩ to 2.9 mΩ, ± 150 for 3 mΩ to 4.9 mΩ ± 110 for 5 mΩ to 6.9 mΩ, ± 75 for 7 mΩ to 0.5 Ω
Operating temperature range	°C	- 65 to + 170
Maximum working voltage	V	$(P \times R)^{1/2}$

GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: WSL25124L000FTA18

W	S	L	2	5	1	2	4	L	0	0	0	F	T	A	1	8

GLOBAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING CODE	SPECIAL
WSL0603 **WSL0805** **WSL1206** **WSL2010** **WSL2512**	**L** = mΩ* **R** = Decimal **5L000** = 0.005 Ω **R0100** = 0.01 Ω * Use "**L**" for resistance values < 0.01 Ω	**D** = ± 0.5 % **F** = ± 1.0 % **J** = ± 5.0 %	**EA** = Lead (Pb)-free, tape/reel **EK** = Lead (Pb)-free, bulk **TA** = Tin/lead, tape/reel (R86) **TG** = Tin/lead, tape/reel (RT1, for WSL0603 and WSL0805) **BA** = Tin/lead, bulk (B43)	**18** = "High power" option

Historical Part Numbering example: WSL2512-18 0.004 Ω 1 % R86

WSL2512-18	0.004 Ω	1 %	R86
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING CODE

For technical questions, contact: ww2bresistors@vishay.com

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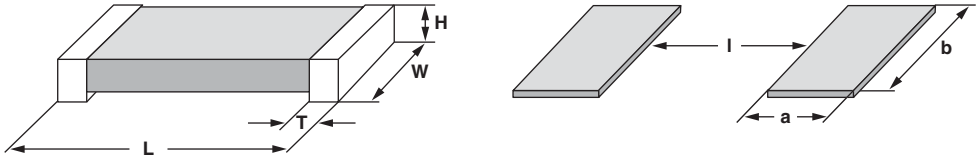
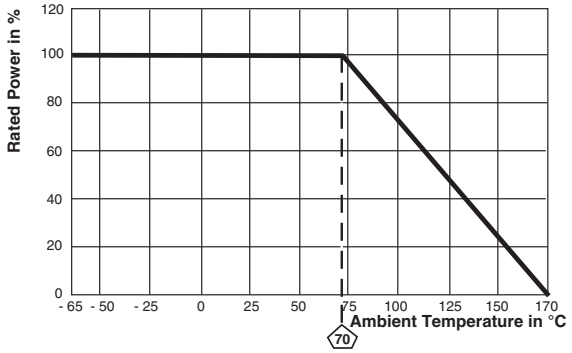
DIMENSIONS in inches (millimeters)



MODEL	RESISTANCE RANGE (Ω)	DIMENSIONS				SOLDER PAD DIMENSIONS		
		L	W	H	T	a	b	l
WSL0603...18	0.01 to 0.1	0.060 ± 0.010 (1.52 ± 0.254)	0.030 ± 0.010 (0.76 ± 0.254)	0.013 ± 0.010 (0.330 ± 0.254)	0.015 ± 0.005 (0.381 ± 0.127)	0.040 (1.01)	0.040 (1.01)	0.020 (0.50)
WSL0805...18	0.005 to 0.2	0.080 ± 0.010 (2.03 ± 0.254)	0.050 ± 0.010 (1.27 ± 0.254)	0.013 ± 0.010 (0.330 ± 0.254)	0.015 ± 0.005 (0.381 ± 0.127)	0.040 (1.02)	0.050 (1.27)	0.020 (0.50)
WSL1206...18	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 ± 0.010 (0.635 ± 0.254)			
	0.006 to 0.20				0.020 ± 0.010 (0.508 ± 0.254)			
WSL2010...18	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 ± 0.010 (0.508 ± 0.254)	0.055 (1.40)	0.120 (3.05)	0.130 (3.30)
WSL2512...18	0.0005 to 0.00099	0.250 ± 0.010 (6.35 ± 0.254)	0.125 ± 0.010 (3.18 ± 0.254)	0.025 ± 0.010 (0.635 ± 0.254)	0.107 ± 0.010 (2.72 ± 0.254)	0.120 (3.05)	0.145 (3.68)	0.050 (1.27)
	0.001 to 0.0049				0.087 ± 0.010 (2.21 ± 0.254)			
	0.005 to 0.0069				0.047 ± 0.010 (1.19 ± 0.254)	0.083 (2.11)		0.125 (3.18)
	0.007 to 0.04				0.030 ± 0.010 (0.762 ± 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	± (0.5 % + 0.0005 Ω) ΔR
Short time overload	5 x rated power for 5 s	± (0.5 % + 0.0005 Ω) ΔR
Low temperature storage	- 65 °C for 24 h	± (0.5 % + 0.0005 Ω) ΔR
High temperature exposure	1000 h at + 170 °C	± (1.0 % + 0.0005 Ω) ΔR
Bias humidity	+ 85 °C, 85 % RH, 10 % bias, 1000 h	± (0.5 % + 0.0005 Ω) ΔR
Mechanical shock	100 *g*'s for 6 ms, 5 pulses	± (0.5 % + 0.0005 Ω) ΔR
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	± (0.5 % + 0.0005 Ω) ΔR
Load life	1000 h at rated power, + 70 °C, 1.5 h "ON", 0.5 h "OFF"	± (1.0 % + 0.0005 Ω) ΔR
Resistance to solder heat	+ 260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± (0.5 % + 0.0005 Ω) ΔR
Moisture resistance	MIL-STD-202, method 106, 0 % power, 7a and 7b not required	± (0.5 % + 0.0005 Ω) ΔR

PACKAGING

MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSL0603...18	8 mm/punched paper	178 mm/7"	5000	EA
WSL0805...18	8 mm/punched paper	178 mm/7"	5000	EA
WSL1206...18	8 mm/embossed plastic	178 mm/7"	4000	EA
WSL2010...18	12 mm/embossed plastic	178 mm/7"	4000	EA
WSL2512...18	12 mm/embossed plastic	178 mm/7"	2000	EA

Note

- Embossed Carrier Tape per EIA-481.

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