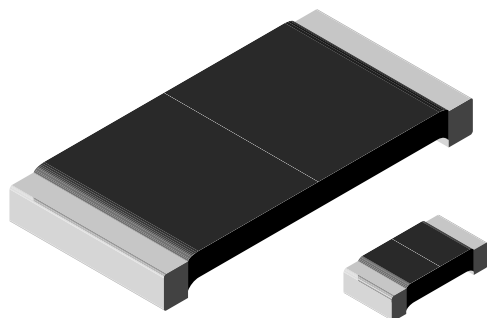


Power Metal Strip® Resistors, Low Value (down to 0.001 Ω), Surface Mount



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 0.001 Ω)
- All welded construction
- Solderable terminations
- Solid metal Nickel-Chrome or Manganese-Copper alloy resistive element with low TCR (< 20 ppm/°C)
- Very low inductance 0.5 nH to 5 nH
- Excellent frequency response to 50 MHz
- Low thermal EMF (< 3 μV/°C)
- Compliant to RoHS directive 2002/95/EC



RoHS*
COMPLIANT
GREEN
(5-2009)**
Available

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	POWER RATING $P_{70^{\circ}\text{C}}$ W	RESISTANCE RANGE Ω		WEIGHT (typical) g/1000 pieces
		± 0.5 %	± 1.0 %	
WSL0603	0.1	0.01 to 0.1	0.01 to 0.1	1.9
WSL0805	0.125	0.01 to 0.2	0.01 to 0.2	4.8
WSL1206	0.25	0.006 to 0.2	0.001 to 0.2	16.2
WSL2010	0.5	0.004 to 0.5	0.001 to 0.5	38.9
WSL2512	1.0 ⁽¹⁾	0.003 to 0.5	0.001 to 0.5	63.6
WSL2816	2.0	0.01 to 0.1	0.01 to 0.1	118

Notes

- ⁽¹⁾ For values above 0.1 Ω derate linearly to 80 % rated power at 0.5 Ω
- Part Marking: Value; Tolerance: Due to resistor size limitations some resistors will be marked with only the resistance value

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	WSL RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/°C	± 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

NEW GLOBAL PART NUMBERING: WSL25124L000FTA (PREFERRED PART NUMBERING FORMAT)

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

GLOBAL MODEL	VALUE	TOLERANCE CODE	PACKAGING	SPECIAL
WSL0603 WSL0805 WSL1206 WSL2010 WSL2512 WSL2816	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) BA = Tin/lead, bulk (B43)	(Dash Number) (up to 2 digits) From 1 to 99 as applicable

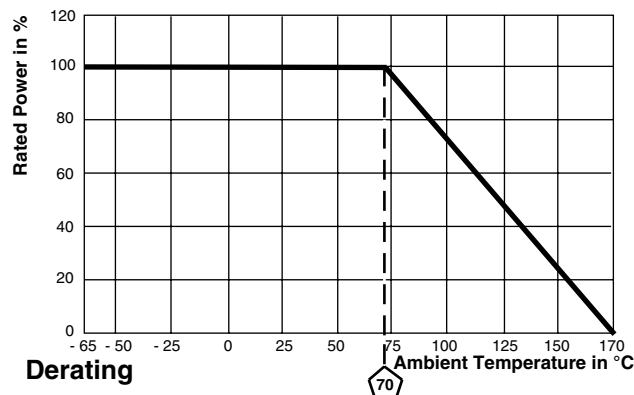
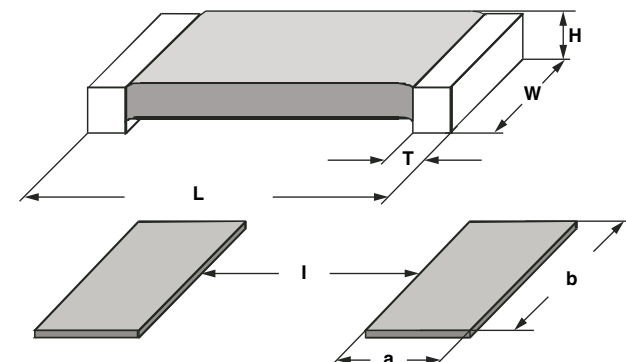
HISTORICAL PART NUMBER EXAMPLE: WSL2512 0.004 Ω 1 % R86 (WILL CONTINUE TO BE ACCEPTED)

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

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

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

DIMENSIONS



MODEL	DIMENSIONS in inches [millimeters]				
	RESISTANCE RANGE Ω	L	W	H	T
WSL0603	0.01 to 0.1	0.060 ± 0.010 [1.52 ± 0.254]	0.030 ± 0.010 [0.76 ± 0.254]	0.013 ± 0.005 [0.330 ± 0.127]	0.015 ± 0.010 [0.381 ± 0.254]
WSL0805	0.01 to 0.2	0.080 ± 0.010 [2.03 ± 0.254]	0.050 ± 0.010 [1.27 ± 0.254]	0.013 ± 0.005 [0.330 ± 0.127]	0.015 ± 0.010 [0.381 ± 0.254]
WSL1206	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]
	0.002 to 0.0059	0.126 ± 0.010 [3.20 ± 0.254]	0.063 ± 0.010 [1.60 ± 0.254]	0.025 ± 0.010 [0.635 ± 0.254]	0.025 ± 0.010 [0.635 ± 0.254]
	0.006 to 0.20	0.126 ± 0.010 [3.20 ± 0.254]	0.063 ± 0.010 [1.60 ± 0.254]	0.025 ± 0.010 [0.635 ± 0.254]	0.020 ± 0.010 [0.508 ± 0.254]
WSL2010	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]
	0.007 to 0.5	0.200 ± 0.010 [5.08 ± 0.254]	0.100 ± 0.010 [2.54 ± 0.254]	0.025 ± 0.010 [0.635 ± 0.254]	0.020 ± 0.010 [0.508 ± 0.254]
WSL2512	0.001 to 0.0049	0.250 ± 0.010 [6.35 ± 0.254]	0.125 ± 0.010 [3.18 ± 0.254]	0.025 ± 0.010 [0.635 ± 0.254]	0.087 ± 0.010 [2.21 ± 0.254]
	0.005 to 0.0069	0.250 ± 0.010 [6.35 ± 0.254]	0.125 ± 0.010 [3.18 ± 0.254]	0.025 ± 0.010 [0.635 ± 0.254]	0.047 ± 0.010 [1.19 ± 0.254]
	0.007 to 0.5	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]
WSL2816	0.01 to 0.1	0.280 ± 0.010 [7.1 ± 0.254]	0.165 ± 0.010 [4.2 ± 0.254]	0.025 ± 0.010 [0.635 ± 0.254]	0.062 ± 0.010 [1.57 ± 0.254]

MODEL	SOLDER PAD DIMENSIONS in inches [millimeters]			
	RESISTANCE RANGE Ω	a	b	l
WSL0603	0.01 to 0.1	0.040 [1.01]	0.040 [1.01]	0.020 [0.50]
WSL0805	0.01 to 0.2	0.040 [1.02]	0.050 [1.27]	0.020 [0.50]
WSL1206	0.001 to 0.2	0.062 [1.57]	0.070 [1.78]	0.030 [0.76]
WSL2010	0.001 to 0.0069	0.093 [2.36]	0.120 [3.05]	0.055 [1.40]
	0.007 to 0.5	0.055 [1.40]	0.120 [3.05]	0.130 [3.30]
WSL2512	0.001 to 0.0049	0.120 [3.05]	0.145 [3.68]	0.050 [1.27]
	0.005 to 0.0069	0.083 [2.11]	0.145 [3.68]	0.125 [3.18]
	0.007 to 0.5	0.065 [1.65]	0.145 [3.68]	0.160 [4.06]
WSL2816	0.01 to 0.1	0.096 [2.45]	0.185 [4.7]	0.125 [3.20]

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 Operation	- 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	8 mm/Punched Paper	178 mm/7"	5000	EA
WSL0805	8 mm/Punched Paper	178 mm/7"	5000	EA
WSL1206	8 mm/Embossed Plastic	178 mm/7"	4000	EA
WSL2010	12 mm/Embossed Plastic	178 mm/7"	4000	EA
WSL2512	12 mm/Embossed Plastic	178 mm/7"	2000	EA
WSL2816	16 mm/Embossed Plastic	330 mm/13"	5000	EA

Note

- Embossed carrier tape per EIA-481-1A



Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.