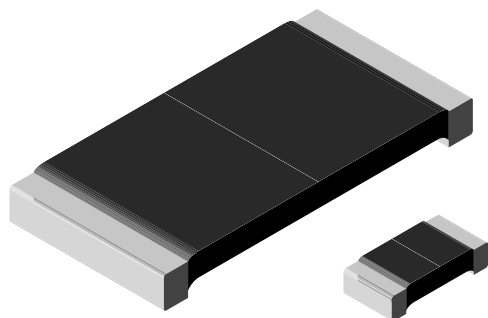


Power Metal Strip® Resistors, Low Value (down to 0.001 Ω), Surface Mount



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
- Solid metal Nickel-chrome or Manganese-copper alloy resistive element with low TCR (< 20 ppm/°C)
- Solderable terminations
- Very low inductance 0.5 nH to 5 nH
- Excellent frequency response to 50 MHz
- Low thermal EMF (< 3 μ V/°C)
- Lead (Pb)-free version is RoHS compliant



RoHS*
COMPLIANT

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	POWER RATING $P_{70^\circ\text{C}}$ W	RESISTANCE RANGE Ω		WEIGHT (typical) g/1000 pcs
		$\pm 0.5\%$	$\pm 1.0\%$	
WSL0603	0.1	0.015 - 0.1	0.015 - 0.1	1.9
WSL0805	0.125	0.01 - 0.2	0.01 - 0.2	4.8
WSL1206	0.25	0.006 - 0.2	0.002 - 0.2	16.2
WSL2010	0.5	0.004 - 0.5	0.001 - 0.5	38.9
WSL2512	1.0 ¹⁾	0.003 - 0.5	0.001 - 0.5	63.6
WSL2816	2.0	0.01 - 0.1	0.01 - 0.1	118

Notes

1. For values above 0.1 Ω derate linearly to 80 % rated power at 0.5 Ω

- Part Marking: DALE, 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 m Ω to 2.9 m Ω , ± 150 for 3 m Ω to 4.9 m Ω ± 110 for 5 m Ω to 6.9 m Ω , ± 75 for 7 m Ω to 0.5 Ω
Operating Temperature Range	°C	- 65/+ 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 MODE	VALUE	TOLERANCE CODE	PACKAGING	SPECIAL
WSL0603 WSL0805 WSL1206 WSL2010 WSL2512 WSL2816	L = Milliohm* R = Decimal 5L000 = 0.005 Ω R0100 = 0.01 Ω * use "L" for resistance values < 0.01 Ω	D = $\pm 0.5\%$ F = $\pm 1.0\%$ J = $\pm 5.0\%$	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 - 99 as applicable

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

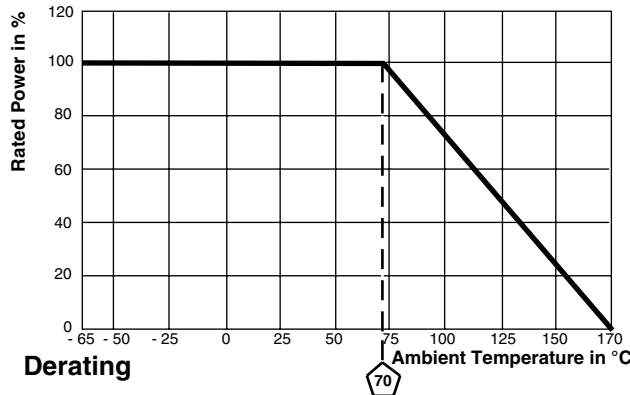
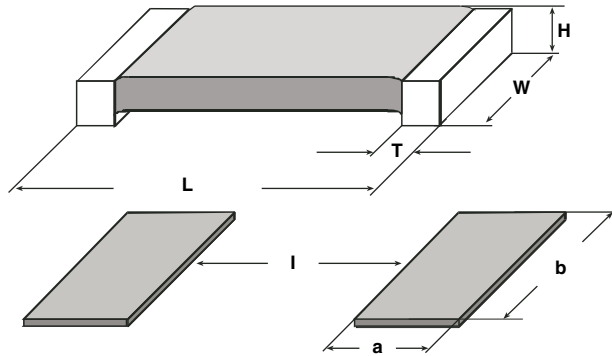
WSL2512	0.004 Ω	1 %	R86
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING

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

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

Vishay Dale

DIMENSIONS



MODEL	DIMENSIONS in inches [millimeters]				
	RESISTANCE RANGE Ω	L	W	H	T
WSL0603	0.015 - 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 - 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	0.002 - 0.2	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 - 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 - 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 - 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 - 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 - 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 - 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	0.015 - 0.1	0.040 [1.01]	0.040 [1.01]	0.020 [0.50]
WSL0805	0.01 - 0.2	0.040 [1.02]	0.050 [1.27]	0.020 [0.50]
WSL1206	0.002 - 0.2	0.050 [1.27]	0.070 [1.78]	0.055 [1.40]
WSL2010	0.001 - 0.0069	0.093 [2.36]	0.120 [3.05]	0.055 [1.40]
	0.007 - 0.5	0.055 [1.40]	0.120 [3.05]	0.130 [3.30]
WSL2512	0.001 - 0.0049	0.120 [3.05]	0.145 [3.68]	0.050 [1.27]
	0.005 - 0.0069	0.083 [2.11]	0.145 [3.68]	0.125 [3.18]
	0.007 - 0.5	0.065 [1.65]	0.145 [3.68]	0.160 [4.06]
WSL2816	0.01 - 0.1	0.130 [3.3]	0.190 [4.8]	0.040 [1.00]

PERFORMANCE

TEST	CONDITIONS OF TEST	TEST LIMITS
Thermal Shock	- 55 °C to + 150 °C, 1000 cycles, 15 minutes at each extreme	± (0.5 % + 0.0005 Ω) ΔR
Short Time Overload	5 x rated power for 5 seconds	± (0.5 % + 0.0005 Ω) ΔR
Low Temperature Operation	- 65 °C for 24 hours	± (0.5 % + 0.0005 Ω) ΔR
High Temperature Exposure	1000 hours at + 170 °C	± (1.0 % + 0.0005 Ω) ΔR
Bias Humidity	+ 85 °C, 85 % RH, 10 % Bias, 1000 hours	± (0.5 % + 0.0005 Ω) ΔR
Mechanical Shock	100 g's for 6 milliseconds, 5 pulses	± (0.5 % + 0.0005 Ω) ΔR
Vibration	Frequency varied 10 to 2000 Hz in one minute, 3 directions, 12 hours	± (0.5 % + 0.0005 Ω) ΔR
Load Life	1000 hours at rated power, + 70 °C, 1.5 hours "ON", 0.5 hours "OFF"	± (1.0 % + 0.0005 Ω) ΔR
Resistance to Solder Heat	+ 260 °C Solder, 10 - 12 second dwell, 25 mm/second 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



Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.