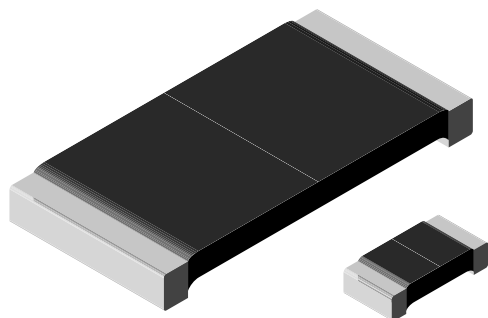


Power Metal Strip® Resistors, Low Value (down to 0.001 Ω), Surface Mount



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 μV/°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
		± 0.5 %	± 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 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/+ 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

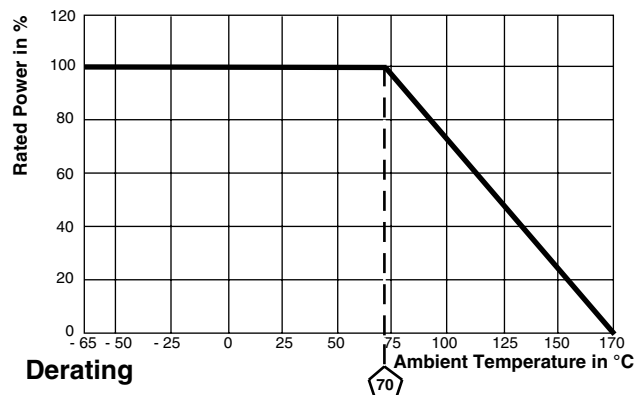
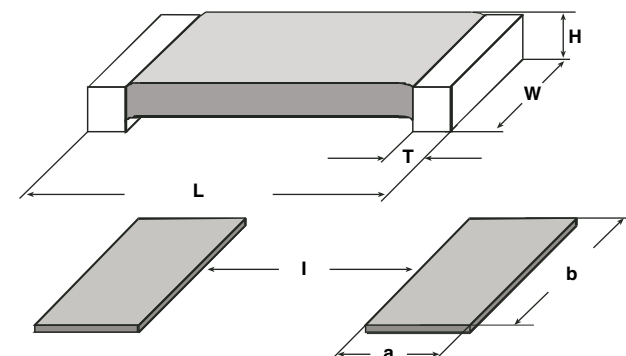
GLOBAL MODE	VALUE	TOLERANCE CODE	PACKAGING	SPECIAL
WSL0603 WSL0805 WSL1206 WSL2010 WSL2512 WSL2816	L = Milliohm* R = Decimal 5L000 = 0.005 Ω R0100 = 0.01 Ω * use "L" for resistance values < 0.01 Ω	D = ± 0.5 % F = ± 1.0 % J = ± 5.0 %	EA = Lead (Pb)-free, Tape/Reel EK = Lead (Pb)-free, Bulk TA = Tin/Lead, Tape/Reel (R86) TG = Tin/Lead, Tape/Reel (RT1) BA = Tin/Lead, Bulk (B43)	(Dash Number) (up to 2 digits) From 1 - 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

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



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