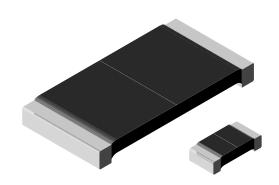
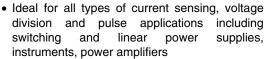
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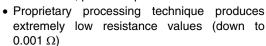
# Power Metal Strip® Resistors, Low Value (down to 0.001 $\Omega$ ), Surface Mount



### **FEATURES**









COMPLIANT

- All welded construction
- Solid metal Nickel-Chrome or Manganese-Copper alloy resistive element with low TCR (< 20 ppm/°C)</li>
- 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

STANDARD ELECTRICAL SPECIFICATIONS				
GLOBAL	POWER RATING  P <sub>70 °C</sub>	RESISTANCE RANGE $\Omega$		WEIGHT (typical)
MODEL	W	± 0.5 %	± 1.0 %	g/1000 pieces
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	0.001 - 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  $\Omega$  derate linearly to 80 % rated power at 0.5  $\Omega$ 

• 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	$\pm$ 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	$(P \times R)^{1/2}$	

#### **GLOBAL PART NUMBER INFORMATION** NEW GLOBAL PART NUMBERING: WSL25124L000FTA (PREFERRED PART NUMBERING FORMAT) W 2 5 2 0 F 8 O Т **GLOBAL MODEL** VALUE **TOLERANCE CODE SPECIAL PACKAGING** (Dash Number) WSL0603 $L = m\Omega'$ $D = \pm 0.5 \%$ EA = Lead (Pb)-free, tape/reel WSL0805 R = Decimal **EK** = Lead (Pb)-free, bulk (up to 2 digits) $F = \pm 1.0 \%$ WSL1206 From 1 to 99 as **5L000** = 0.005 $\Omega$ $J = \pm 5.0 \%$ TA = Tin/lead, tape/reel (R86) WSL2010 applicable **R0100** = $0.01 \Omega$ TG = Tin/lead, tape/reel (RT1) WSL2512 use "L" for resistance BA = Tin/lead, bulk (B43) WSL2816 values < 0.01 $\Omega$ HISTORICAL PART NUMBER EXAMPLE: WSL2512 $\,$ 0.004 $\Omega$ 1 % R86 (WILL CONTINUE TO BE ACCEPTED) WSL2512 $0.004 \Omega$ 1 % **R86** HISTORICAL MODEL RESISTANCE VALUE **TOLERANCE PACKAGING** CODE

<sup>\*</sup> Pb containing terminations are not RoHS compliant, exemptions may apply

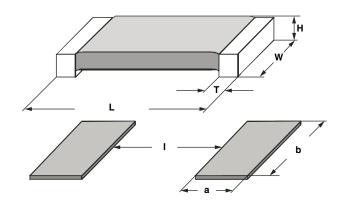


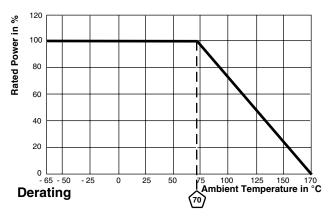


## Power Metal Strip<sup>®</sup> Resistors, Low Value (down to 0.001 $\Omega$ ), Surface Mount

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### **DIMENSIONS**





	DIMENSIONS in inches [millimeters]				
MODEL	$\begin{array}{c} \textbf{RESISTANCE} \\ \textbf{RANGE} \ \Omega \end{array}$	L	W	Н	Т
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]
WSLZUIU	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]
	0.001 - 0.0049	0.250 ± 0.010 [6.35 ± 0.254]	0.125 ± 0.010 [3.18 ± 0.254]	$0.025 \pm 0.010$ [0.635 ± 0.254]	0.087 ± 0.010 [2.21 ± 0.254]
WSL2512	0.005 - 0.0069	0.250 ± 0.010 [6.35 ± 0.254]	0.125 ± 0.010 [3.18 ± 0.254]	$0.025 \pm 0.010$ [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]

	SOLDER PAD DIMENSIONS in inches [millimeters]				
MODEL	$\begin{array}{c} \textbf{RESISTANCE} \\ \textbf{RANGE} \ \Omega \end{array}$	а	b	1	
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]	
WSLZUIU	0.007 - 0.5	0.055 [1.40]	0.120 [3.05]	0.130 [3.30]	
	0.001 - 0.0049	0.120 [3.05]	0.145 [3.68]	0.050 [1.27]	
WSL2512	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 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 Operation	- 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 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"	± (1.0 % + 0.0005 Ω) ΔR	
Resistance to Solder Heat	+ 260 °C Solder, 10 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

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<sup>•</sup> Embossed carrier tape per EIA-481-1A



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