

Power Metal Strip® Resistors, Very High Power (to 3 W), Low Value (down to 0.0005 Ω), Surface Mount



FEATURES

- Very high power to foot print size ratio (3 W in 2512, 2 W in 2010, 1 W in 1206, 0.5 W in 0805, and 0.4 W in 0603 package)
- Ideal for all types of current sensing and pulse applications including switching and linear power supplies, instruments, power amplifiers and shunts
- Proprietary processing technique produces extremely low resistance values (down to 0.0005 Ω)
- All welded construction
- 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)
- AEC-Q200 qualified available ⁽¹⁾
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE


RoHS COMPLIANT
 HALOGEN FREE
 GREEN (5-2008)

Note

⁽¹⁾ Flame retardance test may not be applicable to some resistor technologies

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	SIZE	POWER RATING $P_{70^{\circ}\text{C}}$ W	RESISTANCE VALUE RANGE Ω		WEIGHT (typical) g/1000 pieces
			Tol. ± 0.5 %	Tol. ± 1.0 %	
WSLP0603	0603	0.4	0.015 to 0.1	0.01 to 0.1	1.9
WSLP0805	0805	0.5	0.01 to 0.05	0.005 to 0.05	4.8
WSLP1206	1206	1.0	0.005 to 0.05	0.001 to 0.05	16.2
WSLP2010	2010	2.0	0.004 to 0.01	0.001 to 0.01	38.9
WSLP2512	2512	3.0	0.003 to 0.01	0.0005 to 0.01	63.6

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 0.1 Ω
Element TCR	ppm/°C	< 20
Operating temperature range	°C	-65 to +170
Maximum working voltage	V	$(P \times R)^{1/2}$

GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: WSLP1206R0100FEA

W	S	L	P	1	2	0	6	R	0	1	0	0	F	E	A		
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GLOBAL MODEL (8 digits)
WSLP0603 WSLP0805 WSLP1206 WSLP2010 WSLP2512

RESISTANCE VALUE (5 digits)
L = mΩ* R = Decimal 4L000 = 0.004 Ω R0100 = 0.01 Ω

* Use "L" for resistance values < 0.01 Ω

TOLERANCE CODE (1 digit)
D = ± 0.5 % F = ± 1.0 %

PACKAGING CODE (2 digits)
EA = Lead (Pb)-free, tape/reel EK = Lead (Pb)-free, bulk

SPECIAL (up to 2 digits)
Reserved for future specials

DIMENSIONS


MODEL	RESISTANCE RANGE (Ω)	DIMENSIONS in inches (millimeters)				SOLDER PAD DIMENSIONS in inches (millimeters)			
		L	W	H	T	a	b	l	
WSLP0603	0.01 to 0.1	0.060 \pm 0.010 (1.52 \pm 0.254)	0.030 \pm 0.010 (0.76 \pm 0.254)	0.013 \pm 0.010 (0.330 \pm 0.254)	0.015 \pm 0.010 (0.381 \pm 0.254)	0.040 (1.02)	0.040 (1.02)	0.020 (0.50)	
WSLP0805	0.01 to 0.05	0.080 \pm 0.010 (2.03 \pm 0.254)	0.050 \pm 0.010 (1.27 \pm 0.254)	0.013 \pm 0.010 (0.330 \pm 0.254)	0.015 \pm 0.010 (0.381 \pm 0.254)	0.040 (1.02)	0.050 (1.27)	0.020 (0.50)	
WSLP1206	0.001 to 0.0019	0.126 \pm 0.010 (3.20 \pm 0.254)	0.063 \pm 0.010 (1.60 \pm 0.254)	0.025 \pm 0.010 (0.635 \pm 0.254)	0.041 \pm 0.010 (1.04 \pm 0.254)	0.062 (1.57)	0.070 (1.78)	0.030 (0.76)	
	0.002 to 0.0059				0.025 \pm 0.010 (0.635 \pm 0.254)				
	0.006 to 0.050				0.020 \pm 0.010 (0.508 \pm 0.254)				
WSLP2010	0.001 to 0.0069	0.200 \pm 0.010 (5.08 \pm 0.254)	0.100 \pm 0.010 (2.54 \pm 0.254)	0.025 \pm 0.010 (0.635 \pm 0.254)	0.058 \pm 0.010 (1.47 \pm 0.254)	0.093 (2.36)	0.120 (3.05)	0.055 (1.40)	
	0.007 to 0.010				0.020 \pm 0.010 (0.508 \pm 0.254)			0.055 (1.40)	0.130 (3.30)
WSLP2512	0.0005 to 0.00099	0.250 \pm 0.010 (6.35 \pm 0.254)	0.125 \pm 0.010 (3.18 \pm 0.254)	0.025 \pm 0.010 (0.635 \pm 0.254)	0.107 \pm 0.010 (2.72 \pm 0.254)	0.120 (3.05)	0.145 (3.68)	0.050 (1.27)	
	0.001 to 0.0049				0.087 \pm 0.010 (2.21 \pm 0.254)			0.125 (3.18)	
	0.005 to 0.0069				0.047 \pm 0.010 (1.19 \pm 0.254)			0.083 (2.11)	0.160 (4.06)
	0.006 to 0.01				0.030 \pm 0.010 (0.762 \pm 0.254)			0.065 (1.65)	

DERATING


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 Ω) ΔR
Low temperature operation	-65 °C for 45 min	\pm (0.5 % + 0.0005 Ω) ΔR
High temperature exposure	1000 h at + 170 °C	\pm (1.0 % + 0.0005 Ω) ΔR
Bias humidity	+85 °C, 85 % RH, 10 % bias, 1000 h	\pm (0.5 % + 0.0005 Ω) ΔR
Mechanical shock	100 g's for 6 ms, 5 pulses	\pm (0.5 % + 0.0005 Ω) ΔR
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	\pm (0.5 % + 0.0005 Ω) ΔR
Load life	1000 h at 70 °C, 1.5 h "ON", 0.5 h "OFF"	\pm (1.0 % + 0.0005 Ω) ΔR
Resistance to solder heat	+260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	\pm (0.5 % + 0.0005 Ω) ΔR
Moisture resistance	MIL-STD-202, method 106, 0 % power, 7b not required	\pm (0.5 % + 0.0005 Ω) ΔR

PACKAGING				
MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSLP0603	8 mm/punched paper	178 mm/7"	5000	EA
WSLP0805	8 mm/punched paper	178 mm/7"	5000	EA
WSLP1206	8 mm/embossed plastic	178 mm/7"	4000	EA
WSLP2010	8 mm/embossed plastic	178 mm/7"	4000	EA
WSLP2512	12 mm/embossed plastic	178 mm/7"	2000	EA

Note

- Embossed Carrier Tape per EIA-481.



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