

Power Metal Strip® Resistors, Very High Power (to 10 W) Low Value (Down to 0.0003 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 0.0003 Ω
- Specially selected and stabilized materials allow for high power rating (to 10 W)
- All welded construction
- Solid metal iron-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⁾
- Compliant to RoHS Directive 2002/95/EC

AUTOMOTIVE GRADE Available



RoHS COMPLIANT

GREEN (5-2008)**

Note

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

STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | SIZE | POWER RATING $P_{70\text{ }^\circ\text{C}}$ W | TOLERANCE % | RESISTANCE VALUE RANGE Ω | RESISTANCE VALUES CURRENTLY AVAILABLE ⁽²⁾ Ω | WEIGHT (typical) g/1000 pieces |
|--------------|------|---|----------------|-----------------------------|---|-----------------------------------|
| WSLP3921 | 3921 | 5.0 | 1.0, 5.0 | 2m to 4m | 2m, 3m, 4m | 281 |
| WSLP3921 | 3921 | 9.0 | 1.0, 5.0 | 0.5m to 1m | 0.5m, 1m | 281 |
| WSLP5931 | 5931 | 7.0 | 1.0, 5.0 | 1m to 3m | 1m, 2m, 3m | 398 |
| WSLP5931 | 5931 | 10.0 | 1.0, 5.0 | 0.3m to 0.5m | 0.3m, 0.5m | 398 |

Note

⁽²⁾ Other values may be available, contact factory.

TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | RESISTOR CHARACTERISTICS |
|-----------------------------|--------|--|
| Temperature coefficient | ppm/°C | ± 175 for 0.3 mΩ and 0.5 mΩ, ± 75 for 1 mΩ to 4 mΩ |
| Operating temperature range | °C | - 65 to + 170 |
| Maximum continuous current | A | $(P/R)^{1/2}$ |

GLOBAL PART NUMBER INFORMATION

Global Part Numbering: WSLP39212L000FEA

W S L P 3 9 2 1 2 L 0 0 0 F E A

| GLOBAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING CODE | SPECIAL |
|----------------------|---------------------------|----------------------------|---|------------------------------|
| WSLP3921 WSLP5931 | L = mΩ 2L000 = 0.002 Ω | F = ± 1.0 % J = ± 5.0 % | EA = Lead (Pb)-free, tape/reel EK = Lead (Pb)-free, bulk | Reserved for future specials |

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



DIMENSIONS



| MODEL | DIMENSIONS in inches (millimeters) | | | | SOLDER PAD DIMENSIONS in inches (millimeters) | | |
|----------|------------------------------------|---------------------------------|----------------|---------------------------------|---|---------------------------------|--------------------------------|
| | L | W | H | T | d | b | I |
| WSLP3921 | 0.394 ± 0.010 (10.0 ± 0.254) | 0.205 ± 0.010 (5.20 ± 0.254) | 0.020 (0.5) | 0.080 ± 0.010 (2.00 ± 0.254) | 0.106 ± 0.010 (2.70 ± 0.254) | 0.244 ± 0.010 (6.20 ± 0.254) | 0.220 ± 0.005 (5.60 ± 0.13) |
| WSLP5931 | 0.591 ± 0.010 (15.0 ± 0.254) | 0.305 ± 0.010 (7.75 ± 0.254) | 0.020 (0.5) | 0.157 ± 0.010 (4.00 ± 0.254) | 0.205 ± 0.010 (5.20 ± 0.254) | 0.344 ± 0.010 (8.75 ± 0.254) | 0.220 ± 0.005 (5.60 ± 0.13) |

| GLOBAL MODEL | RESISTANCE VALUE (mΩ) | "D" THICKNESS (inches) | ELEMENT MATERIAL |
|--------------|-----------------------|------------------------|------------------|
| WSLP3921 | 0.5 | 0.0300 | Mn-Cu |
| WSLP3921 | 1.0 | 0.0150 | Mn-Cu |
| WSLP3921 | 2.0 | 0.0270 | Fe-Cr |
| WSLP3921 | 3.0 | 0.0170 | Fe-Cr |
| WSLP3921 | 4.0 | 0.0130 | Fe-Cr |
| WSLP5931 | 0.3 | 0.0300 | Mn-Cu |
| WSLP5931 | 0.5 | 0.0180 | Mn-Cu |
| WSLP5931 | 1.0 | 0.0330 | Fe-Cr |
| WSLP5931 | 2.0 | 0.0155 | Fe-Cr |
| WSLP5931 | 3.0 | 0.0105 | Fe-Cr |

DERATING



| PERFORMANCE | | |
|---------------------------|--|-------------|
| TEST | CONDITIONS OF TEST | TEST LIMITS |
| Thermal shock | - 55 °C to + 150 °C, 1000 cycles, 15 min at each extreme | ± 0.5 % ΔR |
| Short time overload | 5 x rated power for 5 s | ± 0.5 % ΔR |
| Low temperature operation | - 65 °C for 45 min | ± 0.5 % ΔR |
| High temperature storage | 1000 h at + 170 °C | ± 1.0 % ΔR |
| Bias humidity | + 85 °C, 85 % RH, 10 % bias, 1000 h | ± 0.5 % ΔR |
| Mechanical shock | 100 g's for 6 ms, 5 pulses | ± 0.5 % ΔR |
| Vibration | Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h | ± 0.5 % ΔR |
| Load life at 70 °C | 1000 h, 1.5 h "ON", 0.5 h "OFF" | ± 1.0 % ΔR |
| Resistance to solder heat | 260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence | ± 0.5 % ΔR |
| Moisture resistance | MIL-STD-202, method 106, 0 % power, 7b not required | ± 1.0 % ΔR |

| PACKAGING | | | | |
|-----------|------------------------|------------|-------------|------|
| MODEL | REEL | | | |
| | TAPE WIDTH | DIAMETER | PIECES/REEL | CODE |
| WSLP3921 | 16 mm/embossed plastic | 330 mm/13" | 3000 | EA |
| WSLP5931 | 24 mm/embossed plastic | 330 mm/13" | 1500 | EA |

Note

- Embossed Carrier Tape per EIA-481.



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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9