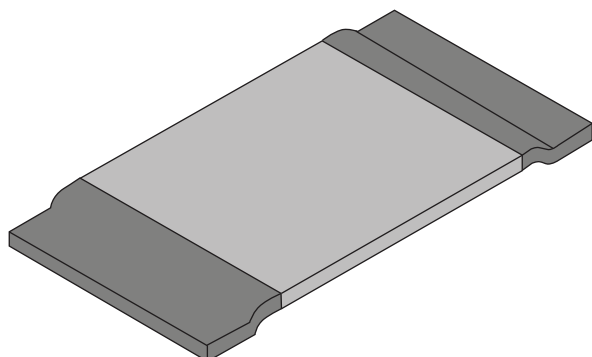




# Power Metal Strip® Resistors, Low Value, Surface Mount



## FEATURES

- Ideal for all types of current sensing, voltage division and pulse applications including switching and linear power supplies, instruments and power amplifiers
- Proprietary processing technique produces extremely low resistance values down to 0.002 Ω
- All welded construction
- Solid metal manganese-copper alloy resistive element with low TCR (< 20 ppm/°C)
- Solderable terminations
- Low thermal EMF (< 3 μV/°C)
- Very low inductance 0.5 nH to 5 nH
- Excellent frequency response to 50 MHz
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



RoHS\* Available

HALOGEN FREE Available

GREEN [5-2008] Available

## Note

\* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

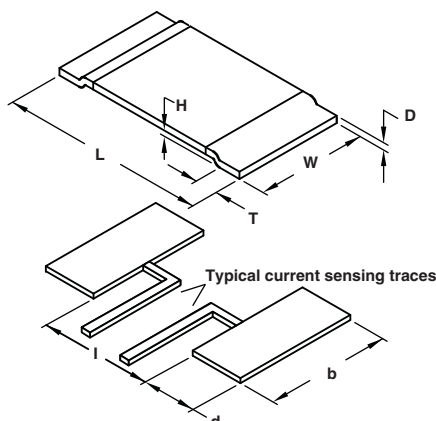
STANDARD ELECTRICAL SPECIFICATIONS					
GLOBAL MODEL	SIZE	POWER RATING $P_{70\text{ }^\circ\text{C}}$ W	TOLERANCE ± %	RESISTANCE VALUE RANGE Ω	WEIGHT (typical) g/1000 pieces
WSR2...3	4022	3.0	1.0	0.002 to 0.005	169

TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	RESISTOR CHARACTERISTICS
Temperature coefficient	ppm/°C	± 175
Inductance	nH	< 3
Operating temperature range	°C	-65 to +170
Maximum working voltage	V	$(P \times R)^{1/2}$

GLOBAL PART NUMBER INFORMATION				
Global Part Numbering example: WSR23L000FEA3				
W	S	R	2	3
L	0	0	0	F
E	A	3		
GLOBAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING CODE	SPECIAL
WSR2	L = mΩ 2L000 = 0.002 Ω 5L000 = 0.005 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) BA = tin / lead bulk (B43)	3 for special design with no mold compound



**DIMENSIONS** in inches (millimeters)

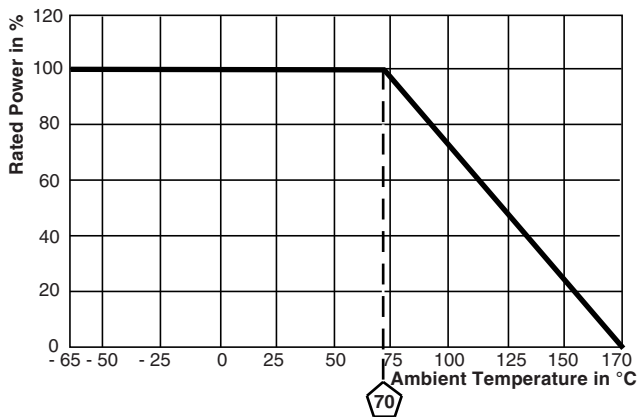


MODEL	DIMENSIONS				SOLDER PAD DIMENSIONS		
	L	W	H	T	a	b	l
WSR2...3	0.400 ± 0.010 (10.16 ± 0.254)	0.215 ± 0.010 (5.46 ± 0.254)	0.029 ± 0.005 (0.737 ± 0.127)	0.075 ± 0.010 (1.91 ± 0.254)	0.100 (2.540)	0.235 (5.969)	0.240 (5.080)

**Note**

(1) 0.1" x 0.1" area in the center of the resistor will be flat and free of any trim cuts to facilitate pick and place nozzle

**DERATING**



PERFORMANCE		
TEST	CONDITIONS OF TEST	TEST LIMITS
Thermal shock	-55 °C to +150 °C, 1000 cycles, 15 min at each extreme	(± 0.5 % + 0.0005 Ω) ΔR
Short time overload	5x rated power for 5 s	(± 1.0 % + 0.0005 Ω) ΔR
Low temperature operation	-65 °C for 24 h	(± 0.5 % + 0.0005 Ω) ΔR
High temperature exposure	1000 h at +170 °C	(± 1.0 % + 0.0005 Ω) ΔR
Bias humidity	+85 °C, 85 % RH, 10 % bias, 1000 h	(± 0.5 % + 0.0005 Ω) ΔR
Mechanical shock	100 g's for 6 ms, 5 pulses	(± 0.5 % + 0.0005 Ω) ΔR
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h	(± 0.5 % + 0.0005 Ω) ΔR
Load life	1000 h at 70 °C, 1.5 h "ON", 0.5 h "OFF"	(± 2.0 % + 0.0005 Ω) ΔR

PACKAGING				
MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSR2...3	16 mm/embossed plastic	330 mm/13"	5000	EA

**Note**

- Embossed Carrier Tape per EIA-481



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