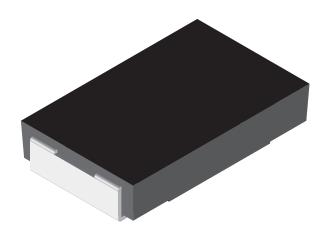
### Vishay Dale



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



### **FEATURES**

- Molded high temperature encapsulation
- 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  $0.001~\Omega$ )
- 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

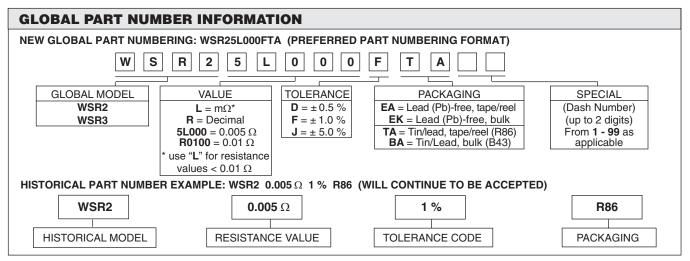
STANDARD ELECTRICAL SPECIFICATIONS				
GLOBAL MODEL	SIZE	POWER RATING  P <sub>70 °C</sub> W	RESISTANCE RANGE $\Omega$	
			± 0.5 %	± 1.0 %
WSR2	4527	2.0	0.01 - 1.0	0.001 - 1.0
WSR3	4527	3.0 (1)	0.01 - 0.2	0.001 - 0.2

### Note

(1) The WSR3 requires a minimum of 1050 sq. mil. circuit traces connecting to the recommended solder pad

• Part Marking: DALE, Model, Value, Tolerance, Date Code

TECHNICAL SPECIFICATIONS				
PARAMETER	UNIT	WSR2 & WSR3		
Temperature Coefficient	ppm/°C	$0.005 \Omega$ - $0.0099 \Omega$ = ± 110 $0.010 \Omega$ - 1.0 $\Omega$ = ± 75		
Dielectric Withstanding Voltage	V <sub>AC</sub>	> 500		
Insulation Resistance	Ω	> 10 <sup>9</sup>		
Operating Temperature Range	°C	- 65 to + 275		
Maximum Working Voltage	V	$(P \times R)^{1/2}$		
Weight/1000 pieces (typical)	g	440		



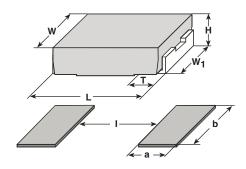
<sup>\*</sup> Pb containing terminations are not RoHS compliant, exemptions may apply



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

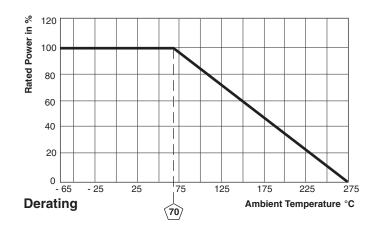
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### **DIMENSIONS**



MODEL	DIMENSIONS in inches [millimeters]				
MODEL	L	Н	Т	W	W <sub>1</sub>
WSR2	0.455 ± 0.032	0.095 ± 0.005	0.100 ± 0.010	0.275 ± 0.005	0.215 ± 0.005
WSR3	$[11.56 \pm 0.813]$	$[2.41 \pm 0.127]$	$[2.54 \pm 0.254]$	$[6.98 \pm 0.127]$	$[5.46 \pm 0.127]$

MODEL	SOLDER PAD DIMENSIONS in inches [millimeters]			
WIODEL	а	b	I	
WSR2	0.155	0.230	0.205	
WSR3	[3.94]	[5.84]	[5.21]	



PERFORMANCE				
TEST	CONDITIONS OF TEST	TEST LIMITS		
	CONDITIONS OF 1EST	WSR2	WSR3	
Thermal Shock	- 55 °C to + 150 °C, 1000 cycles, 15 min at each extreme	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$	$\pm$ (0.5 % + 0.0005 $\Omega$ ) $\Delta R$	
Short Time Overload	WSR2: 5 x rated power for 5 s WSR3: 4 x rated power for 5 s	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$	$\pm (2.0 \% + 0.0005 \Omega) \Delta R$	
Low Temperature Storage	- 65 °C for 24 h	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$	
High Temperature Exposure	1000 h at + 275 °C	± (1.0 % + 0.0005 Ω) ΔR	$\pm (1.0 \% + 0.0005 \Omega) \Delta R$	
Bias Humidity	+ 85 °C, 85 % RH, 10 % Bias, 1000 h	$\pm$ (0.5 % + 0.0005 $\Omega$ ) $\Delta R$	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$	
Mechanical Shock	100 g's for 6 ms, 5 pulses	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$	
Vibration	Frequency varied 10 to 2000 Hz in 1 min, 3 directions, 12 h	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$	
Load Life	1000 h at rated power, + 70 °C, 1.5 h "ON", 0.5 h "OFF"	$\pm (1.0 \% + 0.0005 \Omega) \Delta R$	$\pm$ (2.0 % + 0.0005 $\Omega$ ) $\Delta R$	
Resistance to Solder Heat	+ 260 °C Solder, 10 - 12 s dwell, 25 mm/s emergence	± (0.5 % + 0.0005 Ω) ΔR	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$	
Moisture Resistance	MIL-STD-202 Method 106, 0 % power, 7a and 7b not required	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$	$\pm (0.5 \% + 0.0005 \Omega) \Delta R$	

PACKAGING				
MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSR2 and WSR3	24 mm/Embossed Plastic	330 mm/13"	1500	EA

### Note

• Embossed Carrier Tape per EIA-481-2



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