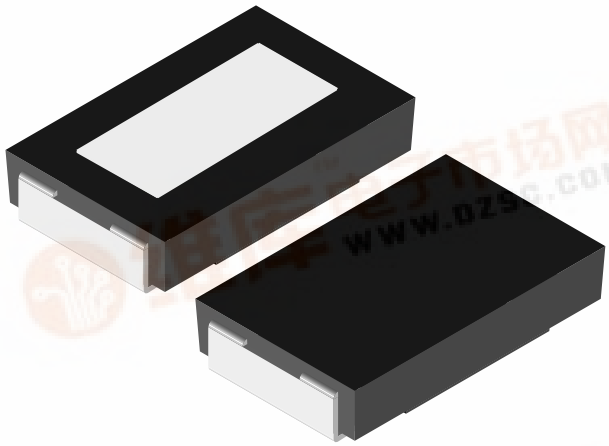
Power Metal Strip® Resistors, High Power (5 W), Low Value (down to 0.001 Ω), Surface Mount



FEATURES

- Molded high temperature encapsulation
- Improved thermal management incorporated into design
- Ideal for all types of current sensing, voltage division and pulse applications including switching and linear power supplies, instrumentation, power amplifiers
- Proprietary processing technique produces extremely low resistance values (down to 0.001 Ω)
- All welded construction
- Solid metal Nickel-Chrome or Manganese-Copper alloy resistive element with low TCR (< 20 ppm/°C)
- 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
- Integral heat sink not utilized for resistance values less than 0.0075 Ω

Pb-free Available

RoHS* COMPLIANT

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	SIZE	POWER RATING $P_{70\,°C}$ W	RESISTANCE RANGE Ω	
			± 0.5 %	± 1 %
WSR5	4527	5.0 (1)	0.01 - 0.3	0.001 - 0.3

Note

(1) The WSR5 is rated at 5 W with terminal temperature maintained ≤ 120 °C

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

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	WSR5
Temperature Coefficient	ppm/°C	0.0075 Ω to 0.0099 Ω = ± 110 0.01 Ω to 0.3 Ω = ± 75
Dielectric Withstanding Voltage	V_{AC}	> 500
Insulation Resistance	Ω	> 10^9
Operating Temperature Range	°C	- 65 to + 275
Maximum Working Voltage	V	$(P \times R)^{1/2}$
Weight/1000 pieces	g	476

GLOBAL PART NUMBER INFORMATION

NEW GLOBAL PART NUMBERING: WSR5R0100FTA (PREFERRED PART NUMBERING FORMAT)

W	S	R	5	R	0	1	0	0	F	T	A		

GLOBAL MODEL	VALUE	TOLERANCE	PACKAGING	SPECIAL
WSR5	**L** = mΩ* **R** = Decimal **5L000** = 0.005 Ω **R0100** = 0.01 Ω * use "**L**" for resistance values < 0.01 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)	(Dash Number) (up to 2 digits) From **1 - 99** as applicable

HISTORICAL PART NUMBER EXAMPLE: WSR5 0.01 Ω 1 % R86 (WILL CONTINUE TO BE ACCEPTED)

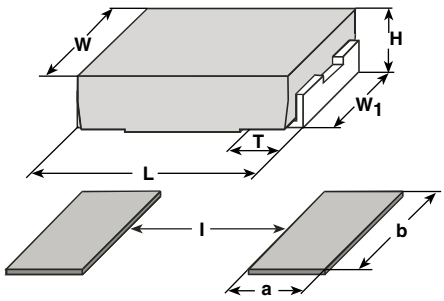
WSR5	0.01 Ω	1 %	R86
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING

* Pb containing terminations are not RoHS compliant, exemptions may apply

Power Metal Strip® Resistors, High Power (5 W), Low Value (down to 0.001 Ω), Surface Mount

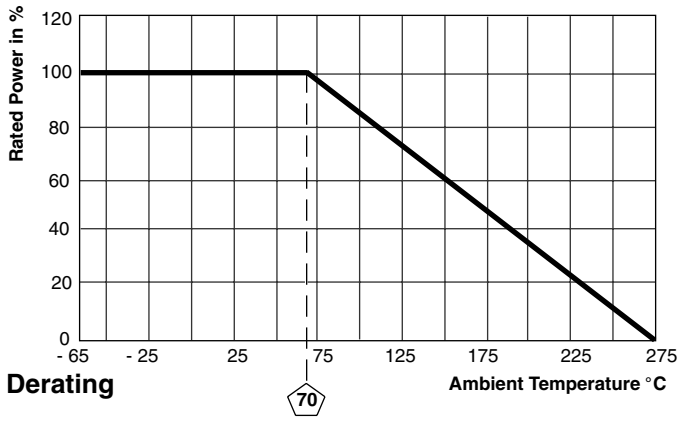
Vishay Dale

DIMENSIONS



MODEL	DIMENSIONS in inches [millimeters]				
	L	H	T	W	W_1
WSR5	0.455 ± 0.032 [11.56 ± 0.813]	0.095 ± 0.005 [2.41 ± 0.127]	0.100 ± 0.010 [2.54 ± 0.254]	0.275 ± 0.005 [6.98 ± 0.127]	0.215 ± 0.005 [5.46 ± 0.127]

MODEL	SOLDER PAD DIMENSIONS in inches [millimeters]		
	a	b	l
WSR5	0.155 [3.94]	0.230 [5.84]	0.205 [5.21]



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) Δ*R*
Short Time Overload	3 x rated power for 5 s	± (2.0 % + 0.0005 Ω) Δ*R*
Low Temperature Storage	- 65 °C for 24 h	± (0.5 % + 0.0005 Ω) Δ*R*
High Temperature Exposure	1000 h at + 275 °C	± (1.0 % + 0.0005 Ω) Δ*R*
Bias Humidity	+ 85 °C, 85 % RH, 10 % Bias, 1000 h	± (0.5 % + 0.0005 Ω) Δ*R*
Mechanical Shock	100 g's for 6 ms, 5 pulses	± (0.5 % + 0.0005 Ω) Δ*R*
Vibration	Frequency varied 10 to 2000 Hz in 1 min, 3 directions, 12 h	± (0.5 % + 0.0005 Ω) Δ*R*
Load Life	1000 h at 70 °C	± (2.0 % + 0.0005 Ω) Δ*R*
Resistance to Solder Heat	260 ± 3 °C 10 - 12 s dwell, 25 mm/s emergence	± (0.5 % + 0.0005 Ω) Δ*R*
Moisture Resistance	MIL-STD-202, Method 106, 0 % power, 7a and 7b not required	± (0.5 % + 0.0005 Ω) Δ*R*

PACKAGING				
MODEL	REEL			
	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
WSR5	24 mm/Embossed Plastic	330 mm/13"	1500	EA

Note

- Embossed Carrier Tape per EIA-481-2

Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.