



APPROVAL SHEET

RS & RSF

Series mold SMT type
Wire wound resistors

PRODUCE	CHECK AND APPROVED	ACCEPTED BY
EM	CE	HONORABLE CUSTOMER
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RS SERIES

MOULD TYPE WIRE WOUND RESISTORS

SURFACE MOUNT TYPE

FEATURES

- Advanced American alloy technology
- Very low TCR: lower than $\pm 25 \text{ ppm}/^\circ\text{C}$.
- Tolerance up to $\pm 0.25\%$
- Excellent overall stability: Class 0.25
- Very low noise and voltage coefficient
- Non-inductance type RSF series is available
- Perfect pulse loading capability
- Certificate number of [UL94 V-0](#) for encapsulation materials is 20180922-E302746

APPLICATIONS

- Current sensor for test and measuring instruments
- Power supply with high reliability
- Components burn-in devices
- Pulse load and in rush current protector
- Medical equipment
- Military electronics





1. PART NUMBER: Part number of the resistor is identified by the series name, power rating, tolerance, temperature coefficient, packing type and resistance value.

Example:

<u>RSF</u>	<u>3</u>	<u>J</u>	<u>1</u>	<u>T</u>	<u>500</u>
Series	Power	Tolerance	Temperature	Packing	Resistance
Name	Rating		Coefficient	Style	Value

(1) Series name: RS SERIES WIRE WOUND RESISTORS

RSF SERIES NON-INDUCTANCE WIREWOUND RESISTORS

(2) Power Rating: 1 = 1W; 2 = 2W; 3 = 3W; 5 = 5W

(3) Tolerance: D=±0.50%; F=±1.0%; G=±2.0%; J=±5.0%;

(4) T.C.R.: 3=±25ppm/°C; 2=±50ppm/°C; 1=±100ppm/°C; 0=±250ppm/°C

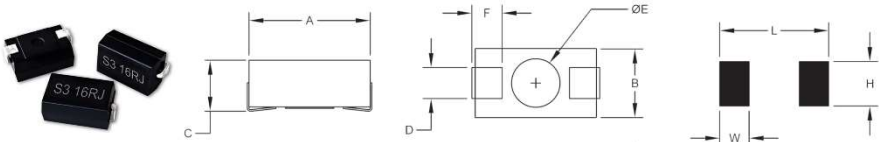

(5) Packaging Type: T=Tape

(6) Resistance Value: 1R00=1Ω, 10R0=10Ω, 1000=100Ω, 1001=1kΩ, 1002=10kΩ

Resistance Value for J Tol.: 1R0=1Ω, 100=10Ω, 101=100Ω, 102=1kΩ



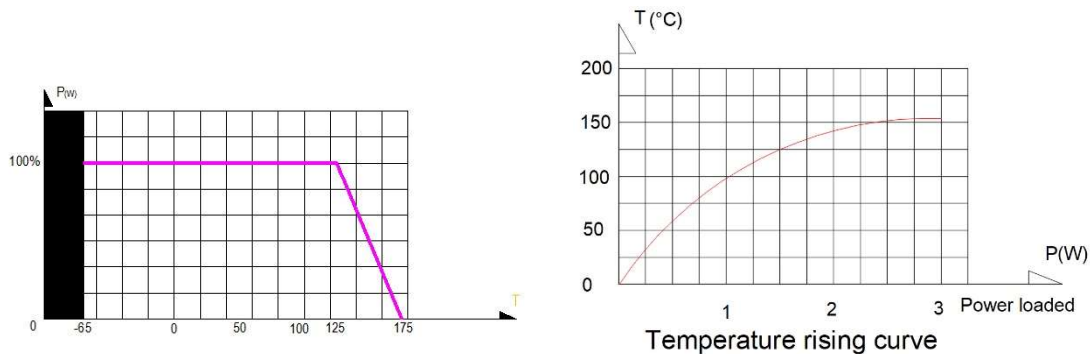
2. ELECTRICAL CHARACTERISTICS

THUNDER type		RS - 1	RS - 2	RS - 3	RS - 5	型号	
Cross to Vishay's type		WSC2512	WSC-1; WSC2515	WSC-2; WSC4527	WSC6927	对应于Vishay的型号	
Rated dissipation,	P_{70}	1.0W	2.0W	3.0W	5.0W	P_{70}	70℃ 以下额定功率
Standard resistance range		0.1Ω to 200Ω	0.1Ω to 200Ω	0.1Ω to 300Ω	0.1Ω to 500Ω	标准阻值范围	
THUNDER non-inductance type		SF - 1	SF - 2	SF - 3	SF - 5	无感电阻型号	
Standard resistance range		0.1Ω to 20Ω	0.1Ω to 20Ω	0.1Ω to 50Ω	0.1Ω to 50Ω	标准阻值范围	
Resistance tolerance		C(±0.25%); D(±0.50%); F(±1.0%); G(±2.0%); J(±5.0%);				阻值精度	
temperature coefficient		C1(±100ppm/℃); C2(±50ppm/℃); C3(±25ppm/℃)				温度系数	
Operating Temperature range		-55℃ to 175℃				工作环境温度范围	
Dimension	Body	±1.0(mm)	A=6.6, B=3.9, C=3.6	A=8.5, B=3.9, C=3.5	A=10.5, B=5.5, C=4	A=14.5, B=6.5, C=6	±1.0(mm) 本体
	Terminal	±0.50(mm)	D=1.5, F=1.5	D=1.5, F=1.8	D=2, F=2.5	D=2, F=3	±0.50(mm) 端头
Minimum soldering pad		(mm)	W=3, H=3.0, L=9.9	W=2.5, H=3.0, L=10	W=4, H=4, L=14	W=5, H=4, L=17	(mm) 建议最小焊盘尺寸
Outlines							外观
							
		Solder Pad Dimensions					
Minimun parking quantity per reel		3000	2500	2000	1000	最小包装数量	
Resistance range and tolerance range can be extended upon request							
Unless otherwise specified, all values are tested at the following condition: Temperature: 21℃ to 25℃; Relative humidity: 45% to 70%							

- * Unless otherwise specified, all values are tested at the following condition:
Temperature: 21℃ to 25℃; Relative humidity: 45% to 70%;
- * Rated Continuous Working Voltage (RCWV)= $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$
- * Resistance out of range is available upon request.

3. DERATING CURVE AND TEMPERATURE RISING CURVE

For resistors working at an ambience temperature of 70℃ or above, the power rating shall be derated in accordance with the following derating curve.





4. ENVIRONMENTAL CHARACTERISTICS

(1) Insulation Resistance

IEC 60115-1, 4.6: in V-block for 60 seconds, the test resistance should be high than 10,000 M Ohm.

(2) Dielectric Withstanding Voltage

IEC 60115-1 4.7: Place resistors in V-block for 60 Seconds, Load on 1000V, no breakdown or flashover.

(3) Temperature Coefficient Test

IEC 60115-1, 4.8: Test of resistors at room temperature and 60°C or 100°C on request above room temperature. Then measure the resistance. The Temperature Coefficient is calculated by the following equation and its value should be within the range requested.

$$\text{Resistor Temperature Coefficient} = \frac{R - R_0}{R_0} \times \frac{1}{t - t_0} \times 10^6$$

R = Resistance value under the testing temperature

R₀ = Resistance value at the room temperature

t = the 2nd testing temperature

t₀ = Room temperature

(4) Short Time Over Load Test

IEC60115-1 4.13: At 10 times rated voltage or 2 times the maximum working voltage whichever is lower for 5 seconds, the resistor should be free from defects. The change of the resistance value should be within ± (0.25%+0.05Ω) as compared with the value before the test.

(5) Solderability

IEC 60115-1, 4.17: 235±5°C for 3±0.5 Seconds, there are at least 95% solder coverage on the termination.



(6) Resistance to soldering heat:

IEC 60115-1, 4.18: $260 \pm 3^{\circ}\text{C}$ for 10 ± 1 Seconds, immersed to a point $3 \pm 0.5\text{mm}$ from the body. The change of the resistance value should be within $\pm(0.25\% + 0.05 \Omega)$ as compared with the value before the test.

(7) Climatic sequence

IEC 60115-1, 4.19: -55°C to Room Temp. to $+155^{\circ}\text{C}$ to Room Temp. (5 cycles). The change of the resistance value shall be within $\pm (1\% + 0.05\Omega)$ as compared with the value before the load. After the test the resistors shall be free from the electrical or mechanical damage. The typical value is less than 0.6%.

(8) Damp Heat Steady State

IEC 60115-1, 4.24: $40 \pm 2^{\circ}\text{C}$, 90-95% RH for 56 days, loaded with 0.1 times RCWV or the maximum working voltage whichever is lower. The change of the resistance value should be within $\pm (5\% + 0.05\Omega)$ as compared with the value before the load. The typical value is less than 1%.

(9) Load Life Test

IEC 60115-1, 4.25: $70 \pm 2^{\circ}\text{C}$ at RCWV or the maximum working voltage whichever is lower for $1,000 + 48/-0$ Hr. (1.5Hr. on, 0.5Hr. off). The resistors shall be arranged not much effected mutually by the temperature of others and the excessive ventilation shall not be performed.

The change of the resistance value should be within $\pm (5\% + 0.05\Omega)$ as compared with the value before the load. The typical value is less than 1.2%.

(10) Resistance to Solvent

IEC 60115-1, 4.30: IPA for 5 ± 0.5 Min. with ultrasonic. No deterioration occurred.



Disclaimer

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