

# APPROVAL SHEET

## SQP SERIES

## RX27-1 SERIES

WIRE WOUND CEMENT RESISTORS

PRODUCE	CHECK AND APPROVE	ACCEPTED BY
EM	CE	HONORABLE CUSTOMER
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## 1. PRODUCT: WIRE WOUND CEMENT RESISTORS

### FEATURES

- Advanced American alloy technology
- Low TCR: lower than  $\pm 50 \text{ ppm}/^\circ\text{C}$ .
- Tolerance up to  $\pm 1.0\%$
- Excellent overall stability: Class 1.0
- Very low noise and voltage coefficient
- Non-inductance winding available under request
- Perfect pulse loading capability

### 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
- Automotive electronics

### STANDARD APPLIED:

Q\SLC033-2010

## 2. PART NUMBER:

Part number of the cement resistor is identified by the type name, power rating, tolerance, temperature coefficient, packing type and resistance value.

Example:

**SQP      10W      J      1      B      391**

Series Name	Power rating	Resistance Tolerance	Temperature Coefficient	Packing Style	Resistance Value
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(1) Series : SQP SERIES CEMENT TYPE RESISTORS (AXIAL LEAD TYPE)

SQP SERIES = RX27-1 SERIES: RX27-1 is the type of China

(2) Power Rating: 3W ~ 60W

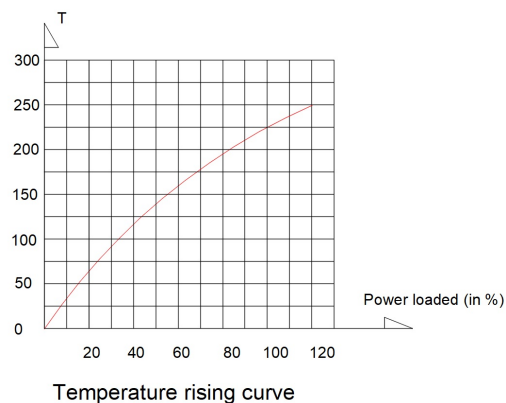
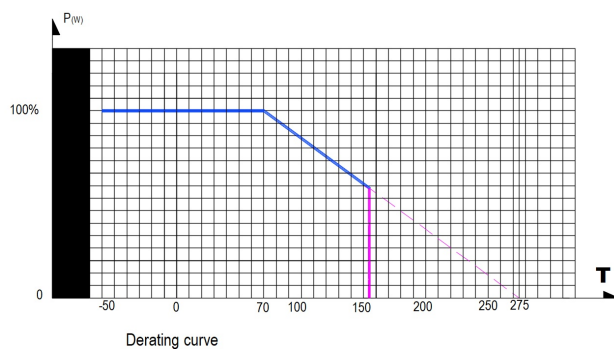
(3) Tolerance: F=  $\pm 1.0\%$ ; J=  $\pm 5.0\%$

(4) T.C.R: 2=  $\pm 50\text{ppm}/^\circ\text{C}$ ; 1=  $\pm 100\text{ppm}/^\circ\text{C}$ ; 0=  $> \pm 100\text{ppm}/^\circ\text{C}$

(5) Packaging Type: B= Bulk/Box; M= Horizontal forming; F= Vertical forming  
(RX27-1H = B; RX27-1V = F)

(6) Resistance Value: R27= 0.27 $\Omega$ ; 391=390 $\Omega$ ; 102=1k $\Omega$ ; 223=22k $\Omega$

## 3. DERATING CURVE and TEMPERATURE RISING CURVE



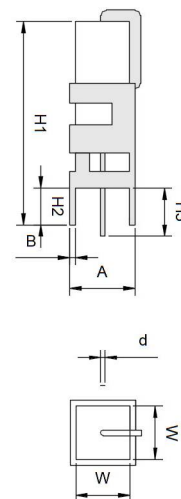
#### 4. Characteristics OF SQP SERIES (RX27-1)

POWER RATING	Resistance range	L(mm) ±0.5	W(mm) ±0.5	d(mm) ±0.1	l (mm) ±3
2W	0.1Ω ~ 100Ω	18	7	0.6	20
3W	0.1Ω ~ 390Ω	22	8	0.8	20
5W	0.1Ω ~ 510Ω	22	9.5	0.8	20
7W	0.1Ω ~ 3.9kΩ	35	9.5	0.8	20
10W	0.1Ω ~ 4.7kΩ	48	9.5	0.8	20
15W	0.1Ω ~ 5.6kΩ	48	12.5	1.0	20
20W	0.1Ω ~ 8.2kΩ	63	12.5	1.0	20
30W	0.1Ω ~ 15kΩ	75	19	1.0	20
50W	0.1Ω ~ 18kΩ	90	19	1.0	20
60W	0.1Ω ~ 18kΩ	90	19	1.0	20



#### 5. Characteristics OF OF SPS SERIES (RX27-1V)

POWER RATING	Resistance range	L(mm) ±0.5	W(mm) ±0.5	d(mm) ±0.1	l (mm) ±3	H <sub>1</sub> (mm) ±3	H <sub>2</sub> (mm) ±0.5	H <sub>3</sub> (mm) ±0.5	A(mm) ±1	B(mm) ±0.5
2	0.1Ω ~ 100Ω	18	7	0.6	20					
3	0.1Ω ~ 390Ω	22	8	0.8	20					
5	0.1Ω ~ 510Ω	22	9.5	0.8	20	31	4	5	11	1.5
7	0.1Ω ~ 3.9kΩ	35	9.5	0.8	20	47	4	5	11	1.5
10	0.1Ω ~ 4.7kΩ	48	9.5	0.8	20	60	4	5	11	1.5
15	0.1Ω ~ 5.6kΩ	48	12.5	1.0	20	61.5	4.5	6.5	14	2.5
20	0.1Ω ~ 8.2kΩ	63	12.5	1.0	20	77	4.5	6.5	14	2.5
30	0.1Ω ~ 15kΩ	75	19	1.0	20	90	4.5	6.5	21	2.5
50	0.1Ω ~ 18kΩ	90	19	1.0	20	105	4.5	6.5	21	2.5
60	0.1Ω ~ 18kΩ	90	19	1.0	20	105	4.5	6.5	21	2.5



\* Unless otherwise specified, all values are tested at the following condition:  
Temperature: 21°C to 25°C; Relative humidity: 45% to 70%;

## 6. 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

R<sub>0</sub> = Resistance value at the room temperature

t = the 2<sup>nd</sup> testing temperature

t<sub>0</sub> = 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 ± (1.0%+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±3°C for 10±1 Seconds, immersed to a point 3±0.5mm from the body. The change of the resistance value should be within ±(1.0%+0.05Ω) as compared with the value before the test.

(7) Climatic sequence

IEC 60115-1, 4.19: -55°C to Room Temp. to +155°C to Room Temp. (5 cycles). The change of the resistance value shall be within  $\pm (2.0\% + 0.05\Omega)$  as compared with the value before the load. After the test the resistors shall be free from the electrical or mechanical damage.

dry heat	UCT; 16 h
damp heat, cyclic	55°C; 24h; $\geq 90\%$ RH 1 cycle;
cold	LCT; 2 h
low air pressure	8.5 kPa 25 $\pm$ 10°C 2h;
damp heat, cyclic	55°C; 24h; $\geq 90\%$ RH ; 5 cycles
	LCT=-55°C;
	UCT=155°C

(8) Damp Heat Steady State

IEC 60115-1, 4.24: 40 $\pm$ 2°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  $\pm (5.0\% + 0.05\Omega)$  as compared with the value before the load.

(9) Load Life Test

IEC 60115-1, 4.25: 70 $\pm$ 2°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  $\pm (5.0\% + 0.05\Omega)$  as compared with the value before the load.

(10) Periodic-pulse Overload (Accidental Overload Test)

IEC 60115-1, 4.26: 4 times RCWV 10,000 cycles (1s on, 25s off). No evidence of flaming or arcing and the permissible resistance change  $\pm (1.0\%R + 0.05\Omega)$

(11) Resistance to Solvent

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

(12) ESD human body mode

IEC 60115-1, 4.38: 16kV, 3 pos.+3 neg. (equivalent to MIL-STD-883, method 3015) The change of the resistance value should be within  $\pm (1.0\% + 0.05\Omega)$  as compared with the value before the test.

## Disclaimer

*All products, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise.*

*Thunder Precision Resistors makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product to the maximum extent permitted by applicable law.*