

# DATA SHEET

## CEMENT RESISTORS

High Power, Axial Lead

SQP Series

NSP Series

$\pm 1\%$ ,  $\pm 5\%$

1W to 40W

RoHS compliant & Halogen Free





**APPLICATIONS**

- Power applications
- Home appliance
- Industry

**FEATURES**

- High power rating
- Excellent pulse load capability
- Axial terminal
- Flameproof ceramic case
- RoHS compliant & halogen-free

**ORDERING INFORMATION**

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

**PART NUMBER**

**SQP**   **500**   **J**   **B**   **-**   **22R**  
 (1)   (2)   (3)   (4)   (5)   (6)

**(1) SERIES**

SQP Series = General purpose  
 NSP Series = Non inductive

**(2) POWER RATING**

100 = 1W	10A = 10W
200 = 2W	15A = 15W
300 = 3W	20A = 20W
5WS = 5W	25A = 25W
500 = 5W	30A = 30W
700 = 7W	40A = 40W

**(3) TOLERANCE**

F = ±1% (Wirewound)                      J = ±5%

**(4) PACKAGING**

B = Bulk for wirewound or metal oxide or fiberglass element  
 W = Bulk for wirewound element  
 M = Bulk for metal oxide element

**(5) TEMPERATURE COEFFICIENT OF RESISTANCE**

F = ±100ppm/°C (Wirewound)                      - = Based on spec.

**(6) RESISTANCE VALUE**

E24 & E96 Series  
 Example:  
 100R = 100Ω, 10K = 10,000Ω, 1M = 1,000,000Ω

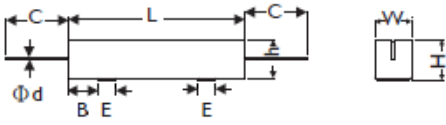
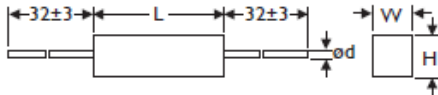
**DIMENSIONS**

Unit: mm

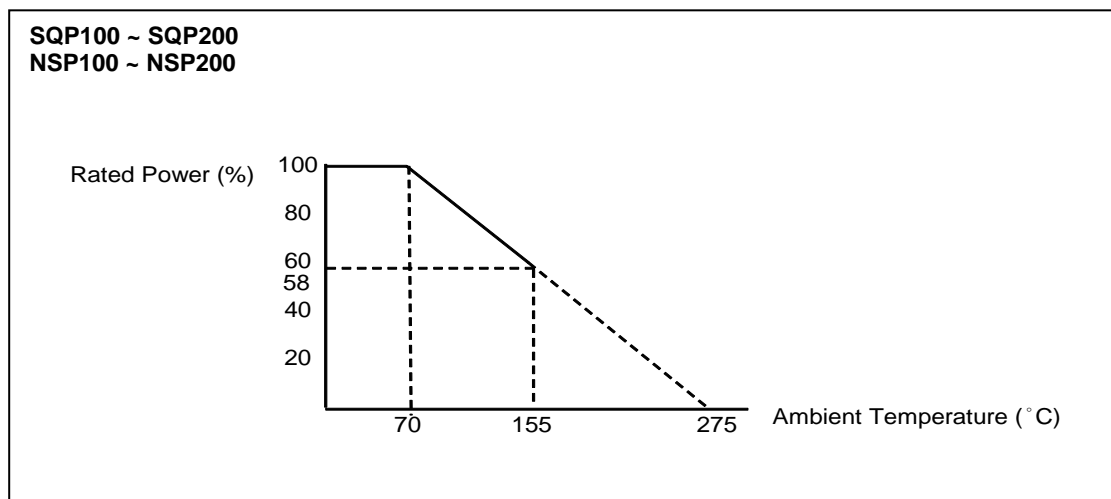
	Normal	Non-Inductive	L	W	H	$\psi d$
	SQP100	NSP100	13±1.0	5.5±1.0	5.5±1.0	0.6±0.05
	SQP200	NSP200	18±1.0	7.0±1.0	7.0±1.0	0.65±0.05
	SQP300	NSP300	22±1.5	8.0±1.0	8.0±1.0	0.8±0.05
	SQP5WS	-	25±1.5	6.0±1.0	6.0±1.0	0.65±0.05
	SQP500	NSP500	22±1.5	9.5±1.0	9.0±1.0	0.8±0.05
	SQP700	NSP700	35±1.5	9.5±1.0	9.0±1.0	0.8±0.05
	SQP10A	NSP10A	48±1.5	9.5±1.0	9.0±1.0	0.8±0.05
	SQP15A	NSP15A	48±1.5	12.5±1.0	12.5±1.0	0.8±0.05
	SQP20A	NSP20A	60±5.0	12.5±1.0	12.5±1.0	0.8±0.05
	SQP25A	NSP25A	60±5.0	14.0±1.5	13.0±1.5	0.8±0.05
	SQP30A	NSP30A	77±5.0	18.0±1.5	17 <sup>+2.5</sup> <sub>-1.0</sub>	0.8±0.05

	Normal	Non-Inductive	L	W	H	h
			90±5.0	19.0±1.5	20.5±1.5	19.5±1.5
	SQP40A	NSP40A	<b>B</b>	<b>C</b>	<b>E</b>	<b><math>\psi d</math></b>
			15.0±1.0	32±3	9.0±0.5	0.8±0.05

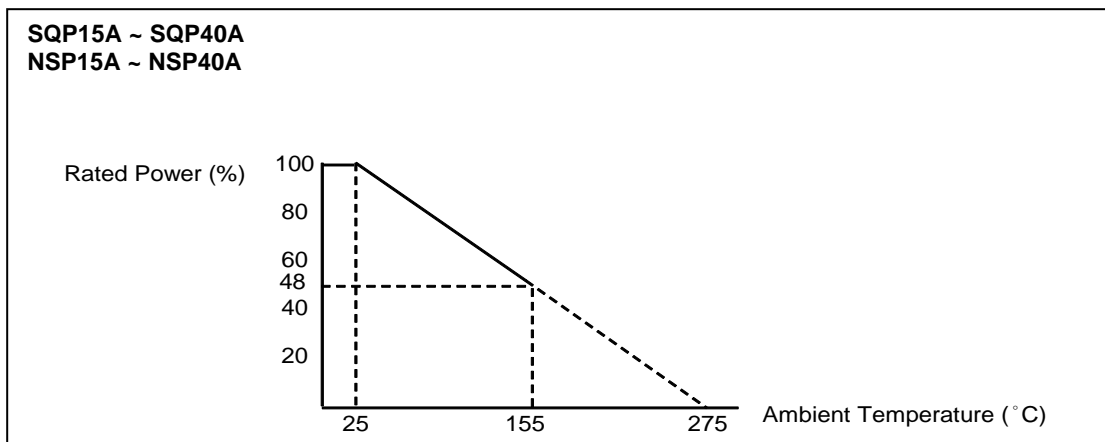
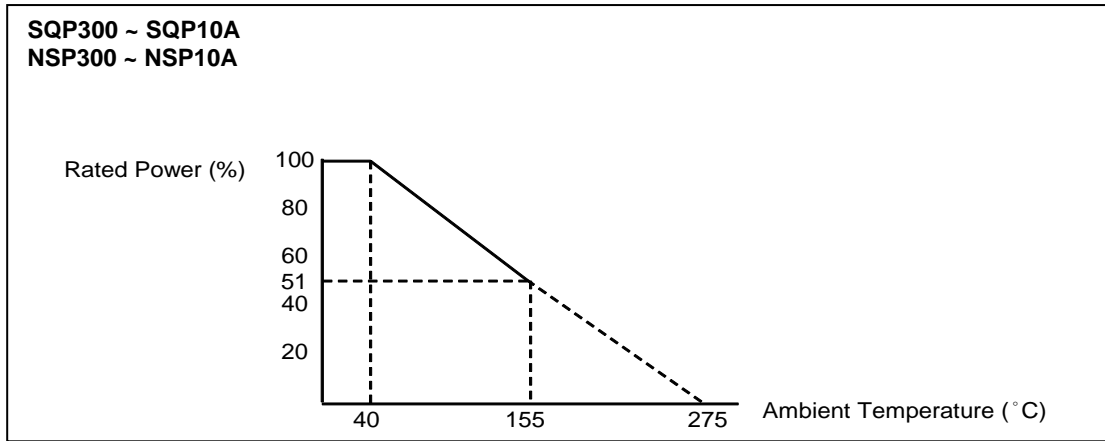


**DERATING CURVE**

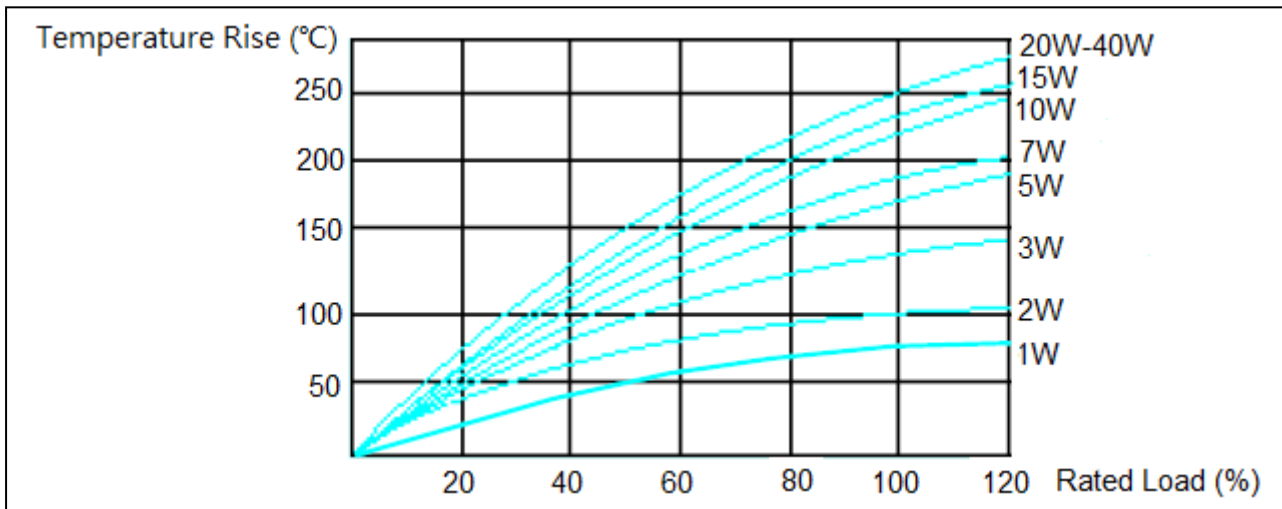


**Cement Resistors**

SQP / NSP



**TEMPERATURE CURVE**



**ELECTRICAL CHARACTERISTICS**

CHARACTERISTICS	SQP100	SQP200	SQP300	SQP5WS	SQP500	SQP700	SQP10A
Power Rating at 70 °C	1W	2W					
Power Rating at 40 °C			3W	5W	5W	7W	10A
Maximum Working Voltage	200V	250V	350V	350V	350V	500V	500V
Maximum Overload Voltage	500V	500V	700V	700V	700V	1000V	1000V
Voltage Proof on Insulation	500V	500V	700V	700V	700V	1000V	1000V
Resistance Range(Wirewound)	0.1Ω ~ 27Ω	0.03Ω ~ 36Ω	0.015Ω ~ 68Ω	0.015Ω ~ 130Ω	0.015Ω ~ 130Ω	0.05Ω ~ 330Ω	0.08Ω ~ 510Ω
Resistance Range(Film)	30Ω ~ 47KΩ	39Ω ~ 1MΩ	75Ω ~ 1MΩ	150Ω ~ 1MΩ	150Ω ~ 1MΩ	360Ω ~ 100KΩ	560Ω ~ 100KΩ
Operating Temp. Range	- 55°C to +155°C						
Temperature Coefficient	Wirewound :±100ppm/°C , ±300ppm/°C, Film: ±300ppm/°C						

Note: For resistance value out of above range is by request.

CHARACTERISTICS	SQP15A	SQP20A	SQP25A	SQP30A	SQP40A
Power Rating at 25 °C	15W	20W	25W	30W	40W
Maximum Working Voltage	500V	500V	1000V	1000V	1000V
Maximum Overload Voltage	1000V	1000V	2000V	2000V	2000V
Voltage Proof on Insulation	1000V	1000V	2000V	2000V	2000V
Resistance Range(Wirewound)	0.1Ω ~ 680Ω	0.15Ω ~ 1KΩ	0.15Ω ~ 1KΩ	0.15Ω ~ 1KΩ	0.15Ω ~ 1KΩ
Operating Temp. Range	- 55°C to +155°C				
Temperature Coefficient	Wirewound :±100ppm/°C , ±300ppm/°C				

Note: For resistance value out of above range is by request.

CHARACTERISTICS	NSP100	NSP200	NSP300	NSP500	NSP700	NSP10A
Power Rating at 70 °C	1W	2W				
Power Rating at 40 °C			3W	5W	7W	10A
Voltage Proof on Insulation	500V	500V	700V	700V	1000V	1000V
Resistance Range(Wirewound)	0.08Ω ~ 10Ω	0.08Ω ~ 10Ω	0.033Ω ~ 30Ω	0.03Ω ~ 40Ω	0.15Ω ~ 65Ω	0.25Ω ~ 100Ω
Maximum Working Voltage	$\sqrt{(P \times R)}$					
Operating Temp. Range	- 55°C to +155°C					
Temperature Coefficient	±300ppm/°C					

Note: For resistance value out of above range is by request.

CHARACTERISTICS	NSP15A	NSP20A	NSP25A	NSP30A	NSP40A
Power Rating at 25 °C	15W	20W	25W	30W	40W
Voltage Proof on Insulation	1000V	1000V	2000V	2000V	2000V
Resistance Range(Wirewound)	0.25Ω ~ 120Ω	0.36Ω ~ 160Ω	0.36Ω ~ 160Ω	0.36Ω ~ 160Ω	0.36Ω ~ 160Ω
Maximum Working Voltage	$\sqrt{(P \times R)}$				
Operating Temp. Range	- 55°C to +155°C				
Temperature Coefficient	±300ppm/°C				

Note: For resistance value out of above range is by request.

## TEST AND REQUIRMENTS

TEST	TEST METHOD	PROCEDURE	APPRAISE
Short Time Overload	IEC 60115-1 4.13	2.5 times RCWV for 5 sec.(Not more than maximum overload voltage)	±2.0%+0.05Ω
Voltage Proof on Insulation	IEC 60115-1 4.7	In V-Block for 60 sec. test voltage as above table	No Breakdown
Temperature Coefficient	IEC 60115-1 4.8	Between -55°C to +155°C	By Type
Insulation Resistance	IEC 60115-1 4.6	In V-Block for 60 sec.	>1,000MΩ
Solderability	IEC 60115-1 4.17	245±5°C for 3±0.5 Sec.	95% Min. coverage
Solvent Resistance of Marking	IEC 60115-1 4.30	IPA for 5±0.5 Min. with ultrasonic	No deterioration of coatings and markings
Robustness of Terminations	IEC 60115-1 4.16	Direct load for 10 Sec. in the direction of the terminal leads	≥2.5Kg(24.5N)D
Periodic-pulse Overload	IEC 60115-1 4.39	4 times RCWV 10,000 cycles (1 Sec. on, 25 Sec.off)	±2.0%+0.05Ω
Damp Heat Steady State	IEC 60115-1 4.24	40±2°C,90-95% RH for 56 days, loaded with 0.1 times RCWV	±5.0%+0.05Ω
Endurance at 70°C	IEC 60115-1 4.25	70±2°C at RCWV(or Umax., whichever less) for 1,000 Hr.(1.5 Hr.on,0.5 Hr. off)	±5.0%+0.05Ω
Temperature Cycling	IEC 60115-1 4.19	➔ -55°C ➔ Room Temp. ➔ +155°C Room Temp.(5 cycles)	±2.0%+0.05Ω
Resistance to Soldering Heat	IEC 60115-1 4.18	260±3°C for 10±1 Sec., immersed to a point 3±0.5mm from the body	±1.0%+0.05Ω

Note:

**RCWV (Rated Continuous Working Voltage ):**

The DC or AC (rms) continuous working voltage corresponding to the rated power is determined by the following formula:

$$V = \sqrt{P \times R}$$

or max. working voltage whichever is less

Where

V=Continuous rated DC or  
AC (rms) working voltage (V)

P=Rated power (W)

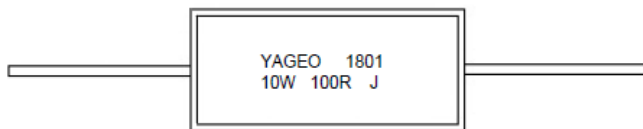
R=Resistance value ( $\Omega$ )

**BULK PACKING**

Unit: Piece

Normal	Non-Inductive	PACKAGE	Quantity
SQP200	NSP200	Bulk	1,400
SQP300	NSP300	Bulk	1,000
SQP500	NSP500	Bulk	900
SQP700	NSP700	Bulk	600
SQP10A	NSP10A	Bulk	500
SQP15A	NSP15A	Bulk	360
SQP20A	NSP20A	Bulk	360
SQP25A	NSP25A	Bulk	360
SQP30A	NSP30A	Bulk	50
SQP40A	NSP40A	Bulk	50

**MARKING**



**Example:**

- YAGEO = Brand
- 1801 = Date code
- 10W = Power rating
- 100R = Resistance
- J = Tolerance

**REVISION HISTORY**

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 0	Aug.2, 2021	-	- First issue of this specification
Version 1	Feb.16, 2023	-	- Update packaging quantity of SQP20A&25A

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