Cement Resistors

Axial Lead Type

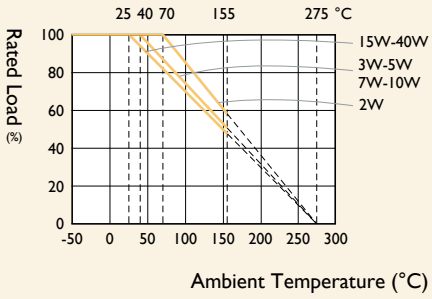
Normal Style [SQP Series]
Non-Inductive Style [NSP Series]



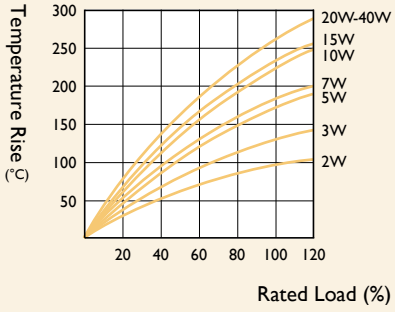
FEATURES

Power Rating	2W, 3W, 5W, 7W, 10W, 15W, 20W, 25W, 30W, 40W
Resistance Tolerance	±5%
T.C.R.	±300ppm/°C

DERATING CURVE



TEMPERATURE RISE

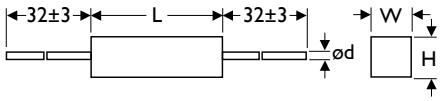


INTRODUCTION

The materials used and the construction techniques ensure excellent flame resistance, arc resistance and moisture resistance as well as self-extinguishing capabilities. They will withstand the most rigorous loading test.

As resistors in radio and television receivers, hazardous conditions such as smoking and redheat can be completely prevented by the proper choice of power resistors.

DIMENSIONS



Unit: mm

STYLE		DIMENSION			
Normal	**Non-Inductive**	**L**	**W**	**H**	**ød**
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
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	17.0±1.5	0.8±0.05
SQP40A	NSP40A	90±5.0	19.0±1.5	18.0±1.5	0.8±0.05

ELECTRICAL CHARACTERISTICS

NORMAL STYLE

STYLE	SQP200	SQP300	SQP500	SQP700	SQP10A	SQP15A	SQP20A	SQP25A	SQP30A	SQP40A
Power Rating at 25°C						15W	20W	25W	30W	40W
Power Rating at 40°C		3W	5W	7W	10W					
Power Rating at 70°C	2W									
Maximum Working Voltage	250V	350V		500V				1,000V		
Maximum Overload Voltage	500V	700V		1,000V				2,000V		
Voltage Proof on Insulation	500V	700V		1,000V				2,000V		
Resistance Range (Wirewound)	0.1Ω - 36Ω	0.1Ω - 68Ω	0.1Ω - 130Ω	0.1Ω - 330Ω	0.1Ω - 510Ω	0.1Ω - 680Ω	0.15Ω - 1KΩ			
Resistance Range (Metal Oxide Film)	39Ω - 1MΩ	75Ω - 1MΩ	150Ω - 1MΩ	360Ω - 1MΩ	560Ω - 1MΩ	750Ω - 1MΩ	1.2KΩ - 1MΩ			
Operating Temp. Range	-55°C to +155°C									
Temperature Coefficient	±300ppm/°C									

NON-INDUCTIVE STYLE

STYLE	NSP200	NSP300	NSP500	NSP700	NSP10A	NSP15A	NSP20A	NSP25A	NSP30A	NSP40A
Power Rating at 25°C						15W	20W	25W	30W	40W
Power Rating at 40°C		3W	5W	7W	10W					
Power Rating at 70°C	2W									
Maximum Working Voltage	$\sqrt{P \times R}$									
Voltage Proof on Insulation	500V	700V		1,000V				2,000V		
Resistance Range (Wirewound)	0.08Ω - 10Ω	0.1Ω - 30Ω	0.1Ω - 40Ω	0.15Ω - 65Ω	0.25Ω - 100Ω	0.25Ω - 120Ω	0.36Ω - 160Ω			
Operating Temp. Range	-55°C to +155°C									
Temperature Coefficient	±300ppm/°C									

Note: Special value is available on request

ENVIRONMENTAL CHARACTERISTICS

PERFORMANCE TEST	TEST METHOD		APPRAISE
Short Time Overload	IEC 60115-1 4.13	2.5 times RCWV for 5 Sec.	±2.0%+0.05Ω
Voltage Proof on Insulation	IEC 60115-1 4.7	in V-block for 60 Sec., test voltage by type	By type
Temperature Coefficient	IEC 60115-1 4.8	-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	235±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)
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 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: Rated Continuous Working Voltage (RCWV) = $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$ or Max. working voltage listed above, whichever less.

EXPLANATIONS OF ORDERING CODE

MFR	-12	F	T	F	52-	100R
Code 1 - 3 **Series Name** See Index	Code 4 - 6 **Power Rating** -05 = ød0.5mm -06 = ød0.6mm -07 = ød0.7mm -08 = ød0.8mm -10 = ød1.0mm -14 = ød1.4mm -12 = 1/6W -25 = 1/4W 25S = 1/4WS -50 = 1/2W 50S = 1/2WS 100 = 1W 1WS = 1WS 200 = 2W 2WS = 2WS 204 = 0.4W 207 = 0.6W 300 = 3W 3WS = 3WS 3WM = 3WM 400 = 4W 500 = 5W 5WS = 5WS 5SS = 5WSS 700 = 7W 7WS = 7WS 10A = 10W 20A = 20W 30A = 30W 40A = 40W 50A = 50W 10S = 10WS 15A = 15W 25A = 25W 10B = 100W 25B = 250W	Code 7 **Tolerance** P = ±0.02 % A = ±0.05 % B = ±0.1 % C = ±0.25% D = ±0.5 % F = ±1 % G = ±2 % J = ±5 % K = ±10 % - = Base on Spec.	Code 8 **Packing Style** T = Tape/Box R = Tape/Reel B = Bulk	Code 9 **Temperature Coefficient of Resistance** - = Base on Spec. A = ±5 ppm/°C B = ±10 ppm/°C C = ±15 ppm/°C S = ± 20ppm/°C D = ±25 ppm/°C E = ±50 ppm/°C F = ±100 ppm/°C G = ±200 ppm/°C H = ±250 ppm/°C I = ±300 ppm/°C J = ±350 ppm/°C	Code 10 - 12 **Forming Type** 26- = 26mm 52- = 52.4mm 73- = 73mm 81- = 81mm 91- = 91mm F = F Type FK = FK Type FKK = FKK Type FFK = F-form Kink M = M-Type Forming MB = M-form W/flat MT = MT Type Forming MR = MR Type AV = AVIsert PN = PANAsert	Code 13 - 17 **Resistance Value** 0R1 = 0.1 100R = 100 10K = 10,000 10M = 10,000,000

EXCEPTION:

• Cement series:

<Code 8>: Special packing style code

B: Bulk with wirewound or metal oxide sub-assembly for resistance value

W: Bulk with ceramic based wirewound sub-assembly for resistance value

M: Bulk with metal oxide sub-assembly for resistance value

F: Bulk with Fiberglass based wirewound sub-assembly for resistance value

<Code 10-12>: Without forming code

Example: SQP500J**B**-10R

• JPW series:

<Code 13-17>: without resistance value code

Example: JPW-06-T-52-