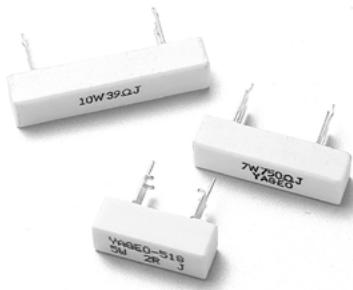


# Cement Resistors

# Radial Terminal Type

Normal Style [ SQZ Series ]

Non-Inductive Style [ NSZ Series ]



## INTRODUCTION

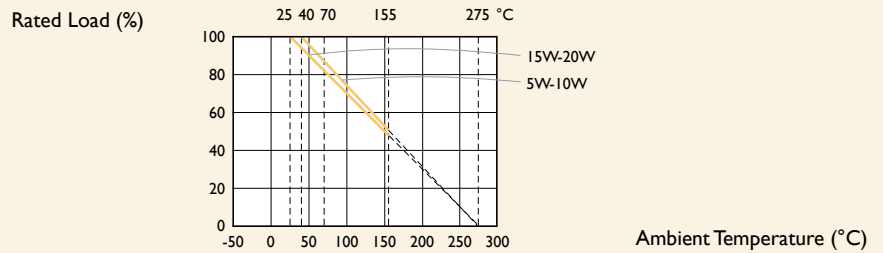
The materials used and the construction techniques ensure excellent flame resistance, arc resistance and moisture resistance as well as self-extinguishing capabilities. They will withstand the most rigorous loading test.

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.

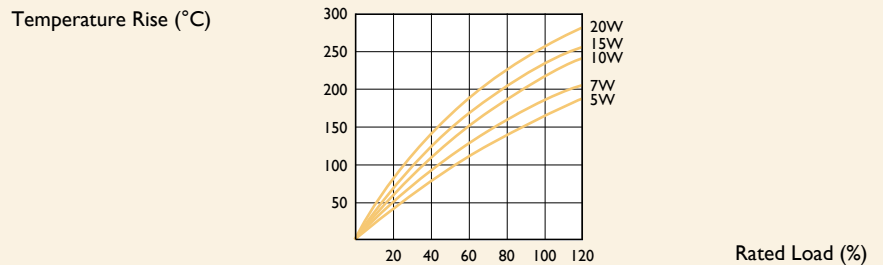
## FEATURES

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

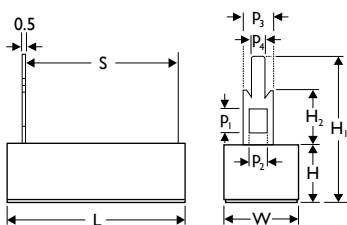
## DERATING CURVE



## TEMPERATURE RISE



## DIMENSIONS



STYLE	DIMENSION	Unit: mm											
		Normal	Non-Ind.	L	H	W	S	H <sub>1</sub>	H <sub>2</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
SQZ500	NSZ500			28.0±1.5	10.0±1.0	10.0±1.0	15.0±1.5	25.0±1.5	10.0±1.0	4.0±0.2	2.0±0.2	5.0±0.2	1.5±0.2
SQZ700	NSZ700			35.0±1.5	10.0±1.0	10.0±1.0	22.5±1.5	25.0±1.5	10.0±1.0	4.0±0.2	4.0±0.2	5.0±0.2	1.5±0.2
SQZ10A	NSZ10A			48.0±1.5	9.5±1.0	10.0±1.0	32.0±1.5	25.0±1.5	10.5±1.0	4.0±0.2	4.0±0.2	5.0±0.2	1.5±0.2
SQZ15A	NSZ15A			48.0±1.5	12.5±1.0	13.0±1.0	32.0±1.5	35.0±1.5	15.0±1.5	7.0±0.2	4.0±0.2	10.0±0.2	3.0±0.2
SQZ20A	NSZ20A			63.0±1.5	12.5±1.0	12.5±1.0	42.5±1.5	35.0±1.5	15.0±1.5	7.0±0.2	4.0±0.2	10.0±0.2	3.0±0.2

## ELECTRICAL CHARACTERISTICS

### NORMAL STYLE

STYLE	SQZ500	SQZ700	SQZ10A	SQZ15A	SQZ20A
Power Rating at 25°C				15W	20W
Power Rating at 40°C	5W	7W	10W		
Maximum Working Voltage	350V	500V			
Maximum Overload Voltage	700V	1,000V			
Voltage Proof on Insulation	700V	1,000V			
Resistance Range (Wirewound)	0.36Ω - 200Ω		0.56Ω - 430Ω	1Ω - 560Ω	1.5Ω - 750Ω
Resistance Range (Metal Oxide Film)	220Ω - 1MΩ	300Ω - 1MΩ	470Ω - 1MΩ	750Ω - 1MΩ	820Ω - 1MΩ
Operating Temp. Range	-55°C to +155°C				
Temperature Coefficient	±300ppm/°C				

### NON-INDUCTIVE STYLE

STYLE	NSZ500	NSZ700	NSZ10A	NSZ15A	NSZ20A
Power Rating at 25°C				15W	20W
Power Rating at 40°C	5W	7W	10W		
Maximum Working Voltage	$\sqrt{P \times R}$				
Voltage Proof on Insulation	700V	1,000V			
Resistance Range (Wirewound)	0.1Ω - 10Ω		0.1Ω - 20Ω		0.1Ω - 30Ω
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
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

<b>MFR</b>	<b>-12</b>	<b>F</b>	<b>T</b>	<b>F</b>	<b>52-</b>	<b>100R</b>
Code 1 - 3 <b>Series Name</b> See Index	Code 4 - 6 <b>Power Rating</b> -05 = $\varnothing$ d0.5mm -06 = $\varnothing$ d0.6mm -07 = $\varnothing$ d0.7mm -08 = $\varnothing$ d0.8mm -10 = $\varnothing$ d1.0mm -14 = $\varnothing$ d1.4mm -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 <b>Tolerance</b> P = $\pm 0.02$ % A = $\pm 0.05$ % B = $\pm 0.1$ % C = $\pm 0.25$ % D = $\pm 0.5$ % F = $\pm 1$ % G = $\pm 2$ % J = $\pm 5$ % K = $\pm 10$ % - = Base on Spec.	Code 8 <b>Packing Style</b> T = Tape/Box R = Tape/Reel B = Bulk	Code 9 <b>Temperature Coefficient of Resistance</b> - = Base on Spec. A = $\pm 5$ ppm/ $^{\circ}$ C B = $\pm 10$ ppm/ $^{\circ}$ C C = $\pm 15$ ppm/ $^{\circ}$ C S = $\pm 20$ ppm/ $^{\circ}$ C D = $\pm 25$ ppm/ $^{\circ}$ C E = $\pm 50$ ppm/ $^{\circ}$ C F = $\pm 100$ ppm/ $^{\circ}$ C G = $\pm 200$ ppm/ $^{\circ}$ C H = $\pm 250$ ppm/ $^{\circ}$ C I = $\pm 300$ ppm/ $^{\circ}$ C J = $\pm 350$ ppm/ $^{\circ}$ C	Code 10 - 12 <b>Forming Type</b> 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 <b>Resistance Value</b> 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: **SQP500JB-10R**

#### • JPW series:

<Code 13-17>: without resistance value code

Example: **JPW-06-T-52-**