Innovative Service Around the Globe YAGEO

DATA SHEET

CEMENT RESISTORS

High Power, Vertical Mount

SQM Series

NSM Series

±1%, ±5%

2W to 10W

RoHS compliant & Halogen Free

YAGEO

Product specification – September 27, 2023 V.2

APPLICATIONS

- Power applications
- Home appliance
- Industry

FEATURES

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

ORDERING INFORMATION

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

PART NUMBER

SQM	200	J	B	-	100R
(1)	(2)	(3)	(4)	(5)	(6)

(1) SERIES

SQM = General Purpose

NSM = Non-Inductive

(2) POWER RATING

200 = 2W	500= 5W	10A= 10W
300 = 3W	700= 7W	10S=10W

(3) TOLERANCE

F = ±1%	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
F = Bulk for fiberglass element

(5) TEMPERATURE COEFFICIENT OF RESISTANCE

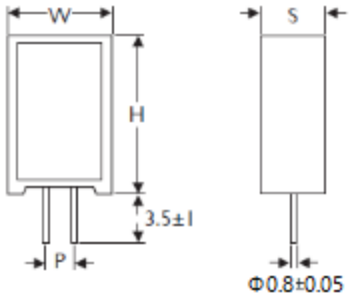
F=±100ppm/°C	- = Based on spec

(6) RESISTANCE VALUE

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

DIMENSIONS

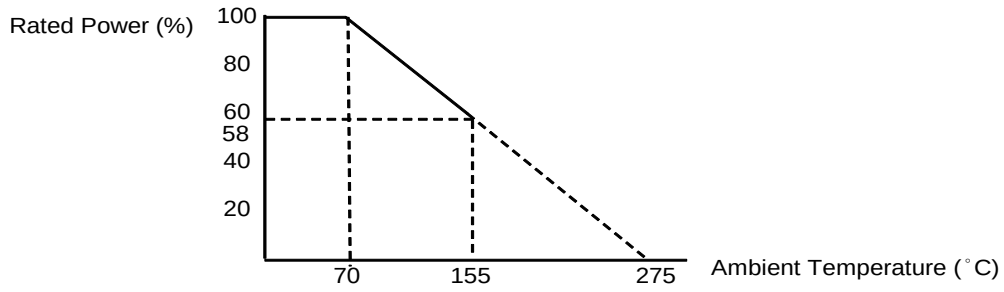
Unit: mm



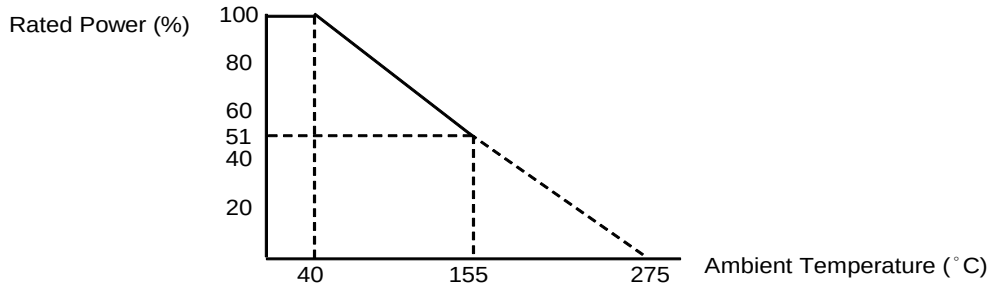
Normal	Non-Inductive	H	W	S	P
SQM200	NSM200	20 ± 1.5	11.0 ± 1.0	7.0 ± 1.0	5^{+2-1}
SQM300	NSM300	25 ± 1.5	12.0 ± 1.0	8.0 ± 1.0	5^{+2-1}
SQM500	NSM500	25 ± 1.5	13.0 ± 1.0	9.0 ± 1.0	5^{+2-1}
SQM700	NSM700	39 ± 1.5	13.0 ± 1.0	9.0 ± 1.0	5^{+2-1}
SQM10A	NSM10A	51 ± 1.5	13.0 ± 1.0	9.0 ± 1.0	5^{+2-1}
SQM10S	NSM10S	35 ± 1.5	16.0 ± 1.0	12.0 ± 1.0	7^{+2-1}

DERATING CURVE

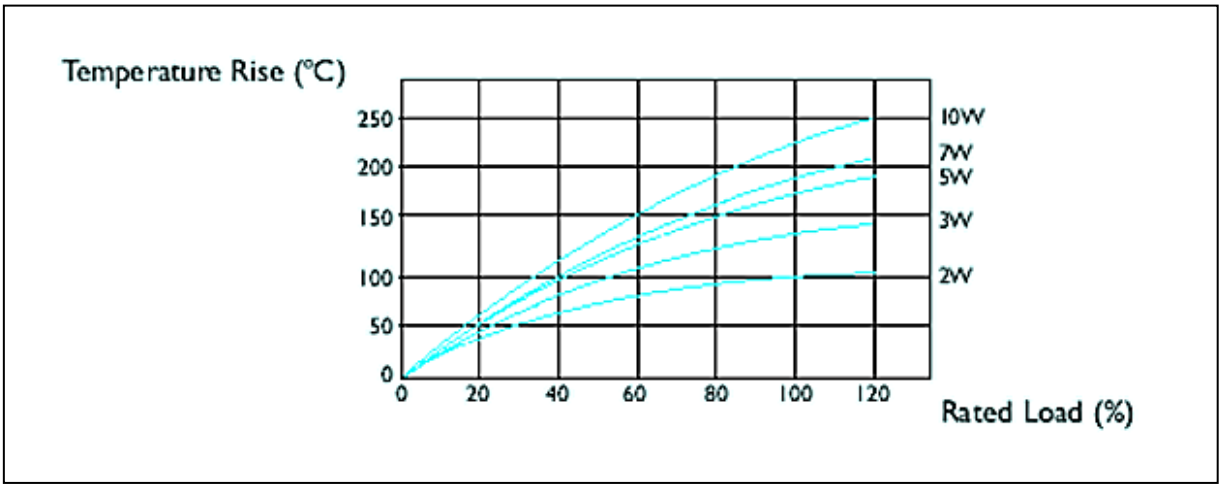
SQM2W, NSM2W



SQM3W~10W, NSM3W~10W



TEMPERATURE RISE



ELECTRICAL CHARACTERISTICS

CHARACTERISTICS	SQM200	SQM300	SQM500	SQM700	SQM10A	SQM10S
Power Rating at 40 °C		3W	5W	7W	10W	10W
Power Rating at 70 °C	2W					
Maximum Working Voltage	250V	350V	350V	500V	500V	500V
Maximum Overload Voltage	500V	700V	700V	1000V	1000V	1000V
Voltage Proof on Insulation	500V	700V	700V	1000V	1000V	1000V
Resistance Range (Ceramic based wirewound)	0.1Ω~36Ω	0.1Ω~68Ω	0.1Ω~130Ω	0.1Ω~330Ω	0.1Ω~510Ω	0.1Ω~270Ω
Resistance Range (Metal Oxide Film)	39Ω~1MΩ	75Ω~1MΩ	150Ω~1MΩ	360Ω~1MΩ	560Ω~1MΩ	300Ω~1MΩ
Resistance Range (Fiberglass based wirewound)	0.1Ω~1KΩ	0.1Ω~4.7KΩ	0.1Ω~4.7KΩ	0.1Ω~4.7KΩ	0.1Ω~5.6KΩ	0.1Ω~4.7KΩ
Operating Temp. Range	- 55°C to +155°C					
Temperature Coefficient	Wirewound: ±100ppm/°C , ±300ppm/°C, Film:±300ppm/°C					

CHARACTERISTICS	NSM200	NSM300	NSM500	NSM700	NSM10A	NSM10S
Power Rating at 40 °C		3W	5W	7W	10W	10W
Power Rating at 70 °C	2W					
Maximum Working Voltage	√(P X R)					
Voltage Proof on Insulation	500V	700V	700V	1000V	1000V	1000V
Resistance Range (Ceramic based wirewound)	0.1Ω~10Ω	0.1Ω~30Ω	0.15Ω~65Ω	0.27Ω~100Ω	0.27Ω~100Ω	0.27Ω~100Ω
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%+0.05Ω
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)
Periodic-pulse Overload	IEC 60115-1 4.39	4 times RCWV(or Umax., whichever less) 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(or Umax., whichever less)	±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)

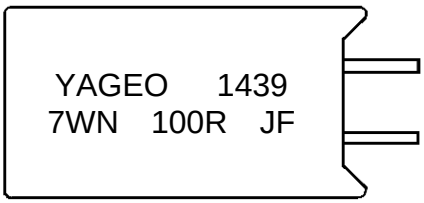
P=Rated power (W)

R=Resistance value (Ω)

BULK PACKING

Miniature	Non-Inductive	Piece/Per Inner Box
SQM200	NSM200	1,600
SQM300	NSM300	1,000
SQM500	NSM500	1,000
SQM700	NSM700	700
SQM10A	NSM10A	500
SQM10S	NSM10S	500

MARKING



Example:

YAGEO	= Brand
1439	= Date code
7W	= Power rating
N	= Non-inductive
100R	= Resistance
J	= Tolerance
F	= Fiberglass

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 2	Sep.7, 2023	-	- Updated legal disclaimer and footer versions numbers
Version 1	Aug.24, 2023	-	- Update copper wire dimensions and add temperature rise curves
Version 0	Aug.2, 2021	-	- First issue of this specification

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