

**ASJ**

**ASJ PTE LTD**

**SQM WIREWOUND RESISTORS SPECIFICATION  
(RECTANGULAR RADIAL LEAD)**

Reference No. : SYS-ENG-041

Revision No. : H

**COPY FOR REFERENCE ONLY**

**1.0 SCOPE**

This specification applies to the general requirements for SQM Wirewound Resistors rectangular radial lead. This resistor is used as pure power components. Apart from power characteristics the impulse strength of wirewound resistors is higher, capable of withstanding higher load ratings without damage when compared against other type of fixed resistors.

**2.0 SPECIFICATION**

**2.1 Type**

The type of resistor designates the power rating.

- SQM2 = 2 watt power
- SQM3 = 3 watt power
- SQM5 = 5 watt power
- SQM7 = 7 watt power
- SQM10 = 10 watt power
- SQM10SS = 10 watt power
- SQM15SS = 15 watt power

**2.2 Table 1**

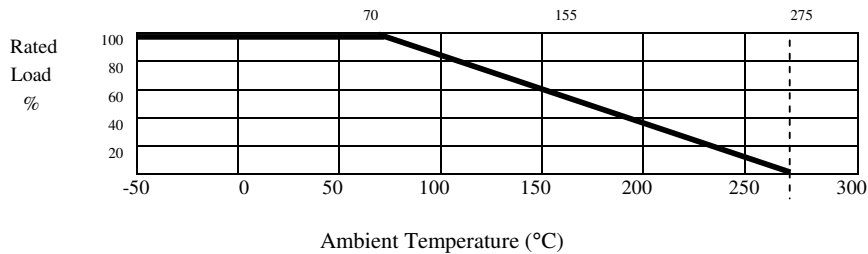
**PERFORMANCE CHARACTERISTICS**

<b>RATING</b>	<b>SQM2</b>	<b>SQM3</b>	<b>SQM5</b>	<b>SQM7</b>	<b>SQM 10SS</b>	<b>SQM 10</b>	<b>SQM 15SS</b>
Power Rating at 70°C	2W	3W	5W	7W	10W	10W	15W
Resistance Range	0.1-100KΩ						
Resistance Tolerance	± 5%, 10%						
Operating Temperature Range	-55°C to +155°C						
Zero Deratng at	+275°C						
M.C.W.V.	500V	500V	500V	500V	750V	1000V	1000V
Max. Overload Voltage	1000V	1000V	1500V	1500V	1500V	1500V	1500V

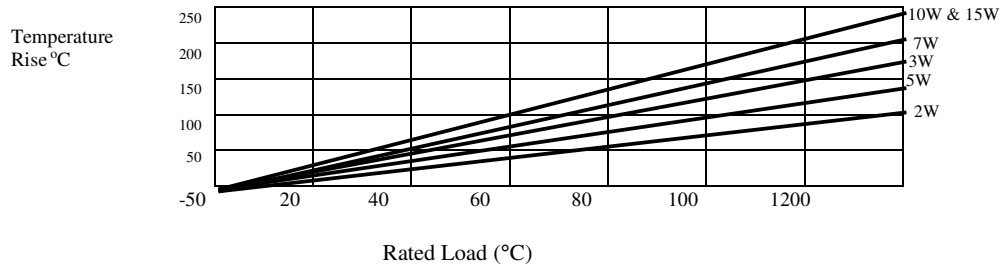
**2.3 POWER RATING**

The resistor power rating are based on continuous operation at full rated voltage at maximum ambient temperature of 70°C..Operation at above 70°C shall cause the resistor power to be derated as shown in the derating curve (Fig. 1).

**Fig. 1 Derating Curve**



**2.4 TEMPERATURE RISE**



**2.5 RATED VOLTAGE**

The rated voltage is the D.C. or A.C. continuous working voltage at commercial line frequency corresponding to the power rating and shall be obtained from the following formula. If the rated voltage exceeds the maximum continuous working voltage (M.C.W.V.) in Table 1, then the maximum working voltage shall be regarded as the rated voltage.

$$E = \sqrt{PR}$$

E = Rated Voltage (V)

Where P = Rated Power (W)

R = Nominal Resistance Value (Ohm)

**2.6 NOMINAL RESISTANCE**

The DC nominal resistance shall be within the specified values shown in Table 1 and significant figures shall be based on the value of E24 series (Table 2).

**TABLE 2. STANDARD RESISTANCE DECADE VALUE**

100	220	470
110	240	510
120	270	560
130	300	620
150	330	680
160	360	750
180	390	820
200	430	910

**2.7 MATERIALS**

COMPONENTS	MATERIAL	REMARKS
Base	Ceramic core	High thermal conductivity
Resistor	Resistance wire	Nickel-chromium or copper-nickel alloy
Terminals	Caps terminal leads	Termination & lead welding
Body Coating	Fireproof insulation cement	Body Color : white

**2.8 ELECTRICAL, MECHANICAL AND CLIMATIC CHARACTERISTICS**

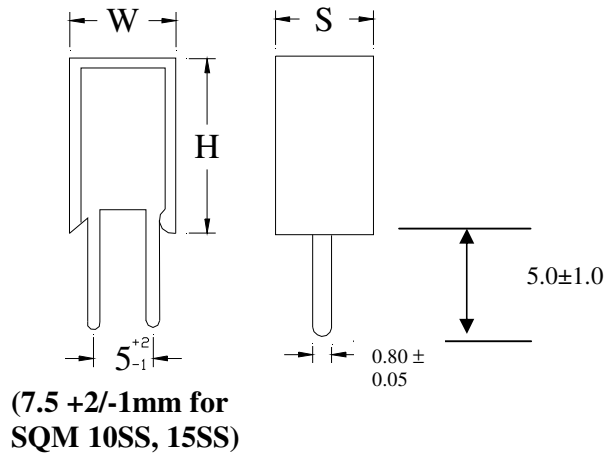
- Performance specifications are as given in Table 3 below:

**TABLE 3 - SQM2,SQM3,SQM5,SQM7,SQM10,SQM10SS & SQM15SS**

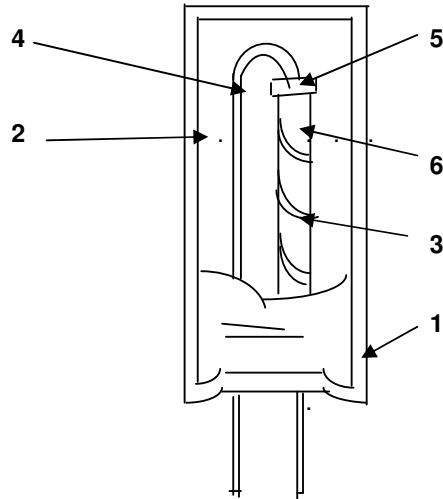
CHARACTERISTICS	SPECIFICATIONS							TESTING CONDITIONS
	SQ M2	SQ M3	SQ M5	SQ M7	SQ M10 SS	SQ M10	SQM 15SS	
Rated Wattage	2W	3W	5W	7W	10W	10W	15W	-
Resistance Range	0.1~ 100KΩ							-
Tolerance	5%,10%							
Working Temperature Range	-55°C to +155°C							-
Temperature Coefficient	±260 PPM/°C							At 125 ± 3°C for 45 minutes $R - R_0 \quad 1$ $\dots\dots\dots \times \dots\dots\dots \times 10^6$ $R_0 \quad t - t_0$
Di-electric	± (2.0% + 0.05Ω)							Apply AC 1000v for 1 min.
Short Time Overload Voltage	±(2.0% + 0.05Ω)							Apply 2.5 times rated voltage for 5 secs.
Humidity Load Life	± (5.0% + 0.05Ω)							40 ± 2°C at 90 - 95% Relative humidity for 1000 hours
Load Life	± (5.0% + 0.05Ω).							At 70°C for 1000 hours
Resistance to Soldering Heat	± (2.0% + 0.05Ω)							Temp : 260 ± 5°C at 10 ± 1 secs.
Solderability	95% Coverage Min.							Temp : 240 ± 5°C for 5 ± 0.5 secs.
Vibration (Low Frequency)	± (1.0% + 0.05Ω)							6 Hrs in 3 Directions (10 Hz to 55 Hz)

NOTE: Test Methods are based on JIS C5202

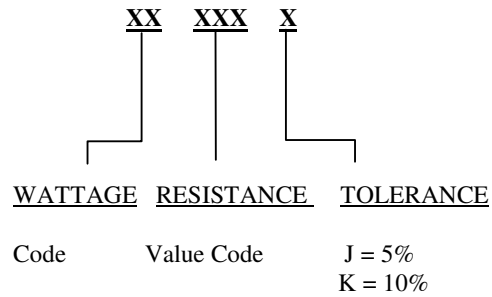
**2.9 DIMENSIONS**



Type	H (mm)	W (mm)	S (mm)
SQM2	$20 \pm 1.5$	$11 \pm 1$	$7 \pm 1$
SQM3	$25 \pm 1.5$	$12 \pm 1$	$8 \pm 1$
SQM5	$25 \pm 1.5$	$13 \pm 1$	$9 \pm 1$
SQM7	$39 \pm 1.5$	$13 \pm 1$	$10 \pm 1$
SQM10SS	$35 \pm 1.5$	$16 \pm 1$	$12 \pm 1$
SQM10	$51 \pm 1.5$	$13 \pm 1$	$10 \pm 1$
SQM15SS	$35 \pm 1.5$	$16 \pm 1$	$12 \pm 1$

**2.10 CONSTRUCTION AND MATERIALS**

1. Fire proof ceramic case
2. Fire proof insulation cement
3. Resistance Wire
4. Tin plated copper wire
5. Automatically clamped Termination & Lead welding
6. Ceramic core

**2.11 MARKING****2.12 PACKAGING****BULK PACKAGING**

TYPE	PCS./ P.E. BAG	PCS./ INNER CTN.	PCS./ OUTER CTN.
SQM 2W, 3W, 5W	50	500	2000
SQM 7W	50	400	1600
SQM 10W, 10SS, 15SS	50	200	800

**DIMENSIONS ( mm )**

TYPE	L	W	H
INNER CTN	225	160	118
OUTER CTN.	335	325	276