Aillen®
EXPERT IN PASSIVE PARTS

PRODUCT SPECIFICATION

规 格 书

Customer (客户名称) :
Customer P/N (客户料号)**:**
Aillen P/N(爱伦料号):
CATEGORY(品名)**:**
DESCRIPTION(型号)**:**
Spec No.(承认书编号):
Date(发行日期)**:**

AILLEN	
PREPARED **（拟定）**	**CHECKED** **（审核）**

CUSTOMER Please sign a copy after accepting	
APPROVAL **（批准）**	**SIGNATURE** **（签名）**

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ALTERNATION HISTORY RECORDS变更记录

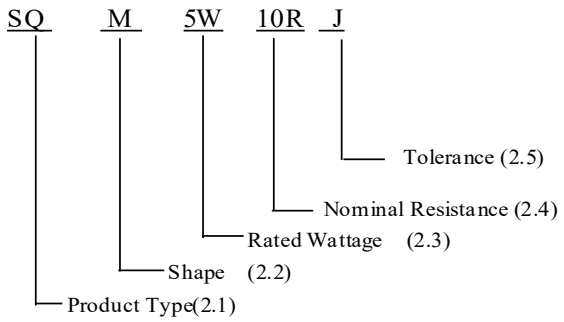
Date	Version	Mark	Page	Description	Drafter	Approver
2025-12-15	B	/	/	Revised edition release	Doris Chang	/

1.Applicable Scope:

This type standard specification is for use in consumer electronics, computer, telecommunications equipments...etc.

2.Part Number System:

It is composed by Type, Rated Wattage, Nominal Resistance and Tolerance. e.g.



2.1 Product Type

Code	SQ
Product Type	Cement Resistors

2.2 Shape Type

Code	P	M	Z	S	H
shape Type	P	M	Z	S	H

2.3 Rated Wattage code

Code	1W	2W	3W	5W,……40W
Rated Power (W)	1W	2W	3W	5W,……40W

2.4 Nominal Resistance

Code	10R	100R	10K
Resistance	10Ω	100Ω	10KΩ

Remark:Ω is its unit which be in accordance with JIS-C6409 article 6 (EIARS-196A) series.

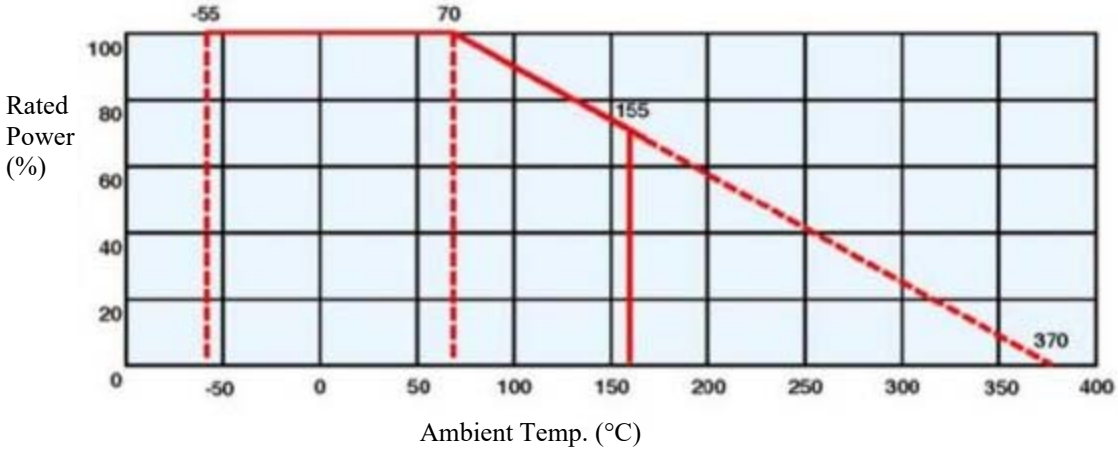
2.5 Resistance tolerance

Code	F	G	J
Tolerance Range	±1%	±2%	±5%

Remark :SMF Series Resistors are RoHS & Halogen Free Compliant.

3. Rated Power:

Rated power is the value of Max load power specified at the ambient temperature of 20℃, and shall meet the functions of electrical and mechanical performance. When the ambient temperature surpasses above mentioned temperature, the value declines as per following DERATING CURVE.



3.1 Rated Voltage:

It is calculated through the following formula:

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

Where E: rated voltage (V)

P: rated power (W)

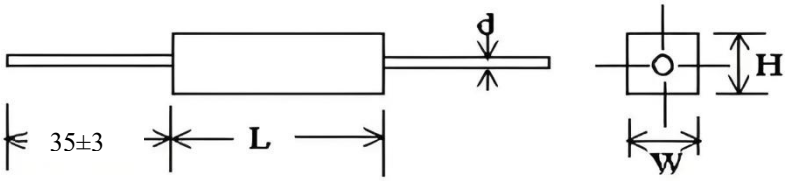
R: total nominal resistance (Ω)

However, in case the voltage calculated exceeds the maximum load voltage, such the maximum load voltage shall be regarded as its rated voltage, means whichever less.

4.Dimension and Structure:

4.1 Dimension:

4.1.1 SQP:



2W:23±3

Type	Dimension(mm)				Resistance Range(Ω)		Max Working Voltage
SQP	W±1	H±1	L±1.5	d±0.1	Wire Wound	Power Film	
2W	7	7	18	0.65	0.1~100	101~10K	150V
3W	8	8	22	0.8	0.1~150	151~33K	350V
5W	10	9	22	0.8	0.1~150	151~50K	350V
7W	10	9	35	0.8	0.1~430	431~50K	500V
10W	10	9	48	0.8	0.1~470	471~50K	750V
15W	12.5	11.5	48	0.8	0.5~600	601~150K	1000V
20W, 25W	14	13.5	60	0.8	0.5~1K	1.1K~150K	1000V

Notes: 1. Max Overload Voltage is 2 times of Max Working Voltage.

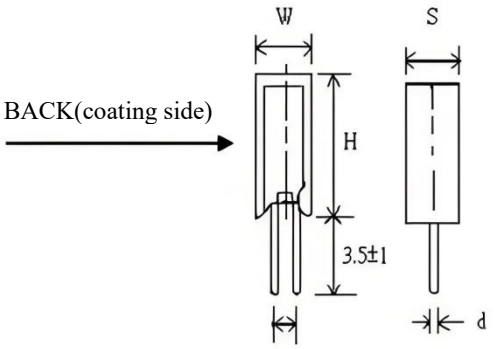
2. Too low or too high ohmic value can be supplied only case by case.

3. Max Working Voltage is applying for all SQ types.

4. Power Film means cutting resistance values instead of wound by resistance wires.

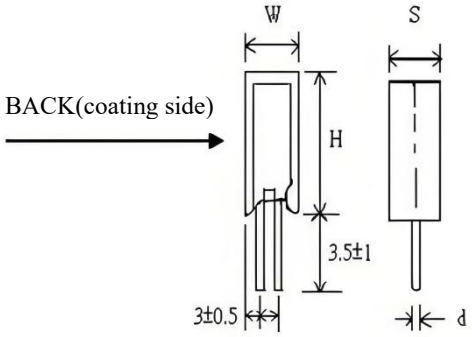
5. Non-Inductive types are also supplied.

4.1.2 SQM:



5+2/-1
7.5+2/-1(10WS)

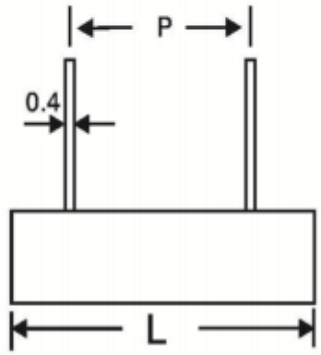
Type	Dimension (mm)				Resistance Range(Ω)	
SQM	H±1.5	W±1	S±1	d±0.1	Wire Wound	Power Film
1W	10	10	5	0.6	0.1~47	48~10K
2W	20	11	7	0.65	0.1~82	83~10K
3W	25	12	8	0.8	0.1~150	151~50K
5W	25	13	9	0.8	0.1~150	151~50K
10WS	35	16	12	0.8	0.1~300	301~100K



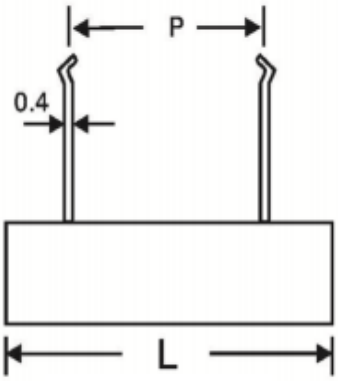
5+2/-1

Type	Dimension (mm)				Resistance Range(Ω)	
SQM	H±1.5	W±1	S±1	d±0.1	Wire Wound	Power Film
7W	39	13	9	0.8	0.1~430	431~50K
10W	52	13	9	0.8	0.1~470	471~75K

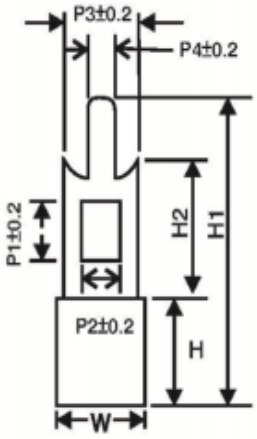
4.1.3 SQZ:



20W·25W

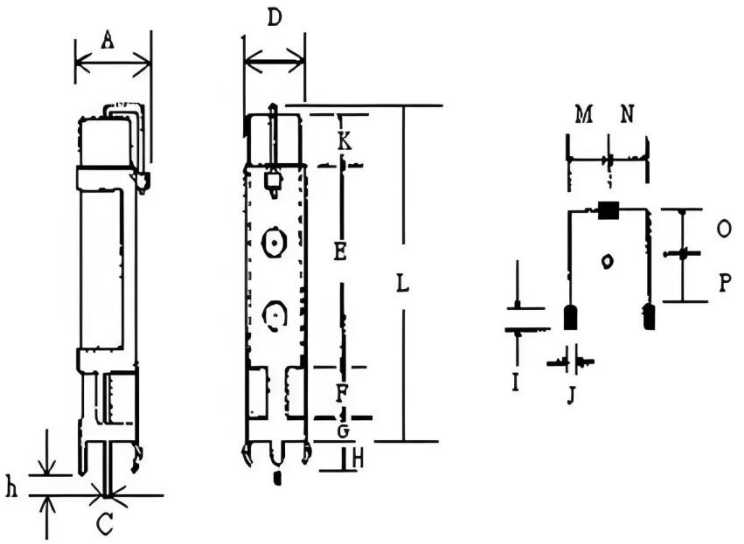


5W·15W



TYPE	Dimension(mm)										Resistance Range(Ω)	
SQZ	L±1.5	W±1	H±1	P±1.5	P1	P2	P3	P4	H1±1	H2±1	Wirewound	Power Film
5WS	25	10	10	9.5	4	1.8	5	1.5	25	10	0.1~130	131~50K
5W	28	10	10	15	4	1.8	5(5)(7.5)	1.5	25(30)(40)	10(15)(25)	0.1~130	131~50K
7W	36	10	10	20	4	1.8	5(5)(7.5)	1.5	25(30)(40)	10(15)(25)	0.1~430	431~50K
10W	48	10	9	32	4	1.8	5(5)(7.5)	1.5	25(30)(40)	10(15)(25)	0.2~470	471~50K
15W	48	12.5	12	32	4	1.8	5	1.5	27	10	1~600	601~150K
20W,25W	60	15	13	42	7	5	10	2.7	32	15	1~1K	1.1K~150K

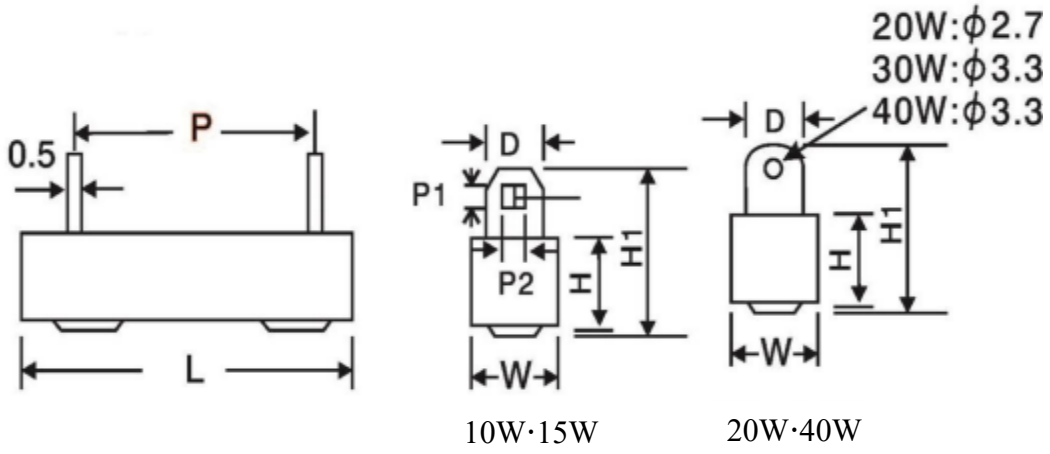
4.1.4 SPS:



TYPE	Dimension(mm)															
SPS	A±1	C±0.1	D±1	E±0.5	F±0.5	G±0.2	H±0.3	I±0.1	J±0.1	K±1	L±1.5	M±0.5	N±0.5	O±0.5	P±0.5	h±0.5
7W	12	0.8	11	28	7	3	4	1.5	0.5	7.5	46	5	5	5	5	2
10W	12	0.8	11	28	7	3	4	1.5	0.5	20	60	5	5	5	5	2

Note: Resistance Range: SPS 7W: 0.1Ω~430Ω(Wire Wound), 431Ω~50KΩ(Power Film)
SPS 10W: 0.1Ω~470Ω(Wire Wound), 471Ω~50KΩ(Power Film)

4.1.5 SQH & SQHG:

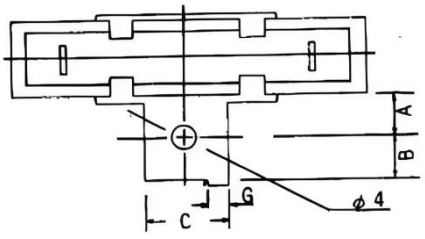


10W·15W 20W·40W

TYPE	Dimension (mm)								Resistance Range(Ω)	
SQH	W±1	H±1	L±1.5	P	H1±1	D±0.5	P1±0.2	P2±0.2	Wirewound	Power Film
10W	10	9	48	32±1	21	5	2.5	1.7	0.5~600	601~50K
15W	12.5	12	48	32±1	21	5	2.5	1.7	1~600	601~150K
20W	14.5	13.5	60	42±1	24	6			1~1K	1.1K~150K
30W	19	19	75	55±2	31	7.5			1~2K	
40W	19	19	90	67±2	31	7.5			1~2K	

Notes: 1.Max Overload Voltage is 2 times of Max Working Voltage.
2.Too low or too high ohmic value can be supplied only case by case.

TYPE	Dimension (mm)			
SQHG	A±0.5	B±0.5	C±0.5	G±0.2
10W	8	5	12	3
15W, 20W	8	5.5	12	3
30W, 40W	10.5	8	18	3.5



4.2 STRUCTURE:

4.2.1 Terminal:

It is made of hot –dipped tin coated copper wire.(SQP、SQM)

It is made of tin plated iron base. (SQZ、SPS、SQH)

4.2.2 Stuffing:

Stuffing is made by flameproof cement (resistant to 800℃) which is solid enough to be free from looseness, crack and easy breakage.

4.2.3 Marking:

Marking is made on the surface.

5. Operating Temperature Range:-55℃~155℃

6. Storage Conditions:

The resistors with appropriate package would have a preservative duration of 1 year, under the following conditions.

T=5℃ ~ 35℃

H=40% ~ 75%

7. Test And Requirements:

Test		Test Method	Condition	Criteria
Mechanical Performance	Terminal tensile	IEC 60115-14.16	To fix the resistor body, a static load of 4.5kg. is to be gradually applied into the terminal for 10 seconds	without causing any looseness and fall
	Twist withstand		To bend the lead wire at the point of about of 6mm from resistor body to 90 ° , then catch the wire at 1.2±0.4mm apart from the bent point end and turn it (clockwise) by 360 degrees perpendicular to the resistor axis at speed of 5 seconds per turn, and do the same counterclockwise again which constitute a whole turn. Repeat the turn for 2 times	without causing any break and looseness
Resistance Temperature Coefficient:		IEC 60115-1 4.8	T.C (ppm/℃) = 〔(R2－R1) ÷R1〕 × 〔1÷(T2－T1)〕×10^6 where R1: resistance value at reference temperature R2: resistance value at test temp. T1: reference temp. T2: test temp.	It shall be within ±300ppm/℃ and if the ohmic value is under 1Ω the T.C. shall be within ±600ppm/℃.
Temperature Cycle		IEC 60115-1 4.19	Following temp. cycles are to be made 5 times and then put at room temp. for one hour Steps / Temperature (℃) / Time (minutes) 1st step: -55 ± 3 / 30 2nd step: Room temp. / 3 3rd step: 155 ± 3 / 30 4th step: Room temp. / 3	The resistance value change rate between pre-and-post test shall be within ±1%
Voltage Withstanding		IEC 60115-1 4.7	Resistors are located in a jig and applying AC 1000V for 1 minute	The resistance should find no physical damage to the resistors, such as arc, char...etc.
Short Time Over Load		IEC 60115-14.13	When the resistors are applied 10 times (Power Film: 5 times) as much as rated wattage for 5 seconds continuously, it shows no evidence of arc, flame...etc. Removing the voltage and place the resistors to the normal condition for 30 minutes,	The resistance value change rate between pre-and-post test shall be within ±2% .

Test	Test Method	Condition	Criteria
Insulation Character	IEC 60115-1 4.6	Resistors are located in a V-shaped metal trough. Using the DC 500V megger instrument 2 poles to clutch either side of lead wires and metal trough	Measuring the Insulation Resistance which shall be over 1000MΩ
Load Life	IEC 60115-14.25	The resistors arrayed are sent into the 70℃ oven, applying rated voltage at the cycle of 1.5 hours ON, 0.5 hour OFF for 1000^{+48}_{-0} hours in total. Then, after removing the voltage, take the resistors out of the oven and left under normal temp. for one hour cooling	The resistance value change rate between pre-and-post test shall be within ±5%.
Moisture-proof Load Life	IEC 60115-14.24	The resistors arrayed are placed into a constant temp./humidity oven at the temp. of 40 ±2℃ and the humidity of 90～95%, then rated power is applied for 1.5 hours and cut off for 0.5 hour. The similar cycle will be repeated for 1000^{+48}_{-0} hours in total (including cut-off time). Then remove the voltage,taking the resistors out of the oven and leaving them at room temp. for one hour.	The resistance value change rate between pre-and-post test shall be within ±5%. There also shall be no evidence of remarkable change on appearance, and the marking shall not be illegible.
Solder-ability	IEC 60115-1 4.17	Immerse the resistors in the solder pot at 235 ±5℃ for 2 seconds	At least 95% solder coverage on the termination
Resistance to Soldering Heat	IEC 60115-1 4.18	Two leads are together dipped in a melted solder of 270 ±5℃ for 10 ±1 seconds, or 350 ±10℃ for 3.5 ±0.5 seconds, Then remove the resistors and leaving them at room temp. for one hour.	The resistance value change rate between pre-and-post test shall be within ±1%.
Nonflammability	JIS - C 5201-4.26	The resistors are applied the power of 16 times the rated wattage for 5 min.	The resistance shall not get flame.