

Version:  
March 1, 2017

# DIRECT

## Electronics Tech.

### (SQ)

# Ceramic Housed Cement Resistors

Web: [www.direct-token.com](http://www.direct-token.com)

Email: [rfq@direct-token.com](mailto:rfq@direct-token.com)

**Direct Electronics Industry Co., Ltd.**

**China:** 12F, Zhong Xing Industry Bld., Chuang Ye Road,  
Nan Shan District, Shen Zhen City,  
Guang Dong, China 518054  
Tel: +86 755 26055363; Fax: +86 755 26055365

**Taiwan:** No.137, Sec. 1, Zhongxing Rd., Wugu District,  
New Taipei City, Taiwan, R.O.C. 24872  
Tel: +886 2981 0109 Fax: +886 2988 7487

**► Product Introduction****Low-cost Ceramic Encased Cement Resistors Suit High Volumes and High Temperatures.****Features :**

- Low cost, space saving
- RoHS compliant with 100% lead free
- Direct mounting on printed circuit board
- Circuit board lock-in mounting tabs available
- High performance for power required applications
- High power to size ratio, Special inorganic potting compound
- Ceramic case provide high thermal conductivity in a fireproof package

**Applications :**

- Power supplies
- Voltage dividers
- Motor controllers
- Automotive applications
- Power electronics circuits

Direct electronics offers commercial grade ceramic-housed power wire wound and film resistors. For medium to high rated power (2W...50W), SQ resistors provide full electrical insulation mounted in a ceramic case.

Axial, radial, vertical styles and several mounting techniques of wire leads or quick disconnects are available from Direct's SQP, SQM, SQZ, and SQH.

The SQ series power resistors feature ideal specifications for high volume and high-temperature applications. Frequently used in power supplies, motor controllers, and automotive applications, these products can be custom tailored to individual needs.

With the extended resistance range and high-temperature rating, the resistors can be specified for operation in harsh environments. The SQ series wire wound resistors feature a resistance range from 0.1Ω to 3KΩ, while the SQ series power film resistors have a resistance range of 80Ω to 150KΩ.

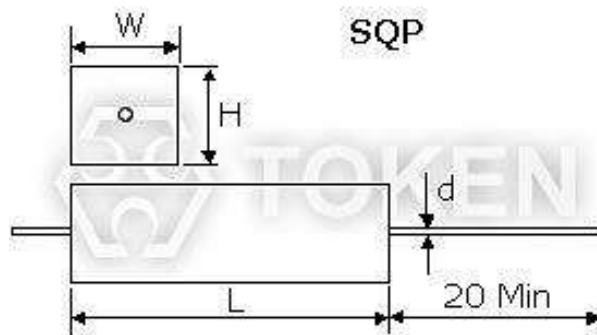
Standard tolerances for both devices are to ±5%, with TCRs of ±300ppm/°C and above. Direct is equipped to design and produce custom components to meet many design and reliability demands. Contact us with your specific needs. For more information, please link to Direct official website "[General Purpose Resistors](#)".



▶ **SQP Dim.**

**Dimensions (SQP)**

Type	Dimension (mm)				Resistance Range ( $\Omega$ )	
	$W \pm 1$	$H \pm 1$	$L \pm 1.5$	$d \pm 0.05$	SQP	RS+SQP
<b>2W</b>	7	7	18	0.5~0.6	0.1~82	
<b>3W</b>	8	8	22	0.7~0.8	0.1~180	181~33K
<b>5W</b>	10	9	22	0.7~0.8	0.1~180	181~50K
<b>7W</b>	10	9	35	0.7~0.8	0.1~430	431~50K
<b>10W</b>	10	9	48	0.7~0.8	0.1~470	471~50K
<b>15W</b>	12.5	11.5	48	0.7~0.8	0.5~600	601~150K
<b>20W-25W</b>	14	13.5	60	0.7~0.8	0.8~1K	1.1~150K



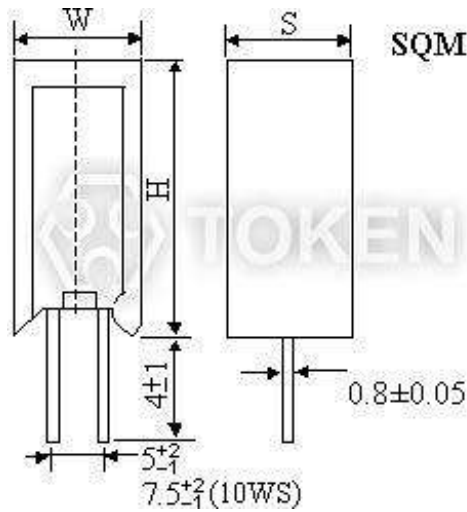
Cement Ceramic Housed (SQP) Dimensions



► **SQM Dim.**

**Dimensions (SQM)**

Type	Dimension (mm)			Resistance Range ( $\Omega$ )	
	H $\pm$ 1.5	W $\pm$ 1	S $\pm$ 1	SQM	RS+SQM
<b>2W</b>	20	12	8	0.1-8.0	81-50K
<b>3W</b>	25	12	8	0.1-180	181-50K
<b>5W</b>	25	13	9	0.1-180	181-50K
<b>7W</b>	39	13	9	0.1-430	431-47K
<b>10W</b>	51	13	12	0.1-470	471-47K
<b>10WS</b>	35	16	12	0.1-430	431-47K



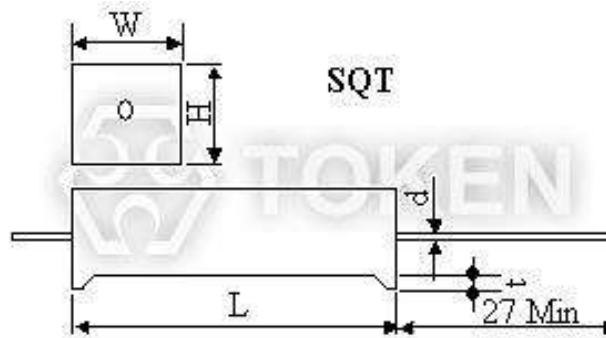
Ceramic Housed (SQM) Dimensions



► **SQT Dim.**

**Dimensions (SQT)**

Type	Dimension (mm)				Resistance Range ( $\Omega$ )	
	H $\pm$ 1.5	W $\pm$ 1	L $\pm$ 1	t $\pm$ 1	SQT	RS+SQM
<b>3W</b>	9	10	22	1.5	0.1-180	181-50K
<b>5W</b>	9	10	22	1.5	0.1-180	181-50K
<b>7W</b>	9	10	35	3.0	0.1-430	431-47K
<b>10W</b>	9	10	48	3.0	0.1-470	471-47K

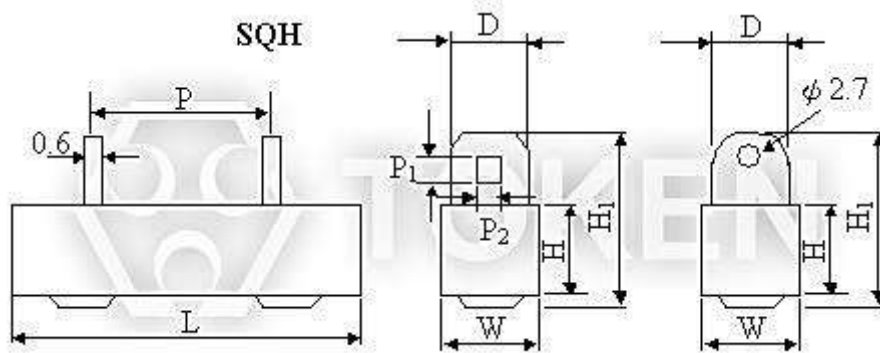


Cement Ceramic Encased (SQT) Dimensions

► **SQH Dim.**

**Dimensions (SQH)**

Type	Dimension (mm)								Resistance Range ( $\Omega$ )		Max Working Voltage
	SQH	W $\pm$ 1	H $\pm$ 1	L $\pm$ 1.5	P $\pm$ 1	H1 $\pm$ 1	D $\pm$ 0.5	P1 $\pm$ 0.2	P2 $\pm$ 0.2	SQH	
10W	10	9	48	32	21	5	2.5	2	0.1~500	500~50K	500V
15W	12.5	11.5	48	32	21	5	2.5	2	1~1K	1K~150K	600V
20W	14.5	13.5	60	43	24	6	3.0	2.5	1~2K	2K~150K	700V
30W	19	19	75	56	29	6	3.0	2.5	1~2K		700V
40W	19	19	90	67	29	6	3.0	2.5	2~3K		700V
50W	19	19	90	67	29	6	3.0	2.5	2~3K		700V



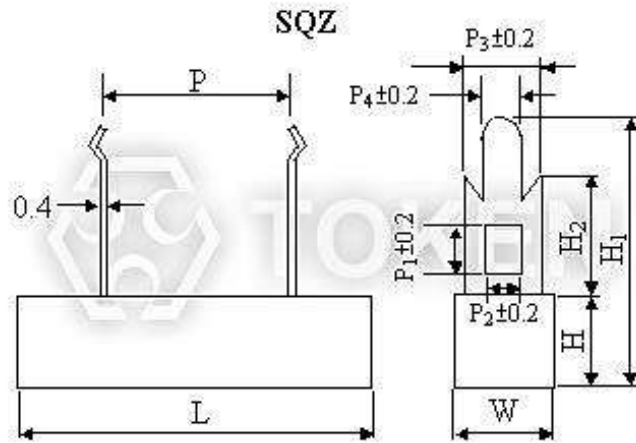
Cement Ceramic Encased (SQH) Dimensions



► **SQZ Dim.**

**Dimensions (SQZ)**

Type	Dimension (mm)										Resistance Range ( $\Omega$ )	
SQZ	L $\pm$ 1.5	W $\pm$ 1	H $\pm$ 1	P $\pm$ 1.5	P1	P2	P3	P4	H1 $\pm$ 1	H2 $\pm$ 1	SQZ	RS+SQZ
5W	25(28)	10	10	9.5(15)	4.2	2	5	1.5	25	10.5	0.1-130	131-50K
7W	36	10	10	20	4.2	2	5	1.5	25	10.5	0.1-430	431-50K
10W	48	10	10	32	4.2	2	5	1.5	25	10.5	0.2-470	471-50K
15W	48	12.5	12	32	4.2	2	5	1.5	26	10.5	1-600	601-150K
20.25W	60	15	13	42	7	6	10	2.7	36	15.0	1-1K	1.1K-150K



Cement Ceramic Encased (SQZ) Dimensions



## ► Electrical Performance

### Electrical Performance (SQ)

TEST ITEMS	CONDITION	SPEC.
Resistance Temp Coeff.	-30°C ~ 200°C	±300ppm / °C
Short Time Over Load	2.5 times of rated wattage for 5 sec.	±2 %
Rated Load	Rated wattage for 30 min.	±1 %
Voltage Withstanding	800 v AC 1 min.	no charge
Temp. Cycle	-30°C ~ 85°C for 5 cycles	±1 %
Load Life	70°C on-off cycle 1000hrs.	±5 %
Moisture-proof Load Life	40°C 95% RH on-off cycle 500 hrs.	±5 %
Incombustibility	16 times of rated wattage for 5 min.	not flamed

## ► Material Specifications

### Material Specifications (SQ)

- **Core :**  
High purity grade alumina ceramic rod.
- **Terminals :**  
Tin/lead plated (Lead (Pb)-free will be 100 % tin).
- **Body :**  
Steatite ceramic case with inorganic potting compound.
- **Element :**  
Copper-nickel alloy, nickel-chrome alloy, resistive wirewound or power film depending on resistance value.

## ► Order Codes

### Order Codes (SQ)

SQP	5W	100R	J	Bulk
Part Number	Rated Power (W)	Resistance Value (Ω)		Resistance Tolerance (%)
SQP		0R1	0.1Ω	J ±5%
SQM		100R	100Ω	
SQT		1K	1KΩ	
SQH		100K	100KΩ	
SQZ				





**► General Information****General Purpose Resistors with Customized Service**

Direct Electronics is expanding business to include a broad range of General Purpose Resistor products designed for high volume applications. This expanded range of commercial resistor presents a more comprehensive product offering for Customer Experience Management (CEM) and other high volume customers that require quality products at competitive pricing.

Backed by the same customer service, technical support and quality assurance that Token has always provided, these new commercial products enable you the opportunity to source a wider range of resistors from a trusted supplier.

**General Use**

When an ambient temperature exceeds a rated ambient temperature, resistor shall be applied on the derating curve by derating the load power. General purpose resistor under overloads is not combustion resistant and is likely to emit, flame, gas, smoke, red heat, etc. Flame retardant resistor generally emits smoke and red heat in a certain power and over but do not emit fire or flame.

When resistors are shielded or coated with resin etc., stress from the storage heat and the resins are applied. So, performance and reliability should be checked well before use.

When a voltage higher than rated is applied in a short time (single pulse, repeated pulses, surge, etc.), it does not necessarily ensure safety that an effective wattage is not higher than a rated wattage. Then consult with us with your specified pulse wave shape. Resistors shall be used in a condition causing no dew condensation.

Keep temperature from rising by choosing resistor with a higher rated capacity; do not use a component having the exact load value required. For considerations of safety in extended period applications, the rating should be more than four times higher than the actual wattage involved, but never use resistors at less than 25% of its rated power.

In applications where resistors are subject to intermittent current surges and spikes, be sure in advance that the components selected are capable of withstanding brief durations of increased load.

Do not exceed the recommended rated load. Resistor must use within the rated voltage range to prevent the shortening of service life and/or failure of the wound resistance elements.

Minimum load: Resistor must be utilized at 1/10 or more of the rated voltage to prevent poor conductance due to oxidation build-up. For basic particulars for cautions, refer to EIAJ Technical Report RCR-2121 "Guidance for care note on fixed-resistors".

