



SYNTON-TECH CORPORATION
CEMENT POWER RESISTORS
(SQM TYPE)

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1. INTRODUCTION

Cement resistors are manufactured by winding the ceramic rods with metal alloy resistance wire and put it in a fireproof ceramic box then concrete with non-flameable and heat-resistant cement.

2. FEATURES

- Heat and flame resistant!
- Completely insulated character suitable for printed circuit board.
- For high resistance value, the winding core will be replaced by metal oxide film cutting core (RS type).
- Non inductive type are available on request!

APPROVED	CHECKED	DESIGNED	REMARK	DOCUMENT NO.
Carol	May	Chen		0201010060



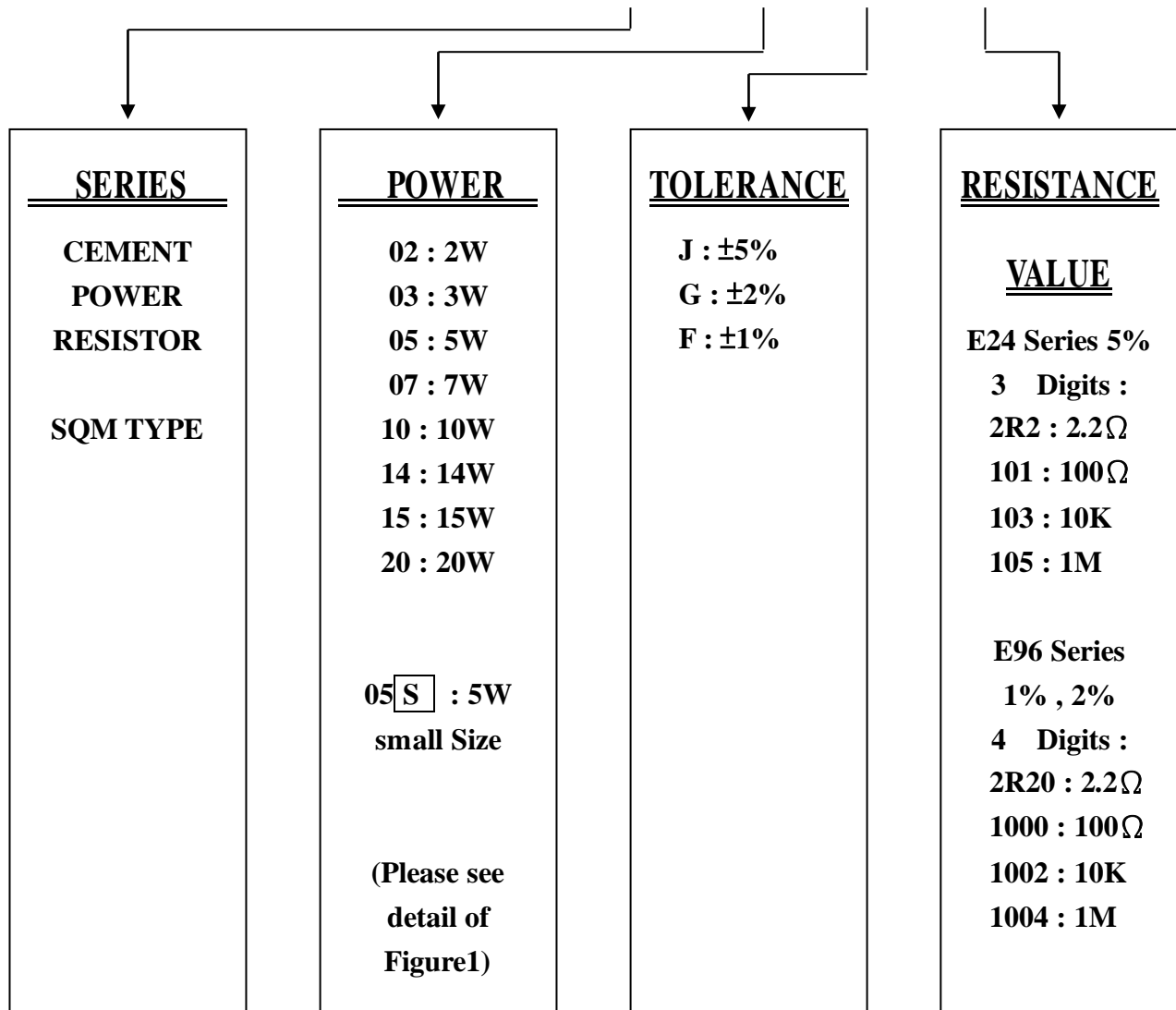
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3. EXPLANATIONS OF ORDERING CODE

DESCRIPTION : SQM 5W 5% 10K

SYNTON CODE : SQM 05 J 103





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4. ELECTRICAL CHARACTERISTICS

STYLE	SQM-02	SQM-03S	SQM-03	SQM-05S	SQM-05	SQM-07	SQM-10	SQM-10S	SQM-14S	SQM-15S	SQM-20S
Power Rating at 70°C	2W	3W	3W	5W	5W	7W	10W	10W	14W	15W	20W
Operating Temp. Range	-55°C ~ +155°C										
Maximum Working Volt.	350V	350V	350V	350V	350V	500V	500V	500V	500V	500V	500V
Maximum Overload Volt.	700V	700V	700V	700V	700V	1000V	1000V	1000V	1000V	1000V	1000V
Dielectric withstanding Volt.	700V	700V	700V	700V	700V	1000V	1000V	1000V	1000V	1000V	1000V
Value Range	Special	0.01Ω ~ 0.09Ω									
	Standard	0.1Ω ~ 33KΩ				0.1Ω ~ 50KΩ					
Temp. Coefficient	±300 PPM / °C special low to ±25PPM , high to ±1500PPM										

Figure 1

* Standard resistance is at the above list, below or over this resistance on request.

* Non-Inductive type up to 50Ω only.

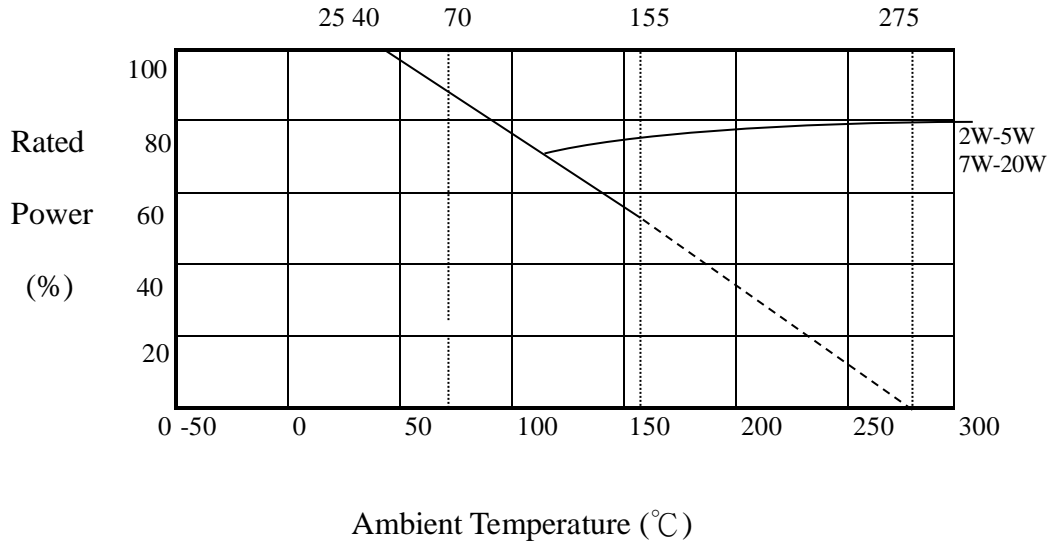


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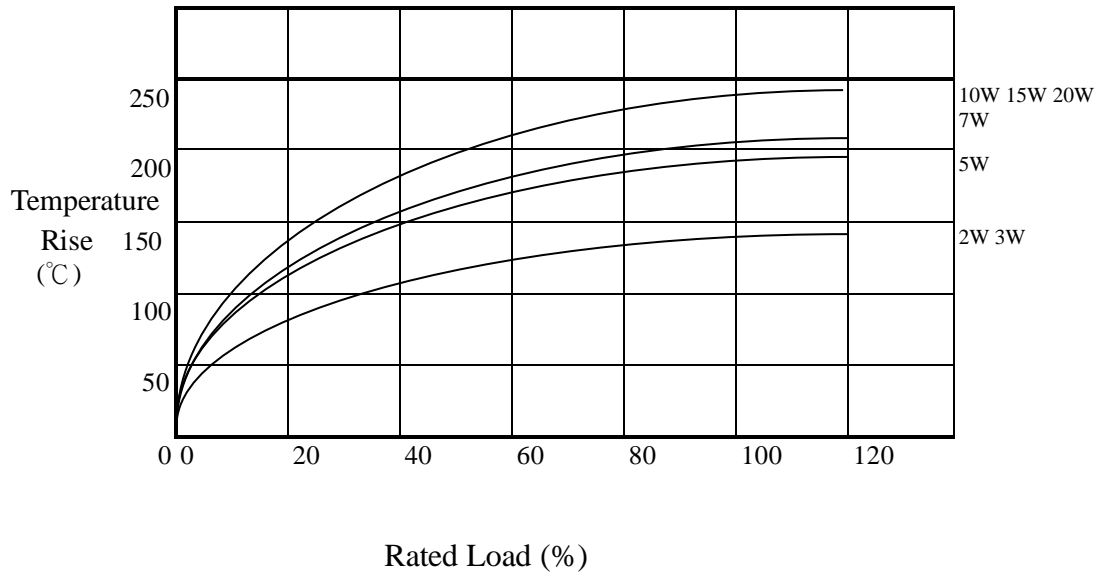
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5. DERATING CURVE



6. TEMPERATURE RISE

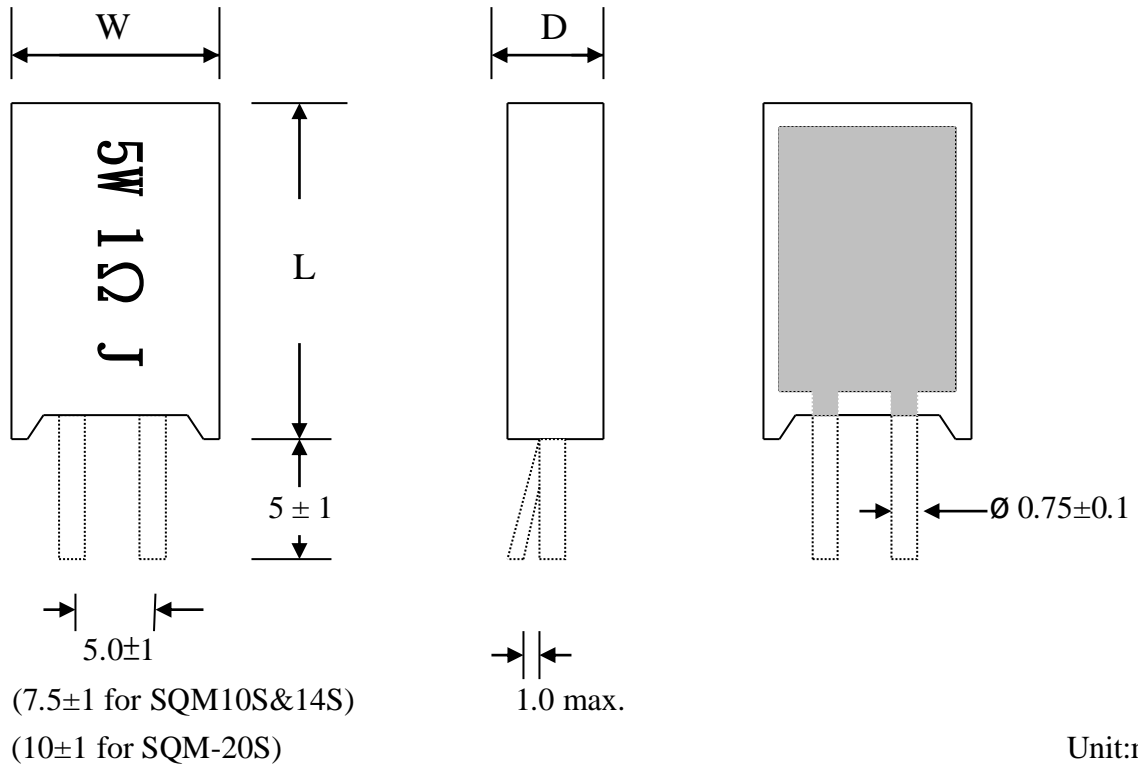




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7. DIMENSIONS



TYPE	POWER	W	D	L
SQM-02	2W	11.5 ± 1.5	7.5 ± 1.5	20.5 ± 1.5
SQM-03S	3W	11.5 ± 1.5	7.5 ± 1.5	20.5 ± 1.5
SQM-03	3W	12.5 ± 1.5	8.5 ± 1.5	25.0 ± 1.5
SQM-05S	5W	12.5 ± 1.5	8.5 ± 1.5	25.0 ± 1.5
SQM-05	5W	12.5 ± 1.5	9.0 ± 1.5	25.0 ± 1.5
SQM-07	7W	12.5 ± 1.5	9.0 ± 1.5	39.0 ± 1.5
SQM-10	10W	12.5 ± 1.5	9.0 ± 1.5	51.0 ± 1.5
SQM-10S	10W	16.0 ± 2.0	12.0 ± 1.5	35.0 ± 1.5
SQM-14S	14W	16.0 ± 2.0	12.0 ± 1.5	35.0 ± 1.5
SQM-15S	15W	12.5 ± 1.5	9.0 ± 1.5	51.0 ± 1.5
SQM-20S	20W	20.0 ± 1.5	10.0 ± 1.5	49.0 ± 1.5

Figure2



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8. ENVIRONMENTAL CHARACTERISTICS

(1) Short-Time Overload

Test Method : 2.5 time RC WV for 5 seconds.

Acceptance Standard : $\pm (2\% + 0.05\Omega)$

(2) Temperature Coefficient of Resistance

Test Method : $-55^{\circ}\text{C} \sim 125^{\circ}\text{C}$

Acceptance Standard : $\pm 300\text{ppm}/^{\circ}\text{C}$

(3) Insulation Resistance

Test Method : in V-Block

Acceptance Standard : $> 1,000\text{M}\Omega$

(4) Solderability

Test Method : $260 \pm 5^{\circ}\text{C}$ for 3 ± 0.5 seconds

Acceptance Standard : 95% min. covering

(5) Resistance to Solvent

Test Method : Trichroethane for 1 min. with ultrasonic

Acceptance Standard : no deterioration of coating and markings

(6) Terminal Strength

Test Method : Direct load for 10 sec. In the direction
of the terminal leads

Acceptance Standard : $\geq 2.54\text{kg} (24.5\text{N})$

(7) Pulse overload

Test Method : 4 times RC WV 10000 cycles
(1 sec. on 25 sec. off)

Acceptance Standard : $\pm(2\% + 0.05\Omega)$



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(8) Load Life in Humidity

Test Method : $40\pm 2^{\circ}\text{C}$, 90~95% RH at RCWV for 1000 hrs.
(1.5 hrs. on, 0.5 hrs. off)
Acceptance Standard : $\pm (5\% + 0.05 \Omega)$

(9) Load Life

Test Method : 70°C at RCWV for 1000 hrs.
(1.5 hrs. on, 0.5 hrs. off)
Acceptance Standard : $\pm (5\% + 0.05 \Omega)$

(10) Temperature Cycling

Test Method : $-65^{\circ}\text{C} \rightarrow \text{room temp.} \rightarrow 150^{\circ}\text{C} \rightarrow \text{room temp.}$
for 5 cycles
Acceptance Standard : $\pm (2\% + 0.05 \Omega)$

(11) Resistance to Soldering Heat

Test Method : Tensile : $350^{\circ}\text{C} \pm 10^{\circ}\text{C}$ for 3 ± 0.5 seconds
Acceptance Standard : $\pm (1\% + 0.05 \Omega)$

● **Rated continuous Working Voltage (RCWV)**

$$= \sqrt{\text{power rating} \times \text{resistance value}}$$