



SYNTON-TECH CORPORATION

HIGH RESISTANCE RESISTOR

RR series

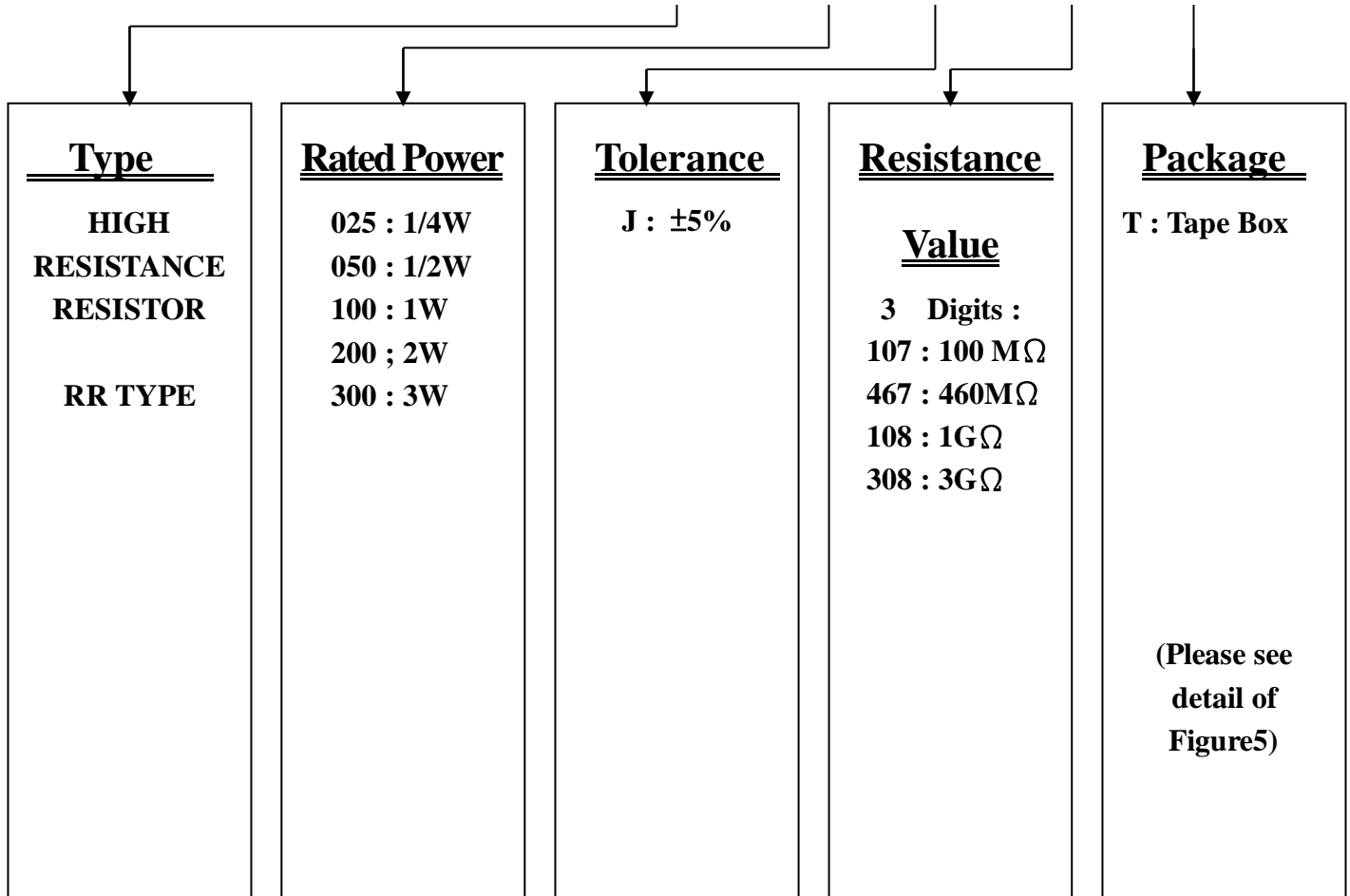
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1. **SUBJECT** : This specification applies on the high resistance resistor
was made by **SYNTON-TECH** Corporation ◦

2. **PART NUMBER** : Part number of the high resistance resistor is
identified by the type, rated power, tolerance, resistance value ◦

Example : **DESCRIPTION : RR 1/4W 5% 100M**

SYNTON CODE : RR 025 J 107 T



APPROVED	CHECKED	DESIGNED	REMARK	DOCUMENT NO
Carol	May	Chen		0201010463



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3. RATING

3.1 Ratings are shown at fig 1. Ratings

TYPE	RR-25	RR-50S	RR-50	RR-100S	RR-100	RR-200S	RR-200	RR-300S
Rated wattage	1/4W	1/2W	1/2W	1W	1W	2W	2W	3W
Maximum operational voltage	1600V		3500V		7000V		10000V	
Dielectric withstanding voltage	700V							
Rated ambient temperature	70 °C							
Operating temperature range	-55°C ~ +155°C							
Resistance tolerance	J (±5%)							
Resistance range	100M ~ 3G							

Rated wattage is the maximum continuous power applicable at ambient temperature from -55 °C ~ 70 °C

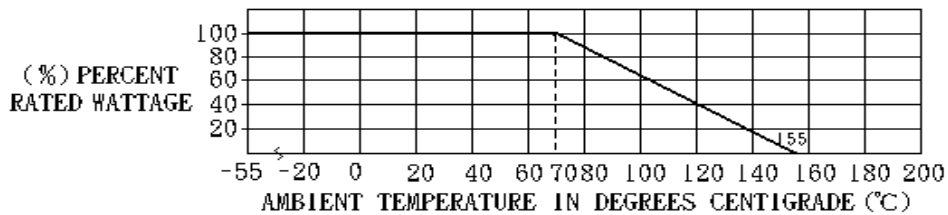


Fig.1 derating curve

3.2 Rated voltage

Rated voltage is the D.C. or rms A.C. maximum applied voltage at ambient temperature from -55°C to 70°C. Rated voltage shall be determined from the following formula. If Rated voltage is over maximum operational voltage, then rated voltage is equal to maximum operational voltage on Fig. 1.

$$E = \sqrt{P(W) \times R(\Omega)}$$

E : Rated voltage (V)

P : Rated wattage (W)

R : Nominal resistance (Ω)



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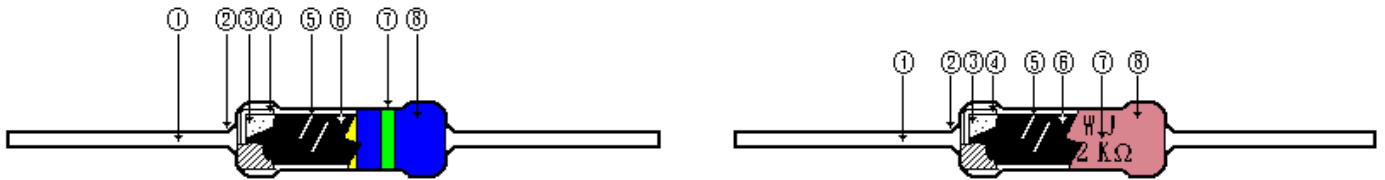
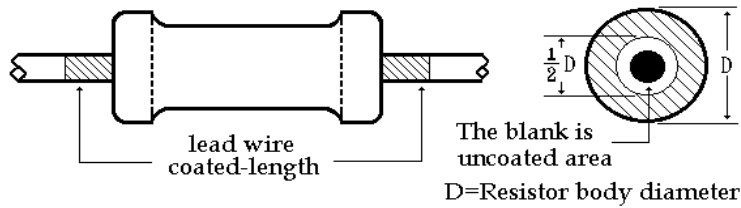
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4. DIMENSIONS AND CONSTRUCTIONS

4.1 Construction

Painting Specification

Welding point, terminal and lead wire, is permissible to be exposed without the outer coated cover. The extent should be within 1/2 of the arc angle.



No.	Parts	Material
1	Lead wire	tin plated copper wire
2	Contact of cap and Lead wire	welding
3	Ceramic base	aluminum ceramic of the kind
4	Cap	tin plated iron base
5	Helical cutting groove	-----
6	Conductive film	metal glaze film
7	Marking	Color Code → 1/4W UV ink → ≥ 1/2WS
8	Insulation coat	1/4W:epoxy paint of the kind Coating Color : Blue ≥ 1/2WS:silicon paint of the kind flame proof (worth UL94-V0) thermal set resin of the kind

Fig.2



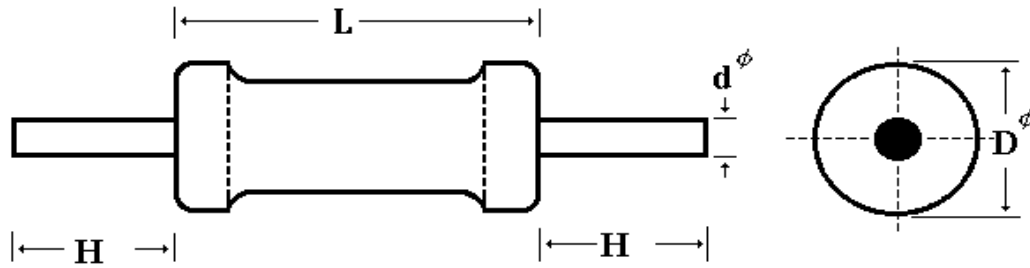
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4.2 Dimensions



Unit::mm

RATED POWER		L	D ϕ	H	d ϕ
RR-25	1/4W	6.0 \pm 0.5	2.4 \pm 0.1	28 \pm 2	0.60 \pm 0.1
RR-50S	1/2W				
RR-50	1/2W	9.0 \pm 0.5	3.3 \pm 0.5	30 \pm 3	0.60 \pm 0.1
RR-100S	1W				
RR-100	1W	12 $^{+1}_{-2}$	4.5 \pm 0.5	38 \pm 3	0.80 \pm 0.1
RR-200S	2W				
RR-200	2W	16 $^{+1}_{-2}$	5.5 \pm 0.5	38 \pm 3	0.80 \pm 0.1
RR-300S	3W				

Fig.3



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5. CHARACTERISTICS

No.	Items	Characteristics	Test methods
1	Resistance Value	class J ($\pm 5\%$)	JIS C-5201-1(4.5) classification of applied A
2	Temperature coefficient of resistance	$\pm 200\text{ppm}/^\circ\text{C}$	JIS C-5201-1 measured at room temperature and room temperature+100 $^\circ\text{C}$
3	Short-time Overload	resistance change within $\pm(1\% + 0.05\ \Omega)$	JIS C-5201-1(4.13) (rated voltage $\times 2.5$ 5 s)
4	Endurance (under damp and load)	resistance change within $\pm(5.0\% + 0.1\ \Omega)$	JIS C-5201-1(4.24) 1) test temperature. 40 $^\circ\text{C}$ $\pm 2\ ^\circ\text{C}$ 2) relative humidity 90 % - 95 % 3) duration 1000 hours
5	Endurance (rated load)	resistance change within $\pm(5\% + 0.1\ \Omega)$	JIS C-5201-1 (4.25.1) 1) test temperature 70 $^\circ\text{C}$ $\pm 3\ ^\circ\text{C}$ 2) duration 1000 hours
6	Resistance to soldering heat	resistance change within $\pm(1.0\% + 0.05\ \Omega)$	JIS C-5201-1 (4.18) 1) wave solder 260 $^\circ\text{C}$ $\pm 5^\circ\text{C}$ 10s 2) Solder Iron 350 $^\circ\text{C}$ $\pm 10^\circ\text{C}$ 3.5 s
7	Solder ability	95 % (min) coverage	JIS C-5201-1 (4.17) 1) temp. of solder 245 $^\circ\text{C}$ $\pm 5\ ^\circ\text{C}$ 2) duration of immersion 2.0 s ± 0.5 s 3) preparation not applicable
8	Temperature cycling	resistance change within $\pm(1.5\% + 0.05\ \Omega)$	JIS C-5201-1(4.19) 1) Test temp. -25 $\pm 3\ ^\circ\text{C}$ \sim +85 $\pm 3\ ^\circ\text{C}$ 2) number of 5 cycles
9	Dielectric withstanding voltage	Flash over, burning, insulation damage should not be observed	JIS C-5201-1 (4.7) 1) V-Block 2) test voltage 700 V 3) duration time 60 s
10	Resistance to cold	resistance change within $\pm (1.0\% + 0.05\ \Omega)$	JIS C-5201-1 (4.23.4) 1) test temp. -25 $^\circ\text{C}$ $\pm 3^\circ\text{C}$ 2) duration 24 $_{-0}^{+4}$ hours



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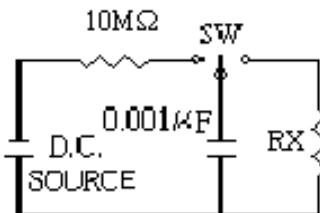
11	Resistance to damp heat	resistance change within $\pm(1 \% + 0.05 \Omega)$	JIS C-5201-1 1) test temp. $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 2) relative humidity 90 % to 95 % 3) duration 240 hours
12	Insulation resistance	more than 1,000M Ω	JIS C-5201-1 (4.6.1.1) test voltage DC500 V
13	Intermittent overload	resistance change within $\pm(5 \% + 0.1\Omega)$	JIS C 5201-1 (4.13) 1) applicable more than 100 Ω 2) Rated voltage $\times 3$ 3) 10,000 cycles
14	Tensile strength	Neither breakage of the lead wire nor loosening of termination resistance change within $\pm(0.5 \% + 0.05 \Omega)$	JIS C-5201-1(4.16) 1)10N ; 10s \pm 1s
15	Bending strength	Neither breakage of the lead wire nor loosening of termination resistance change within $\pm(0.5 \% + 0.05 \Omega)$	JIS C-5201-1 (4.16) 1)360° Round-trip ; 1.5cycle (0.6 φ) 2)360° Round-trip ; 3cycle (0.8 φ)
16	Pulse withstanding voltage	Resistance change within ± 20 % test circuit 	The following discharge cycle is repeated in the circuit of the left fig. 2.5 sec. ON 2.5 sec. OFF 50 cycles. test voltage (DC source) The following discharge cycle is repeated in the circuit of the left fig. 2.5 sec. ON 2.5 sec. OFF 50 cycles. test voltage (DC source) 10KV

Fig.4



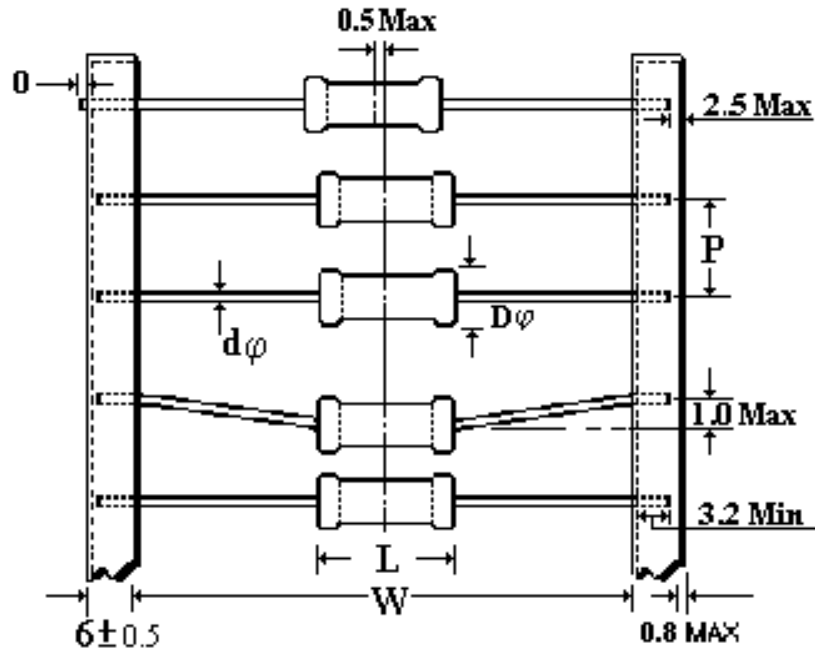
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6. TAPING



Unit::mm

Rated Power		W	L1	D φ	P	d φ	BOX (pcs)
RR-25	1/4W	52±2	6.0 ±0.5	2.4 ±0.1	5 ±0.5	0.60 ±0.1	2,500
RR-50S	1/2W						
RR-50	1/2W	52±2	9.0 ±0.5	3.3 ±0.5	5 ±0.5	0.60 ±0.1	2,500
RR-100S	1W						
RR-100	1W	52±2	12 ⁺¹ ₋₂	4.5 ±0.5	5 ±0.5	0.80 ±0.1	1,000
RR-200S	2W						
RR-200	2W	63±2	16 ⁺¹ ₋₂	5.5 ±0.5	10 ±0.5	0.80 ±0.1	500
RR-300S	3W						

Fig.5