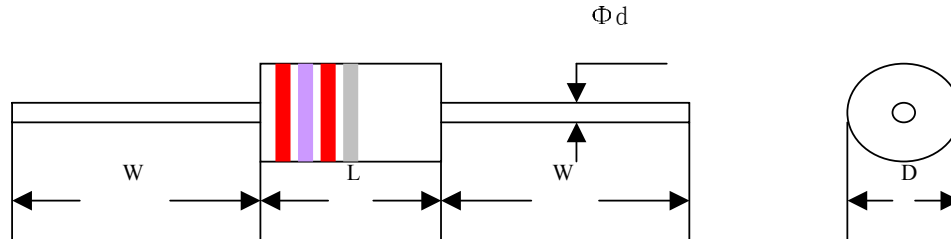


## Sharma Resistors

## THE FIXED CARBON COMPOSITION RESISTORS

### 1. Dimensions:



### 2. Rating and Dimensions:

Type	Rated Power (W)	Dimensions in mm				Max Rated Voltage (v)	Max Overload Voltage (v)	Resistance range (Ω)
		L	D	W	d			
RS11-1/2	0.5	9.5±0.8	3.5±0.2	26±2	0.69±0.01	350	500	4.7 to 22M

### 3. Sold Resistance in Packs

#### 1/2WATT

SHARMA Type #	Ω	SHARMA Type #	Ω	SHARMA Type #	Ω	SHARMA Type #	Ω
RS11-1/2W-4R7	4.7	RS11-1/2W-18	18	RS11-1/2W-75	75	RS11-1/2W-300	300
RS11-1/2W-5R1	5.1	RS11-1/2W-20	20	RS11-1/2W-82	82	RS11-1/2W-330	330
RS11-1/2W-5R6	5.6	RS11-1/2W-22	22	RS11-1/2W-91	91	RS11-1/2W-360	360
RS11-1/2W-6R2	6.2	RS11-1/2W-24	24	RS11-1/2W-100	100	RS11-1/2W-390	390
RS11-1/2W-6R8	6.8	RS11-1/2W-27	27	RS11-1/2W-110	110	RS11-1/2W-430	430
RS11-1/2W-7R5	7.5	RS11-1/2W-30	30	RS11-1/2W-120	120	RS11-1/2W-470	470
RS11-1/2W-8R2	8.2	RS11-1/2W-33	33	RS11-1/2W-130	130	RS11-1/2W-510	510
RS11-1/2W-9R1	9.1	RS11-1/2W-36	36	RS11-1/2W-150	150	RS11-1/2W-560	560
RS11-1/2W-10	10	RS11-1/2W-39	39	RS11-1/2W-160	160	RS11-1/2W-620	620
RS11-1/2W-11	11	RS11-1/2W-43	43	RS11-1/2W-180	180	RS11-1/2W-680	680
RS11-1/2W-12	12	RS11-1/2W-47	47	RS11-1/2W-200	200	RS11-1/2W-750	750
RS11-1/2W-13	13	RS11-1/2W-51	51	RS11-1/2W-220	220	RS11-1/2W-820	820
RS11-1/2W-15	15	RS11-1/2W-62	62	RS11-1/2W-240	240	RS11-1/2W-910	910
RS11-1/2W-16	16	RS11-1/2W-68	68	RS11-1/2W-270	270	RS11-1/2W-1K	1.0K

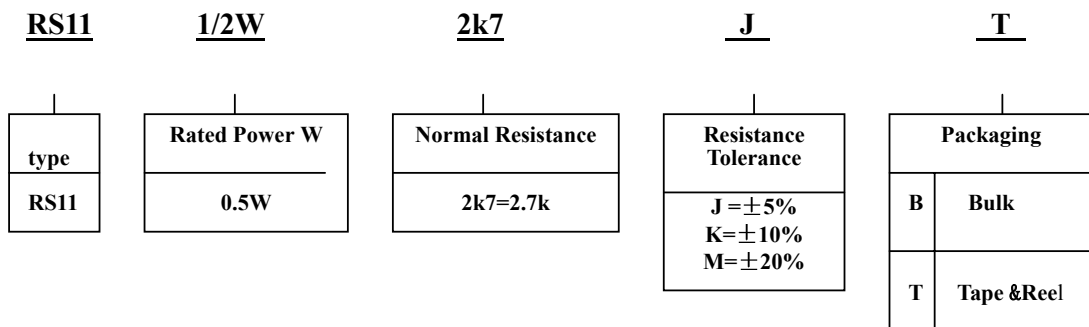
**Sharma Resistors**

**1/2WATT (Cont.)**

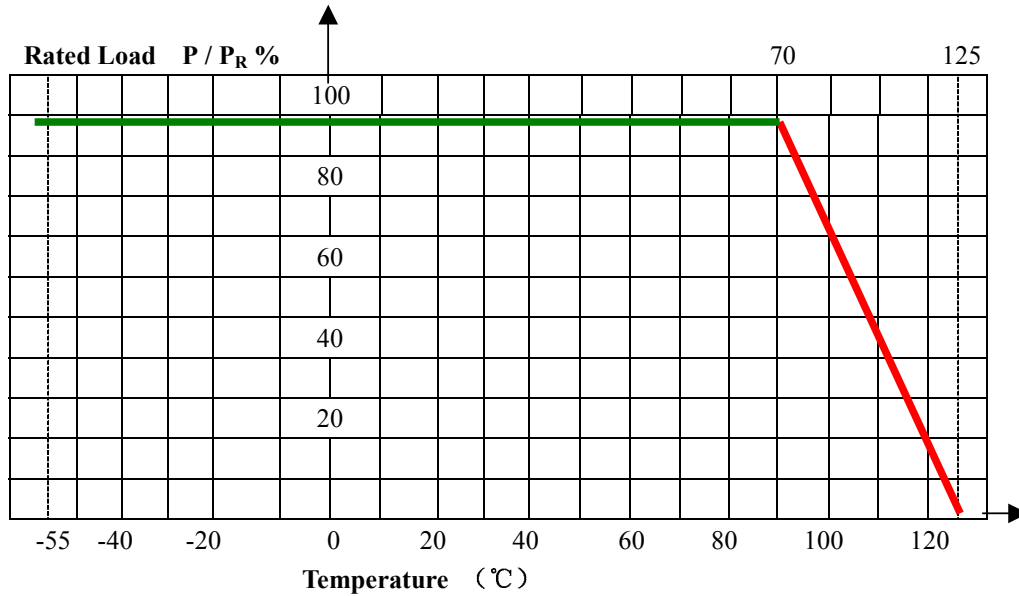
SHARMA Type #	Ω	SHARMA Type #	Ω	SHARMA Type #	Ω	SHARMA Type #	Ω
RS11-1/2W-1K1	1.1K	RS11-1/2W-13K	13K	RS11-1/2W-160K	160K	RS11-1/2W-2M	2.0M
RS11-1/2W-1K2	1.2K	RS11-1/2W-15K	15K	RS11-1/2W-180K	180K	RS11-1/2W-2M2	2.2M
RS11-1/2W-1K3	1.3K	RS11-1/2W-16K	16K	RS11-1/2W-200K	200K	RS11-1/2W-2M4	2.4M
RS11-1/2W-1K5	1.5K	RS11-1/2W-18K	18K	RS11-1/2W-220K	220K	RS11-1/2W-2M7	2.7M
RS11-1/2W-1K6	1.6K	RS11-1/2W-20K	20K	RS11-1/2W-240K	240K	RS11-1/2W-3M0	3.0M
RS11-1/2W-1K8	1.8K	RS11-1/2W-22K	22K	RS11-1/2W-270K	270K	RS11-1/2W-3M3	3.3M
RS11-1/2W-2K	2.0K	RS11-1/2W-24K	24K	RS11-1/2W-300K	300K	RS11-1/2W-3M6	3.6M
RS11-1/2W-2K2	2.2K	RS11-1/2W-27K	27K	RS11-1/2W-330K	330K	RS11-1/2W-3M9	3.9M
RS11-1/2W-2K4	2.4K	RS11-1/2W-30K	30K	RS11-1/2W-360K	360K	RS11-1/2W-4M3	4.3M
RS11-1/2W-2K7	2.7K	RS11-1/2W-33K	33K	RS11-1/2W-390K	390K	RS11-1/2W-4M7	4.7M
RS11-1/2W-3K	3.0K	RS11-1/2W-36K	36K	RS11-1/2W-430K	430K	RS11-1/2W-5M1	5.1M
RS11-1/2W-3K3	3.3K	RS11-1/2W-39K	39K	RS11-1/2W-470K	470K	RS11-1/2W-5M6	5.6M
RS11-1/2W-3K6	3.6K	RS11-1/2W-43K	43K	RS11-1/2W-510K	510K	RS11-1/2W-6M2	6.2M
RS11-1/2W-3K9	3.9K	RS11-1/2W-47K	47K	RS11-1/2W-560K	560K	RS11-1/2W-6M8	6.8M
RS11-1/2W-4K3	4.3K	RS11-1/2W-51K	51K	RS11-1/2W-620K	620K	RS11-1/2W-7M5	7.5M
RS11-1/2W-4K7	4.7K	RS11-1/2W-56K	56K	RS11-1/2W-680K	680K	RS11-1/2W-8M2	8.2M
RS11-1/2W-5K1	5.1K	RS11-1/2W-62K	62K	RS11-1/2W-750K	750K	RS11-1/2W-9M1	9.1M
RS11-1/2W-5K6	5.6K	RS11-1/2W-68K	68K	RS11-1/2W-820K	820K	RS11-1/2W-10M	10M
RS11-1/2W-6K2	6.2K	RS11-1/2W-75K	75K	RS11-1/2W-910K	910K	RS11-1/2W-11M	11M
RS11-1/2W-6K8	6.8K	RS11-1/2W-82K	82K	RS11-1/2W-1M	1.0M	RS11-1/2W-12M	12M
RS11-1/2W-7K5	7.5K	RS11-1/2W-91K	91K	RS11-1/2W-1M1	1.1M	RS11-1/2W-13M	13M
RS11-1/2W-8K2	8.2K	RS11-1/2W-100K	100K	RS11-1/2W-1M2	1.2M	RS11-1/2W-15M	15M
RS11-1/2W-9K1	9.1K	RS11-1/2W-110K	110K	RS11-1/2W-1M3	1.3M	RS11-1/2W-16M	16M
RS11-1/2W-10K	10K	RS11-1/2W-120K	120K	RS11-1/2W-1M5	1.5M	RS11-1/2W-18M	18M
RS11-1/2W-11K	11K	RS11-1/2W-130K	130K	RS11-1/2W-1M6	1.6M	RS11-1/2W-20M	20M
RS11-1/2W-12K	12K	RS11-1/2W-150K	150K	RS11-1/2W-1M8	1.8M	RS11-1/2W-22M	22M

**4. Part Numbering System:**

Example:



5. Derating Curve :



6. Resistance Temperature Characteristics:

Resistance range	Max. Resistance Characteristics $\pm(\Delta R^*/R)\%$	
	Temperature range	Temperature range
	-55 $^{\circ}\text{C}$ to +20 $^{\circ}\text{C}$	+20 $^{\circ}\text{C}$ to +125 $^{\circ}\text{C}$
1k $\Omega$ and under	$\pm 6.5$	$\pm 6.5$
1.1k $\Omega$ to 10k $\Omega$	$\pm 10$	$\pm 8$
11k $\Omega$ to 100k $\Omega$	$\pm 13$	$\pm 10$
110k $\Omega$ to 1M $\Omega$	$\pm 15$	$\pm 13$
1.1M $\Omega$ to 10M $\Omega$	$\pm 20$	$\pm 19.5$
11M $\Omega$ and over	$\pm 25$	$\pm 19.5$

\*  $\Delta R = R_2 - R_1$   
**R<sub>1</sub>**: Resistance value at reference temperature  
**R<sub>2</sub>**: Resistance value at test temperature

7. Mechanical and Electronic Performance

Description	Test method	Performance Requirements
(Vibration)	Frequency range: 10HZ ~ 500Hz Amplitude: 0.75mm Total last time: 6h	No visible damage ( $R \leq \pm (2\%R + 0.1 \Omega)$ ).

**Sharma Resistors**

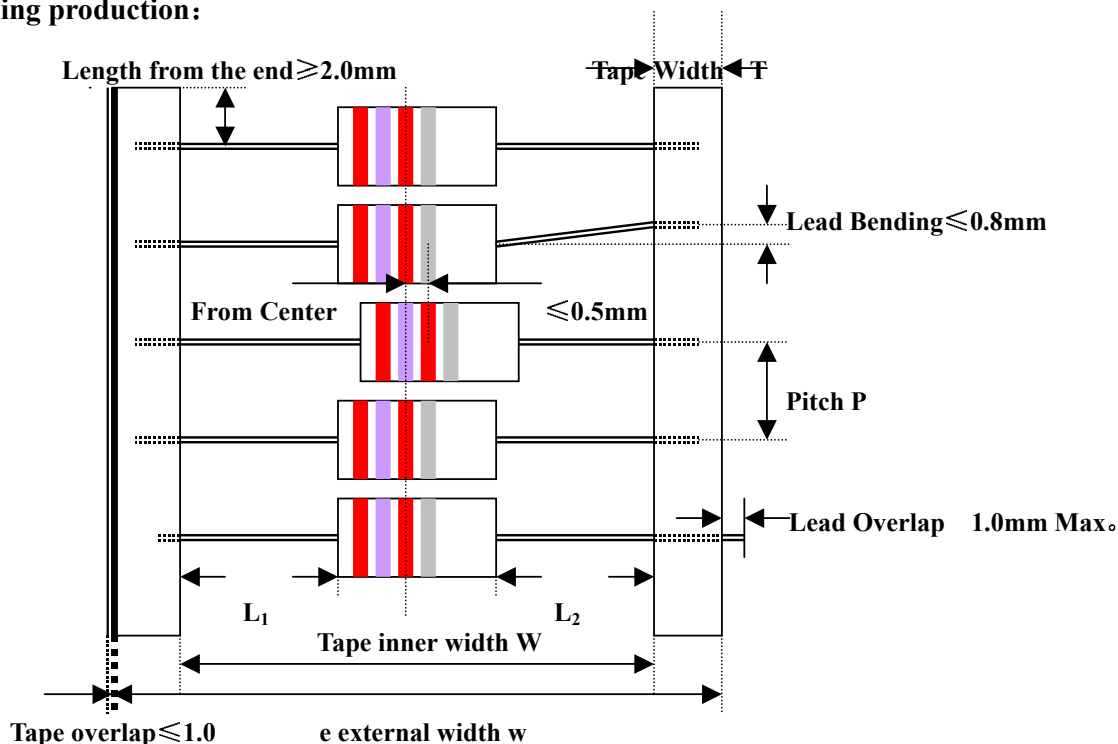
**8. Mechanical and Electronic Performance Cont. :**

Description		Test method	Performance Requirements
<b>Terminal Strength</b>	<b>Pull</b>	Along the longitudinal axis of the terminal leads 20N, 5S	No visible damage ( $R \leq \pm (2\%R + 0.1 \Omega)$ ).
	<b>Bending</b>	Bending two times, Once in each direction	
	<b>Twist</b>	Twist 180° two times	
<b>Resistance to Soldering Heat</b>		Solder temperature: $350 \pm 10^\circ\text{C}$ Immerge time : $3.5 \pm 0.5\text{S}$ Depth from the body of the resistor: $2^{+0.5}$ mm	No visible damage ( $R \leq \pm (2\%R + 0.1 \Omega)$ ).
<b>Solderability</b>		Solder temperature : $235 \pm 5^\circ\text{C}$ Dwell time in solder: $3 \pm 0.5\text{S}$ Depth from the body of the resistor: $2 \pm 0.5$ mm	At least 95% of the dipping surface must be covered by new solder, no flaws gathered
<b>Voltage Coefficient (Application in 1K<math>\Omega</math> to 10M<math>\Omega</math>)</b>		Use 10%Resistance rated voltage and 100%Resistance rated voltage to test resistance value	A total resistance change of $\pm 2\%$ max. or $\pm 0.035\%/V$
<b>Short time overload</b>		2.5 times of rated voltage or times of Max. rated voltage (selecting lower) 5S.	No visible damage ( $R \leq \pm (2\%R + 0.1 \Omega)$ )
<b>Dielectric withstanding voltage</b>		Resistois shall be clamped in the trough of a 90° metallic V-block and shall be tested at AC potential respectively Specified in the above list for $60 \pm 5\text{s}$ ,	No evidence of arcing or insulation breakdown

9. Mechanical and Electronic Performance Cont. :

Description	Test method	Performance Requirements
Temperature fast change	$\theta_A: -55^\circ\text{C}$ $\theta_B: +125^\circ\text{C}$ Shape check Resistance	No visible damage $(R \leq \pm (2\%R + 0.1 \Omega))$ .
70°C endurance	Last out time : 1000h When 48h, 500h and 1000h check: Shape check resistance When 1000h check: Insulation Resistance	No visible damage, Mark clarity $\Delta R \leq \pm (10\%R + 0.5 \Omega)$ $R \geq 1G \Omega$
Fixing state Damp heat	Shape check Resistance Insulation Resistance	No visible damage, Mark clarity $\Delta R \leq \pm (10\%R + 0.5 \Omega)$ $R \geq 100M \Omega$

10. Taping production:



**Sharma Resistors**

Tape Style	Taping Dimensions mm				
	W	A	T	P	L <sub>1</sub> -L <sub>2</sub>
T-52	52±1.0	64.5±0.5	6.0±1.0	5.0±0.3	0±1.0

**11. Products Package:**

**a. In bulk**

Description	Specification	Quantity	Dimension (mm)			
			Length	Width	Height	Thickness
Small-size plastic bag	1/2 W	100 pieces	115	75	—	0.075±0.005
Big-size plastic bag	1/2 W	5 bags	175	115	—	0.025±0.005
Paper box	1/2 W	20 boxes	310	200	120	3
Outside package	1/2 W	3 Paper boxes	410 <sup>+10</sup>	330 <sup>+10</sup>	220 <sup>+10</sup>	4
<b>Note: Outside package weight 15±1 kg</b>						

**b. Taping Products**

Description	Specification	Quantity	Dimension (mm)			
			Length	Width	Height	Thickness
Paper box	1/2 W	2000 pieces	445	80	65	2
Outside package	1/2 W	10 Paper boxes	460 <sup>+10</sup>	420 <sup>+10</sup>	150 <sup>+10</sup>	4
<b>Note: Outside package weight 10±1 kg</b>						