



SYNTECH CORPORATION

RESISTOR NETWORKS

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1. INTRODUCTION

Thick film resistor networks have Metal Glaze Element on the ceramic substrates with strong clip construction terminal, and are coated with special epoxy resin. They are the most suitable to meet the density of circuit assembling.

2. APPLICATION

- Control Circuits of V.T.R. Computer, facsimile, Car & Air-Conditioner.
- Color T.V. & Other Electronic equipments for Consumer use.

3. FEATURES

- Miniature, High Density Packaging.
- Combinations of Different Ohmic value are available.
- High Reliability with RuO₂ Paste.

APPROVED	CHECKED	DESIGNED	REMARK	DOCUMENT NO.
Carol	May	Chen		0201010022



5. RATING

Wattage/Element	R		X							
	All Style		All Style							
	0.125W		0.25W							
Resistance Range	E-12 Series (Please see detail of Figure2)									
Max. Working Voltage	100V					200V				
CIRCUITS	R Style	Resistance value	100Ω - 10K							
	L Style	Bit Errors	±1/2 LSB							
		Resistance value	5KΩ - 100K							
		Rated voltage	30mW/element							
		Working voltage	DC 20V Max.							
		BITS	4Bits	5Bits	6Bits	7Bits	8Bits	9Bits	10Bits	
		FSA(Max.)	3.12%	1.56%	0.78%	0.39%	0.2%	0.2%	0.2%	
Operating Temp. Range	-55°C ~ +125°C									
T.C.R. (PPM/°C)	±100PPM 50 ohm ~ 1M ohm									
	±250PPM < 50 ohm or ≥ 2.2M ohm									

Figure1

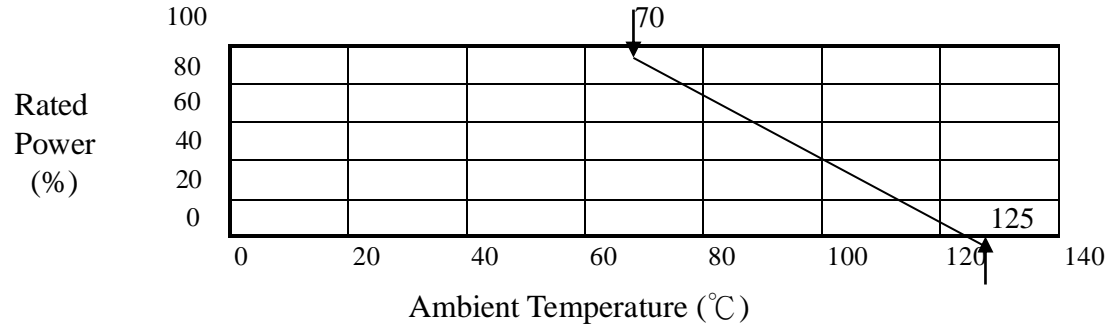
E-12 SERIES											
10	12	15	18	22	27	33	39	47	56	68	82
100	120	150	180	220	270	330	390	470	560	680	820
1K	1.2K	1.5K	1.8K	2.2K	2.7K	3.3K	3.9K	4.7K	5.6K	6.8K	8.2K
10K	12K	15K	18K	22K	27K	33K	39K	47K	56K	68K	82K
100K	120K	150K	180K	220K	270K	330K	390K	470K	560K	680K	820K
1M											
DUAL TERMINATORS (OHM)											
*R STYLE(R1/R2)											
160/240				330/390							
180/390				330/470							
220/270				1.5K/3.3K							
220/330				3.0K/6.2K							
*L STYLE(Standard)											
5Kohm — 10Kohm — 25Kohm — 50Kohm — 100Kohm											

Figure2



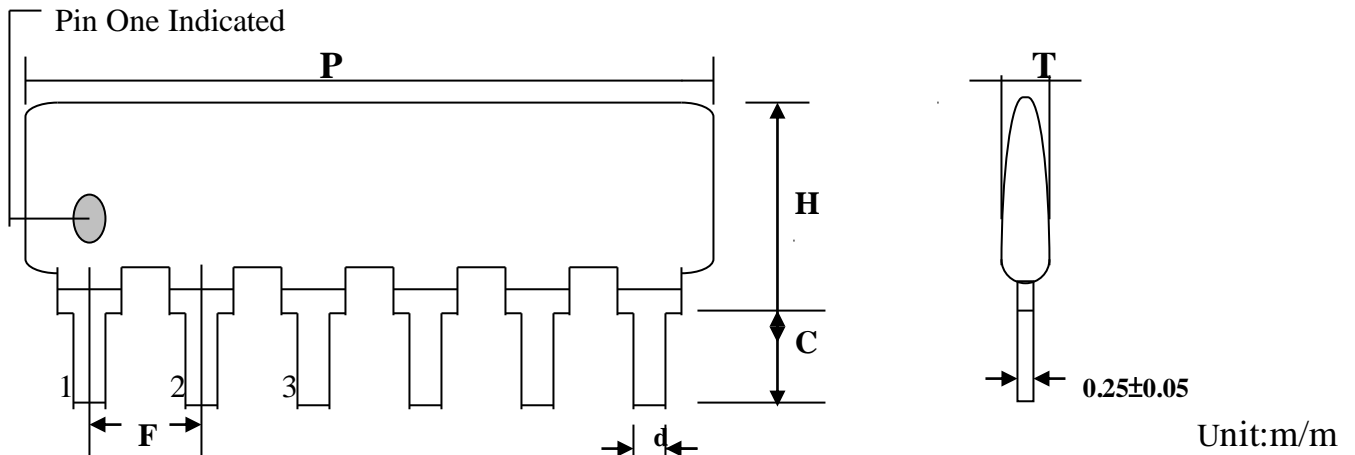
6. DERATING CURVE

The rated power at the temperature in excess of 70°C shall be derated in accordance with figure3



(Figure3)

7. DIMENSIONS



TYPE	L (BITS)	P (Max.)	H (Max.)			T (Max.)	C ±0.5	d ±0.05	F ±0.2
			R	L	X				
4pin		10.2	5.08	8	3.0	3.0	0.5	2.54	
5pin		12.7							
6pin	4BIT	15.3							
7pin	5BIT	17.8							
8pin	6BIT	20.4							
9pin	7BIT	22.9							
10pin	8BIT	25.4							
11pin	9BIT	28.0							
12pin	10BIT	30.5							
13pin		33.1							
14pin		35.6							

Figure4



8. CIRCUITS CONSTRUCTION

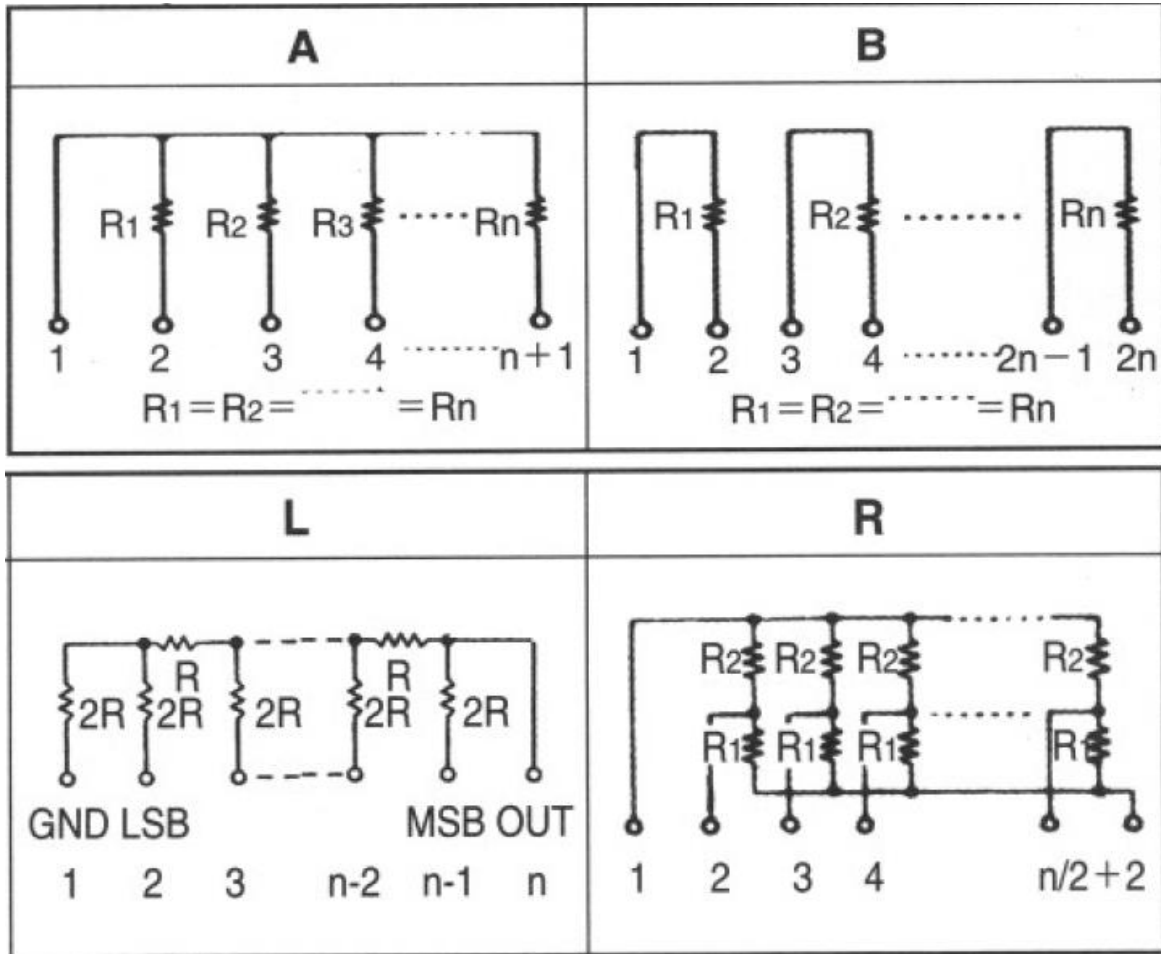


Figure5



9. CHARACTERISTICS

(1) Resistance Temperature Characteristic

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

Acceptance Standard : $\pm 100\text{ppm}/^{\circ}\text{C}$ for 50 ohm $\sim 2.2\text{M}$

$\pm 250\text{ppm}/^{\circ}\text{C}$ for $< 50\text{ ohm} \geq 2.2\text{M}$

(2) Temperature Cycling

Test Method : $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$ for 5 Cycle

Acceptance Standard : $\Delta R \leq \pm (0.5\% + 0.05 \Omega)$

(3) Short-Time Overload

Test Method : Rated Voltage x 2.5 for 5 sec.

Acceptance Standard : $\Delta R \leq \pm (0.5\% + 0.05 \Omega)$

(4) Resistance to Soldering Heat

Test Method : 350°C for 3 sec.

Acceptance Standard : $\Delta R \leq \pm (0.5\% + 0.05 \Omega)$

(5) Insulation Resistance

Test Method : 100V for 1 minute.

Acceptance Standard : $\Delta 1,000\text{ Meg ohm Min.}$

(6) Terminal Strength

Test Method : Tensile : 1Kg, 30 SEC. Bending : 500g, 2 Times

Acceptance Standard : $\Delta R \leq \pm (0.25\% + 0.05 \Omega)$

(7) Thermal Shock

Test Method : Load V, Room Temp. 30 minutes Unload, -55°C ,

15 minute Over 2 hrs in Room Temp. before measuring

Acceptance Standard : $\Delta R \leq \pm (0.5\% + 0.05 \Omega)$



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(8) Solderability

Test Method : 260°C ± 5°C, 3 sec.

Acceptance Standard : Covering 95%

(9) Moisture Load life

Test Method : 40°C, 90-95% RH rated Voltage for 1000 hours.

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

(10) Load Life

Test Method : 70°C at Rated Voltage for 1000 hours.

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