Thick Film Resistor Networks

Thick film resistor networks have a 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.

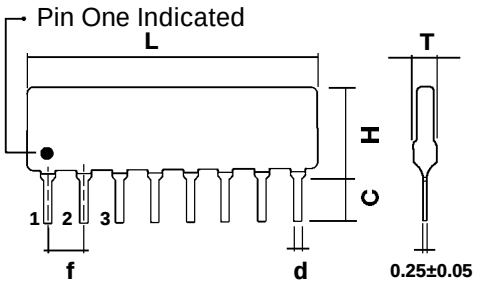
Application

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

Features

- Miniature, High Density Packaging.
- Combinations of Different Ohmic values are available.
- High Reliability with RUO_2 Paste.

Dimension: mm

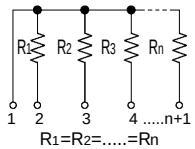
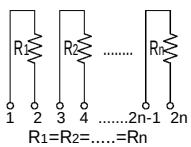
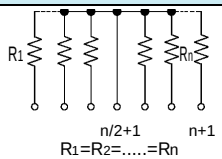
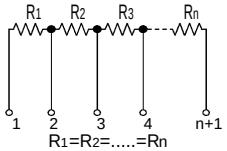
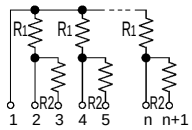
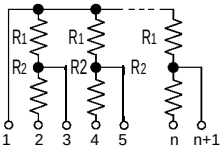
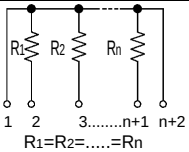
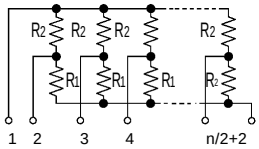


TYPE	L (MAX)	H (MAX)		T (Max)	C +0.3 -0.2	d ±0.05	f ±0.2
		*NL	*NH				
4 pin	10.2	5.08	7.5	2.5	2.8	0.5	2.54
5 pin	12.7						
6 pin	15.3						
7 pin	17.8						
8 pin	20.4						
9 pin	22.9						
10 pin	25.4						
11 pin	28.0						
12 pin	30.5						
13 pin	33.1						
14 pin	35.6						

Rating

Operating Temp. Range		-55°C ~ + 125°C		Wattage/Element	NL		NH
T.C.R.	± 100PPM	50 ohm ~ 2.2M ohm			B Style	Others	All Styles
	± 250PPM	< 50 ohm or ≥ 2.2M ohm			0.2W	0.125W	0.25W
Rating Ambient Temp.		+70°C		Max. Working Voltage	100V		200V
Resistance Range (E-12 Series)		R Style	Others	Resistance Tolerance	F = ± 1%, G = ± 2%, J = ± 5%		
		100Ω -10K	10Ω-4.7MΩ				

Circuit Construction

A (Bussed)	B (Isolated)	C	D
			
R1=R2=.....=Rn	R1=R2=.....=Rn	R1=R2=.....=Rn	R1=R2=.....=Rn
E	**P**	**T**	**R**
			
		R1=R2=.....=Rn	

* Tight tolerance and low T.C. available upon request.
* T.C. matching of resistors available upon request.

Characteristics

Item	Test Methods	Specifications
Resistance Temperature Characteristic	-55°C ~ + 125°C	± 100ppm/°C for 50ohm ~ 2.2M ± 250ppm/°C for < 50 ohm ≥ 2.2M
Temperature Cycling	-55°C ~ + 125°C, for 5 cycle	Δ R ≤ ± (0.5% + 0.05Ω)
Short-Time Overload	Rated Voltage x 2.5 for 5 sec.	Δ R ≤ ± (0.5% + 0.05Ω)
Resistance to Soldering Heat	350°C for 3 sec.	Δ R ≤ ± (0.5% + 0.05Ω)
Insulation Resistance	100V for 1 minute	Δ 10,000 Megohm Min.
Terminal Strength	Tensile: 1Kg, 30 sec. Bending: 500g, 2 Times	Δ R ≤ ± (0.25% + 0.05Ω)
Thermal Shock	Load V, Room Temp. 30 minutes Unload, -55°C, 15 minutes Over 2 hrs in Room Temp. before measuring	Δ R ≤ ± (0.5% + 0.05Ω)
Solderability	230°C ± 5°C, 3 sec.	Covering 95%
Moisture Load Life	40°C, 90-95% RH rated Voltage for 1000 hours	Δ R ≤ ± (2% + 0.05Ω)
Load Life	70°C at Rated Voltage for 1000 hours	Δ R ≤ ± (2% + 0.05Ω)

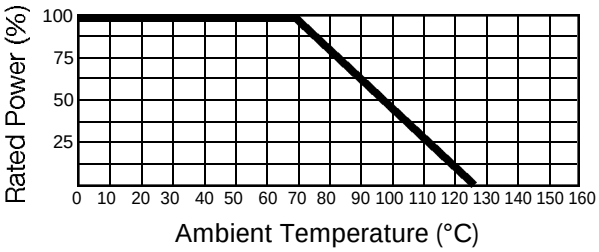
Standard Resistance (OHM) E-12 Series

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	1.2M	1.5M	1.8M	2.2M							

Dual Terminators (R1/R2) (OHM)

160/240	330/390
180/390	330/470
220/270	1.5K/3.3K
220/330	3.0K/6.2K

Derating Curve



Part Numbering System

NL — **Type**
- NL =Low Profile
- NH =High Power

A — **Circuits**
- A
- B
- C
- D
- E
- P
- R
- T

08 — **Number Of Pins**
- 04 = 4PIN
- 05 = 5PIN
- 06 = 6PIN
- 07 = 7PIN
- 08 = 8PIN
- 09 = 9PIN
- 10 = 10PIN
- 11 = 11PIN
- 12 = 12PIN
- 13 = 13PIN
- 14 = 14PIN

472 — **Resistance**
- 2%
- 3 Digits
- e.g. 2R2=2.2Ω
- e.g. 102=1KΩ
- 1%
- 4 Digits
- 1001=1KΩ
- 10R0=10Ω

J — **Tolerance**
- F = ± 1%
- G = ± 2%
- J = ± 5%