Thick Film Single-In-Line Resistor Networks

PERFORMANCE SPECIFICATIONS

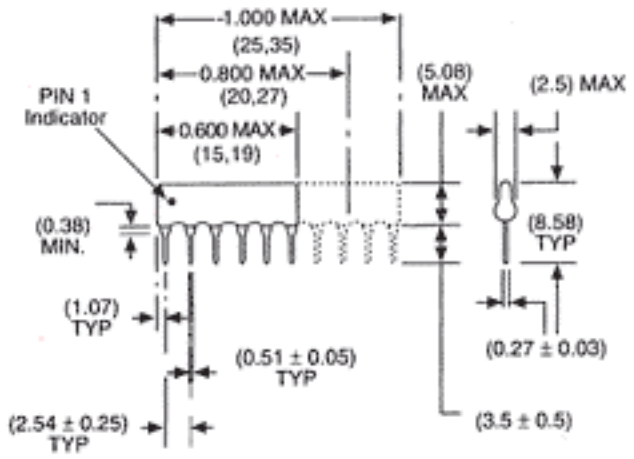
Product performance is maximized with improved temperature coefficient of resistance (TCR) and resistance tracking. Less than ± 100ppm/°C and 25ppm/°C typical TCR tracking ensure that each resistor is closer in value to other resistors within the same package.

FEATURES

- Low profile package
- Highly stable thick film
- Low temperature coefficient
- Reduces total assembly costs
- Resistor elements protected by tough epoxy conformal coating
- Wide resistance range
- Low cost

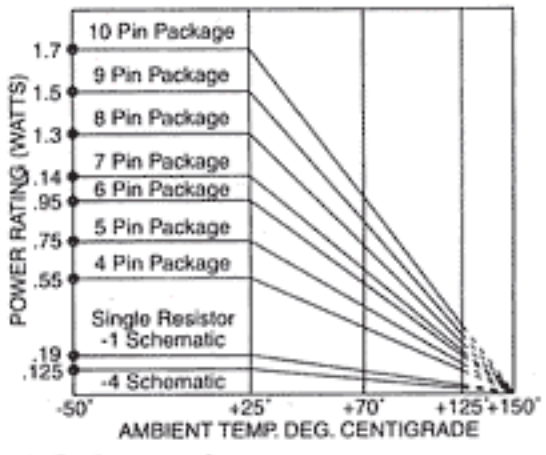
PHYSICAL DIMENSIONS

(All dimensions in millimetres)

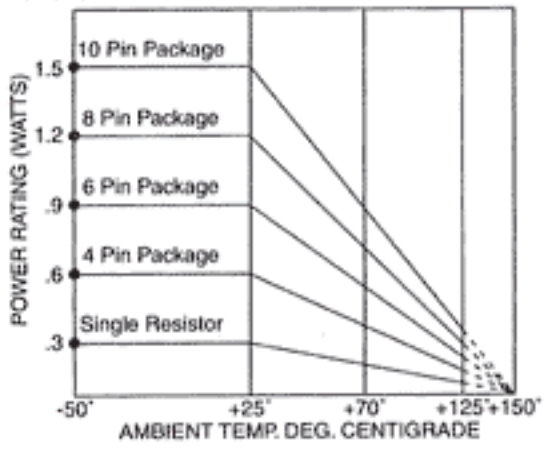


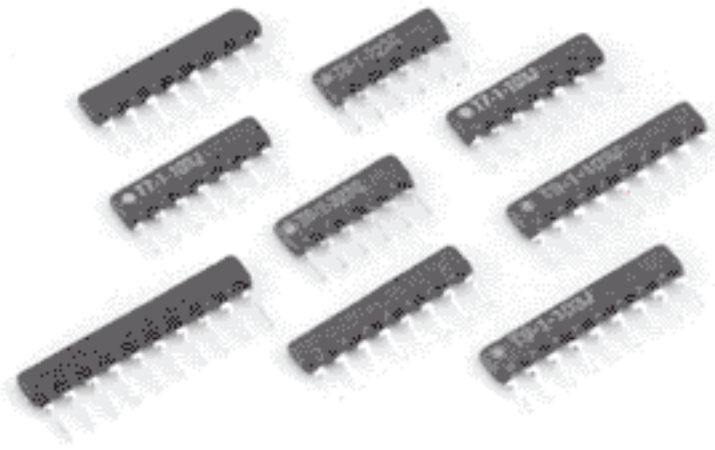
POWER DERATING CURVES

-1 and -4 Schematic



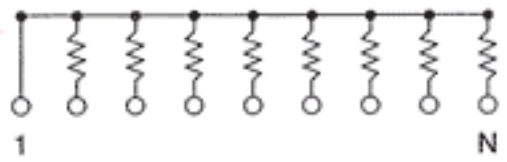
-2 Schematic





-1 SCHEMATIC

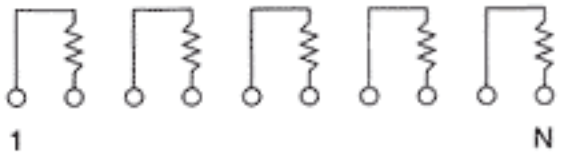
Pin 1 Common, 3 to 11 Resistors
4 to 12 pins Single-In-Line Package



These models incorporate 3 to 11 thick-film resistors of equal value, each connected between a common bus (pin1) and a separate pin. Pin 1 is indicated by dot.

-2 SCHEMATIC

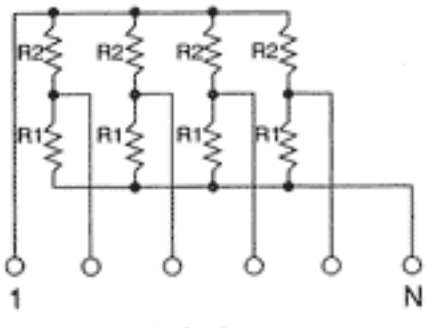
2, 3, 4, 5 or 6 Isolated Resistors
4, 6, 8, 10 or 12 Pins Single-In-Line Package



These models incorporate 2, 3, 4, 5 or 6 isolated thick-film resistors of equal value, each connected between two pins. Pin 1 is indicated by dot.

-4 SCHEMATIC

Dual Terminator:
6, 8 or 10 Pins Single-In-Line Package



Resistance (ohms) R1	R2	Resistance Code
220	270	221/271
220	330	221/331
330	390	331/391
330	470	331/471
3K	6.2K	302/622

These models incorporate 4, 6 or 8 series-pairs of thick-film resistors between the common lines Pin 1 (ground) and Pin N (Power). Pin 1 is indicated by dot. Typical applications include:

- TTL dual line termination
- Improve noise immunity to excessive capacitive effects

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STANDARD RESISTANCE VALUES

Resistance (ohms)	Resistance Code	Resistance (ohms)	Resistance Code
22	-220	6,800	-682
27	-270	8,200	-822
33	-330	10,000	-103
39	-390	12,000	-123
47	-470	15,000	-153
56	-560	18,000	-183
68	-680	20,000	-203
82	-820	22,000	-223
100	-101	27,000	-273
120	-121	33,000	-333
150	-151	39,000	-393
180	-181	47,000	-473
220	-221	56,000	-563
270	-271	68,000	-683
330	-331	82,000	-823
390	-391	100,000	-104
470	-471	120,000	-124
560	-561	150,000	-154
680	-681	180,000	-184
820	-821	220,000	-224
1,000	-102	270,000	-274
1,200	-122	330,000	-334
1,500	-152	390,000	-394
1,800	-182	470,000	-474
2,000	-202	560,000	-564
2,200	-222	680,000	-684
2,700	-272	820,000	-824
3,300	-332	1,000,000	-105
3,900	-392	2,200,000	-225
4,700	-472		
5,600	-562		

SPECIFICATIONS

Electrical

Resistance Range: 22Ω to 2.2MΩ

Resistance Tolerance: ±2% ±2Ω,whichever is greater
±5% ±2Ω,whichever is greater

Temperature Coefficient of Resistance:
±100ppm/°C from 100Ω to 1MΩ(for ±2% 100ppm)
±200ppm/°C from 100Ω to 1MΩ(for ±5% 200ppm)
±300ppm/°C from 100Ω to 1MΩ(for ±5% 300ppm)
±500ppm/°C for values <100Ω & >1MΩ

Resistor Power Rating: (individual element at 70°C)
See Derating Curves

Power Rating: Derate to zero watt from +70°C to +150°C

Package Power Rating: (See Derating Curves)

Maximum Operating Voltage: 100VDC

Voltage Coefficient of Resistance: 50ppm/V typical

T.C. Tracking:
Schematic -1: 50ppm/°C max (-55°C to +125°C)
Schematic -2: 50ppm/°C max (-55°C to +125°C)
Schematic -4: 150ppm/°C max (-55°C to +125°C)

Operating Temperature Range: -55°C to +150C

Physical

Marking Resistance to Solvents:
Permanency testing per MIL-R-83401E

Solderability: Per MIL-R-83401E

Terminals: Tin plated steel standard,solder dipped

Body: High alumina substrate,epoxy coated

Flammability: Conforms to UL 94 V-0

ENVIRONMENTAL CHARACTERISTICS

Parts will meet the following specifications when tested per procedures of MIL-R-83401

Test	Data
Thermal Shock: (5 cycles between -65°C & +125°C) max.ΔR	±0.5%
Low Temperature Operation: (45 minutes at full rated working voltage at -65°C) max.ΔR	±0.5%
Short Time Overload: (2½ X rated working voltage for 5 seconds) max.ΔR	±1.0%
Terminal Strength: (2.05Kg pull for 30 seconds) max.ΔR	±0.5%
Resistance to Soldering Heat: (Leads immersed in 260°C solder to depth of 3.18mm for 10 seconds) max.ΔR	±1.0%
Moisture Resistance: (240 hours with humidity ranging from 80% RH to 98%RH and after 56 days damp heat steady state test per IEC publication 68.2-3,Test C and DIN 40046) max.ΔR	±3.0%
Shock: (Total of 18 shocks at 100G's) max.ΔR	±0.5%
Vibration: (12 hours at maximum of 20G's between 10 and 2,000Hz) max.ΔR	±0.5%
Life: (1,000 hours at 70°C,rated power applied 1½ hours on, ½ hour off for full 1,000 hours period) max.ΔR	±3.0% for < 1MΩ ±5.0% for > 1MΩ
Insulation Resistance: Megaohms (minimum)	10,000
Dielectric Withstanding Voltage: (200 VRMS for 1 minute)	No evidence of arcing or damage