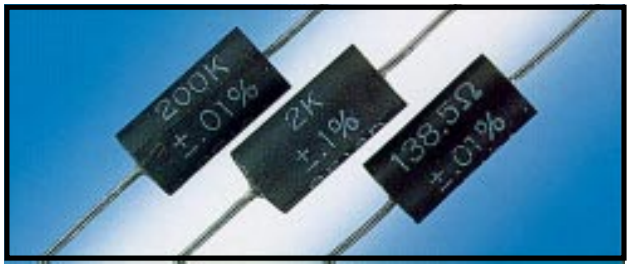
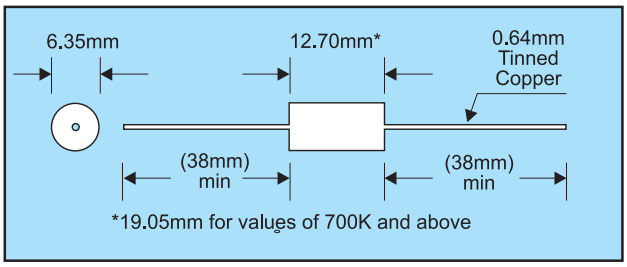
ECONISTOR *(8E16 & 8E24)*





FEATURES

- ±3ppm per degree Centigrade temperature co-efficient
- Full load stability ±50ppm maximum after three years
- Tolerance ±0.005%, ±0.01% and ±0.1%
- Axial leads
- From stock in 111 popular standard values; to order in any value from 1 ohm to 1.1 Meg

OHMIC VALUES

Econistors are available in 111 standard values from 1Ω to 1MΩ and in any "non-standard" values from 1Ω to 1.1MΩ. Three tolerances are available; 0.1%, 0.01% and 0.005% (0.005% available on values of 100Ω and above only). Type 8E16 includes all values below 700KΩ; values of 700KΩ and above are type 8E24. The types are identical except dimensionally; Type 8E16 is 12.7mm long, Type 8E24 is 19.05mm long. Both are manufactured using all welded construction.

SPECIFICATIONS

Tolerance at 25°C:
±0.005%, ±0.01%, ±0.1%

Temperature Co-efficient:
±3ppm/°C typical over 0°C to +85°C
±5ppm maximum over –55°C to +125°C

Full Load Stability:
±35ppm/10,000hours ±50ppm/26,000 hours

No Load Stability:
±25ppm/10,000 hours
±35ppm/26,000 hours
} over full temperature range; –55°C to +125°C

Power Rating:
0.33 watt (+85°C) 0.25 watt (+110°C)

Maximum Continuous Working Voltage:
Up to 250V DC or peak as determined by $\sqrt{PR}$

Noise: Essentially non-measurable

Thermal EMF: <0.4µV/°C typical <1.5µV/°C maximum

Encapsulation: Moulded epoxy

Leads: 22 AWG tinned copper

Windings:
Balanced multiple π for low reactance. Exclusive 'air cushion' technique provides virtually stressless elements for improved performance. Non-inductively wound. Direction of winding reversed at half turns point.

Stocked in ±0.1% and ±0.01% in listed values shown below

1 Ω	103.90 Ω†	194.07 Ω†	680 Ω*	4.7K *	27K *	180K
2 Ω	107.79 Ω†	200.00 Ω	700 Ω	5.0K	30K	200K
5 Ω	109.73 Ω†	212.02 Ω†	800 Ω	5.6K *	33K *	250K
10 Ω	111.67 Ω†	220.00 Ω*	820 Ω*	6.0K	39K	300K
20 Ω	115.54 Ω†	229.67 Ω†	900 Ω	6.8K *	40K	320K *
30 Ω	119.40 Ω†	247.04 Ω†	1.0 K	7.0K	47K *	400K
40 Ω	120.00 Ω	250 Ω	1.2 K*	8.0K	50K	500K
50 Ω	123.24 Ω†	270 Ω*	1.5 K	8.2K *	56K *	990K
60 Ω	125.00 Ω†	300 Ω	1.8 K*	9.0K	60K	1M
60.25 Ω†	127.07 Ω†	330 Ω*	2.0 K	9.9K	68K *	
62.50 Ω*	130.89 Ω†	350 Ω	2.2 K	10.0K	70K	**Any non-listed value from 1Ω to 1.1MΩ available to order**
70 Ω	134.70 Ω†	390 Ω*	2.5 K	12.0K *	80K	
80 Ω	138.50 Ω	400 Ω	2.7 K*	15.0K *	82K *	
84.27 Ω†	150.00 Ω*	470 Ω*	3.0 K	18.0K *	90K	
90 Ω	157.31 Ω†	500 Ω	3.3 K*	20.0K	99K	
92.16 Ω†	175.84 Ω†	560 Ω*	3.9 K*	22.0K *	100K	
100 Ω	180.00 Ω*	600 Ω	4.0 K	25.0K	160K *	

* Stocked in ±0.1% tolerance only. † Stocked in ±0.01% tolerance only.
A number of values listed are RTD simulation values. See page 6 for temperature equivalents.

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ECONISTOR *(8E16 & 8E24)*

Resistance Wire
Highest quality copper alloy wire drawn from melts of known resistivity and controlled temperature co-efficient.

Accuracy
Calibration is as 25°C against equipment traceable to NBS (United States). During calibration, the electrical connection is made – 10mm along the lead-out wires from the body.

Operating Temperature
The maximum operating temperature due to ambient and power dissipation within the resistor is 160°C.

Solvent Resistance
The body material and identification marking is resistant to all commonly used PC board solvents.

Lead Pull Strength
2kg (limited only by inherent strength of copper lead material).

Resistance of Termination Leads
Type 8E16 = 0.52m Ohms/cm
Type 8E24 = 0.33m Ohms/cm

Voltage Co-efficient
Essentially zero

Manufacturing
The highest quality materials are used; all processing is performed in temperature/humidity controlled "clean rooms", each step is carefully monitored.

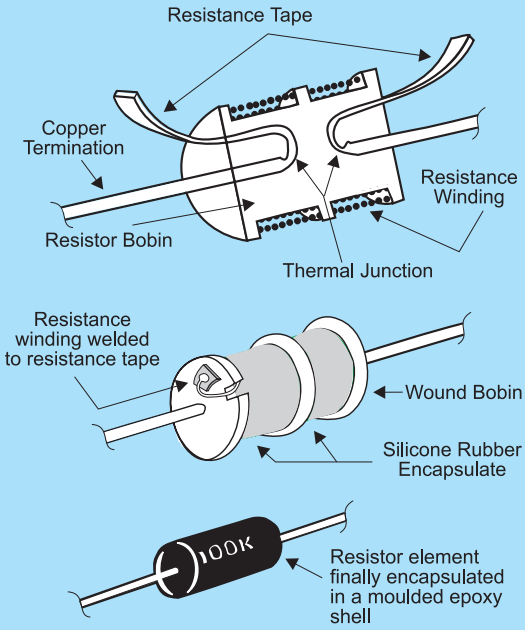
Thermal EMFS
The temperature difference between the two copper to resistance wire joins is the critical factor. If the two junctions are at the same temperature, then the effect of thermal EMFs is minimised.

The construction of Econistors is such that the two junctions are not more than 2mm apart, thus reducing any possibility of temperature difference almost to zero. This largely negates the effect of thermal EMFs in Econistors.

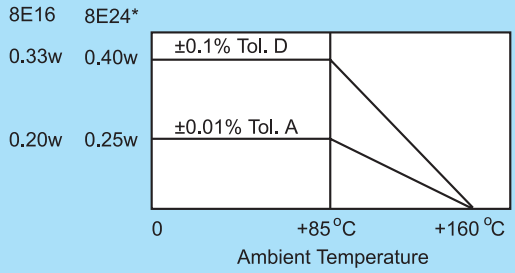
The thermal EMF of the resistance material to copper join for Econistors is typically <0.4µV/°C.

INTERNAL CONSTRUCTION

Applies to both Econistor and Minohm models



Power Derating Curves



Note: If power ratings are exceeded, resistors may not remain within specified accuracy.

* Values above 700kΩ only

CONSTRUCTION

Econistors are wound on a proprietary multi-section bobbin with the termination wires moulded deep into the body of the bobbin. Each copper to resistance wire join is thus positioned near to the centre of the resistor and spaced apart from each other by only 2mm. This is an important factor in minimising the effect of thermal EMFs (see separate note on thermal EMFs). This method of construction also effectively isolates the fine resistance wire mechanically from the termination wires. To minimise inductance, the direction of winding is reversed at the half turns point.

During the manufacturing process each resistor undergoes an ageing process for a minimum of one week in a temperature controlled oven in order to completely stabilise the winding prior to calibration.

Econistors are encapsulated in a moulded epoxy shell which fully seals the winding.

ORDERING PROCEDURE EXAMPLE:

8 E 1 6	A	10 K
Style and general specifications	Tolerance: X = 0.005% A = 0.01% D = 0.1%	R value in Ohms

Matched pairs and ratio matched resistors are available against specific enquiries.