

3810 Series

Features:

- Resistance range up to 50G ohms
- Designed for low current (picoampere level) measurements
- Low voltage coefficient
- Hermetically sealed
- Leakage current minimized by hermetic sealing and silicone coat



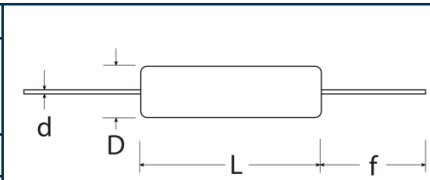
All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863

Electrical Data

		3810	3811
Resistance range ¹	Ω	100M to 50G	
Limiting element voltage	V	500	1000
Resistance tolerance	%	10, 20	1, 2, 5, 10
TCR (20 to 70°C)	ppm/°C	0 to -500	
VCR (100 to 500V)	ppm/V	≤5G: -40 >5G: -400	≤10G: -20 >10G: -200
Capacitance	pF	≤0.4	≤0.2
Values		E24 preferred	
Ambient temperature range	°C	-40 to +100	
Power rating	W	Due to high ohmic values no power rating applies. The maximum power is LEV^2/R .	

Notes 1. Resistance value measurements are made at 100V.

Physical Data

Dimensions in mm and weight in g								
Type	L max.	D max.	f min.	D nom.	PCB mounting centres	Min. bend radius	Wt. nom.	
3810	25	6	30	0.6	29.2	0.6	1.5	
3811	42.9	6	30	0.6	47.1	0.6	2.2	

Construction

The resistive film is fired onto a high quality ceramic substrate. Brass end caps are forced fitted to the substrate which is then adjusted to value with a helical cut in the film. The leads are mechanically locked into the end caps and the assembly sealed into the glass envelope. All close tolerance units utilise two resistors connected in series within the glass envelope.

Marking

The serial number, resistance value and tolerance code are legend marked. The resistance value marking conforms to IEC 62.

Solvent Resistance

The glass envelope is coated with silicone and should not be subjected to solvents or their vapours.

Terminations

Material	Tin-coated Dumet wire
Strength	The terminations meet the requirements of IEC 68.2.21
Solderability	The terminations meet the requirements of IEC 115-1, clause 4.17.3.2

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Performance Data

Test		Maximum	Typical
Load at Rated Voltage: 1000 hours at 20°C	±ΔR%	2	1
Shelf Life Test: 12 months at room temperature	±ΔR%	1	0.5
Resistance to Solder Heat	±ΔR%	0.2	<0.1

Application Notes

Each resistor is packed with a card stating nominal resistance value at 20 ±1°C with 100V applied, selection tolerance, date and serial number.

Although the glass envelope is an excellent insulant and would be adequate in a dry atmosphere, the condensation which occurs in a normal atmosphere will provide a shunt resistance which will modify the very high resistance value. To minimise this effect all units are coated with silicone, and it is essential that this coating is not damaged; any handling should be by the terminations. For the same reason solvents must not be used.

The resistors should not be used in a damp atmosphere. If moisture develops on the body the resistor should be dried for 30 minutes at 70°C and allowed to cool for a further 30 minutes in a dry atmosphere.

To avoid damage to the seal between terminations and glass, the leads must be fully supported inside the point of bending during any preforming.

Non-Standard Versions

Units without glass envelopes but with lacquer protection are available, but will have a limited electrical performance.

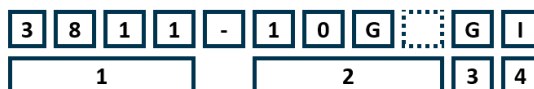
Measured values at a voltage other than 100V may be recorded. For non-standard items contact TT Electronics.

Packaging

Each resistor is individually packed in a polythene envelope together with a card carrying measurement details and serial number.

Ordering Procedure

Example: 3811-10GGI (3811, 10 gigohms ±2%, Pb-free)



1	2	3	4
Type	Value	Tolerance	Packing & Termination Finish
3810	E24	F = ±1%	I = Bag pack, Pb-free
3811	3/4 characters M = megohms G = gigohms	G = ±2%	
		J = ±5%	
		K = ±10%	
		M = ±20%	