Resistors

Ultra Precision Metal Film Resistors

OBSOLETE

MAR 40/42 series

- Tolerance down to 0.005%
- Very low TCRs
- Rugged moulded protection
- Matched sets available

All Pb-free parts comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

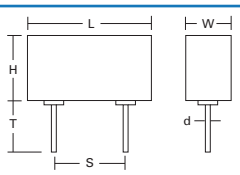
Electrical Data

			Notes
Power rating at 85°C	watts	0.3	
Resistance range	ohms	20R0 to 400K	Higher values by agreement
Limiting element voltage	volts	250	
TCR (0°C to +60°C)	ppm/°C	2 (T18) & 5 (T16)	
TCR (-55°C to +125°C)	ppm/°C	5 (T18) & 10 (T16)	
Resistance tolerance	%	0.005, 0.01, 0.02, 0.05, 0.1, 0.25, 0.5 & 1	
Standard values		E24, E96 preferred	Any value to order
Thermal impedance	°C/watt	80	
Ambient temperature range	°C	- 55 to +155	

Physical Data

Dimensions (mm) and Weight (g)

Type	L max.	H max.	W max.	T min.	d nom.	S nom.	Wt. nom.
MAR 40	7.75	8.64	3.3	25.4	0.6	3.8	0.65
MAR 42	8.25	8.64	3.3	25.4	0.6	5.1	0.65



Construction

Ceramic rods are coated with a metal film and plated steel caps are force fitted. A helical cut is used to adjust the film to its final value. Termination wires are welded to the caps and the resistor is protected with a multiple lacquer coat and encapsulated in an epoxy moulded protection.

Terminations

Material Solder-coated copper wire.

Strength The terminations meet requirements of IEC 68.2.21 and MIL-STD 1276.

Solderability The terminations meet the requirements of IEC 115-1, Clause 4.17.3.2 and MIL-STD 202.

Marking

Type reference, TCR code, resistance value and tolerance. The resistance value marking conforms to IEC 62.

Solvent Resistance

The body protection and marking are resistant to all normal industrial cleaning fluids suitable for printed circuits.

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Performance Data

Test conditions per MIL-R55182 except where noted		Actual Performance	
		Maximum	Typical
Load at rated power: 1000 hrs at 85°C	ΔR%	0.05	0.02
Dry heat: 1000 hrs at 155°c	ΔR%	0.10	0.05
Shelf life: 12 months at room temperature	ΔR%	0.01	0.003
Derating from rated power at 85°c		Zero at 155°C	
Short term overload	ΔR%	0.01	0.001
Damp heat (IEC 68-2-3)	ΔR%	0.04	0.02
Thermal shock (tested per method 107, MIL-STD 202 condition F)	ΔR%	0.04	0.01
Effect of solder (tested per method 210, MIL-STD 202)	ΔR%	0.02	0.003
Vibration and bump	ΔR%	0.02	0.002
Noise (in a decade of frequency)	µV/V	0.1	0.03
Voltage coefficient of resistance	ppm/V	0.2	<0.05

Matched Sets

TT Electronics has many years' experience in the supply of matched sets of precision resistors.

Resistors can be supplied matched for tolerance and TCR down to ±0.005% and ±1ppm/°C.

Packaging

The standard packaging is loose in boxes of 50 or 300 resistors.

Ordering Procedure

Example: MAR40V-68K1EI (MAR40 with TCR ±5ppm/°C, at 68.1 kilohms ±0.005%, Pb-free)

M	A	R	4	0	V	-	6	8	K	1		E	I
1						2	3					4	5

1 Type	2 TCR		3 Value	4 Tolerance	5 Packing & Termination Finish		
MAR40	H	±2ppm/°C (T18)	E24 / E96 3/4 characters Custom 3-5 characters R = ohms K = kilohms	E = ±0.005%	I	Bulk pack, Pb-free	50/box
MAR42	V	±5ppm/°C (T16)		L = ±0.01%			
				P = ±0.02%			
				W = ±0.05%			
				B = ±0.1%			
				C = ±0.25%			
				D = ±0.5%			
				F = ±1%			