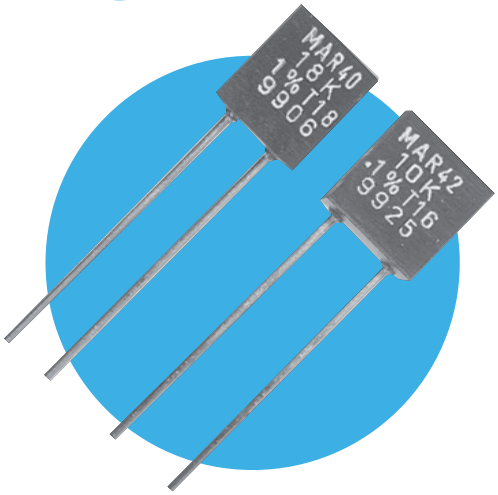
Resistors

Ultra Precision Metal Film Resistors

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)

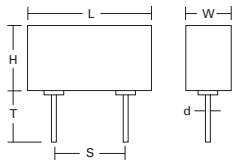
Electrical Data

			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.

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability.

All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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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 and Networks

Welwyn has many years experience in the supply of matched sets of precision resistors.

Resistors in a set can be supplied matched for tolerance and TCR down to 0.005% and 1ppm/°C of each other.

Packaging

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

Ordering Procedure

Example: MAR40 with TCR of 5ppm/°C at 68.1 kilohms and 0.005% tolerance in a box of 50 pieces -

M A R 4 0 V – 6 8 K 1 E I

Type

TCR (0 to 60 C)

H	2 ppm/°C
V	5 ppm/°C

Value (use IEC62 code)

Tolerance (use IEC62 code)

E	0.005%	B	0.1%
L	0.01%	C	0.25%
P	0.02%	D	0.5%
W	0.05%	F	1%

Packing

I	Bulk	MAR40, MAR42	50/box	Standard

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