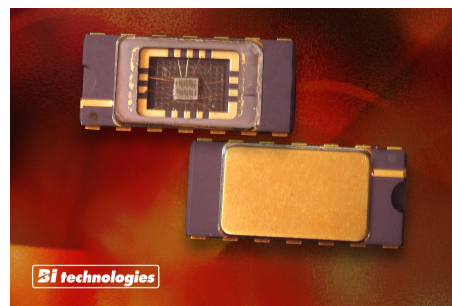


MODELS

144-TBA¹

Custom circuits
Thin film resistor network
Hermetically sealed packages
RoHS compliant available



DESCRIPTION

BI Technologies provides custom thin film resistor networks. The networks can include uncommon values, tolerances and interconnections between resistors. Custom thin film resistor networks offer many advantages. Starting with the choice of resistance values, design engineers can mix and match resistor values according to application needs. Ratio tolerances and TCR tracking between resistors are superior to alternative technologies including foil resistors. With up to twenty five resistors, our 144 series networks are housed in hermetically sealed packages. These packages offer several advantages compared with their plastic counter parts. Advantages include higher operating temperature range, inert atmosphere for thin film element and means for removing package generated electrical offsets allowing for tighter resistance tolerances. We offer surface and through hole PCB mounting. These high reliability packages allow users a convenient means for incorporating these custom networks into circuits and products that will operate in extreme environments. Schematics for these networks are usually limited by package terminal count only. These networks are ideal for use in critical and demanding applications. Our networks are tested to industrial and military test requirements associated with high performance resistors.

FEATURES

Precision nichrome resistors	Passivation coating provides protection in humid environments
Hermetic packaging (DIP and flat packs)	HTCC side brazed and metal cases
Network schematic	Customer specific
Ratio tolerances	< ± 0.01%
TCR tracking tolerances	< ± 1 ppm/°C

APPLICATIONS

Instrumentation amplifiers
Precision voltage dividers
Measurement bridge circuitry
Converter applications
Precision analog circuits
Ladder networks

¹ Part numbers are assigned by factory.

ELECTRICAL²

Resistance range, ohms	10 to 3M
Greatest resistance ratio range (R _A /R _B)	1 to 1000
Resistor tolerances	± 0.025%
Ratio tolerances	± 0.01%
TCR	± 25 ppm/°C
TCR tracking between resistors	± 1 ppm/°C
Operating temperature range	-55°C to +175°C
Inter-lead capacitance	< 2 pF
Insulation resistance	≥ 10,000 megohms
Maximum operating voltage	100 Vdc or √ PR
Noise, maximum (MIL-STD-202, Method 308)	-25 dB
Resistor power rating at 70 °C	0.1 watts

ENVIRONMENTAL (MIL-R-83401)

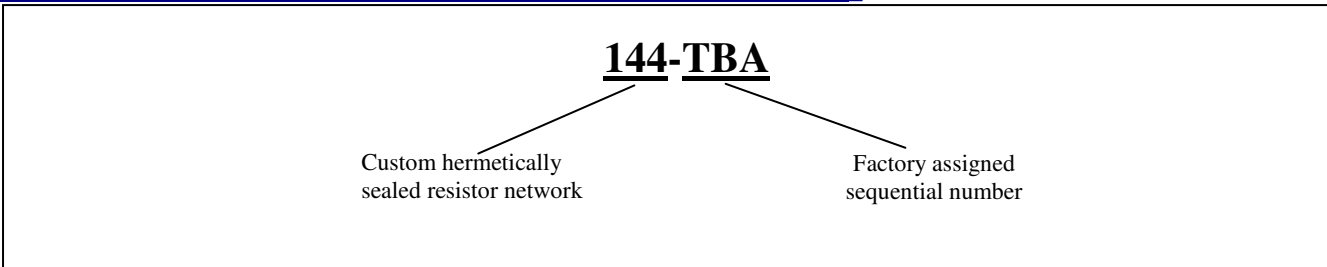
Thermal shock plus power conditioning	ΔR 0.25%
Short time overload	ΔR 0.1%
Terminal strength	ΔR 0.1%
Moisture resistance	ΔR 0.2%
Mechanical Shock	ΔR 0.25%
Vibration	ΔR 0.25%
Low temperature operation	ΔR 0.05%
High temperature exposure	ΔR 0.1%
Resistance to solder heat	ΔR 0.1%
Marking permanency	Per MIL-STD-202, method 215
Flammability	UL-94V-0 rated
Storage temperature range	-55°C to +125°C

MECHANICAL

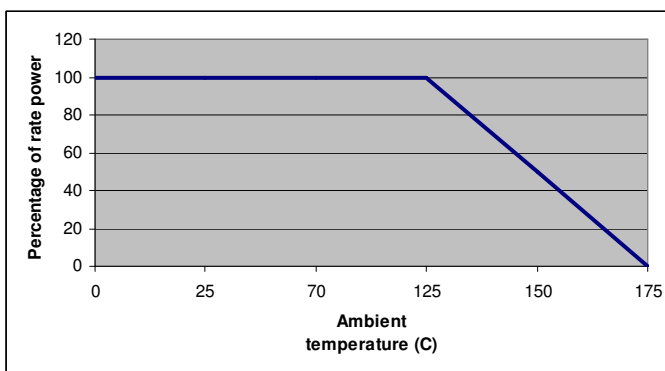
Terminal count	3 to 28
Terminal plating	Gold plated over electrolytic nickel
Terminal material	Alloy 42, Alloy F15
Terminal co-planarity	≤0.004" (0.1 mm)
Substrate material	Ceramic
Resistor material	Passivated Nichrome
Body material	HTCC or Metal

² Specifications subject to change without notice.

ORDERING INFORMATION



POWER DERATING CURVE



PACKAGING

Bulk

Tubes, Cartons

RECOMMENDATIONS

Specify ratio matches in multiple groups rather than one large group

Use lowest resistor value within ratio group as reference resistor

Limit total network resistance value to less than 3 megohms

TCR tracking of +/-1 ppm/C is available for resistors with near equal values.

OPTIONAL LOT ACCEPTANCE TESTING

Serialized units with corresponding attributes or variables data

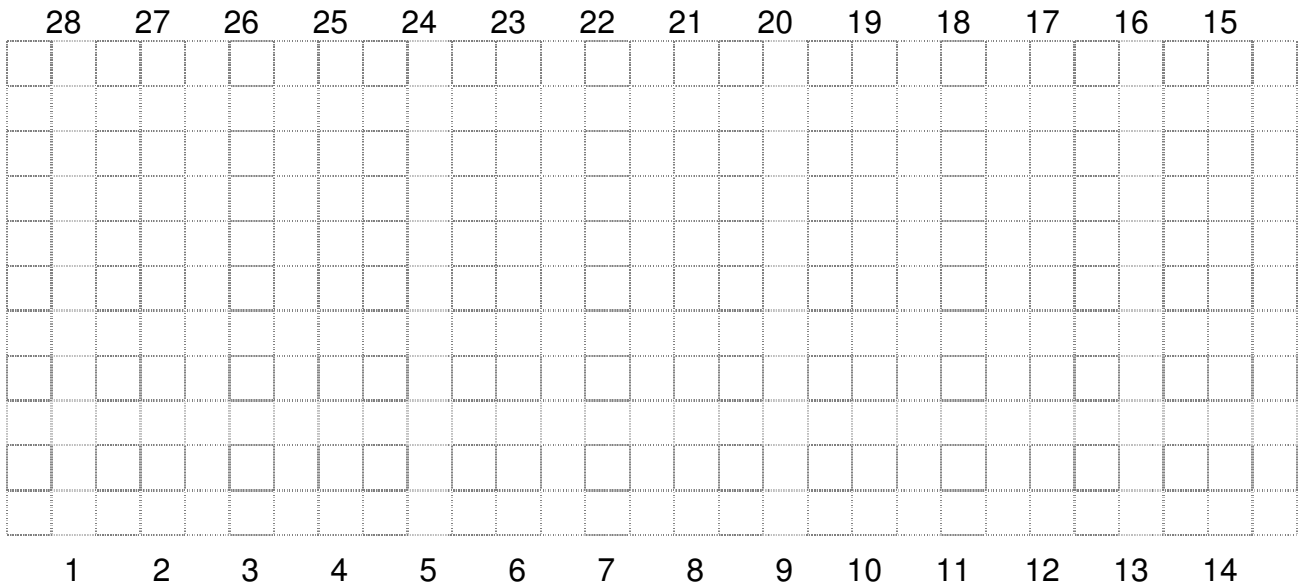
Screening per Mil-Std-883

Group A and B testing per Mil-PRF-83401

Full qualification testing per Mil-PRF-83401

WORKSHEET

SCHEMATICS



NETWORK PARAMETERS

Reference Designator	Resistance Value (ohms)	Absolute Tolerance (%)	Ratio Tolerance (%)	Reference Resistor	Absolute TCR (ppm/°C)	TCR Tracking (ppm/°C)	Power (mWatts)
R1							
R2							
R3							
R4							
R5							
R6							
R7							
R8							
R9							
R10							
R11							
R12							
R13							
R14							
R15							