SURFACE MOUNT

RF Transformer

TC1-1-13M-22+

50Ω 47 to 1000 MHz

FEATURES

- Wideband, 47 to 1000 MHz
- Balanced Transmission Line
- Good Return Loss
- Excellent Amplitude Unbalance, 0.5 dB typ. and Phase Unbalance, 2 deg Typ. in 1 dB Bandwidth
- Plastic Base with Leads
- Aqueous Washable



Generic photo used for illustration purposes only

CASE STYLE: AT224-1A

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- Balanced to Unbalanced Transformation
- Push-Pull Amplifiers
- PCS/DCS
- MMDS

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio			1		Ohm
Frequency Range		47		1000	MHz
Insertion Loss[1]	47-1000		1		dB
Phase Unbalance[2]	47-1000		2		Deg.
Amplitude Unbalance	47-1000		0.5		dB

1. Insertion Loss is referenced to mid-band loss, 0.5 dB typ. DC current imbalance less than 3% between windings.
2. At 30 mA max.

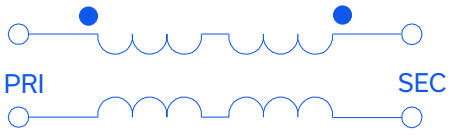
ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
RF Power	0.25 W
DC Current	100 mA[3]

3. Equal current must be applied in opposite directions to individual windings.

Permanent damage may occur if any of these limits are exceeded.

CONFIG. G



REV. E
ECO-025349
TC1-1-13M-22+
MCL NY
250428

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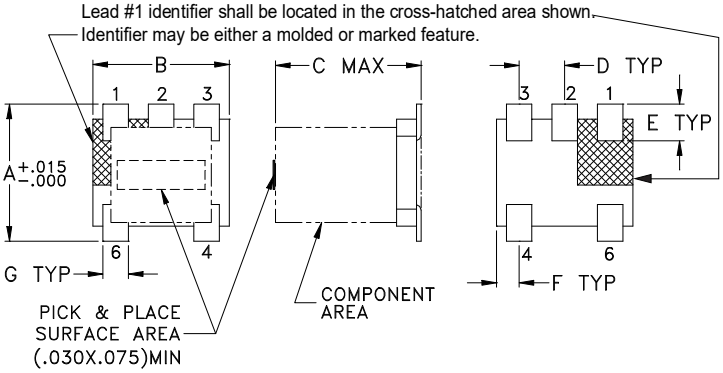
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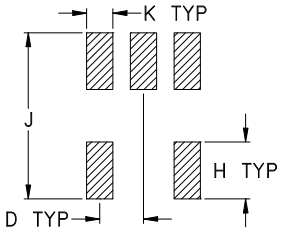
PIN CONNECTIONS

Function	Pin Number
PRIMARY DOT	6
PRIMARY	4
SECONDARY DOT	1
SECONDARY	3
NOT USED	2

OUTLINE DRAWING



PCB Land Pattern

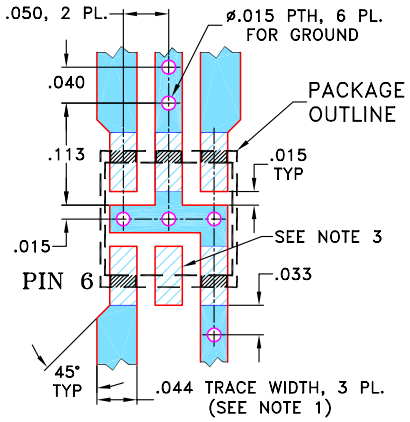


Suggested Layout,
Tolerance to be within±.002

PRODUCT MARKING: N/A

DEMO BOARD MCL P/N: TB-TC11-13M-22+

SUGGESTED PCB LAYOUT (PL-244)



1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015"; COPPER: 1/2 OZ. ON EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. THIS PAD IS NOT REQUIRED FOR AT224 CASE STYLE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

OUTLINE DIMENSIONS (Inch / mm)

A	B	C	D	E	F
.150	.150	.160	.050	.040	.025
3.81	3.81	4.06	1.27	1.02	0.64

G	H	J	K	wt
.028	.065	.190	.030	grams
0.71	1.65	4.83	0.76	0.15

TAPE & REEL INFORMATION: F17

SURFACE MOUNT

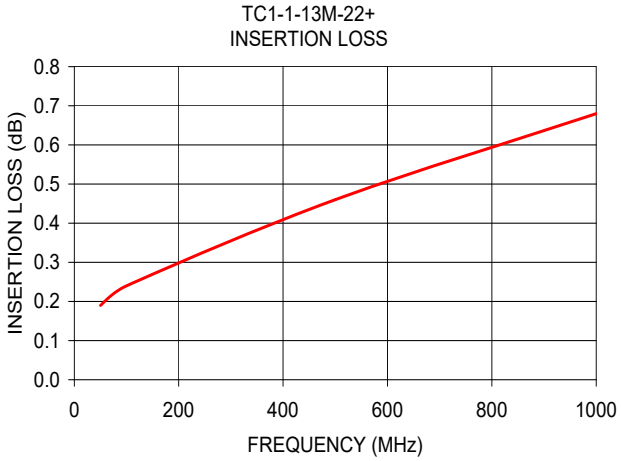
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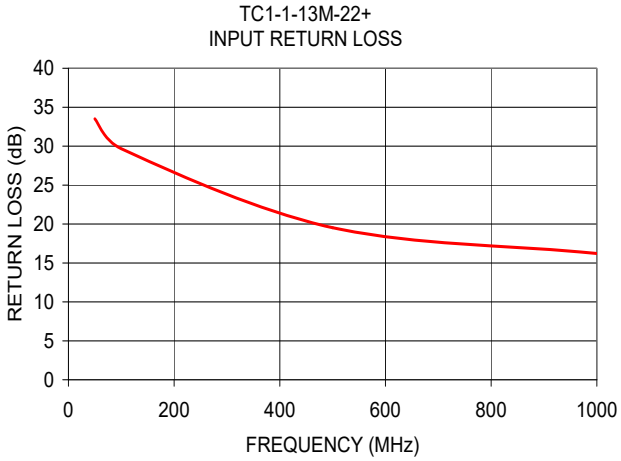
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TYPICAL PERFORMANCE DATA

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
50.0	0.19	33.50	0.56	0.11
100.0	0.24	29.68	0.55	0.19
500.0	0.46	19.52	0.45	0.81
1000.0	0.68	16.22	0.14	1.59





NOTES

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html