SURFACE MOUNT

RF Transformer

TC1-1-13M-34+

50Ω 47 to 1400 MHz

FEATURES

- Wideband, 47 to 1400 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 (Secondary/Primary)			1		Ohm
Frequency Range		47		1400	MHz
Insertion Loss*	47-1000 1000-1400		1 1.5		dB
Phase Unbalance	47-1000 1000-1400		2 3		Deg.
Amplitude Unbalance	47-1000 1000-1400		0.5 0.5		dB

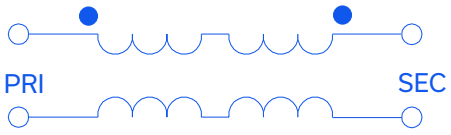
*Insertion Loss is referenced to mid-band loss, 0.5 dB typ. ** At 30mA max.

MAXIMUM RATINGS

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

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

CONFIG. G



REV. C
ECO-022029
TC1-1-13M-34+
MCL NY
240607

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RF Transformer

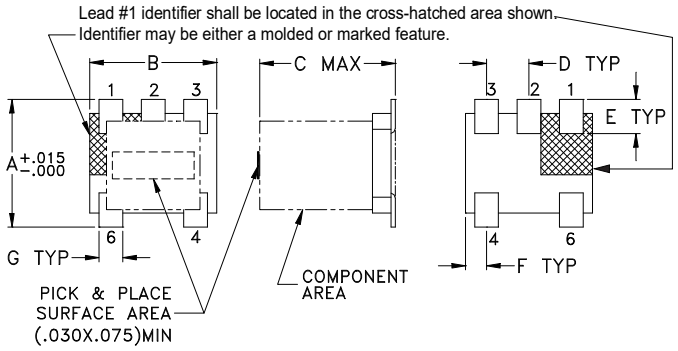
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PIN CONNECTIONS

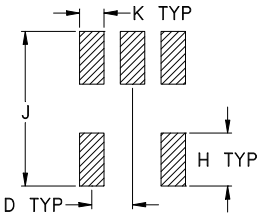
Function	Pin Number
PRIMARY DOT	6
PRIMARY	4
SECONDARY DOT	1
SECONDARY	3
NOT USED	2

OUTLINE DRAWING



PRODUCT MARKING: N/A

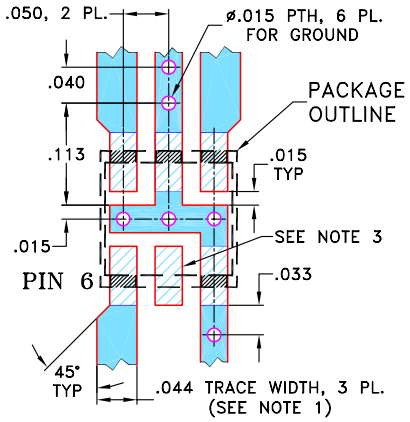
PCB Land Pattern



Suggested Layout,
Tolerance to be within±.002

DEMO BOARD MCL P/N: TB-145

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

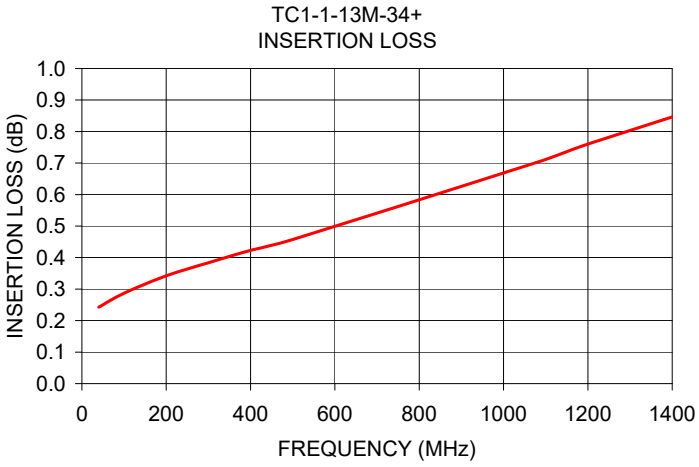
RF Transformer

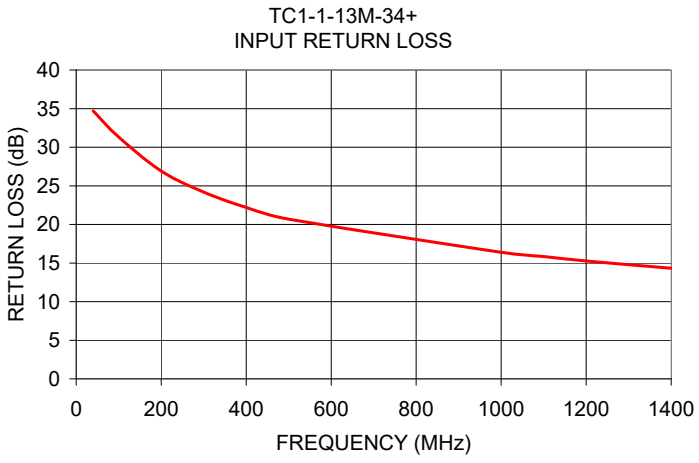
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TYPICAL PERFORMANCE DATA

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
40.0	0.24	34.70	0.66	0.03
100.0	0.29	31.33	0.66	0.35
200.0	0.34	26.92	0.66	0.79
300.0	0.38	24.19	0.64	1.19
400.0	0.42	22.21	0.61	1.62
500.0	0.46	20.68	0.57	2.00
1000.0	0.67	16.40	0.30	3.30
1100.0	0.71	15.83	0.24	3.40
1200.0	0.76	15.27	0.17	3.43
1400.0	0.85	14.32	0.03	3.48





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