

SURFACE MOUNT

RF Transformer

1.5 to 600 MHz

Mini-Circuits

50Ω

FEATURES

- Suitable for tin/lead and RoHs solder systems
- Wideband, 1.5 to 600 MHz
- Good return loss
- Aqueous washable



TC4-6TG2+

Generic photo used for illustration purposes only CASE STYLE: AT224-3

+RoHS Compliant The +Suffix identifies RoHS Compliance. ee our website for methodologies and qualification:

APPLICATIONS

- CATV
- VHF/UHF receivers/transmitters

ELECTRICAL SPECIFICATIONS AT 25°C

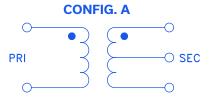
Parameter	Frequency (MHz)	Min.	Тур.	Max.	Unit
Impedance Ratio (secondary / primary)			4		
Frequency Range		1.5		600	MHz
	1.5-600		3.0		
Insertion Loss*	2-400		2.0		dB
	3-350		1.0		

* Insertion Loss is referenced to mid-band loss, 0.6 dB typ.

MAXIMUM RATINGS

Ratings
-20°C to 85°C
-55°C to 100°C
0.25W
30mA

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



REV. B ECO-015303 TC4-6TG2+ MCL NY 221019

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RF Transformer



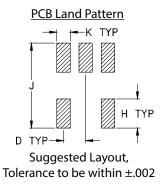
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50Ω 1.5 to 600 MHz

PIN CONNECTIONS

PRIMARY DOT	6
PRIMARY	4
SECONDARY DOT	1
SECONDARY	3
SECONDARY CT	2

OUTLINE DRAWING -C MAX--D TYP В 2 1 2 3 3 1 eia_eia_eia E TYP V A 777 6 -G TYP F TYP-PICK & PLACE SURFACE AREA _COMPONENT AREA (.030X.075)MIN



PRODUCT MARKING: NA

A	B	C	D	E	F
.150	.150	.150	.050	.030	.025
3.81	3.81	3.81	1.27	0.76	0.64
G	H	J	K		wt
.028	.065	.190	.030		grams
0.71	1.65	4.83	0.76		0.10

TAPE & REEL INFORMATION: F17

SURFACE MOUNT



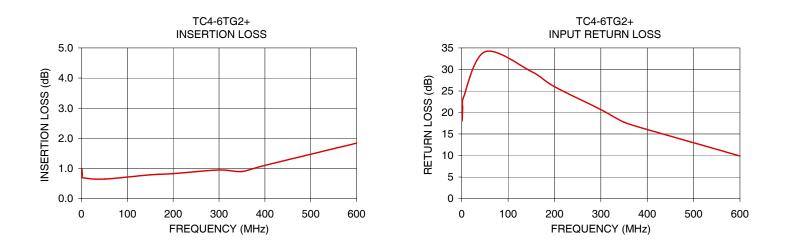


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50Ω 1.5 to 600 MHz

TYPICAL PERFORMANCE DATA

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)
1.00	0.99	18.04
2.00	0.79	21.15
3.00	0.69	23.26
50.00	0.65	34.11
150.00	0.79	29.54
200.00	0.83	26.00
300.00	0.95	20.67
350.00	0.90	17.75
400.00	1.10	16.06
600.00	1.84	9.91



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

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RF Transformer

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)
1	0.99	18.04
2	0.79	21.15
3	0.69	23.26
50	0.65	34.11
150	0.79	29.54
200	0.83	26.00
300	0.95	20.67
350	0.90	17.75
400	1.10	16.06
600	1.84	9.91



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RF Transformer

Typical Performance Curves

45 50

50

100

150

200

250

300

Frequency (MHz)

350

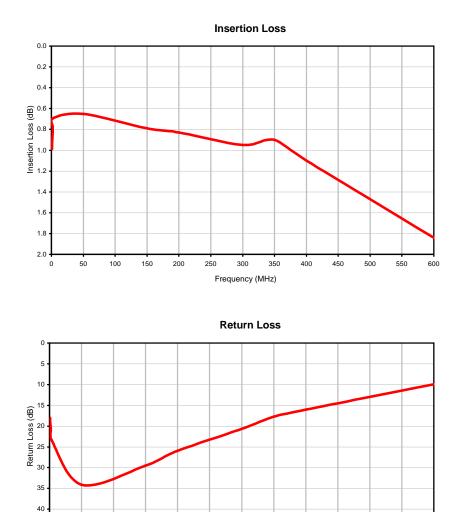
400

450

500

550

600



INTERNET http://www.minicircuits.com Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010 Mini-Circuits ISO 9001 & ISO 14001 Certified REV. X1 TC4-6TG2+ 070211 Page 1 of 1

Case Style

Outline Dimensions

3

-777

В 2

777

1

77

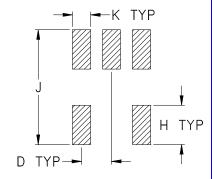
6

PICK & PLACE

SURFACE AREA

(.030X.075)MIN

PCB Land Pattern



Suggested Layout, Tolerance to be within ±.002

CASE #	А	В	С	D	Е	F	G	Н	J	K	L	WT. GRAMS
AT224-3	.150	.150	.150	.050	.030	.025	.028	.065	.190	.030		.10
A122 4 -J	(3.81)	(3.81)	(3.81)	(1.27)	(0.76)	(0.64)	(0.71)	(1.65)	(4.83)	(0.76)		.10

D TYP

1

6

-G TYP

2

Dimensions are in inches (mm). Tolerances: 2 Pl. + .01; 3 Pl. + .005

COMPONENT

AREA

-С МАХ--

E TYP

F TYP

Notes:

- 1. Open style, ceramic base.
- 2. Termination finish: 3.15-5.12 µ inch (.08-.130 microns) Gold over 78-236 µ inch (1.98-6.0 microns) Nickel plate.





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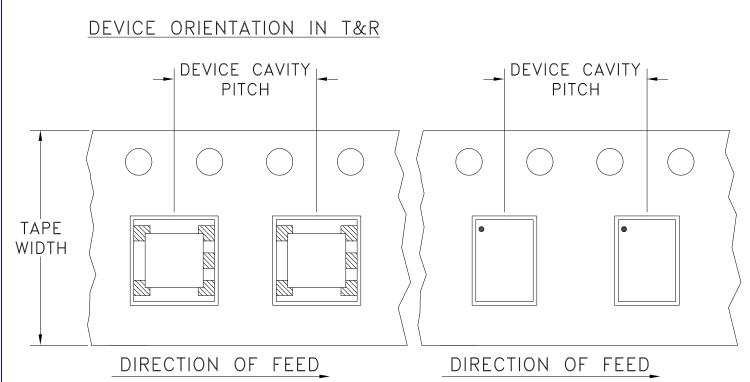


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RF/IF MICROWAVE COMPONENTS

AT224-3

Tape & Reel Packaging TR-F17



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices	s per Reel
			Small	20
	12 8	7	quantity	50
12			standards	100
			(see note)	200
				500
		13	C(1000
			Standard	2000

Note: Please Consult individual model data sheet to determine device per reel availability.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf



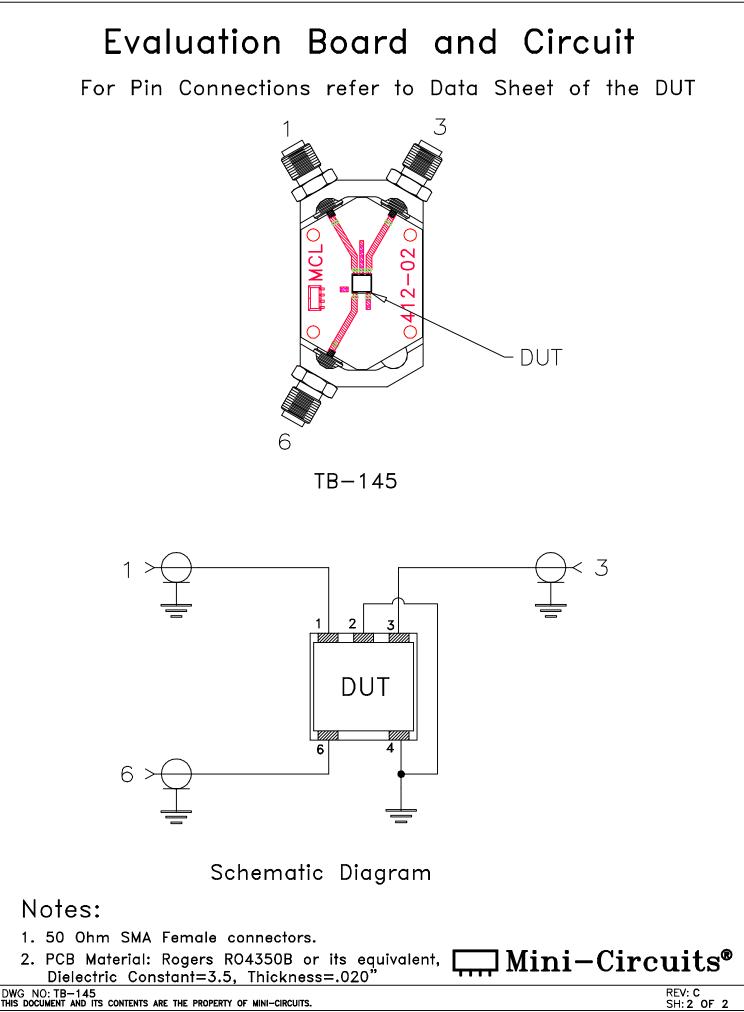


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RF/IF MICROWAVE COMPONENTS

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THIRD ANGLE PROJECTI	ON			REVISIONS				
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	JGGESTED N					C		
FOR AT224/DB						2		
<u>(FOR S</u>	INGLE ENDE	<u>U TO E</u>	BALANCE	D APPLICATIO	<u>(nc</u>			
.050, 2 PL. FOR GROUND .040 .040 .040 .015 PACKAGE OUTLINE .113 .015 TYP .015 PIN 6 .033								
NOTES: 1. TRACE WID	45° TYP .044 TRACE WIDTH, 3 PL. (SEE NOTE 1)							
NOTES: 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								
UNLESS OTHERWISE SPECIFIED INITIALS DATE DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL DECIMALS ± .005 APPROVED IG 08/23/06 3 PL DECIMALS ± .005 APPROVED IG 08/23/06								
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ASHEETA1.DWG	REV:A DATE:01/12/95		8PL244	SCALE: 8:1		OF	1	



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All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec		
Operating Temperature	-20° to 85°C Ambient Environment	Individual Model Data Sheet		
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet		
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours		
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C		
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1		
Solderability	10X Magnification	J-STD-002, 95% Coverage		
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D		
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A		
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215		
ENV02 Rev: A 02/25/11 M130240 File: ENV				

ENV02 Rev: A 02/25/11 M130240 File: ENV02.pdf

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