RF Transformer

2 to 200 MHz 50Ω

TC9-1G2+



Generic photo used for illustration purposes only

CASE STYLE: AT224-3

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



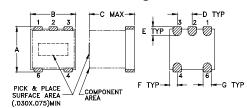
Maximum Ratings

Operating Temperature	-20°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.25W
DC Current	30mA
D	-f al l'a-la

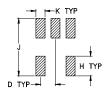
Pin Connections

6
4
1
3
2

Outline Drawing AT224-3



PCB Land Pattern



Suggested Layout, Tolerance to be within ±002

Outline Dimensions (inch)

F	Е	D	С	В	Α
.025	.030	.050	.150	.150	.150
0.64	0.76	1.27	3.81	3.81	3.81
wt		K	J	Н	G
grams		.030	.190	.065	.028
0.10		0.76	4.83	1.65	0.71

Config. A

Features

- suitable for tin/lead and RoHS solder systems
- good return loss
- excellent amplitude unbalance, 0.1 dB typ. and phase unbalance, 1 deg. typ. in 1 dB band width
- aqueous washable

Applications

• impedance matching

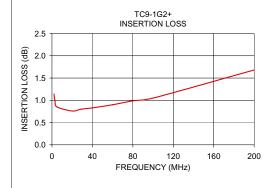
Transformer Electrical Specifications

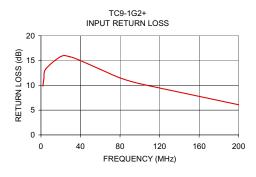
Ω RATIO (Secondary/Primary)	FREQUENCY (MHz)	INSERTION LOSS* 3 dB 2 dB 1 dB		
		MHz	MHz	MHz
9	2-200	2-200	3-100	5-40

^{*} Insertion Loss is referenced to mid-band loss, 0.7 dB typ.

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	
2.00 3.00 5.00 20.00 29.00 40.00 60.00 80.00 100.00 200.00	1.14 0.98 0.85 0.76 0.80 0.83 0.90 0.99 1.05	9.85 11.35 13.33 15.80 15.77 14.99 13.22 11.5 10.34 6.08	





- 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.

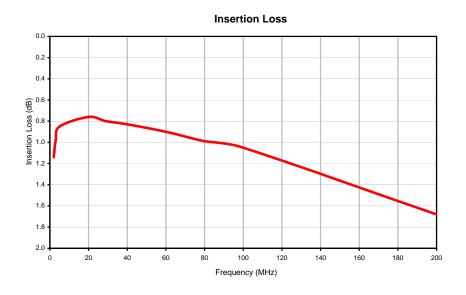
 C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

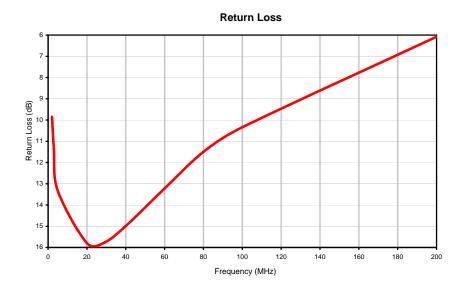
RF Transformer TC9-1G2+

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)
2.00	1.14	9.85
3.00	0.98	11.35
5.00	0.85	13.33
20.00	0.76	15.80
29.00	0.80	15.77
40.00	0.83	14.99
60.00	0.90	13.22
80.00	0.99	11.50
100.00	1.05	10.34
200.00	1.68	6.08

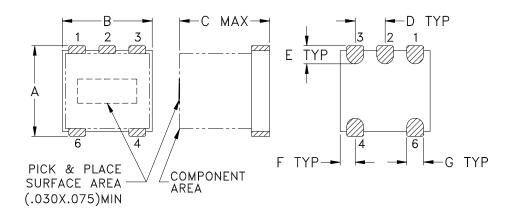
Typical Performance Curves



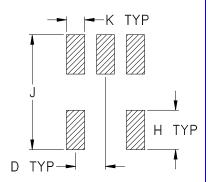


Outline Dimensions

AT224-3



PCB Land Pattern



Suggested Layout, Tolerance to be within ±.002

CASE #	A	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
11122.5	(3.81)	(3.81)	(3.81)	(1.27)	(0.76)	(0.64)	(0.71)	(1.65)	(4.83)	(0.76)		.10

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

Notes:

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



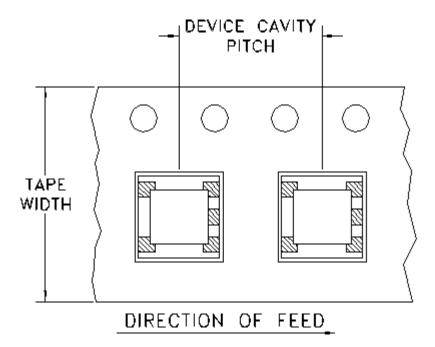


P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site

The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

Tape & Reel Packaging TR-F17

DEVICE ORIENTATION IN T&R



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



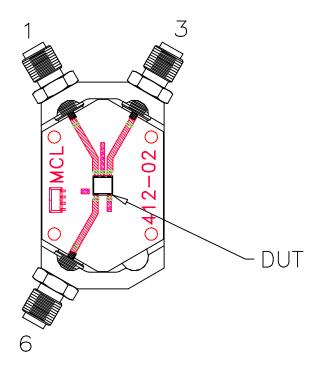


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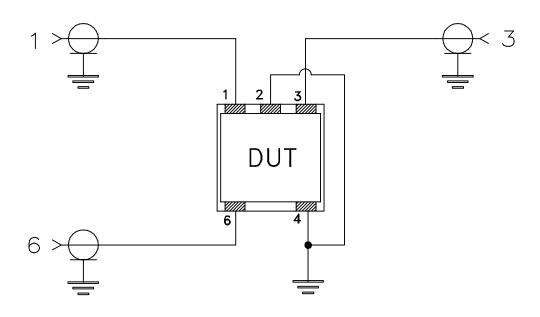
RF/IF MICROWAVE COMPONENTS

Evaluation Board and Circuit

For Pin Connections refer to Data Sheet of the DUT



TB-145



Schematic Diagram

Notes:

- 1. 50 Ohm SMA Female connectors.
- 2. PCB Material: Rogers RO4350B or its equivalent, III Mini-Circuits® Dielectric Constant=3.5, Thickness=.020"



Environmental Specifications

ENV02

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: ENV02.pdf

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