0.3 to 475 MHz

TC9-1-75X+



Generic photo used for illustration purposes only

CASE STYLE: AT1521

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



Features

- wideband 0.3-475 MHz
- good return loss, 23 dB typ in 1 dB bandwidth
- step-down 9:1 autotransformer
- plastic base with leads
- · aqueous washable

Applications

· matching laser diode

Electrical Specifications at 25°C

Parameter	Condition	Min.	Тур.	Max.	Unit
Impedance Ratio (secondary / primary)			75/8		Ohm
Frequency Range		0.3		475	MHz
	0.3-475		3.0		
Insertion Loss*	0.5-450		2.0		dB
	0.9-370		1.0		

^{*} Insertion Loss is referenced to mid-band loss, 0.4 dB typ. Stepdown, 75 ohm primary, 51 pF across secondary

Maximum Ratings

Parameter	Ratings
Operating Temperature	-20°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.25W
DC Current	30mA

 $\label{permanent} \mbox{Permanent damage may occur if any of these limits are exceeded.}$

Pin Connections

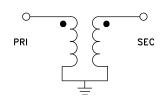
Function	Pin Number
PRIMARY DOT	6
PRIMARY	3
SECONDARY DOT	1
SECONDARY	3

Product Marking

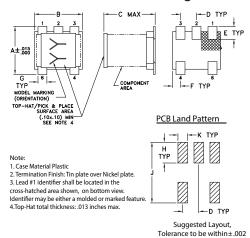


Demo Board MCL P/N: TB-276

Config. D



Outline Drawing

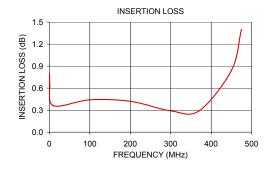


Outline Dimensions (inch)

F .025 0.64	.040 1.02	D .050 1.27	C .160 4.06	B .150 3.81	A .150 3.81
wt grams 0.15		.030 0.76	J .190 4.83	H .065 1.65	G .028 0.71

Typical Performance Data

FREQUENCY (MHz)	/ INSERTION LOSS (dB)	INPUT R. LOSS (dB)	
0.30	0.80	14.70	
0.50	0.71	16.80	
0.90	0.66	18.13	
10.00	0.36	22.63	
100.00	0.44	22.86	
200.00	0.42	22.40	
300.00	0.29	23.48	
370.00	0.29	18.53	
450.00	0.84	9.48	
475.00	1.40	7.44	





Additional 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.

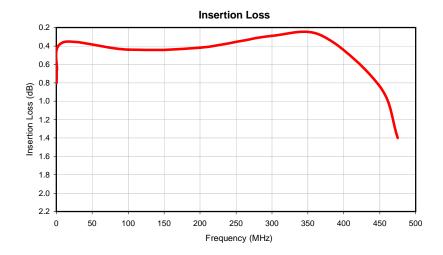
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty 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/MCLStore/terms.jsp

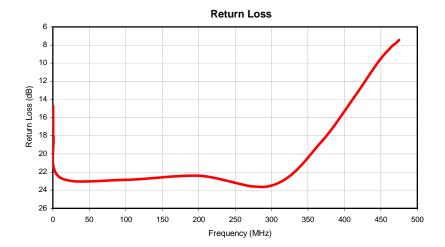
Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)
0.3	0.80	14.70
0.5	0.71	16.80
0.9	0.66	18.13
10.0	0.36	22.63
100.0	0.44	22.86
200.0	0.42	22.40
300.0	0.29	23.48
370.0	0.29	18.53
450.0	0.84	9.48
475.0	1.40	7.44



Typical Performance Data

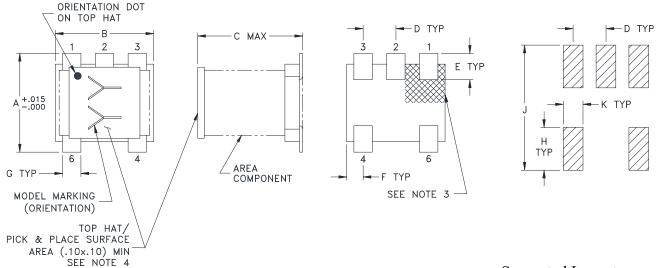




Outline Dimensions

AT1521

PCB Land Pattern



Suggested Layout, Tolerance to be within ±.002

CASE #	A	В	С	D	Е	F	G	Н	J	K	WT. GRAMS
AT1521	.150 (3.81)	.150 (3.81)	.160 (4.06)	.050 (1.27)	.040 (1.02)	.025 (.64)	.028 (.71)	.065 (1.65)	.190 (4.83)	.030 (.76)	.15

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

Notes:

- 1. Case material: Plastic.
- 2. Termination finish:

For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.

- 3. Orientation Dot on Top Hat & Marking on the Substrate both refers to Pin #1 of the Unit.
- 4. Top-Hat total thickness: .013 inches MAX.



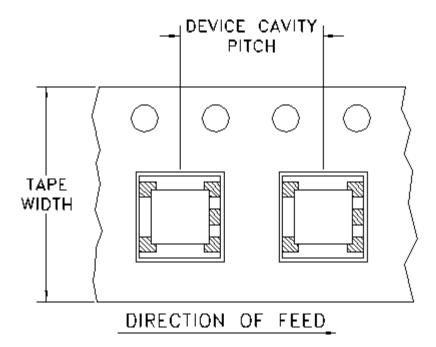


P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site

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	per Reel
12	8	7	Small quantity standards (see note)	20 50 100 200 500
		13	Standard	1000 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





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

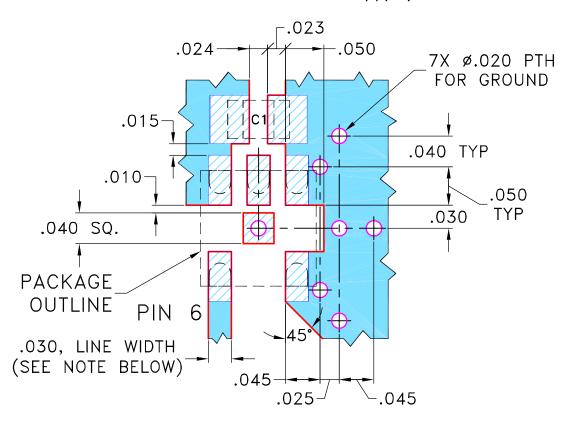
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

THIRD ANG	GLE PROJECTION
\triangle	
(+)	

		REVISIONS			
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M91565	NEW RELEASE	04/16/04	AV	IG
A	M102713	ADDED "WITH SMOBC"	01/12/06	GF	IL

SUGGESTED MOUNTING CONFIGURATION FOR AT224 CASE STYLE, "pp/kp" PIN CONNECTION



CAPACITOR C1: 0805 SIZE, FOR VALUE SEE CATALOG.

NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

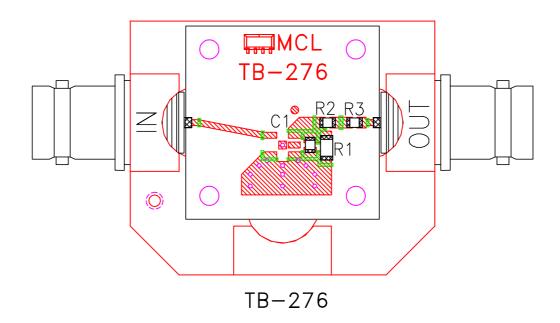
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

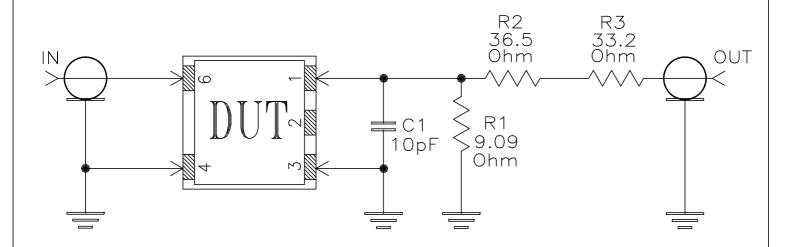
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIE	D	INITIALS	DATE		¬ > e · ·	. ~		• 4 R			
DIMENSIONS ARE IN INCHES	DRAWN	AV	03/23/04		Mini	ı — C	ircu	1ts 🗓	Neptu	ne Avenu	le 5
TOLERANCES ON: 2 PL DECIMALS ±	CHECKED	IL	04/16/04		Γ			ьго	окіуп	NI IISS	ວ
3 PL DECIMALS ± .005	APPROVED	IG	04/16/04								
FRACTIONS ±				PL.	pp/kp,	75.	AT224	1. TC9	. Т	'B-2'	76
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PARTY, IN WHOLE OR IN PART, WITH	IOUT WRITTEN PER	RMISSION OF MINI-C	IRCUITS.	FILE: O	8PL155	SCALE:	8:1	SHEET:	1	<u>Λ</u> Ε 1	1
	ASHEETA1.D	WG REV:A DA	TE:01/12/95	9	0LT199		0:1		T	Or J	L

Evaluation Board and Circuit

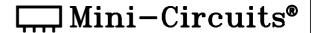




Schematic Diagram

Notes:

- 1. BNC Female connectors.
- 2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.





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.

Test/Inspection Condition	Reference/Spec
-20° to 85°C Ambient Environment	Individual Model Data Sheet
-55° to 100° C Ambient Environment	Individual Model Data Sheet
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
-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
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
10X Magnification	J-STD-002, 95% Coverage
20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
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
	-20° to 85°C Ambient Environment -55° to 100° C Ambient Environment 90 to 95% RH, 240 hours, 50°C -55° to 100°C, 100 cycles Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak 10X Magnification 20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36) 50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether +

ENV02 Rev: A

02/25/11

M130240 File: ENV02.pdf

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