UNBALANCED TO UNBALANCED

RF Transformer

TRS2-252+

100Ω to 50Ω 4 to 2500 MHz

THE BIG DEAL

- Wideband, 4 to 2500 MHz
- Low Insertion Loss, 0.98 - 1.71 dB
- Good Return Loss, 20 dB typ. at 1 dB band
- High IP2, +105 dBm typ.
- High IP3, +53 dBm typ.
- Small Size
- Aqueous Washable

Generic photo used for illustration purposes only

CASE STYLE: AT577-1

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

APPLICATIONS

- VHF/UHF
- Receivers / Transmitters
- Impedance Matching
- Push-pull Amplifiers

PRODUCT OVERVIEW

The TRS2-252+ is a mini unbalanced-to-unbalanced, very wide bandwidth transformer measuring only 0.2" on all sides, with a flat top for pick and place compatibility. The rugged, wire-welded, rectangular-core design is RoHS-compliant, with an open style, aqueous washable, ceramic case and gold-plated terminals.

KEY FEATURES

Feature	Advantages
Very wide bandwidth	4-2500 MHz frequency range for use in cable or broadcast TV & radio, GPS, cellular communications, avionics, and radar implementations
Very good, flat insertion loss	Insertion loss flatness ±0.35 across operating range maintains gain flatness when used as a step-up or step-down transformer in amplifier or filter circuitry
Good, flat return loss	22 ±4.7 dB return loss at 1 dB provides excellent matching for 50/100 Ω circuits

REV. B
ECO-024671
TRS2-252+
MCL NY
250311

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			2		Ohm
Frequency Range		4		2500	MHz
Insertion Loss[1]	4 - 2500		3.0		dB
	8 - 2000		2.0		
	30 - 1500		1.0		

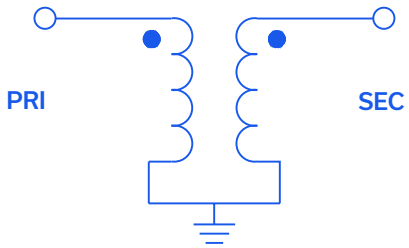
1. Insertion Loss is referenced to mid-band loss, 0.9 dB typ.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
RF Power	0.35 W
DC Current	30 mA

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

CONFIG. D



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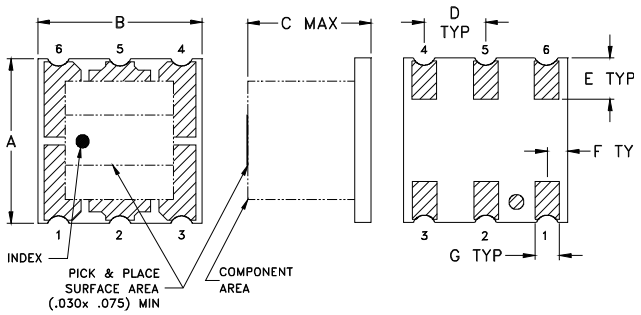
PIN CONNECTIONS

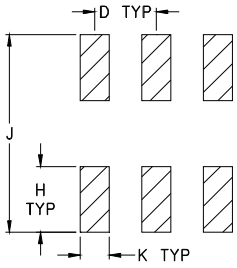
Function	Pin Number
PRIMARY DOT	1
SECONDARY DOT	3
NOT USED	6
NOT USED	4
COMMON	2
NOT USED	5

PRODUCT MARKING: N/A

OUTLINE DRAWING



PCB Land Pattern



OUTLINE DIMENSIONS (Inch / mm)

A	B	C	D	E	F
.200	.200	.15	.075	.050	.025
5.08	5.08	3.81	1.91	1.27	0.64
G	**H**	**J**	**K**		**wt**
.030	.080	.240	.035		grams
0.76	2.03	6.10	0.89		0.15

TAPE & REEL INFORMATION: F73

UNBALANCED TO UNBALANCED

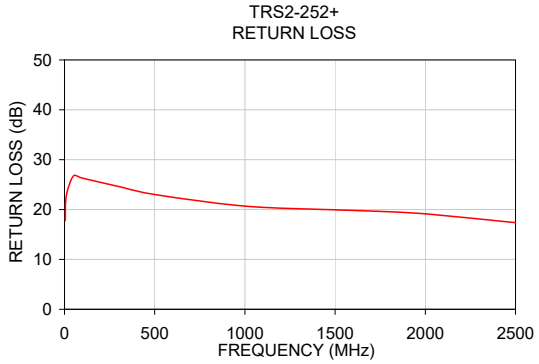
RF Transformer

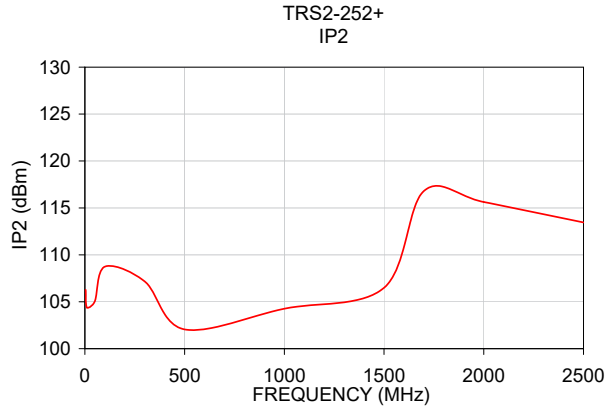
TRS2-252+

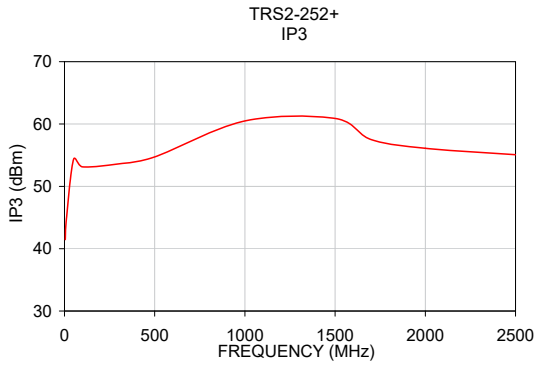
100Ω to 50Ω 4 to 2500 MHz

TYPICAL PERFORMANCE DATA

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	IP2 (dBm)	IP3 (dBm)
4.00	1.36	17.77	106.28	41.45
10.00	1.06	22.78	104.39	44.58
50.00	0.98	26.76	105.04	54.29
100.00	1.01	26.30	108.74	53.12
300.00	1.03	24.62	107.16	53.60
500.00	1.05	23.01	102.05	54.72
1000.00	1.15	20.69	104.26	60.50
1500.00	1.29	19.95	106.48	60.89
1700.00	1.35	19.70	116.81	57.50
2000.00	1.47	19.13	115.63	56.11
2500.00	1.71	17.37	113.45	55.08







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

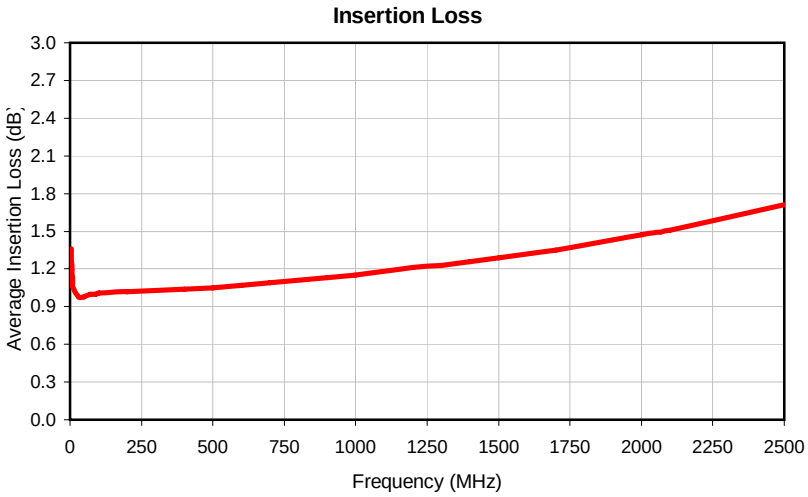
RF Transformer TRS2-252+

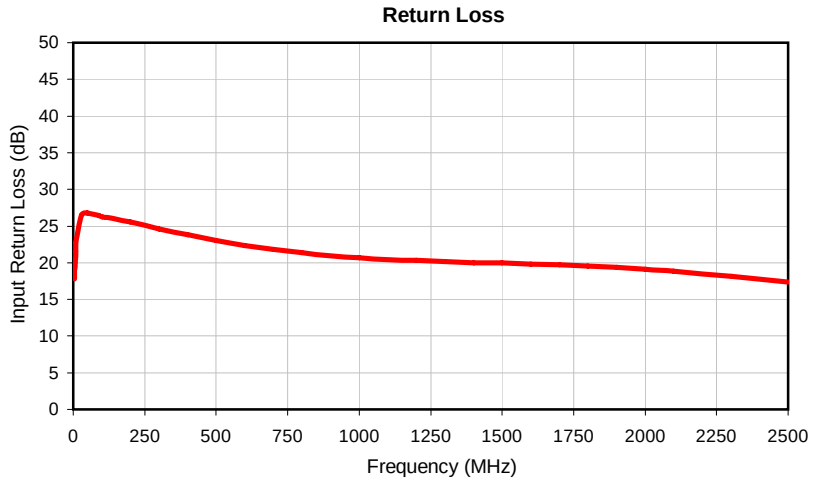
Typical Performance Data

FREQUENCY MHz	INSERTION LOSS (dB)	RETURN LOSS (dB)
4.0	1.36	17.77
6.0	1.19	19.95
8.0	1.10	21.56
10.0	1.06	22.78
30.0	0.98	26.56
50.0	0.98	26.76
70.0	1.00	26.65
90.0	1.00	26.41
100.0	1.01	26.30
200.0	1.02	25.60
300.0	1.03	24.62
400.0	1.04	23.83
500.0	1.05	23.01
600.0	1.07	22.31
700.0	1.09	21.83
800.0	1.11	21.39
900.0	1.13	20.93
1000.0	1.15	20.69
1100.0	1.18	20.46
1200.0	1.21	20.31
1300.0	1.23	20.16
1400.0	1.26	20.01
1500.0	1.29	19.95
1600.0	1.32	19.83
1700.0	1.35	19.70
1800.0	1.39	19.56
1900.0	1.43	19.37
2000.0	1.47	19.13
2100.0	1.51	18.83
2300.0	1.61	18.16
2500.0	1.71	17.37

RF Transformer TRS2-252+

Typical Performance Data



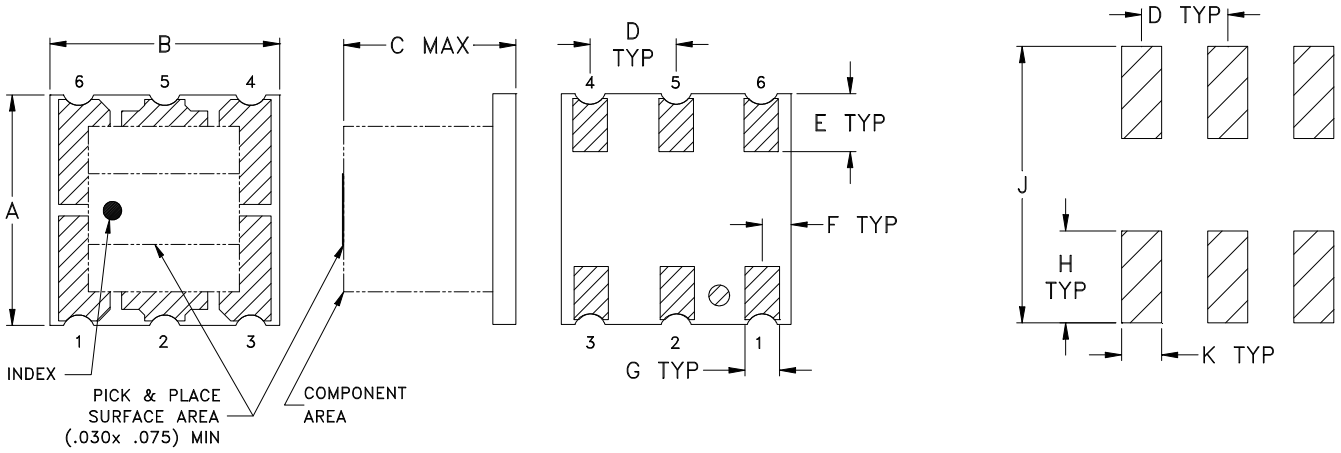


Case Style AT

Outline Dimensions

AT577-1

PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L	WT. GRAMS
AT577-1	.200 (5.08)	.200 (5.08)	.15 (3.81)	.075 (1.91)	.050 (1.27)	.025 (0.64)	.030 (0.76)	.080 (2.03)	.240 (6.10)	.035 (0.89)	-- --	.15

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

Notes:

1. Base material: Printed wiring laminate.
2. Termination finish:
   For RoHS Case Style: 3-5 µ inch (.08-.13 microns) Gold over 120-240 µ inch (3.05-6.10 microns) Nickel plate.
   For RoHS-5 Case Style: Tin-Lead plate. All models, no (+) suffix.

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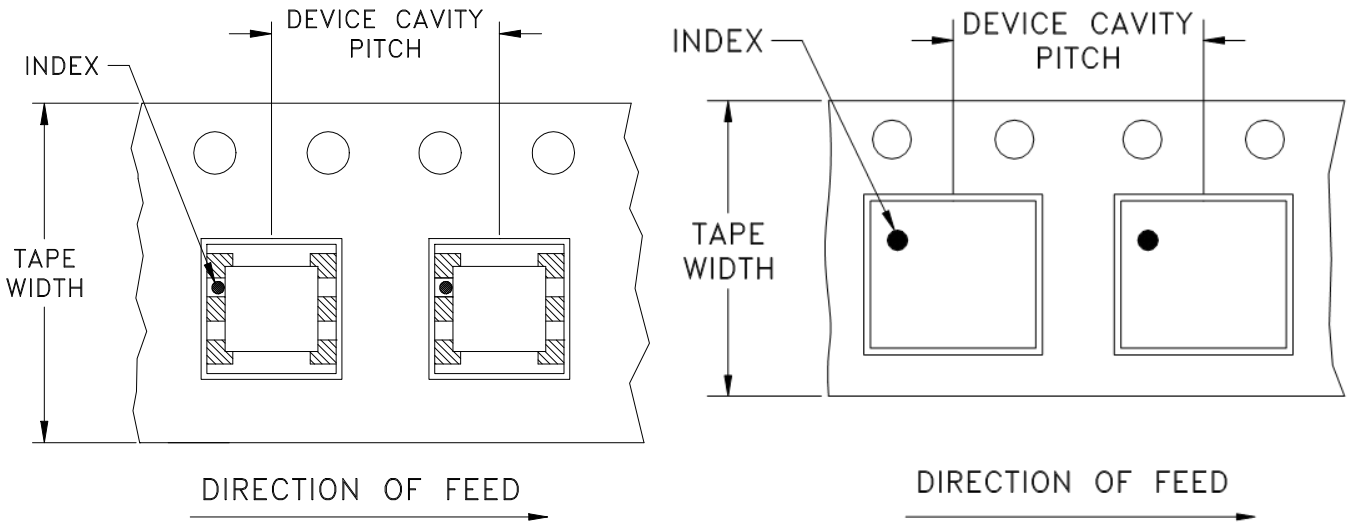
Tape & Reel Packaging TR-F73

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

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INTERNET http://www.minicircuits.com
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Mini-Circuits

Environmental Specifications ENV02T1

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	-40° 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

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