75Ω

10 to 2200 MHz

The Big Deal

- Very wide band balun, with excellent performance from 10 MHz to 2.2 GHz
- Excellent amplitude unbalance, 0.3 dB typ
- Good return loss, 20 dB typ



CASE STYLE: AT577-1

Product Overview

The TRS1-23-75+ is a balanced-to-unbalanced 75Ω transmission line transformer, 0.2" x 0.2" x 0.2" in size. This rugged, wire welded, rectangular core design is rated for up to 0.5W maximum power, in an aqueous washable case suitable for both RoHS and tin/lead solder systems.

Feature	Advantages
Very wide bandwidth	10-2200 MHz bandwidth covers CATV (forward & return), medical wireless and D2A/A2D, and other communications applications
Excellent amplitude and phase unbalance	0.4 dB amplitude and 3° phase unbalance aid rejection of even harmonics (in push-pull amplifiers) and common mode signals (when used as a balun)
Good return loss	Provides excellent matching for 75Ω circuitry
Low and flat insertion loss	Consistently low signal loss, ±0.2dB across all 50-1000 MHz CATV bands

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.ninicircuits.com/MCLStore/terms.jsp

RF Transformer

10 to 2200 MHz 75Ω

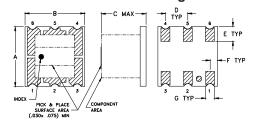
Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.5W
DC Current	300mA
Permanent damage may occur if any	of these limits are exceeded.

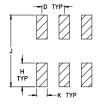
Pin Connections

PRIMARY DOT	1
PRIMARY	3
SECONDARY DOT	6
SECONDARY	4
NOT USED	2,5

Outline Drawing



PCB Land Pattern



Suggested Layout, Tolerance to be within ±.002

Outline Dimensions (inch)

Α	В	С	D	E	F
.200	.200	.15	.075	.050	.025
5.08	5.08	3.81	1.91	1.27	0.64
G	Н	J	K		wt
G .030	H .080	J .240	K .035		wt grams



- suitable for tin/lead and RoHS solder systems
- wideband, 10 to 2200 MHz
- balanced transmission line
- good return loss, 20 dB typ. at 1 dB band
- excellent amplitude unbalance, 0.3 dB typ.
- aqueous washable

Applications

- balanced to unbalanced transformation
- push-pull amplifiers
- PCS/DCS
- cable TV
- cellular

Features

Generic photo used for illustration purposes only

TRS1-23-75+

CASE STYLE: AT577-1

+RoHS Compliant

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

	Available Tape and Reel at no extra cost
Reel Size	Devices/Reel
7"	500
13"	2000

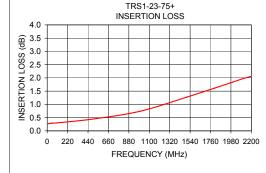
Transformer Electrical Specifications at 25°C

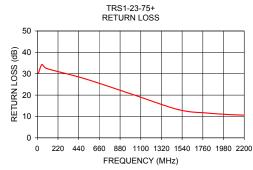
Ω RATIO	FREQUENCY (MHz)	INSI	INSERTION LOSS*		UNBAI (De	ASE LANCE eg.) vp.	(d	LANCE
		3 dB MHz	2 dB MHz	1 dB MHz	1 dB bandwidth	2 dB bandwidth	1 dB bandwidth	2 dB bandwidth
1	10-2200	10-2200	30-1500	50-1000	3	5	0.4	0.6

*Insertion Loss is referenced to mid-band loss, 0.2 dB tvp.

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
10.00	0.27	30.06	0.58	6.13
30.00	0.29	34.11	0.58	2.24
50.00	0.29	34.32	0.55	1.33
100.00	0.30	32.46	0.51	0.30
500.00	0.45	27.73	0.33	2.61
1000.00	0.74	20.49	0.10	2.40
1500.00	1.27	13.21	0.27	1.23
1800.00	1.61	11.64	0.18	3.21
2000.00	1.84	10.99	0.05	4.05
2200.00	2.06	10.63	0.14	4.39





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.

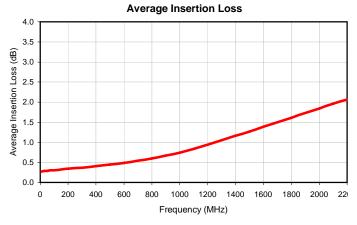
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive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

Typical Performance Data

FREQUENCY	AVERAGE INSERTION LOSS (dB)	INPUT RETURN LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (deg.)
10.0	0.27	30.06	0.58	6.13
30.0	0.29	34.11	0.59	2.24
50.0	0.29	34.32	0.55	1.33
70.0	0.30	33.79	0.53	0.83
90.0	0.30	32.87	0.52	0.45
100.0	0.30	32.46	0.51	0.30
200.0	0.34	29.38	0.48	0.74
300.0	0.37	27.62	0.44	1.49
400.0	0.41	27.27	0.39	2.09
500.0	0.45	27.73	0.33	2.61
600.0	0.49	28.55	0.26	2.92
700.0	0.54	28.58	0.17	3.07
800.0	0.60	26.33	0.09	3.04
900.0	0.67	23.24	0.01	2.82
1000.0	0.74	20.49	0.10	2.40
1100.0	0.84	18.26	0.17	1.81
1200.0	0.94	16.51	0.23	1.09
1300.0	1.05	15.12	0.26	0.33
1400.0	1.16	14.04	0.28	0.43
1500.0	1.27	13.21	0.27	1.23
1600.0	1.39	12.57	0.25	1.95
1700.0	1.50	12.05	0.22	2.62
1800.0	1.61	11.64	0.18	3.21
1900.0	1.73	11.28	0.12	3.67
2000.0	1.84	10.99	0.05	4.05
2100.0	1.96	10.99	0.03	4.03
		_		
2200.0	2.06	10.63	0.14	4.39

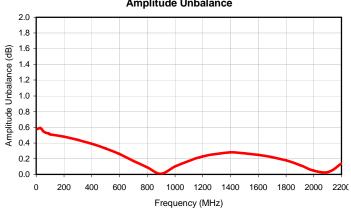


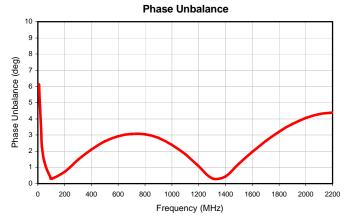
Typical Performance Data





Amplitude Unbalance



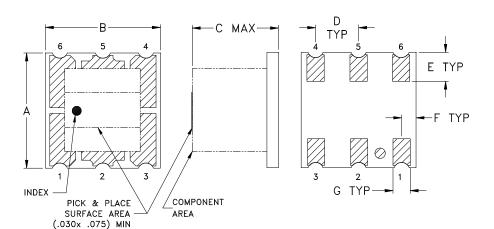


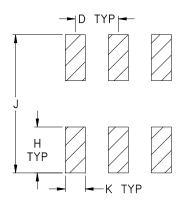
Page 1 of 1

Outline Dimensions

AT577-1

PCB Land Pattern





Suggested Layout, Tolerance to be within ±.002

CASE #	A	В	С	D	Е	F	G	Н	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: $3-5~\mu$ 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.



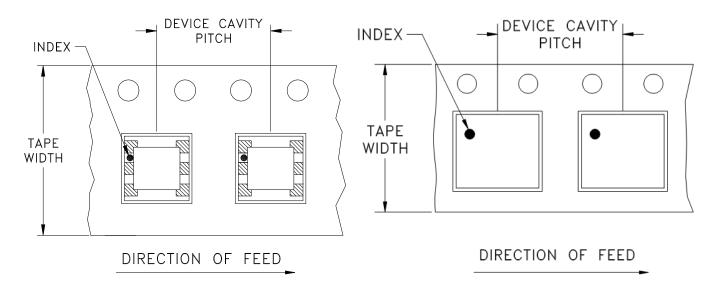


P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site

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

Tape & Reel Packaging TR-F73

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices p	er 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



Mini-Circuits ISO 9001 & ISO 14001 Certified



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

ENV02T1 Rev: B

02/25/11

M130240 File: ENV02T1.pdf

This document and its contents are the property of Mini-Circuits.