



SURFACE MOUNT

RF Transformer

TRS1.33-1T-75+

Mini-Circuits

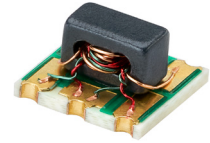
75Ω to 100Ω 1 to 400 MHz

FEATURES

- Wideband, 1 to 400 MHz
- Good Return Loss
- Excellent Amplitude Unbalance and Phase Unbalance
- DC Isolated

APPLICATIONS

- Impedance Matching
- Balanced to Unbalance Transformer
- Push-Pull Amplifiers
- CATV



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

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (Secondary/Primary)			1.33		Ohm
Frequency Range		1		400	MHz
Insertion Loss ¹	1 - 400		0.6	1.2	dB
	5 - 200		0.4	0.9	
Amplitude Unbalance	1 - 400		1.10	2.0	dB
	5 - 200		0.5	0.9	
Phase Unbalance	1 - 400		3	8	Deg.
	5 - 200		2	7	

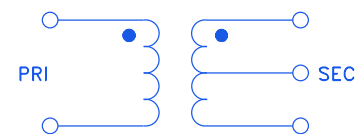
1. Insertion Loss is referenced to mid-band loss, 0.4 dB typ.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.25W
DC Current	30mA

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

CONFIG. A



REV. C
ECO-024671
TC1.33-1T-75+
MCL NY
240808

Mini-Circuits



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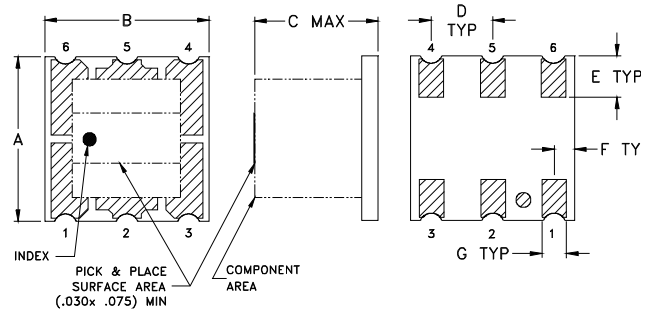
75Ω to 100Ω 1 to 400 MHz

PIN CONNECTIONS

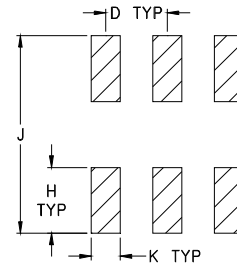
PRIMARY DOT	6
PRIMARY	4
SECONDARY DOT	1
SECONDARY	3
SECONDARY CT	2
NOT USED	5

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



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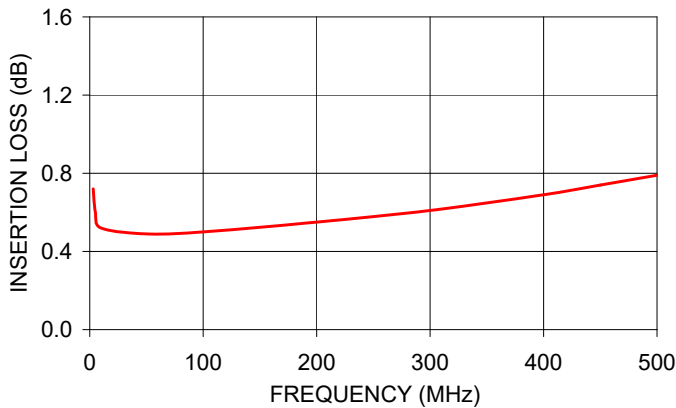
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75Ω to 100Ω 1 to 400 MHz

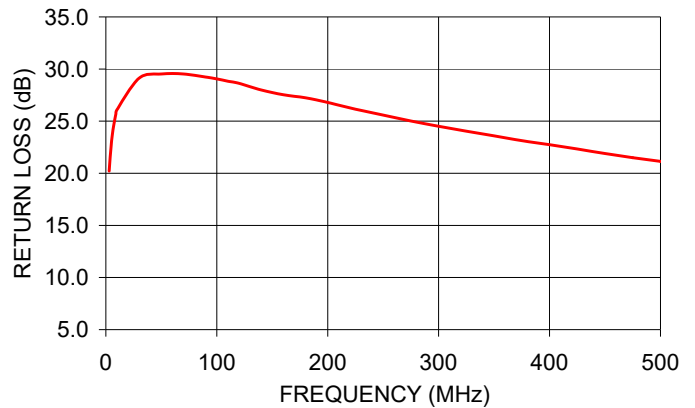
TYPICAL PERFORMANCE DATA

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
1.00	0.68	21.22	0.03	0.01
5.00	0.40	29.54	0.03	0.09
10.00	0.37	33.00	0.03	0.17
50.00	0.38	33.93	0.01	0.68
100.00	0.40	30.23	0.09	1.27
150.00	0.42	27.24	0.22	1.86
200.00	0.45	25.42	0.37	2.23
300.00	0.51	22.48	0.80	2.91
350.00	0.55	21.37	1.08	3.16
400.00	0.60	20.37	1.37	3.35

TC1.33-1T-75+
INSERTION LOSS



TC1.33-1T-75+
INPUT RETURN LOSS



- 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

TRS1.33-1T-75+

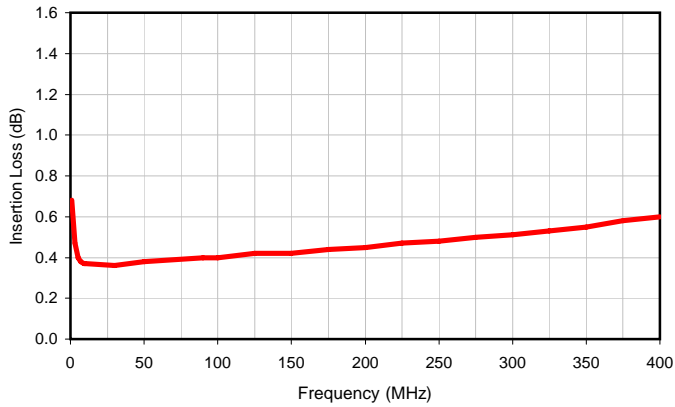
Typical Performance Data

FREQUENCY MHz	AVERAGE INSERTION LOSS (dB)	INPUT RETURN LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (deg.)
1.0	0.68	21.22	0.03	0.01
3.0	0.47	26.74	0.03	0.03
5.0	0.40	29.54	0.03	0.09
7.0	0.38	31.32	0.04	0.11
9.0	0.37	32.52	0.03	0.15
10.0	0.37	33.00	0.03	0.17
30.0	0.36	35.17	0.02	0.44
50.0	0.38	33.93	0.01	0.68
70.0	0.39	32.43	0.03	0.93
90.0	0.40	30.90	0.07	1.17
100.0	0.40	30.23	0.09	1.27
125.0	0.42	28.64	0.14	1.54
150.0	0.42	27.24	0.22	1.86
175.0	0.44	26.30	0.29	2.01
200.0	0.45	25.42	0.37	2.23
225.0	0.47	24.56	0.46	2.40
250.0	0.48	23.82	0.57	2.59
275.0	0.50	23.12	0.68	2.72
300.0	0.51	22.48	0.80	2.91
325.0	0.53	21.92	0.93	3.04
350.0	0.55	21.37	1.08	3.16
375.0	0.58	20.81	1.22	3.21
400.0	0.60	20.37	1.37	3.35

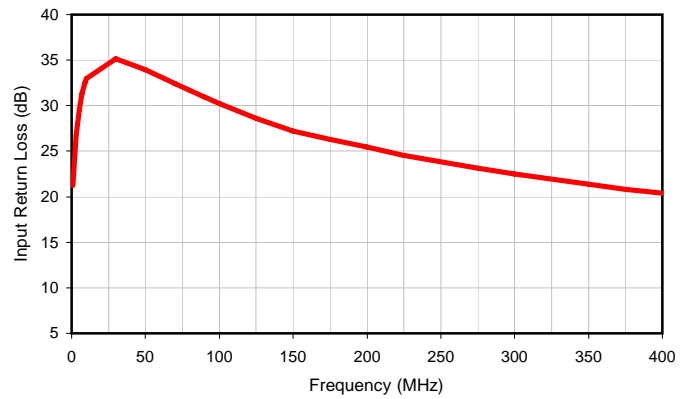


Typical Performance Data

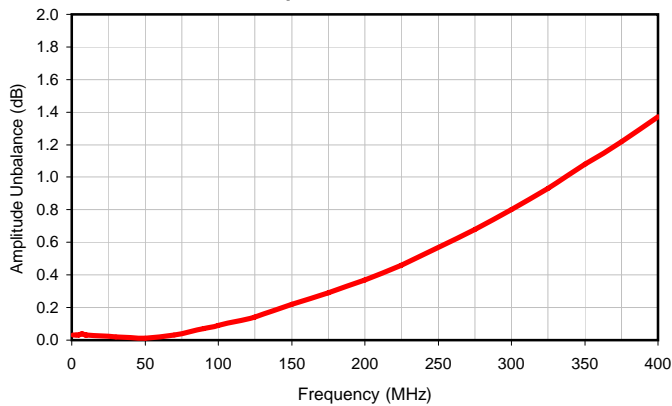
Average Insertion Loss



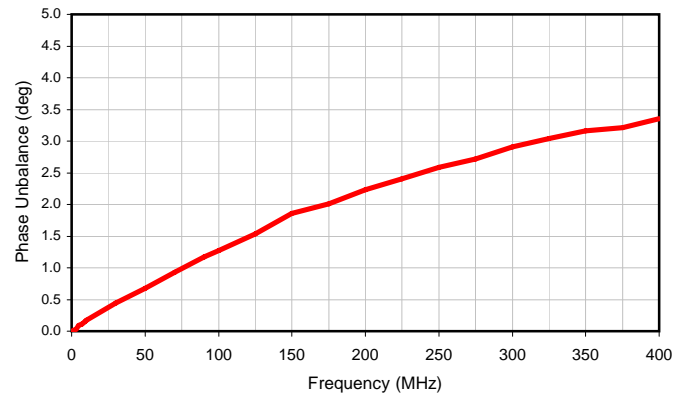
Input Return Loss



Amplitude Unbalance



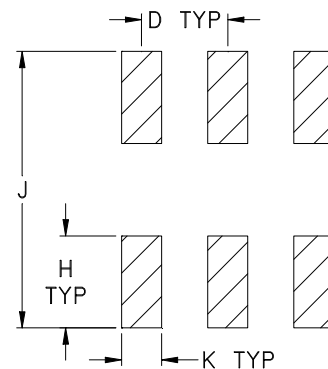
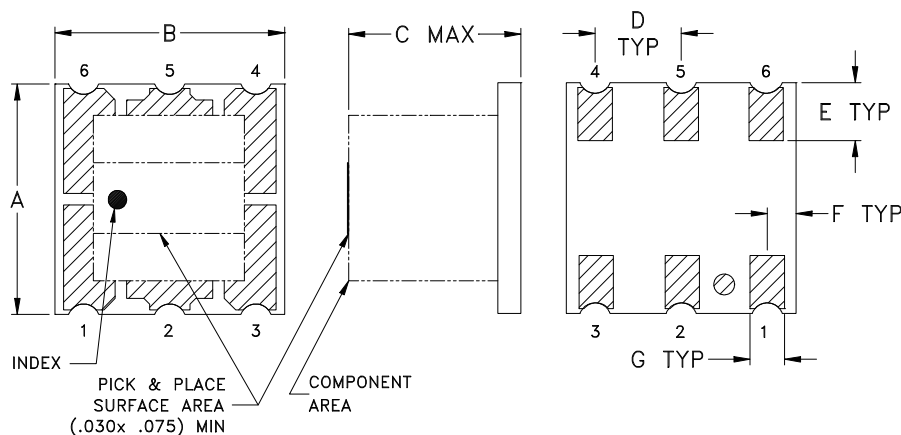
Phase Unbalance



Outline Dimensions

AT577-1

PCB Land Pattern



Suggested Layout,
Tolerance to be within $\pm .002$

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. $\pm .01$; 3 Pl. $\pm .005$

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.



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

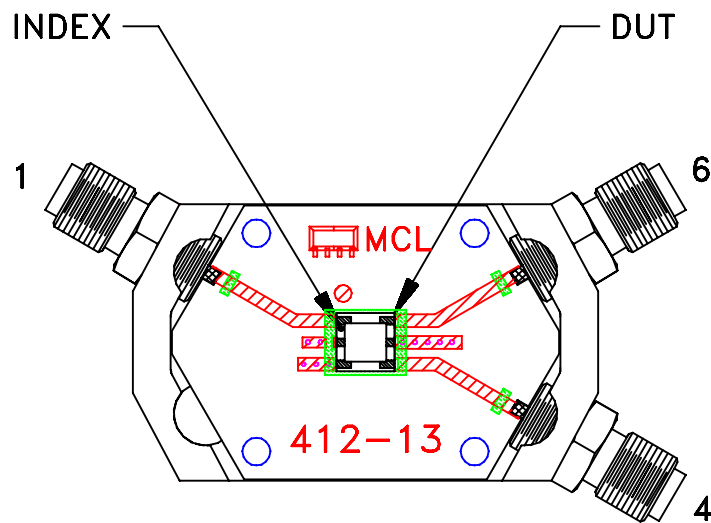


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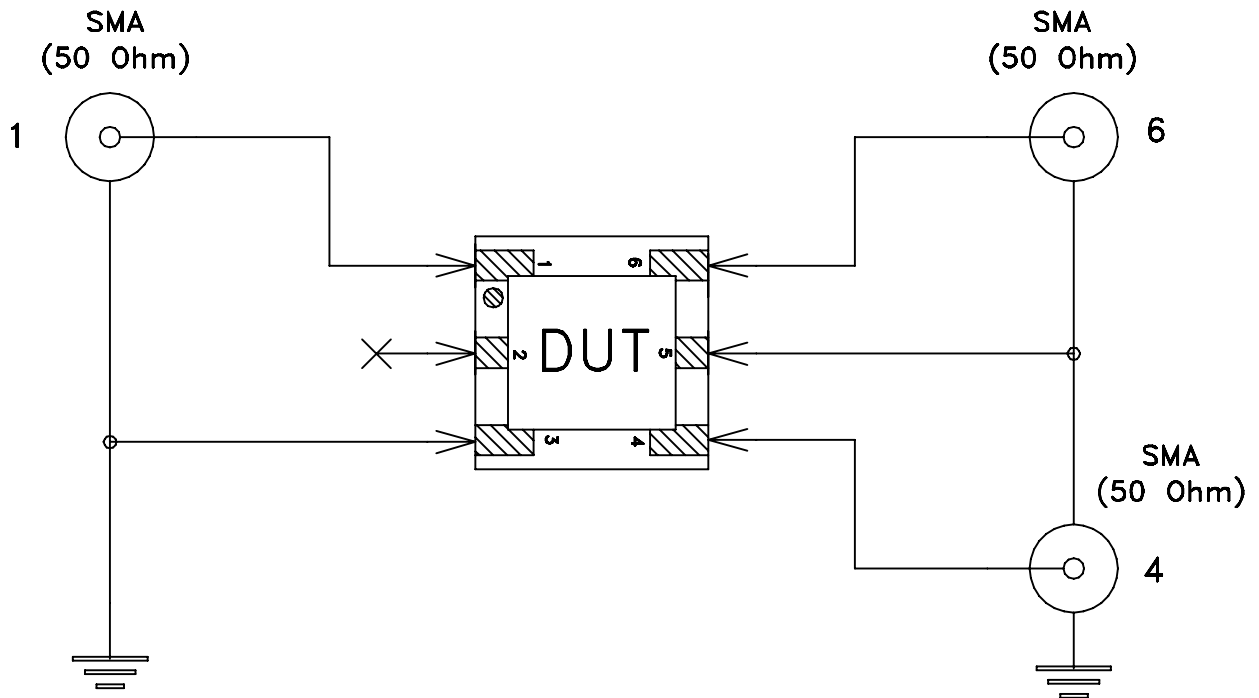
RF/IF MICROWAVE COMPONENTS

Evaluation Board and Circuit

For Pin Connections refer to Data Sheet of the DUT




TB-575+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.020 inch.

 **Mini-Circuits®**



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