Balanced top hat®

RF Transformer

TRS2-1T-75+

75Ω 5 to 1200 MHz

The Big Deal

- Low insertion loss, 1.0 dB typ.
- Good return loss, 20 dB typ.
- Low amplitude unbalance, 0.3 dB
- Power handling up to 0.25W

CASE STYLE: TT1618

Product Overview

The TRS2-1T-75+ is a 75Ω surface mount balanced-to-balanced transformer with a 2:1 secondary/primary impedance ratio covering the 5 to 1200 MHz band, meeting bandwidth requirements for DOCSIS® 3.1 compliant systems and equipment, among other applications. This model handles RF input power up to 0.25W and provides low insertion loss, good return loss and low amplitude unbalance. Measuring only 0.28 x 0.25 x 0.12”, the unit features core and wire, all-welded construction with gold over nickel plate wraparound terminations suitable for tin/lead and RoHS solder systems. The unit also includes Mini-Circuits’ Top Hat™ feature for faster more accurate pick-and-place assembly.

Key Features

Feature	Advantages
Wideband, 5 to 1200 MHz	TRS2-1T-75+ supports a variety of applications including CATV and DOCSIS 3.1 systems and equipment.
Low insertion loss, 1.0 dB	Enables excellent signal power transmission from input to output.
Good return loss, 20 dB typ.	Excellent matching for 75Ω systems with minimal signal reflection.
Low amplitude unbalance, 0.3 dB	Low unbalance can improve a system’s electromagnetic compatibility by rejecting unwanted common-mode noise.
Small footprint, 0.28 x 0.25”	Accommodates tight space requirements for dense PCB layouts.
Top Hat® feature	Improves speed and accuracy of pick and place assembly and provides clear device marking for visual inspection

top hat®

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Generic photo used for illustration purposes only

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+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”	10, 20, 50, 100, 200
13”	500

Features

- suitable for tin/lead and RoHS solder systems
- wideband, 5 to 1200 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

Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			2		
Frequency Range		5		1200	MHz
Insertion Loss*	5 - 600	—	0.6	1.0	dB
	600 - 1000	—	1.0	1.8	
	1000 - 1200	—	1.3	2.2	
Amplitude Unbalance	5 - 600	—	0.3	1.0	dB
	600 - 1000	—	0.6	1.7	
	1000 -1200	—	0.8	1.9	
Phase Unbalance	5 - 50	—	0.8	3	Degree
	50 - 1200	—	5	9	
Primary Return Loss (Input)	5 - 50	17	22	—	dB
	50 -1000	13	22	—	
	1000 - 1200	9	17	—	

* Insertion Loss is referenced to mid-band loss, 0.6 dB typ.

Maximum Ratings

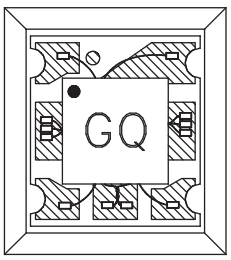
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.25W
DC Current	30mA

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

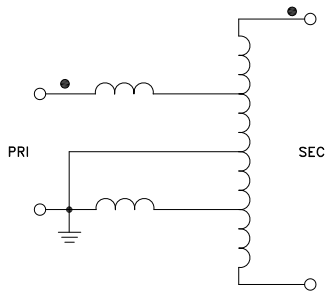
Pin Connections

Function	Pin Number
PRIMARY DOT	1
PRIMARY (GROUND)	4
SECONDARY DOT	3
SECONDARY	2

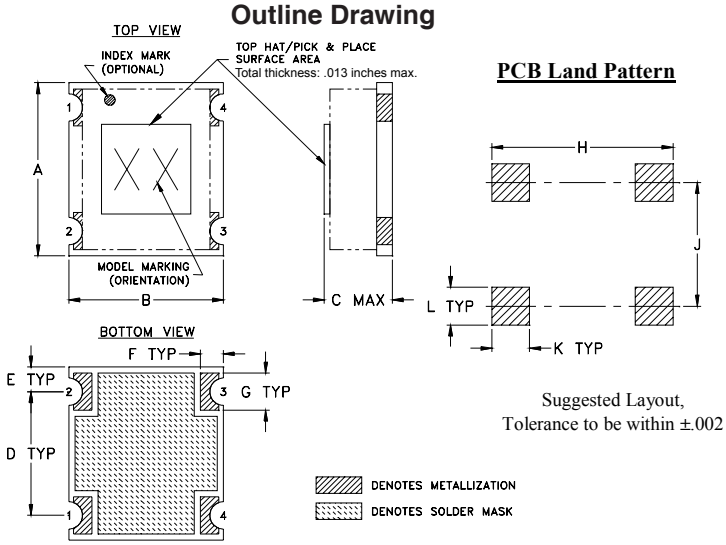
Product Marking



Config. P1



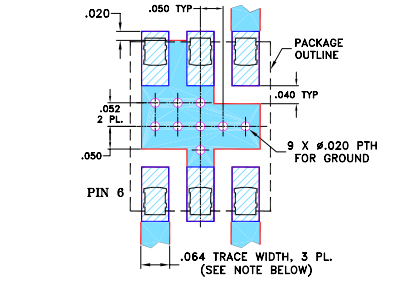
Outline Drawing



PCB Land Pattern

Suggested Layout,
Tolerance to be within ±.002

Demo Board MCL P/N: TB-619+
Suggested PCB Layout (PL-237)



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

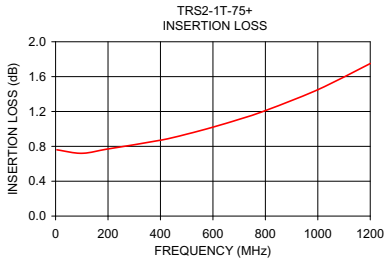
Outline Dimensions (inch / mm)

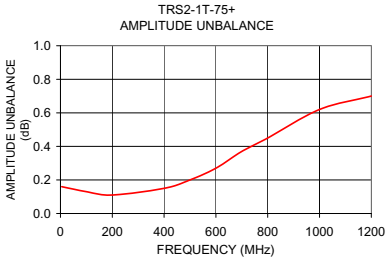
A	B	C	D	E	F
.280	.250	.12	.200	.040	.037
7.11	6.35	3.05	5.08	1.02	0.94

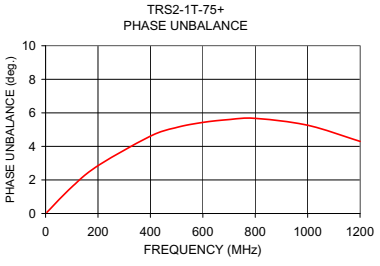
G	H	J	K	L	wt.
.060	.293	.200	.061	.061	grams
1.52	7.44	5.08	1.55	1.55	2.8

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
5.00	0.76	20.46	0.16	0.07
100.00	0.72	23.43	0.13	1.58
200.00	0.77	24.55	0.11	2.85
400.00	0.87	27.39	0.15	4.61
500.00	0.94	29.37	0.20	5.13
600.00	1.02	30.97	0.27	5.43
700.00	1.11	29.50	0.37	5.60
800.00	1.21	26.22	0.45	5.67
1000.00	1.45	20.59	0.62	5.26
1200.00	1.75	16.81	0.70	4.30







Mouser Electronics

Authorized Distributor

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Mini-Circuits:

TRS2-1T-75+