Balanced top hat® RF Transformer

TRS1-182-75+

75Ω 10 to 1800 MHz

Features

- suitable for tin/lead and RoHS solder systems
- wideband, 10 to 1800 MHz
- balanced transmission line
- good return loss, 20 dB typ. at 1 dB band
- excellent amplitude unbalance, 0.3 dB typ.
- aqueous washable
- excellent intermod suppression

Generic photo used for illustration purposes only

CASE STYLE: TT1618-1

+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"	10, 20, 50, 100, 200
13"	500

Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio			1		Ohm
Frequency Range		10		1800	MHz
Insertion Loss*	50 -1200	—	0.6	1.0	dB
	10-1800	—	0.9	2.0	
Amplitude Unbalance	50-1000	—	0.3	0.7	dB
	1000-1200	—	0.5	0.7	
	10-1800	—	0.7	1.4	
Phase Unbalance	50-1000	—	2	4	Degree
	1000-1200	—	3	8	
	10-1800		7.5	15	
Primary Return Loss (Input)	50-500	16	22	—	dB
	500-1000	13	20	—	
	1000-1200	13	20	—	
	10-1800	8	12.5	—	

*Insertion Loss is referenced to mid-band loss, 0.25 dB typ.

Maximum Ratings

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	1W
DC Current	30mA

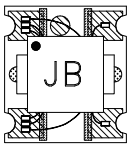
Permanent damage may occur if any of these limits are exceeded.

Demo Board MCL P/N: TB-789+

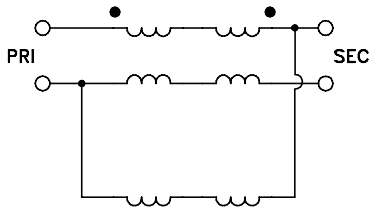
Pin Connections

Function	Pin Number
PRIMARY DOT	4
PRIMARY	1
SECONDARY DOT	2
SECONDARY	3

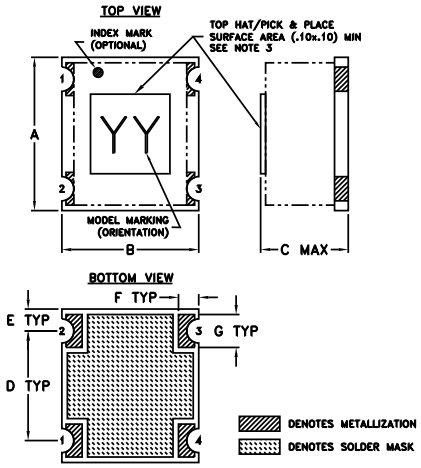
Product Marking

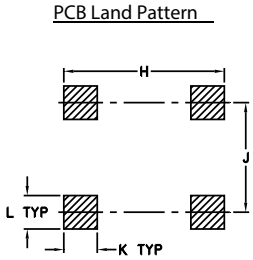


Config. K



Outline Drawing





Suggested Layout,
Tolerance to be within .002

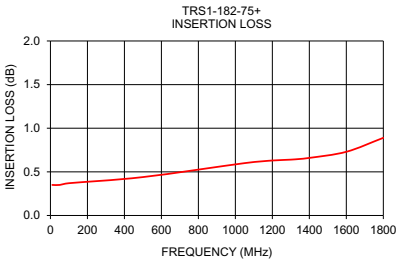
Outline Dimensions (inch / mm)

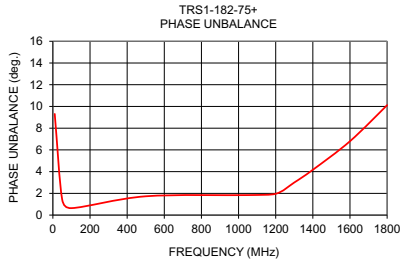
A	B	C	D	E	F
.280	.250	.16	.200	.040	.037
7.11	6.35	4.06	5.08	1.02	0.94

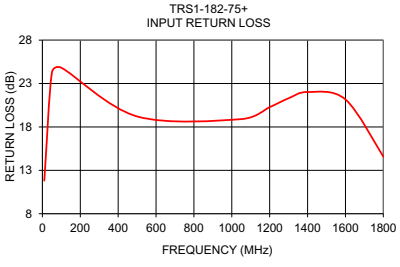
G	H	J	K	L	wt.
.060	.293	.200	.061	.061	grams
1.52	7.44	5.08	1.55	1.55	3

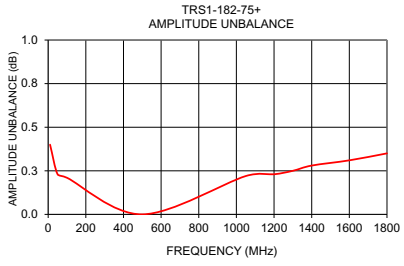
Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
10.0	0.35	11.81	0.40	9.31
50.0	0.35	24.24	0.23	1.45
100.0	0.37	24.82	0.21	0.64
500.0	0.44	19.21	0.00	1.73
1000.0	0.60	18.90	0.22	1.84
1200.0	0.63	20.28	0.23	1.96
1300.0	0.64	21.30	0.25	3.00
1400.0	0.66	22.02	0.28	4.17
1600.0	0.73	21.17	0.31	6.80
1800.0	0.89	14.58	0.35	10.12







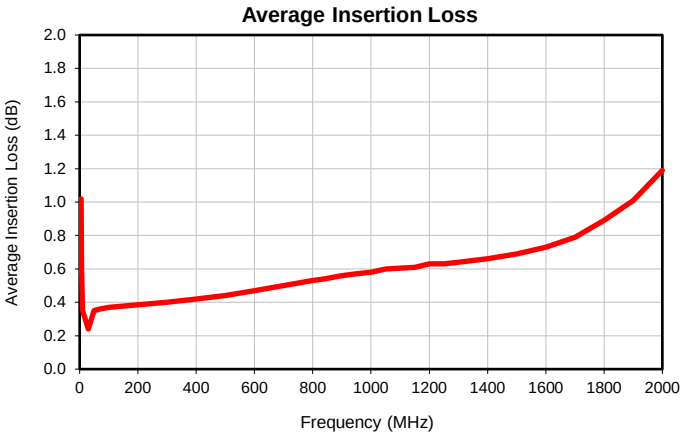


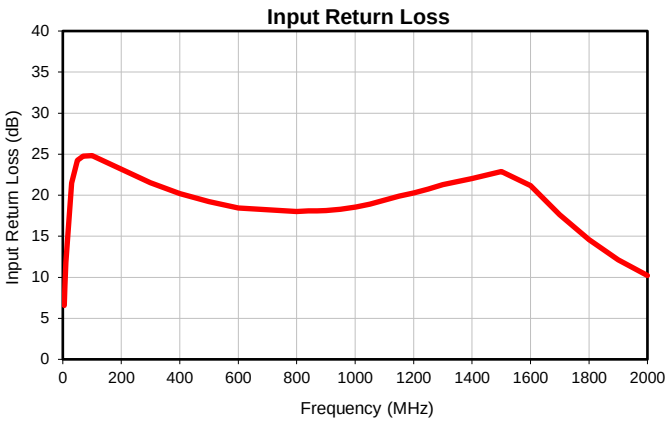
RF Transformer TRS1-182-75+

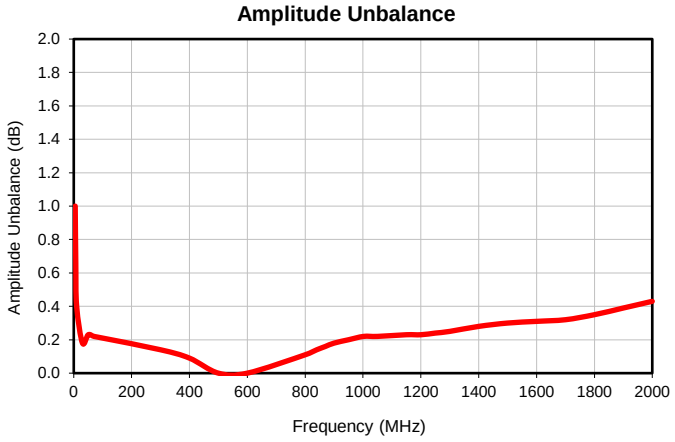
Typical Performance Data

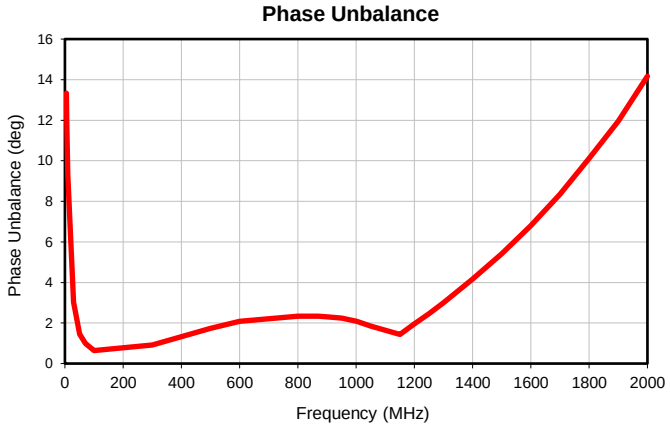
FREQUENCY MHz	AVERAGE INSERTION LOSS (dB)	INPUT RETURN LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (deg.)
5	1.02	6.57	1.00	13.33
7	0.59	8.98	0.66	11.72
10	0.35	11.81	0.40	9.31
30	0.24	21.48	0.18	3.03
50	0.35	24.24	0.23	1.45
70	0.36	24.77	0.22	0.99
100	0.37	24.82	0.21	0.64
300	0.40	21.53	0.14	0.91
400	0.42	20.19	0.09	1.33
500	0.44	19.21	0.00	1.73
600	0.47	18.45	0.00	2.09
800	0.53	18.01	0.11	2.33
840	0.54	18.08	0.14	2.34
870	0.55	18.08	0.16	2.34
900	0.56	18.13	0.18	2.31
950	0.57	18.28	0.20	2.24
1002	0.58	18.57	0.22	2.08
1050	0.60	18.90	0.22	1.84
1150	0.61	19.87	0.23	1.44
1200	0.63	20.28	0.23	1.96
1250	0.63	20.73	0.24	2.46
1300	0.64	21.30	0.25	3.00
1400	0.66	22.02	0.28	4.17
1500	0.69	22.90	0.30	5.41
1600	0.73	21.17	0.31	6.80
1700	0.79	17.62	0.32	8.34
1800	0.89	14.58	0.35	10.12
1900	1.01	12.12	0.39	11.95
2000	1.19	10.23	0.43	14.17

Typical Performance Data





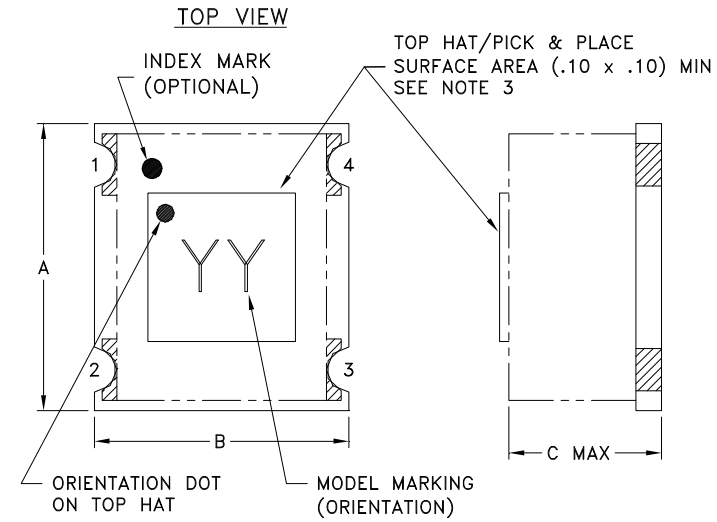


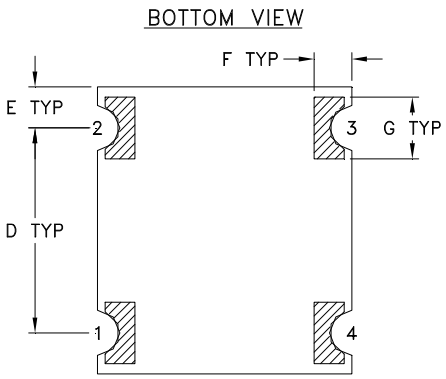


Case Style TT

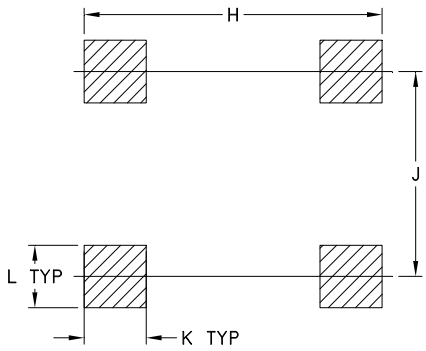
Outline Dimensions

TT1618-1





PCB Land Pattern



SUGGESTED LAYOUT
TOLERANCE TO BE WITHIN ±.002

DENOTES METALLIZATION
DENOTES SOLDER RESIST

CASE #	A	B	C	D	E	F	G	H	J	K	L	WT GRAMS
TT1618-1	.280 (7.11)	.250 (6.35)	.16 (4.06)	.200 (5.08)	.040 (1.02)	.037 (.94)	.060 (1.52)	.293 (7.44)	.200 (5.08)	.061 (1.55)	.061 (1.55)	3.00

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

Notes:

1. Open style, Base material: Printed wiring laminate.
2. Termination finish: 3-5 µ inch (.08-.13 microns) Gold over 120-240 µ inch (3.05-6.10 microns) Nickel plate. All models, (+) suffix.
3. Top-Hat total thickness: .013 inches MAX.
4. Orientation Dot on Top Hat & PCB corresponds to Pin #1.

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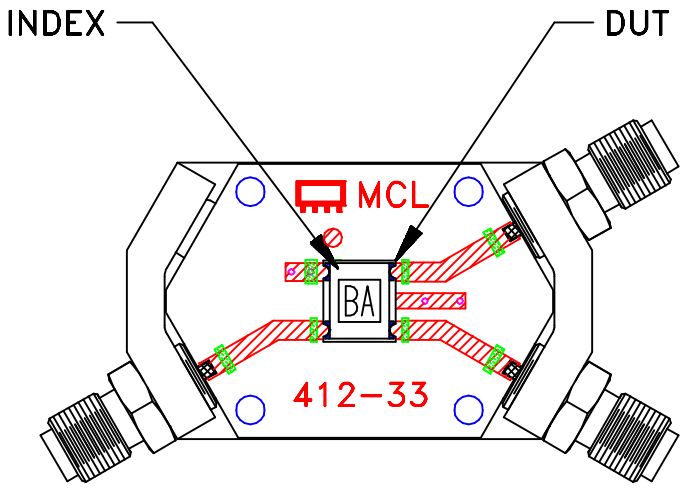
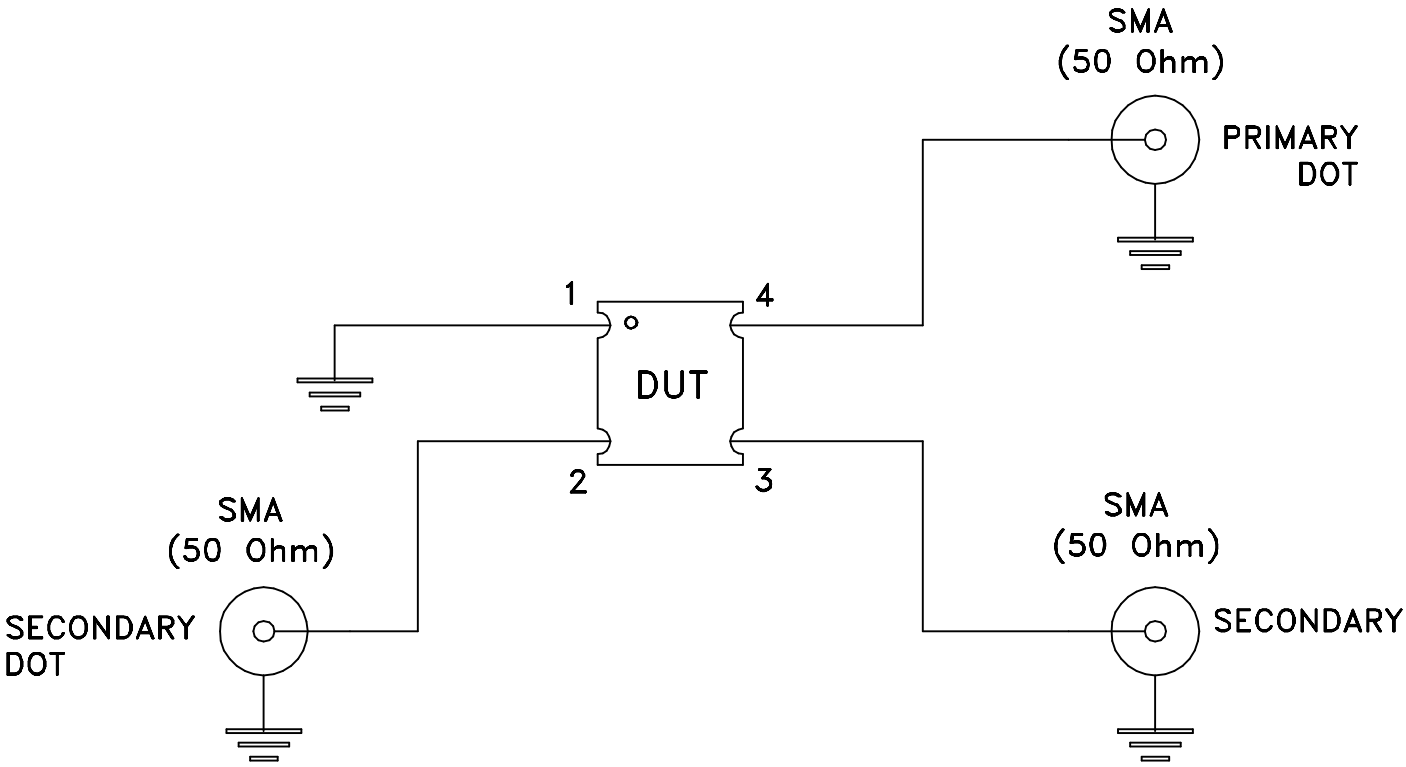
Evaluation Board and Circuit



TB-789+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: RO4350 or equivalent,
   Dielectric Constant=3.5, Thickness=.030 inch.

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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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