



SURFACE MOUNT

RF Transformer

RTX1-182-75+

75Ω 45 to 1800 MHz

KEY FEATURES

- Low Cost/Lead and RoHS solder systems
- Wideband 45 to 1800 MHz
- Balanced Transmission line

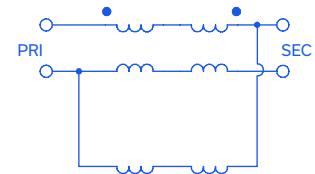


Generic photo used for illustration purposes only

APPLICATIONS

- Balanced to unbalanced transformation
- Push Pull Amplifiers
- CATV
- DOCSIS® 4.0 Systems

CONFIGURATION K



PRODUCT OVERVIEW

Mini-Circuits' RTX1-182-75+ is a 75Ω surface-mount transmission line transformer covering a wide frequency range from 45 to 1800 MHz. The transformer provides low insertion loss. It achieves low phase and amplitude unbalance and excellent input return loss performance. Featuring core and wire construction on a 5-pad printed laminate base with gold over nickel termination finish, the unit measures 0.20 x 0.17 x 0.14", accommodating dense circuit board layouts.

ELECTRICAL SPECIFICATIONS¹ AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Impedance Ratio		1			
Frequency Range		45		1800	MHz
Insertion Loss (Avg.)	45 - 1200	-	0.6	1.0	dB
	1200 - 1800	-	0.9	1.5	
Amplitude Unbalance	45 - 1200	-	0.3	1.0	dB
	1200 - 1800	-	0.6	1.6	
Phase Unbalance	45 - 1800	-	-	12	Degree
Primary Return Loss (Input)	45 - 1200	18	23	-	dB
	1200 - 1800	16	22	-	

ABSOLUTE MAXIMUM RATINGS¹

Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power	1 W
DC Current	30 mA

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

REV. OR
ECO-023874
RTX1-182-75+
MCL NY
241209





SURFACE MOUNT

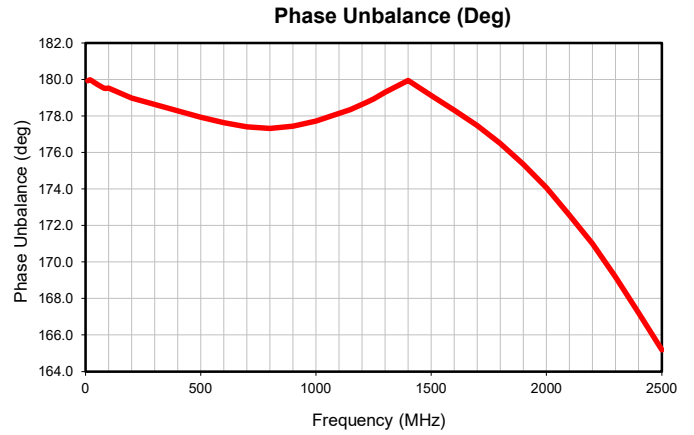
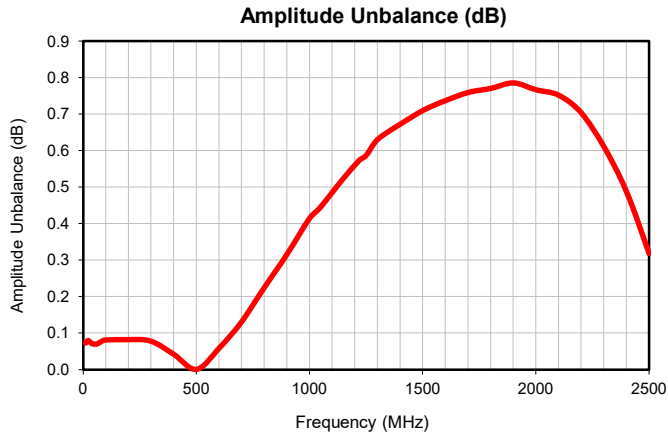
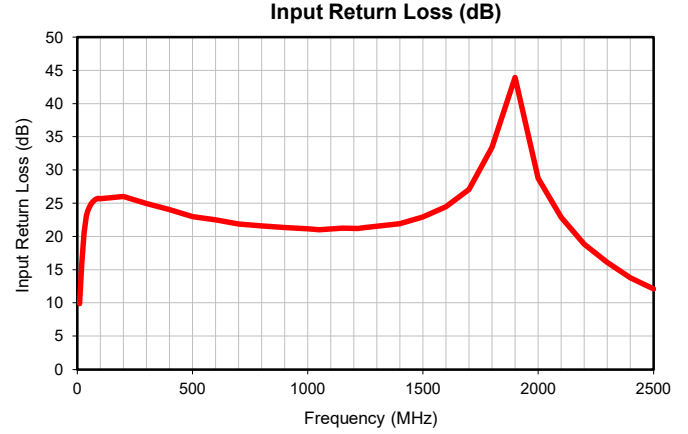
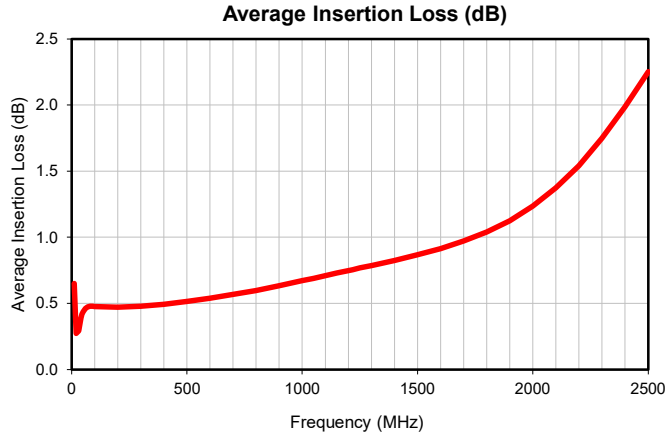
RF Transformer

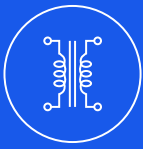
RTX1-182-75+

Mini-Circuits

75Ω 45 to 1800 MHz

TYPICAL PERFORMANCE GRAPHS





CONFIGURATION K

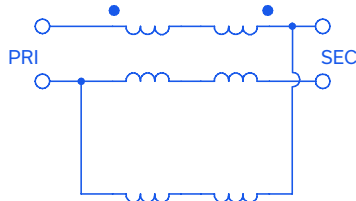
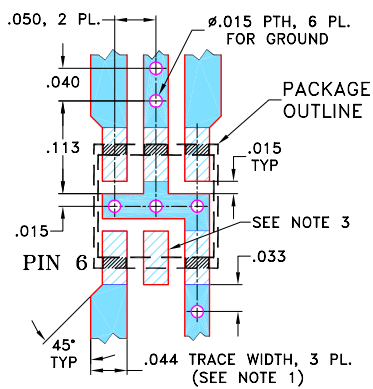


Figure 1. RTX1-182-75+ Configuration

PAD DESCRIPTION

Function	Pad Number
Primary Dot	4
Primary	5
Secondary Dot	1
Secondary	3
Not Connected	2

SUGGESTED PCB LAYOUT (PL-244)

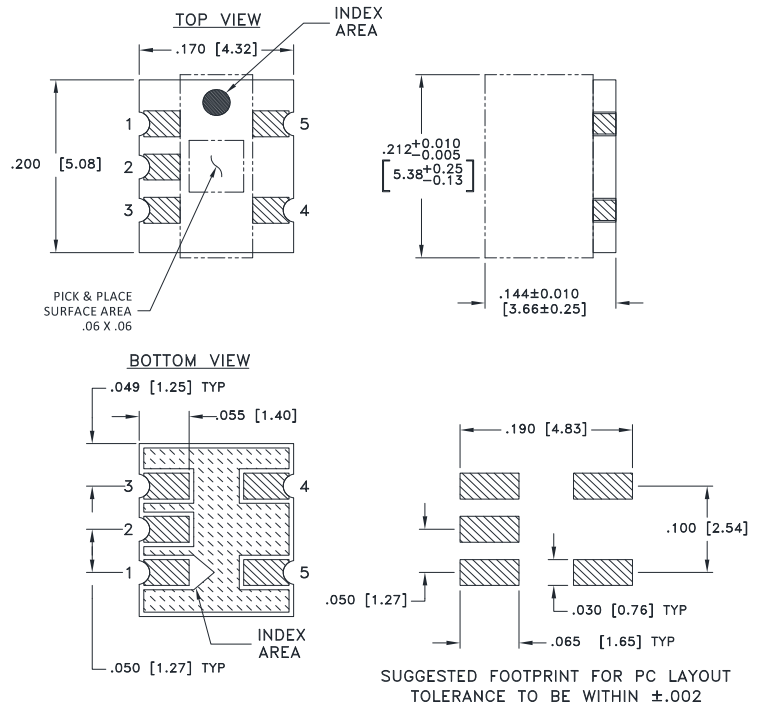


1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS $.020" \pm .0015"$; COPPER: 1/2 OZ. ON EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. THIS PAD IS NOT REQUIRED FOR AT224 CASE STYLE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Figure 2. Suggested PCB Layout PL-244

CASE STYLE DRAWING



Weight: .2 grams

Dimensions are in inches [mm]. Tolerances: 2 Pl. $\pm .01$; 3 Pl. $\pm .005$

PRODUCT MARKING*: N/A

*Marking may contain other features or characters for internal lot control.



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RF Transformer

RTX1-182-75+

 Mini-Circuits

75Ω 45 to 1800 MHz

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD

[CLICK HERE](#)

Performance Data & Graphs	Data Graphs S-Parameter (S3P Files) Data Set (.zip file) De-embedded to device pads
Case Style	TT3628 Pad Finish: Gold over nickel
RoHS Status	Compliant
Tape and Reel	F017
Suggested Layout for PCB Design	PL-244
Evaluation Board	TB-RTX1-182-75+ Gerber File
Environmental Rating	ENV02T1

NOTES

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- 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



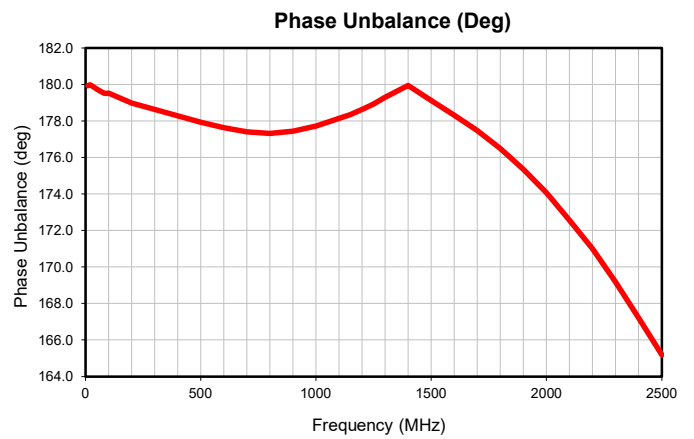
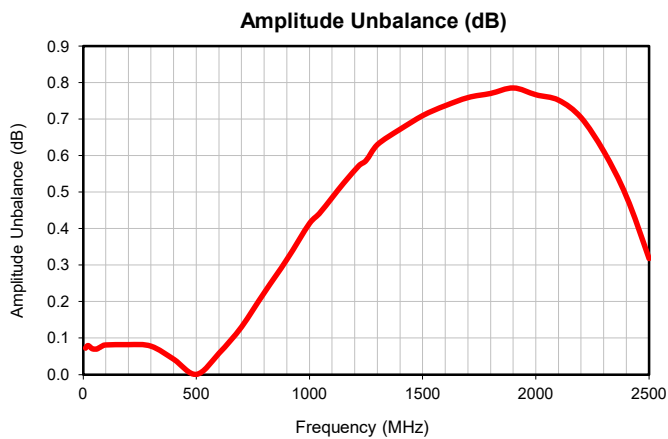
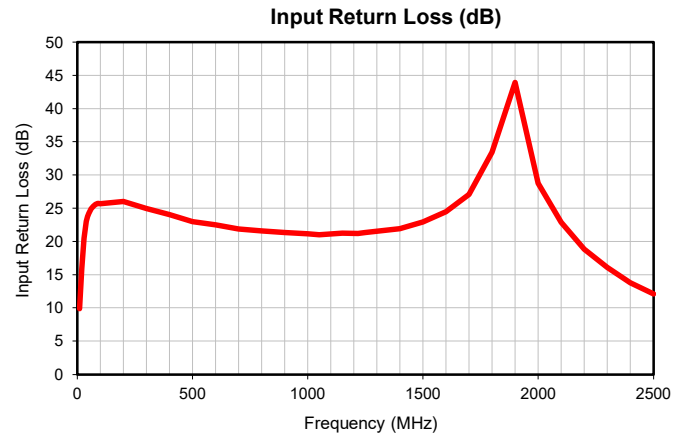
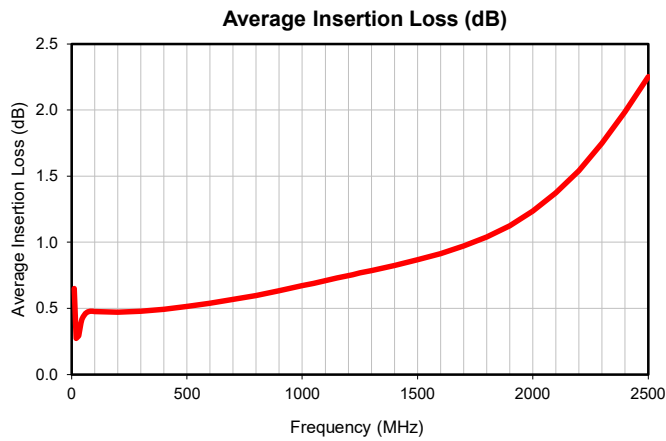
RF Transformer

RTX1-182-75+

Typical Performance Data

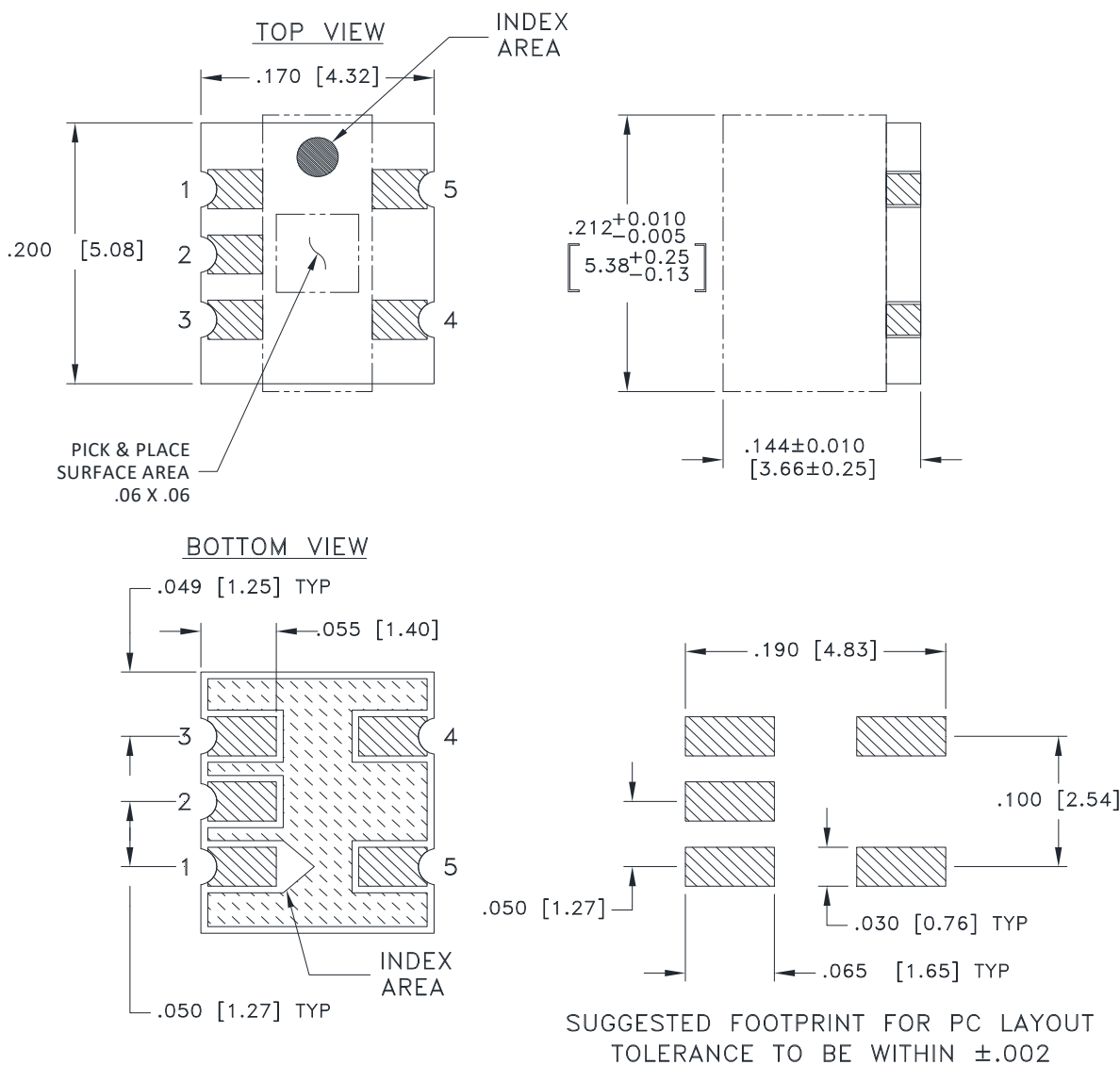
FREQUENCY (MHz)	AVERAGE INSERTION LOSS (dB)	INPUT RETURN LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (deg.)
10.00	0.65	9.90	0.07	179.93
20.00	0.27	15.92	0.08	179.99
30.00	0.29	20.49	0.08	179.92
40.00	0.39	23.05	0.07	179.83
45.00	0.42	23.73	0.07	179.78
50.00	0.44	24.23	0.07	179.74
60.00	0.46	24.90	0.07	179.66
70.00	0.47	25.31	0.07	179.60
80.00	0.48	25.59	0.08	179.53
90.00	0.48	25.72	0.08	179.51
100.00	0.47	25.66	0.08	179.53
200.00	0.47	26.00	0.08	178.98
300.00	0.48	24.97	0.08	178.64
400.00	0.49	24.03	0.04	178.28
500.00	0.51	23.00	0.00	177.92
600.00	0.54	22.48	0.06	177.63
700.00	0.57	21.85	0.13	177.40
800.00	0.60	21.57	0.22	177.32
900.00	0.63	21.33	0.32	177.43
1000.00	0.67	21.13	0.41	177.72
1050.00	0.69	21.03	0.45	177.93
1150.00	0.73	21.25	0.52	178.35
1218.00	0.75	21.18	0.57	178.74
1250.00	0.77	21.33	0.59	178.93
1300.00	0.78	21.55	0.63	179.30
1400.00	0.82	21.93	0.67	179.94
1500.00	0.87	22.93	0.71	179.12
1600.00	0.91	24.47	0.74	178.32
1700.00	0.97	27.06	0.76	177.48
1800.00	1.04	33.44	0.77	176.49
1900.00	1.12	43.96	0.79	175.34
2000.00	1.24	28.75	0.77	174.08
2100.00	1.37	22.88	0.75	172.57
2200.00	1.54	18.85	0.70	171.00
2300.00	1.75	16.07	0.61	169.17
2400.00	1.99	13.79	0.49	167.20
2500.00	2.25	12.08	0.32	165.18

Typical Performance Data



Outline Dimensions

TT3628



Weight: .2 grams.

Dimensions are in inches (mm).

Tolerances: 2Pl. \pm .01; 3Pl. \pm .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.

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RF/IF MICROWAVE COMPONENTS

THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M106563	NEW RELEASE	08/23/06	AV	IG

SUGGESTED MOUNTING CONFIGURATION
FOR AT224/DB714 CASE STYLE, "gs/ha/hd" PIN CONNECTIONS
(FOR SINGLE ENDED TO BALANCED APPLICATION)



- NOTES:**
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 - THIS PAD IS NOT REQUIRED FOR AT224 CASE STYLE.



DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED

INITIALS DATE

DIMENSIONS ARE IN INCHES
 TOLERANCES ON:
 2 PL DECIMALS ±
 3 PL DECIMALS ± .005
 ANGLES ±
 FRACTIONS ±

DRAWN	AV	07/28/06
CHECKED	IL	08/23/06
APPROVED	IG	08/23/06



Mini-Circuits®

13 Neptune Avenue
 Brooklyn NY 11235

PL, gs/ha/hd, AT224/DB714, TC/TCM, TB-145

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SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-244	REV: OR
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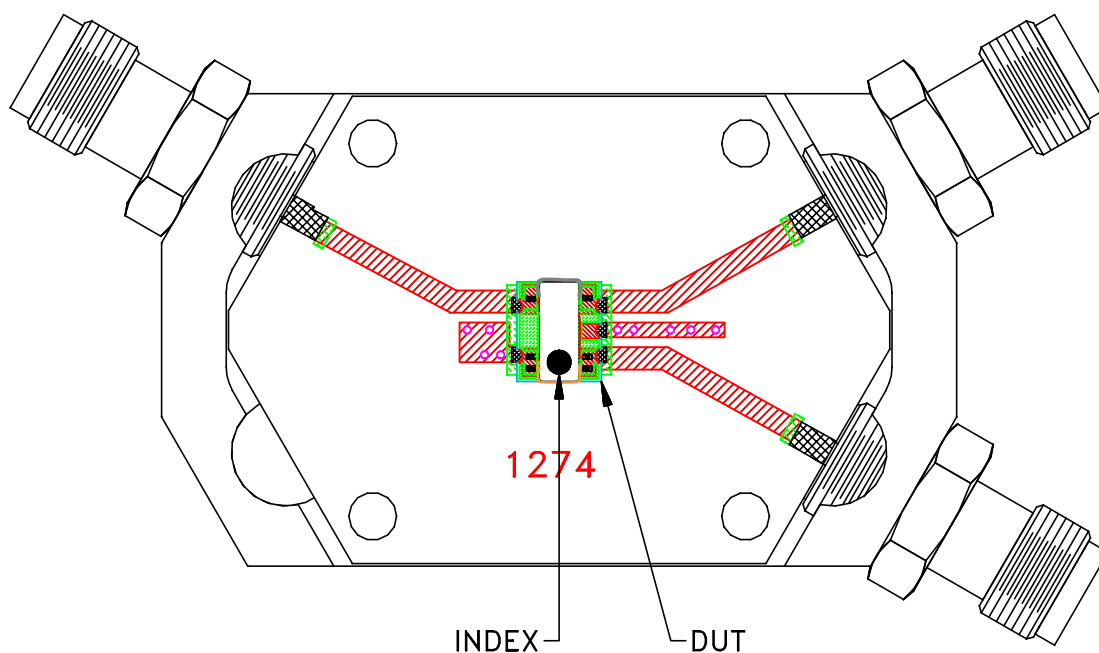
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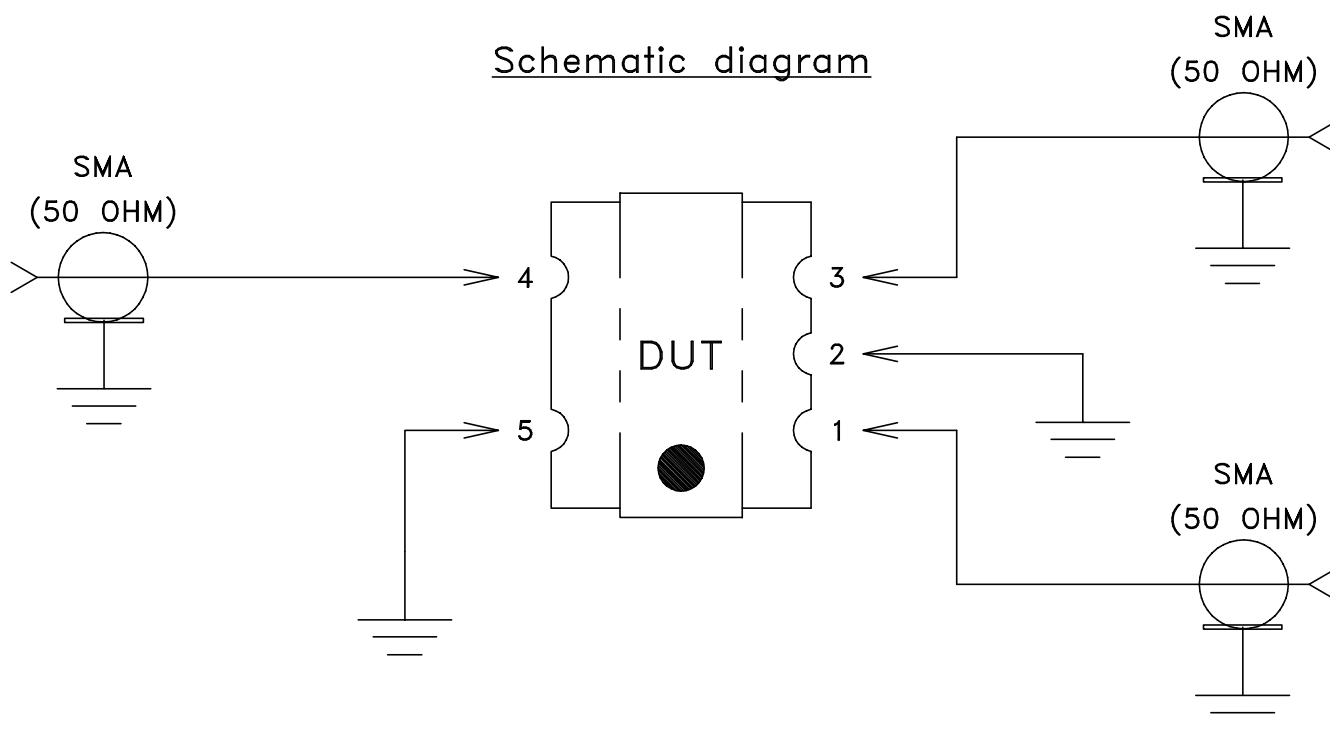
Evaluation Board and Circuit

TB-RTX1-182-75+

For Pin Connections refer to Data Sheet of the DUT




Schematic diagram



Notes:

1. PCB Material: ROGERS (R04350B) OR Equivalent, Dielectric Constant=3.48
Thickness=.020±.0015 inch
2. 50 Ohm SMA Female Connector.

 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