Engineering Development Model

Power Splitter/Combiner SBTC-ED12456/1

2 Way-0°

Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability.
At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.

Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : AT790

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		**Min.**	**Typ.**	**Max.**	**Units**
Frequency		5		1000	MHz
Isolation	**5 - 50 MHz**		30		dB
	50 - 500 MHz		28		dB
	500 - 1000 MHz		21		dB
Insertion Loss Above 3.0 dB	**5 - 50 MHz**		0.20		dB
	50 - 500 MHz		0.30		dB
	500 - 1000 MHz		0.70		dB
Phase Unbalance	**5 - 50 MHz**		0.356		deg.
	50 - 500 MHz		0.468		deg.
	500 - 1000 MHz		0.613		deg.
Amplitude Unbalance	**5 - 50 MHz**		0.135		dB
	50 - 500 MHz		0.098		dB
	500 - 1000 MHz		0.071		dB
VSWR	**SUM Port**		1.05		(:1)
	OUT Ports		1.12		(:1)

MAXIMUM RATINGS	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C

PIN CONNECTIONS	
SUM PORT	6
PORT 1	3
PORT 2	4
GND EXT	1, 2
NOT USED	5

Functional Diagram

2 Way-0° Power Splitter/Combiner SBTC-ED12456/1

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS[1] (dB)		AMP. UNBAL. (dB)	ISOLATION (dB)	PHASE UNBAL. (deg.)	FREQ. (MHz)	VSWR (:1)		
	S-1	S-2					S	1	2
0.30	3.84	3.14	0.69	13.79	3.28	0.30	1.21	2.11	1.74
0.40	3.71	3.13	0.57	14.90	3.06	0.40	1.16	1.91	1.62
0.50	3.62	3.13	0.49	15.85	2.84	0.50	1.14	1.78	1.54
0.70	3.52	3.13	0.39	17.41	2.41	0.70	1.11	1.62	1.43
0.90	3.46	3.13	0.34	18.64	2.08	0.90	1.09	1.52	1.37
1.00	3.44	3.12	0.32	19.17	1.96	1.00	1.08	1.49	1.35
2.00	3.33	3.11	0.22	22.62	1.27	2.00	1.05	1.32	1.23
3.00	3.29	3.10	0.19	24.69	0.98	3.00	1.04	1.26	1.19
4.00	3.27	3.10	0.17	26.25	0.79	4.00	1.03	1.22	1.16
5.00	3.26	3.10	0.15	27.49	0.65	5.00	1.03	1.20	1.15
6.00	3.25	3.11	0.14	28.49	0.54	6.00	1.02	1.18	1.14
7.00	3.24	3.11	0.14	29.27	0.47	7.00	1.02	1.17	1.13
8.00	3.24	3.11	0.14	29.89	0.40	8.00	1.02	1.17	1.13
9.00	3.25	3.12	0.14	30.39	0.32	9.00	1.02	1.16	1.12
10.00	3.25	3.12	0.13	30.81	0.24	10.00	1.02	1.16	1.12
30.00	3.25	3.13	0.12	32.52	0.06	30.00	1.02	1.14	1.11
50.00	3.27	3.15	0.12	32.06	0.17	50.00	1.03	1.14	1.10
70.00	3.28	3.17	0.12	31.45	0.21	70.00	1.03	1.13	1.10
90.00	3.29	3.18	0.12	30.79	0.27	90.00	1.03	1.13	1.10
100.00	3.30	3.18	0.12	30.43	0.30	100.00	1.03	1.13	1.10
200.00	3.35	3.24	0.11	27.79	0.47	200.00	1.05	1.12	1.09
300.00	3.39	3.29	0.09	25.57	0.61	300.00	1.06	1.10	1.09
400.00	3.42	3.34	0.08	23.94	0.69	400.00	1.07	1.07	1.08
450.00	3.44	3.37	0.07	23.30	0.73	450.00	1.07	1.06	1.08
500.00	3.46	3.41	0.05	22.71	0.76	500.00	1.07	1.05	1.08
550.00	3.48	3.44	0.04	22.21	0.79	550.00	1.08	1.05	1.08
600.00	3.51	3.49	0.02	21.79	0.81	600.00	1.08	1.04	1.08
700.00	3.55	3.56	0.01	21.15	0.79	700.00	1.08	1.06	1.09
800.00	3.61	3.65	0.05	20.78	0.71	800.00	1.08	1.08	1.11
900.00	3.68	3.76	0.08	20.58	0.56	900.00	1.07	1.12	1.13
925.00	3.70	3.79	0.10	20.54	0.52	925.00	1.07	1.13	1.14
950.00	3.72	3.82	0.11	20.52	0.46	950.00	1.07	1.14	1.14
975.00	3.74	3.86	0.12	20.50	0.40	975.00	1.07	1.15	1.15
1000.00	3.76	3.89	0.13	20.49	0.33	1000.00	1.07	1.16	1.15
1025.00	3.79	3.93	0.14	20.47	0.26	1025.00	1.07	1.17	1.16
1050.00	3.82	3.96	0.15	20.44	0.18	1050.00	1.06	1.18	1.17
1100.00	3.87	4.04	0.17	20.34	0.01	1100.00	1.06	1.19	1.18
1300.00	4.19	4.43	0.23	19.28	0.91	1300.00	1.06	1.25	1.22
1500.00	4.73	4.98	0.25	16.70	2.25	1500.00	1.11	1.27	1.21
1750.00	5.90	6.03	0.12	13.57	4.25	1750.00	1.21	1.25	1.11
2000.00	8.21	7.79	0.42	13.79	5.67	2000.00	1.32	1.47	1.14

[1] Total Loss = Insertion Loss + 3dB Splitter Loss

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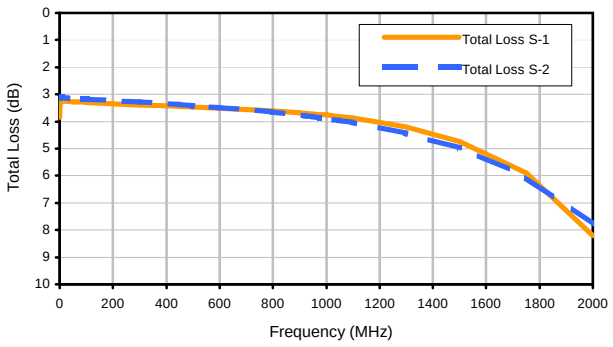
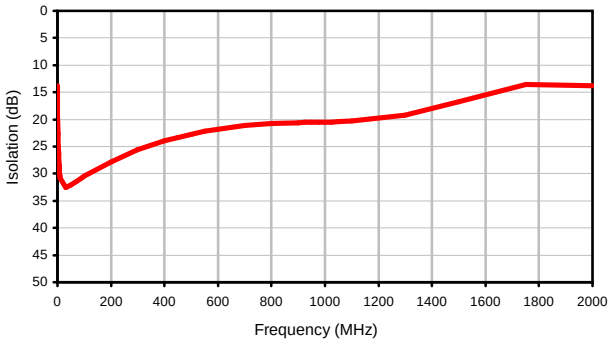
Typical Performance Curves

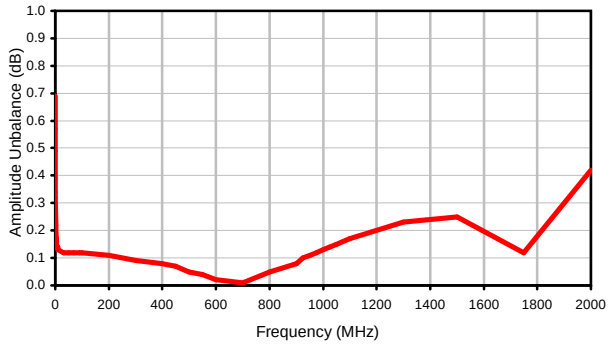
Total Loss



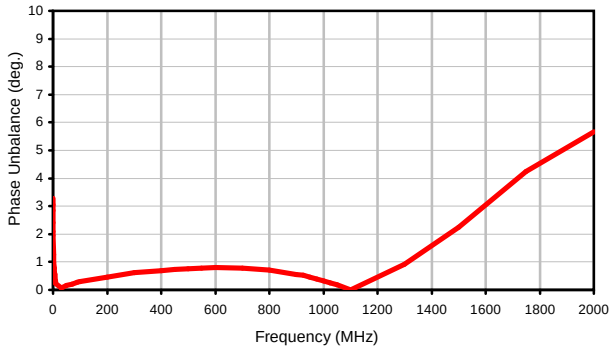
Isolation



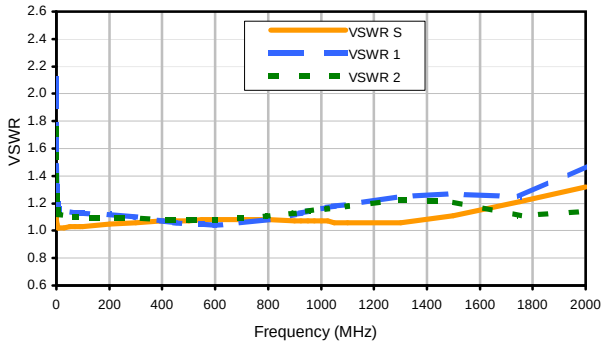
Amplitude Unbalance



Phase Unbalance



VSWR

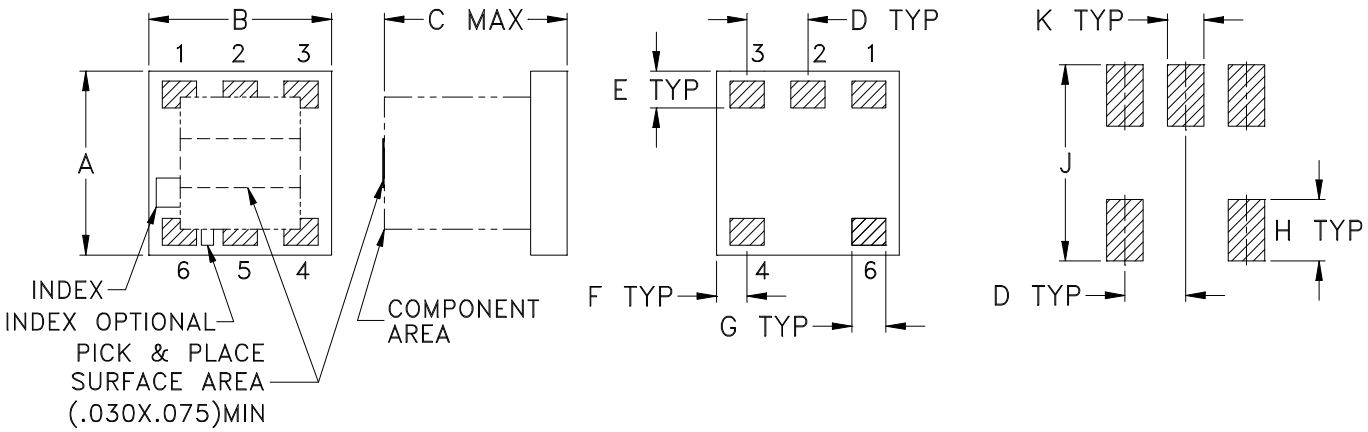


Case Style AT

Outline Dimensions

AT790

PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L	WT. GRAMS
AT790	.150 (3.81)	.150 (3.81)	.150 (3.81)	.050 (1.27)	.030 (0.76)	.025 (0.64)	.028 (0.71)	.050 (1.27)	.160 (4.06)	.030 (0.76)	-- --	.10

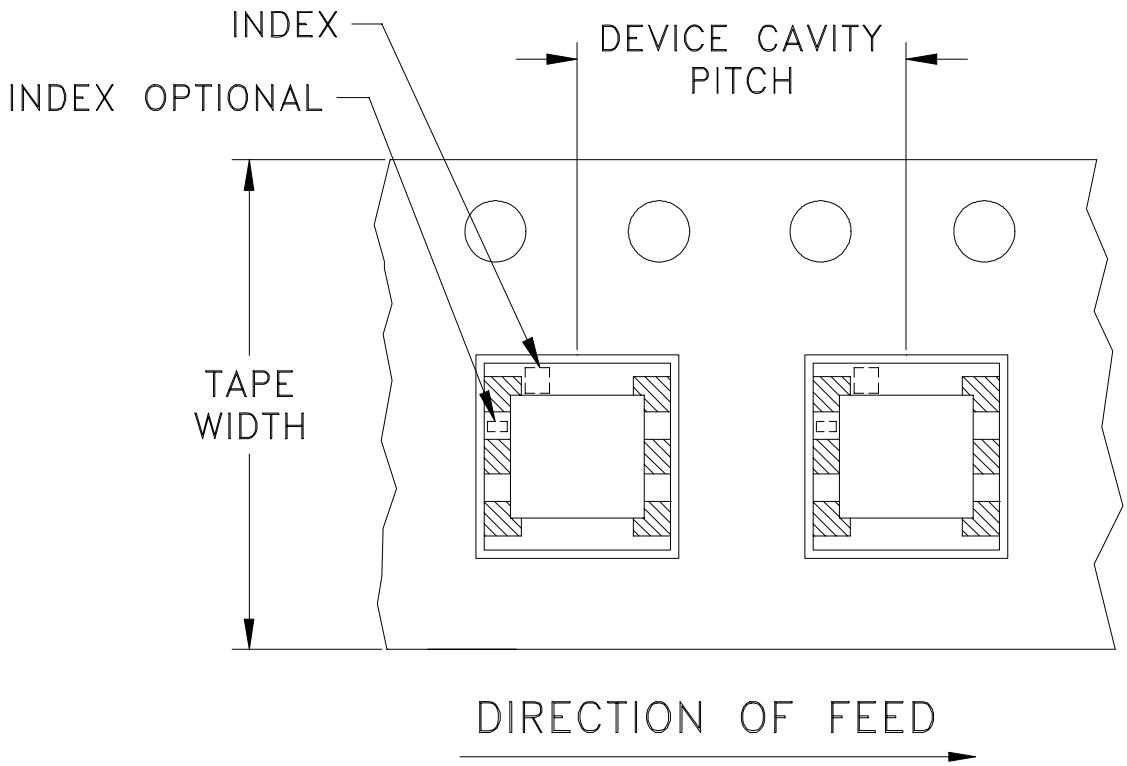
Dimensions are in inches (mm). Tolerances: 2 Pl. ± .01; 3 Pl. ± .005

Notes:

1. Open style, Ceramic base.
2. Termination finish: Silver palladium or gold over nickel based on stock availability.

Tape & Reel Packaging TR-F15

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
12	8	7	20
			50
			100
			200
		13	500
			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

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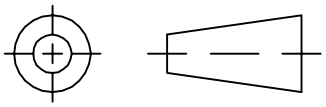
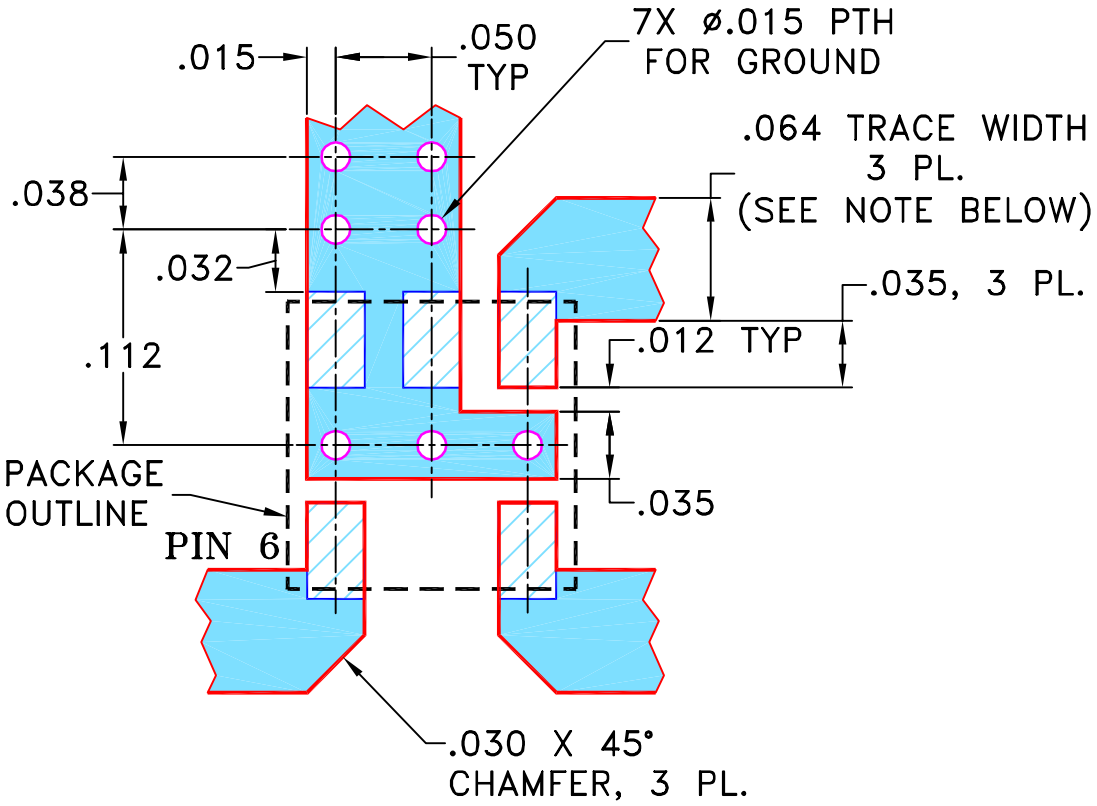
THIRD ANGLE PROJECTION



REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M76111	NEW RELEASE	04/01	MMG	AD
A	M82377	UPDATED DRAWING	08/06/02	GF	HY
B	M102713	UPDATED DRAWING, DIMENSIONS, NOTES	01/16/06	AV	WP

SUGGESTED MOUNTING CONFIGURATION FOR AT790 CASE STYLE, "nc" PIN CONNECTION



NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; 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

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	MMG	06/06/01
TOLERANCES ON:	CHECKED	CT	08/16/01
2 PL DECIMALS ±	APPROVED	AD	08/16/01
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

ASHEETA1.DWG REV:A DATE:01/12/95

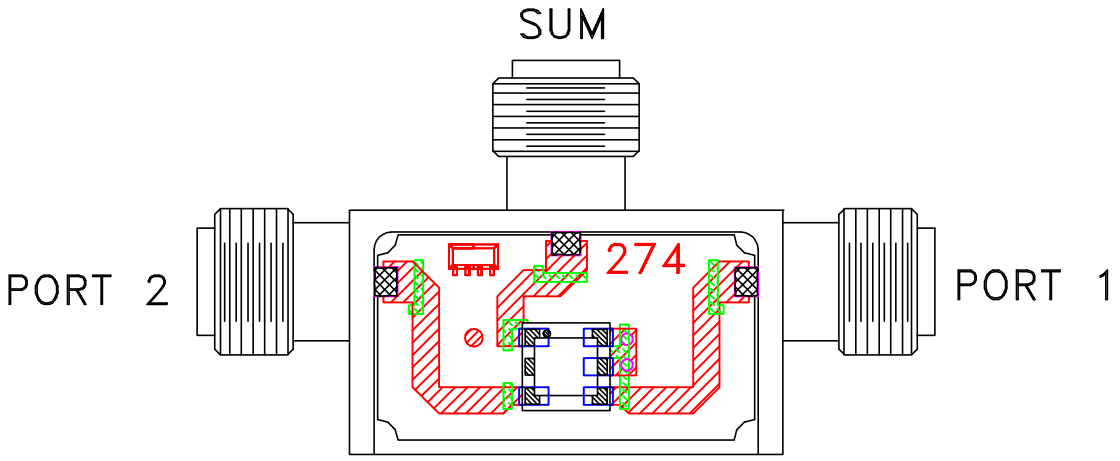
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, nc, AT790, SBTC, TB-120

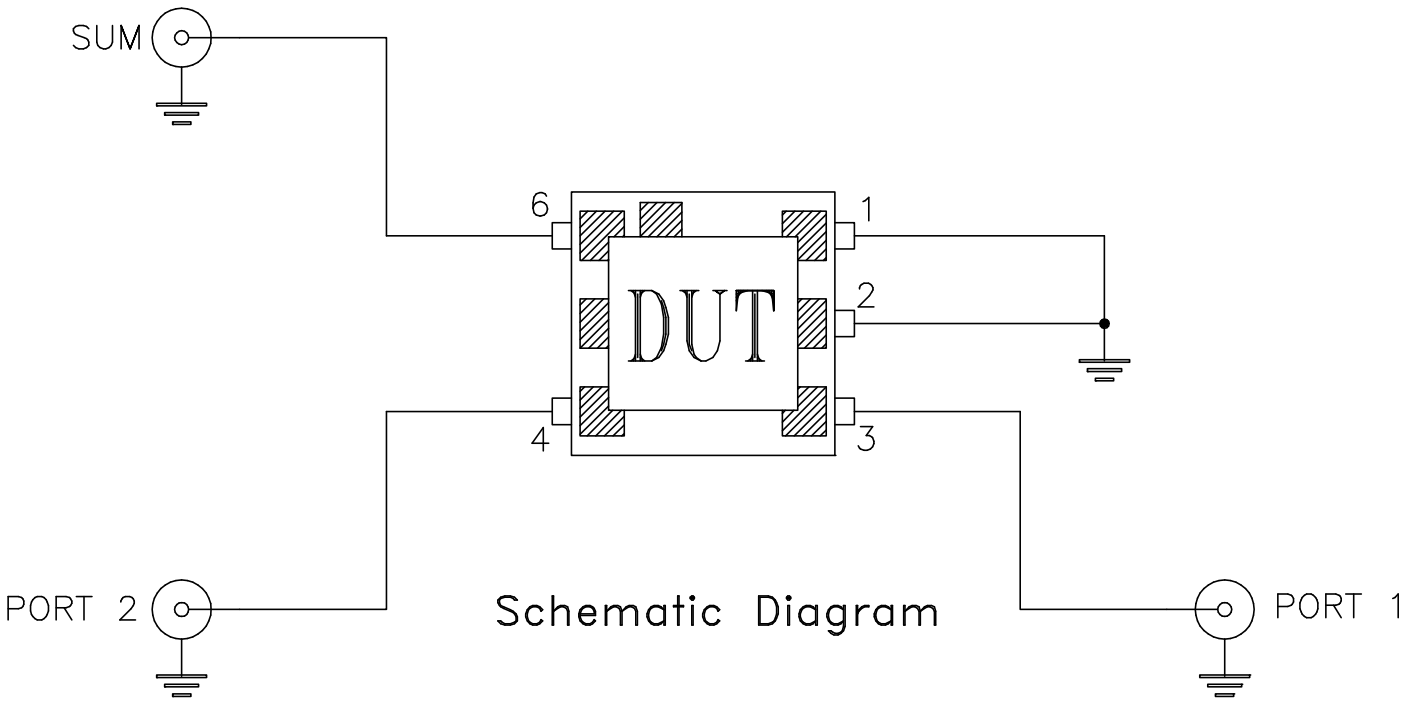
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-027	B

FILE:	SCALE:	SHEET:
98PL027	10:1	1 OF 1

Evaluation Board and Circuit



TB-274



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.020 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