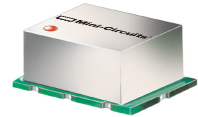


Surface Mount High Power Splitter

2 Way-180° 50Ω 10 to 520 MHz

SYPJ-2-5W-52+



CASE STYLE: AH202-1

Maximum Ratings

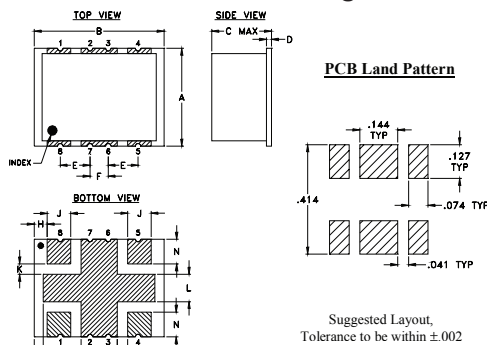
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	5.0W max.
Internal Dissipation	1.0W max.

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

Pin Connections

SUM PORT	8
PORT 1 (0°)	5
PORT 2 (180°)	4
GROUND	1,2,3,6,7

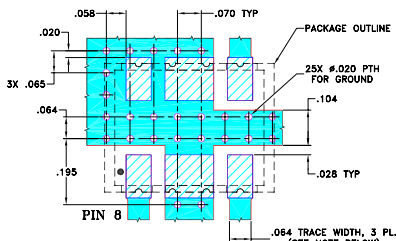
Outline Drawing



Outline Dimensions (inch)

A	B	C	D	E	F	G
.38	.50	.25	.020	.115	.070	.035
9.65	12.70	6.35	0.51	2.92	1.78	0.89
H	J	K	L	M	N	wt
.050	.090	.040	.105	.140	.095	grams
1.27	2.29	1.02	2.67	3.56	2.41	0.80

Demo Board MCL P/N: TB-427+ Suggested PCB Layout (PL-274)



- 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

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-Circuit's 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-Circuit's website at www.minicircuits.com/MCLStore/terms.jsp

Features

- wideband, 10 to 500 MHz
- low phase unbalance, 2 deg. typ.
- low amplitude unbalance, 0.1 dB typ.
- high isolation, 23 dB typ.
- high input power as a splitter, 5.0 W

Applications

- VHF/UHF
- communication systems
- receivers & transmitters

- instrumentation
- CATV

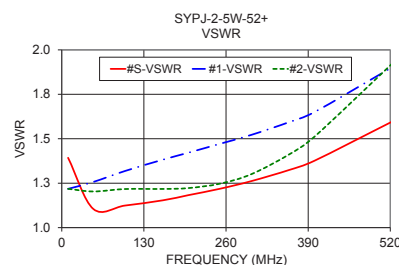
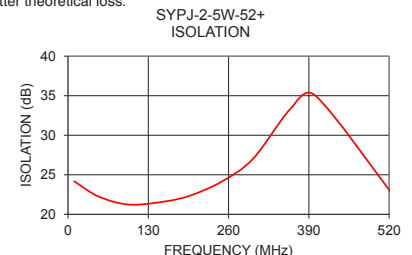
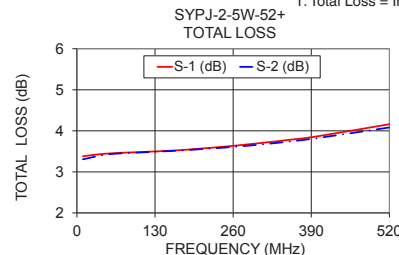
Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency		10		520	MHz
Insertion Loss (above theoretical 3.0 dB)	10 - 250 250 - 520	— —	0.5 0.9	0.9 1.5	dB
Isolation	10 - 250 250 - 520	18 19	22 24	— —	dB
Phase Unbalance	10 - 250 250 - 520	— —	2.0 2.0	8.0 10	Degree
Amplitude Unbalance	10 - 250 250 - 520	— —	0.05 0.1	0.2 0.3	dB
VSWR (Port S)	10 - 250 250 - 520	— —	1.4 1.5	1.55 1.95	:1
VSWR (Port 1-2)	10 - 250 250 - 520	— —	1.35 1.6	1.65 2.3	:1
Input Power	as splitter as combiner	10 - 520 10 - 520	— —	5.0 1.0	W

Typical Performance Data

Frequency (MHz)	Total Loss ¹ (dB)	Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1 S-2						
10	3.38 3.31	0.08	24.18	179.96	1.39	1.22	1.22
50	3.45 3.42	0.02	22.24	179.43	1.10	1.26	1.20
100	3.48 3.47	0.01	21.23	179.08	1.12	1.32	1.22
160	3.52 3.51	0.01	21.67	178.76	1.15	1.38	1.22
200	3.56 3.55	0.01	22.43	178.60	1.18	1.42	1.22
250	3.62 3.60	0.02	24.19	178.48	1.22	1.47	1.25
300	3.69 3.66	0.04	27.05	178.46	1.26	1.52	1.30
360	3.79 3.75	0.04	33.32	178.69	1.32	1.59	1.41
400	3.87 3.82	0.04	35.05	179.07	1.38	1.65	1.51
525	4.17 4.09	0.08	22.57	178.05	1.60	1.91	1.93

1. Total Loss = Insertion Loss + 3dB splitter theoretical loss.



Electrical Schematic



2 Way-180° Power Splitter/Combiner

SYPJ-2-5W-52+

Typical Performance Data

FREQUENCY (MHz)	TOTAL LOSS ¹ (dB)		AMPLITUDE UNBALANCE (dB)	ISOLATION (dB) 1-2	PHASE UNBALANCE (deg.)	FREQUENCY (MHz)	VSWR (:1)		
	S-1	S-2					S	1	2
3.0	4.42	4.35	0.08	12.75	179.51	3.0	2.82	1.59	1.64
4.0	3.95	3.87	0.08	14.90	179.68	4.0	2.21	1.45	1.48
5.0	3.71	3.63	0.08	16.78	179.77	5.0	1.90	1.37	1.39
6.0	3.57	3.50	0.07	18.46	179.84	6.0	1.72	1.31	1.33
7.0	3.49	3.42	0.08	19.99	179.90	7.0	1.59	1.28	1.29
8.0	3.44	3.36	0.08	21.43	179.96	8.0	1.51	1.25	1.26
9.0	3.40	3.33	0.08	22.80	179.99	9.0	1.44	1.23	1.24
10.0	3.38	3.31	0.08	24.18	179.96	10.0	1.39	1.22	1.22
30.0	3.36	3.32	0.04	26.02	179.48	30.0	1.13	1.23	1.20
50.0	3.45	3.42	0.02	22.24	179.43	50.0	1.10	1.26	1.20
70.0	3.46	3.45	0.02	21.61	179.28	70.0	1.11	1.28	1.21
90.0	3.47	3.46	0.01	21.27	179.15	90.0	1.12	1.31	1.22
100.0	3.48	3.47	0.01	21.23	179.08	100.0	1.12	1.32	1.22
120.0	3.49	3.48	0.01	21.26	178.97	120.0	1.14	1.34	1.22
140.0	3.50	3.50	0.01	21.42	178.85	140.0	1.14	1.36	1.22
160.0	3.52	3.51	0.01	21.67	178.76	160.0	1.15	1.38	1.22
180.0	3.54	3.53	0.01	21.95	178.67	180.0	1.17	1.40	1.22
200.0	3.56	3.55	0.01	22.43	178.60	200.0	1.18	1.42	1.22
220.0	3.58	3.57	0.02	23.06	178.54	220.0	1.19	1.44	1.23
240.0	3.61	3.59	0.02	23.78	178.49	240.0	1.21	1.46	1.24
250.0	3.62	3.60	0.02	24.19	178.48	250.0	1.22	1.47	1.25
260.0	3.63	3.61	0.03	24.66	178.46	260.0	1.23	1.48	1.25
280.0	3.66	3.63	0.03	25.71	178.45	280.0	1.24	1.50	1.27
300.0	3.69	3.66	0.04	27.05	178.46	300.0	1.26	1.52	1.30
320.0	3.72	3.69	0.04	28.72	178.51	320.0	1.28	1.54	1.33
340.0	3.76	3.72	0.04	30.84	178.58	340.0	1.30	1.57	1.37
360.0	3.79	3.75	0.04	33.32	178.69	360.0	1.32	1.59	1.41
380.0	3.83	3.79	0.04	35.39	178.86	380.0	1.35	1.62	1.46
400.0	3.87	3.82	0.04	35.05	179.07	400.0	1.38	1.65	1.51
420.0	3.91	3.86	0.04	32.57	179.33	420.0	1.41	1.68	1.57
440.0	3.95	3.91	0.04	29.94	179.66	440.0	1.44	1.71	1.63
460.0	4.00	3.95	0.05	27.65	179.93	460.0	1.47	1.75	1.69
480.0	4.04	3.99	0.05	25.76	179.45	480.0	1.51	1.79	1.76
500.0	4.10	4.04	0.06	24.18	178.88	500.0	1.55	1.84	1.84
525.0	4.17	4.09	0.08	22.57	178.05	525.0	1.60	1.91	1.93
550.0	4.26	4.15	0.11	21.21	177.10	550.0	1.66	1.98	2.03
575.0	4.35	4.20	0.15	20.05	175.97	575.0	1.72	2.07	2.13
600.0	4.45	4.24	0.21	19.07	174.69	600.0	1.79	2.17	2.24
650.0	4.71	4.32	0.39	17.54	171.69	650.0	1.95	2.42	2.45

¹Total Loss = Insertion Loss + 3dB Splitter Loss



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
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

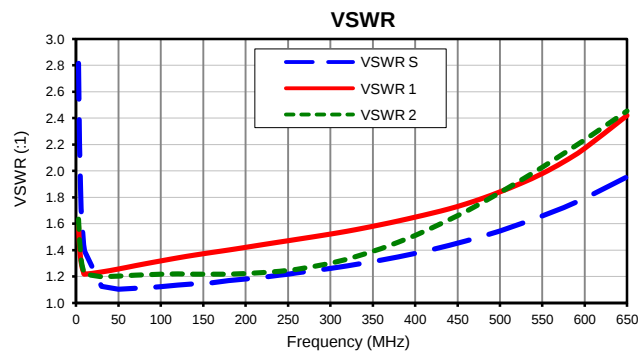
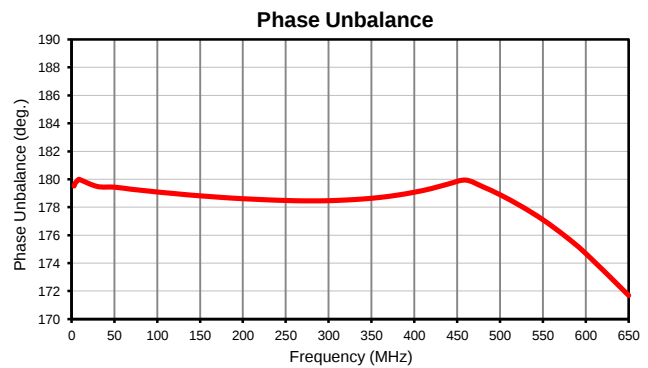
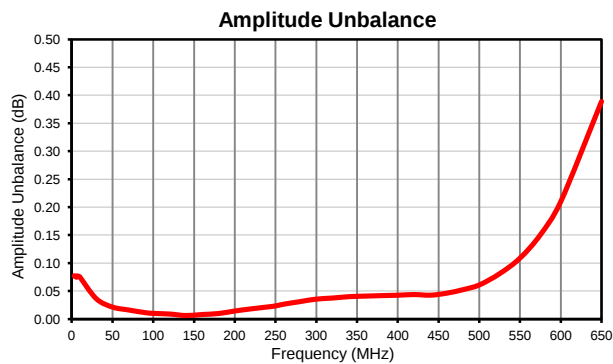
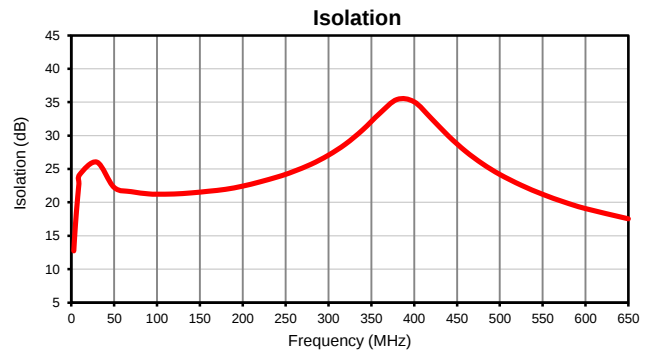
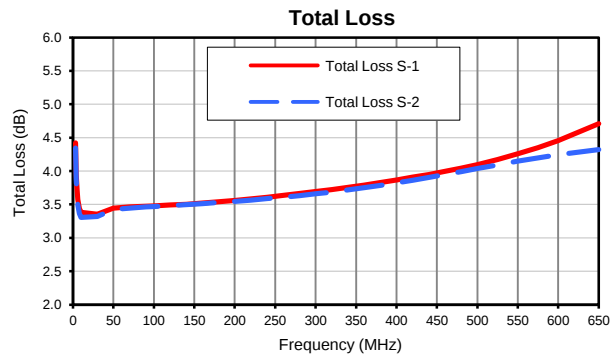


IF/RF MICROWAVE COMPONENTS



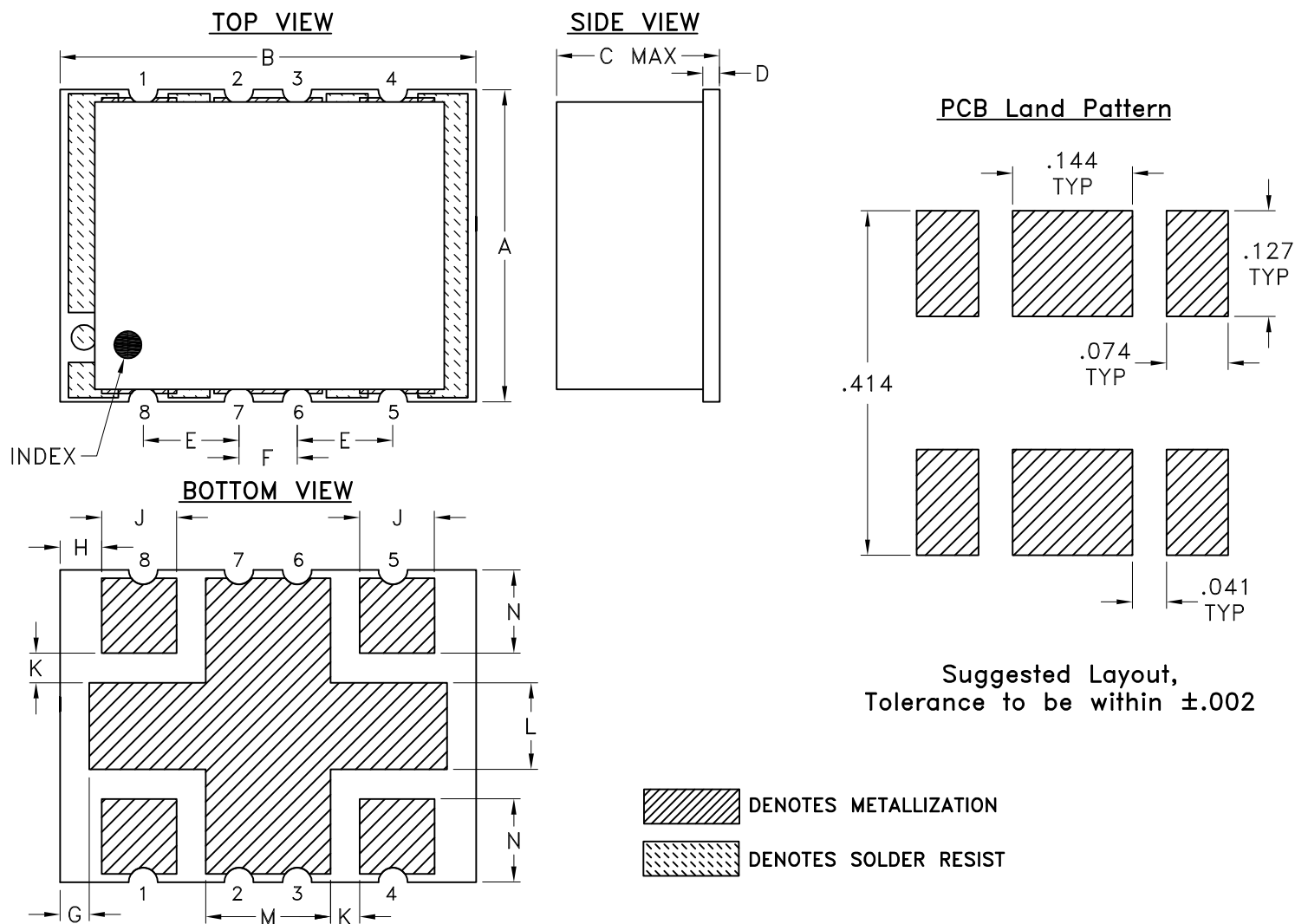
REV. OR
SYPJ-2-5W-52+
12/23/2014
Page 1 of 1

Typical Performance Curves



Outline Dimensions

AH202-1



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N	WT, GRAM
AH202-1	.38 (9.65)	.50 (12.70)	.25 (6.35)	.020 (0.51)	.115 (2.92)	.070 (1.78)	.035 (0.89)	.050 (1.27)	.090 (2.29)	.040 (1.02)	.105 (2.67)	.140 (3.56)	.095 (2.41)	.80

Dimensions are in inches (mm). Tolerances: 2 Pl. ± 0.01 ; 3 Pl. ± 0.005

Notes:

- Case material: Nickel Silver alloy.
- Base material: Printed wiring laminate.
- Termination finish:

For RoHS 3-5 μ inch (.08-.13 microns) Gold over 120-240 μ inch (3.05-6.10 microns) Nickel plate.

All models, (+) suffix.

For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

Mini-Circuits
ISO 9001 ISO 14001 CERTIFIED

ALL NEW
minicircuits.com

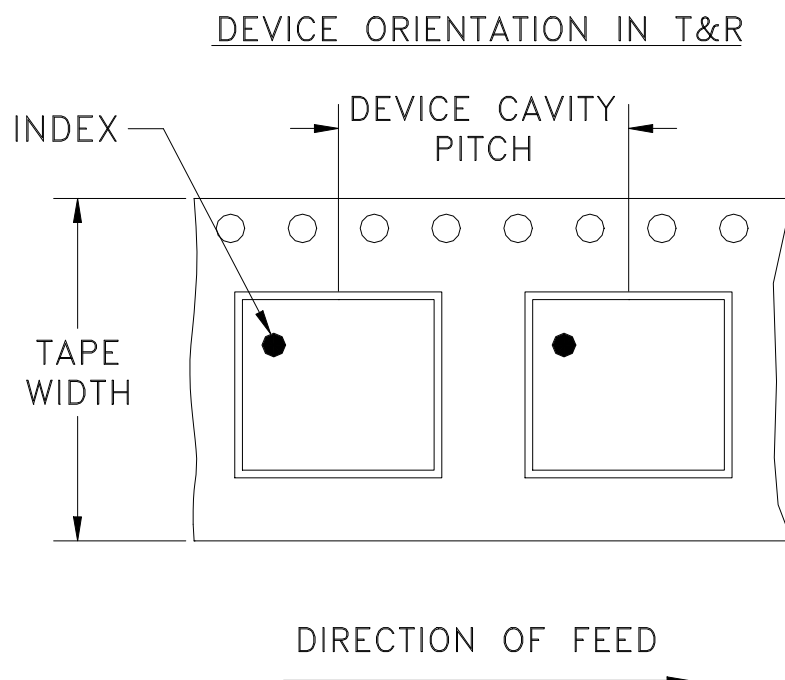
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F61



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
24	12	13	200

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



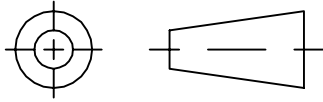
INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

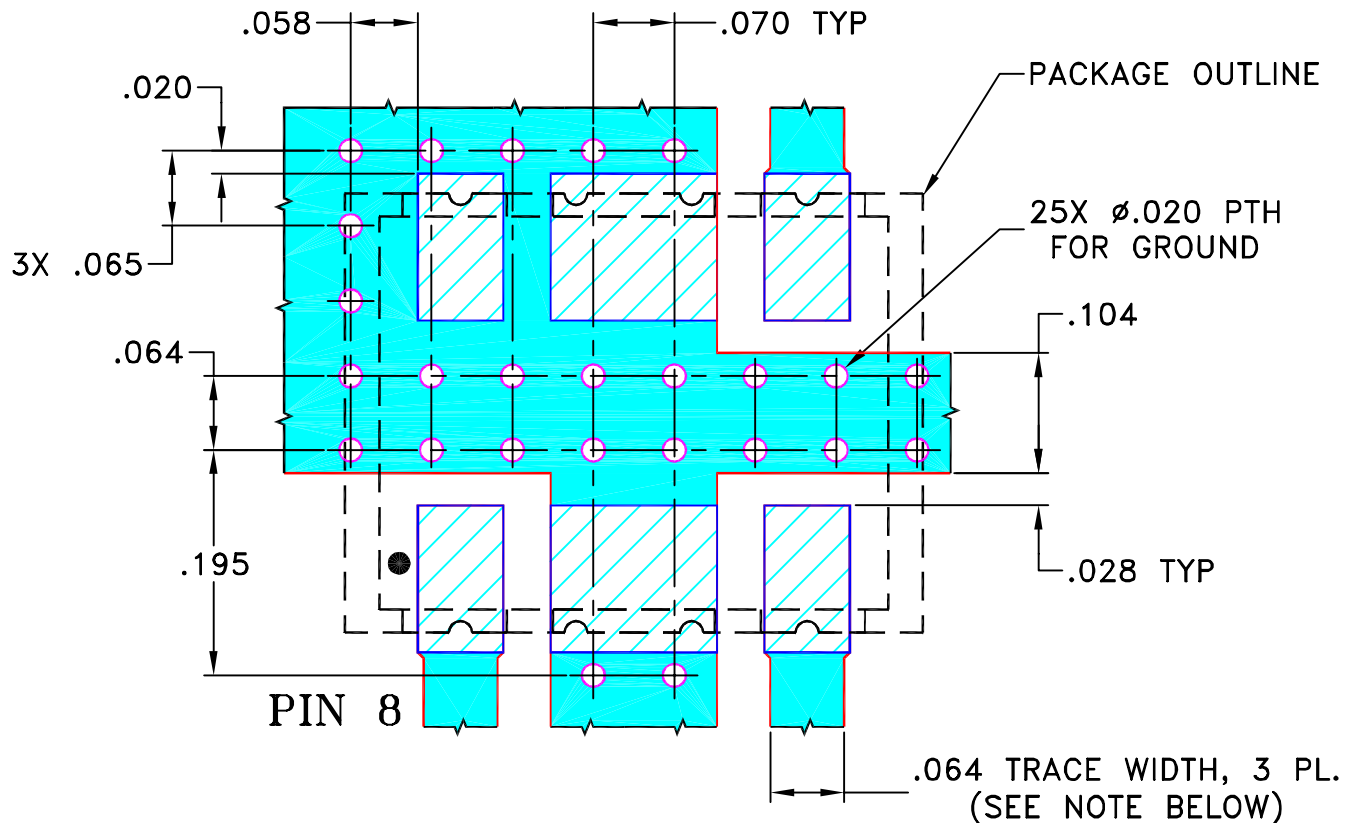
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M110938	NEW RELEASE	04/12/07	AV	HY

SUGGESTED MOUNTING CONFIGURATION FOR
AH202-2 CASE STYLE, "sb" PIN CONNECTION



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" $\pm$.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

TOLERANCES ON:
2 PL DECIMALS $\pm$
3 PL DECIMALS $\pm$.005
ANGLES $\pm$
FRACTIONS $\pm$

DRAWN

AV

04/11/07

CHECKED

IL

04/12/07

APPROVED

HY

04/12/07

Mini-Circuits®

THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF MINI-CIRCUITS. EXCEPT FOR USE EXPRESSLY GRANTED, IN WRITING, TO ITS VENDORS, VENDEE AND THE UNITED STATES GOVERNMENT, MINI-CIRCUITS RESERVES ALL PROPRIETARY DESIGN, USE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO. THESE CONTENTS SHALL NOT BE USED, DUPLICATED OR DISCLOSED TO ANY OUTSIDE PARTY, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION OF MINI-CIRCUITS.

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



Mini-Circuits®

13 Neptune Avenue
Brooklyn NY 11235

PL, sb, AH202-2, SYPS-2, TB-427+

SIZE
A

CODE IDENT
15542

DRAWING NO:
98-PL-274

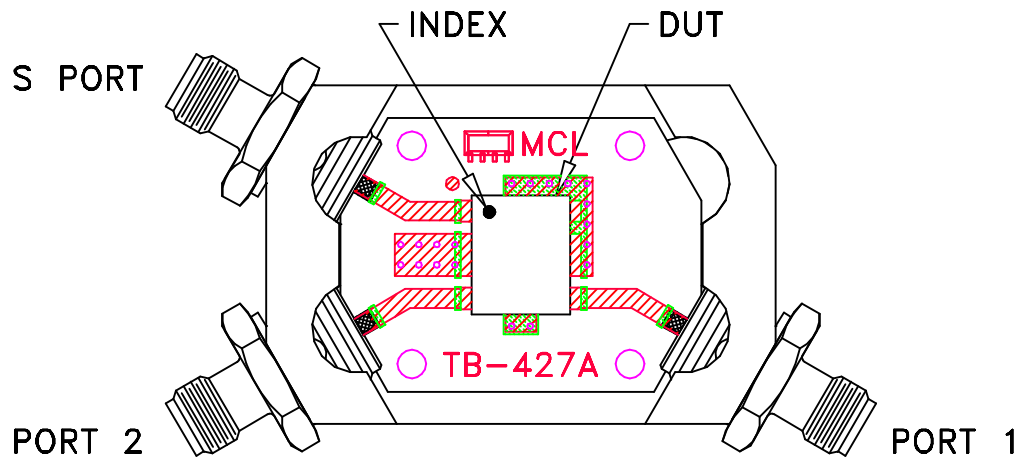
REV:
OR

FILE: 98PL274

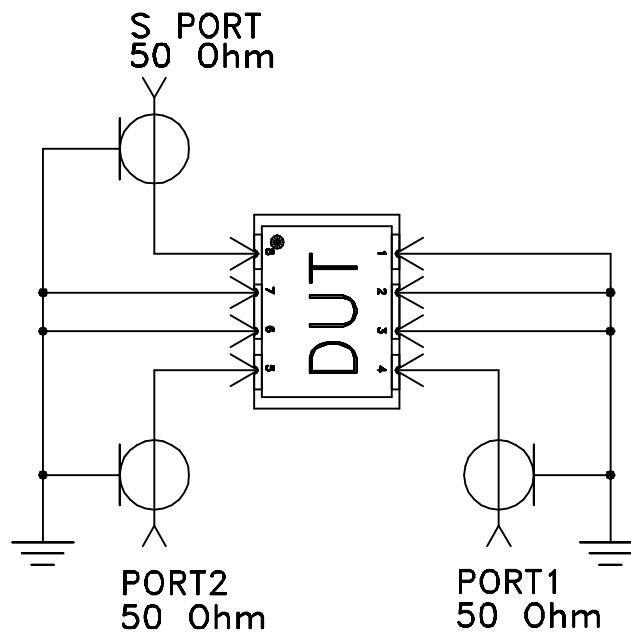
SCALE: 6:1

SHEET: 1 OF 1

Evaluation Board and Circuit



TB-427+



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or its equivalent, Dielectric Constant=3.5, Thickness=.030"

 **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