

Power Splitter/Combiner

SYPS-3-142W+

3 Way-0° 50Ω 5 to 1450 MHz

Maximum Ratings

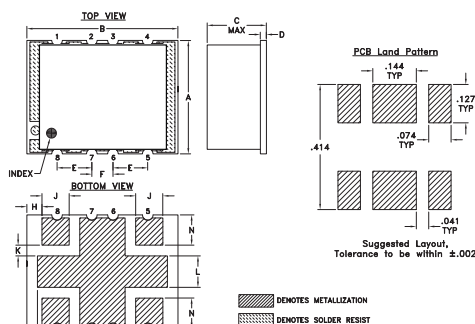
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	1W max.
Internal Dissipation	0.15W max.

Permanent damage may occur if any of these limits are exceeded

Pin Connections

SUM PORT	8
PORT 1	1
PORT 2	4
PORT 3	5
GROUND	2,3,6,7

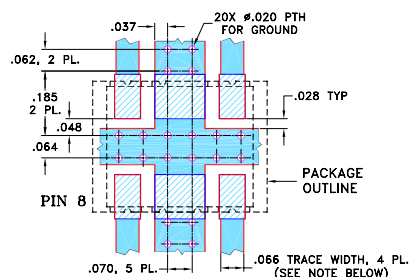
Outline Drawing



Outline Dimensions (inch)

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

Demo Board MCL P/N: TB-364
Suggested PCB Layout (PL-231)



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.

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

Notes

- 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-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/MC/Store/terms_iso

Features

- low insertion loss 1.5, dB typ. at midband
- wide frequency band, 5 to 1450 MHz
- low amplitude unbalance, 0.3 dB typ.

Applications

- VHF/UHF CATV
- cellular
- GPS
- satellite distribution



Generic photo used for illustration purposes only

CASE STYLE: AH202

+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
13"	200

Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		1450	MHz
Insertion Loss Above 4.8 dB	5-400	—	0.7	1.3	dB
	400-1200	—	1.5	2.4	
	1200-1450	—	2.2	3.3	
Isolation	5-400	17	24	—	dB
	400-1200	15	20	—	
	1200-1450	13	19	—	
Phase Unbalance	5-400	—	—	2.0	Degree
	400-1200	—	—	5.0	
	1200-1450	—	—	9.0	
Amplitude Unbalance	5-400	—	—	0.3	dB
	400-1200	—	—	0.7	
	1200-1450	—	—	0.9	
VSWR (Port S)	5-400	—	1.20	—	:1
	400-1200	—	1.65	—	
	1200-1450	—	1.65	—	
VSWR (Port 1-3)	5-400	—	1.10	—	:1
	400-1200	—	1.20	—	
	1200-1450	—	1.20	—	

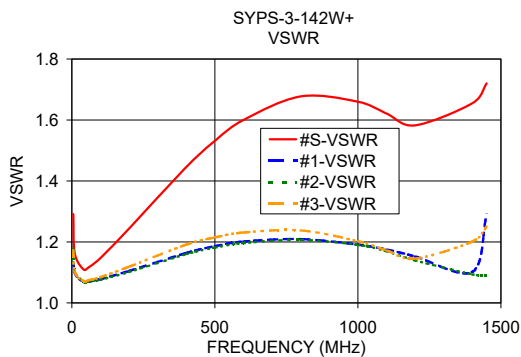
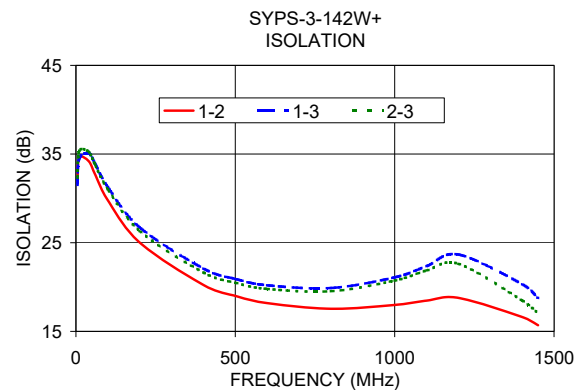
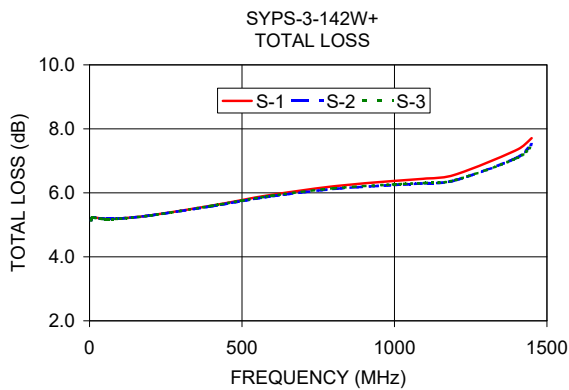
Electrical Schematic



Typical Performance Data

Freq. (MHz)	Total Loss ¹ (dB)			Amp. Unbal. (dB)	Isolation (dB)			Phase Unbal. (deg.)	VSWR S	VSWR 1	VSWR 2	VSWR 3
	S-1	S-2	S-3		1-2	1-3	2-3					
5.00	5.15	5.15	5.14	0.01	31.98	31.52	32.33	0.04	1.29	1.17	1.18	1.17
10.00	5.23	5.23	5.22	0.01	34.60	34.45	35.32	0.03	1.16	1.10	1.10	1.10
40.00	5.20	5.19	5.19	0.01	34.20	35.08	35.25	0.03	1.11	1.07	1.07	1.07
60.00	5.19	5.18	5.18	0.01	32.72	33.92	33.79	0.04	1.12	1.07	1.07	1.07
100.00	5.20	5.20	5.19	0.01	29.79	31.28	31.02	0.04	1.15	1.08	1.08	1.08
200.00	5.30	5.29	5.29	0.00	25.02	26.73	26.32	0.14	1.24	1.10	1.10	1.12
400.00	5.60	5.58	5.59	0.02	20.24	22.09	21.64	0.29	1.45	1.16	1.16	1.19
500.00	5.78	5.74	5.76	0.03	19.00	20.92	20.48	0.35	1.53	1.19	1.18	1.21
600.00	5.94	5.90	5.91	0.05	18.19	20.20	19.79	0.48	1.60	1.20	1.20	1.23
800.00	6.20	6.12	6.14	0.08	17.55	19.89	19.53	0.98	1.68	1.21	1.21	1.24
1000.00	6.37	6.25	6.26	0.13	17.98	21.09	20.73	1.61	1.66	1.19	1.19	1.20
1100.00	6.45	6.30	6.31	0.14	18.47	22.36	21.87	2.14	1.62	1.17	1.17	1.17
1200.00	6.57	6.39	6.40	0.18	18.78	23.67	22.63	2.76	1.58	1.15	1.14	1.15
1400.00	7.34	7.09	7.08	0.26	16.62	20.33	18.49	4.89	1.66	1.10	1.09	1.20
1450.00	7.71	7.52	7.46	0.26	15.69	18.76	17.06	5.31	1.72	1.29	1.09	1.25

1. Total Loss = Insertion Loss + 4.8dB splitter loss.



Notes

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3 Way-0° Power Splitter/Combiner

SYPS-3-142W+

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS ¹			AMP. UNBAL. (dB)	ISOLATION			PHASE UNBAL. (deg.)	FREQ. (MHz)	VSWR			
	S-1	S-2	S-3		1-2	1-3	2-3			S	1	2	3
5.0	5.15	5.15	5.14	0.01	31.98	31.52	32.33	0.04	5.0	1.29	1.17	1.18	1.17
7.0	5.20	5.20	5.20	0.01	33.86	33.48	34.41	0.04	7.0	1.21	1.13	1.13	1.13
9.0	5.23	5.22	5.22	0.01	34.42	34.20	35.15	0.03	9.0	1.17	1.11	1.11	1.11
10.0	5.23	5.23	5.22	0.01	34.60	34.45	35.32	0.03	10.0	1.16	1.10	1.10	1.10
15.0	5.23	5.23	5.22	0.01	35.11	35.24	35.97	0.04	15.0	1.13	1.08	1.08	1.08
20.0	5.22	5.22	5.21	0.01	35.15	35.49	36.10	0.03	20.0	1.12	1.08	1.08	1.08
40.0	5.20	5.19	5.19	0.01	34.20	35.08	35.25	0.03	40.0	1.11	1.07	1.07	1.07
60.0	5.19	5.18	5.18	0.01	32.72	33.92	33.79	0.04	60.0	1.12	1.07	1.07	1.07
80.0	5.19	5.19	5.18	0.01	31.20	32.58	32.36	0.04	80.0	1.13	1.07	1.07	1.08
100.0	5.20	5.20	5.19	0.01	29.79	31.28	31.02	0.04	100.0	1.15	1.08	1.08	1.08
200.0	5.30	5.29	5.29	0.00	25.02	26.73	26.32	0.14	200.0	1.24	1.10	1.10	1.12
300.0	5.43	5.43	5.43	0.01	22.11	23.90	23.45	0.27	300.0	1.35	1.14	1.13	1.16
400.0	5.60	5.58	5.59	0.02	20.24	22.09	21.64	0.29	400.0	1.45	1.16	1.16	1.19
500.0	5.78	5.74	5.76	0.03	19.00	20.92	20.48	0.35	500.0	1.53	1.19	1.18	1.21
600.0	5.94	5.90	5.91	0.05	18.19	20.20	19.79	0.48	600.0	1.60	1.20	1.20	1.23
700.0	6.09	6.03	6.04	0.06	17.73	19.87	19.49	0.70	700.0	1.65	1.21	1.20	1.24
800.0	6.20	6.12	6.14	0.08	17.55	19.89	19.53	0.98	800.0	1.68	1.21	1.21	1.24
900.0	6.30	6.18	6.21	0.12	17.65	20.29	19.93	1.26	900.0	1.68	1.20	1.20	1.23
1000.0	6.37	6.25	6.26	0.13	17.98	21.09	20.73	1.61	1000.0	1.66	1.19	1.19	1.20
1100.0	6.45	6.30	6.31	0.14	18.47	22.36	21.87	2.14	1100.0	1.62	1.17	1.17	1.17
1200.0	6.57	6.39	6.40	0.18	18.78	23.67	22.63	2.76	1200.0	1.58	1.15	1.14	1.15
1300.0	6.83	6.62	6.62	0.21	18.28	23.25	21.44	3.57	1300.0	1.58	1.12	1.10	1.15
1400.0	7.34	7.09	7.08	0.26	16.62	20.33	18.49	4.89	1400.0	1.66	1.10	1.09	1.20
1450.0	7.71	7.52	7.46	0.26	15.69	18.76	17.06	5.31	1450.0	1.72	1.09	1.09	1.25

¹Total Loss = Insertion Loss + 4.8dB Splitter Loss



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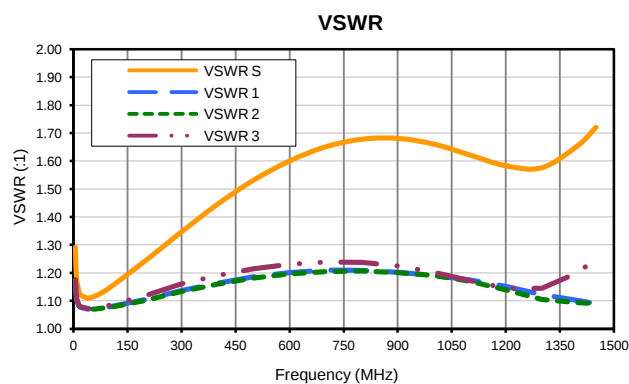
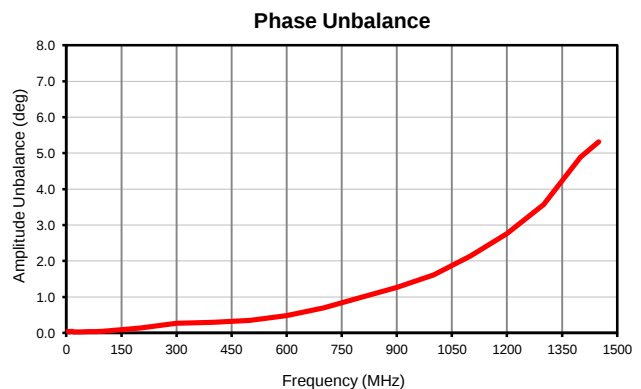
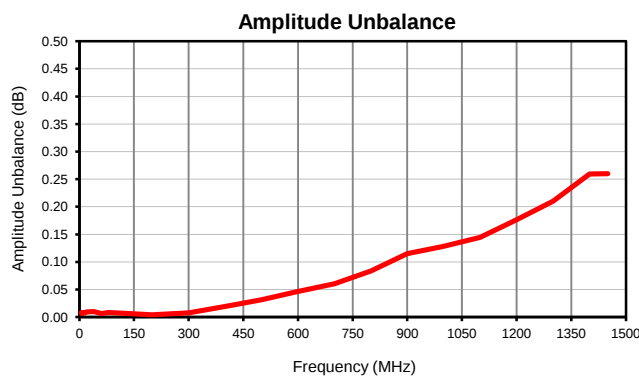
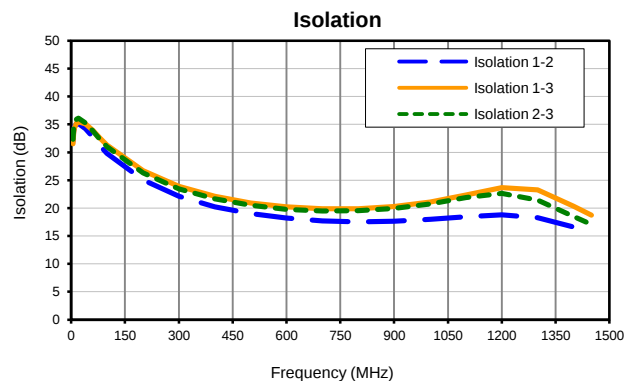
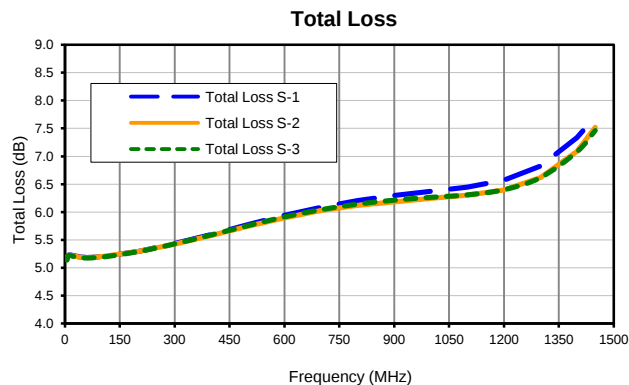
IF/RF MICROWAVE COMPONENTS

REV. OR
SYPS-3-142W+
12/23/2014
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3 Way-0° Power Splitter/Combiner

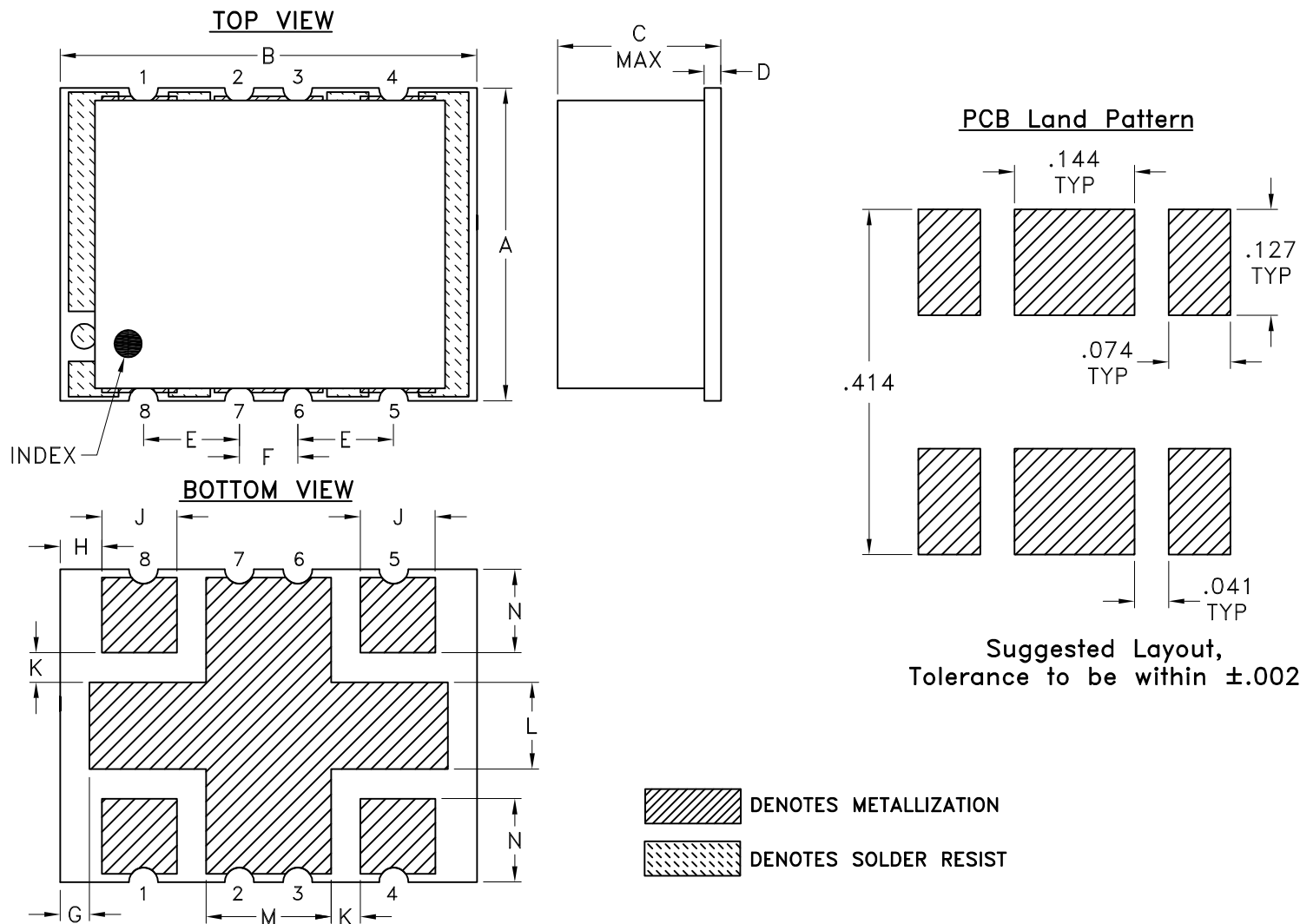
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Typical Performance Curves



Outline Dimensions

AH202



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N	WT, GRAM
AH202	.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. $\pm .01$; 3 Pl. $\pm .005$

Notes:

- Case material: Plastic.
- 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.

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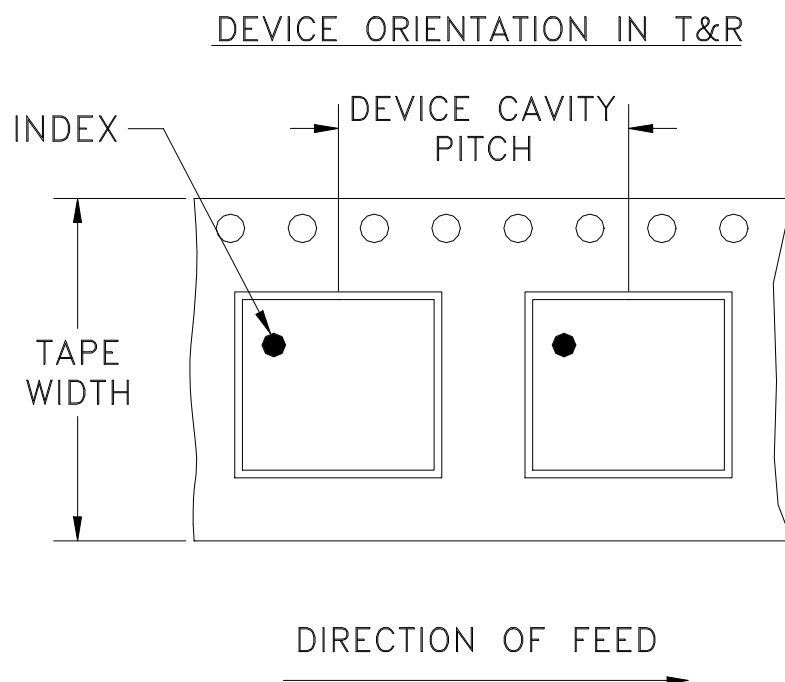
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RF/IF MICROWAVE COMPONENTS

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.

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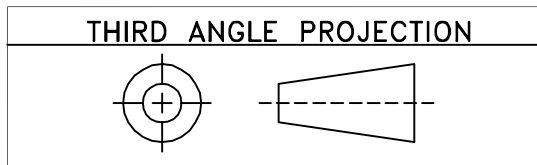


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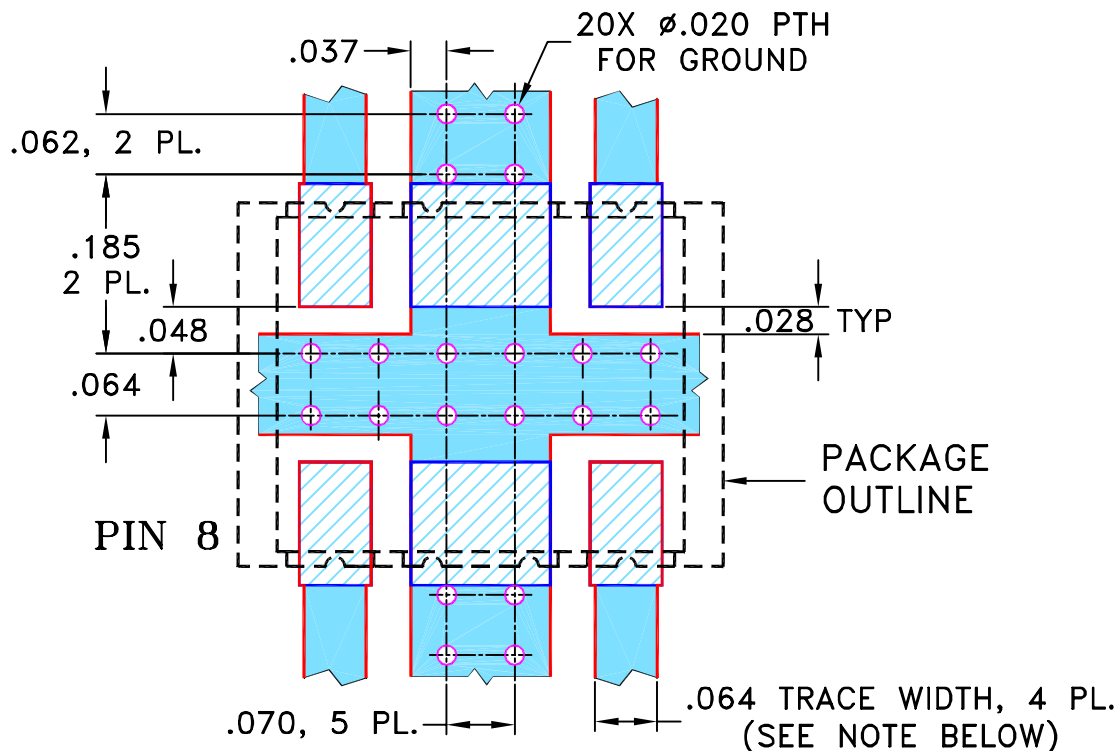
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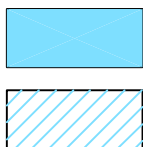
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	M101222	NEW RELEASE	09/19/06	MMG	HY

**SUGGESTED MOUNTING CONFIGURATION
FOR AH202 CASE STYLE, "rd" PIN CONNECTION**



NOTES:

- 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.
- 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	MMG	12/07/05
	CHECKED	AY	09/18/06
	APPROVED	HY	09/19/06



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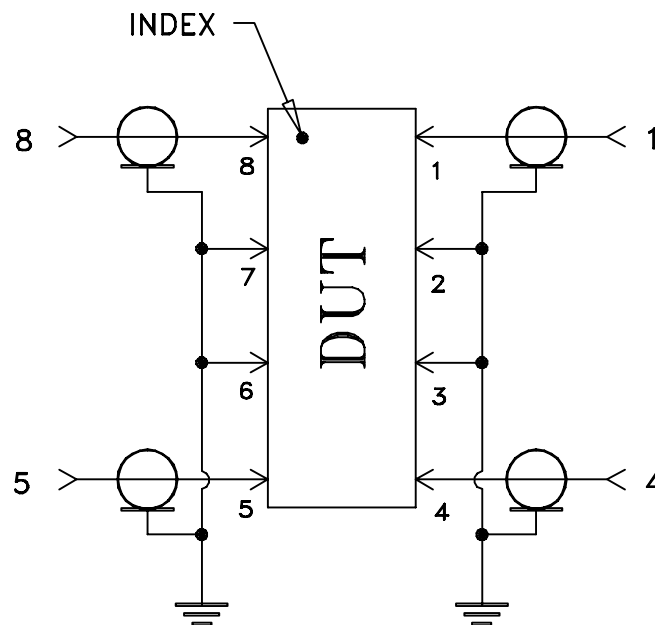
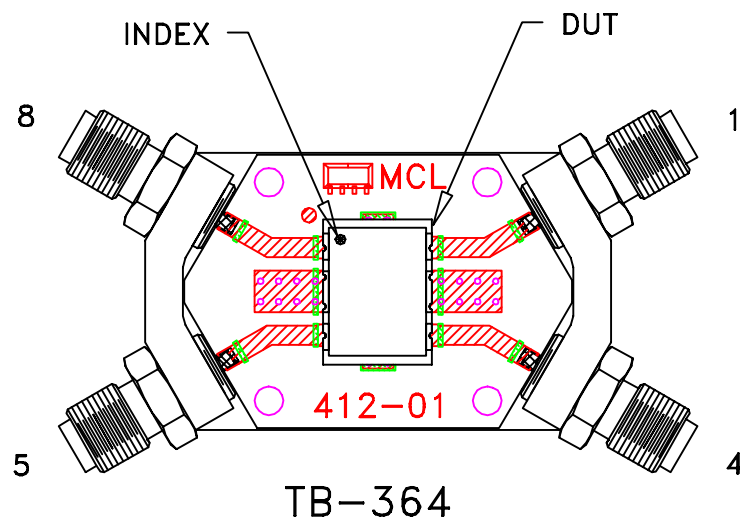
PL, rd, AH202, SYPS-3-12W, TB-364

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

SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-231	REV: OR
FILE: 98PL231	SCALE: 5:1	SHEET: 1 OF 1	

Evaluation Board and Circuit

For Pin Connections refer to Data Sheet of the DUT



Schematic Diagram

Notes:

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

 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