

Engineering Development Model

Power Splitter/Combiner 4 Way-0°

SCP-ED10233/1

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 : YY161

ELECTRICAL SPECIFICATIONS 75Ω @ +25°C					
Parameter		Min.	Typ.	Max.	Units
Frequency		1		600	MHz
Isolation	1 - 10 MHz		38		dB
	10 - 300 MHz		28		dB
	300 - 600 MHz		22		dB
Insertion Loss Above 6.0 dB	1 - 10 MHz		0.30		dB
	10 - 300 MHz		0.40		dB
	300 - 600 MHz		0.80		dB
Phase Unbalance	1 - 10 MHz		0.08		deg.
	10 - 300 MHz		0.55		deg.
	300 - 600 MHz		1.65		deg.
Amplitude Unbalance	1 - 10 MHz		0.02		dB
	10 - 300 MHz		0.02		dB
	300 - 600 MHz		0.08		dB
VSWR	SUM Port		1.15		(:1)
	OUT Ports		1.24		(:1)

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

PIN CONNECTIONS	
SUM PORT	3
PORT 1	2
PORT 2	4
PORT 3	6
PORT 4	8
GND EXT	1,5,7

Functional Diagram



4 Way-0° Power Splitter/Combiner

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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-3	S-4		1-2	1-3	3-4			S	1	2	3	4
0.4	6.45	6.45	6.45	6.46	0.01	29.21	51.06	28.91	0.04	0.4	1.18	1.29	1.29	1.29	1.29
0.6	6.42	6.41	6.41	6.41	0.01	31.15	54.59	31.12	0.03	0.6	1.14	1.23	1.23	1.23	1.23
0.8	6.38	6.39	6.38	6.38	0.01	32.51	57.96	32.76	0.06	0.8	1.13	1.20	1.20	1.20	1.20
1.0	6.35	6.36	6.35	6.35	0.02	33.61	60.85	34.01	0.10	1.0	1.12	1.18	1.18	1.18	1.18
2.0	6.27	6.27	6.28	6.28	0.02	37.07	67.87	37.32	0.05	2.0	1.08	1.13	1.13	1.13	1.13
3.0	6.24	6.24	6.24	6.24	0.00	39.16	62.72	38.72	0.09	3.0	1.07	1.11	1.11	1.11	1.11
4.0	6.24	6.24	6.24	6.24	0.00	40.50	59.98	39.53	0.03	4.0	1.06	1.10	1.10	1.10	1.10
5.0	6.23	6.23	6.22	6.22	0.01	41.28	57.63	39.85	0.09	5.0	1.06	1.10	1.10	1.11	1.10
10.0	6.24	6.23	6.24	6.23	0.01	41.88	51.55	40.22	0.12	10.0	1.05	1.09	1.09	1.09	1.09
20.0	6.26	6.25	6.25	6.24	0.01	39.75	46.35	38.80	0.11	20.0	1.05	1.08	1.08	1.09	1.09
40.0	6.28	6.28	6.27	6.27	0.01	35.85	40.80	35.73	0.18	40.0	1.04	1.09	1.09	1.09	1.09
60.0	6.30	6.30	6.31	6.30	0.01	33.29	37.57	33.22	0.19	60.0	1.05	1.09	1.09	1.09	1.09
80.0	6.32	6.33	6.33	6.32	0.01	31.27	35.31	31.22	0.31	80.0	1.05	1.10	1.09	1.10	1.10
100.0	6.34	6.35	6.34	6.34	0.01	29.74	33.58	29.68	0.36	100.0	1.06	1.11	1.10	1.11	1.11
120.0	6.37	6.35	6.36	6.35	0.02	28.46	32.24	28.43	0.42	120.0	1.06	1.12	1.11	1.11	1.12
140.0	6.38	6.39	6.39	6.38	0.02	27.38	31.01	27.35	0.49	140.0	1.07	1.13	1.12	1.13	1.14
160.0	6.39	6.40	6.39	6.39	0.01	26.42	29.97	26.40	0.60	160.0	1.07	1.14	1.13	1.14	1.15
180.0	6.42	6.42	6.42	6.42	0.01	25.65	29.13	25.61	0.64	180.0	1.08	1.15	1.14	1.15	1.16
200.0	6.45	6.45	6.44	6.43	0.02	24.89	28.32	25.90	0.72	200.0	1.09	1.16	1.15	1.17	1.18
220.0	6.46	6.45	6.45	6.43	0.03	24.27	27.68	24.29	0.67	220.0	1.10	1.18	1.17	1.18	1.19
240.0	6.49	6.48	6.47	6.46	0.03	23.68	27.01	23.74	0.92	240.0	1.11	1.19	1.18	1.19	1.21
260.0	6.51	6.51	6.50	6.48	0.03	23.16	26.43	23.22	0.91	260.0	1.12	1.21	1.19	1.21	1.22
280.0	6.53	6.53	6.50	6.51	0.03	22.72	25.94	22.79	0.99	280.0	1.13	1.23	1.21	1.23	1.24
300.0	6.54	6.54	6.52	6.52	0.02	22.30	25.48	22.41	1.05	300.0	1.14	1.24	1.22	1.24	1.26
325.0	6.58	6.58	6.55	6.54	0.04	21.83	24.95	21.99	1.25	325.0	1.16	1.26	1.24	1.27	1.29
350.0	6.62	6.62	6.59	6.59	0.03	21.41	24.44	21.59	1.23	350.0	1.18	1.29	1.26	1.29	1.31
375.0	6.65	6.65	6.60	6.61	0.05	21.03	24.01	21.57	1.30	375.0	1.20	1.31	1.28	1.31	1.34
400.0	6.68	6.69	6.63	6.64	0.05	20.71	23.59	21.00	1.35	400.0	1.22	1.33	1.30	1.33	1.37
425.0	6.73	6.72	6.67	6.57	0.07	20.40	23.20	20.77	1.46	425.0	1.25	1.36	1.32	1.36	1.39
450.0	6.79	6.77	6.72	6.71	0.08	20.15	22.86	20.57	1.68	450.0	1.27	1.38	1.34	1.38	1.42
475.0	6.82	6.80	6.73	6.73	0.09	19.94	22.57	20.41	1.70	475.0	1.29	1.41	1.36	1.41	1.45
500.0	6.86	6.86	6.78	6.79	0.08	19.76	22.30	20.31	1.82	500.0	1.32	1.44	1.39	1.44	1.48
525.0	6.93	6.91	6.82	6.80	0.12	19.62	22.08	20.23	1.91	525.0	1.34	1.46	1.41	1.47	1.51
550.0	6.97	6.96	6.85	6.85	0.12	19.47	21.86	20.17	2.09	550.0	1.36	1.49	1.44	1.49	1.54
575.0	7.02	7.01	6.89	6.87	0.15	19.42	21.74	20.18	2.13	575.0	1.38	1.52	1.46	1.52	1.58
600.0	7.07	7.07	6.92	6.92	0.15	19.38	21.64	20.21	2.38	600.0	1.39	1.55	1.49	1.55	1.61
625.0	7.13	7.11	6.94	6.95	0.19	19.34	21.59	20.21	2.34	625.0	1.40	1.57	1.51	1.58	1.64
650.0	7.16	7.16	6.96	6.97	0.21	19.30	21.63	20.18	2.64	650.0	1.40	1.60	1.54	1.61	1.68
700.0	7.27	7.27	7.00	7.02	0.27	19.13	21.98	19.90	2.98	700.0	1.38	1.64	1.59	1.66	1.74

¹Total Loss = Insertion Loss + 6dB Splitter Loss

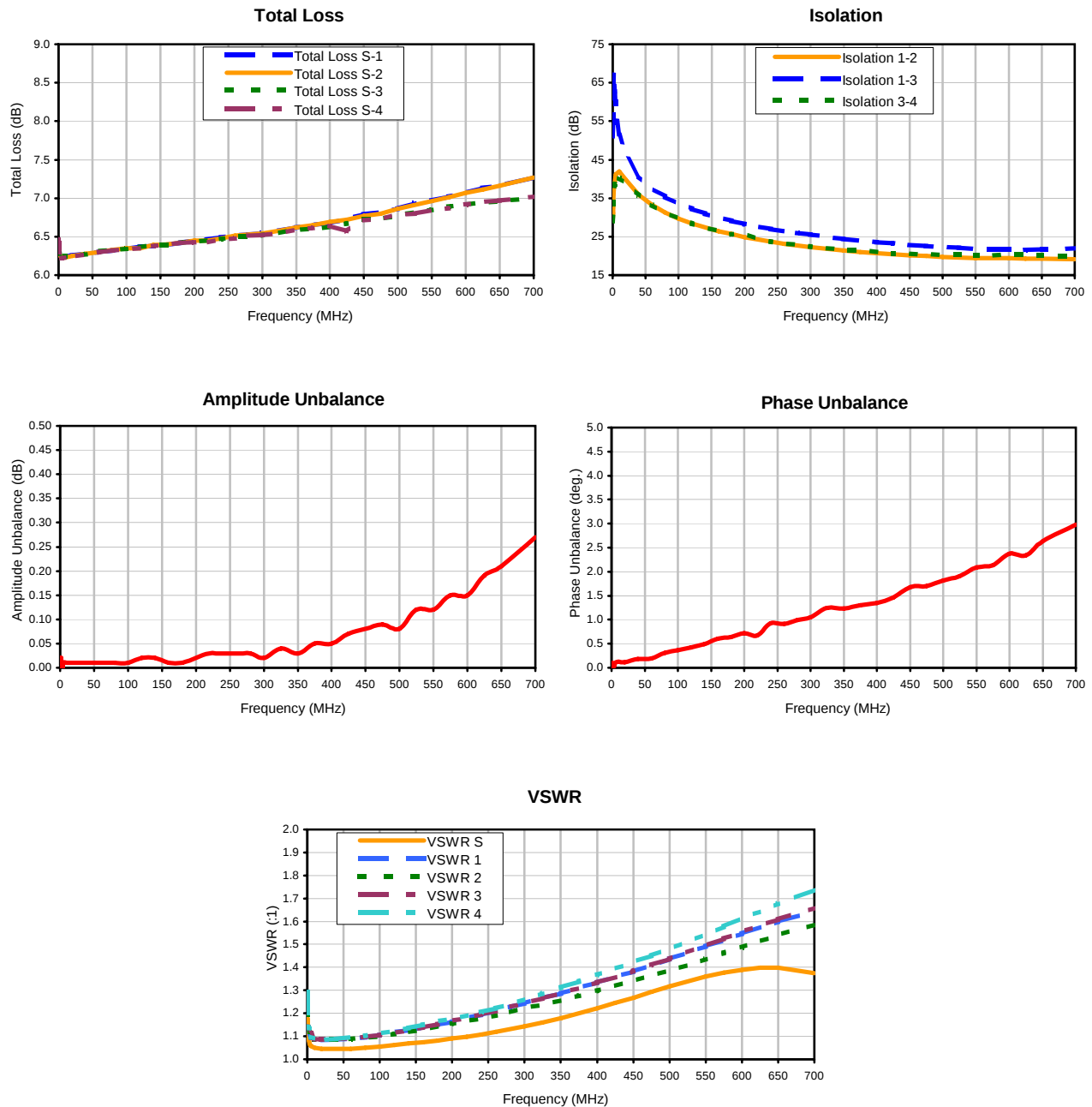


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IF/RF MICROWAVE COMPONENTS

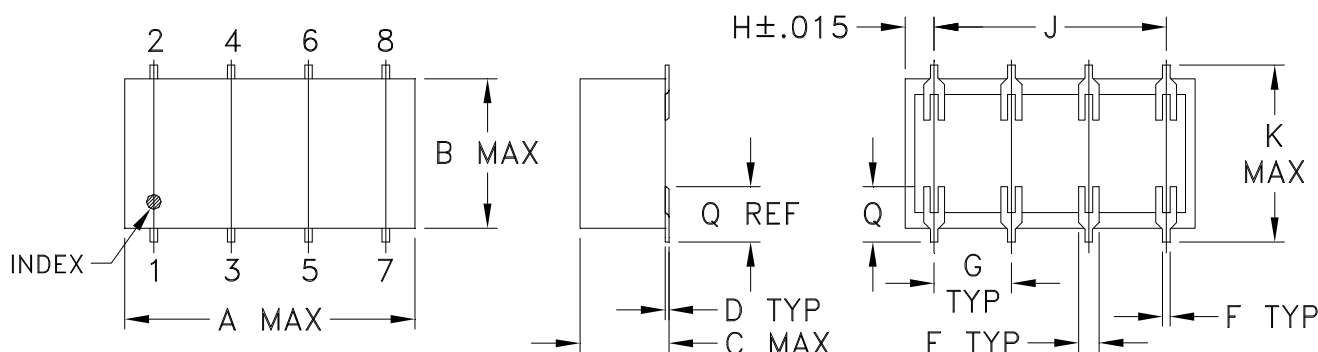
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Typical Performance Curves

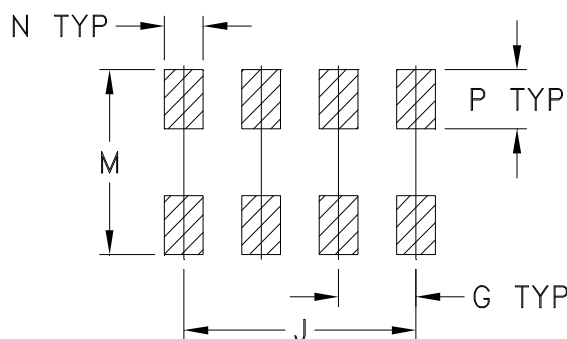


Outline Dimensions

YY101
YY109
YY161



PCB Land Pattern



Suggested Layout
Tolerance to be within $\pm .002$

CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	WT. GRAM S
YY101*			.20 (5.08)							.450 (11.43)	--	.470 (11.94)				1.6
YY109*	.75 (19.05)	.38 (9.65)	.20 (5.08)	.010 (0.25)	.050 (1.27)	.020 (0.51)	.200 (5.08)	.075 (1.91)	.600 (15.24)	.720 (18.29)	--	.740 (18.80)	.100 (2.54)	.150 (3.81)	.148 (3.76)	1.6
YY161			.28 (7.11)							.450 (11.43)	--	.470 (11.94)				1.6

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

Notes:

- Case material: Plastic.
- Termination finish:
For RoHS Case Styles: Tin plate over Nickel plate.
For RoHS-5 Case Styles: Tin-Lead plate.
- Special Tolerances: Termination thickness $\pm .003$ inch.
- * Denotes: For SCM mixers, long termination version (case YY109) is available upon request, consult factory. To order short termination version (case YY101) add -NL suffix.



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Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
32	16	13	500

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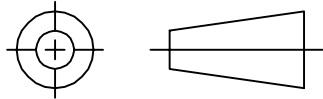
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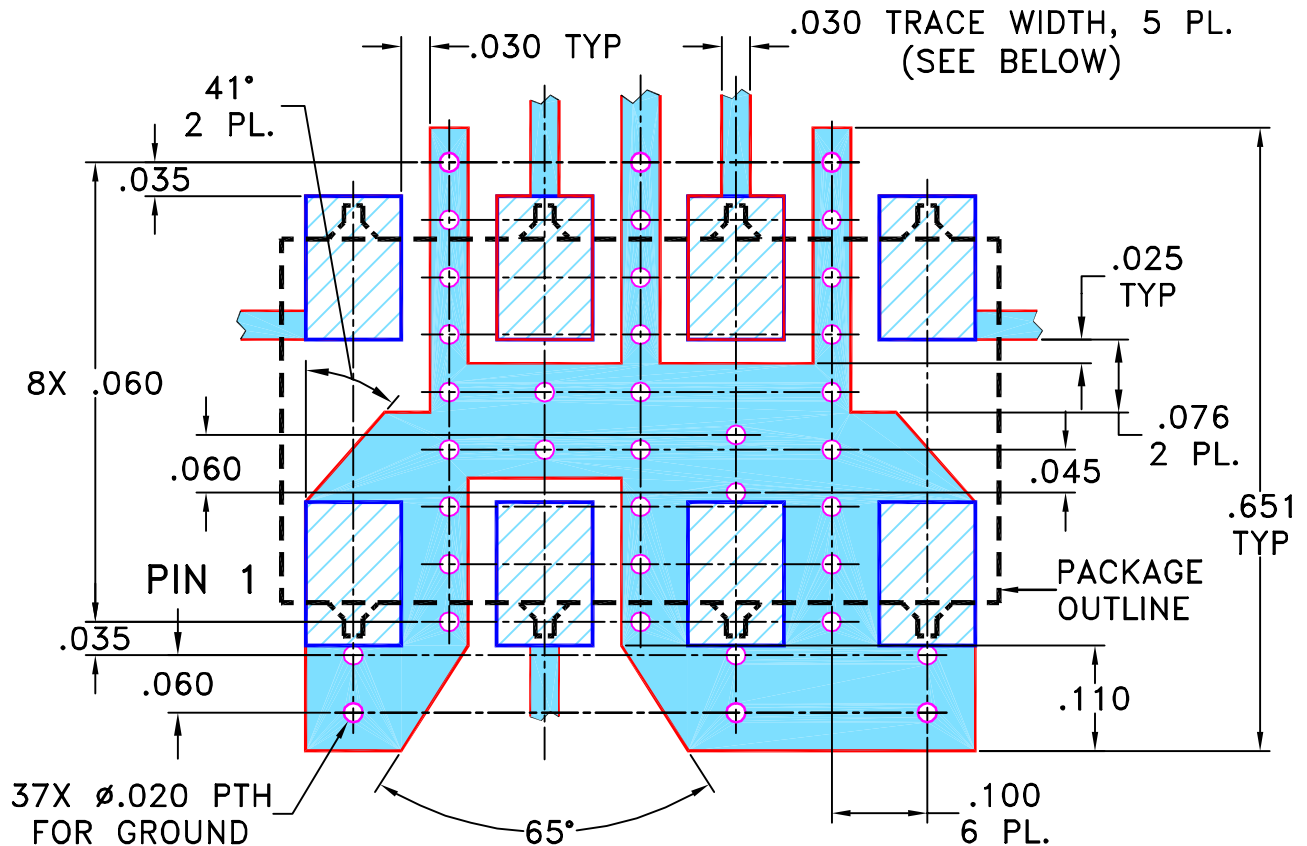
THIRD ANGLE PROJECTION



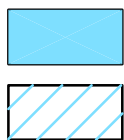
REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M96392	NEW RELEASE	01/27/05	MMG	HY
A	M102713	UPDATED NOTES, ADDED "...WITH SMOBC"	01/20/06	GT	IL

SUGGESTED MOUNTING CONFIGURATION FOR YY161 CASE STYLE, "bv" 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

DRAWN

MMG

01/24/05

TOLERANCES ON:

CHECKED

AV

01/27/05

2 PL DECIMALS $\pm$

APPROVED

HY

01/27/05

3 PL DECIMALS $\pm$.005ANGLES $\pm$ FRACTIONS $\pm$

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PL, bv, 75, YY161, SCP, TB-184

SIZE

A

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A

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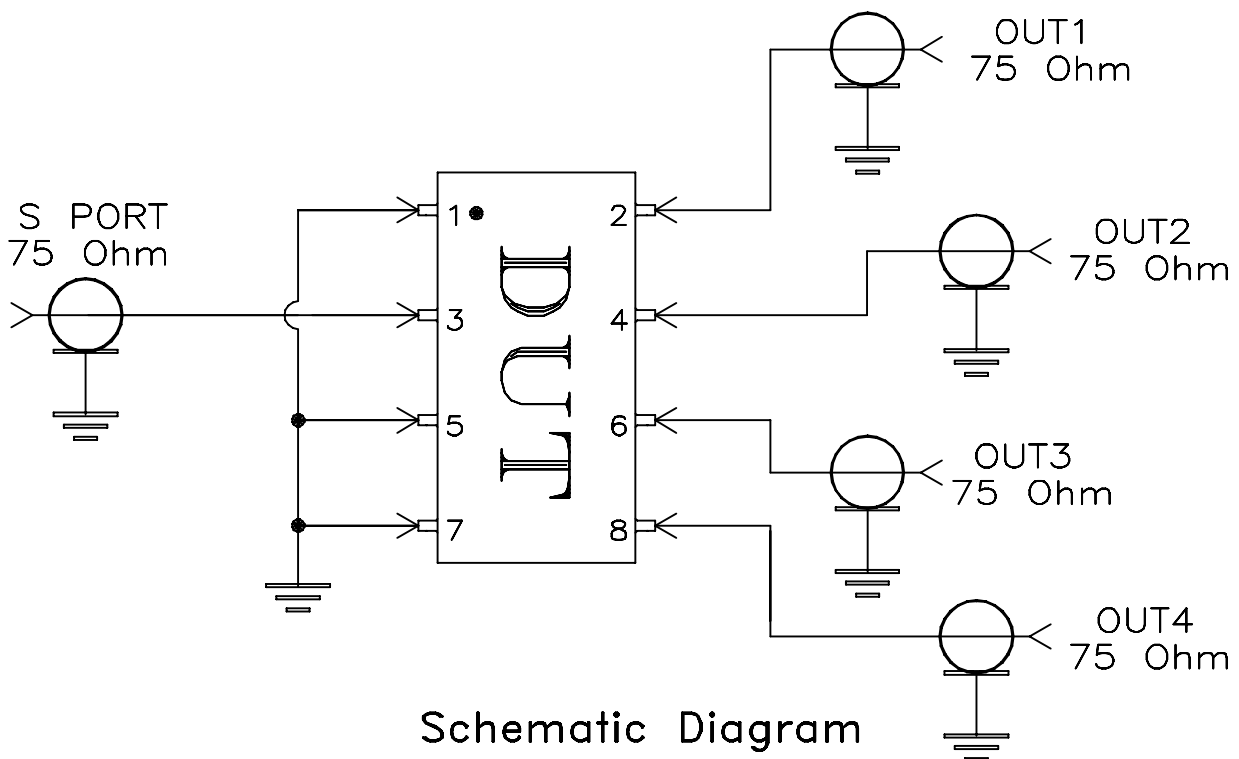
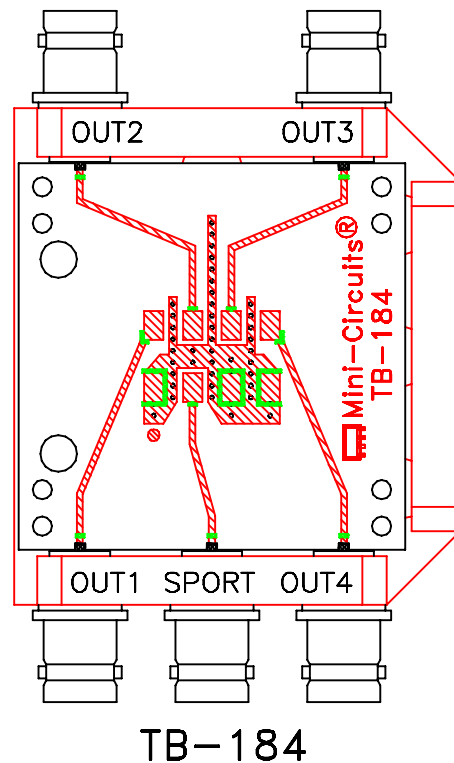
SCALE:

5:1

SHEET:

1 OF 1

Evaluation Board and Circuit



Schematic Diagram

Notes:

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

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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