

High Power

50Ω 20dB Coupling DC Pass 800 to 1000 MHz



+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
DC Current	2A

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

INPUT	1
OUTPUT	2
COUPLED (forward)	4
COUPLED (reverse)	3
GROUND	5

Figure 1: Dimensions of the test specimen. The diagram shows a cross-section of a specimen with various dimensions. The total width is .670 TYP. The central core has a width of .360 TYP. The top and bottom layers have thicknesses of .095 and .067 TYP, respectively. The total height is .295 TYP. The distance from the centerline to the outer edge of the top layer is .500 TYP. The distance from the centerline to the outer edge of the bottom layer is .175 TYP. The distance from the centerline to the outer edge of the top layer, including the top layer thickness, is .060 TYP. The distance from the centerline to the outer edge of the bottom layer, including the bottom layer thickness, is .275 TYP. A hatched area indicates METALLIZATION.

Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.70	.32	.13	.060	.100	.500	.022
17.78	8.13	3.30	1.52	2.54	12.70	0.56
H	J	K	L	M		wt
.060	.040	.360	.670	.175		grams
1.52	1.02	9.14	17.02	4.45		0.68

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 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

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/MCLStore/terms.jsp

- high power handling, 150 watts at room temp.
- low mainline loss, 0.12 dB typ.
- excellent VSWR, 1.10:1 typ.
- excellent directivity, 24 dB typ.

- cellular
- GPS
- PCS
- ISM
- defense communications

FREQ. (MHz)	COUPLING (dB)		MAINLINE LOSS¹ (dB)		DIRECTIVITY (dB)		VSWR (:1)	POWER INPUT (W)
f _i -f _u	Nom.	Flatness	Typ.	Max.	Typ.	Min.	Typ.	Max.
800-1000	20.8±0.8	±1.3	0.12	0.35	24	17	1.10	100
800-900	21.6±0.8	±0.7	0.12	0.35	24	18	1.10	100
900-1000	20.6±0.8	±0.6	0.12	0.35	24	17	1.10	100

1. Mainline loss includes theoretical power loss at coupled port

Frequency (MHz)	Mainline Loss (dB)	Coupling (dB)		Directivity (dB)		Return Loss (dB)			
	In-Out	In-Cpl Fwd	Out-Cpl Rev	Out-Cpl Fwd	In-Cpl Rev	In	Out	Cpl Fwd	Cpl Rev
800.00	0.12	21.77	21.73	23.83	25.05	28.92	26.92	29.17	29.75
820.00	0.11	21.56	21.51	23.92	25.21	28.77	26.79	28.99	29.59
860.00	0.12	21.16	21.11	24.02	25.44	28.52	26.57	28.73	29.36
880.00	0.11	20.96	20.91	24.02	25.43	28.21	26.37	28.57	29.35
900.00	0.13	20.79	20.74	24.03	25.41	27.93	26.14	28.50	29.21
920.00	0.12	20.59	20.55	24.12	25.40	27.74	25.99	28.41	29.13
940.00	0.13	20.42	20.38	24.18	25.27	27.58	25.81	28.33	28.95
960.00	0.13	20.24	20.20	24.19	25.28	27.52	25.70	28.30	28.89
980.00	0.14	20.07	20.03	24.12	25.28	27.32	25.50	28.19	28.84
1000.00	0.14	19.91	19.86	24.02	25.34	27.10	25.29	28.16	28.91

Frequency (MHz)	Mainline Loss (dB)
800	0.115
810	0.110
820	0.105
830	0.110
840	0.115
850	0.120
860	0.115
870	0.110
880	0.115
890	0.120
900	0.130
910	0.125
920	0.120
930	0.125
940	0.130
950	0.130
960	0.135
970	0.140
980	0.140
990	0.140
1000	0.140

Frequency (MHz)	Coupling IN-CPL FWD (dB)	Directivity IN-CPL-REV (dB)
800	21.5	25.5
850	21.0	25.5
900	20.5	25.5
950	20.0	25.5
1000	19.5	25.5

The diagram shows a rectangular block labeled "BI-DIRECTIONAL COUPLER (DC THRU)*". On the left side, there is a terminal labeled "DC+RF INPUT". On the right side, there is a terminal labeled "DC+RF OUTPUT". Inside the block, two horizontal arrows point in opposite directions, representing the main signal path. From the bottom of the block, two terminals are shown: "COUPLED FORWARD DC+RF" on the left and "COUPLED REVERSE DC+RF" on the right. Curved arrows indicate the coupling mechanism, showing signals being directed from the main path to these two output terminals.

* ELECTRICAL SCHEMATIC IS FOR BI-DIRECTIONAL COUPLER WITHOUT INTERNAL TRANSFORMERS AND RESISTORS

Bi-Directional Coupler

SYBD-20-13HP+

Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = +25°C

FREQ. (MHz)	INSERTION LOSS		COUPLING		DIRECTIVITY		RETURN LOSS			
	(dB) IN-OUT	(dB) FWD-REV	(dB) IN-FWD	(dB) OUT-REV	(dB) IN-REV	(dB) OUT-FWD	(dB) IN	(dB) OUT	(dB) FWD	(dB) REV
500	0.03	0.02	25.80	25.78	29.99	30.49	48.93	48.46	53.75	43.83
600	0.04	0.04	24.25	24.23	30.23	30.35	48.32	47.15	49.87	43.50
700	0.06	0.06	22.95	22.94	30.68	30.88	44.64	44.16	44.69	42.09
725	0.07	0.06	22.67	22.65	30.85	30.82	43.77	43.61	43.99	41.63
750	0.08	0.07	22.38	22.36	30.96	30.95	43.04	42.60	42.85	41.15
775	0.08	0.07	22.12	22.09	31.40	31.50	42.91	41.97	42.39	40.89
790	0.09	0.07	21.95	21.94	31.29	31.17	42.11	41.58	41.96	40.85
800	0.09	0.08	21.85	21.83	31.44	31.19	41.99	41.17	41.65	40.68
820	0.08	0.07	21.63	21.61	31.31	31.32	41.11	40.86	41.19	40.43
840	0.08	0.07	21.43	21.41	31.16	31.58	40.48	40.43	40.86	40.18
850	0.09	0.08	21.33	21.31	31.37	31.28	40.15	40.08	40.44	40.23
860	0.09	0.08	21.23	21.21	31.54	31.46	40.16	39.98	40.45	40.08
870	0.09	0.08	21.14	21.13	31.87	31.69	40.04	39.81	40.30	40.05
880	0.09	0.08	21.05	21.03	31.86	31.71	39.79	39.69	40.23	40.02
890	0.10	0.09	20.95	20.93	31.84	31.83	39.74	39.46	40.13	39.74
900	0.10	0.09	20.86	20.85	31.88	31.81	39.49	39.26	39.88	39.77
920	0.11	0.11	20.69	20.67	31.88	31.67	39.08	38.73	39.71	39.38
940	0.12	0.11	20.52	20.51	32.51	32.06	38.80	38.56	39.29	39.22
950	0.12	0.11	20.43	20.42	32.41	32.03	38.58	38.35	38.87	39.23
960	0.12	0.11	20.34	20.33	32.46	31.81	38.56	38.19	38.82	39.17
970	0.12	0.12	20.27	20.26	32.59	32.22	38.42	38.26	39.02	39.08
980	0.12	0.12	20.18	20.18	33.16	32.73	38.28	38.17	38.98	38.98
990	0.13	0.12	20.10	20.09	33.30	32.79	38.12	37.97	38.93	38.84
1000	0.13	0.12	20.02	20.00	33.22	32.88	37.97	37.94	38.79	38.75
1020	0.13	0.13	19.86	19.84	33.42	32.91	37.87	37.71	38.71	38.62
1040	0.14	0.13	19.70	19.69	33.83	33.17	37.74	37.60	38.62	38.48
1050	0.14	0.13	19.62	19.61	34.17	33.23	37.59	37.54	38.32	38.27
1100	0.15	0.14	19.24	19.21	33.90	33.15	37.32	37.21	38.07	38.08
1200	0.18	0.17	18.59	18.56	33.59	32.84	37.67	37.28	38.70	38.19
1300	0.19	0.19	17.96	17.94	36.74	34.59	38.12	38.08	39.35	39.67
1400	0.22	0.21	17.38	17.36	40.74	36.07	38.47	38.95	40.68	42.23
1500	0.24	0.22	16.90	16.88	41.54	36.00	39.04	41.87	43.13	48.52
1600	0.26	0.25	16.41	16.39	45.15	37.12	38.11	42.91	43.59	59.49
1700	0.29	0.28	15.94	15.93	46.74	39.51	35.76	40.96	42.02	48.28
1800	0.31	0.30	15.56	15.55	43.60	39.33	33.30	37.26	40.00	41.63
1900	0.35	0.34	15.21	15.19	48.16	39.34	31.32	34.55	38.62	39.03
2000	0.37	0.38	14.89	14.86	45.05	36.99	30.22	32.94	37.13	37.23
2100	0.39	0.36	14.55	14.54	36.00	46.05	29.41	32.20	35.62	35.73
2200	0.42	0.40	14.35	14.33	40.40	40.35	28.40	30.33	37.00	36.40
2300	0.44	0.43	14.06	14.05	37.13	42.26	28.77	30.36	38.80	38.10
2400	0.46	0.43	13.86	13.83	38.51	41.79	29.38	30.68	41.14	41.65
2500	0.46	0.46	13.58	13.59	34.54	61.18	30.50	32.05	47.46	51.78
2600	0.49	0.48	13.33	13.35	31.65	43.84	32.61	32.82	44.73	42.92
2700	0.52	0.51	13.13	13.13	28.75	34.92	33.97	32.08	37.88	36.06
2800	0.54	0.54	12.98	12.99	27.34	33.01	34.31	31.55	33.76	32.03
2900	0.56	0.55	12.81	12.81	26.23	30.88	32.21	29.68	30.40	29.54
3000	0.58	0.57	12.63	12.64	24.96	29.61	29.24	27.95	28.21	27.42
3500	0.69	0.67	12.02	11.96	20.24	21.51	22.79	22.83	23.18	23.64
4000	0.78	0.76	11.51	11.47	17.68	17.92	25.09	26.11	26.26	29.05
4500	0.84	0.84	11.35	11.37	16.67	15.74	31.00	39.72	34.00	37.17
5000	0.91	0.92	11.50	11.53	16.75	15.32	29.52	34.37	29.50	30.36
5500	0.97	0.96	11.93	12.03	13.91	14.53	34.91	34.97	29.87	31.29
6000	1.05	1.05	12.44	12.74	10.10	12.07	30.34	26.46	25.89	28.06

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SYBD-20-13HP+

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Bi-Directional Coupler

SYBD-20-13HP+

Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = -55°C

FREQ. (MHz)	INSERTION LOSS		COUPLING		DIRECTIVITY		RETURN LOSS			
	(dB) IN-OUT	(dB) FWD-REV	(dB) IN-FWD	(dB) OUT-REV	(dB) IN-REV	(dB) OUT-FWD	(dB) IN	(dB) OUT	(dB) FWD	(dB) REV
500	0.01	0.06	25.80	25.77	30.78	31.47	44.64	45.23	44.56	44.09
600	0.01	0.05	24.24	24.23	31.01	31.07	49.93	47.87	52.95	47.46
700	0.02	0.04	22.94	22.92	31.38	30.94	65.20	52.75	58.80	48.95
725	0.03	0.04	22.64	22.62	31.39	30.86	55.04	51.37	57.46	49.15
750	0.03	0.03	22.36	22.34	31.47	30.86	51.42	49.23	50.96	46.71
775	0.03	0.03	22.09	22.07	31.39	30.87	49.54	47.41	47.25	44.52
790	0.04	0.03	21.94	21.91	31.69	31.21	47.92	46.65	45.85	44.02
800	0.04	0.03	21.83	21.80	32.03	31.12	47.47	45.75	45.03	43.55
820	0.03	0.04	21.61	21.59	31.74	31.23	45.39	45.00	44.13	43.00
840	0.04	0.04	21.41	21.39	31.89	31.44	44.08	44.18	43.67	42.69
850	0.04	0.03	21.31	21.29	31.91	31.26	43.49	43.61	42.99	42.54
860	0.04	0.03	21.21	21.19	31.90	31.29	43.40	43.23	42.69	42.18
870	0.04	0.03	21.11	21.09	31.98	31.39	43.10	42.79	42.23	41.91
880	0.05	0.03	21.03	21.00	32.01	31.54	42.77	42.61	41.90	41.73
890	0.05	0.03	20.93	20.90	32.18	31.74	42.56	42.15	41.60	41.31
900	0.05	0.02	20.84	20.81	32.20	31.61	42.12	41.70	40.97	41.08
920	0.06	0.01	20.68	20.65	32.40	32.41	41.49	41.02	40.61	40.48
940	0.07	0.01	20.49	20.46	32.90	32.19	40.84	40.47	40.15	40.44
950	0.07	0.00	20.40	20.37	32.77	31.98	40.42	40.13	39.83	40.56
960	0.07	0.01	20.31	20.29	32.86	32.06	40.29	39.80	39.93	40.50
970	0.07	0.00	20.23	20.20	32.84	32.33	39.82	39.57	40.10	40.31
980	0.07	0.00	20.14	20.12	32.88	32.13	39.50	39.29	39.95	40.11
990	0.08	0.00	20.06	20.03	32.88	32.11	39.21	38.95	39.75	39.88
1000	0.08	0.00	19.97	19.95	32.59	32.21	38.90	38.79	39.40	39.65
1020	0.08	0.00	19.81	19.78	32.65	32.40	38.44	38.25	38.77	39.10
1040	0.09	0.00	19.64	19.62	32.65	31.80	37.89	37.63	37.95	38.39
1050	0.09	0.00	19.56	19.54	32.38	31.77	37.56	37.48	37.62	37.88
1100	0.10	0.01	19.19	19.17	32.29	31.62	36.77	36.72	37.16	37.37
1200	0.12	0.03	18.52	18.48	33.91	33.11	36.24	36.30	36.63	36.74
1300	0.13	0.04	17.93	17.90	36.76	34.67	37.28	37.62	35.46	36.10
1400	0.16	0.05	17.30	17.28	39.31	35.21	36.41	36.98	37.31	38.33
1500	0.18	0.06	16.84	16.80	39.66	34.74	36.30	38.18	40.98	44.05
1600	0.20	0.07	16.40	16.36	37.18	33.11	38.25	44.56	45.25	50.77
1700	0.22	0.10	15.89	15.86	42.51	36.66	38.54	49.42	45.19	44.51
1800	0.24	0.12	15.48	15.46	40.27	37.43	34.47	39.49	38.10	42.55
1900	0.27	0.14	15.07	15.02	40.20	44.51	31.34	35.11	37.69	39.38
2000	0.28	0.17	14.74	14.71	40.68	45.02	29.68	33.27	33.70	36.47
2100	0.31	0.17	14.45	14.41	33.59	50.81	28.80	32.07	32.02	33.72
2200	0.33	0.20	14.24	14.20	34.35	40.40	27.43	30.06	34.15	33.89
2300	0.34	0.20	13.91	13.92	32.00	42.41	27.01	29.63	35.22	34.94
2400	0.36	0.20	13.71	13.67	34.41	43.62	27.56	29.88	40.38	38.58
2500	0.36	0.23	13.47	13.47	36.32	51.82	28.69	31.27	40.19	50.58
2600	0.40	0.23	13.19	13.18	30.13	41.04	31.32	33.09	58.17	40.94
2700	0.47	0.34	12.86	12.89	23.23	26.35	34.37	31.05	29.93	29.54
2800	0.44	0.28	12.80	12.82	28.13	33.42	32.52	31.21	33.11	30.93
2900	0.46	0.29	12.64	12.62	25.90	30.98	32.25	29.57	29.68	28.71
3000	0.46	0.30	12.50	12.48	25.56	28.33	28.48	27.90	29.65	28.41
3500	0.58	0.38	11.84	11.76	19.94	21.38	22.49	22.32	23.02	23.48
4000	0.65	0.42	11.32	11.27	18.32	18.29	24.53	25.40	24.91	26.93
4500	0.70	0.48	11.05	11.06	16.87	15.78	29.68	40.09	35.74	35.88
5000	0.78	0.51	11.12	11.17	16.98	15.06	27.66	31.70	27.82	28.39
5500	0.79	0.54	11.68	11.75	13.74	14.24	32.42	39.63	25.24	25.91
6000	0.84	0.58	12.09	12.36	10.56	13.06	30.41	27.19	25.01	28.31

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Bi-Directional Coupler

SYBD-20-13HP+

Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = +100°C

FREQ. (MHz)	INSERTION LOSS		COUPLING		DIRECTIVITY		RETURN LOSS			
	(dB) IN-OUT	(dB) FWD-REV	(dB) IN-FWD	(dB) OUT-REV	(dB) IN-REV	(dB) OUT-FWD	(dB) IN	(dB) OUT	(dB) FWD	(dB) REV
500	0.05	0.06	25.81	25.78	29.89	30.26	44.82	43.95	46.62	41.36
600	0.07	0.08	24.26	24.25	30.65	30.55	43.13	42.63	43.73	40.51
700	0.09	0.11	22.97	22.96	31.55	31.28	41.39	41.10	41.70	39.94
725	0.10	0.11	22.67	22.66	31.75	31.55	41.07	41.06	41.58	39.92
750	0.10	0.12	22.39	22.37	31.95	31.75	40.84	40.59	41.07	39.80
775	0.11	0.13	22.12	22.11	32.29	32.11	41.09	40.46	41.17	39.99
790	0.11	0.13	21.98	21.96	32.83	32.23	40.85	40.48	41.25	40.27
800	0.12	0.13	21.87	21.85	33.07	32.43	40.92	40.24	41.11	40.24
820	0.11	0.13	21.65	21.63	33.07	32.61	40.44	40.22	40.84	40.14
840	0.11	0.12	21.45	21.43	33.11	32.99	40.14	40.21	40.83	40.19
850	0.12	0.13	21.35	21.33	33.27	32.62	40.02	40.05	40.59	40.34
860	0.12	0.14	21.25	21.23	33.43	32.72	40.25	40.04	40.73	40.24
870	0.12	0.14	21.16	21.14	33.56	32.84	40.23	39.95	40.76	40.39
880	0.12	0.15	21.07	21.05	33.98	33.11	40.18	40.02	40.97	40.61
890	0.12	0.14	20.98	20.95	34.08	33.43	40.23	39.99	41.15	40.62
900	0.13	0.15	20.88	20.86	34.26	33.22	40.19	39.88	41.19	40.83
920	0.14	0.16	20.72	20.70	34.96	33.95	40.26	39.79	41.63	40.95
940	0.15	0.17	20.54	20.52	35.40	34.06	40.12	39.79	41.38	41.03
950	0.15	0.17	20.45	20.43	35.43	33.79	40.06	39.77	41.09	41.29
960	0.15	0.17	20.36	20.34	35.72	34.22	40.20	39.67	41.33	41.33
970	0.15	0.18	20.28	20.26	35.55	34.35	40.12	39.71	41.60	41.15
980	0.15	0.18	20.20	20.17	35.81	34.26	40.09	39.73	41.58	41.14
990	0.16	0.18	20.11	20.09	35.63	34.37	40.05	39.59	41.50	41.00
1000	0.16	0.18	20.03	20.01	35.68	34.56	40.06	39.69	41.37	41.04
1020	0.16	0.19	19.86	19.84	35.93	34.86	40.10	39.57	41.49	41.17
1040	0.18	0.19	19.70	19.69	36.40	34.35	40.22	39.52	41.56	41.12
1050	0.17	0.20	19.62	19.59	35.71	34.03	40.02	39.45	41.35	40.80
1100	0.19	0.21	19.25	19.23	35.94	34.40	40.57	39.60	42.06	41.74
1200	0.21	0.24	18.59	18.55	37.83	35.86	41.29	39.78	44.85	43.30
1300	0.23	0.26	18.00	17.98	46.28	39.75	41.99	41.47	48.40	48.42
1400	0.25	0.29	17.38	17.37	43.00	40.16	40.99	41.49	48.36	52.48
1500	0.28	0.31	16.92	16.89	55.33	41.61	39.70	41.95	48.04	59.07
1600	0.31	0.34	16.49	16.48	46.13	37.83	37.14	39.34	45.56	46.60
1700	0.33	0.37	16.00	15.98	42.90	43.98	35.09	37.26	43.54	47.39
1800	0.36	0.40	15.59	15.59	38.26	48.98	33.74	36.02	43.49	42.94
1900	0.39	0.43	15.18	15.15	33.82	41.43	32.82	35.45	43.54	44.55
2000	0.40	0.47	14.90	14.88	36.94	47.00	31.93	34.68	41.96	41.47
2100	0.44	0.49	14.61	14.59	34.79	41.07	31.61	33.40	46.56	42.64
2200	0.46	0.53	14.41	14.39	37.63	38.75	31.07	32.72	54.64	47.39
2300	0.48	0.54	14.12	14.10	37.44	43.41	32.14	33.23	56.71	57.49
2400	0.52	0.56	13.89	13.87	39.42	43.59	32.97	32.87	44.78	50.06
2500	0.52	0.60	13.69	13.69	37.04	36.62	33.54	33.64	42.27	41.56
2600	0.56	0.61	13.42	13.41	33.96	41.64	34.08	32.30	36.74	35.84
2700	0.62	0.71	13.36	13.42	26.83	27.44	36.75	30.58	37.47	34.20
2800	0.60	0.69	13.05	13.11	29.65	34.75	33.24	31.04	33.49	31.84
2900	0.63	0.71	12.88	12.90	27.54	31.82	31.37	29.52	30.53	29.78
3000	0.65	0.74	12.73	12.75	26.04	30.34	28.92	28.61	28.41	28.16
3500	0.78	0.88	12.15	12.08	21.35	22.64	23.73	24.33	24.43	25.36
4000	0.89	0.98	11.72	11.67	17.80	17.87	26.20	27.60	27.13	30.08
4500	0.99	1.12	11.51	11.56	16.87	15.83	33.72	33.73	44.14	41.07
5000	1.08	1.21	11.76	11.78	16.28	14.91	32.03	36.77	31.35	32.58
5500	1.16	1.30	12.25	12.36	13.28	13.39	33.05	29.83	28.88	31.47
6000	1.26	1.42	12.83	13.16	9.84	11.62	28.94	26.25	25.34	26.09

REV. X1

SYBD-20-13HP+

090203

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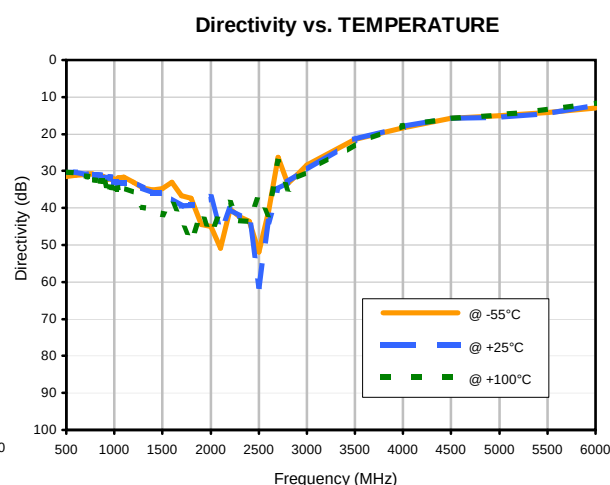
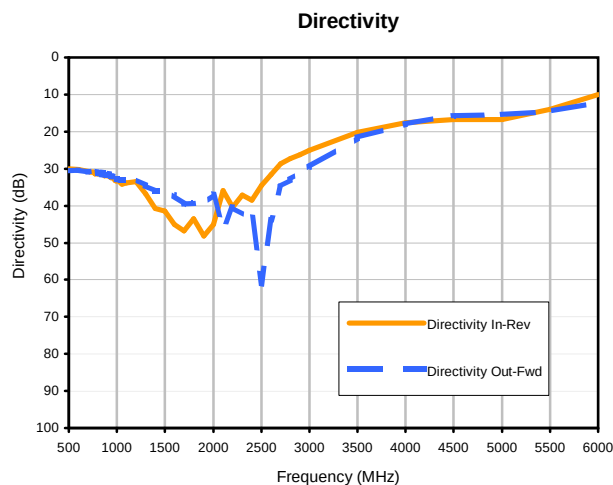
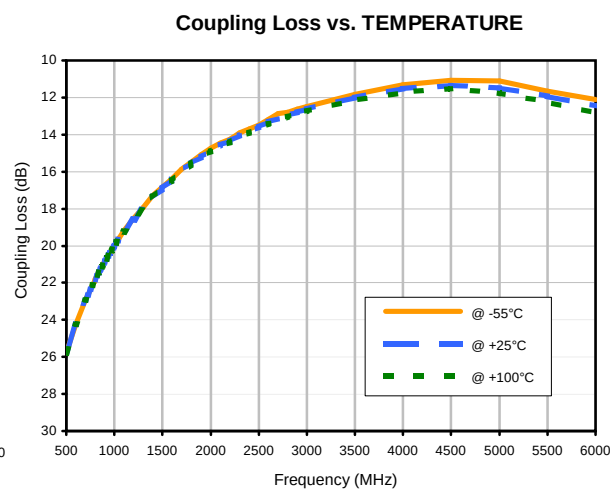
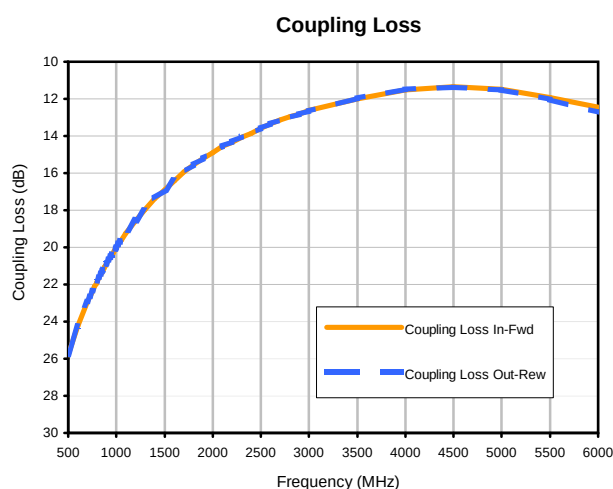
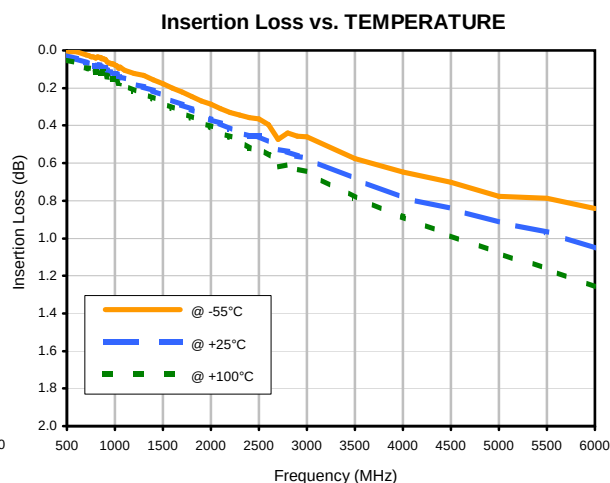
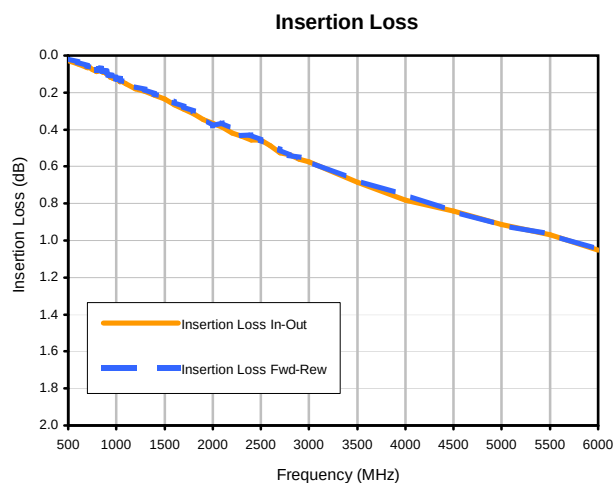
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Bi-Directional Coupler

Typical Performance Curves

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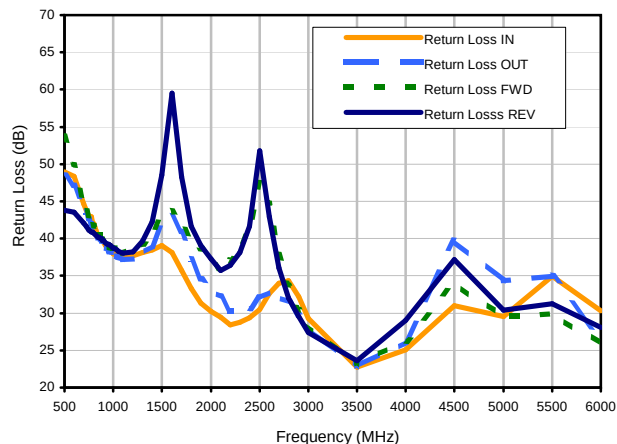


Bi-Directional Coupler

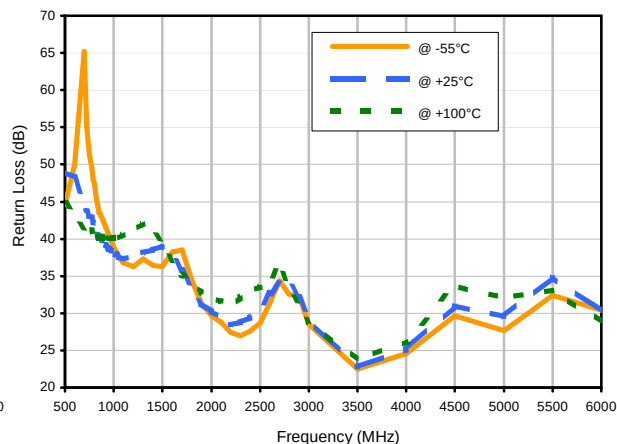
Typical Performance Curves

SYBD-20-13HP+

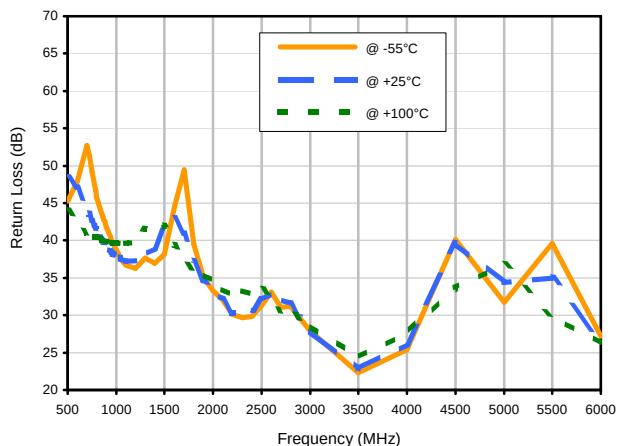
Return Loss



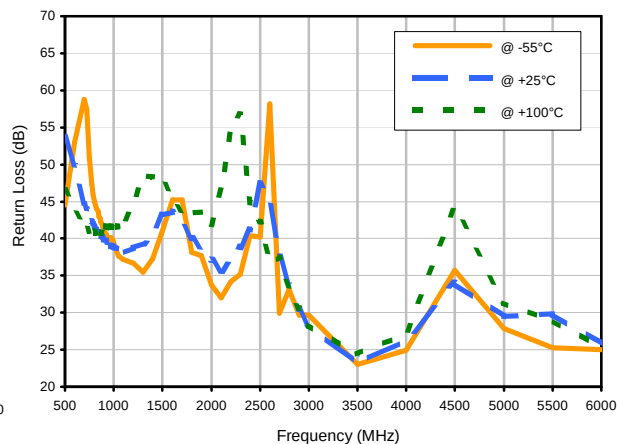
Return Loss In vs. TEMPERATURE



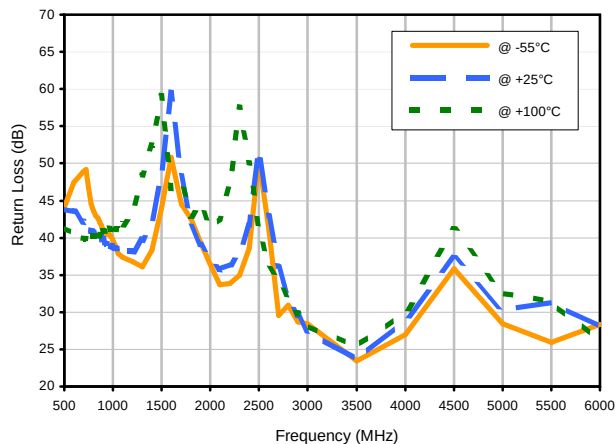
Return Loss Out vs. TEMPERATURE



Return Loss Fwd vs. TEMPERATURE



Return Loss Rev vs. TEMPERATURE



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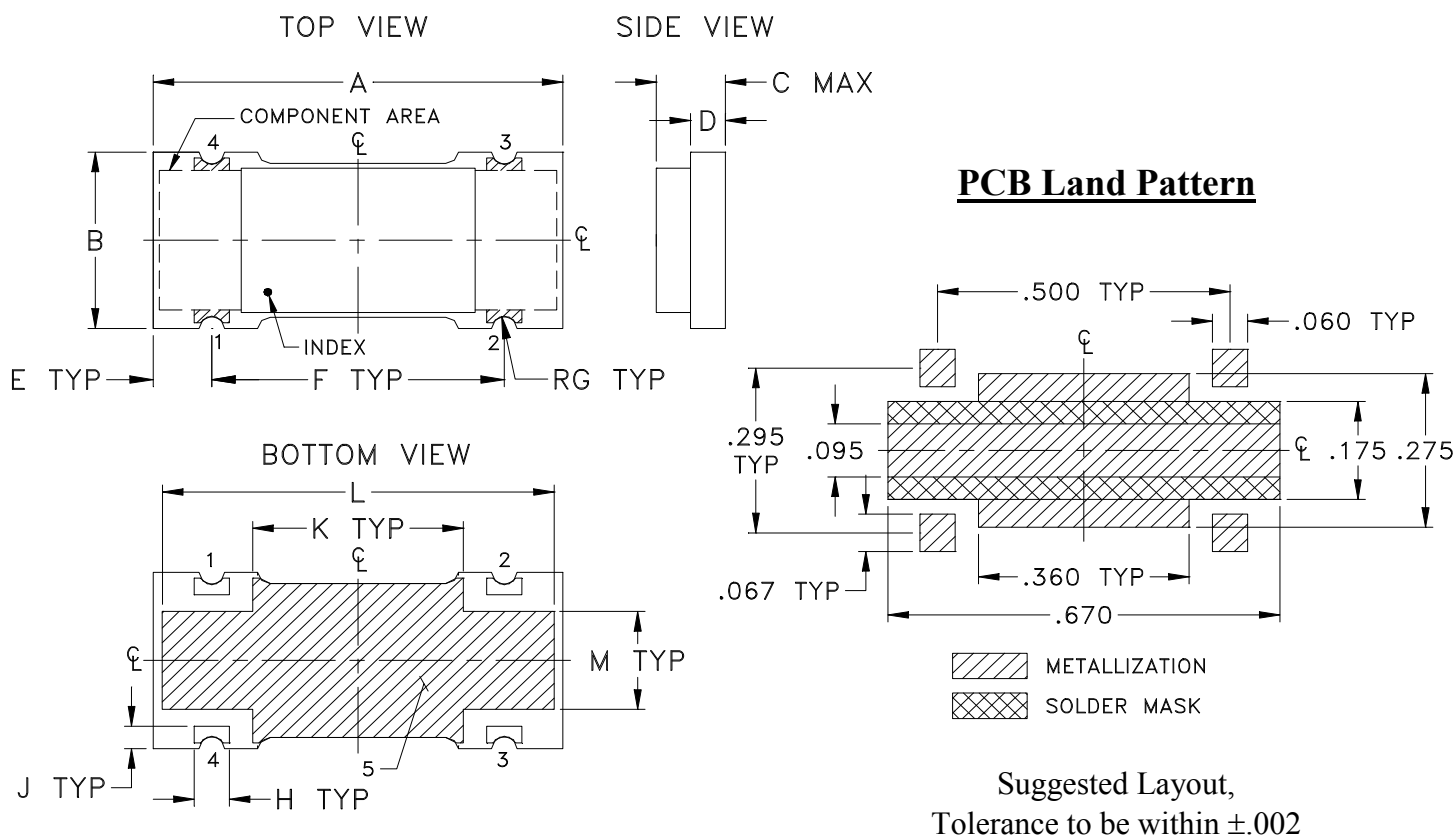


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Outline Dimensions



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	WT, GRAM
JB1233	.70 (17.78)	.32 (8.13)	.13 (3.30)	.060 (1.52)	.100 (2.54)	.500 (12.70)	.022 (0.56)	.060 (1.52)	.040 (1.02)	.360 (9.14)	.670 (17.02)	.175 (4.45)	0.68

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

Notes:

- Open style, Base material: Printed wiring laminate.
- 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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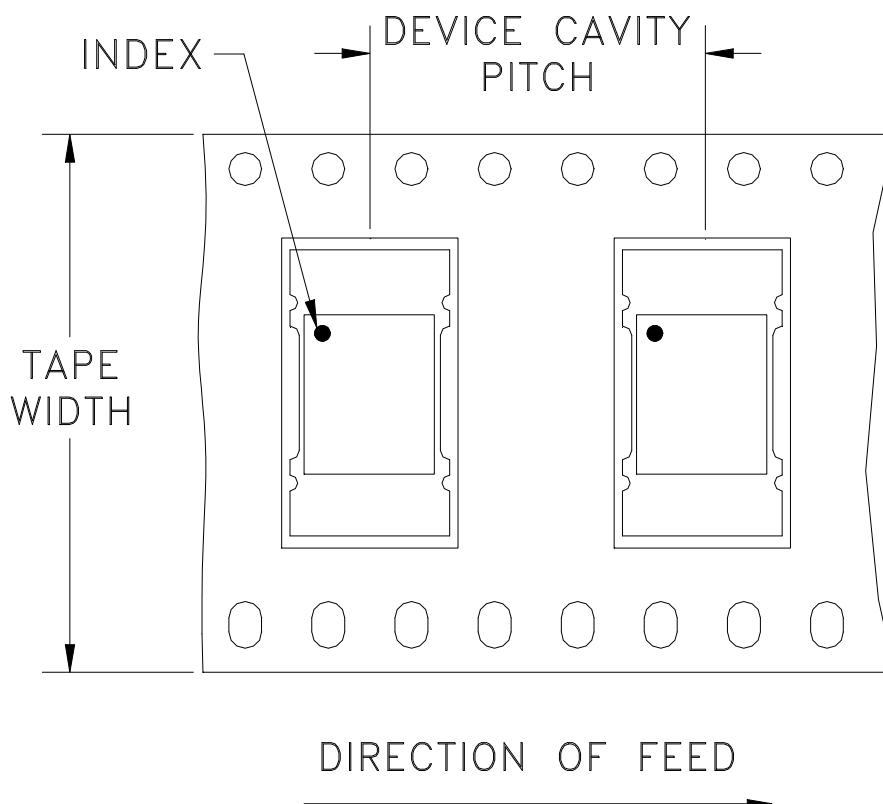
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Tape & Reel Packaging TR-F84

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
32	12	13	500

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



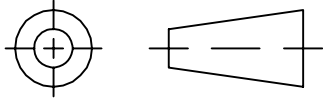
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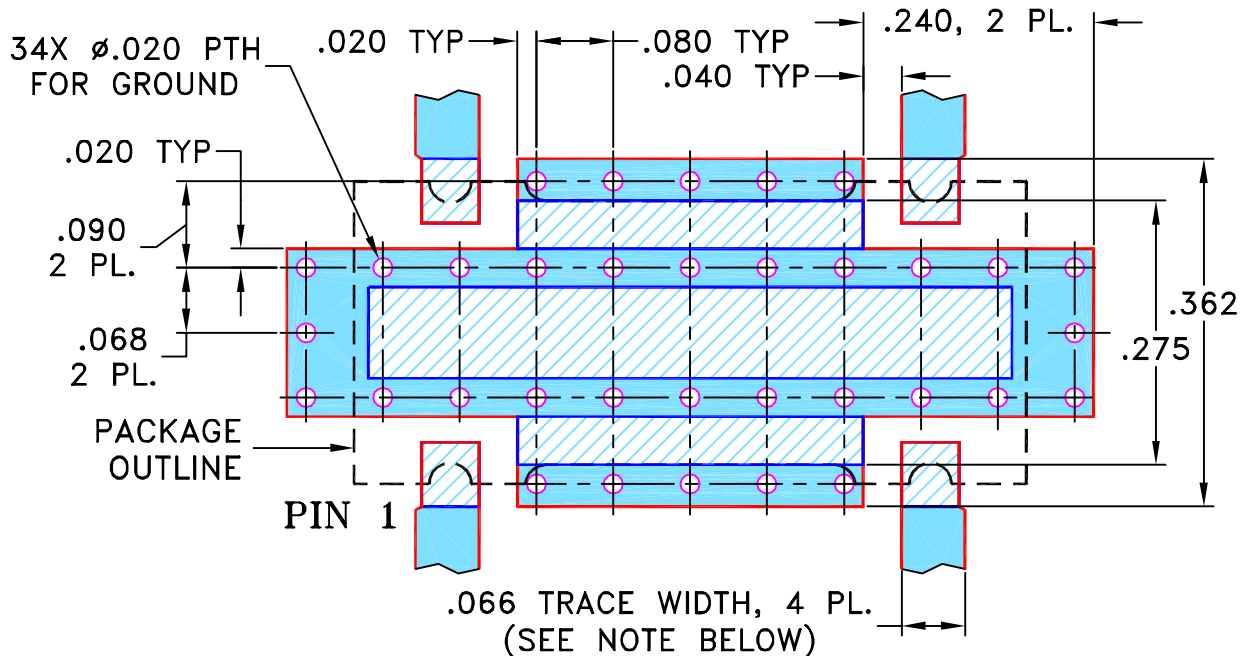
THIRD ANGLE PROJECTION



REVISIONS

REV OR	ECN No.	DESCRIPTION	DATE	DR	AUTH
	M109017	NEW RELEASE	12/29/06	MMG	WP

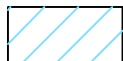
SUGGESTED MOUNTING CONFIGURATION FOR
JB1233 CASE STYLE, "rw" PIN CONNECTION



- 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 $\pm$.005ANGLES $\pm$ FRACTIONS $\pm$

DRAWN

MMG

12/21/06

CHECKED

AV

12/29/06

APPROVED

WP

12/29/06



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Brooklyn NY 11235

PL, rw, JB1233, SYBD, TB-398

SIZE

A

CODE IDENT

15542

DRAWING NO:

98-PL-260

REV:

OR

FILE:

98PL260

SCALE:

5:1

SHEET:

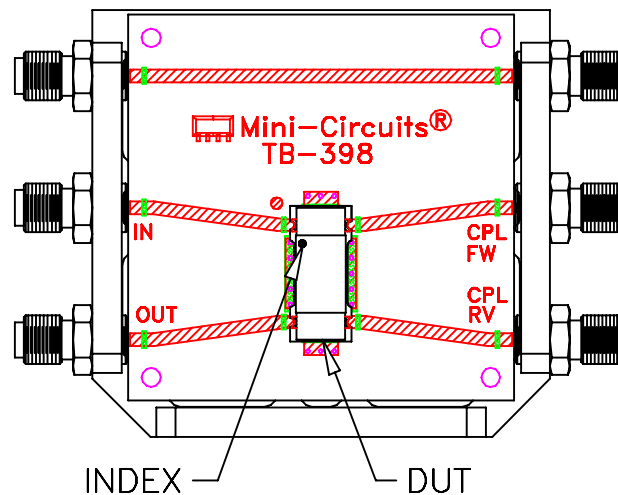
1 OF 1

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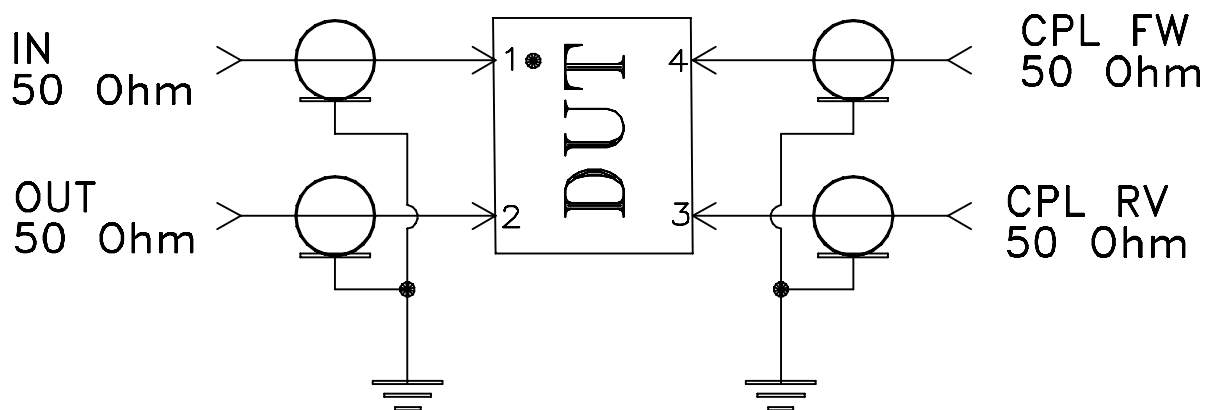
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ASHEETA1.DWG REV:A DATE:01/12/95

Evaluation Board and Circuit



TB-398



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	-55° to 100°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