Surface Mount

Power Splitter/Combiner

SBD-4-25+

4 Way-0° 50Ω 1800 to 2600 MHz

Generic photo used for illustration purposes only

CASE STYLE: SM34

+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
7"	10, 20, 50, 100, 200
13"	500

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	10W max.
Internal Dissipation	0.375W max.

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

Pin Connections

SUM PORT	4
PORT 1	8
PORT 2	10
PORT 3	12
PORT 4	14
GROUND	2,3,5,6,9,13
NOT USED	1,7,11

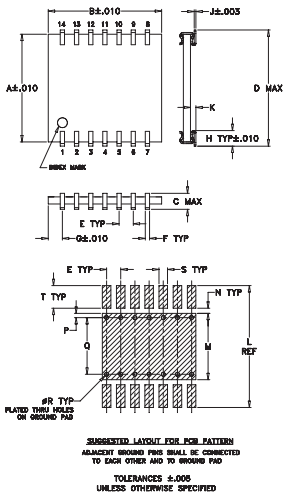
Features

- wideband frequency, 1800 to 2600 MHz
- high isolation, 20 dB typ.
- good input port matching VSWR, 1.26 typ.
- good output port matching VSWR, 1.26 typ.
- high power handling
- aqueous washable
- protected by U.S Patent 6,819,202

Applications

- PCS
- ISM
- WLAN
- VMTS

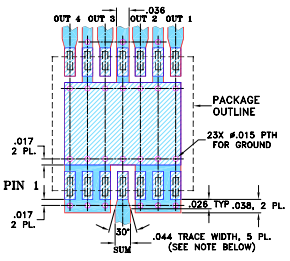
Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	
.380	.400	.070	.420	.050	.015	.050	.060	.006	
9.65	10.16	1.78	10.67	1.27	0.38	1.27	1.52	0.15	
K	L	M	N	P	Q	R	S	T	wt
.020	.430	.234	.018	.015	.200	.014	.030	.080	grams
0.51	10.92	5.94	0.46	0.38	5.08	0.36	0.76	2.03	0.3

Demo Board MCL P/N: TB-85
Suggested PCB Layout (PL-142)



NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020 ± .0015; 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

DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Electrical Specifications

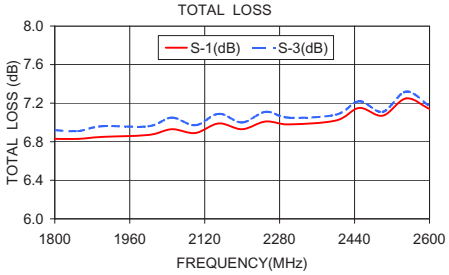
FREQ. RANGE (MHz)	ISOLATION (dB)		INSERTION LOSS (dB) ABOVE 6.0 dB		PHASE UNBALANCE (Degrees)	AMPLITUDE UNBALANCE (dB)	
f_L-f_U	Typ.	Min	Typ.	Max.	Max.	Typ.	Max.
1800-2600	**20**	**12**	**1.0**	**1.9**	**8**	**0.2**	**0.7**
1800-2000	18	12	0.9	1.4	6	0.15	0.4
2100-2200	21	15	0.9	1.4	6	0.15	0.4
2200-2400	22	15	1.0	1.6	7	0.15	0.6
2400-2500	22	16	1.0	1.8	7	0.25	0.7

Typical Performance Data

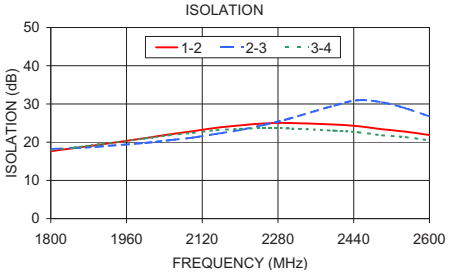
Freq. (MHz)	Total Loss[1] (dB)				Amp. Unbal. (dB)	Isolation (dB)			Phase Unbal. (deg.)	VSWR S	VSWR 1	VSWR 2	VSWR 3	VSWR 4
	S-1	S-2	S-3	S-4		1-2	2-3	3-4						
1800.00	6.83	6.80	6.92	6.82	0.13	17.65	18.21	17.86	2.17	1.35	1.20	1.10	1.13	1.20
1850.00	6.83	6.80	6.91	6.84	0.12	18.45	18.48	18.58	2.43	1.35	1.21	1.11	1.15	1.21
1900.00	6.85	6.83	6.96	6.86	0.13	19.29	18.86	19.40	2.26	1.35	1.23	1.12	1.16	1.22
2000.00	6.87	6.83	6.96	6.86	0.13	21.08	19.81	20.98	2.35	1.32	1.25	1.14	1.19	1.23
2050.00	6.93	6.89	7.05	6.96	0.16	22.04	20.51	21.82	2.09	1.30	1.26	1.15	1.20	1.24
2100.00	6.89	6.83	6.97	6.88	0.14	22.87	21.19	22.42	2.52	1.29	1.28	1.15	1.21	1.24
2150.00	6.99	6.92	7.09	7.02	0.17	23.76	22.17	23.15	2.09	1.27	1.28	1.16	1.22	1.25
2200.00	6.93	6.87	7.00	6.92	0.13	24.39	23.19	23.45	2.58	1.26	1.29	1.17	1.23	1.25
2250.00	7.01	6.94	7.11	7.03	0.17	24.89	24.52	23.75	2.19	1.25	1.29	1.17	1.24	1.25
2300.00	6.98	6.90	7.05	6.99	0.15	25.03	26.03	23.63	2.49	1.25	1.29	1.18	1.24	1.25
2400.00	7.02	6.93	7.08	7.07	0.15	24.61	29.63	22.99	2.67	1.28	1.29	1.19	1.25	1.24
2450.00	7.15	7.04	7.22	7.15	0.18	24.16	30.97	22.58	2.43	1.31	1.30	1.19	1.24	1.23
2500.00	7.07	6.96	7.11	7.13	0.17	23.40	30.43	21.81	2.90	1.35	1.29	1.20	1.24	1.23
2550.00	7.25	7.12	7.32	7.28	0.20	22.75	28.84	21.33	2.43	1.38	1.29	1.20	1.23	1.21
2600.00	7.14	7.02	7.17	7.20	0.18	21.87	26.73	20.46	3.20	1.43	1.28	1.21	1.23	1.21

1. Total Loss = Insertion Loss + 6dB splitter loss.

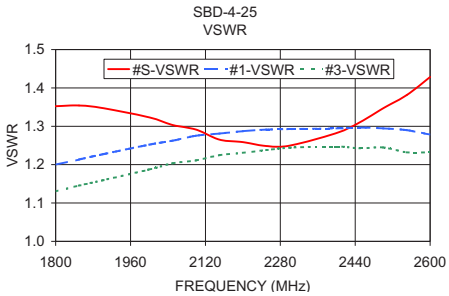
SBD-4-25
TOTAL LOSS



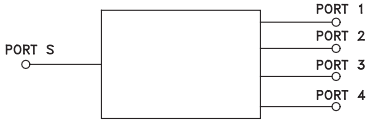
SBD-4-25
ISOLATION



SBD-4-25
VSWR



electrical schematic



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/MCLStore/terms.jsp

4 Way-0° Power Splitter/Combiner SBD-4-25+

Typical Performance Data

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

FREQ. (MHz)	TOTAL LOSS[1] (dB)				AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION (dB)			VSWR (:1)				
	S-1	S-2	S-3	S-4			1-2	2-3	3-4	S	1	2	3	4
300	7.99	7.92	7.96	7.96	0.07	0.25	10.32	10.34	6.24	3.58	2.56	2.54	2.55	2.56
400	7.93	7.85	7.88	7.90	0.08	0.25	11.36	11.41	6.06	3.45	2.20	2.17	2.18	2.21
500	7.84	7.75	7.77	7.81	0.09	0.26	12.35	12.45	6.11	3.29	1.93	1.89	1.90	1.94
600	7.72	7.63	7.64	7.71	0.09	0.13	13.28	13.44	6.32	3.11	1.73	1.67	1.68	1.73
700	7.58	7.49	7.49	7.58	0.09	0.22	14.14	14.36	6.65	2.90	1.57	1.51	1.52	1.56
800	7.42	7.33	7.32	7.43	0.10	0.31	14.95	15.22	7.08	2.68	1.44	1.38	1.38	1.43
900	7.26	7.17	7.16	7.27	0.11	0.49	15.70	16.02	7.58	2.44	1.34	1.27	1.28	1.32
1000	7.09	6.99	6.99	7.09	0.10	0.66	16.43	16.75	8.15	2.20	1.25	1.20	1.19	1.24
1100	6.93	6.83	6.84	6.92	0.10	0.72	17.14	17.44	8.80	1.97	1.19	1.13	1.13	1.17
1200	6.79	6.69	6.71	6.77	0.11	0.85	17.86	18.09	9.53	1.75	1.14	1.09	1.08	1.12
1300	6.68	6.57	6.60	6.64	0.11	0.91	18.63	18.72	10.32	1.55	1.10	1.07	1.05	1.08
1400	6.60	6.49	6.54	6.56	0.11	1.07	19.48	19.38	11.15	1.38	1.07	1.06	1.03	1.05
1500	6.55	6.45	6.49	6.50	0.10	1.13	20.44	20.11	11.99	1.25	1.05	1.06	1.04	1.03
1550	6.54	6.43	6.48	6.49	0.10	1.15	20.98	20.53	12.42	1.20	1.05	1.07	1.05	1.02
1600	6.53	6.44	6.49	6.49	0.09	1.16	21.58	20.98	12.82	1.17	1.04	1.08	1.05	1.01
1650	6.54	6.45	6.50	6.50	0.08	1.21	22.22	21.49	13.22	1.17	1.03	1.09	1.07	1.01
1700	6.54	6.47	6.51	6.51	0.08	1.15	22.95	22.04	13.60	1.18	1.03	1.10	1.08	1.02
1750	6.56	6.49	6.53	6.52	0.07	1.26	23.75	22.68	13.97	1.21	1.03	1.11	1.09	1.03
1800	6.58	6.52	6.56	6.55	0.06	1.26	24.66	23.42	14.34	1.24	1.04	1.12	1.10	1.05
1850	6.60	6.55	6.58	6.58	0.05	1.38	25.67	24.26	14.71	1.28	1.04	1.14	1.11	1.06
1900	6.61	6.59	6.61	6.61	0.03	1.51	26.84	25.22	15.09	1.31	1.05	1.15	1.12	1.07
1950	6.63	6.61	6.64	6.64	0.03	1.62	28.20	26.35	15.51	1.34	1.06	1.15	1.13	1.09
2000	6.64	6.64	6.66	6.67	0.03	1.63	29.82	27.72	15.97	1.36	1.06	1.16	1.14	1.10
2050	6.66	6.67	6.68	6.70	0.04	1.69	31.80	29.39	16.49	1.37	1.07	1.17	1.15	1.11
2100	6.67	6.70	6.70	6.72	0.05	1.60	34.36	31.44	17.09	1.38	1.07	1.17	1.15	1.12
2150	6.68	6.71	6.71	6.73	0.05	1.63	38.01	34.27	17.78	1.38	1.08	1.17	1.15	1.12
2200	6.67	6.73	6.73	6.75	0.07	1.70	44.06	38.27	18.63	1.36	1.08	1.17	1.15	1.12
2250	6.67	6.74	6.72	6.74	0.07	1.76	53.55	44.05	19.65	1.34	1.07	1.16	1.14	1.12
2300	6.66	6.74	6.73	6.75	0.09	1.75	43.31	43.52	20.90	1.30	1.07	1.15	1.13	1.12
2350	6.65	6.74	6.73	6.76	0.11	1.76	37.86	37.95	22.45	1.26	1.06	1.14	1.13	1.11
2400	6.64	6.75	6.73	6.75	0.11	1.76	34.70	34.25	24.43	1.21	1.05	1.13	1.12	1.10
2450	6.64	6.75	6.73	6.75	0.12	1.86	32.37	31.68	26.94	1.15	1.03	1.12	1.11	1.09
2500	6.63	6.76	6.74	6.76	0.13	1.90	30.65	29.80	29.71	1.10	1.01	1.12	1.11	1.08
2550	6.64	6.78	6.76	6.78	0.14	1.97	29.33	28.36	30.63	1.08	1.01	1.13	1.13	1.08
2600	6.66	6.81	6.80	6.83	0.17	2.01	28.31	27.24	28.31	1.13	1.04	1.15	1.15	1.09
2650	6.70	6.86	6.85	6.88	0.18	2.00	27.50	26.44	25.33	1.21	1.07	1.19	1.19	1.11
2700	6.76	6.94	6.92	6.96	0.20	2.11	26.86	25.82	22.82	1.32	1.11	1.23	1.23	1.15
2750	6.85	7.04	7.01	7.06	0.22	2.23	26.36	25.39	20.82	1.46	1.15	1.29	1.28	1.20
2800	6.95	7.17	7.13	7.19	0.24	2.30	26.04	25.11	19.25	1.62	1.20	1.34	1.34	1.25
2850	7.10	7.33	7.28	7.36	0.26	2.42	25.79	25.01	17.99	1.79	1.25	1.41	1.41	1.31
2900	7.26	7.51	7.46	7.54	0.28	2.50	25.65	25.01	16.98	1.99	1.30	1.48	1.48	1.38
2950	7.45	7.72	7.66	7.75	0.30	2.64	25.60	25.14	16.18	2.21	1.36	1.55	1.55	1.45
3000	7.66	7.94	7.87	7.98	0.32	2.76	25.60	25.35	15.55	2.45	1.42	1.62	1.62	1.52
3100	8.11	8.43	8.34	8.45	0.34	2.83	25.80	26.02	14.72	2.97	1.54	1.76	1.77	1.66
3200	8.57	8.91	8.81	8.94	0.37	3.05	26.10	26.86	14.29	3.52	1.67	1.91	1.92	1.82
3300	8.99	9.32	9.23	9.35	0.36	3.09	26.48	27.98	14.27	3.99	1.81	2.04	2.06	1.96
3400	9.31	9.64	9.56	9.67	0.37	3.21	26.89	28.97	14.53	4.38	1.94	2.17	2.19	2.10
3500	9.50	9.81	9.75	9.86	0.36	3.28	27.19	29.84	15.13	4.56	2.07	2.28	2.32	2.24
3600	9.55	9.82	9.79	9.89	0.34	3.41	27.70	30.69	16.15	4.50	2.21	2.38	2.43	2.36
3700	9.44	9.66	9.66	9.76	0.31	3.53	28.23	31.24	17.73	4.22	2.33	2.46	2.53	2.46
3800	9.18	9.34	9.38	9.47	0.28	3.86	29.03	31.76	20.36	3.73	2.43	2.52	2.60	2.54
3900	8.80	8.91	8.95	9.06	0.26	3.94	30.51	32.51	25.55	3.09	2.51	2.55	2.64	2.58
4000	8.37	8.41	8.46	8.58	0.21	4.27	33.63	34.30	45.17	2.42	2.55	2.55	2.63	2.59
4100	8.00	7.98	8.01	8.17	0.19	4.43	40.99	39.37	23.69	1.81	2.56	2.52	2.60	2.56

[1] Total Loss = Insertion Loss+ 6dB Splitter Loss

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4 Way-0° Power Splitter/Combiner SBD-4-25+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = 0dBm @Temperature = -40°C

FREQ. (MHz)	TOTAL LOSS[1] (dB)				AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION (dB)			VSWR (:1)				
	S-1	S-2	S-3	S-4			1-2	2-3	3-4	S	1	2	3	4
300	7.95	7.87	7.92	7.91	0.08	0.25	10.24	10.26	6.19	3.63	2.59	2.57	2.59	2.60
400	7.88	7.79	7.82	7.83	0.09	0.32	11.27	11.32	6.01	3.49	2.24	2.20	2.22	2.24
500	7.78	7.69	7.71	7.75	0.09	0.47	12.25	12.34	6.05	3.34	1.96	1.91	1.93	1.96
600	7.64	7.57	7.56	7.63	0.09	0.42	13.17	13.32	6.27	3.16	1.75	1.69	1.71	1.75
700	7.49	7.43	7.40	7.50	0.10	0.38	14.00	14.23	6.58	2.95	1.58	1.53	1.53	1.58
800	7.33	7.26	7.23	7.34	0.11	0.31	14.79	15.08	6.99	2.73	1.45	1.39	1.39	1.44
900	7.14	7.08	7.05	7.16	0.11	0.41	15.54	15.87	7.47	2.48	1.34	1.29	1.28	1.33
1000	6.97	6.90	6.87	6.97	0.10	0.54	16.26	16.61	8.03	2.23	1.26	1.20	1.20	1.24
1100	6.81	6.73	6.72	6.80	0.10	0.49	16.97	17.30	8.66	2.00	1.19	1.14	1.13	1.17
1200	6.67	6.57	6.58	6.64	0.10	0.66	17.68	17.94	9.36	1.78	1.14	1.09	1.08	1.12
1300	6.55	6.44	6.47	6.50	0.12	0.76	18.43	18.56	10.13	1.58	1.10	1.06	1.05	1.08
1400	6.46	6.35	6.40	6.40	0.11	1.02	19.25	19.20	10.95	1.40	1.07	1.06	1.04	1.05
1500	6.41	6.30	6.34	6.34	0.11	1.23	20.17	19.91	11.78	1.27	1.06	1.06	1.05	1.03
1550	6.39	6.29	6.33	6.33	0.10	1.40	20.70	20.31	12.19	1.23	1.05	1.07	1.05	1.02
1600	6.38	6.29	6.33	6.32	0.10	1.50	21.27	20.74	12.59	1.20	1.04	1.08	1.06	1.02
1650	6.38	6.29	6.34	6.32	0.09	1.63	21.90	21.22	12.97	1.18	1.04	1.09	1.07	1.01
1700	6.38	6.30	6.34	6.32	0.08	1.75	22.60	21.76	13.35	1.19	1.04	1.10	1.08	1.02
1750	6.38	6.32	6.35	6.33	0.06	1.89	23.38	22.38	13.70	1.21	1.03	1.12	1.09	1.03
1800	6.40	6.35	6.37	6.36	0.04	1.96	24.27	23.09	14.05	1.24	1.04	1.13	1.10	1.04
1850	6.41	6.38	6.39	6.38	0.03	1.97	25.26	23.90	14.39	1.28	1.05	1.14	1.11	1.05
1900	6.42	6.41	6.41	6.41	0.01	2.05	26.42	24.85	14.74	1.31	1.05	1.15	1.12	1.07
1950	6.43	6.44	6.43	6.44	0.01	2.12	27.76	25.96	15.12	1.33	1.05	1.16	1.12	1.08
2000	6.44	6.47	6.44	6.47	0.02	2.14	29.33	27.27	15.55	1.36	1.05	1.17	1.13	1.09
2050	6.45	6.49	6.46	6.49	0.04	2.17	31.30	28.86	16.02	1.37	1.06	1.18	1.13	1.11
2100	6.46	6.51	6.47	6.51	0.05	2.09	33.77	30.83	16.58	1.37	1.06	1.18	1.13	1.12
2150	6.46	6.52	6.48	6.52	0.06	2.16	37.32	33.49	17.22	1.37	1.06	1.18	1.14	1.12
2200	6.46	6.53	6.49	6.52	0.07	2.21	43.25	37.01	17.98	1.35	1.07	1.17	1.14	1.12
2250	6.45	6.54	6.49	6.52	0.09	2.24	64.86	41.71	18.91	1.34	1.07	1.17	1.13	1.12
2300	6.45	6.54	6.50	6.53	0.09	2.24	43.99	42.10	20.05	1.31	1.08	1.16	1.13	1.11
2350	6.44	6.55	6.51	6.53	0.11	2.33	37.92	37.59	21.46	1.28	1.08	1.14	1.12	1.11
2400	6.43	6.55	6.49	6.52	0.12	2.36	34.43	33.99	23.22	1.23	1.07	1.13	1.11	1.10
2450	6.41	6.54	6.50	6.52	0.13	2.42	32.08	31.37	25.45	1.17	1.06	1.12	1.10	1.09
2500	6.40	6.55	6.50	6.53	0.15	2.52	30.36	29.51	28.03	1.12	1.05	1.12	1.10	1.08
2550	6.41	6.56	6.51	6.54	0.15	2.64	28.99	28.06	29.78	1.08	1.03	1.13	1.10	1.07
2600	6.41	6.58	6.53	6.57	0.17	2.64	27.92	26.93	28.59	1.10	1.00	1.14	1.12	1.07
2650	6.44	6.63	6.57	6.62	0.19	2.68	27.11	26.07	25.82	1.18	1.03	1.18	1.16	1.09
2700	6.49	6.68	6.63	6.69	0.21	2.75	26.43	25.44	23.21	1.29	1.07	1.22	1.21	1.13
2750	6.56	6.78	6.71	6.79	0.22	2.83	25.90	24.97	21.07	1.42	1.11	1.27	1.27	1.18
2800	6.66	6.89	6.83	6.90	0.23	2.85	25.53	24.68	19.41	1.58	1.17	1.33	1.33	1.23
2850	6.80	7.02	6.97	7.05	0.26	2.90	25.29	24.55	18.06	1.75	1.23	1.39	1.40	1.30
2900	6.96	7.20	7.15	7.23	0.27	2.92	25.15	24.54	17.00	1.95	1.30	1.46	1.48	1.36
2950	7.15	7.39	7.34	7.44	0.30	3.08	25.08	24.62	16.12	2.19	1.37	1.53	1.56	1.43
3000	7.37	7.62	7.57	7.67	0.31	3.16	25.09	24.81	15.45	2.44	1.44	1.61	1.66	1.50
3100	7.84	8.11	8.06	8.16	0.32	3.26	25.29	25.49	14.54	3.02	1.61	1.76	1.82	1.66
3200	8.30	8.58	8.53	8.63	0.33	3.45	25.63	26.38	14.10	3.60	1.75	1.91	2.00	1.82
3300	8.71	9.00	8.96	9.04	0.33	3.60	25.97	27.33	13.99	4.13	1.89	2.05	2.15	1.97
3400	9.03	9.33	9.28	9.38	0.34	3.84	26.30	28.22	14.15	4.58	1.99	2.19	2.28	2.11
3500	9.20	9.53	9.45	9.58	0.38	3.91	26.66	29.14	14.67	4.77	2.08	2.32	2.39	2.25
3600	9.22	9.56	9.47	9.55	0.34	3.78	26.98	29.94	15.55	4.72	2.18	2.43	2.47	2.38
3700	9.11	9.43	9.33	9.44	0.34	3.78	27.47	30.46	16.95	4.43	2.28	2.54	2.54	2.48
3800	8.85	9.14	9.04	9.14	0.30	3.61	28.03	30.59	19.20	3.95	2.37	2.61	2.60	2.56
3900	8.49	8.74	8.65	8.74	0.25	3.19	29.30	31.31	23.42	3.31	2.45	2.66	2.62	2.60
4000	8.06	8.23	8.16	8.26	0.20	3.10	31.80	32.73	37.45	2.63	2.53	2.65	2.63	2.60
4100	7.69	7.76	7.71	7.84	0.15	2.93	37.89	35.86	25.86	1.99	2.60	2.61	2.65	2.58

[1] Total Loss = Insertion Loss+ 6dB Splitter Loss

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4 Way-0° Power Splitter/Combiner SBD-4-25+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = 0dBm @Temperature = +85°C

FREQ. (MHz)	TOTAL LOSS[1] (dB)				AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION (dB)			VSWR (:1)				
	S-1	S-2	S-3	S-4			1-2	2-3	3-4	S	1	2	3	4
300	8.01	7.96	7.99	7.99	0.06	0.42	10.37	10.39	6.26	3.55	2.53	2.52	2.52	2.54
400	7.97	7.89	7.92	7.93	0.08	0.38	11.41	11.47	6.08	3.41	2.17	2.15	2.15	2.19
500	7.89	7.79	7.82	7.85	0.10	0.37	12.42	12.51	6.14	3.25	1.91	1.87	1.88	1.92
600	7.78	7.67	7.70	7.75	0.11	0.28	13.37	13.52	6.36	3.07	1.71	1.66	1.67	1.72
700	7.65	7.53	7.56	7.63	0.12	0.34	14.24	14.46	6.71	2.86	1.56	1.50	1.51	1.56
800	7.50	7.38	7.41	7.49	0.12	0.38	15.05	15.31	7.14	2.64	1.43	1.37	1.38	1.43
900	7.34	7.23	7.25	7.34	0.12	0.55	15.81	16.11	7.66	2.41	1.34	1.27	1.28	1.33
1000	7.18	7.07	7.09	7.18	0.11	0.72	16.55	16.83	8.24	2.18	1.26	1.19	1.20	1.24
1100	7.03	6.92	6.93	7.02	0.10	0.76	17.26	17.51	8.91	1.95	1.20	1.13	1.14	1.18
1200	6.88	6.79	6.80	6.88	0.09	0.92	17.99	18.16	9.65	1.73	1.14	1.09	1.09	1.12
1300	6.77	6.68	6.70	6.75	0.09	1.04	18.76	18.80	10.45	1.54	1.10	1.07	1.05	1.08
1400	6.70	6.60	6.63	6.67	0.09	1.15	19.62	19.46	11.30	1.37	1.07	1.06	1.03	1.05
1500	6.66	6.56	6.60	6.61	0.09	1.15	20.59	20.21	12.17	1.23	1.05	1.07	1.03	1.03
1550	6.65	6.56	6.61	6.60	0.08	1.17	21.15	20.64	12.61	1.18	1.04	1.07	1.04	1.02
1600	6.66	6.56	6.62	6.61	0.09	1.14	21.75	21.10	13.03	1.15	1.03	1.08	1.05	1.01
1650	6.66	6.57	6.64	6.62	0.09	1.16	22.41	21.61	13.44	1.15	1.02	1.09	1.06	1.01
1700	6.68	6.59	6.65	6.64	0.09	1.15	23.14	22.19	13.84	1.17	1.02	1.10	1.07	1.02
1750	6.70	6.62	6.68	6.66	0.09	1.27	23.95	22.83	14.23	1.20	1.02	1.11	1.09	1.04
1800	6.73	6.66	6.71	6.70	0.07	1.36	24.88	23.58	14.62	1.24	1.03	1.12	1.10	1.05
1850	6.75	6.69	6.74	6.73	0.07	1.41	25.89	24.43	15.01	1.28	1.04	1.13	1.12	1.07
1900	6.77	6.72	6.78	6.76	0.06	1.40	27.09	25.42	15.41	1.31	1.05	1.14	1.13	1.08
1950	6.80	6.75	6.81	6.80	0.06	1.54	28.47	26.60	15.86	1.34	1.07	1.15	1.14	1.10
2000	6.82	6.79	6.84	6.83	0.05	1.56	30.08	28.00	16.35	1.36	1.07	1.16	1.15	1.11
2050	6.83	6.82	6.86	6.86	0.04	1.62	32.10	29.71	16.91	1.38	1.08	1.16	1.16	1.12
2100	6.84	6.84	6.89	6.88	0.05	1.65	34.63	31.93	17.55	1.38	1.09	1.16	1.16	1.12
2150	6.85	6.87	6.90	6.90	0.05	1.74	38.09	34.91	18.31	1.37	1.09	1.16	1.16	1.13
2200	6.85	6.89	6.91	6.91	0.06	1.79	43.04	39.41	19.21	1.36	1.08	1.16	1.16	1.13
2250	6.84	6.90	6.91	6.91	0.07	1.82	46.66	48.12	20.31	1.33	1.08	1.15	1.15	1.13
2300	6.84	6.90	6.92	6.92	0.08	1.85	41.71	45.40	21.67	1.29	1.07	1.14	1.14	1.12
2350	6.83	6.90	6.92	6.93	0.10	1.85	37.36	38.27	23.40	1.24	1.05	1.13	1.13	1.11
2400	6.83	6.91	6.93	6.93	0.10	1.85	34.42	34.34	25.62	1.19	1.04	1.12	1.13	1.10
2450	6.82	6.92	6.94	6.94	0.11	1.94	32.33	31.76	28.52	1.14	1.02	1.12	1.12	1.09
2500	6.83	6.93	6.95	6.96	0.13	1.97	30.70	29.88	31.46	1.09	1.01	1.12	1.13	1.08
2550	6.85	6.96	6.98	6.98	0.13	2.05	29.45	28.48	31.29	1.08	1.03	1.13	1.14	1.08
2600	6.87	7.00	7.02	7.03	0.16	2.10	28.47	27.40	28.05	1.14	1.06	1.16	1.17	1.10
2650	6.92	7.06	7.08	7.10	0.17	2.11	27.71	26.59	24.95	1.23	1.10	1.19	1.21	1.13
2700	6.99	7.14	7.16	7.18	0.20	2.31	27.11	26.03	22.50	1.34	1.13	1.24	1.25	1.17
2750	7.08	7.26	7.25	7.29	0.21	2.44	26.65	25.62	20.58	1.47	1.17	1.29	1.30	1.22
2800	7.20	7.39	7.38	7.43	0.23	2.59	26.31	25.39	19.10	1.62	1.21	1.35	1.36	1.27
2850	7.34	7.55	7.53	7.60	0.25	2.69	26.13	25.30	17.90	1.79	1.26	1.42	1.41	1.33
2900	7.51	7.75	7.71	7.79	0.28	2.80	26.00	25.34	16.95	1.99	1.30	1.48	1.47	1.39
2950	7.70	7.97	7.91	8.01	0.30	2.85	25.97	25.48	16.18	2.20	1.35	1.56	1.54	1.46
3000	7.92	8.20	8.13	8.23	0.31	3.00	26.00	25.70	15.59	2.43	1.41	1.63	1.61	1.53
3100	8.37	8.70	8.61	8.73	0.36	3.08	26.23	26.42	14.81	2.93	1.51	1.77	1.74	1.67
3200	8.85	9.20	9.09	9.21	0.36	3.20	26.61	27.43	14.49	3.46	1.64	1.91	1.88	1.81
3300	9.28	9.63	9.53	9.64	0.36	3.14	27.03	28.53	14.53	3.93	1.78	2.04	2.02	1.96
3400	9.61	9.93	9.85	9.96	0.35	3.20	27.50	29.60	14.87	4.29	1.93	2.16	2.17	2.10
3500	9.81	10.08	10.05	10.15	0.34	3.31	27.98	30.63	15.61	4.44	2.08	2.27	2.31	2.24
3600	9.84	10.08	10.09	10.16	0.31	3.68	28.50	31.68	16.83	4.36	2.23	2.36	2.43	2.36
3700	9.71	9.87	9.94	10.02	0.31	3.77	29.23	32.27	18.61	4.02	2.35	2.44	2.53	2.46
3800	9.44	9.53	9.62	9.71	0.27	3.96	30.15	32.79	21.67	3.51	2.46	2.49	2.61	2.54
3900	9.05	9.07	9.19	9.28	0.23	4.09	32.01	33.88	28.12	2.86	2.52	2.52	2.63	2.59
4000	8.63	8.60	8.71	8.81	0.21	4.44	35.83	36.48	36.10	2.22	2.54	2.51	2.61	2.58
4100	8.30	8.22	8.30	8.43	0.22	4.70	41.52	43.98	22.09	1.67	2.51	2.48	2.55	2.55

[1] Total Loss = Insertion Loss+ 6dB Splitter Loss

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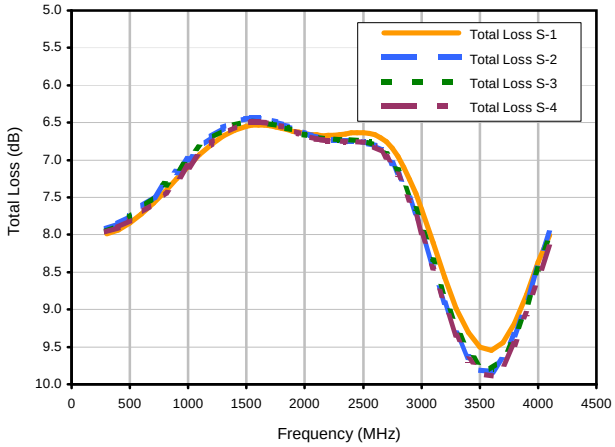
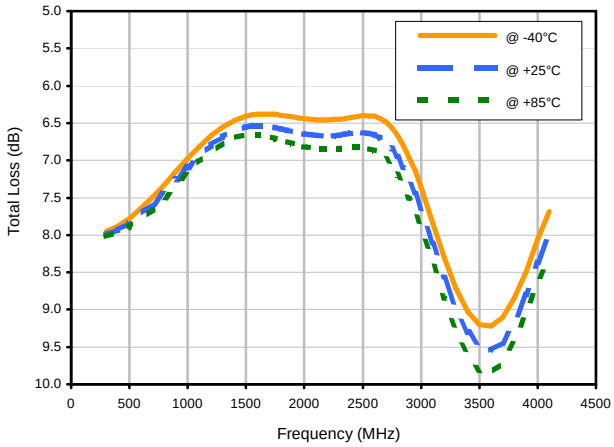
4 Way-0° Power Splitter/Combiner SBD-4-25+

Typical Performance Curves

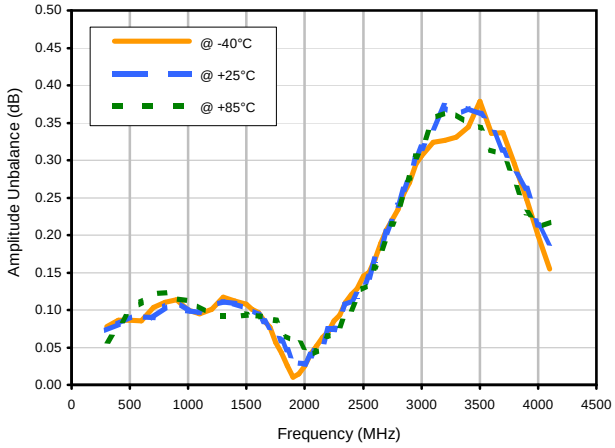
Total Loss



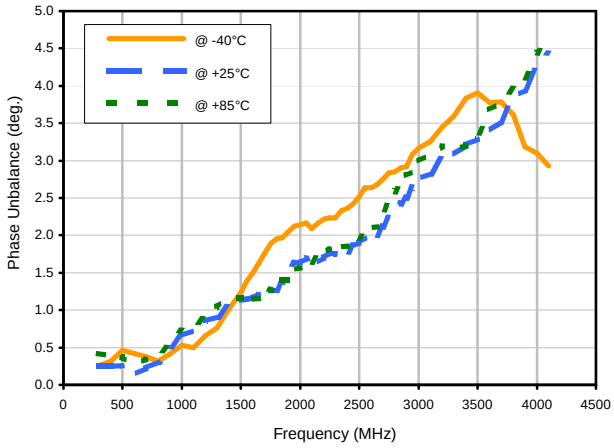
Total Loss S-1 vs. TEMPERATURE



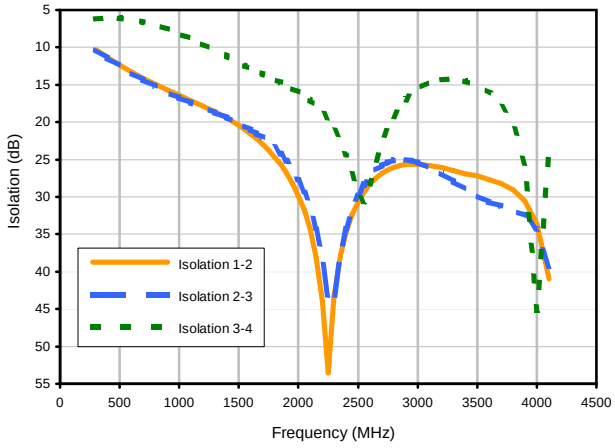
Amplitude Unbalance vs. TEMPERATURE



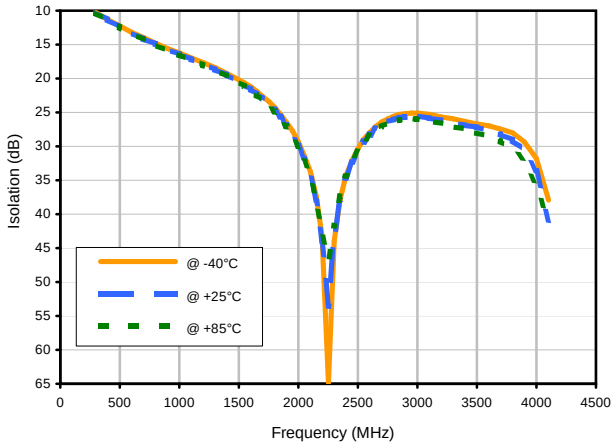
Phase Unbalance vs. TEMPERATURE



Isolation



Isolation 1-2 vs. TEMPERATURE



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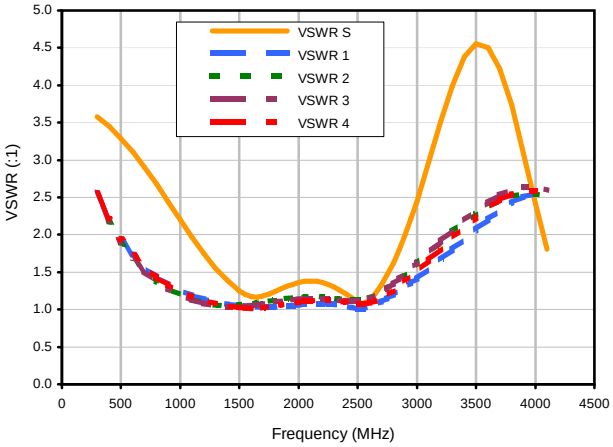
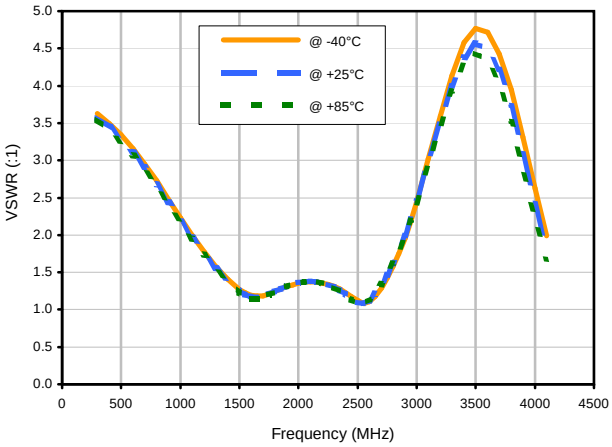
Typical Performance Curves

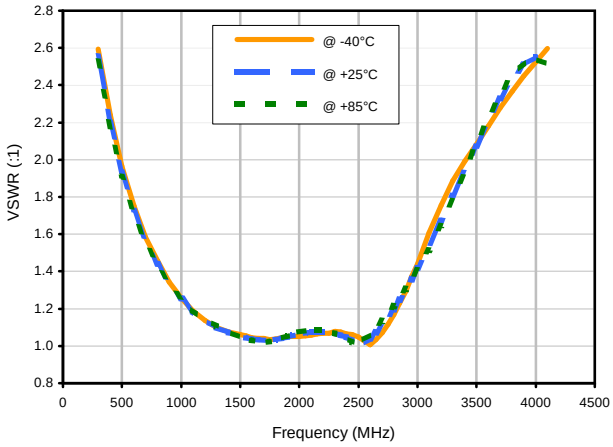
VSWR



VSWR SUM vs. TEMPERATURE



VSWR OUT1 vs. TEMPERATURE



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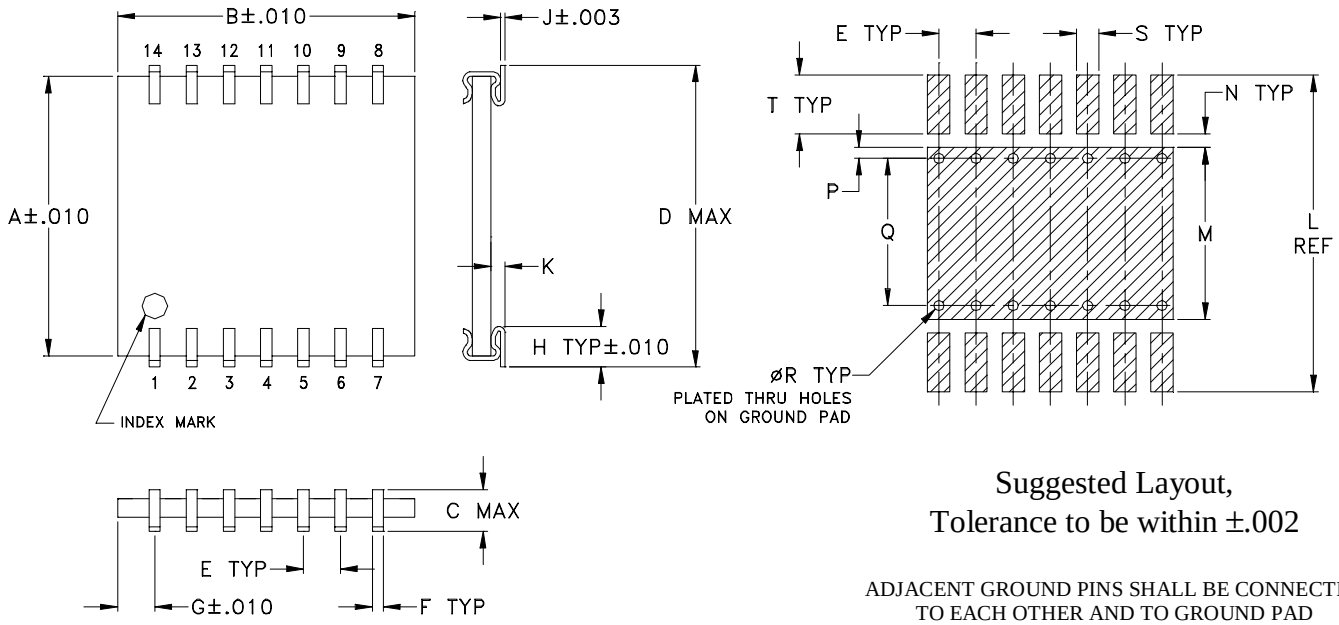
Case Style SM34

SM34

Outline Dimensions

PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

ADJACENT GROUND PINS SHALL BE CONNECTED TO EACH OTHER AND TO GROUND PAD

CASE #	A	B	C	D	E	F	G	H	J	K	L	M	N
SM34	.380 (9.65)	.400 (10.16)	.070 (1.78)	.420 (10.67)	.050 (1.27)	.015 (0.38)	.050 (1.27)	.060 (1.52)	.006 (0.15)	.020 (0.51)	.430 (10.92)	.234 (5.94)	.018 (0.46)

CASE #	P	Q	R	S	T	WT. GRAM
SM34	.015 (0.38)	.200 (5.08)	.014 (0.36)	.030 (0.76)	.080 (2.03)	.3

Dimensions are in inches (mm). Tolerances: ± .005

Notes:

1. Case material: Ceramic.
2. Termination finish:
   For RoHS Case Styles: Tin plate over Nickel plate.
   For RoHS-5 Case Styles: Tin-Lead plate.

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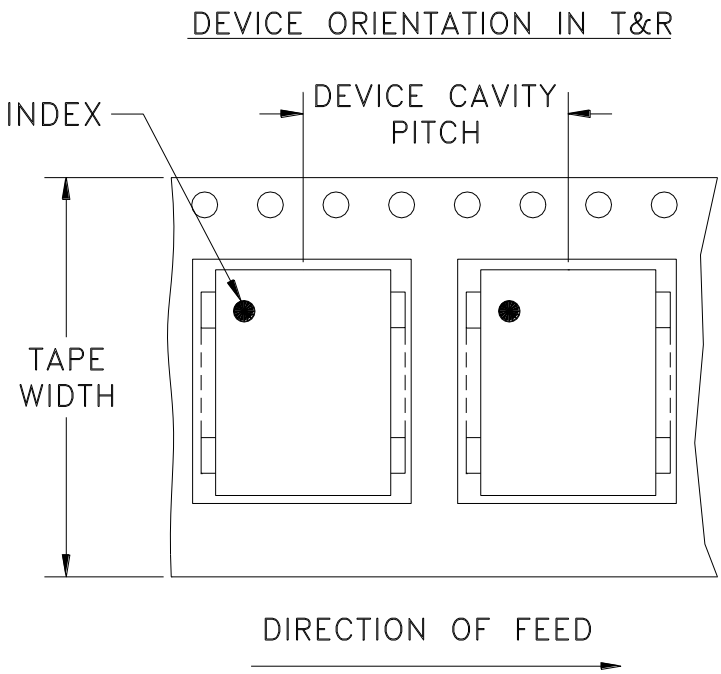
Tape & Reel Packaging TR-F10



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
24	16	7	10,20,50,100
		13	200,500

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

Note: Please consult individual model data sheet to determine device per reel availability.

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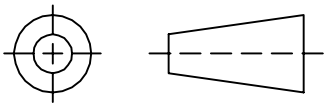
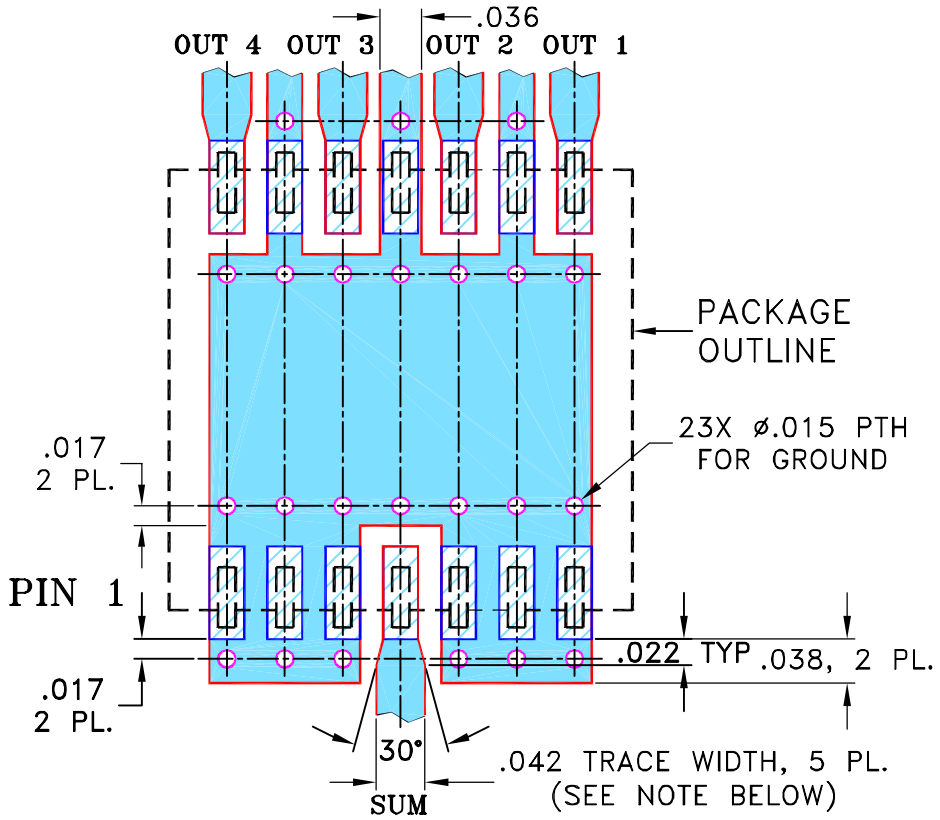
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M88804	NEW RELEASE	12/13/05	MMG	HY
A	M102713	.042 WAS .044 & ADDED "...WITH SMOBC"	01/25/06	MMG	HY

SUGGESTED MOUNTING CONFIGURATION FOR SM34 CASE STYLE, "lj" PIN CONNECTION.



NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020 ± .0015; 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 SOLDERMASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	MMG	12/05/05
TOLERANCES ON:	CHECKED	AV	12/13/05
2 PL DECIMALS ±	APPROVED	HY	12/13/05
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

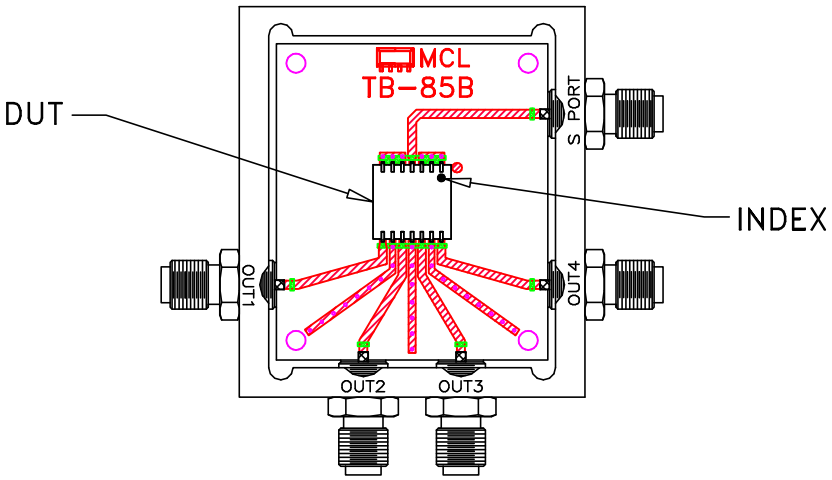
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, lj, SM34, SBD-4-25, TB-85

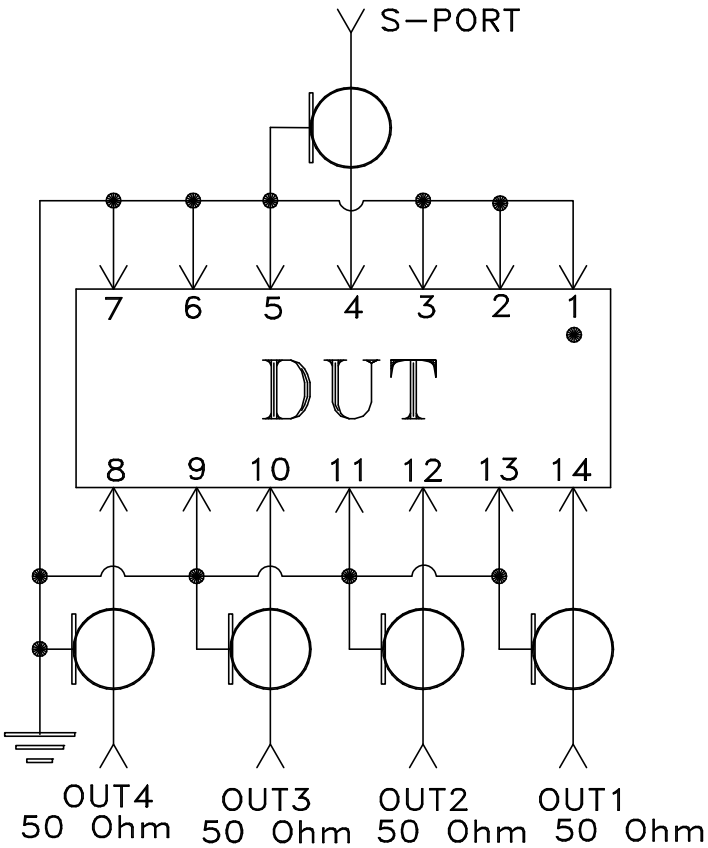
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-142	A

FILE:	SCALE:	SHEET:
98PL142	6:1	1 OF 1

Evaluation Board and Circuit



TB-85



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

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