

Surface Mount Low Pass Filter

SCLF-30+

50Ω DC to 30 MHz

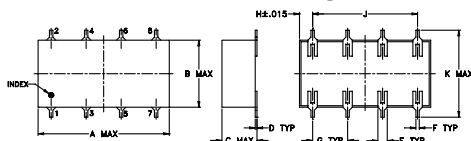
Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input	0.5W max.
Permanent damage may occur if any of these limits are exceeded.	

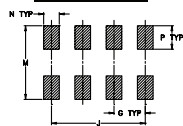
Pin Connections

INPUT	1
OUTPUT	8
GROUND	2,3,4,5,6,7

Outline Drawing



PCB Land Pattern

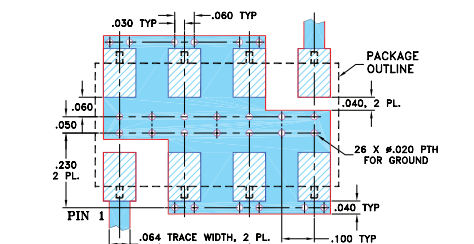


Outline Dimensions (inch)

A	B	C	D	E	F	G
0.75	0.38	0.28	0.01	0.05	0.02	0.2
19.05	9.65	7.11	0.25	1.27	0.51	5.08
H	J	K	M	N	P	wt
0.075	0.6	0.45	0.47	0.1	0.15	grams
1.91	15.24	11.43	11.94	2.54	3.81	1.60

Demo Board MCL P/N: TB-187+

Suggested PCB Layout (PL-049)



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

Features

- wide selection of cut-off frequencies
- excellent rejection
- custom models available

Applications

- defense communications
- receivers/transmitters
- harmonic rejection of VCOs



Generic photo used for illustration purposes only

CASE STYLE: YY161

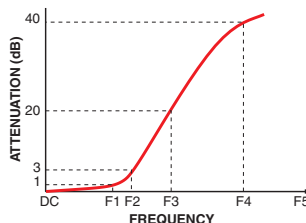
+RoHS Compliant

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

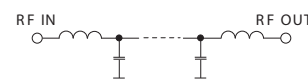
Electrical Specifications

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC-30	—	1.0	dB
	Freq. Cut-Off	F2	35	3.0	—	dB
	VSWR	DC-F1	DC-30	1.7	—	:1
Stop Band	Rejection Loss	F3-F4	47-61	20	—	dB
		F4-F5	61-200	40	—	dB
	VSWR	F3-F5	47-200	18	—	:1

Typical Frequency Response

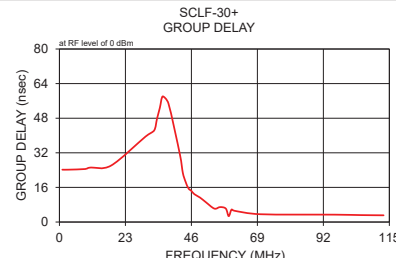
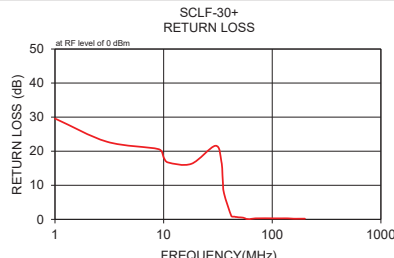
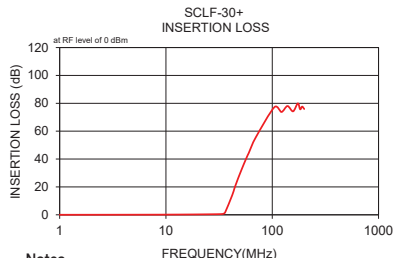


Electrical Schematic



Typical Performance Data

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Frequency (MHz)	Group Delay (nsec)
	$\bar{x}$	σ		
1.00	0.04	0.10	1.00	24.20
3.00	0.07	0.10	3.00	24.20
9.00	0.13	0.10	9.00	24.50
10.00	0.15	0.10	10.00	25.00
11.00	0.17	0.10	11.00	25.20
18.00	0.27	0.10	18.00	26.10
30.00	0.45	0.10	30.00	39.50
34.00	0.59	0.10	33.00	42.30
35.00	0.90	0.20	34.00	47.70
36.00	1.64	0.50	35.00	52.80
42.00	14.01	1.80	36.00	58.10
44.00	18.75	1.70	38.00	54.80
45.00	20.87	1.70	42.00	31.20
46.00	22.85	1.60	43.00	22.80
47.00	24.78	1.60	44.00	18.50
49.00	28.37	1.50	45.00	15.50
54.00	36.33	1.40	46.00	14.40
58.00	41.83	1.10	47.00	12.90
59.00	43.10	1.10	49.00	11.30
60.00	44.18	1.10	51.00	9.20
61.00	45.51	0.90	54.00	6.20
70.00	55.55	1.50	56.00	6.90
105.00	77.30	9.90	58.00	6.20
122.00	73.76	4.40	59.00	2.70
139.00	78.03	9.10	60.00	5.80
157.00	74.23	4.80	61.00	5.20
174.00	79.94	4.80	70.00	3.60
183.00	75.66	3.00	96.00	3.40
191.00	77.64	7.00	105.00	3.20
200.00	75.91	6.00	113.00	3.10



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.
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M151107
SCLF-30+
200813

Surface Mount Low Pass Filter

SCLF-30+

Typical Performance Data

FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@ -40° C	@ +25° C	@ +85° C	@ -40° C	@ +25° C	@ +85° C	@ -40° C	@ +25° C	@ +85° C
1	0.02	0.05	0.07	48.20	44.75	40.92	49.22	44.20	41.78
3	0.05	0.07	0.10	42.66	40.42	37.61	52.13	45.55	42.66
9	0.11	0.12	0.16	26.12	26.58	27.30	26.82	26.83	27.02
10	0.11	0.14	0.17	23.98	24.35	24.98	24.42	24.37	24.46
11	0.14	0.15	0.19	22.14	22.42	22.93	22.43	22.34	22.36
18	0.25	0.28	0.32	16.19	16.16	16.22	16.18	15.99	15.92
30	0.35	0.39	0.45	18.49	18.39	18.56	18.10	17.92	17.93
34	1.20	1.28	1.46	8.76	8.69	8.35	8.45	8.35	7.94
35	2.43	2.55	2.82	4.97	4.94	4.79	4.82	4.75	4.51
36	4.34	4.50	4.86	2.76	2.77	2.74	2.68	2.64	2.53
42	18.85	19.05	19.47	0.30	0.35	0.45	0.28	0.30	0.33
44	22.97	23.19	23.57	0.23	0.28	0.36	0.23	0.24	0.27
45	24.91	25.12	25.52	0.21	0.26	0.33	0.20	0.22	0.24
46	26.76	26.96	27.37	0.20	0.25	0.32	0.19	0.21	0.23
47	28.52	28.73	29.13	0.19	0.24	0.30	0.18	0.19	0.22
49	31.86	32.08	32.44	0.17	0.21	0.28	0.16	0.17	0.20
50	33.45	33.64	34.05	0.16	0.21	0.27	0.16	0.17	0.20
51	34.98	35.14	35.57	0.16	0.20	0.25	0.15	0.17	0.20
52	36.41	36.58	37.04	0.16	0.20	0.25	0.14	0.16	0.19
53	37.90	38.02	38.47	0.14	0.19	0.24	0.14	0.16	0.18
54	39.20	39.39	39.83	0.15	0.20	0.24	0.14	0.15	0.18
55	40.57	40.70	41.18	0.14	0.18	0.23	0.14	0.15	0.18
56	41.81	42.00	42.49	0.14	0.18	0.22	0.13	0.14	0.17
57	43.08	43.26	43.75	0.14	0.17	0.22	0.13	0.14	0.17
58	44.31	44.44	44.96	0.15	0.18	0.22	0.12	0.13	0.17
59	45.42	45.56	46.25	0.14	0.17	0.21	0.13	0.13	0.17
60	46.56	46.81	47.28	0.14	0.17	0.21	0.12	0.13	0.16
61	47.76	47.88	48.32	0.14	0.16	0.22	0.13	0.15	0.16
70	55.90	56.28	56.84	0.14	0.16	0.20	0.12	0.14	0.15
105	69.36	70.90	69.98	0.11	0.14	0.16	0.12	0.13	0.14
110	70.44	70.57	71.38	0.11	0.13	0.15	0.12	0.12	0.14
120	71.66	70.99	71.99	0.11	0.14	0.15	0.12	0.13	0.14
122	70.85	70.69	71.12	0.10	0.13	0.15	0.13	0.14	0.14
130	69.93	70.63	72.08	0.10	0.13	0.15	0.12	0.14	0.15
139	70.43	72.15	72.16	0.10	0.12	0.14	0.12	0.15	0.14
140	70.53	71.18	71.57	0.10	0.12	0.14	0.11	0.14	0.14
150	71.35	71.07	72.58	0.10	0.12	0.14	0.11	0.15	0.14
157	72.73	72.46	70.94	0.10	0.13	0.14	0.12	0.15	0.15
160	71.80	70.06	72.46	0.09	0.13	0.14	0.12	0.15	0.15
170	71.31	69.51	70.64	0.09	0.13	0.14	0.12	0.14	0.15
174	72.04	70.24	70.27	0.09	0.13	0.14	0.10	0.14	0.14
180	70.40	69.76	70.87	0.09	0.13	0.14	0.10	0.15	0.15
183	71.49	71.30	71.20	0.10	0.14	0.14	0.10	0.15	0.16
190	71.61	73.56	68.72	0.10	0.13	0.14	0.10	0.15	0.16
191	70.89	72.10	71.53	0.10	0.13	0.14	0.10	0.15	0.16
200	70.85	71.27	71.53	0.10	0.14	0.15	0.10	0.14	0.15
300	71.65	69.82	70.21	0.11	0.15	0.16	0.08	0.16	0.17
400	68.51	67.05	68.06	0.11	0.16	0.18	0.09	0.17	0.18
500	69.44	68.54	68.67	0.11	0.17	0.20	0.10	0.19	0.20
600	74.10	71.94	74.15	0.13	0.20	0.24	0.12	0.22	0.25
700	66.08	61.34	67.19	0.13	0.21	0.26	0.14	0.23	0.29
800	60.13	62.82	57.50	0.16	0.25	0.30	0.16	0.27	0.33
900	57.78	59.85	58.31	0.16	0.27	0.32	0.18	0.31	0.38
1000	59.70	59.63	60.65	0.18	0.29	0.36	0.19	0.33	0.42

REV. X2

SCLF-30+

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Surface Mount Low Pass Filter

SCLF-30+

Typical Performance Data

FREQ. (MHz)	GROUP DELAY (nsec)		
	@ -40° C	@ +25° C	@ +85° C
0.1	26.62	24.42	22.68
1	24.27	24.25	22.59
4	24.15	24.53	24.25
5	24.27	24.27	29.64
6	24.17	24.55	22.23
7	24.61	24.28	26.68
8	24.44	24.86	22.84
9	24.58	24.61	25.03
10	24.74	24.82	26.20
11	25.12	25.06	24.22
12	25.31	25.32	26.04
13	25.54	25.49	26.03
14	25.84	25.64	23.75
15	25.87	25.97	23.54
16	26.67	26.66	24.58
17	26.79	26.87	22.73
18	27.16	27.24	26.85
19	27.53	27.73	25.10
20	28.09	28.04	27.10
21	28.40	28.71	32.06
22	29.46	29.42	33.75
23	30.15	30.23	34.04
24	31.02	31.23	35.95
25	32.17	32.41	37.30
26	33.66	33.56	35.43
27	35.16	35.25	36.12
28	37.16	37.35	40.73
29	39.65	39.65	45.74
30	42.90	43.13	53.70
31	46.90	46.87	63.21
32	50.69	50.95	66.88
33	53.74	53.90	59.57
34	53.77	54.11	46.81
35	50.69	50.58	33.94
36	44.78	44.73	25.78
37	38.55	38.55	18.02
38	32.85	32.34	16.91
39	27.56	27.52	12.90
40	23.86	24.10	7.86
41	20.65	20.93	5.54
42	18.51	18.08	3.50
43	16.70	16.52	19.98
44	13.93	14.63	1.33
45	13.45	13.61	20.31
46	12.28	11.63	1.54
47	10.79	10.75	32.19
48	10.13	10.03	32.80
49	8.56	9.28	44.06
50	8.10	8.03	18.54
52	7.17	7.43	23.69
53	6.57	6.34	54.86
54	5.01	6.62	28.72
55	6.77	5.53	5.58
56	4.93	6.93	2.97

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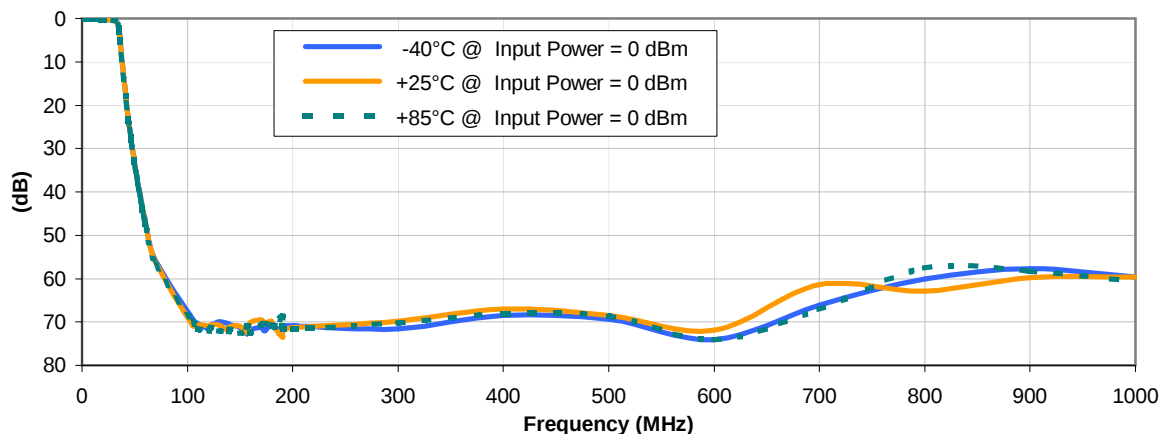


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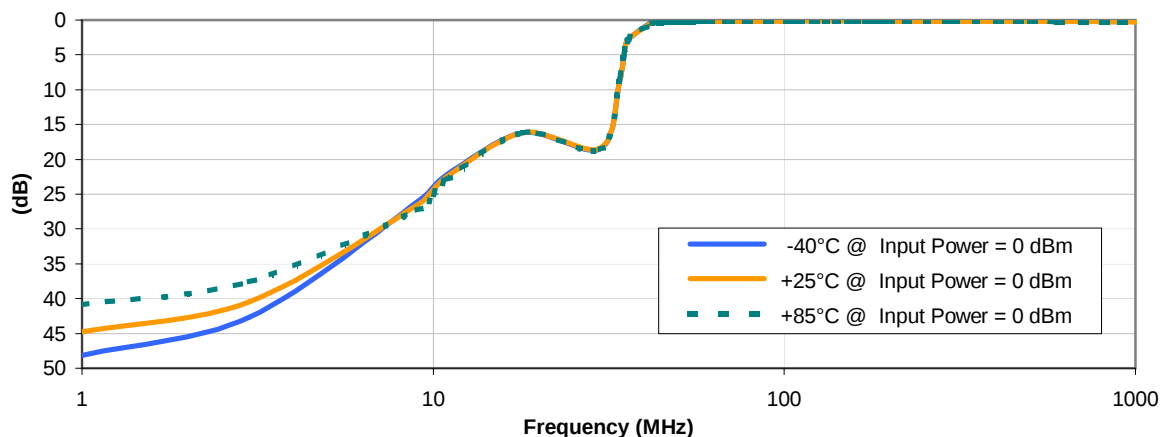


Typical Performance Curves

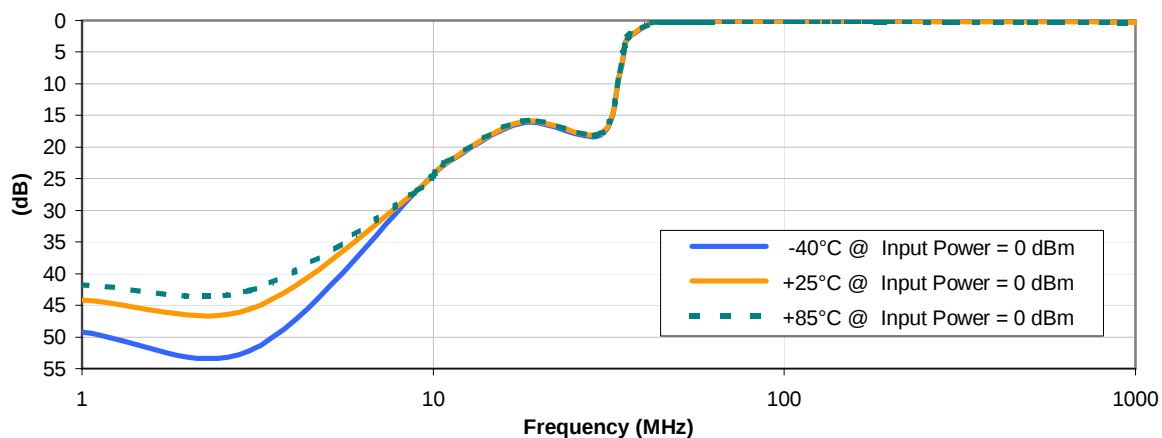
INSERTION LOSS vs. TEMPERATURE



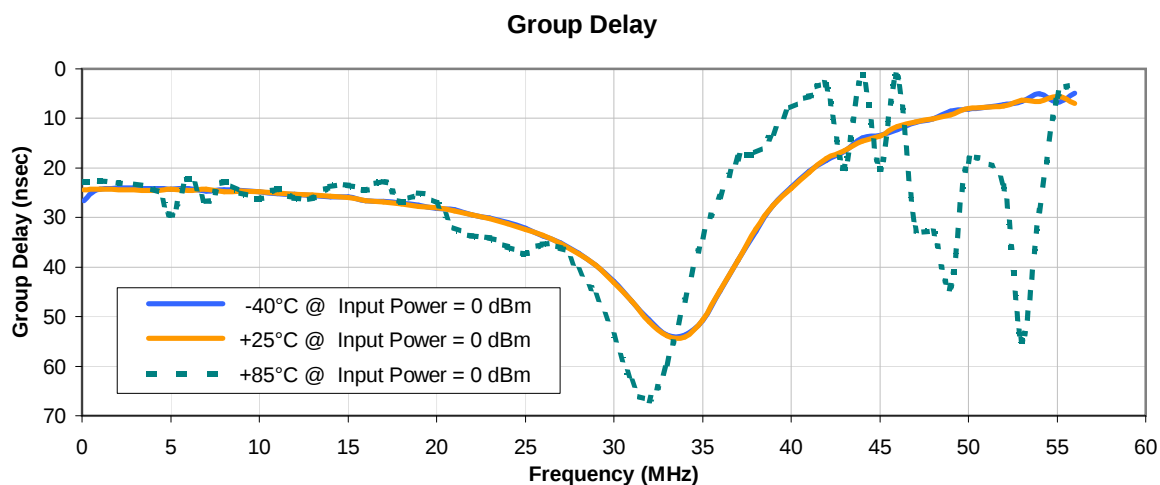
INPUT RETURN LOSS vs. TEMPERATURE



OUTPUT RETURN LOSS vs. TEMPERATURE



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 & Reel Packaging TR-F5



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

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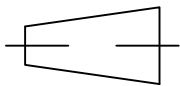


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REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M81561	NEW RELEASE	09/11/02	GF	ABD
A	M101145	ADDED YY101 CASE STYLE & NOTE 2	10/07/05	MMG	ABD
B	M102713	ADDED "...WITH SMOBC"	01/16/06	GT	IL
C	M165986	TB-187+ (WAS TB-187)	02/01/18	ITG	IL

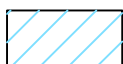
Figure 1: PCB layout for the 74VHC04. The diagram shows a rectangular PCB with a blue solder mask and red copper traces. It features a 4x4 grid of vias (26 x 0.020 PTH for ground) and four rectangular pads (0.060 x 0.060) for components. Dimensions include .030 TYP for pad spacing, .060 TYP for pad width, .040 TYP for pad length, .040 TYP for pad thickness, .064 TRACE WIDTH, 2 PL. for the main traces, .100 TYP for the overall width, .050 TYP for the overall height, .060 TYP for the overall width, .040 TYP for the overall height, .040 TYP for the overall width, .040 TYP for the overall height, .040 TYP for the overall width, .040 TYP for the overall height. The package outline is shown as a dashed line. Pin 1 is indicated at the bottom left.

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	GF	08/12/02
TOLERANCES ON:	CHECKED	AV	09/11/02
2 PL DECIMALS ±	APPROVED	ABD	09/11/02
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			



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PL, cr, YY101/YY161, SCLF, TB-187+

SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-049		REV: C
FILE: 98PL049		SCALE: 5:1	SHEET: 1 OF 1	

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

Evaluation Board and Circuit



TB-187+



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