

Non-Catalog Model

Frequency Mixer

Level 17 (LO Power + 17 dBm)

SBL-1H+

Important Note

This is a non-catalog model and can be manufactured on specific request.
Pricing and delivery information can be supplied upon request.

Please click "Back", and then click "Contact Us" for Applications support.



CASE STYLE : A06

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		Min.	Typ.	Max.	Units
Frequency	LO (f _L to f _U)	1		500	MHz
	RF (f _L to f _U)	1		500	MHz
	IF	DC		500	MHz
Conversion Loss	mid band		5.6	7.0	dB
	Total Range		6.2	7.5	dB
LO-RF Isolation	Low Range	50	60		dB
	Mid Range	40	50		dB
	Upper Range	30	45		dB
LO-IF Isolation	Low Range	50	60		dB
	Mid Range	30	41		dB
	Upper Range	20	38		dB

Note: Low Range = [f_L to 10f_L]

Mid Range = [10f_L to f_U/2]

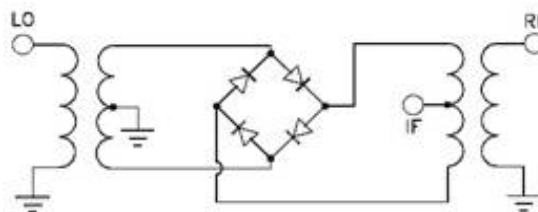
Upper Range = [f_U/2 to f_U]

mid band = [2f_L to f_U/2]

MAXIMUM RATINGS	
Operating Temperature	-55°C to +100°C
Storage Temperature	-55°C to +100°C

PIN CONNECTIONS	
LO	8
RF	1
IF	3 & 4
GROUND	2,5,6,7

Electrical Schematics



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RF/IF MICROWAVE COMPONENTS

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Frequency Mixer

SBL-1H+

Typical Performance Data

RF (MHz)	LO (MHz)	CONVERSION LOSS (dB)			LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			LO (MHz)	RF (MHz)	IP3 Input (dBm)
		@LO (dBm)				@LO (dBm)			@LO (dBm)					
		+14	+17	+20		+14	+17	+20	+14	+17	+20			+17
10.0	40.0	4.45	4.51	4.50	40.0	64.95	65.67	66.59	68.13	68.70	68.47	40.0	10.0	25.16
22.3	52.3	5.08	4.88	5.03	52.3	63.03	64.41	65.21	65.25	67.17	68.32	52.3	22.3	27.47
34.5	64.5	5.11	5.01	4.96	64.5	61.56	61.88	63.01	63.13	65.29	66.99	64.5	34.5	28.78
46.8	76.8	5.01	5.08	4.99	76.8	60.26	61.36	61.90	61.62	63.84	65.83	76.8	46.8	28.21
59.0	89.0	5.15	5.10	5.07	89.0	59.35	59.87	60.44	60.45	62.75	64.65	89.0	59.0	16.98
71.3	101.3	5.11	5.05	5.13	101.3	58.16	58.90	59.30	58.80	61.07	63.00	101.3	71.3	24.71
83.5	113.5	5.17	5.15	5.09	113.5	56.99	57.43	58.07	58.01	60.08	61.86	113.5	83.5	24.31
95.8	125.8	5.21	5.12	5.12	125.8	56.60	57.29	57.93	57.14	59.21	60.79	125.8	95.8	23.39
108.0	138.0	5.13	5.14	5.09	138.0	55.74	56.56	57.08	57.16	59.01	60.32	138.0	108.0	20.50
120.3	150.3	5.20	5.12	5.11	150.3	54.71	55.33	55.90	55.09	56.82	58.03	150.3	120.3	20.27
132.5	162.5	5.18	5.17	5.10	162.5	54.57	55.06	55.72	53.74	55.50	56.77	162.5	132.5	18.47
144.8	174.8	5.15	5.14	5.10	174.8	54.32	55.01	55.89	53.80	55.36	56.24	174.8	144.8	19.90
157.0	187.0	5.28	5.19	5.17	187.0	53.40	54.04	54.74	53.05	54.20	54.94	187.0	157.0	18.55
169.3	199.3	5.30	5.23	5.19	199.3	52.62	53.31	54.09	52.56	53.82	54.48	199.3	169.3	17.15
181.5	211.5	5.28	5.22	5.23	211.5	52.53	53.54	54.60	51.96	52.47	52.67	211.5	181.5	18.14
193.8	223.8	5.24	5.22	5.24	223.8	52.42	53.39	54.34	50.44	51.07	51.46	223.8	193.8	21.20
206.0	236.0	5.31	5.27	5.24	236.0	51.42	52.24	52.93	49.67	50.31	50.41	236.0	206.0	17.17
218.3	248.3	5.31	5.25	5.23	248.3	50.70	51.38	52.38	49.87	50.46	50.09	248.3	218.3	14.61
230.5	260.5	5.29	5.23	5.20	260.5	51.17	52.65	54.27	49.33	49.41	48.93	260.5	230.5	14.83
242.8	272.8	5.31	5.27	5.23	272.8	51.99	53.34	54.69	49.48	49.33	48.78	272.8	242.8	16.30
255.0	285.0	5.36	5.30	5.26	285.0	51.19	52.37	53.63	48.53	48.31	47.65	285.0	255.0	16.54
267.3	297.3	5.42	5.34	5.31	297.3	51.27	52.77	54.69	48.23	48.08	47.27	297.3	267.3	16.17
279.5	309.5	5.44	5.37	5.34	309.5	51.40	53.11	55.54	46.08	46.20	45.78	309.5	279.5	17.11
291.8	321.8	5.55	5.42	5.38	321.8	50.79	52.28	54.33	44.85	45.02	44.89	321.8	291.8	17.49
304.0	334.0	5.66	5.58	5.52	334.0	49.99	51.22	53.10	43.60	43.58	43.42	334.0	304.0	15.09
316.3	346.3	5.69	5.62	5.56	346.3	51.04	53.60	57.76	43.68	43.53	43.30	346.3	316.3	14.33
328.5	358.5	5.74	5.67	5.65	358.5	51.22	54.80	60.61	42.76	42.20	41.71	358.5	328.5	14.67
340.8	370.8	5.81	5.76	5.74	370.8	51.09	54.60	58.09	41.46	40.78	40.54	370.8	340.8	14.89
353.0	383.0	5.89	5.86	5.83	383.0	52.78	57.51	62.48	39.49	39.22	39.47	383.0	353.0	15.39
365.3	395.3	5.92	5.90	5.90	395.3	54.63	57.11	55.10	38.41	38.38	38.55	395.3	365.3	15.94
377.5	407.5	5.95	5.94	5.94	407.5	54.46	55.58	53.34	37.69	37.47	37.45	407.5	377.5	16.47
389.8	419.8	6.00	6.00	5.99	419.8	53.40	55.49	55.68	37.84	37.35	37.13	419.8	389.8	16.91
402.0	432.0	6.10	6.07	6.06	432.0	55.67	57.28	54.23	37.56	36.79	36.54	432.0	402.0	17.78
414.3	444.3	6.07	6.02	5.99	444.3	54.59	53.83	50.34	37.26	36.39	35.98	444.3	414.3	18.81
426.5	456.5	6.12	6.04	5.98	456.5	54.30	53.45	50.07	36.85	35.94	35.45	456.5	426.5	21.44
438.8	468.8	6.23	6.10	6.02	468.8	54.21	55.82	52.60	36.78	35.70	35.22	468.8	438.8	24.56
451.0	481.0	6.40	6.21	6.09	481.0	54.26	49.51	45.39	35.98	34.72	34.03	481.0	451.0	21.47
463.3	493.3	6.33	6.06	5.93	493.3	53.20	49.38	45.52	34.79	33.55	32.88	493.3	463.3	18.23
475.5	505.5	6.32	6.01	5.85	505.5	51.72	47.59	44.80	33.72	32.43	32.07	505.5	475.5	16.32
487.8	517.8	6.56	6.13	5.92	517.8	53.59	47.26	43.77	33.35	31.64	31.08	517.8	487.8	15.09
500.0	530.0	6.78	6.29	5.99	530.0	48.03	43.26	39.87	33.55	31.28	30.28	530.0	500.0	12.74

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Frequency Mixer

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Typical Performance Data

RF/LO (MHz)	RF VSWR (:1)			LO VSWR (:1)			IF (MHz)	IF VSWR (:1)		
	@LO (dBm)			@LO (dBm)				@LO (dBm)		
	+14	+17	+20	+14	+17	+20		+14	+17	+20
40.0	1.27	1.37	1.31	5.51	5.52	6.51	10.0	1.91	1.74	1.62
52.3	1.03	1.12	1.19	6.58	6.03	5.44	22.3	2.03	1.86	1.73
64.5	1.07	1.05	1.02	5.74	5.56	5.59	34.5	2.01	1.85	1.72
76.8	1.03	1.08	1.07	5.39	5.52	5.58	46.8	1.94	1.78	1.66
89.0	1.04	1.09	1.09	5.46	5.41	5.16	59.0	2.01	1.84	1.72
101.3	1.05	1.06	1.09	5.33	5.44	5.34	71.3	2.11	1.94	1.81
113.5	1.07	1.08	1.10	5.23	5.19	5.30	83.5	2.04	1.88	1.77
125.8	1.08	1.11	1.13	5.20	5.17	5.33	95.8	1.94	1.78	1.67
138.0	1.10	1.13	1.15	5.22	5.23	5.06	108.0	2.03	1.87	1.75
150.3	1.11	1.14	1.15	5.14	5.17	5.33	120.3	2.20	2.03	1.91
162.5	1.12	1.16	1.19	5.23	5.20	5.14	132.5	2.21	2.05	1.92
174.8	1.16	1.18	1.21	5.03	5.13	5.02	144.8	2.15	1.99	1.88
187.0	1.15	1.18	1.21	5.09	5.09	5.07	157.0	2.21	2.05	1.94
199.3	1.18	1.21	1.24	5.03	5.07	5.03	169.3	2.28	2.12	2.02
211.5	1.24	1.26	1.28	5.03	5.07	5.00	181.5	2.25	2.11	2.01
223.8	1.27	1.30	1.31	5.03	5.02	5.02	193.8	2.18	2.05	1.95
236.0	1.25	1.29	1.32	4.95	4.96	4.99	206.0	2.25	2.11	2.01
248.3	1.25	1.28	1.31	4.89	4.98	4.92	218.3	2.39	2.25	2.14
260.5	1.29	1.32	1.34	4.91	4.96	4.87	230.5	2.39	2.26	2.17
272.8	1.31	1.33	1.35	4.86	4.87	4.88	242.8	2.33	2.20	2.11
285.0	1.33	1.37	1.38	4.86	4.84	4.78	255.0	2.37	2.24	2.15
297.3	1.34	1.39	1.41	4.74	4.77	4.74	267.3	2.44	2.32	2.23
309.5	1.39	1.43	1.46	4.73	4.72	4.70	279.5	2.37	2.26	2.18
321.8	1.42	1.47	1.51	4.68	4.68	4.66	291.8	2.28	2.16	2.09
334.0	1.42	1.49	1.54	4.61	4.62	4.57	304.0	2.35	2.22	2.15
346.3	1.49	1.54	1.60	4.57	4.56	4.52	316.3	2.45	2.33	2.27
358.5	1.56	1.62	1.67	4.53	4.47	4.50	328.5	2.39	2.29	2.23
370.8	1.65	1.70	1.73	4.47	4.44	4.42	340.8	2.29	2.18	2.12
383.0	1.70	1.74	1.77	4.37	4.33	4.29	353.0	2.30	2.20	2.14
395.3	1.75	1.78	1.80	4.30	4.27	4.23	365.3	2.35	2.25	2.19
407.5	1.77	1.79	1.79	4.25	4.18	4.18	377.5	2.28	2.18	2.13
419.8	1.78	1.80	1.80	4.12	4.11	4.08	389.8	2.17	2.07	2.03
432.0	1.76	1.77	1.78	4.08	4.01	4.00	402.0	2.17	2.08	2.04
444.3	1.72	1.73	1.74	3.97	3.91	3.93	414.3	2.21	2.12	2.07
456.5	1.69	1.70	1.70	3.90	3.83	3.82	426.5	2.15	2.06	2.02
468.8	1.65	1.65	1.65	3.79	3.70	3.70	438.8	2.06	1.97	1.93
481.0	1.62	1.61	1.61	3.68	3.63	3.61	451.0	2.05	1.96	1.92
493.3	1.55	1.55	1.56	3.65	3.58	3.56	463.3	2.06	1.97	1.93
505.5	1.51	1.53	1.54	3.55	3.49	3.47	475.5	1.97	1.88	1.85
517.8	1.47	1.49	1.52	3.49	3.42	3.41	487.8	1.86	1.77	1.74
530.0	1.45	1.47	1.53	3.42	3.35	3.34	500.0	1.86	1.76	1.73

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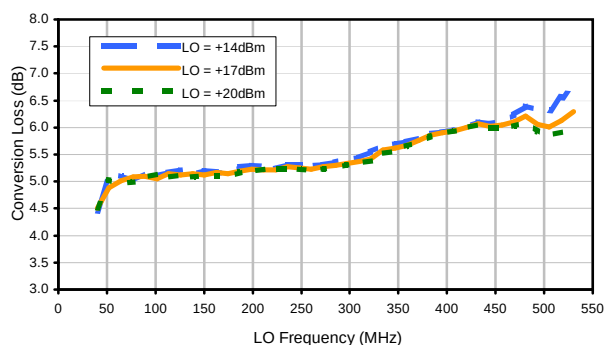


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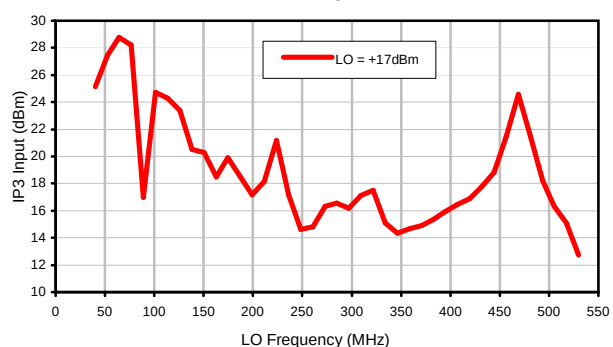


Typical Performance Curves

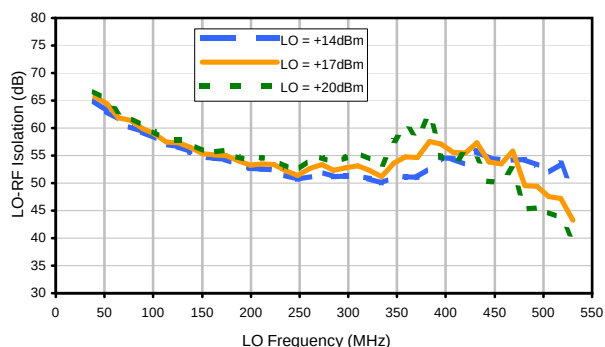
Conversion Loss



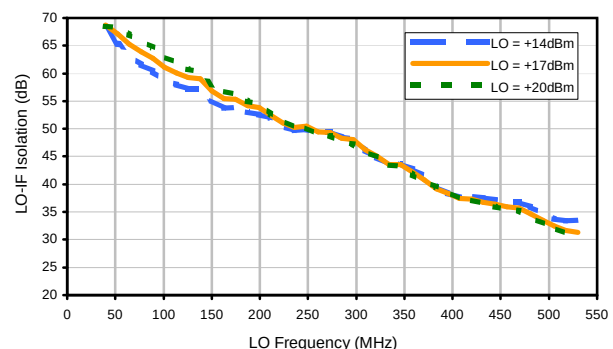
IP3 Input



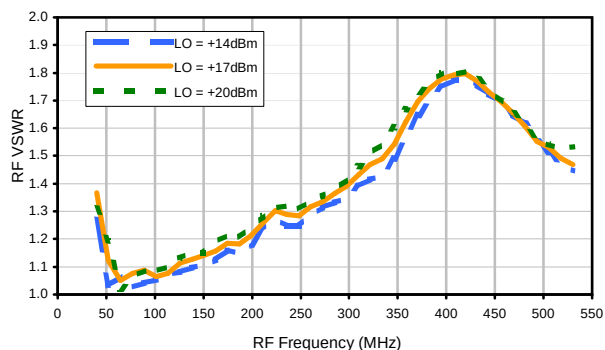
LO-RF Isolation



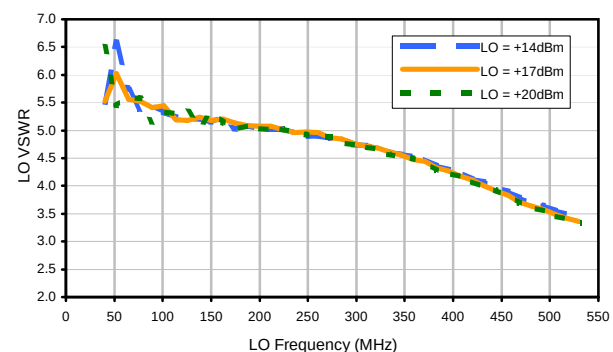
LO-IF Isolation



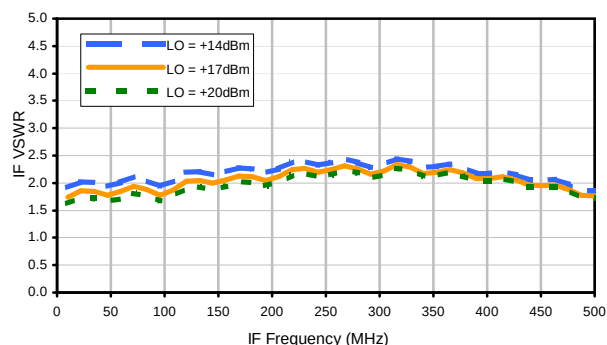
RF VSWR



LO VSWR



IF VSWR



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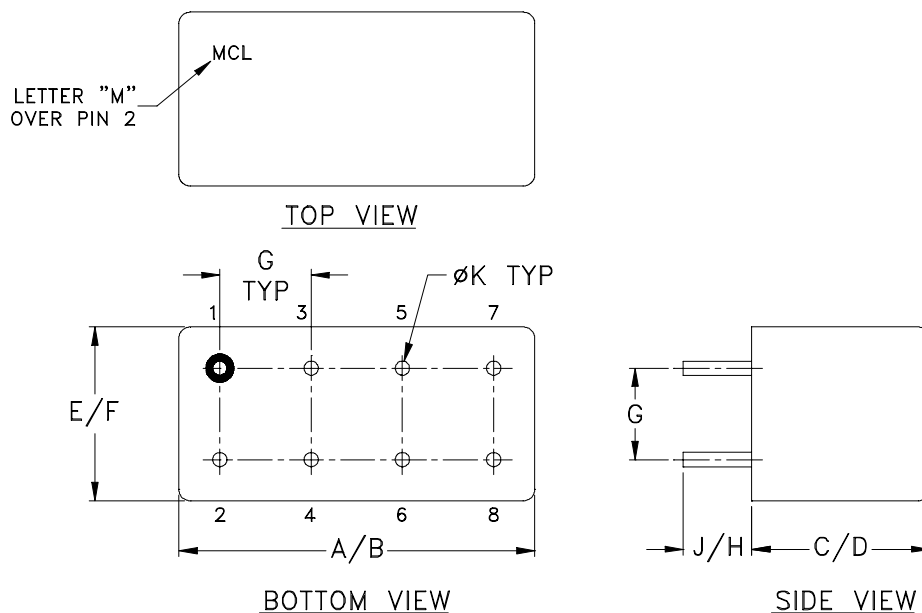


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A01
A04
A05
A06

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	WT, GRAM
A01	.770 (19.56)	.800 (20.32)	.385 (9.78)	.400 (10.16)	.370 (9.40)	.400 (10.16)	.200 (5.08)	.20 (5.08)	.14 (3.56)	.031 (.79)	5.2
A04			.200 (5.08)	.210 (5.33)							3.7
A05			.240 (6.10)	.250 (6.35)							3.7
A06			.285 (7.24)	.310 (7.87)							5.2

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .03$; 3 Pl. $\pm .015$

Notes:

- Header material: C.R.S.
Pin material: #52 alloy.
Cover material: Cupro-Nickel.
- Pin finish: Electro Tin-Silver.
- Insulated spacer available. Request P/N B14-045-01.
- Tolerance on pin diameter $\pm .005$ inch.
- Glass meniscus 0.015 inch max.
- Blue bead indicates Pin 1. Pin numbers do not appear on unit, for reference only.



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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	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
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
Moisture Resistance	10 cycles, 24 hours per cycle	MIL-STD-202, Method 106, Condition A, except 50°C and end point electrical test done within 12 hours
Solderability	10X Magnification	J-STD-002, 95% Coverage
Resistance to Solder Heat	260°C for 10 seconds	MIL-STD-202, Method 210, Condition B
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
Terminal Strength	4 1/2 Pound Pull	MIL-STD-202, Method 211, Condition A



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
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D