

Plug-In Frequency Mixer

Level 10 (LO Power +10 dBm) 5 to 1000 MHz

SBL-2LH+

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

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

Pin Connections

LO	8
RF	1
IF	3,4^
GROUND	2,5,6,7
CASE GROUND	2,5,6

^ pins must be connected together externally

Features

- excellent conversion loss, 5.9 dB typ.
- high L-R isolation, 61 dB typ. L-I isolation, 54 dB typ.
- rugged welded construction

Applications

- VHF
- defense & federal communications



Generic photo used for illustration purposes only

CASE STYLE: A06

+RoHS Compliant

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

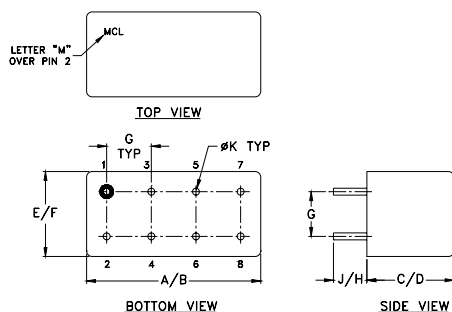
Electrical Specifications

FREQUENCY (MHz)		CONVERSION LOSS (dB)				LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)					
LO/RF f_L - f_U	IF	Mid-Band m		Total Range		L		M		U		L		M		U	
		$\bar{X}$	σ	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.
5-1000	DC-1000	5.9	.09	7.5	9.5	67	45	61	30	57	30	68	40	54	30	43	20

1 dB COMP.: +5 dBm typ.

L = low range [f_L to 10 f_L] M = mid range [10 f_L to $f_U/2$] U = upper range [$f_U/2$ to f_U]
m= mid band [$2f_L$ to $f_U/2$]

Outline Drawing



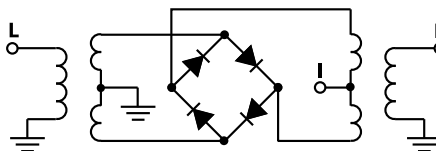
Outline Dimensions (inch/mm)

A	B	C	D	E	F
.770	.800	.285	.310	.370	.400
19.56	20.32	7.24	7.87	9.40	10.16
G	H	J	K		wt
.200	.20	.14	.031		grams
5.08	5.08	3.56	0.79		5.2

Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO					
		LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm
5.00	35.00	5.97	52.74	87.33	1.25	2.82
10.00	40.00	5.89	52.59	81.78	1.18	2.63
20.00	50.00	5.90	52.51	76.47	1.16	2.68
50.00	80.00	5.96	52.73	68.83	1.18	2.62
95.45	65.45	6.01	52.59	68.37	1.19	2.50
100.00	70.00	6.04	52.35	67.59	1.21	2.50
185.91	155.91	5.82	52.03	63.99	1.22	2.40
200.00	170.00	5.77	52.24	62.23	1.23	2.48
276.36	246.36	5.75	51.93	58.87	1.23	2.38
366.82	336.82	5.81	52.59	53.25	1.22	2.39
457.27	427.27	5.88	47.42	55.40	1.21	2.42
487.42	457.42	5.91	45.90	49.79	1.20	2.42
500.00	470.00	5.94	48.30	46.54	1.19	2.43
547.73	517.73	6.07	57.22	40.10	1.18	2.44
638.18	608.18	6.63	48.69	37.95	1.15	2.49
728.64	698.64	7.20	42.92	36.76	1.11	2.47
819.09	789.09	7.24	41.04	32.27	1.05	2.47
909.55	879.55	7.27	41.87	29.47	1.15	2.57
969.85	939.85	7.69	44.77	28.21	1.30	2.60
1000.00	970.00	7.81	50.08	26.90	1.38	2.59

Electrical Schematic



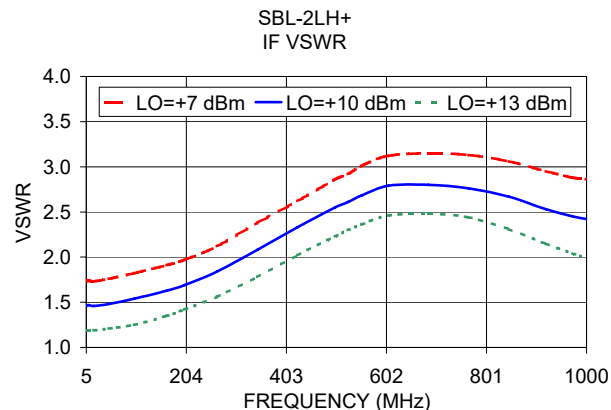
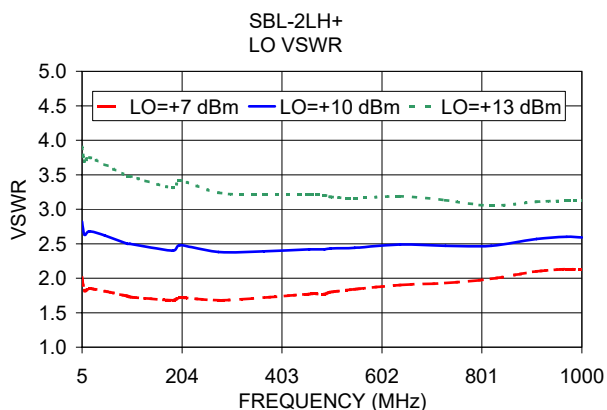
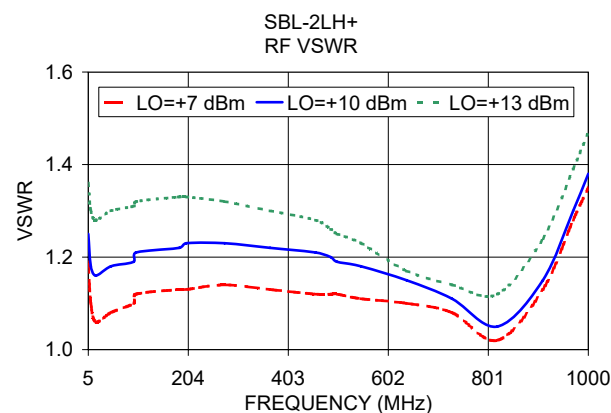
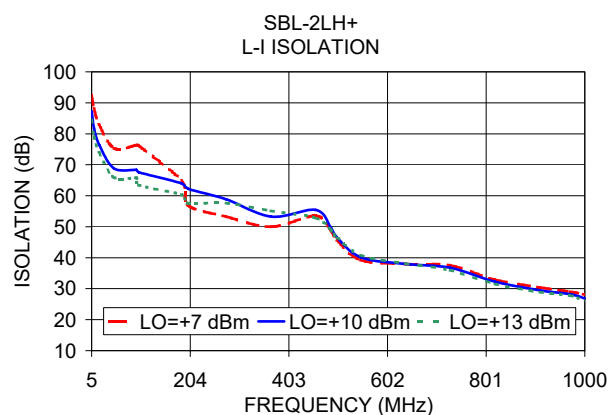
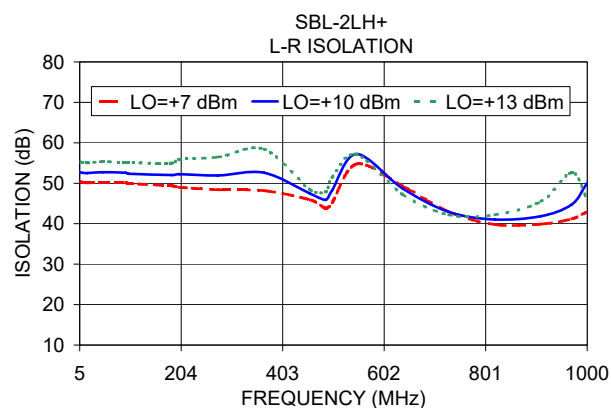
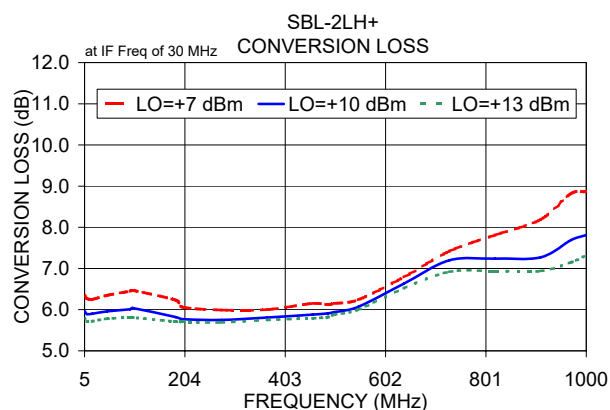
Notes

- 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.
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Page 1 of 2



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Frequency Mixer

SBL-2LH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+5dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+7	+10	+13			+7	+10	+13			+7	+10	+13
5.0	35.0	6.35	5.97	5.79	10.1	40.1	18.76	20.04	20.05	10.1	40.1	1.22	0.93	0.74
10.0	40.0	6.27	5.89	5.71	51.1	81.1	18.85	19.34	18.90	51.1	81.1	1.18	0.91	0.78
51.1	81.1	6.09	5.72	5.50	92.0	122.0	15.96	16.91	21.40	92.0	122.0	1.16	0.88	0.73
92.0	122.0	6.05	5.68	5.47	133.0	163.0	16.26	20.27	29.15	133.0	163.0	1.15	0.86	0.68
133.0	163.0	5.95	5.65	5.49	173.9	203.9	15.81	22.72	21.25	173.9	203.9	1.08	0.80	0.62
173.9	203.9	5.97	5.65	5.48	214.9	244.9	20.18	19.21	19.88	214.9	244.9	1.08	0.74	0.57
214.9	244.9	5.83	5.59	5.45	255.8	285.8	25.42	19.54	20.31	255.8	285.8	1.04	0.68	0.54
255.8	285.8	5.85	5.62	5.47	296.8	326.8	18.33	24.35	23.60	296.8	326.8	1.04	0.71	0.56
296.8	326.8	5.73	5.55	5.43	337.7	367.7	13.80	13.84	14.43	337.7	367.7	1.03	0.72	0.59
337.7	367.7	5.74	5.54	5.41	378.7	408.7	12.29	13.97	17.44	378.7	408.7	0.89	0.64	0.55
378.7	408.7	5.76	5.56	5.40	419.6	449.6	15.08	14.39	15.72	419.6	449.6	0.84	0.63	0.56
419.6	449.6	5.83	5.60	5.45	440.1	470.1	20.04	20.21	23.24	440.1	470.1	0.86	0.62	0.55
440.1	470.1	5.86	5.63	5.44	481.1	511.1	18.72	18.41	19.68	481.1	511.1	1.02	0.76	0.64
481.1	511.1	5.87	5.67	5.52	501.5	531.5	22.32	18.83	21.36	501.5	531.5	1.06	0.82	0.67
501.5	531.5	5.84	5.62	5.51	542.5	572.5	15.99	15.77	16.70	542.5	572.5	1.30	1.01	0.84
542.5	572.5	5.91	5.76	5.62	563.0	593.0	15.12	15.72	16.27	563.0	593.0	1.43	1.13	0.92
563.0	593.0	5.95	5.79	5.70	603.9	633.9	10.93	12.73	15.03	603.9	633.9	1.61	1.29	1.03
603.9	633.9	6.12	5.97	5.89	624.4	654.4	9.56	10.64	12.64	624.4	654.4	1.76	1.38	1.12
665.3	695.3	6.40	6.25	6.12	665.3	695.3	8.41	9.47	10.92	665.3	695.3	1.94	1.55	1.32
685.8	715.8	6.44	6.24	6.08	685.8	715.8	9.14	10.89	13.07	685.8	715.8	1.97	1.56	1.36
726.8	756.8	6.72	6.40	6.18	726.8	756.8	9.02	12.23	15.24	726.8	756.8	2.16	1.75	1.50
747.2	777.2	6.94	6.60	6.29	747.2	777.2	6.92	9.44	12.47	747.2	777.2	2.26	1.84	1.56
788.2	818.2	7.30	6.86	6.53	788.2	818.2	6.28	8.20	10.69	788.2	818.2	2.31	1.87	1.64
808.7	838.7	7.39	6.93	6.53	808.7	838.7	6.45	8.68	11.49	808.7	838.7	2.29	1.85	1.63
849.6	879.6	7.54	6.77	6.30	849.6	879.6	7.54	12.49	17.81	849.6	879.6	2.30	1.98	1.76
870.1	900.1	7.61	6.75	6.24	870.1	900.1	8.05	15.25	18.30	870.1	900.1	2.28	2.05	1.77
911.1	941.1	7.95	6.82	6.19	911.1	941.1	6.76	15.67	14.98	911.1	941.1	2.19	2.17	1.91
931.5	961.5	8.19	6.99	6.27	931.5	961.5	5.59	13.15	14.44	931.5	961.5	2.07	2.10	1.88
972.5	1002.5	8.37	7.23	6.33	972.5	1002.5	5.23	10.09	13.79	972.5	1002.5	1.95	2.06	1.98
993.0	1023.0	8.55	7.46	6.52	993.0	1023.0	5.36	9.15	14.46	993.0	1023.0	1.81	1.89	1.91
1033.9	1063.9	8.67	7.67	6.78	1033.9	1063.9	5.98	8.69	13.61	1033.9	1063.9	1.75	1.86	2.02
1054.4	1084.4	8.88	7.94	7.06	1054.4	1084.4	6.26	8.64	12.64	1054.4	1084.4	1.59	1.74	1.93
1095.3	1125.3	9.20	8.37	7.55	1095.3	1125.3	6.55	8.48	11.61	1095.3	1125.3	1.33	1.52	1.75
1115.8	1145.8	9.49	8.67	7.92	1115.8	1145.8	6.54	8.32	11.24	1115.8	1145.8	1.11	1.31	1.55
1156.8	1186.8	9.73	8.96	8.17	1156.8	1186.8	6.99	8.53	11.78	1156.8	1186.8	0.94	1.10	1.41
1177.2	1207.2	9.73	8.89	8.14	1177.2	1207.2	7.73	10.36	15.02	1177.2	1207.2	0.98	1.20	1.47
1218.2	1248.2	9.63	8.98	8.51	1218.2	1248.2	12.81	15.82	20.98	1218.2	1248.2	1.21	1.21	1.27
1238.7	1268.7	9.87	9.34	8.88	1238.7	1268.7	13.80	15.62	19.36	1238.7	1268.7	1.07	1.02	1.02
1279.6	1309.6	10.65	10.14	9.67	1279.6	1309.6	14.99	17.17	17.37	1279.6	1309.6	0.70	0.61	0.57
1300.1	1330.1	10.92	10.41	9.96	1300.1	1330.1	14.95	18.35	19.66	1300.1	1330.1	0.59	0.46	0.42

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Page 1 of 5



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Frequency Mixer

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=500.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1000.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+10			+10			+10
490.0	10.1	6.01	10.0	20.1	5.73	990.0	10.1	8.43
477.7	22.4	5.94	30.0	40.1	5.57	970.0	30.1	8.33
465.4	34.7	5.86	50.0	60.1	5.68	950.0	50.1	8.23
453.1	47.0	5.87	70.0	80.1	5.68	930.0	70.1	8.23
440.8	59.3	5.88	90.0	100.1	5.71	910.0	90.1	8.13
428.5	71.6	5.76	110.0	120.1	5.72	890.0	110.1	8.03
416.2	83.9	5.73	130.0	140.1	5.68	870.0	130.1	7.96
403.8	96.3	5.67	150.0	160.1	5.72	850.0	150.1	8.00
391.5	108.6	5.55	170.0	180.1	5.74	830.0	170.1	7.99
379.2	120.9	5.57	190.0	200.1	5.79	810.0	190.1	7.93
366.9	133.2	5.50	210.0	220.1	5.73	790.0	210.1	7.96
354.6	145.5	5.43	230.0	240.1	5.75	770.0	230.1	7.92
342.3	157.8	5.46	250.0	260.1	5.81	750.0	250.1	7.95
330.0	170.1	5.45	270.0	280.1	5.79	730.0	270.1	8.07
317.7	182.4	5.43	290.0	300.1	5.81	710.0	290.1	8.01
305.4	194.7	5.47	310.0	320.1	5.83	690.0	310.1	7.99
293.1	207.0	5.45	330.0	340.1	5.89	670.0	330.1	7.95
280.8	219.3	5.46	350.0	360.1	5.87	650.0	350.1	8.00
268.5	231.6	5.49	370.0	380.1	5.88	630.0	370.1	7.99
256.2	243.9	5.46	390.0	400.1	5.85	610.0	390.1	7.88
243.8	256.3	5.54	430.0	440.1	5.93	570.0	430.1	7.84
231.5	268.6	5.54	450.0	460.1	5.99	550.0	450.1	7.92
219.2	280.9	5.50	490.0	500.1	6.10	510.0	490.1	7.79
206.9	293.2	5.51	510.0	520.1	6.14	490.0	510.1	7.76
194.6	305.5	5.49	550.0	560.1	6.67	450.0	550.1	7.58
182.3	317.8	5.48	570.0	580.1	6.87	430.0	570.1	7.53
170.0	330.1	5.53	610.0	620.1	6.99	390.0	610.1	7.34
157.7	342.4	5.54	630.0	640.1	7.05	370.0	630.1	7.34
145.4	354.7	5.59	670.0	680.1	6.79	330.0	670.1	7.46
133.1	367.0	5.65	690.0	700.1	6.64	310.0	690.1	7.49
120.8	379.3	5.64	730.0	740.1	6.34	270.0	730.1	6.87
108.5	391.6	5.66	750.0	760.1	6.19	250.0	750.1	6.75
96.2	403.9	5.66	790.0	800.1	6.07	210.0	790.1	6.95
83.8	416.3	5.64	810.0	820.1	5.99	190.0	810.1	6.90
71.5	428.6	5.66	850.0	860.1	5.93	150.0	850.1	6.67
59.2	440.9	5.66	870.0	880.1	5.86	130.0	870.1	6.44
46.9	453.2	5.63	910.0	920.1	5.93	90.0	910.1	6.25
34.6	465.5	5.66	930.0	940.1	5.96	70.0	930.1	6.43
22.3	477.8	5.67	970.0	980.1	6.01	30.0	970.1	6.82
10.0	490.1	5.75	990.0	1000.1	5.98	10.0	990.1	6.90

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Page 2 of 5



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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+7	+10	+13	+7	+10	+13
5.0	50.42	52.74	55.33	92.39	87.33	84.57
10.0	50.26	52.59	55.18	88.15	81.78	79.01
51.1	69.83	72.07	73.62	63.27	63.28	64.03
92.0	65.11	67.13	68.95	59.74	59.83	59.18
133.0	62.03	64.31	66.77	56.06	56.01	56.07
173.9	59.60	61.93	64.27	53.39	53.32	53.98
214.9	58.06	60.59	62.91	51.42	51.77	52.70
255.8	56.84	59.34	61.69	49.92	50.71	51.38
296.8	55.95	58.26	60.45	48.91	50.07	50.46
337.7	55.34	57.91	59.93	47.64	48.71	49.14
378.7	54.44	57.70	60.60	47.63	48.58	48.89
419.6	53.06	55.48	57.86	47.62	48.34	48.35
440.1	52.80	55.10	57.48	46.78	47.24	47.09
481.1	52.96	55.41	57.77	47.45	47.64	46.88
501.5	53.51	57.43	61.63	47.02	47.58	47.46
542.5	53.08	56.05	60.17	45.46	44.52	44.13
563.0	53.28	56.16	59.43	44.89	44.22	43.81
603.9	53.24	57.68	63.37	43.87	42.41	41.95
665.3	55.92	64.81	70.52	44.82	42.39	40.37
685.8	56.56	62.84	60.50	44.76	42.58	40.48
726.8	52.30	54.96	57.61	44.02	41.46	39.41
747.2	51.38	55.04	59.75	42.38	39.55	37.80
788.2	52.05	56.00	58.80	41.75	39.06	36.62
808.7	52.78	57.63	56.62	41.04	38.81	36.73
849.6	50.88	55.86	56.38	39.34	37.95	36.04
870.1	49.32	52.53	54.23	37.94	36.98	35.45
911.1	48.18	52.23	54.44	35.46	34.52	33.64
931.5	47.13	51.88	57.10	34.38	33.31	32.66
972.5	46.19	51.14	57.14	33.85	31.98	31.00
993.0	46.56	53.16	58.01	33.28	31.41	30.25
1033.9	46.19	52.51	56.56	32.80	31.06	29.35
1054.4	44.97	49.40	55.37	32.41	30.75	29.19
1095.3	45.01	49.23	53.67	31.92	30.57	29.19
1115.8	45.10	50.46	57.28	31.59	30.44	29.20
1156.8	45.77	51.43	60.07	30.98	30.29	29.29
1177.2	46.16	52.36	57.93	30.64	30.26	29.18
1218.2	48.94	62.54	47.12	29.60	28.95	26.90
1238.7	52.05	53.57	45.74	28.95	27.67	26.16
1279.6	52.01	50.10	43.71	27.34	26.63	25.30
1300.1	49.50	48.80	42.73	27.03	26.61	25.49

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	46.43	51.09	56.89
51.1	81.1	38.12	38.16	38.08
92.0	122.0	33.58	33.93	33.71
133.0	163.0	30.80	31.17	31.24
173.9	203.9	29.31	29.71	29.78
214.9	244.9	28.64	28.73	28.84
255.8	285.8	28.45	28.42	28.64
296.8	326.8	28.56	28.83	28.98
337.7	367.7	28.46	29.02	29.28
378.7	408.7	28.08	28.38	28.63
419.6	449.6	27.55	27.52	27.55
440.1	470.1	27.44	27.44	27.45
481.1	511.1	27.00	27.15	27.47
501.5	531.5	26.61	27.07	27.76
542.5	572.5	25.30	25.41	25.69
563.0	593.0	24.69	24.70	24.86
603.9	633.9	23.12	22.94	22.93
624.4	654.4	22.38	22.26	22.25
665.3	695.3	21.46	21.30	21.19
685.8	715.8	20.84	20.61	20.42
726.8	756.8	20.34	20.15	20.17
747.2	777.2	20.27	20.13	20.10
788.2	818.2	20.54	20.59	20.77
808.7	838.7	20.67	20.83	20.98
849.6	879.6	20.90	21.13	21.24
870.1	900.1	20.84	20.95	20.92
911.1	941.1	20.47	20.21	19.98
931.5	961.5	20.38	19.97	19.65
972.5	1002.5	20.08	19.64	19.08
993.0	1023.0	19.72	19.50	18.93
1033.9	1063.9	19.08	18.98	18.75
1054.4	1084.4	18.73	18.71	18.46
1095.3	1125.3	18.03	18.08	18.03
1115.8	1145.8	17.71	17.79	17.82
1156.8	1186.8	17.16	17.34	17.49
1177.2	1207.2	17.01	17.24	17.43
1218.2	1248.2	16.56	16.62	16.51
1238.7	1268.7	16.18	16.20	16.04
1279.6	1309.6	15.49	15.36	15.19
1300.1	1330.1	15.28	15.03	14.84

Frequency Mixer

SBL-2LH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+7	+10	+13
5.0	35.0	1.19	1.25	1.36
10.0	40.0	1.10	1.18	1.30
51.1	81.1	1.06	1.04	1.10
92.0	122.0	1.08	1.09	1.16
133.0	163.0	1.10	1.13	1.20
173.9	203.9	1.11	1.16	1.23
214.9	244.9	1.13	1.19	1.26
255.8	285.8	1.15	1.20	1.26
296.8	326.8	1.16	1.25	1.32
337.7	367.7	1.13	1.22	1.28
378.7	408.7	1.10	1.17	1.24
419.6	449.6	1.10	1.14	1.18
440.1	470.1	1.12	1.17	1.21
481.1	511.1	1.16	1.23	1.30
501.5	531.5	1.18	1.29	1.37
542.5	572.5	1.19	1.29	1.37
563.0	593.0	1.21	1.32	1.39
603.9	633.9	1.24	1.34	1.41
624.4	654.4	1.26	1.35	1.40
665.3	695.3	1.29	1.35	1.38
685.8	715.8	1.31	1.35	1.38
726.8	756.8	1.32	1.34	1.35
747.2	777.2	1.33	1.34	1.34
788.2	818.2	1.32	1.31	1.28
808.7	838.7	1.31	1.29	1.26
849.6	879.6	1.25	1.19	1.14
870.1	900.1	1.21	1.14	1.09
911.1	941.1	1.16	1.06	1.03
931.5	961.5	1.17	1.08	1.08
972.5	1002.5	1.25	1.21	1.24
993.0	1023.0	1.32	1.29	1.32
1033.9	1063.9	1.55	1.52	1.52
1054.4	1084.4	1.68	1.65	1.63
1095.3	1125.3	2.03	2.00	1.96
1115.8	1145.8	2.25	2.21	2.15
1156.8	1186.8	2.72	2.66	2.60
1177.2	1207.2	2.99	2.93	2.85
1218.2	1248.2	3.60	3.54	3.47
1238.7	1268.7	3.93	3.89	3.83
1279.6	1309.6	4.62	4.61	4.59
1300.1	1330.1	4.95	4.95	4.92

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+7	+10	+13
5.0	2.01	2.82	3.90
10.0	1.82	2.63	3.70
51.1	1.79	2.65	3.86
92.0	1.67	2.41	3.39
133.0	1.75	2.58	3.68
173.9	1.67	2.40	3.38
214.9	1.71	2.48	3.50
255.8	1.71	2.46	3.45
296.8	1.69	2.43	3.39
337.7	1.75	2.52	3.48
378.7	1.73	2.44	3.35
419.6	1.78	2.54	3.48
440.1	1.80	2.53	3.44
481.1	1.78	2.48	3.36
501.5	1.82	2.52	3.40
542.5	1.85	2.55	3.40
563.0	1.85	2.54	3.38
603.9	1.90	2.59	3.43
624.4	1.92	2.61	3.43
665.3	1.92	2.58	3.39
685.8	1.94	2.59	3.40
726.8	1.96	2.57	3.34
747.2	1.99	2.59	3.35
788.2	2.07	2.69	3.46
808.7	2.09	2.71	3.47
849.6	2.10	2.69	3.40
870.1	2.13	2.70	3.42
911.1	2.20	2.78	3.47
931.5	2.22	2.81	3.50
972.5	2.26	2.88	3.57
993.0	2.28	2.91	3.60
1033.9	2.31	2.93	3.62
1054.4	2.33	2.95	3.65
1095.3	2.35	2.96	3.65
1115.8	2.37	2.96	3.65
1156.8	2.39	2.98	3.65
1177.2	2.38	2.95	3.61
1218.2	2.33	2.87	3.54
1238.7	2.35	2.92	3.61
1279.6	2.55	3.10	3.76
1300.1	2.63	3.17	3.82

IF (OUT) (MHz)	IF VSWR @LO=1000.1MHz (:1)		
	@LO (dBm)		
	+7	+10	+13
5.0	1.73	1.46	1.19
10.0	1.74	1.47	1.19
30.2	2.75	2.17	1.79
50.4	2.82	2.29	1.87
70.6	2.88	2.36	1.94
90.8	2.84	2.29	1.91
111.0	2.89	2.30	1.91
131.2	2.98	2.40	2.01
151.4	3.01	2.45	2.06
171.6	3.00	2.43	2.04
191.8	3.08	2.46	2.10
212.0	3.14	2.51	2.17
232.2	3.14	2.52	2.17
252.4	3.18	2.57	2.20
272.7	3.23	2.61	2.25
292.9	3.26	2.60	2.26
313.1	3.29	2.60	2.27
333.3	3.36	2.67	2.32
353.5	3.43	2.73	2.36
373.7	3.45	2.73	2.34
393.9	3.48	2.73	2.34
434.3	3.62	2.84	2.41
454.5	3.60	2.84	2.38
494.9	3.69	2.91	2.41
515.1	3.67	2.90	2.39
555.5	3.75	2.99	2.44
575.7	3.76	3.01	2.46
616.1	3.74	3.03	2.48
636.3	3.78	3.07	2.52
676.7	3.73	3.07	2.51
696.9	3.77	3.14	2.57
737.3	3.61	3.02	2.49
757.6	3.65	3.07	2.53
798.0	3.51	3.00	2.47
818.2	3.47	2.96	2.45
858.6	3.35	2.86	2.37
878.8	3.31	2.83	2.35
919.2	3.23	2.79	2.31
939.4	3.10	2.68	2.22
979.8	3.11	2.67	2.22
1000.0	2.19	1.91	1.69

REV. X2

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Page 4 of 5



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	28	42	39	53	39	63	44	66	57	87
1	-	23	+0	32	11	40	24	52	44	51	56	71
2	90	73	48	62	50	65	50	65	60	65	60	74
3	>100	55	43	69	44	63	39	60	48	64	59	59
4	>100	88	76	80	68	74	70	80	61	77	78	78
5	>100	84	65	61	57	64	57	63	56	61	74	71
6	>100	>94	91	86	85	84	>94	83	88	84	84	94
7	>100	86	82	89	>94	80	79	76	72	79	70	72
8	>100	>94	>94	>94	>94	>94	>94	>94	>94	92	90	>94
9	>100	>94	>94	>94	>94	>94	92	93	81	89	82	92
10	>100	>94	>94	>94	>94	>94	>94	>94	>94	>94	>94	>94
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 500.1 MHz; 0.00 dBm.

LO IN: 530.01 MHz; +10.00 dBm

IF OUT: 29.91 MHz; -5.82 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	20	32	24	39	27	45	30	47	40	64
1	-	22	+0	35	11	45	23	46	42	43	49	58
2	>100	72	56	63	58	76	55	71	64	70	66	84
3	>100	66	73	69	66	69	75	67	69	75	73	75
4	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
5	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
6	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
7	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
8	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
9	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
10	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 500.1 MHz; -10.00 dBm.

LO IN: 530.01 MHz; +10.00 dBm

IF OUT: 29.91 MHz; -15.74 dBm

Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.

2. + entry denotes harmonics are in (dBc) above IF OUTPUT.

3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

REV. X2

SBL-2LH+

100818

Page 5 of 5



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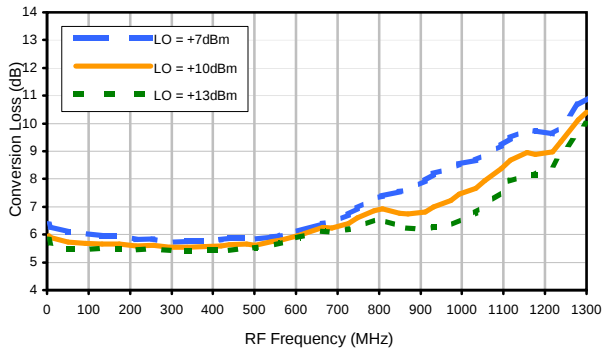


Frequency Mixer

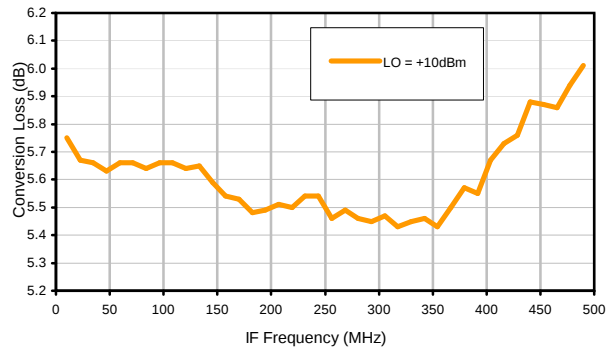
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Typical Performance Curves

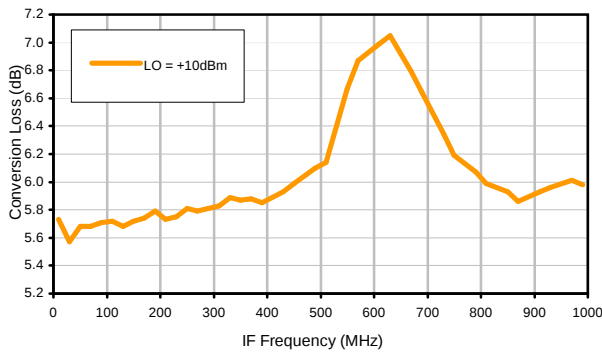
Conversion Loss @ IF=30MHz



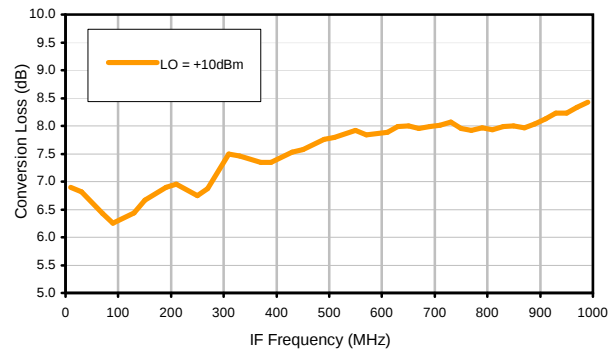
Conversion Loss vs. IF @ RF=500.1MHz



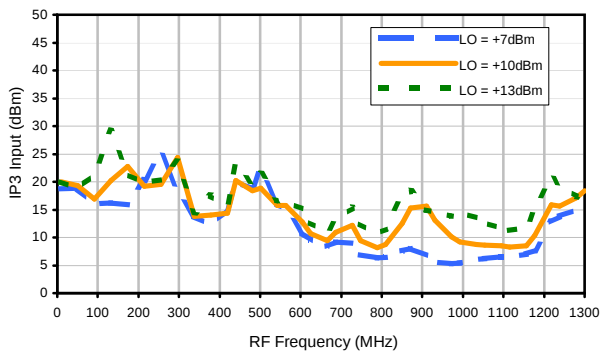
Conversion Loss vs. IF @ RF=10.1MHz



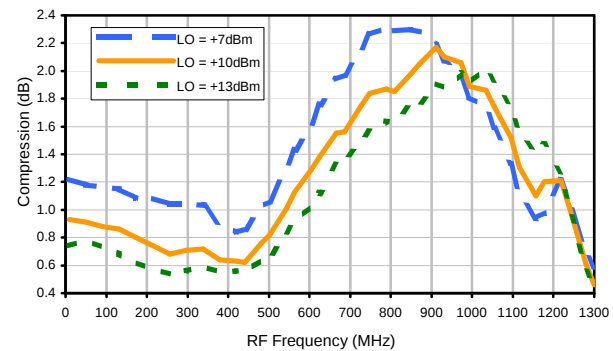
Conversion Loss vs. IF @ RF=1000.1MHz



IP3 Input



Compression @ RF IN=+5dBm



REV. X2
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Page 1 of 3

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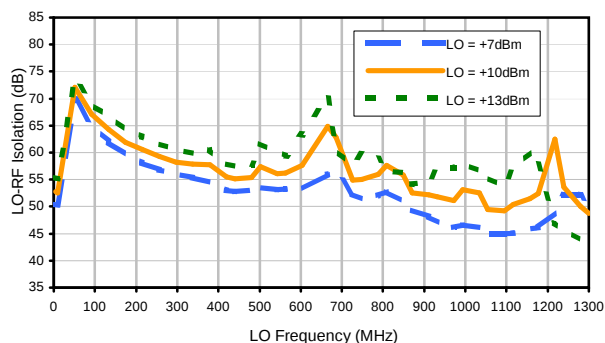


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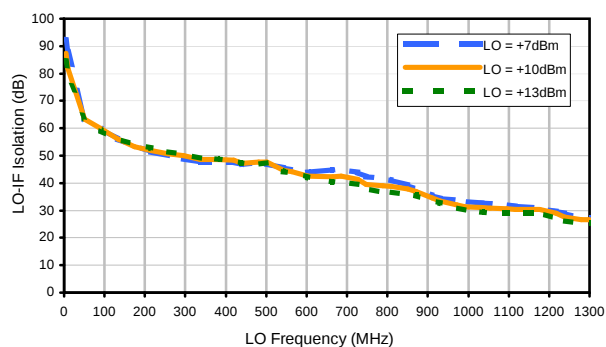


Typical Performance Curves

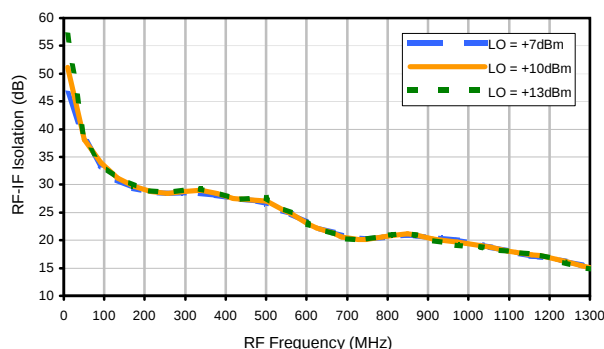
LO-RF Isolation



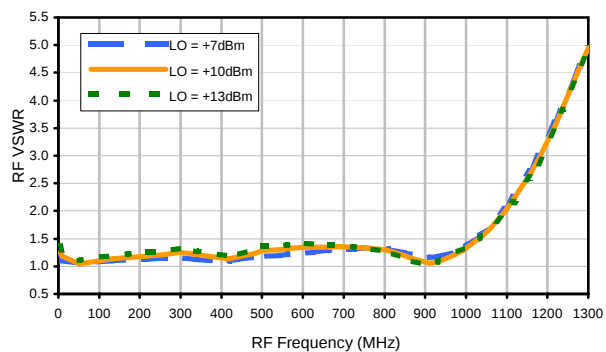
LO-IF Isolation



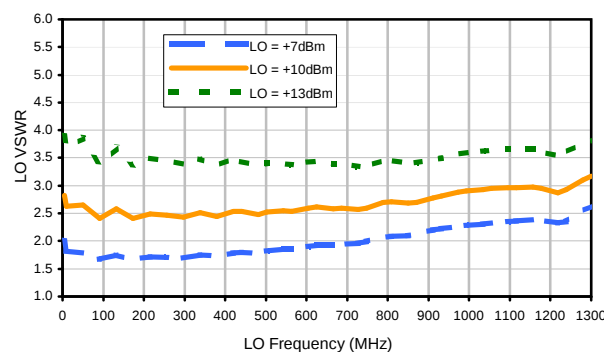
RF-IF Isolation



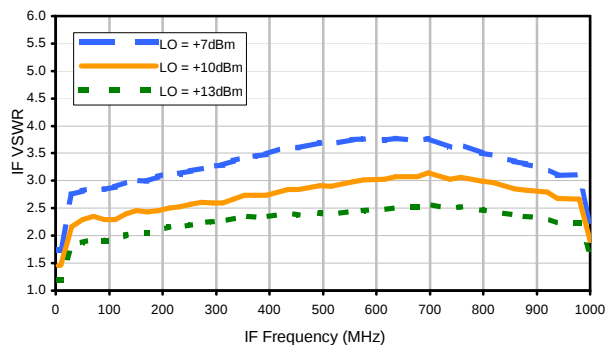
RF VSWR



LO VSWR



IF VSWR



REV. X2

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Page 2 of 3



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	28	42	39	53	39	63	44	66	57	87
1	-	23	+0	32	11	40	24	52	44	51	56	71
2	90	73	48	62	50	65	50	65	60	65	60	74
3	>100	55	43	69	44	63	39	60	48	64	59	59
4	>100	88	76	80	68	74	70	80	61	77	78	78
5	>100	84	65	61	57	64	57	63	56	61	74	71
6	>100	>94	91	86	85	84	>94	83	88	84	84	94
7	>100	86	82	89	>94	80	79	76	72	79	70	72
8	>100	>94	>94	>94	>94	>94	>94	>94	>94	92	90	>94
9	>100	>94	>94	>94	>94	>94	92	93	81	89	82	92
10	>100	>94	>94	>94	>94	>94	>94	>94	>94	>94	>94	>94
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 500.1 MHz; 0.00 dBm.
LO IN: 530.01 MHz; +10.00 dBm
IF OUT: 29.91 MHz; -5.82 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	20	32	24	39	27	45	30	47	40	64
1	-	22	+0	35	11	45	23	46	42	43	49	58
2	>100	72	56	63	58	76	55	71	64	70	66	84
3	>100	66	73	69	66	69	75	67	69	75	73	75
4	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
5	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
6	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
7	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
8	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
9	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
10	>100	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84	>84
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 500.1 MHz; -10.00 dBm.
LO IN: 530.01 MHz; +10.00 dBm
IF OUT: 29.91 MHz; -15.74 dBm

- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

REV. X2
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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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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