

Frequency Mixer WIDE BAND

SIM-83+

Level 7 (LO Power +7 dBm) 2300 to 8000 MHz

Maximum Ratings

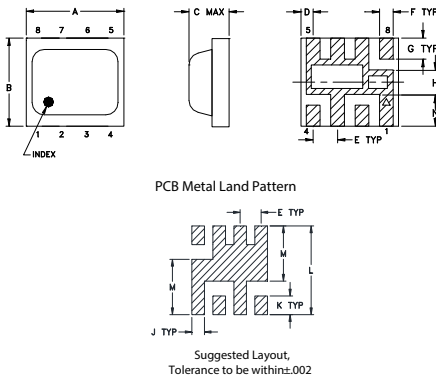
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	50mW

For extended temperature range, consult factory.
Permanent damage may occur if any of these limits are exceeded.

Pin Connections

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

Outline Drawing

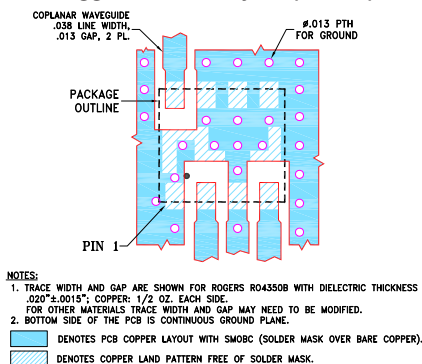


Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.200	.180	.087	.025	.050	.028	.043
5.08	4.57	2.2098	0.64	1.27	0.71	1.09

H	J	K	L	M	N	wt
.050	.030	.043	.204	.127	0.065	grams
1.27	0.76	1.09	5.18	3.23	1.65	0.08

Demo Board MCL P/N: TB-382 Suggested PCB Layout (PL-239)



Features

- wide bandwidth, 2300 to 8000 MHz
- low conversion loss, 6.0 dB typ.
- excellent IF BW, DC to 3000 MHz
- LTCC double balanced mixer
- tiny size, low profile, 0.08"
- useable as up and down converter
- aqueous washable
- protected by US patent 7,027,795

Applications

- satellite up and down converters
- defense radar and communications
- line of sight links
- WIFI
- blue tooth
- VSAT
- ISM

Electrical Specifications

FREQUENCY (MHz)	CONVERSION LOSS* (dB)			LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)		IP3 at center band (dBm)
	Typ.	σ	Max.	Typ.	Min.	Typ.	Min.	
LO/RF $f_c - f_u$								
IF								
2300-8000								
DC-3000								
2300-3200	6.0	0.1	7.8	35	27	23	15	12
3200-3700	5.8	0.1	7.0	31	26	24	18	13
3700-4200	5.9	0.2	7.4	32	26	28	19	15
4200-8000	6.0	0.2	8.9	23	17	18	7	10

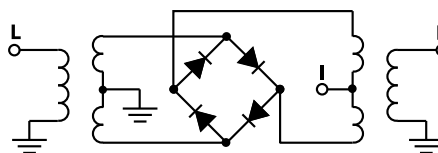
1 dB Compression: +1 dBm typ.

* Conversion loss at 30 MHz IF σ is a measure of repeatability from unit to unit.

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 +7dBm	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm
2300.00	2331.00	6.58	33.75	18.78	2.30	3.23
2500.00	2531.00	6.26	37.97	19.66	2.67	2.46
2700.00	2731.00	5.89	39.45	21.43	2.68	2.07
3000.00	3031.00	5.65	32.22	25.41	2.65	1.93
3300.00	3331.00	5.77	30.68	25.94	2.47	1.94
3600.00	3631.00	5.87	30.39	25.71	2.19	2.14
3900.00	3931.00	6.05	31.52	32.26	2.40	2.43
4200.00	4231.00	6.19	31.06	28.64	3.09	2.54
4500.00	4531.00	6.00	28.97	18.58	2.77	2.60
4800.00	4831.00	6.85	30.21	15.63	4.27	2.62
5100.00	5131.00	6.53	27.21	16.08	3.22	2.80
5400.00	5431.00	5.91	26.54	19.19	2.91	2.93
5700.00	5731.00	5.66	23.69	20.99	2.45	3.38
6000.00	6031.00	5.36	23.52	25.50	1.73	2.68
6500.00	6531.00	5.49	22.36	27.85	1.42	1.31
6900.00	6931.00	5.51	22.41	27.41	1.28	1.12
7300.00	7331.00	5.76	21.74	19.64	1.56	1.88
7600.00	7631.00	6.61	22.46	16.02	2.19	2.56
7800.00	7831.00	6.79	24.63	13.98	2.12	3.07
8000.00	8031.00	7.56	26.32	10.64	2.67	2.95

Electrical Schematic



Generic photo used for illustration purposes only

CASE STYLE: HV1195

+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, 500

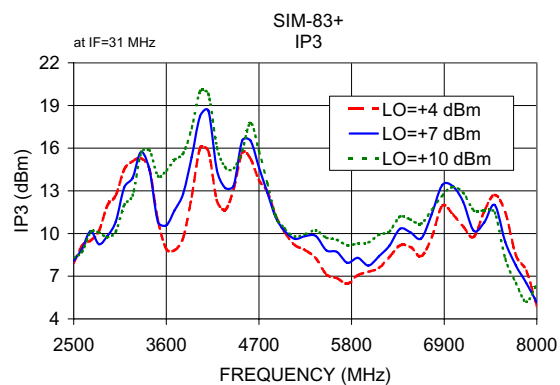
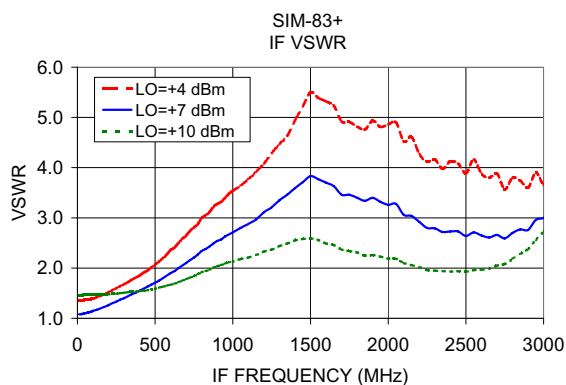
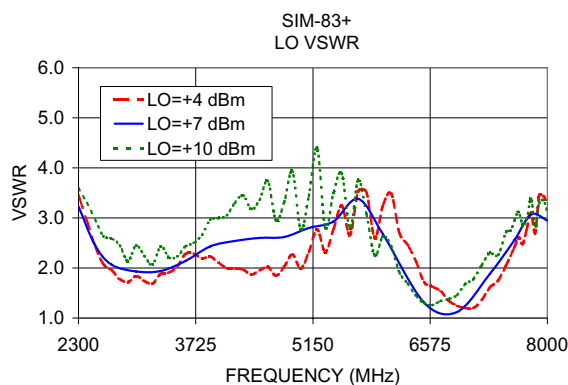
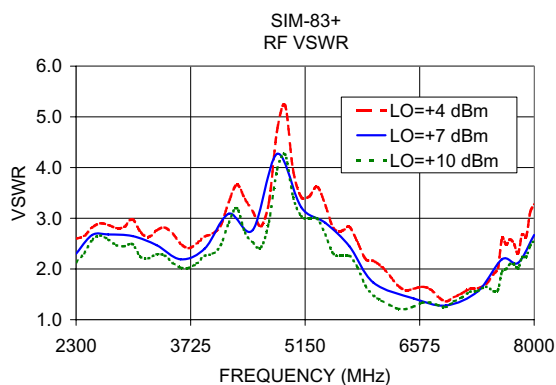
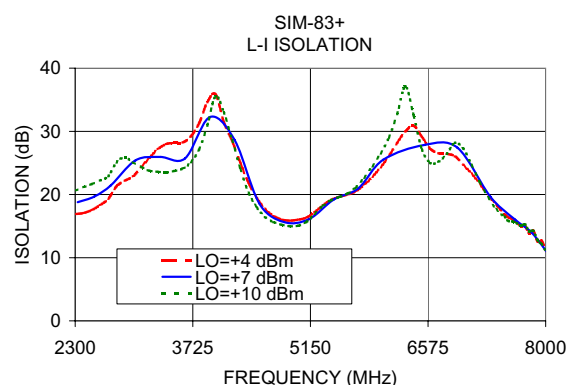
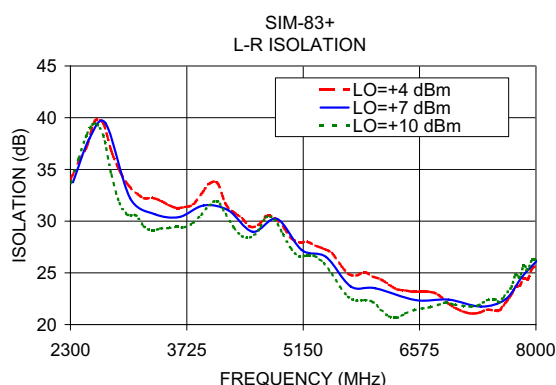
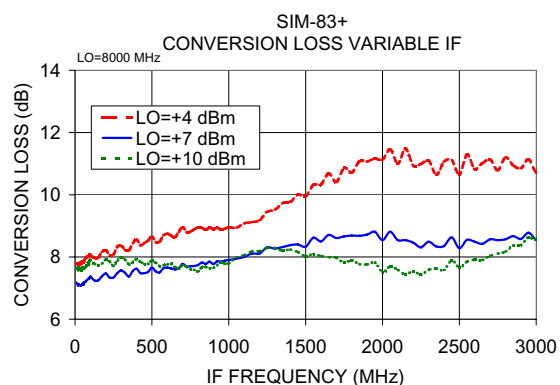
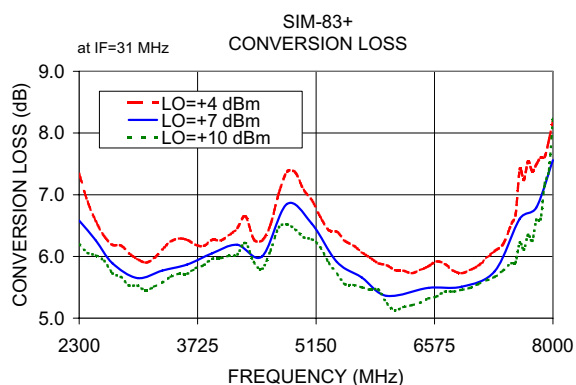
Notes

- 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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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+4	+7	+10
1500.1	1530.1	18.18	11.14	7.84
1680.1	1710.1	13.70	8.72	6.85
1860.1	1890.1	10.82	7.92	6.71
2040.1	2070.1	9.15	7.43	6.67
2220.1	2250.1	7.57	6.62	6.20
2400.1	2430.1	6.94	6.49	6.20
2580.1	2610.1	6.77	6.56	6.45
2760.1	2790.1	6.62	6.33	6.20
2940.1	2970.1	6.53	6.28	6.19
3120.1	3150.1	6.52	6.22	6.06
3300.1	3330.1	6.57	6.22	6.08
3480.1	3510.1	6.58	6.19	6.03
3660.1	3690.1	6.25	5.96	5.86
3840.1	3870.1	6.19	5.98	5.90
4020.1	4050.1	6.08	5.89	5.81
4200.1	4230.1	6.07	5.81	5.67
4380.1	4410.1	5.88	5.61	5.50
4560.1	4590.1	5.71	5.47	5.36
4720.1	4750.1	6.05	5.77	5.64
4900.1	4930.1	6.54	6.05	5.74
5060.1	5090.1	6.58	6.11	5.82
5240.1	5270.1	6.23	5.83	5.62
5400.1	5430.1	5.95	5.57	5.37
5580.1	5610.1	5.82	5.40	5.23
5740.1	5770.1	5.95	5.46	5.30
5920.1	5950.1	5.78	5.40	5.30
6080.1	6110.1	5.89	5.41	5.29
6260.1	6290.1	5.91	5.51	5.40
6420.1	6450.1	6.04	5.65	5.51
6600.1	6630.1	6.12	5.77	5.58
6760.1	6790.1	5.94	5.66	5.56
6940.1	6970.1	5.82	5.62	5.58
7100.1	7130.1	5.95	5.73	5.68
7280.1	7310.1	6.02	5.72	5.65
7440.1	7470.1	6.59	6.08	5.85
7620.1	7650.1	7.09	6.29	5.96
7780.1	7810.1	7.40	6.46	6.13
7960.1	7990.1	8.07	6.87	6.68
8120.1	8150.1	8.45	7.74	8.19
8300.1	8330.1	11.16	10.87	10.66

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+4	+7	+10
1500.1	1530.1	-6.78	0.75	7.25
1680.1	1710.1	-4.36	0.64	4.59
1860.1	1890.1	-1.82	3.43	12.08
2040.1	2070.1	3.06	8.66	12.77
2220.1	2250.1	7.74	11.68	13.07
2400.1	2430.1	9.61	10.66	11.12
2580.1	2610.1	9.76	9.56	9.18
2760.1	2790.1	10.23	10.41	11.18
2940.1	2970.1	12.96	11.63	9.82
3120.1	3150.1	16.47	16.76	14.74
3300.1	3330.1	17.90	16.40	16.90
3480.1	3510.1	12.10	11.49	15.52
3660.1	3690.1	9.89	12.46	16.29
3840.1	3870.1	14.52	18.09	21.05
4020.1	4050.1	16.39	19.82	21.09
4200.1	4230.1	10.89	12.20	12.96
4380.1	4410.1	11.84	12.85	14.54
4560.1	4590.1	14.43	14.53	14.58
4720.1	4750.1	12.80	13.38	14.09
4900.1	4930.1	11.53	10.39	9.77
5060.1	5090.1	8.87	9.36	9.87
5240.1	5270.1	8.30	9.57	9.53
5400.1	5430.1	7.39	9.23	9.66
5580.1	5610.1	6.63	8.78	9.81
5740.1	5770.1	6.38	8.32	9.79
5920.1	5950.1	8.03	8.31	9.99
6080.1	6110.1	8.68	8.67	10.45
6260.1	6290.1	11.07	10.57	11.16
6420.1	6450.1	12.17	11.84	11.79
6600.1	6630.1	10.57	11.15	11.63
6760.1	6790.1	11.08	13.02	13.73
6940.1	6970.1	12.65	14.56	14.70
7100.1	7130.1	11.13	12.82	14.33
7280.1	7310.1	12.95	11.74	13.63
7440.1	7470.1	13.32	13.50	13.27
7620.1	7650.1	8.82	9.66	10.53
7780.1	7810.1	7.45	9.32	7.53
7960.1	7990.1	4.63	6.52	4.76
8120.1	8150.1	1.73	3.90	7.03
8300.1	8330.1	2.59	11.69	16.30

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB)		
		@LO (dBm)		
		+4	+7	+10
1500.1	1530.1	-3.09	1.03	1.74
1680.1	1710.1	0.02	1.94	1.57
1860.1	1890.1	1.47	1.86	1.60
2040.1	2070.1	1.35	1.63	1.42
2220.1	2250.1	1.78	1.62	1.39
2400.1	2430.1	1.61	1.32	1.11
2580.1	2610.1	1.15	0.92	0.80
2760.1	2790.1	0.89	0.78	0.78
2940.1	2970.1	0.89	0.69	0.62
3120.1	3150.1	0.67	0.52	0.46
3300.1	3330.1	0.55	0.45	0.37
3480.1	3510.1	0.59	0.44	0.29
3660.1	3690.1	0.60	0.29	0.17
3840.1	3870.1	0.54	0.26	0.19
4020.1	4050.1	0.55	0.32	0.23
4200.1	4230.1	0.82	0.54	0.37
4380.1	4410.1	0.78	0.57	0.46
4560.1	4590.1	0.69	0.45	0.33
4720.1	4750.1	1.02	0.71	0.57
4900.1	4930.1	1.35	1.10	0.96
5060.1	5090.1	1.38	1.13	1.00
5240.1	5270.1	1.42	1.24	1.12
5400.1	5430.1	1.37	1.19	1.08
5580.1	5610.1	1.31	1.11	1.02
5740.1	5770.1	1.24	0.96	0.88
5920.1	5950.1	1.14	0.94	0.86
6080.1	6110.1	0.88	0.69	0.61
6260.1	6290.1	0.80	0.66	0.53
6420.1	6450.1	0.83	0.68	0.60
6600.1	6630.1	0.77	0.71	0.74
6760.1	6790.1	0.85	0.76	0.81
6940.1	6970.1	0.81	0.63	0.66
7100.1	7130.1	0.73	0.56	0.60
7280.1	7310.1	0.74	0.47	0.35
7440.1	7470.1	1.03	0.81	0.73
7620.1	7650.1	1.36	1.50	1.72
7780.1	7810.1	1.56	1.60	1.86
7960.1	7990.1	1.68	1.74	1.92
8120.1	8150.1	2.51	1.84	1.35
8300.1	8330.1	2.46	0.96	0.58

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=5150MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=2190MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=8010.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+7			+7			+7
3649.9	1500.1	12.42	110.1	2300.1	6.36	3710.0	4300.1	10.48
3456.1	1693.9	11.62	210.1	2400.1	6.08	3610.0	4400.1	9.79
3262.2	1887.8	9.68	310.1	2500.1	6.17	3510.0	4500.1	9.09
3068.4	2081.6	8.76	410.1	2600.1	6.21	3410.0	4600.1	8.24
2874.5	2275.5	7.98	510.1	2700.1	6.17	3310.0	4700.1	8.15
2680.7	2469.3	6.73	610.1	2800.1	6.02	3210.0	4800.1	8.08
2486.9	2663.1	5.72	710.1	2900.1	6.02	3110.0	4900.1	8.04
2293.0	2857.0	6.27	810.1	3000.1	5.98	3010.0	5000.1	8.09
2099.2	3050.8	7.01	910.1	3100.1	6.08	2910.0	5100.1	8.08
1905.3	3244.7	7.74	1010.1	3200.1	6.21	2810.0	5200.1	8.10
1711.5	3438.5	8.53	1110.1	3300.1	6.52	2710.0	5300.1	8.07
1517.7	3632.3	7.49	1210.1	3400.1	7.00	2610.0	5400.1	7.81
1323.8	3826.2	6.82	1310.1	3500.1	7.21	2510.0	5500.1	7.55
1130.0	4020.0	6.43	1410.1	3600.1	7.08	2410.0	5600.1	7.43
936.1	4213.9	6.36	1510.1	3700.1	7.08	2310.0	5700.1	7.45
742.3	4407.7	6.22	1610.1	3800.1	7.36	2210.0	5800.1	7.63
548.4	4601.6	5.99	1710.1	3900.1	7.22	2110.0	5900.1	7.82
354.6	4795.4	6.02	1810.1	4000.1	7.11	2010.0	6000.1	7.89
182.3	4967.7	5.78	1910.1	4100.1	7.05	1910.0	6100.1	7.85
10.0	5160.0	6.33	2010.1	4200.1	7.16	1810.0	6200.1	7.80
157.8	5307.8	5.84	2110.1	4300.1	7.28	1730.0	6280.1	7.66
324.0	5474.0	5.86	2210.1	4400.1	7.49	1630.0	6380.1	7.47
471.8	5621.8	5.85	2310.1	4500.1	7.51	1550.0	6460.1	7.41
638.0	5788.0	6.16	2410.1	4600.1	7.56	1450.0	6560.1	7.25
785.8	5935.8	6.13	2510.1	4700.1	7.70	1370.0	6640.1	7.22
952.0	6102.0	6.44	2610.1	4800.1	7.81	1270.0	6740.1	7.12
1099.8	6249.8	6.60	2710.1	4900.1	7.97	1190.0	6820.1	6.92
1266.0	6416.0	6.74	2810.1	5000.1	8.04	1090.0	6920.1	6.91
1413.8	6563.8	7.08	2910.1	5100.1	7.96	1010.0	7000.1	6.78
1580.1	6730.0	7.38	3010.1	5200.1	7.83	910.0	7100.1	6.75
1727.8	6877.8	7.20	3090.1	5280.1	7.80	830.0	7180.1	6.74
1894.1	7044.1	7.29	3190.1	5380.1	7.52	730.0	7280.1	6.71
2041.8	7191.8	7.20	3270.1	5460.1	7.72	650.0	7360.1	6.62
2208.1	7358.1	7.43	3370.1	5560.1	7.92	550.0	7460.1	6.51
2355.8	7505.8	7.52	3450.1	5640.1	8.09	470.0	7540.1	6.41
2522.1	7672.1	7.33	3550.1	5740.1	8.25	370.0	7640.1	6.11
2669.8	7819.8	7.58	3630.1	5820.1	8.63	290.0	7720.1	6.14
2836.1	7986.1	8.10	3730.1	5920.1	9.11	190.0	7820.1	6.30
2983.9	8133.9	9.84	3810.1	6000.1	9.72	110.0	7900.1	6.52
3150.1	8300.1	13.24	3910.1	6100.1	10.66	10.0	8000.1	7.14

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10
1530.1	48.75	42.90	36.95	21.84	22.22	22.83
1710.1	45.22	40.77	35.63	19.81	20.08	21.37
1890.1	37.62	33.70	31.76	17.96	19.22	21.21
2070.1	33.05	32.03	31.95	17.19	19.24	21.33
2250.1	34.66	34.58	34.80	17.74	19.97	22.13
2430.1	37.35	37.62	37.29	18.80	21.27	23.38
2610.1	38.73	37.99	36.80	20.30	22.54	24.03
2790.1	33.32	32.63	31.77	21.65	23.19	23.24
2970.1	32.09	30.28	29.08	22.34	23.37	23.26
3150.1	30.84	29.37	28.03	23.88	23.84	22.29
3330.1	31.01	28.95	27.61	26.19	24.48	22.91
3510.1	31.15	29.29	27.86	26.98	24.29	22.75
3690.1	30.98	29.05	27.85	27.74	25.22	23.85
3870.1	31.21	29.54	28.61	30.14	27.94	26.94
4050.1	31.91	30.82	29.47	32.70	32.69	32.25
4230.1	29.68	29.14	28.52	30.63	31.31	31.74
4410.1	28.42	27.95	27.75	24.16	23.21	22.79
4590.1	27.34	26.79	26.65	19.00	18.21	17.97
4750.1	27.42	27.03	26.95	16.56	16.12	16.04
4930.1	26.74	26.51	26.39	15.72	15.69	15.69
5090.1	25.94	25.50	25.42	15.92	16.05	16.33
5270.1	24.87	24.55	24.30	16.39	16.95	17.35
5430.1	23.94	23.59	23.30	17.02	17.91	18.57
5610.1	23.49	22.83	22.34	18.09	19.23	20.19
5770.1	23.33	22.09	21.40	19.29	20.59	21.93
5950.1	22.34	21.62	20.67	20.67	22.41	24.13
6110.1	21.80	20.58	19.73	22.60	24.40	26.30
6290.1	20.99	19.93	18.76	24.88	27.11	29.24
6450.1	20.59	19.76	18.68	25.84	26.31	26.68
6630.1	20.07	19.50	18.62	26.35	25.33	24.59
6790.1	19.92	19.83	19.00	28.42	27.20	26.12
6970.1	19.51	19.30	19.17	34.37	33.17	32.26
7130.1	18.71	19.16	19.16	28.39	28.59	28.68
7310.1	19.08	19.60	19.40	22.35	21.89	21.41
7470.1	19.50	20.09	20.35	18.86	18.42	18.11
7650.1	20.27	20.75	21.16	18.68	18.54	18.64
7810.1	20.07	20.56	21.02	15.75	15.19	15.40
7990.1	21.19	21.58	22.01	12.55	11.56	12.01
8150.1	23.19	23.54	23.48	10.18	9.17	9.69
8330.1	24.22	23.28	23.20	8.27	7.91	8.15

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
1500.1	1530.1	21.65	26.43	39.20
1679.8	1709.8	20.20	18.75	13.81
1859.6	1889.6	16.45	12.12	10.22
2039.3	2069.3	12.86	11.11	10.40
2219.0	2249.0	13.42	12.09	11.48
2398.8	2428.8	15.37	14.36	13.70
2578.5	2608.5	18.12	17.51	17.15
2758.3	2788.3	19.77	19.20	18.98
2938.0	2968.0	20.95	20.73	20.39
3117.7	3147.7	21.67	21.55	20.93
3297.5	3327.5	21.24	20.94	20.51
3477.2	3507.2	20.31	19.78	19.32
3656.9	3686.9	20.10	19.74	19.28
3836.7	3866.7	20.36	20.14	19.93
4016.4	4046.4	20.99	20.79	20.58
4196.2	4226.2	23.38	23.03	22.74
4375.9	4405.9	28.08	27.40	26.83
4555.6	4585.6	31.93	31.25	30.58
4735.4	4765.4	34.67	34.19	33.99
4915.1	4945.1	30.51	30.11	29.87
5094.8	5124.8	27.18	27.04	26.86
5274.6	5304.6	24.45	24.15	23.94
5434.3	5464.3	23.57	23.23	23.05
5614.1	5644.1	22.93	22.65	22.40
5773.8	5803.8	22.82	22.42	22.32
5953.6	5983.6	23.99	23.07	22.58
6113.3	6143.3	24.04	23.47	22.99
6293.1	6323.1	22.10	21.05	20.49
6452.8	6482.8	24.73	23.19	22.24
6632.6	6662.6	29.18	27.87	26.86
6792.4	6822.4	31.42	29.81	28.71
6972.1	7002.1	37.73	35.23	33.27
7131.9	7161.9	47.21	46.45	38.07
7311.6	7341.6	39.61	38.66	34.28
7471.4	7501.4	29.70	28.29	28.29
7651.1	7681.1	24.60	25.60	25.43
7810.9	7840.9	26.75	28.79	29.26
7990.6	8020.6	24.14	27.85	29.92
8150.4	8180.4	22.63	26.47	27.09
8330.1	8360.1	24.84	25.93	24.45

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=8000MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
1500.1	1530.1	7.17	3.89	2.67	1530.1	31.60	28.03	22.00	10.0	1.51	1.05	1.24
1679.8	1709.8	3.98	2.45	1.90	1710.1	26.74	22.58	15.00	89.8	1.51	1.11	1.27
1859.6	1889.6	2.82	1.84	1.44	1890.1	19.11	11.85	8.51	169.5	1.54	1.17	1.31
2039.3	2069.3	2.56	2.00	1.75	2070.1	8.99	6.26	6.03	269.3	1.69	1.31	1.37
2219.0	2249.0	2.71	2.33	2.15	2250.1	4.72	4.26	4.63	349.0	1.80	1.42	1.44
2398.8	2428.8	3.02	2.83	2.69	2430.1	2.96	3.06	3.63	448.7	2.02	1.57	1.51
2578.5	2608.5	3.23	3.14	3.09	2610.1	2.15	2.40	3.00	528.5	2.21	1.69	1.58
2758.3	2788.3	3.34	3.17	3.08	2790.1	1.81	2.08	2.65	628.2	2.46	1.87	1.68
2938.0	2968.0	3.43	3.17	3.02	2970.1	1.81	2.02	2.53	708.0	2.66	2.00	1.78
3117.7	3147.7	3.48	3.18	2.92	3150.1	1.81	2.02	2.52	807.7	2.95	2.19	1.92
3297.5	3327.5	3.40	3.07	2.82	3330.1	1.85	2.10	2.61	887.5	3.15	2.34	2.03
3477.2	3507.2	2.97	2.54	2.30	3510.1	2.07	2.30	2.76	987.2	3.51	2.58	2.20
3656.9	3686.9	2.53	2.28	2.11	3690.1	2.05	2.26	2.78	1067.0	3.75	2.75	2.33
3836.7	3866.7	2.46	2.25	2.12	3870.1	1.93	2.30	2.91	1166.7	3.99	2.92	2.44
4016.4	4046.4	2.48	2.29	2.15	4050.1	1.93	2.47	3.18	1246.5	4.15	3.03	2.53
4196.2	4226.2	2.74	2.53	2.36	4230.1	1.90	2.57	3.40	1346.2	4.32	3.09	2.55
4375.9	4405.9	2.66	2.39	2.23	4410.1	1.99	2.74	3.63	1425.9	4.51	3.21	2.66
4555.6	4585.6	2.18	1.95	1.79	4590.1	2.09	2.86	3.75	1525.7	4.73	3.29	2.70
4735.4	4765.4	2.33	2.14	2.02	4750.1	2.17	2.88	3.71	1605.4	4.92	3.40	2.77
4915.1	4945.1	2.87	2.62	2.42	4930.1	2.35	2.97	3.73	1705.1	5.07	3.46	2.78
5094.8	5124.8	2.78	2.56	2.39	5090.1	2.53	3.08	3.81	1784.9	5.30	3.64	2.89
5274.6	5304.6	2.55	2.35	2.19	5270.1	2.79	3.10	3.67	1884.6	5.51	3.71	2.92
5434.3	5464.3	2.47	2.24	2.10	5430.1	3.04	3.17	3.61	1964.4	5.63	3.79	2.97
5614.1	5644.1	2.33	2.11	1.99	5610.1	3.23	3.11	3.40	2064.1	5.66	3.79	2.94
5773.8	5803.8	2.26	2.05	1.95	5770.1	3.31	2.95	3.04	2143.9	5.63	3.76	2.93
5953.6	5983.6	2.18	1.92	1.84	5950.1	3.09	2.57	2.51	2243.6	5.51	3.69	2.86
6113.3	6143.3	2.21	1.95	1.83	6110.1	2.70	2.18	2.05	2323.4	5.38	3.60	2.80
6293.1	6323.1	2.20	1.97	1.83	6290.1	2.17	1.69	1.59	2423.1	5.14	3.48	2.72
6452.8	6482.8	2.27	2.03	1.87	6450.1	1.77	1.32	1.35	2502.9	4.98	3.39	2.69
6632.6	6662.6	2.32	2.13	1.98	6630.1	1.32	1.10	1.45	2602.6	4.67	3.23	2.61
6792.4	6822.4	2.15	2.00	1.90	6790.1	1.08	1.34	1.78	2682.3	4.39	3.10	2.57
6972.1	7002.1	2.10	1.99	1.92	6970.1	1.18	1.64	2.17	2782.1	4.15	3.00	2.55
7131.9	7161.9	2.12	2.02	1.97	7130.1	1.58	1.97	2.51	2861.8	3.88	2.94	2.60
7311.6	7341.6	1.95	1.75	1.66	7310.1	2.15	2.45	2.94	2961.5	3.79	2.96	2.70
7471.4	7501.4	2.45	2.07	1.85	7470.1	2.65	2.87	3.29	3041.3	3.58	2.94	2.80
7651.1	7681.1	2.92	2.52	2.29	7650.1	3.27	3.30	3.66	3141.0	3.53	3.04	3.04
7810.9	7840.9	3.00	2.56	2.31	7810.1	4.00	3.63	3.81	3220.8	3.27	3.02	3.18
7990.6	8020.6	3.11	2.56	2.29	7990.1	4.21	3.60	3.60	3320.5	3.24	3.24	3.60
8150.4	8180.4	2.87	2.31	2.22	8150.1	3.70	3.26	3.28	3400.3	3.13	3.42	3.96
8330.1	8360.1	2.54	2.54	2.56	8330.1	2.85	2.82	2.80	3500.0	3.18	3.80	4.59

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+11	11	18	27	---	---	---	---	---	---
1	-	20	+0	35	20	33	45	---	---	---	---	---
2	>90	51	55	51	51	53	51	>70	---	---	---	---
3	>90	57	55	>70	57	>70	>70	64	>70	---	---	---
4	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	---	---
5	---	---	>70	>70	>70	>70	>70	>70	>70	>70	>70	---
6	---	---	---	>70	>70	>70	>70	>70	>70	>70	>70	>70
7	---	---	---	---	>70	>70	>70	>70	>70	>70	>70	>70
8	---	---	---	---	---	>70	>70	>70	>70	>70	>70	>70
9	---	---	---	---	---	---	>70	>70	>70	>70	>70	>70
10	---	---	---	---	---	---	---	>70	>70	>70	>70	>70
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

Test conditions: RF IN: 5150 MHz; -14.00 dBm.
LO IN: 5180 MHz; +7.00 dBm
IF OUT: 30 MHz; -20.15 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+1	20	28	39	---	---	---	---	---	---
1	-	19	+0	36	20	39	47	---	---	---	---	---
2	71	42	45	38	42	55	45	59	---	---	---	---
3	>90	36	34	60	35	60	53	49	59	---	---	---
4	>90	68	58	54	66	50	63	58	58	71	---	---
5	---	---	77	65	60	76	56	>80	68	63	76	---
6	---	---	---	>80	>80	70	>80	63	79	71	70	>80
7	---	---	---	---	>80	>80	78	>80	71	>80	78	76
8	---	---	---	---	---	>80	>80	>80	>80	74	>80	>80
9	---	---	---	---	---	---	>80	>80	>80	>80	>80	>80
10	---	---	---	---	---	---	---	>80	>80	>80	>80	>80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

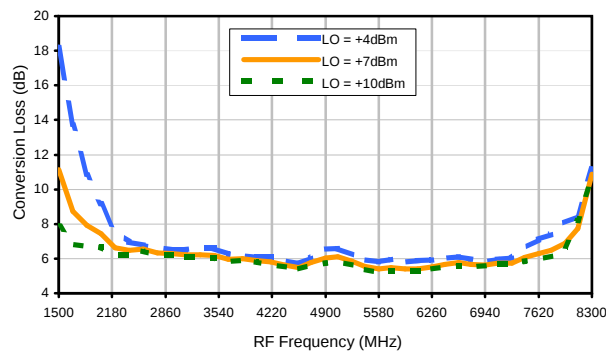
LO HARMONICS ORDER

Test conditions: RF IN: 5150 MHz; -4.00 dBm.
LO IN: 5180 MHz; +7.00 dBm
IF OUT: 30 MHz; -10.12 dBm

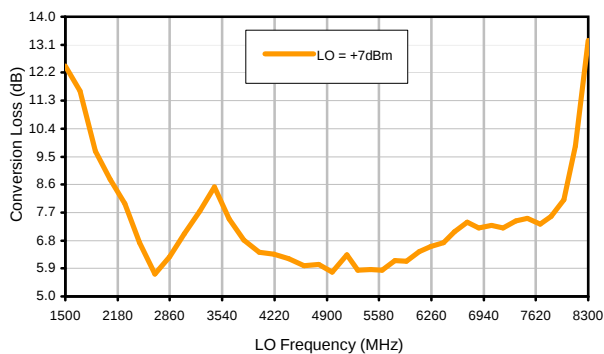
- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

Typical Performance Curves

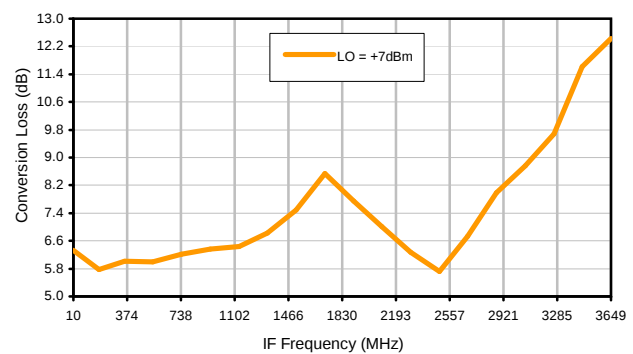
Conversion Loss @ IF=30MHz



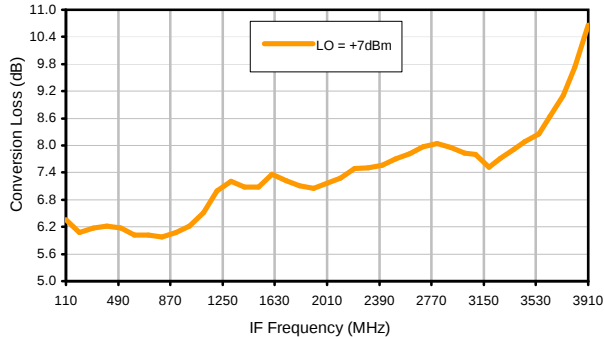
Conversion Loss vs. LO @ RF=5150MHz



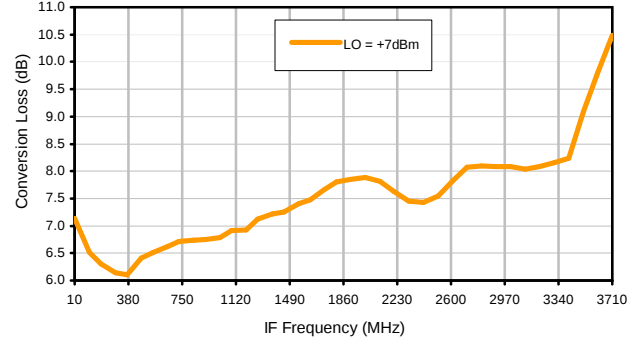
Conversion Loss vs. IF @ RF=5150MHz



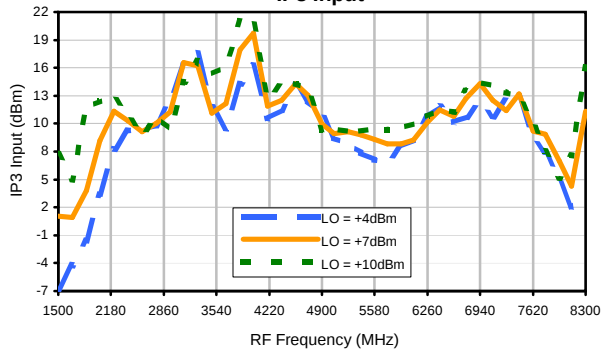
Conversion Loss vs. IF @ RF=2190MHz



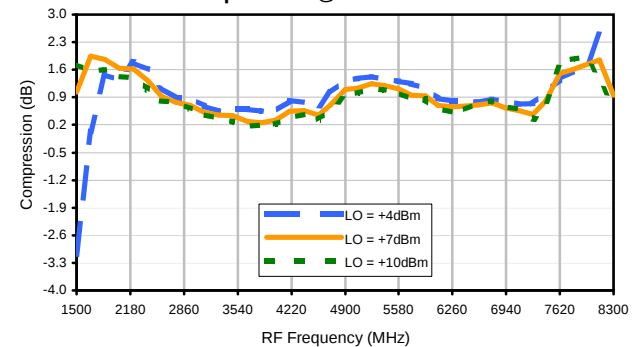
Conversion Loss vs. IF @ RF=8010.1MHz



IP3 Input

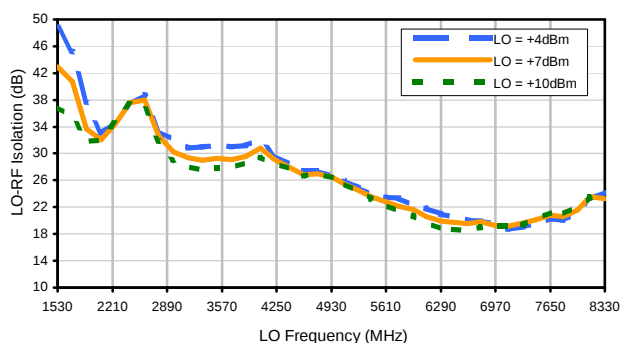


Compression @ RF IN=+1dBm

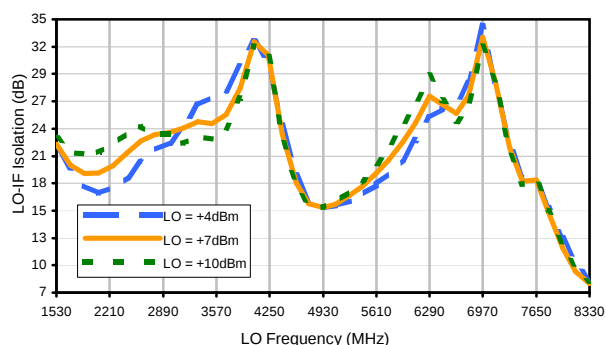


Typical Performance Curves

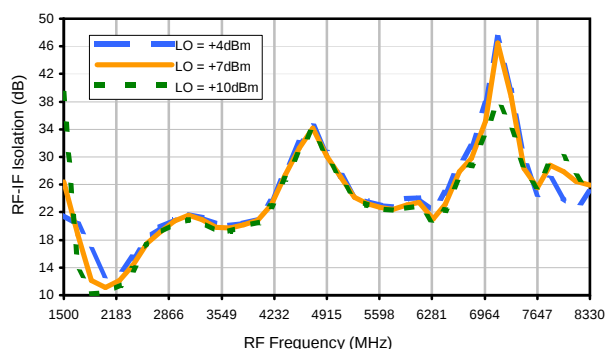
LO-RF Isolation



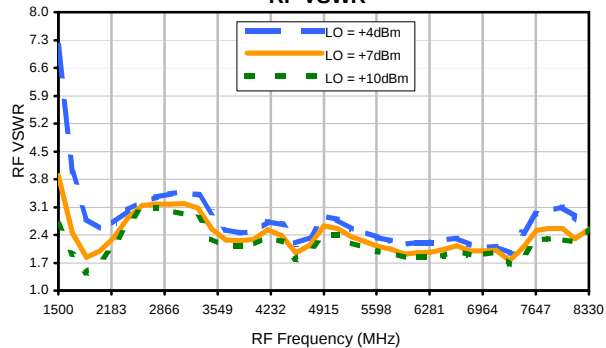
LO-IF Isolation



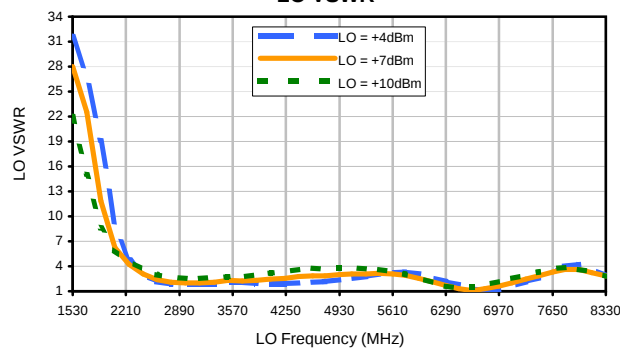
RF-IF Isolation



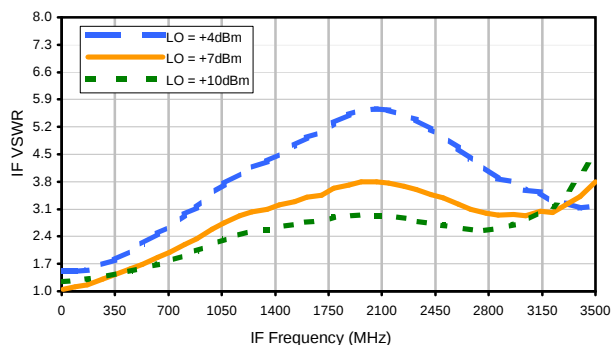
RF VSWR



LO VSWR



IF VSWR



REV. X3

SIM-83+

101028

Page 2 of 3



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+11	11	18	27	---	---	---	---	---	---
1	-	20	+0	35	20	33	45	---	---	---	---	---
2	>90	51	55	51	51	53	51	>70	---	---	---	---
3	>90	57	55	>70	57	>70	>70	64	>70	---	---	---
4	>90	>70	>70	>70	>70	>70	>70	>70	>70	>70	---	---
5	---	---	>70	>70	>70	>70	>70	>70	>70	>70	>70	---
6	---	---	---	>70	>70	>70	>70	>70	>70	>70	>70	>70
7	---	---	---	---	>70	>70	>70	>70	>70	>70	>70	>70
8	---	---	---	---	---	>70	>70	>70	>70	>70	>70	>70
9	---	---	---	---	---	---	>70	>70	>70	>70	>70	>70
10	---	---	---	---	---	---	---	>70	>70	>70	>70	>70
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

Test conditions: RF IN: 5150 MHz; -14.00 dBm.
LO IN: 5180 MHz; +7.00 dBm
IF OUT: 30 MHz; -20.15 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+1	20	28	39	---	---	---	---	---	---
1	-	19	+0	36	20	39	47	---	---	---	---	---
2	71	42	45	38	42	55	45	59	---	---	---	---
3	>90	36	34	60	35	60	53	49	59	---	---	---
4	>90	68	58	54	66	50	63	58	58	71	---	---
5	---	---	77	65	60	76	56	>80	68	63	76	---
6	---	---	---	>80	>80	70	>80	63	79	71	70	>80
7	---	---	---	---	>80	>80	78	>80	71	>80	78	76
8	---	---	---	---	---	>80	>80	>80	>80	74	>80	>80
9	---	---	---	---	---	---	>80	>80	>80	>80	>80	>80
10	---	---	---	---	---	---	---	>80	>80	>80	>80	>80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

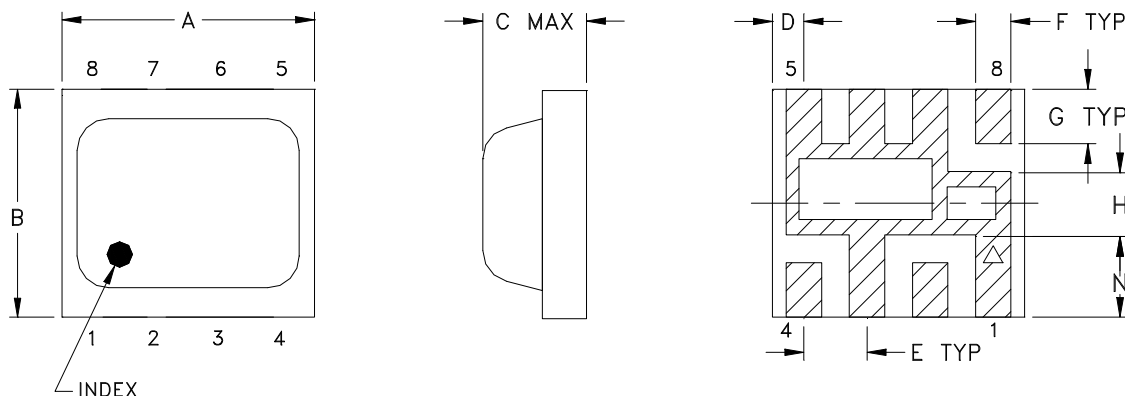
LO HARMONICS ORDER

Test conditions: RF IN: 5150 MHz; -4.00 dBm.
LO IN: 5180 MHz; +7.00 dBm
IF OUT: 30 MHz; -10.12 dBm

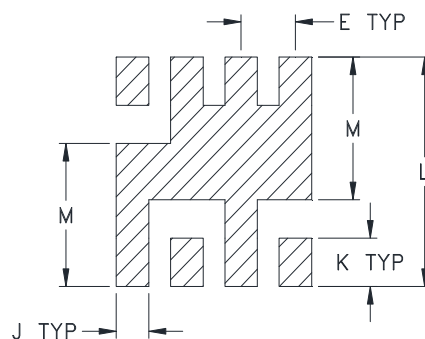
- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

Outline Dimensions

HV1195



PCB Metal Land Pattern



Suggested Layout,
Tolerance to be within $\pm.002$

CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
HV1195	0.200 (5.08)	0.180 (4.57)	0.087 (2.21)	0.025 (0.64)	0.050 (1.27)	0.028 (0.71)	0.043 (1.09)	0.050 (1.27)	0.030 (0.76)	0.043 (1.09)	0.204 (5.18)	0.127 (3.23)	0.065 (1.65)

CASE#	WT, GRAM
HV1195	.08

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

Notes:

1. Case material: Plastic encapsulation on Ceramic base.
2. Termination finish: Palladium Silver.



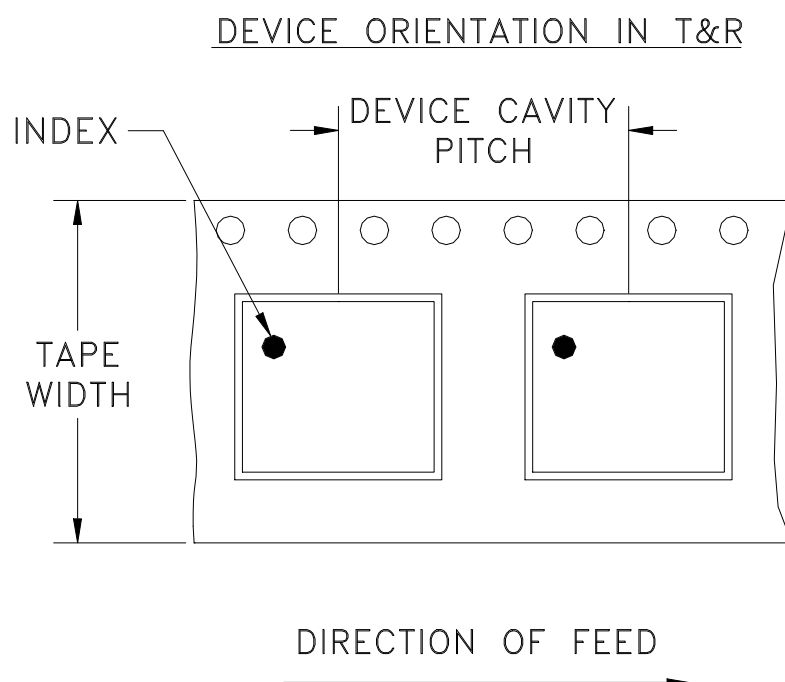
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REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M104559	NEW RELEASE	04/11/06	MMG	DJ
A	M109513	MODIFIED SMOBC AREA, REMOVED NOTE 3	01/31/07	PW	DJ
B	M176274	MODIFIED CASE STYLE	09/23/19	ITG	RB

COPLANAR WAVEGUIDE
.038 LINE WIDTH,
.013 GAP, 2 PL.

Ø.013 PTH
FOR GROUND

PACKAGE OUTLINE

PIN 1

1. TRACE WIDTH AND GAP ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020"±.0015"; COPPER: 1/2 OZ. EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.



DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2 PL DECIMALS ±
3 PL DECIMALS ± .005
ANGLES ±
FRACTIONS ±

04/11/06



Mini-Circuits®

13 Neptune Avenue
Brooklyn NY 11235

PL, rh, HV1195, SIM, TB-382

SIZE
A

CODE IDENT
15542

DRAWING NO:
98-PL-239

REV:	B
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FILE: 98PL239

SCALE: 10:1

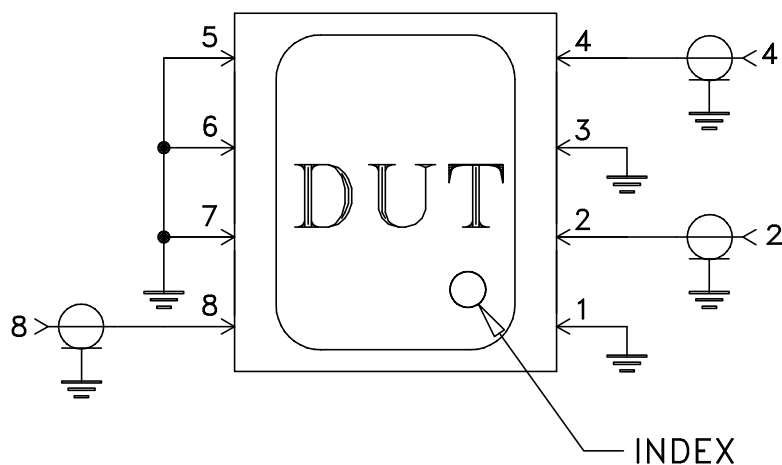
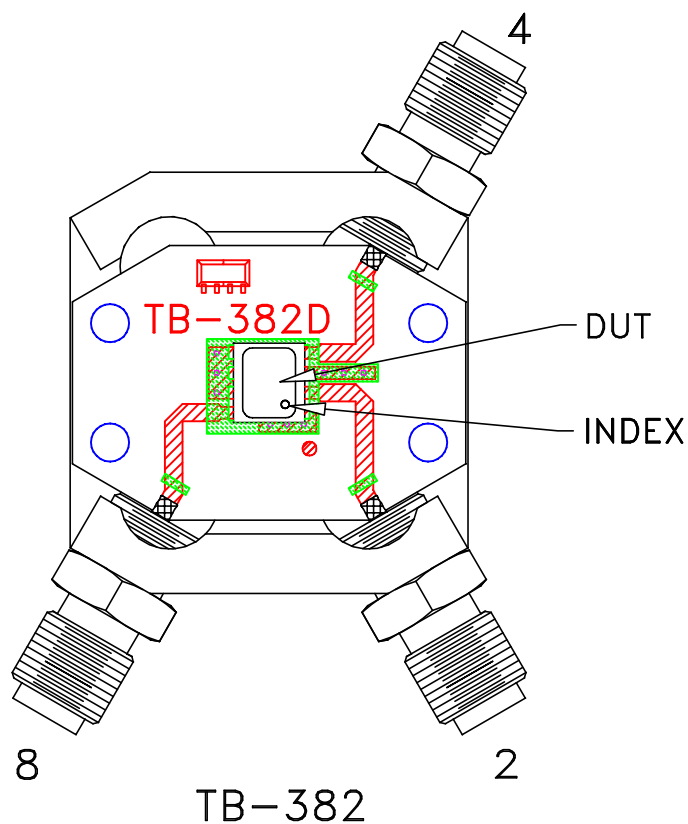
SHEET:	1 OF 1
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ASHEETA1.DWG REV:A DATE:01/12/95

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Evaluation Board and Circuit

For Pin Connections refer to Data Sheet of the DUT



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.020 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	-40° to 85° C Case Temperature	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Autoclave	15 psig, 100% RH, 121°C, 96 hours	JESD22-A102-C, Condition C
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutectic Process: 225°C peak Pb-Free Process: 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 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