

Frequency Mixer WIDE BAND

ZX05-153LH-S+

Level 10 (LO Power +10 dBm) 3200 to 15000 MHz

Maximum Ratings

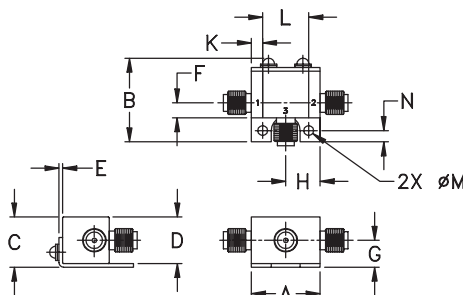
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	50mW

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

Coaxial Connections

LO	2
RF	3
IF	1

Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.74	.90	.54	.50	.04	.16	.29
18.80	22.86	13.72	12.70	1.02	4.06	7.37

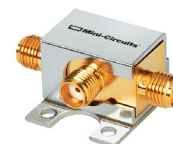
H	J	K	L	M	N	wt
.37	--	.122	.496	.106	.122	grams
9.40	--	3.10	12.60	2.69	3.10	20.0

Features

- wide bandwidth, 3200 to 15000 MHz
- low conversion loss, 6.6 dB typ.
- high L-R isolation, 36 dB typ.
- excellent IF BW, DC to 4000 MHz
- rugged construction
- small size
- useable as up and down converter
- protected by US patents, 6,790,049 and 7,027,795

Applications

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



Generic photo used for illustration purposes only

CASE STYLE: FL905

Connectors Model
SMA ZX05-153LH-S+

+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)		IP3 at center band (dBm)
	LO/RF f _L -f _U	Typ.	σ	Max.	Typ.	Min.	Typ.	Min.	
3200-15000		DC-4000							
3200-4500		6.6	0.1	8.5	40	36	18	12	12
4500-5100		6.2	0.1	7.5	38	34	12	9	16
5100-14000		7.0	0.3	14.2	34	22	18	9	15
14000-15000		7.8	0.4	11.2	25	15	23	12	10

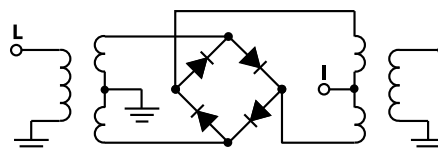
1 dB COMPRESS.: +2 dBm typ.

* 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 +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm
3200.10	3230.10	7.32	46.50	21.25	2.52	15.26
3800.10	3830.10	6.59	46.23	19.58	2.93	7.41
4400.10	4430.10	6.34	40.60	15.17	2.41	3.94
5000.10	5030.10	6.14	37.06	12.14	2.71	1.91
5600.10	5630.10	6.06	35.48	13.32	3.23	2.53
6200.10	6230.10	6.18	38.40	15.97	2.68	4.09
7000.10	7030.10	5.46	36.65	17.39	2.13	4.47
7600.10	7630.10	5.70	39.03	14.07	1.64	3.30
8200.10	8230.10	5.35	30.91	14.22	1.95	1.90
9000.10	9030.10	5.93	34.96	24.70	3.33	2.03
9600.10	9630.10	6.39	28.80	20.15	4.07	2.07
10200.10	10230.10	6.77	31.31	20.86	5.58	2.07
10800.10	10830.10	7.55	38.50	26.81	3.29	2.75
11400.10	11430.10	8.97	39.43	33.14	6.89	5.25
12000.10	12030.10	10.33	36.37	37.96	2.84	7.08
12600.10	12630.10	11.08	32.60	39.88	5.49	6.63
13200.10	13230.10	12.27	26.20	36.26	3.02	4.45
13800.10	13830.10	10.81	24.44	32.04	4.59	3.97
14400.10	14430.10	8.30	26.38	27.04	2.28	3.58
15000.10	15030.10	7.79	24.05	20.42	1.80	2.49

Electrical Schematic



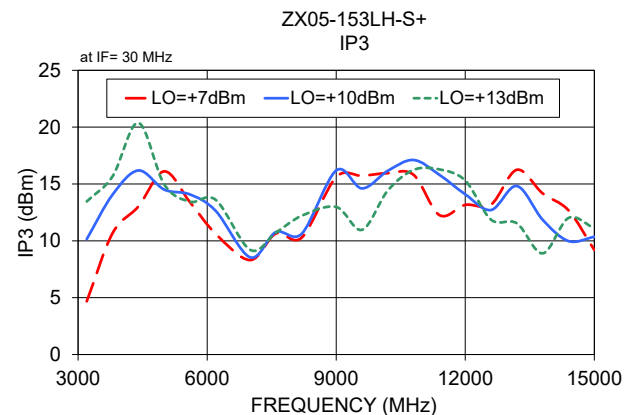
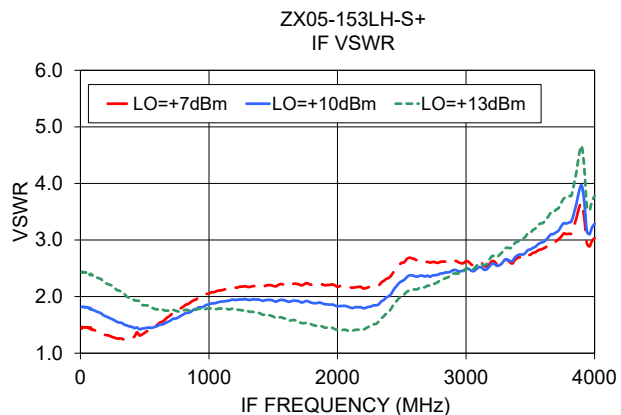
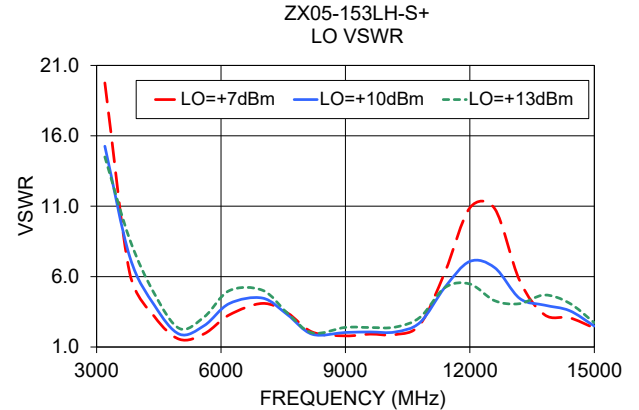
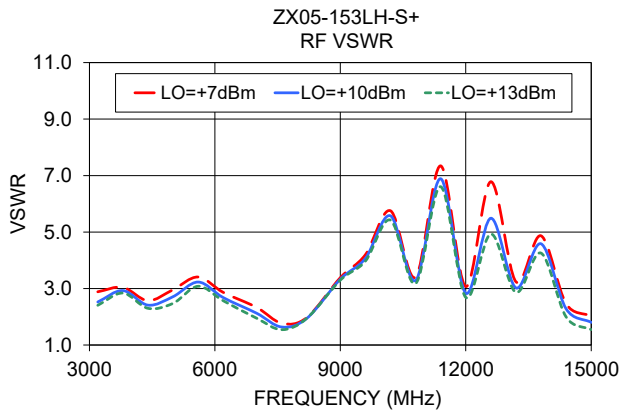
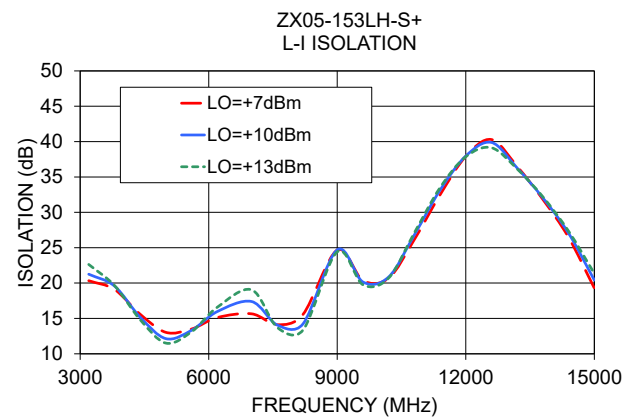
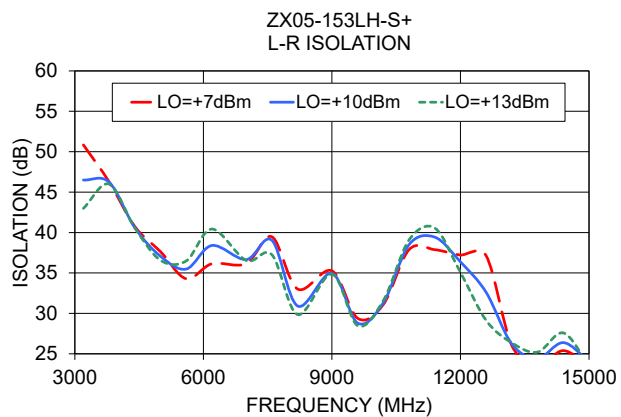
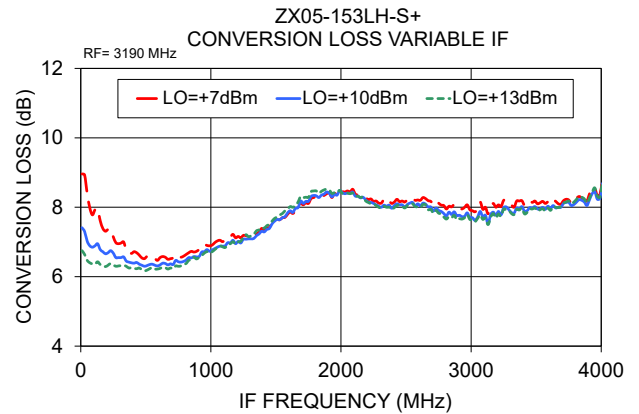
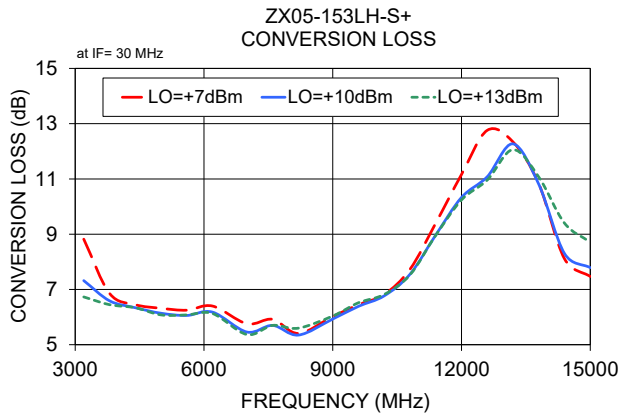
Notes

- 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.
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Page 1 of 2



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Frequency Mixer

ZX05-153LH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+7	+10	+13
2400.1	2430.1	20.83	16.63	12.52
2717.6	2747.6	14.34	9.94	7.72
3035.1	3065.1	9.37	6.96	6.18
3352.6	3382.6	7.19	6.48	6.10
3670.1	3700.1	6.62	6.31	6.14
3987.6	4017.6	6.30	6.09	6.00
4305.1	4335.1	6.09	5.92	5.88
4622.6	4652.6	5.84	5.78	5.82
4940.1	4970.1	6.02	5.89	5.86
5257.6	5287.6	6.62	6.40	6.26
5575.1	5605.1	6.44	6.25	6.16
5892.6	5922.6	6.19	6.02	5.96
6210.1	6240.1	6.10	5.90	5.85
6527.6	6557.6	6.10	5.78	5.70
6845.1	6875.1	6.09	5.76	5.62
7162.6	7192.6	5.73	5.42	5.34
7480.1	7510.1	5.92	5.69	5.64
7797.6	7827.6	5.90	5.73	5.83
8115.1	8145.1	5.84	5.79	5.96
8432.6	8462.6	5.72	5.67	5.88
8750.1	8780.1	5.95	5.92	6.04
9099.3	9129.3	6.25	6.21	6.35
9416.9	9446.9	6.87	6.79	6.92
9766.1	9796.1	7.88	7.82	7.95
10083.6	10113.6	8.21	8.15	8.26
10432.8	10462.8	8.66	8.58	8.66
10750.4	10780.4	8.77	8.65	8.69
11099.6	11129.6	8.95	8.75	8.73
11417.1	11447.1	9.26	8.72	8.62
11766.3	11796.3	15.08	9.40	8.64
12083.9	12113.9	12.68	9.58	9.16
12433.1	12463.1	10.93	9.07	8.99
12750.6	12780.6	9.44	8.76	8.89
13099.8	13129.8	8.55	8.17	8.30
13417.4	13447.4	8.51	8.39	8.57
13766.6	13796.6	8.79	8.74	8.97
14084.1	14114.1	8.82	8.79	9.13
14433.3	14463.3	9.52	9.48	10.06
14750.8	14780.8	9.08	9.14	10.09
15100.1	15130.1	10.61	10.74	11.83

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+7	+10	+13
2400.1	2430.1	-5.53	-3.95	-0.96
2717.6	2747.6	-3.55	1.53	5.54
3035.1	3065.1	3.01	11.42	10.53
3352.6	3382.6	7.03	11.12	12.63
3670.1	3700.1	9.51	13.37	15.29
3987.6	4017.6	11.67	15.21	15.07
4305.1	4335.1	10.43	11.27	12.78
4622.6	4652.6	17.36	19.39	18.12
4940.1	4970.1	13.02	13.82	14.56
5257.6	5287.6	16.14	14.30	13.06
5575.1	5605.1	13.79	14.28	13.47
5892.6	5922.6	10.99	12.29	12.51
6210.1	6240.1	9.53	11.41	12.27
6527.6	6557.6	8.49	9.28	10.79
6845.1	6875.1	8.76	8.85	9.54
7162.6	7192.6	8.41	8.79	9.31
7480.1	7510.1	9.59	10.00	10.23
7797.6	7827.6	10.73	10.21	10.39
8115.1	8145.1	11.61	11.12	10.67
8432.6	8462.6	12.34	10.89	13.18
8750.1	8780.1	14.80	14.19	13.09
9099.3	9129.3	15.56	15.02	11.31
9416.9	9446.9	15.42	14.47	10.73
9766.1	9796.1	16.27	15.60	12.46
10083.6	10113.6	15.98	15.76	13.91
10432.8	10462.8	16.98	17.22	15.63
10750.4	10780.4	16.24	17.14	15.86
11099.6	11129.6	13.76	16.10	16.09
11417.1	11447.1	10.87	13.61	15.15
11766.3	11796.3	1.27	11.32	12.85
12083.9	12113.9	6.34	11.83	13.68
12433.1	12463.1	11.99	12.38	11.92
12750.6	12780.6	15.26	13.09	9.56
13099.8	13129.8	15.48	13.54	9.41
13417.4	13447.4	14.43	12.98	8.75
13766.6	13796.6	14.68	12.71	8.77
14084.1	14114.1	14.41	11.84	8.28
14433.3	14463.3	14.13	11.72	9.22
14750.8	14780.8	11.59	9.45	11.92
15100.1	15130.1	10.32	9.77	12.16

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+2dBm (dB)		
		@LO (dBm)		
		+7	+10	+13
2400.1	2430.1	-3.05	-1.30	1.04
2717.6	2747.6	-0.16	1.76	2.72
3035.1	3065.1	1.69	2.76	2.49
3352.6	3382.6	2.23	1.83	1.46
3670.1	3700.1	1.52	1.15	0.94
3987.6	4017.6	0.97	0.74	0.60
4305.1	4335.1	0.85	0.70	0.59
4622.6	4652.6	0.48	0.35	0.29
4940.1	4970.1	0.65	0.49	0.40
5257.6	5287.6	0.90	0.76	0.69
5575.1	5605.1	1.15	0.98	0.86
5892.6	5922.6	1.19	1.11	1.02
6210.1	6240.1	1.10	0.98	0.93
6527.6	6557.6	1.13	0.99	0.92
6845.1	6875.1	1.35	1.14	1.04
7162.6	7192.6	1.46	1.20	1.07
7480.1	7510.1	1.20	0.96	0.85
7797.6	7827.6	1.11	0.91	0.83
8115.1	8145.1	1.16	1.03	0.97
8432.6	8462.6	0.93	0.92	0.97
8750.1	8780.1	0.80	0.82	0.95
9099.3	9129.3	0.68	0.76	1.03
9416.9	9446.9	0.73	0.73	0.88
9766.1	9796.1	0.49	0.58	0.77
10083.6	10113.6	0.47	0.58	0.76
10432.8	10462.8	0.34	0.44	0.63
10750.4	10780.4	0.30	0.37	0.54
11099.6	11129.6	0.22	0.31	0.47
11417.1	11447.1	0.15	0.29	0.49
11766.3	11796.3	0.18	0.34	0.63
12083.9	12113.9	0.12	0.26	0.64
12433.1	12463.1	0.07	0.29	0.67
12750.6	12780.6	0.26	0.44	0.97
13099.8	13129.8	0.42	0.54	1.06
13417.4	13447.4	0.46	0.61	1.07
13766.6	13796.6	0.56	0.79	1.14
14084.1	14114.1	0.69	0.96	1.22
14433.3	14463.3	0.66	0.96	0.90
14750.8	14780.8	0.69	0.81	0.43
15100.1	15130.1	0.56	0.57	0.42

REV. X2

ZX05-153LH+

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Page 1 of 5



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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=9100MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=3190MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=15010.099MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+10			+10			+10
4100.0	5000.0	9.30	10.1	3200.1	7.02	2910.0	12100.1	11.94
3894.4	5205.6	8.60	130.1	3320.1	6.67	2830.0	12180.1	11.80
3688.7	5411.3	7.67	250.1	3440.1	6.39	2750.0	12260.1	11.92
3483.1	5616.9	7.36	370.1	3560.1	6.15	2670.0	12340.1	11.47
3277.4	5822.6	7.51	490.1	3680.1	6.01	2590.0	12420.1	11.09
3071.8	6028.2	7.78	610.1	3800.1	6.06	2510.0	12500.1	10.79
2866.1	6233.9	7.83	730.1	3920.1	6.15	2430.0	12580.1	10.59
2660.5	6439.5	7.80	850.1	4040.1	6.28	2350.0	12660.1	10.46
2454.9	6645.1	8.14	970.1	4160.1	6.49	2270.0	12740.1	10.48
2249.2	6850.8	8.30	1090.1	4280.1	6.52	2190.0	12820.1	10.28
2043.6	7056.4	8.01	1210.1	4400.1	6.65	2110.0	12900.1	9.94
1837.9	7262.1	7.61	1330.1	4520.1	6.78	2030.0	12980.1	9.67
1632.3	7467.7	7.32	1450.1	4640.1	7.08	1950.0	13060.1	9.60
1426.6	7673.4	7.24	1550.1	4740.1	7.43	1870.0	13140.1	9.53
1221.0	7879.0	7.06	1670.1	4860.1	7.71	1790.0	13220.1	9.39
1015.4	8084.6	6.96	1770.1	4960.1	8.00	1710.0	13300.1	9.24
809.7	8290.3	6.80	1890.1	5080.1	8.14	1630.0	13380.1	9.19
604.1	8495.9	6.56	1990.1	5180.1	8.15	1550.0	13460.1	9.08
398.4	8701.6	6.29	2110.1	5300.1	8.02	1470.0	13540.1	9.06
192.8	8907.2	6.23	2210.1	5400.1	7.85	1410.0	13600.1	8.91
10.0	9110.0	6.44	2330.1	5520.1	7.80	1330.0	13680.1	8.86
164.5	9264.5	6.22	2430.1	5620.1	7.81	1270.0	13740.1	8.85
336.2	9436.2	6.15	2550.1	5740.1	7.78	1190.0	13820.1	8.81
490.7	9590.7	6.27	2650.1	5840.1	7.73	1130.0	13880.1	8.85
662.3	9762.3	6.62	2770.1	5960.1	7.63	1050.0	13960.1	8.92
816.8	9916.8	6.90	2870.1	6060.1	7.49	990.0	14020.1	8.89
988.5	10088.5	7.03	2990.1	6180.1	7.52	910.0	14100.1	8.90
1143.0	10243.0	7.14	3090.1	6280.1	7.52	850.0	14160.1	8.89
1314.7	10414.7	7.21	3210.1	6400.1	7.47	770.0	14240.1	8.81
1469.2	10569.2	7.39	3310.1	6500.1	7.48	710.0	14300.1	8.90
1640.8	10740.8	7.37	3430.1	6620.1	7.55	630.0	14380.1	8.89
1795.3	10895.3	7.49	3530.1	6720.1	7.62	570.0	14440.1	8.92
1967.0	11067.0	7.67	3650.1	6840.1	7.70	490.0	14520.1	8.96
2121.5	11221.5	7.78	3750.1	6940.1	7.83	430.0	14580.1	8.97
2293.2	11393.2	7.89	3870.1	7060.1	7.83	350.0	14660.1	9.04
2447.7	11547.7	8.10	3970.1	7160.1	8.05	290.0	14720.1	9.13
2619.3	11719.3	8.71	4090.1	7280.1	8.49	210.0	14800.1	9.31
2773.8	11873.8	9.27	4190.1	7380.1	8.83	150.0	14860.1	9.40
2945.5	12045.5	9.36	4310.1	7500.1	9.57	70.0	14940.1	9.56
3100.0	12200.0	9.92	4410.1	7600.1	10.17	10.0	15000.1	9.88

Frequency Mixer

ZX05-153LH+

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+7	+10	+13	+7	+10	+13
2430.1	45.01	45.09	45.65	24.77	24.71	24.95
2747.6	42.08	44.29	42.66	22.69	22.73	23.43
3065.1	44.64	44.88	41.51	20.99	21.54	22.94
3382.6	55.18	47.93	44.17	19.62	21.03	22.13
3700.1	50.77	49.54	48.66	19.08	19.96	20.43
4017.6	42.42	41.94	42.15	18.60	18.60	18.59
4335.1	39.40	39.33	39.67	17.33	16.87	16.54
4652.6	39.05	38.78	38.35	14.56	14.04	13.56
4970.1	38.13	37.93	37.38	13.26	12.51	11.63
5287.6	36.29	37.12	37.42	13.13	12.44	11.79
5605.1	35.17	36.51	37.62	13.69	13.48	13.17
5922.6	35.78	37.32	38.78	14.54	14.96	15.10
6240.1	36.40	38.84	41.00	15.28	16.26	16.78
6557.6	37.13	39.05	40.50	15.80	17.07	18.22
6875.1	37.55	38.96	39.72	15.93	17.51	19.16
7192.6	37.85	38.00	37.02	15.31	16.89	18.45
7510.1	37.43	38.26	36.99	14.51	15.30	15.64
7827.6	34.14	33.91	33.35	13.97	13.43	12.44
8145.1	31.80	30.64	30.05	14.66	13.52	12.78
8462.6	36.69	35.82	34.25	17.59	16.57	16.15
8780.1	38.68	41.12	43.41	21.10	20.74	20.88
9129.4	32.77	32.46	32.03	24.44	24.57	24.06
9446.8	29.58	29.13	28.82	21.98	21.89	21.55
9796.1	29.97	29.83	29.77	19.83	19.84	19.45
10113.6	32.33	32.92	33.24	19.91	20.20	19.84
10462.8	40.39	42.67	45.40	22.76	22.90	23.00
10780.4	37.28	37.87	37.75	25.73	26.52	26.62
11129.6	30.58	31.54	31.56	29.41	30.35	30.59
11447.1	27.29	28.90	29.78	33.54	34.57	34.99
11796.3	28.25	29.64	31.48	39.63	39.83	40.37
12113.9	36.08	39.66	41.14	43.95	43.50	42.79
12463.1	41.64	36.99	32.59	45.08	42.61	40.78
12780.6	33.29	30.70	28.22	45.18	43.72	41.74
13129.8	28.12	27.84	27.52	42.83	41.91	40.72
13447.4	26.29	27.25	28.34	39.61	39.04	38.93
13796.6	27.40	28.96	30.42	35.48	35.63	35.76
14114.1	31.01	31.62	32.22	31.37	31.84	32.16
14463.3	33.28	32.53	31.78	25.25	26.17	26.48
14780.9	26.81	26.87	26.64	19.35	20.20	21.05
15130.1	17.02	17.19	17.39	17.89	18.83	19.80

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+7	+10	+13
2400.1	2430.1	15.16	15.17	14.93
2717.6	2747.6	15.25	15.58	13.04
3035.1	3065.1	18.95	16.58	15.20
3352.6	3382.6	19.08	18.65	18.54
3670.1	3700.1	22.37	22.24	21.81
3987.6	4017.6	21.43	20.69	19.88
4305.1	4335.1	18.56	18.00	17.52
4622.6	4652.6	17.81	17.48	17.14
4940.1	4970.1	20.68	20.13	19.64
5257.6	5287.6	24.51	24.05	23.50
5575.1	5605.1	23.03	22.90	22.72
5892.6	5922.6	23.15	22.97	22.81
6210.1	6240.1	24.63	24.43	24.23
6527.6	6557.6	27.28	27.15	27.01
6845.1	6875.1	33.28	33.20	32.99
7162.6	7192.6	34.17	33.89	33.71
7480.1	7510.1	22.88	22.48	22.17
7797.6	7827.6	18.13	17.84	17.55
8115.1	8145.1	16.68	16.50	16.42
8432.6	8462.6	18.17	17.44	17.29
8750.1	8780.1	24.64	23.62	22.79
9099.3	9129.3	31.24	31.66	30.62
9416.9	9446.9	18.63	18.71	18.98
9766.1	9796.1	17.17	17.28	17.41
10083.6	10113.6	17.23	17.53	17.78
10432.8	10462.8	20.06	20.53	20.80
10750.4	10780.4	21.14	21.46	21.85
11099.6	11129.6	24.52	24.99	25.30
11417.1	11447.1	26.18	27.03	27.41
11766.3	11796.3	25.85	27.71	28.54
12083.9	12113.9	27.92	29.58	29.96
12433.1	12463.1	28.78	29.96	29.83
12750.6	12780.6	28.19	28.50	28.65
13099.8	13129.8	26.65	26.84	26.97
13417.4	13447.4	25.22	25.32	25.44
13766.6	13796.6	24.08	24.14	24.23
14084.1	14114.1	24.20	24.31	24.50
14433.3	14463.3	26.61	26.67	26.75
14750.8	14780.8	24.16	24.49	25.81
15100.1	15130.1	13.29	13.30	13.41

Frequency Mixer

ZX05-153LH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=15000MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+7	+10	+13		+7	+10	+13		+7	+10	+13
2400.1	2430.1	4.80	3.81	2.77	2430.0	38.61	37.77	34.75	10.0	1.45	1.86	2.50
2717.6	2747.6	3.19	2.17	1.60	2755.0	36.20	34.07	27.59	130.2	1.46	1.89	2.55
3035.1	3065.1	2.95	2.28	2.08	3080.0	27.16	20.70	17.39	250.5	1.31	1.68	2.27
3352.6	3382.6	2.92	2.73	2.61	3405.0	13.39	11.93	12.44	370.7	1.03	1.28	1.88
3670.1	3700.1	2.99	2.87	2.79	3730.0	7.34	8.47	9.79	491.0	1.43	1.35	1.74
3987.6	4017.6	3.00	2.85	2.73	4055.0	5.23	6.53	7.90	611.2	1.69	1.56	1.78
4305.1	4335.1	2.84	2.64	2.50	4380.0	3.47	4.34	5.25	731.4	1.80	1.68	1.81
4622.6	4652.6	2.34	2.19	2.06	4705.0	2.26	2.78	3.31	851.7	1.86	1.71	1.77
4940.1	4970.1	2.70	2.49	2.31	5030.0	1.54	1.88	2.27	971.9	1.96	1.77	1.73
5257.6	5287.6	3.57	3.33	3.07	5355.0	1.44	1.87	2.35	1092.2	2.06	1.84	1.73
5575.1	5605.1	3.58	3.39	3.22	5680.0	2.03	2.68	3.34	1212.4	2.14	1.89	1.70
5892.6	5922.6	3.25	3.08	2.95	6005.0	2.82	3.67	4.54	1352.7	2.25	1.96	1.67
6210.1	6240.1	2.90	2.69	2.57	6330.0	3.59	4.36	5.31	1472.9	2.28	1.97	1.64
6527.6	6557.6	2.72	2.43	2.26	6655.0	4.05	4.72	5.49	1613.2	2.27	1.93	1.55
6845.1	6875.1	2.53	2.28	2.10	6980.0	4.02	4.46	5.00	1733.5	2.30	1.96	1.52
7162.6	7192.6	2.18	1.94	1.79	7305.0	3.85	3.90	4.25	1873.7	2.33	1.97	1.49
7480.1	7510.1	1.89	1.73	1.61	7630.0	3.30	3.19	3.30	1994.0	2.28	1.91	1.44
7797.6	7827.6	1.90	1.78	1.70	7955.0	2.60	2.46	2.54	2134.3	2.22	1.87	1.43
8115.1	8145.1	1.96	1.93	1.92	8280.0	2.00	1.88	2.00	2254.5	2.23	1.89	1.49
8432.6	8462.6	2.25	2.23	2.29	8605.0	1.74	1.82	2.06	2394.8	2.38	2.04	1.72
8750.1	8780.1	2.73	2.69	2.71	8930.0	1.71	1.92	2.24	2515.0	2.68	2.36	2.05
9099.3	9129.3	3.29	3.22	3.20	9255.0	1.79	1.99	2.32	2655.3	2.78	2.47	2.20
9416.9	9446.9	3.42	3.31	3.19	9580.0	1.87	2.04	2.37	2775.5	2.62	2.37	2.20
9766.1	9796.1	4.04	3.95	3.79	9905.0	1.94	2.11	2.44	2915.8	2.71	2.51	2.41
10083.6	10113.6	4.72	4.55	4.41	10230.0	1.97	2.13	2.47	3036.1	2.72	2.55	2.52
10432.8	10462.8	4.59	4.46	4.32	10555.0	2.07	2.24	2.59	3176.3	2.57	2.49	2.61
10750.4	10780.4	4.61	4.45	4.20	10880.0	2.40	2.46	2.74	3296.6	2.56	2.53	2.73
11099.6	11129.6	5.28	5.04	4.79	11205.0	2.73	2.54	2.62	3436.9	2.58	2.60	2.88
11417.1	11447.1	5.74	5.25	4.93	11530.0	2.12	1.89	1.81	3557.1	2.69	2.78	3.15
11766.3	11796.3	6.94	5.14	4.54	11855.0	1.80	1.72	1.56	3697.4	2.97	3.13	3.62
12083.9	12113.9	5.81	4.66	4.17	12180.0	3.73	3.21	2.65	3817.6	3.15	3.37	3.96
12433.1	12463.1	6.05	4.86	4.41	12505.0	5.51	4.07	3.02	3957.9	3.05	3.30	3.89
12750.6	12780.6	5.31	4.55	4.13	12830.0	6.09	4.12	3.01	4078.2	3.19	3.50	4.15
13099.8	13129.8	4.75	4.26	3.88	13155.0	4.72	3.65	3.27	4218.4	3.65	4.06	4.89
13417.4	13447.4	4.69	4.37	4.05	13480.0	3.52	3.58	3.86	4338.7	3.97	4.44	5.36
13766.6	13796.6	4.43	4.11	3.79	13805.0	3.17	3.78	4.42	4479.0	4.19	4.68	5.56
14084.1	14114.1	3.95	3.70	3.36	14130.0	3.20	3.91	4.61	4599.2	4.44	4.92	5.75
14433.3	14463.3	3.91	3.60	3.13	14455.0	3.18	3.67	4.19	4739.5	5.13	5.65	6.51
14750.8	14780.8	3.35	2.94	2.45	14805.0	3.09	3.31	3.67	4859.7	5.79	6.30	7.11
15100.1	15130.1	1.63	1.49	1.36	15130.0	2.67	2.69	2.89	5000.0	6.51	7.02	7.76

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+14	19	5	---	---	---	---	---	---	---
1	-	12	+0	31	24	39	---	---	---	---	---	---
2	81	55	42	45	50	52	47	---	---	---	---	---
3	89	62	66	>72	61	62	68	71	---	---	---	---
4	---	---	>72	>72	>72	>72	>72	>72	>72	---	---	---
5	---	---	---	>72	>72	>72	>72	>72	>72	>72	---	---
6	---	---	---	---	>72	>72	>72	>72	>72	>72	>72	---
7	---	---	---	---	---	>72	>72	>72	>72	>72	>72	>72
8	---	---	---	---	---	---	>72	>72	>72	>72	>72	>72
9	---	---	---	---	---	---	---	>72	>72	>72	>72	>72
10	---	---	---	---	---	---	---	---	>72	>72	>72	>72
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 7750 MHz; -12.00 dBm.
LO IN: 7780 MHz; +10.00 dBm
IF OUT: 30 MHz; -17.92 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+4	30	16	---	---	---	---	---	---	---
1	-	12	+0	34	25	45	---	---	---	---	---	---
2	61	44	31	36	42	45	41	---	---	---	---	---
3	63	43	46	55	41	46	53	56	---	---	---	---
4	---	---	68	64	60	55	65	60	57	---	---	---
5	---	---	---	70	81	73	60	59	68	66	---	---
6	---	---	---	---	>82	76	73	71	77	73	72	---
7	---	---	---	---	---	>82	>82	81	73	74	80	75
8	---	---	---	---	---	---	>82	>82	>82	74	>82	>82
9	---	---	---	---	---	---	---	>82	>82	>82	>82	>82
10	---	---	---	---	---	---	---	---	>82	>82	>82	82
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 7750 MHz; -2.00 dBm.
LO IN: 7780 MHz; +10.00 dBm
IF OUT: 30 MHz; -8.17 dBm

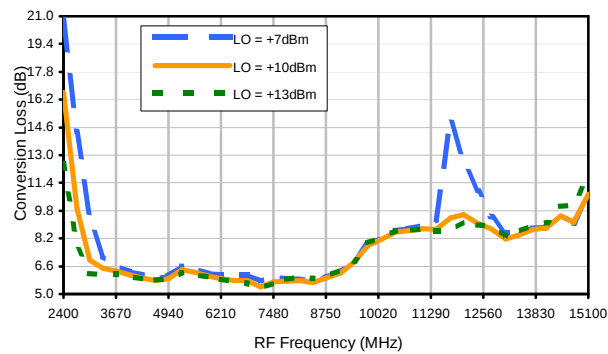
- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

Frequency Mixer

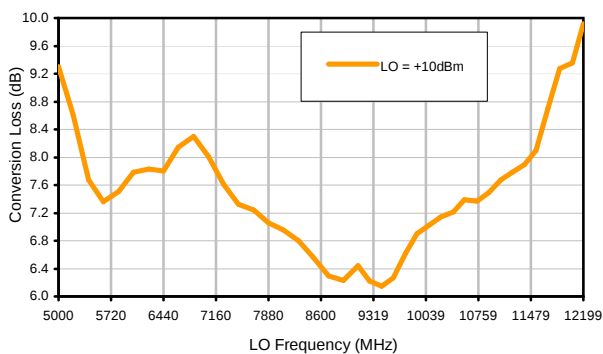
ZX05-153LH+

Typical Performance Curves

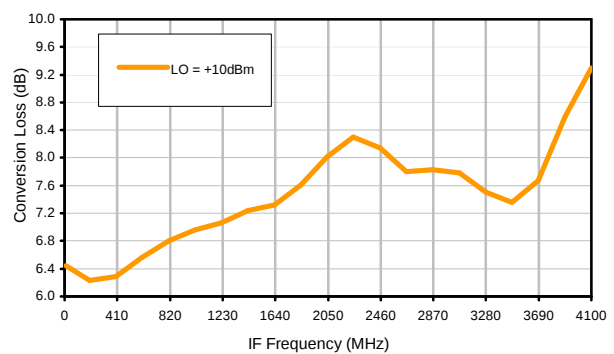
Conversion Loss @ IF=30MHz



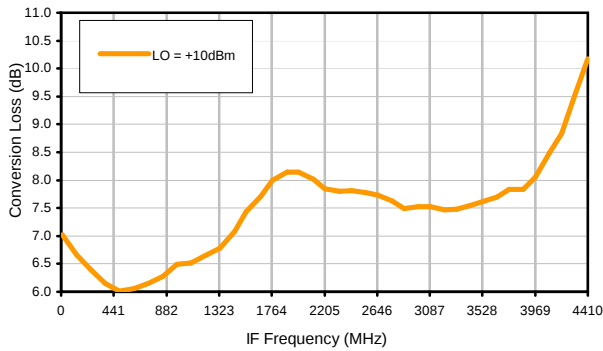
Conversion Loss vs. LO @ RF=9100MHz



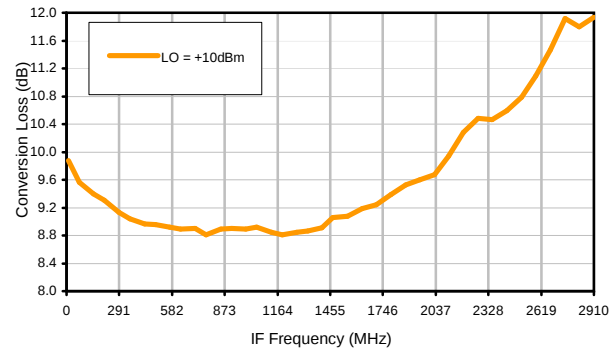
Conversion Loss vs. IF @ RF=9100MHz



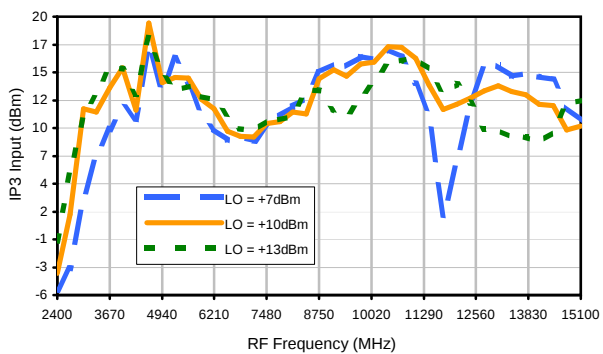
Conversion Loss vs. IF @ RF=3190MHz



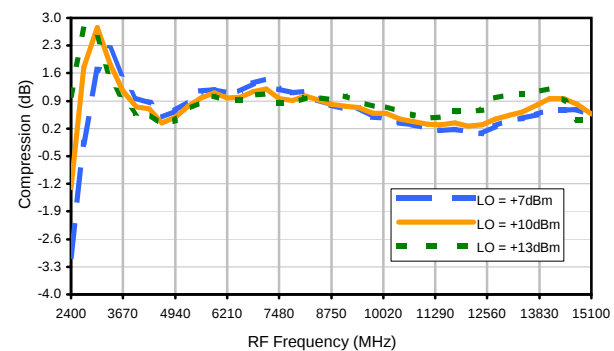
Conversion Loss vs. IF @ RF=15010.099MHz



IP3 Input



Compression @ RF IN=+2dBm



REV. X2

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Page 1 of 3

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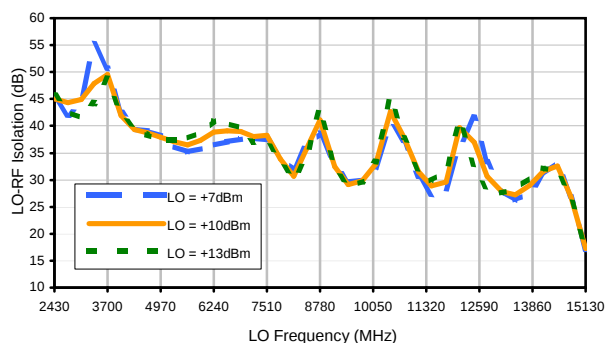


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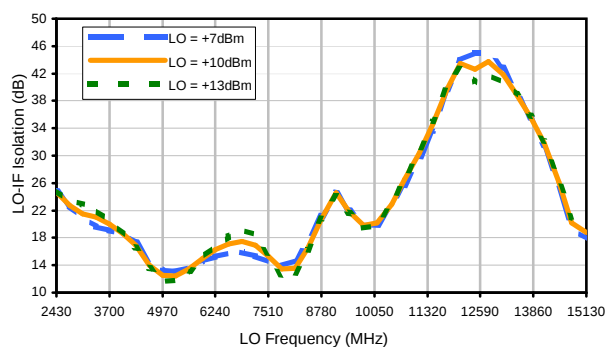
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Typical Performance Curves

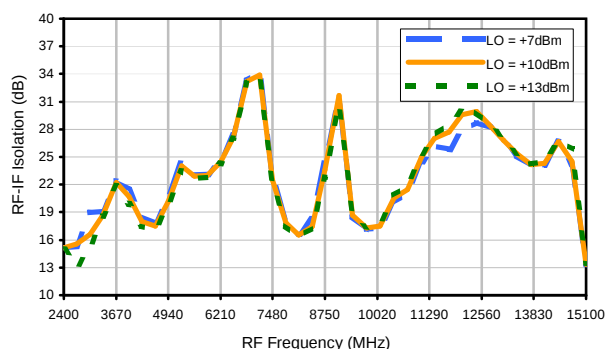
LO-RF Isolation



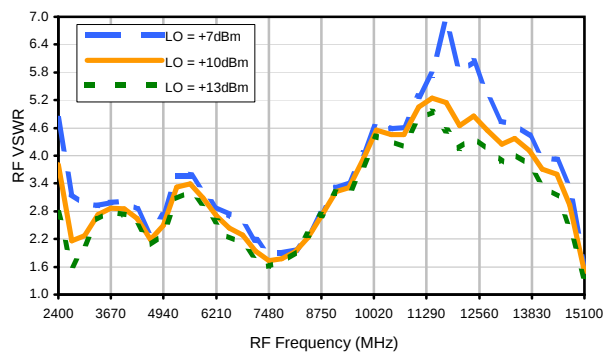
LO-IF Isolation



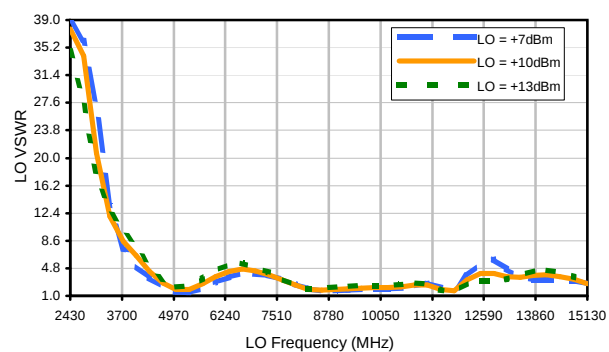
RF-IF Isolation



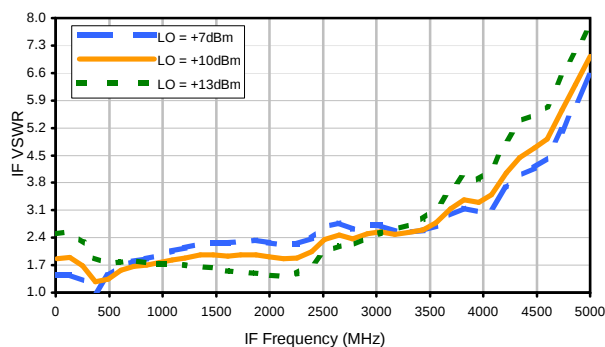
RF VSWR



LO VSWR



IF VSWR



Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+14	19	5	---	---	---	---	---	---	---
1	-	12	+0	31	24	39	---	---	---	---	---	---
2	81	55	42	45	50	52	47	---	---	---	---	---
3	89	62	66	>72	61	62	68	71	---	---	---	---
4	---	---	>72	>72	>72	>72	>72	>72	>72	---	---	---
5	---	---	---	>72	>72	>72	>72	>72	>72	>72	---	---
6	---	---	---	---	>72	>72	>72	>72	>72	>72	>72	---
7	---	---	---	---	---	>72	>72	>72	>72	>72	>72	>72
8	---	---	---	---	---	---	>72	>72	>72	>72	>72	>72
9	---	---	---	---	---	---	---	>72	>72	>72	>72	>72
10	---	---	---	---	---	---	---	---	>72	>72	>72	>72
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 7750 MHz; -12.00 dBm.
LO IN: 7780 MHz; +10.00 dBm
IF OUT: 30 MHz; -17.92 dBm

RF HARMONICS ORDER

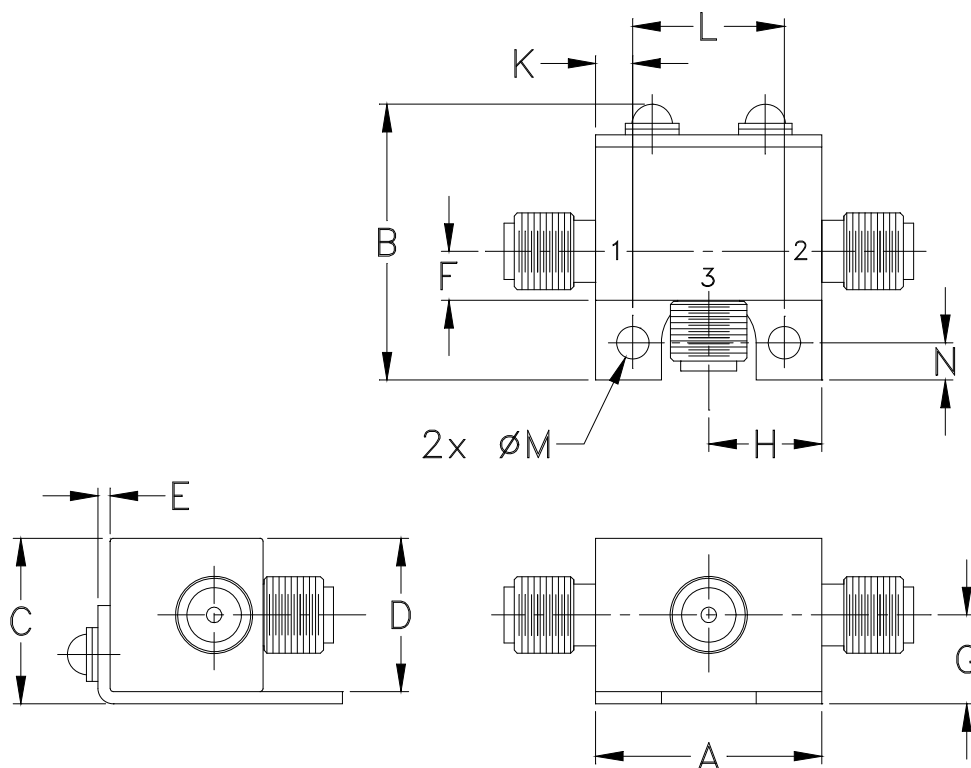
	(-dBm)	(-dBc)										
0	-	-	+4	30	16	---	---	---	---	---	---	---
1	-	12	+0	34	25	45	---	---	---	---	---	---
2	61	44	31	36	42	45	41	---	---	---	---	---
3	63	43	46	55	41	46	53	56	---	---	---	---
4	---	---	68	64	60	55	65	60	57	---	---	---
5	---	---	---	70	81	73	60	59	68	66	---	---
6	---	---	---	---	>82	76	73	71	77	73	72	---
7	---	---	---	---	---	>82	>82	81	73	74	80	75
8	---	---	---	---	---	---	>82	>82	>82	74	>82	>82
9	---	---	---	---	---	---	---	>82	>82	>82	>82	>82
10	---	---	---	---	---	---	---	---	>82	>82	>82	82
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 7750 MHz; -2.00 dBm.
LO IN: 7780 MHz; +10.00 dBm
IF OUT: 30 MHz; -8.17 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



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	N	WT, GRAM
FL905	.74 (18.80)	.90 (22.86)	.54 (13.72)	.50 (12.70)	.04 (1.02)	.16 (4.06)	.29 (7.37)	.37 (9.40)	- -	.122 (3.10)	.496 (12.60)	.106 (2.69)	.122 (3.10)	20.0

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

Tolerance on hole size and interaxes dimensions to be $\pm .005$.

Notes:

1. Case material: Brass.
2. Case finish: Nickel plate.



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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	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
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	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I