

# Frequency Mixer WIDE BAND

## ZX05-153-S+

Level 7 (LO Power +7 dBm) 3400 to 15000 MHz



Generic photo used for illustration purposes only

CASE STYLE: FL905

Connectors	Model
SMA	ZX05-153-S+

**+RoHS Compliant**

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

### 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

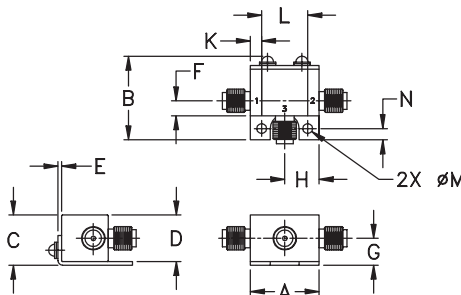
### Features

- wide bandwidth, 3400 to 15000 MHz
- low conversion loss, 6.8 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

### 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

### Electrical Specifications

FREQUENCY (MHz)	CONVERSION LOSS* (dB)	LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)		IP3 at center band (dBm)			
		Typ.	Min.	Typ.	Min.				
LO/RF $f_L - f_U$	IF	Typ.	$\sigma$	Max.	Typ.	Min.	Typ.		
3400-15000	DC-4000								
3400-10000		6.5	0.3	9.9	36	25	15	9	11
10000-13500		11.0	0.7	13.5	35	20	30	14	13
13500-15000		8.0	0.4	10.4	28	16	25	11	10

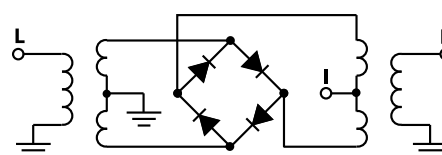
1 dB COMPR.: +1 dBm typ.

\* Conversion loss at 30 MHz IF.  $\sigma$  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
3389.10	3419.10	7.73	53.72	19.87	2.92	19.76
4009.10	4039.10	6.26	42.23	19.60	2.93	7.70
4598.10	4628.10	5.95	39.41	15.55	2.35	4.74
5218.10	5248.10	6.49	37.60	13.58	3.34	2.49
5807.10	5837.10	6.37	36.28	14.94	3.21	1.48
6427.10	6457.10	6.16	37.57	16.85	2.78	2.17
7016.10	7046.10	6.01	38.42	17.33	2.13	3.44
7605.10	7635.10	5.89	37.05	14.68	1.68	4.09
8194.10	8224.10	5.93	33.03	14.75	1.99	3.95
8814.10	8844.10	6.35	37.00	22.36	3.22	3.20
9992.10	10022.10	9.08	30.28	18.43	5.39	1.81
10612.10	10642.10	9.48	36.89	23.48	5.74	1.92
11201.10	11231.10	9.64	38.60	28.40	5.74	2.02
11821.10	11851.10	9.82	35.13	31.35	5.36	2.13
12410.10	12440.10	10.48	35.91	37.37	5.13	2.52
13030.10	13060.10	8.58	26.54	37.69	4.43	4.01
13495.10	13525.10	8.62	24.19	32.08	4.23	6.24
14022.10	14052.10	8.93	27.62	26.87	3.89	8.72
14611.10	14641.10	8.94	32.10	19.38	3.24	10.96
15014.10	15044.10	9.04	22.03	15.17	1.95	8.90

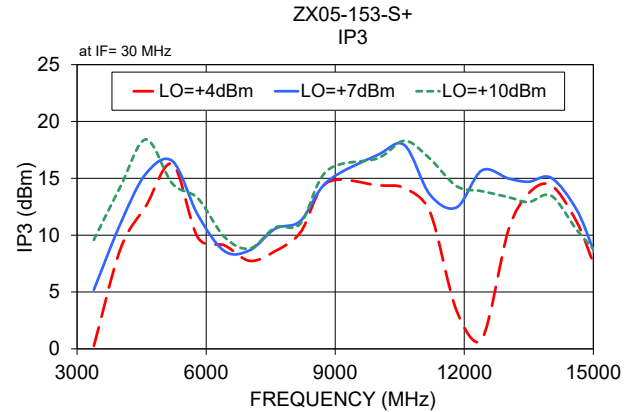
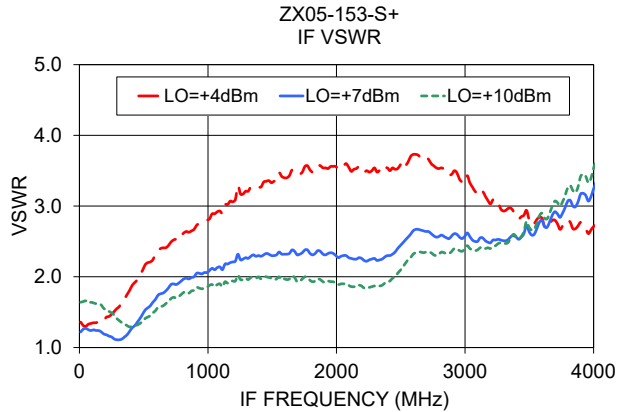
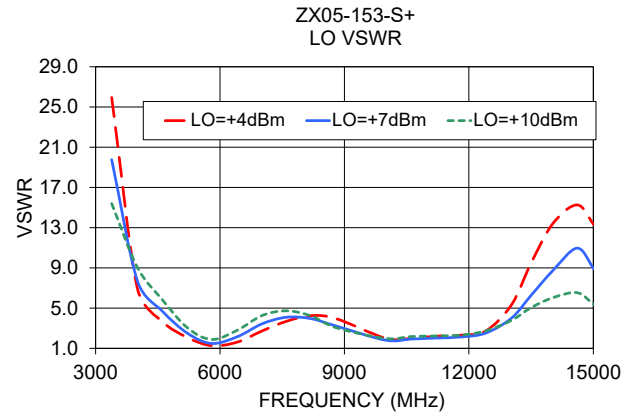
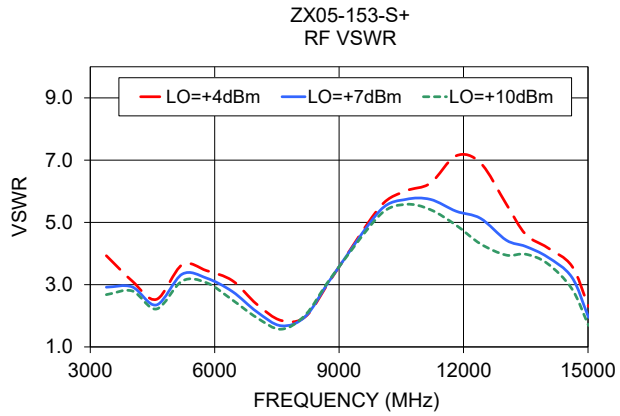
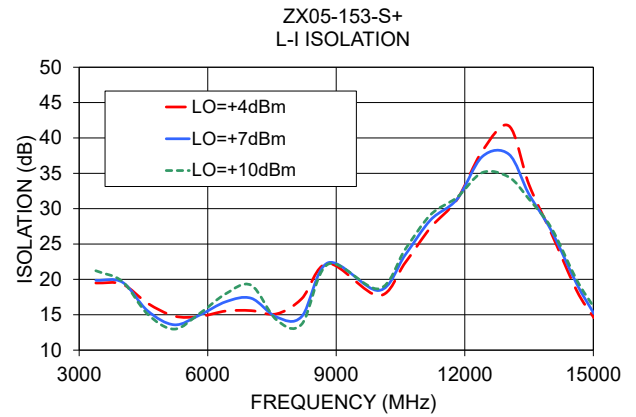
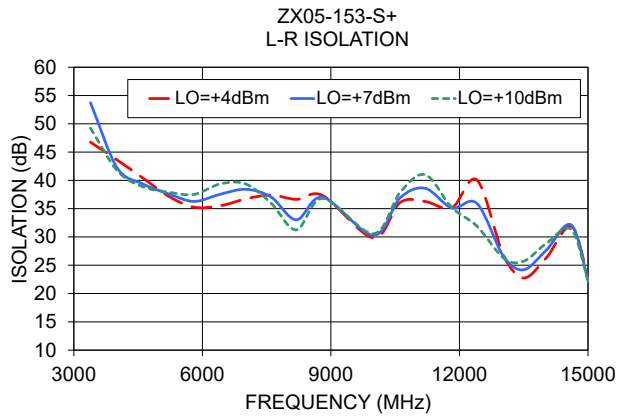
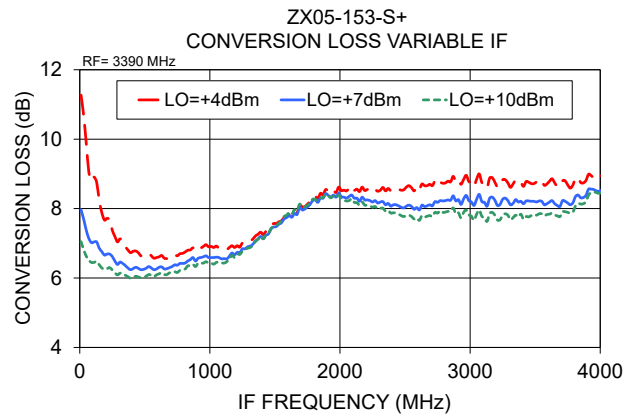
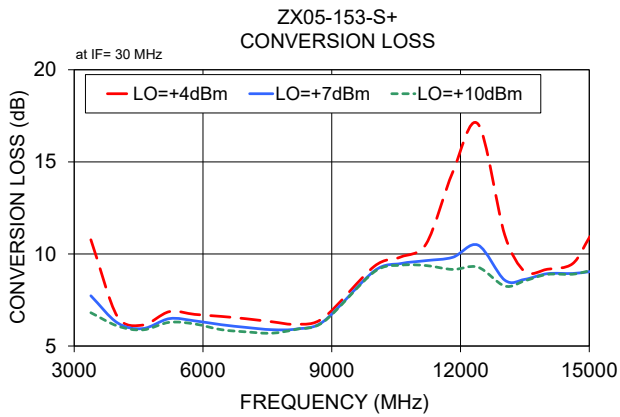
### Electrical Schematic



### 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)





**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.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)



# Frequency Mixer

# ZX05-153+

## Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+4	+7	+10
2800.1	2830.1	20.77	15.69	10.29
3110.1	3140.1	16.22	10.43	7.21
3420.1	3450.1	9.32	7.16	6.51
3730.1	3760.1	6.94	6.40	6.14
4040.1	4070.1	6.61	6.32	6.15
4350.1	4380.1	6.54	6.23	6.07
4660.1	4690.1	6.18	5.97	5.88
4970.1	5000.1	6.43	6.11	5.96
5280.1	5310.1	6.93	6.59	6.36
5590.1	5620.1	6.71	6.38	6.21
5900.1	5930.1	6.64	6.27	6.11
6210.1	6240.1	6.56	6.19	5.99
6520.1	6550.1	6.60	6.15	5.87
6830.1	6860.1	6.62	6.18	5.85
7140.1	7170.1	6.32	5.84	5.55
7450.1	7480.1	6.30	5.79	5.58
7760.1	7790.1	6.34	5.94	5.80
8070.1	8100.1	6.26	5.96	5.88
8380.1	8410.1	6.28	6.03	6.07
8690.1	8720.1	6.67	6.44	6.39
9000.1	9030.1	6.87	6.65	6.61
9341.1	9371.1	7.68	7.44	7.45
9651.1	9681.1	9.02	8.72	8.63
9992.1	10022.1	9.33	9.08	9.03
10302.1	10332.1	9.68	9.40	9.33
10643.1	10673.1	9.91	9.54	9.46
10953.1	10983.1	10.34	9.74	9.55
11294.1	11324.1	10.99	9.67	9.34
11604.1	11634.1	12.81	9.77	9.21
11945.1	11975.1	13.62	9.55	8.98
12255.1	12285.1	14.65	9.96	9.19
12596.1	12626.1	16.73	10.21	9.05
12906.1	12936.1	13.87	9.08	8.36
13247.1	13277.1	9.55	8.52	8.38
13557.1	13587.1	8.95	8.61	8.57
13898.1	13928.1	8.92	8.71	8.68
14208.1	14238.1	9.26	9.03	9.01
14549.1	14579.1	9.83	9.28	9.18
14859.1	14889.1	10.06	8.81	8.83
15200.1	15230.1	11.82	10.17	10.38

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+4	+7	+10
2800.1	2830.1	-9.31	-6.38	0.29
3110.1	3140.1	-6.85	-0.51	9.71
3420.1	3450.1	2.36	5.94	10.23
3730.1	3760.1	6.24	9.45	12.41
4040.1	4070.1	8.78	10.54	13.80
4350.1	4380.1	8.92	9.59	10.57
4660.1	4690.1	14.12	17.01	18.86
4970.1	5000.1	13.55	12.79	13.39
5280.1	5310.1	15.67	15.83	14.42
5590.1	5620.1	11.11	13.46	14.20
5900.1	5930.1	9.37	10.92	12.45
6210.1	6240.1	9.18	9.52	11.48
6520.1	6550.1	8.94	8.60	9.41
6830.1	6860.1	8.63	8.93	8.81
7140.1	7170.1	7.84	8.85	9.07
7450.1	7480.1	7.07	9.06	9.28
7760.1	7790.1	8.26	9.98	9.98
8070.1	8100.1	10.42	12.63	12.07
8380.1	8410.1	12.08	10.87	10.73
8690.1	8720.1	14.28	15.11	15.41
9000.1	9030.1	15.08	15.05	15.69
9341.1	9371.1	14.55	15.19	15.62
9651.1	9681.1	14.21	17.44	16.70
9992.1	10022.1	14.38	17.07	16.77
10302.1	10332.1	14.83	17.42	17.51
10643.1	10673.1	14.25	18.00	18.07
10953.1	10983.1	12.02	15.41	17.36
11294.1	11324.1	12.69	12.57	15.89
11604.1	11634.1	7.28	11.83	14.87
11945.1	11975.1	4.34	12.32	14.14
12255.1	12285.1	3.17	13.69	13.99
12596.1	12626.1	0.86	16.78	13.76
12906.1	12936.1	2.86	17.10	13.24
13247.1	13277.1	13.85	14.38	12.98
13557.1	13587.1	14.06	14.65	12.77
13898.1	13928.1	14.32	14.76	12.74
14208.1	14238.1	13.96	14.61	12.62
14549.1	14579.1	11.68	12.81	11.20
14859.1	14889.1	9.11	9.98	9.07
15200.1	15230.1	6.87	8.09	9.98

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB)		
		@LO (dBm)		
		+4	+7	+10
2800.1	2830.1	-4.20	-1.78	1.03
3110.1	3140.1	-3.28	0.35	1.96
3420.1	3450.1	1.33	1.82	1.45
3730.1	3760.1	1.95	1.37	1.05
4040.1	4070.1	1.35	0.98	0.74
4350.1	4380.1	0.99	0.73	0.59
4660.1	4690.1	0.77	0.48	0.36
4970.1	5000.1	0.88	0.62	0.49
5280.1	5310.1	0.90	0.72	0.60
5590.1	5620.1	0.92	0.78	0.68
5900.1	5930.1	0.91	0.80	0.75
6210.1	6240.1	0.91	0.77	0.68
6520.1	6550.1	0.93	0.76	0.68
6830.1	6860.1	1.02	0.76	0.66
7140.1	7170.1	1.20	0.91	0.78
7450.1	7480.1	1.51	1.02	0.83
7760.1	7790.1	1.26	0.93	0.78
8070.1	8100.1	1.17	0.86	0.87
8380.1	8410.1	0.91	0.69	0.66
8690.1	8720.1	0.71	0.63	0.69
9000.1	9030.1	0.66	0.66	0.81
9341.1	9371.1	0.58	0.51	0.56
9651.1	9681.1	0.27	0.31	0.40
9992.1	10022.1	0.25	0.27	0.33
10302.1	10332.1	0.22	0.22	0.26
10643.1	10673.1	0.18	0.18	0.22
10953.1	10983.1	0.10	0.12	0.19
11294.1	11324.1	-0.02	0.07	0.18
11604.1	11634.1	-1.01	0.00	0.16
11945.1	11975.1	-1.73	0.00	0.20
12255.1	12285.1	-2.37	0.00	0.21
12596.1	12626.1	-3.77	-0.02	0.27
12906.1	12936.1	-2.24	0.24	0.47
13247.1	13277.1	0.48	0.48	0.74
13557.1	13587.1	0.57	0.55	0.80
13898.1	13928.1	0.50	0.53	0.77
14208.1	14238.1	0.42	0.45	0.74
14549.1	14579.1	0.39	0.38	0.66
14859.1	14889.1	0.37	0.54	0.75
15200.1	15230.1	0.02	0.38	0.47

REV. X2

ZX05-153+

101011

Page 1 of 5



IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS9100 CERTIFIED RoHS compliant  
 P.O. Box 350166, Brooklyn, New York 11235-0006 (718) 934-4500 Fax (718) 332-4661



The Design Engineers Search Engine finds the model you need, instantly • For detailed performance specs & shopping online see



# Frequency Mixer

# ZX05-153+

## Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=9200MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=3390MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=15010.09MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+7			+7			+7
4099.9	5100.1	9.41	10.1	3400.1	7.97	4310.0	10700.1	11.89
3891.9	5308.1	8.90	130.1	3520.1	7.04	4190.0	10820.1	11.48
3684.0	5516.0	8.21	250.1	3640.1	6.62	4070.0	10940.1	11.14
3476.0	5724.0	8.09	370.1	3760.1	6.29	3970.0	11040.1	11.18
3268.1	5931.9	8.42	490.1	3880.1	6.25	3850.0	11160.1	11.17
3060.1	6139.9	8.68	610.1	4000.1	6.31	3750.0	11260.1	11.09
2852.1	6347.9	8.61	730.1	4120.1	6.38	3630.0	11380.1	11.25
2644.2	6555.8	9.05	850.1	4240.1	6.53	3530.0	11480.1	11.11
2436.2	6763.8	9.54	970.1	4360.1	6.64	3410.0	11600.1	11.26
2228.3	6971.7	9.43	1090.1	4480.1	6.55	3310.0	11700.1	11.32
2020.3	7179.7	8.96	1210.1	4600.1	6.74	3190.0	11820.1	11.66
1812.3	7387.7	8.61	1330.1	4720.1	6.97	3090.0	11920.1	11.60
1604.4	7595.6	8.38	1450.1	4840.1	7.27	2970.0	12040.1	12.27
1396.4	7803.6	8.10	1570.1	4960.1	7.70	2870.0	12140.1	12.21
1188.4	8011.6	7.89	1690.1	5080.1	8.03	2750.0	12260.1	12.14
980.5	8219.5	7.79	1810.1	5200.1	8.25	2650.0	12360.1	12.18
772.5	8427.5	7.61	1930.1	5320.1	8.33	2530.0	12480.1	11.53
564.6	8635.4	7.26	2050.1	5440.1	8.30	2430.0	12580.1	11.31
356.6	8843.4	7.09	2170.1	5560.1	8.33	2310.0	12700.1	11.18
148.6	9051.4	6.89	2290.1	5680.1	8.16	2210.0	12800.1	10.77
43.8	9243.8	6.89	2410.1	5800.1	8.11	2090.0	12920.1	10.76
195.8	9395.8	6.60	2530.1	5920.1	8.10	1990.0	13020.1	10.08
347.9	9547.9	6.77	2650.1	6040.1	8.06	1870.0	13140.1	9.64
499.9	9699.9	7.17	2770.1	6160.1	8.23	1770.0	13240.1	9.36
651.9	9851.9	7.46	2890.1	6280.1	8.22	1650.0	13360.1	8.91
804.0	10004.0	7.60	3010.1	6400.1	8.19	1550.0	13460.1	8.74
956.0	10156.0	7.79	3130.1	6520.1	8.07	1430.0	13580.1	8.58
1108.1	10308.1	7.72	3250.1	6640.1	8.27	1330.0	13680.1	8.45
1260.1	10460.1	7.96	3370.1	6760.1	8.19	1210.0	13800.1	8.38
1412.1	10612.1	7.99	3490.1	6880.1	8.21	1110.0	13900.1	8.36
1564.2	10764.2	8.18	3610.1	7000.1	8.19	990.0	14020.1	8.38
1716.2	10916.2	8.25	3730.1	7120.1	8.21	890.0	14120.1	8.37
1885.1	11085.1	8.59	3850.1	7240.1	8.31	770.0	14240.1	8.28
2037.2	11237.2	8.70	3950.1	7340.1	8.55	670.0	14340.1	8.28
2206.1	11406.1	8.95	4070.1	7460.1	8.52	550.0	14460.1	8.32
2358.2	11558.2	8.97	4170.1	7560.1	8.86	450.0	14560.1	8.31
2527.1	11727.1	9.26	4290.1	7680.1	9.43	330.0	14680.1	8.35
2679.1	11879.1	9.08	4390.1	7780.1	9.87	230.0	14780.1	8.46
2848.1	12048.1	10.00	4510.1	7900.1	10.58	110.0	14900.1	8.64
3000.1	12200.1	9.97	4610.1	8000.1	11.13	10.0	15000.1	9.26



# Frequency Mixer

# ZX05-153+

## Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10
2830.1	40.91	41.66	43.86	22.54	22.75	22.79
3140.1	40.45	43.72	44.85	20.81	21.12	21.62
3450.1	49.87	55.31	50.35	19.39	19.90	21.27
3760.1	52.58	48.72	47.06	19.18	20.15	20.94
4070.1	41.36	40.31	39.33	19.62	20.08	19.81
4380.1	40.26	39.74	39.85	18.06	17.43	17.17
4690.1	39.88	39.01	38.48	16.23	15.18	14.52
5000.1	39.10	38.76	38.30	15.26	13.92	13.09
5310.1	36.25	37.08	37.46	14.37	13.69	12.73
5620.1	35.09	36.43	37.60	14.31	14.20	14.04
5930.1	35.82	37.30	38.78	14.88	15.31	15.72
6240.1	35.02	37.86	40.61	15.26	16.32	17.12
6550.1	35.96	38.06	39.60	15.64	17.12	18.35
6860.1	36.62	38.36	39.11	15.76	17.55	19.15
7170.1	35.79	36.36	35.93	15.28	16.96	18.58
7480.1	37.00	37.72	36.89	15.14	15.64	16.11
7790.1	36.56	34.97	34.10	15.32	14.17	13.21
8100.1	35.34	32.60	31.35	16.46	13.91	12.70
8410.1	39.97	40.18	37.93	18.32	16.45	15.55
8720.1	39.60	40.11	40.70	21.27	20.81	20.57
9030.1	33.96	32.69	32.22	24.06	24.26	24.36
9371.1	30.59	29.65	29.08	21.46	21.34	21.19
9681.1	29.25	28.90	28.54	18.91	19.17	19.11
10022.1	29.84	30.28	30.57	17.70	18.43	18.67
10332.1	32.70	33.87	34.63	19.43	20.50	20.74
10673.1	35.92	36.75	37.54	22.63	23.81	24.56
10983.1	37.92	39.88	41.60	25.06	26.25	27.04
11324.1	35.54	37.80	40.17	28.02	29.05	29.75
11634.1	34.32	34.99	35.26	30.07	30.75	31.15
11975.1	35.84	35.34	34.72	32.20	32.07	32.23
12285.1	39.07	35.89	32.77	35.74	35.17	34.20
12626.1	35.80	33.27	29.82	40.72	39.52	36.20
12936.1	28.87	28.32	27.35	42.92	39.61	35.75
13277.1	24.29	24.77	25.52	38.21	34.79	32.89
13587.1	22.81	24.28	25.83	32.50	31.40	30.91
13928.1	24.60	26.43	27.87	27.99	28.40	28.29
14238.1	30.23	30.07	30.14	24.22	24.70	25.30
14579.1	33.66	33.00	31.89	19.35	20.34	20.78
14889.1	26.97	26.62	26.76	15.47	16.04	16.96
15230.1	18.59	18.21	18.28	16.18	16.51	17.33

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
2800.1	2830.1	15.06	15.19	16.16
3110.1	3140.1	16.75	19.26	17.43
3420.1	3450.1	19.62	19.83	19.52
3730.1	3760.1	22.28	22.46	22.08
4040.1	4070.1	20.80	20.18	19.36
4350.1	4380.1	18.12	17.54	17.08
4660.1	4690.1	18.15	17.77	17.50
4970.1	5000.1	21.42	20.71	20.21
5280.1	5310.1	23.64	23.42	23.07
5590.1	5620.1	22.54	22.41	22.25
5900.1	5930.1	22.95	22.71	22.57
6210.1	6240.1	24.38	24.14	23.92
6520.1	6550.1	26.58	26.54	26.39
6830.1	6860.1	31.74	31.70	31.60
7140.1	7170.1	36.12	36.06	36.08
7450.1	7480.1	24.10	23.64	23.42
7760.1	7790.1	18.51	18.26	17.95
8070.1	8100.1	17.41	17.14	16.98
8380.1	8410.1	18.98	18.40	18.01
8690.1	8720.1	25.01	23.80	22.83
9000.1	9030.1	28.78	29.26	29.75
9341.1	9371.1	19.92	20.33	20.75
9651.1	9681.1	16.26	16.12	16.11
9992.1	10022.1	15.75	15.95	16.18
10302.1	10332.1	16.97	17.42	17.77
10643.1	10673.1	19.39	20.21	20.73
10953.1	10983.1	22.15	23.03	23.43
11294.1	11324.1	25.47	27.03	27.77
11604.1	11634.1	28.04	29.53	30.40
11945.1	11975.1	25.13	26.07	26.65
12255.1	12285.1	22.63	23.63	24.24
12596.1	12626.1	22.66	23.58	24.27
12906.1	12936.1	23.00	24.05	24.55
13247.1	13277.1	23.52	24.06	24.35
13557.1	13587.1	23.63	23.85	23.99
13898.1	13928.1	23.38	23.53	23.64
14208.1	14238.1	24.10	24.26	24.31
14549.1	14579.1	27.07	27.37	27.39
14859.1	14889.1	23.69	23.96	24.52
15200.1	15230.1	14.59	14.80	14.90



# Frequency Mixer

# ZX05-153+

## 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)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
2800.1	2830.1	5.22	3.86	2.44	2830.0	34.07	33.42	31.60	10.0	1.36	1.22	1.64
3110.1	3140.1	5.34	3.31	2.36	3155.0	28.96	25.56	19.32	110.2	1.35	1.25	1.63
3420.1	3450.1	3.56	2.88	2.70	3480.0	16.89	12.71	12.44	210.5	1.43	1.18	1.54
3730.1	3760.1	3.21	3.00	2.87	3805.0	6.94	7.70	9.04	310.7	1.58	1.11	1.38
4040.1	4070.1	3.07	2.90	2.75	4130.0	4.38	5.56	6.76	411.0	1.88	1.28	1.30
4350.1	4380.1	2.85	2.62	2.46	4455.0	2.87	3.70	4.61	511.2	2.17	1.53	1.41
4660.1	4690.1	2.52	2.33	2.18	4780.0	2.07	2.49	3.03	611.4	2.37	1.74	1.57
4970.1	5000.1	2.99	2.68	2.48	5105.0	1.50	1.68	2.03	711.7	2.49	1.89	1.69
5280.1	5310.1	3.73	3.47	3.23	5430.0	1.13	1.52	1.99	811.9	2.62	1.97	1.78
5590.1	5620.1	3.65	3.42	3.26	5755.0	1.63	2.17	2.82	912.2	2.73	2.05	1.85
5900.1	5930.1	3.45	3.16	3.00	6080.0	2.31	2.97	3.79	1012.4	2.82	2.09	1.88
6210.1	6240.1	3.19	2.89	2.70	6405.0	3.13	3.77	4.55	1112.6	2.90	2.10	1.86
6520.1	6550.1	3.00	2.67	2.39	6730.0	3.73	4.13	4.78	1232.9	3.29	2.32	2.02
6830.1	6860.1	2.66	2.42	2.15	7055.0	4.11	4.11	4.54	1333.2	3.27	2.29	1.99
7140.1	7170.1	2.25	2.01	1.80	7380.0	4.41	3.82	3.86	1453.4	3.35	2.33	2.00
7450.1	7480.1	1.97	1.75	1.60	7705.0	3.81	3.12	2.98	1553.7	3.47	2.35	2.00
7760.1	7790.1	1.78	1.66	1.58	8030.0	2.86	2.34	2.26	1674.0	3.48	2.36	1.99
8070.1	8100.1	1.89	1.86	1.86	8355.0	2.31	1.92	1.91	1774.2	3.57	2.38	1.99
8380.1	8410.1	2.27	2.26	2.34	8655.0	1.96	1.82	2.00	1894.5	3.54	2.32	1.93
8690.1	8720.1	2.95	2.96	2.97	8980.0	1.98	1.88	2.11	1994.7	3.56	2.30	1.91
9000.1	9030.1	3.69	3.67	3.62	9280.0	2.10	1.94	2.17	2115.0	3.49	2.26	1.86
9341.1	9371.1	3.98	3.82	3.79	9605.0	2.20	2.02	2.23	2215.3	3.48	2.23	1.84
9651.1	9681.1	5.10	4.89	4.80	9905.0	2.30	2.08	2.26	2335.6	3.50	2.24	1.87
9992.1	10022.1	5.51	5.39	5.25	10230.0	2.35	2.16	2.35	2435.8	3.54	2.32	1.98
10302.1	10332.1	5.74	5.63	5.42	10530.0	2.65	2.44	2.64	2556.1	3.62	2.56	2.24
10643.1	10673.1	5.68	5.39	5.30	10855.0	3.76	3.15	3.22	2656.3	3.68	2.66	2.35
10953.1	10983.1	6.51	6.03	5.77	11155.0	5.93	4.40	4.06	2776.6	3.54	2.56	2.30
11294.1	11324.1	6.78	6.03	5.59	11480.0	9.33	6.28	5.03	2876.8	3.44	2.54	2.33
11604.1	11634.1	6.56	5.38	4.87	11780.0	12.52	8.12	5.83	2997.1	3.33	2.57	2.39
11945.1	11975.1	6.73	5.13	4.74	12105.0	14.26	9.48	6.13	3097.4	3.19	2.50	2.38
12255.1	12285.1	7.31	5.41	4.75	12405.0	15.13	10.25	6.19	3217.7	3.09	2.52	2.43
12596.1	12626.1	6.83	5.07	4.23	12730.0	13.81	9.79	5.77	3317.9	2.94	2.51	2.47
12906.1	12936.1	6.39	4.73	4.08	13030.0	10.82	7.14	4.67	3438.2	2.85	2.56	2.57
13247.1	13277.1	4.83	4.11	3.82	13355.0	5.89	4.52	4.10	3538.4	2.75	2.60	2.67
13557.1	13587.1	4.46	4.13	3.86	13655.0	3.40	3.70	4.21	3658.7	2.75	2.78	2.90
13898.1	13928.1	4.10	3.86	3.62	13980.0	2.93	3.73	4.60	3758.9	2.72	2.90	3.06
14208.1	14238.1	3.95	3.62	3.40	14280.0	3.37	3.97	4.70	3879.2	2.72	3.06	3.27
14549.1	14579.1	3.74	3.35	3.05	14605.0	4.23	4.22	4.61	3979.5	2.66	3.13	3.39
14859.1	14889.1	2.86	2.46	2.15	14905.0	4.55	4.03	4.02	4099.8	2.73	3.41	3.76
15200.1	15230.1	1.37	1.21	1.10	15230.0	4.01	3.47	3.26	4200.0	2.76	3.54	3.94

## Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+13	23	5	---	---	---	---	---	---	---
1	-	13	+0	32	27	37	---	---	---	---	---	---
2	85	52	39	49	43	57	45	---	---	---	---	---
3	87	66	>70	>70	64	62	>70	67	---	---	---	---
4	---	---	>70	>70	>70	>70	>70	>70	69	---	---	---
5	---	---	---	67	>70	>70	>70	>70	>70	66	---	---
6	---	---	---	---	>70	>70	>70	>70	>70	>70	70	---
7	---	---	---	---	---	>70	>70	>70	>70	>70	>70	>70
8	---	---	---	---	---	---	60	>70	>70	>70	>70	>70
9	---	---	---	---	---	---	---	68	>70	>70	>70	>70
10	---	---	---	---	---	---	---	---	>70	>70	>70	>70
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 7720 MHz; -14.00 dBm.  
 LO IN: 7750 MHz; +7.00 dBm  
 IF OUT: 30 MHz; -19.94 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+3	35	16	---	---	---	---	---	---	---
1	-	12	+0	36	28	42	---	---	---	---	---	---
2	65	43	30	39	36	51	40	---	---	---	---	---
3	65	47	50	60	41	49	58	59	---	---	---	---
4	---	---	67	62	57	63	56	62	58	---	---	---
5	---	---	---	69	71	77	65	63	76	69	---	---
6	---	---	---	---	75	>80	78	76	74	75	70	---
7	---	---	---	---	---	79	>80	>80	>80	78	>80	77
8	---	---	---	---	---	---	>80	>80	>80	>80	>80	>80
9	---	---	---	---	---	---	---	72	>80	>80	>80	>80
10	---	---	---	---	---	---	---	---	>80	>80	>80	>80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

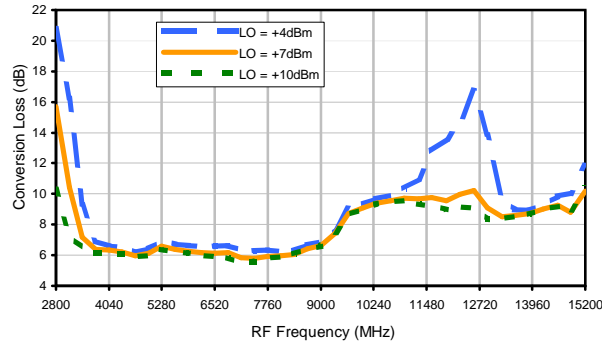
Test conditions: RF IN: 7720 MHz; -4.00 dBm.  
 LO IN: 7750 MHz; +7.00 dBm  
 IF OUT: 30 MHz; -10.23 dBm

- 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.

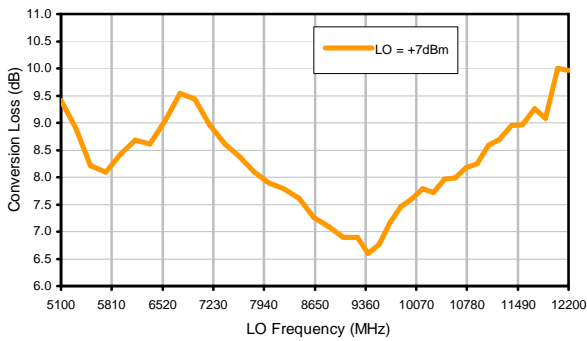


## Typical Performance Curves

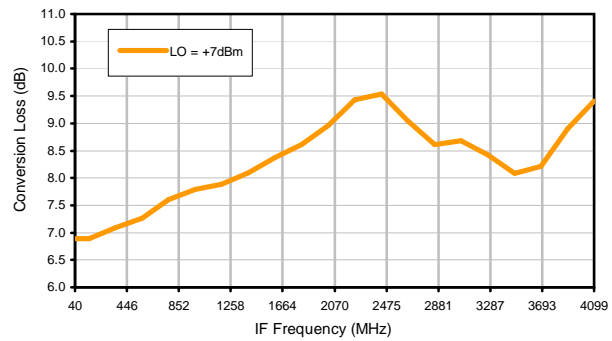
Conversion Loss @ IF=30MHz



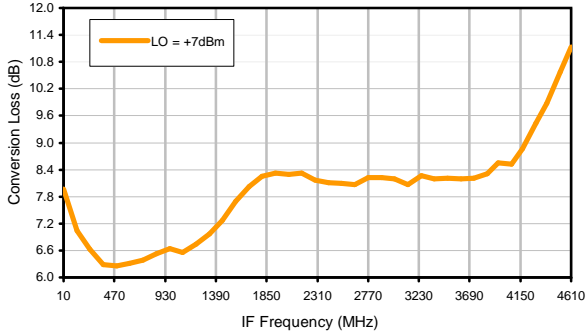
Conversion Loss vs. LO @ RF=9200MHz



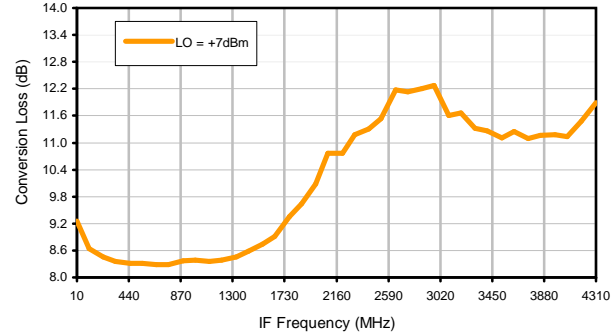
Conversion Loss vs. IF @ RF=9200MHz



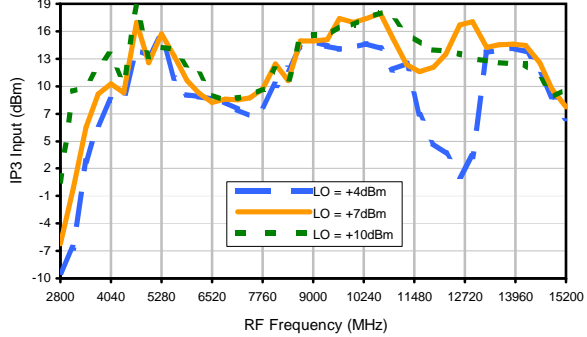
Conversion Loss vs. IF @ RF=3390MHz



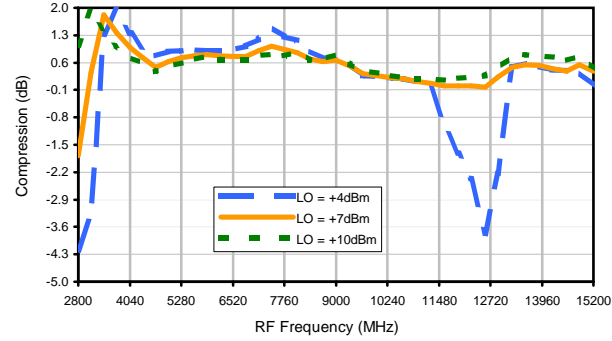
Conversion Loss vs. IF @ RF=15010.09MHz



IP3 Input



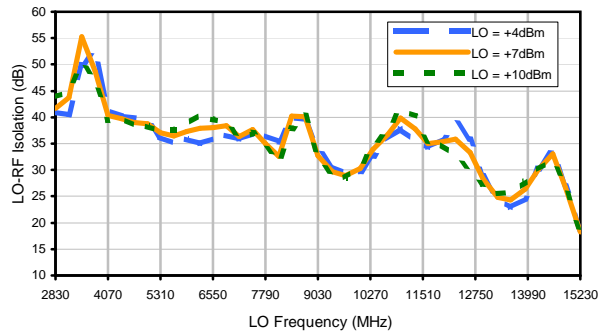
Compression @ RF IN=+1dBm



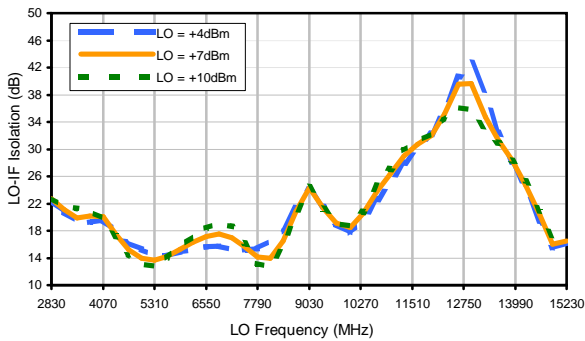


## Typical Performance Curves

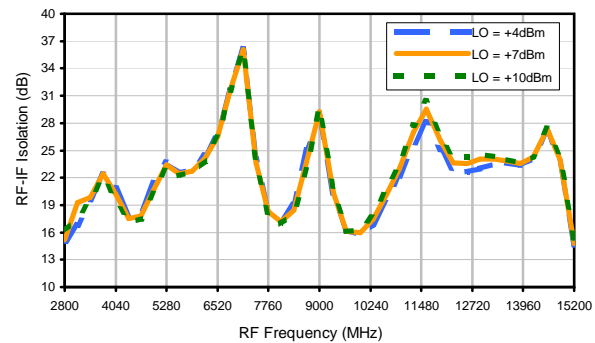
### LO-RF Isolation



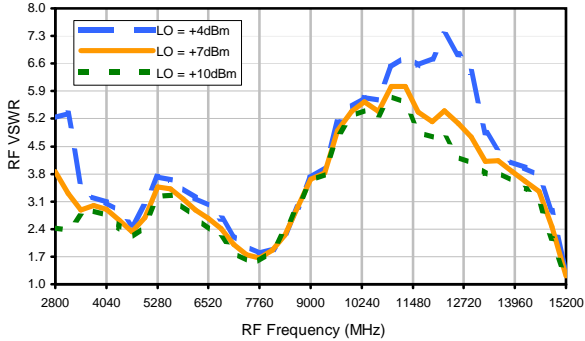
### LO-IF Isolation



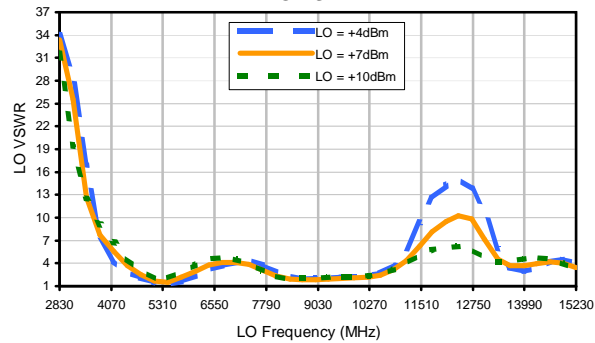
### RF-IF Isolation



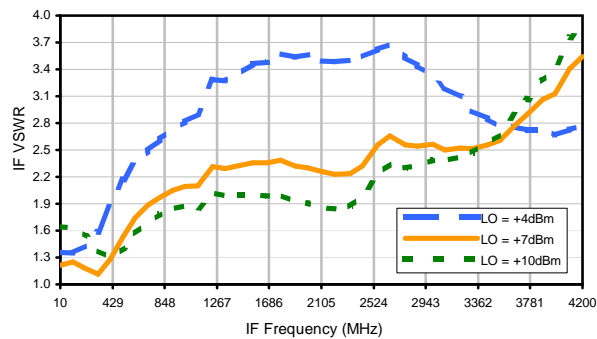
### RF VSWR



### LO VSWR



### IF VSWR



## Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+13	23	5	---	---	---	---	---	---	---
1	-	13	+0	32	27	37	---	---	---	---	---	---
2	85	52	39	49	43	57	45	---	---	---	---	---
3	87	66	>70	>70	64	62	>70	67	---	---	---	---
4	---	---	>70	>70	>70	>70	>70	>70	69	---	---	---
5	---	---	---	67	>70	>70	>70	>70	>70	66	---	---
6	---	---	---	---	>70	>70	>70	>70	>70	>70	70	---
7	---	---	---	---	---	>70	>70	>70	>70	>70	>70	>70
8	---	---	---	---	---	---	60	>70	>70	>70	>70	>70
9	---	---	---	---	---	---	---	68	>70	>70	>70	>70
10	---	---	---	---	---	---	---	---	>70	>70	>70	>70
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 7720 MHz; -14.00 dBm.  
 LO IN: 7750 MHz; +7.00 dBm  
 IF OUT: 30 MHz; -19.94 dBm

RF HARMONICS ORDER

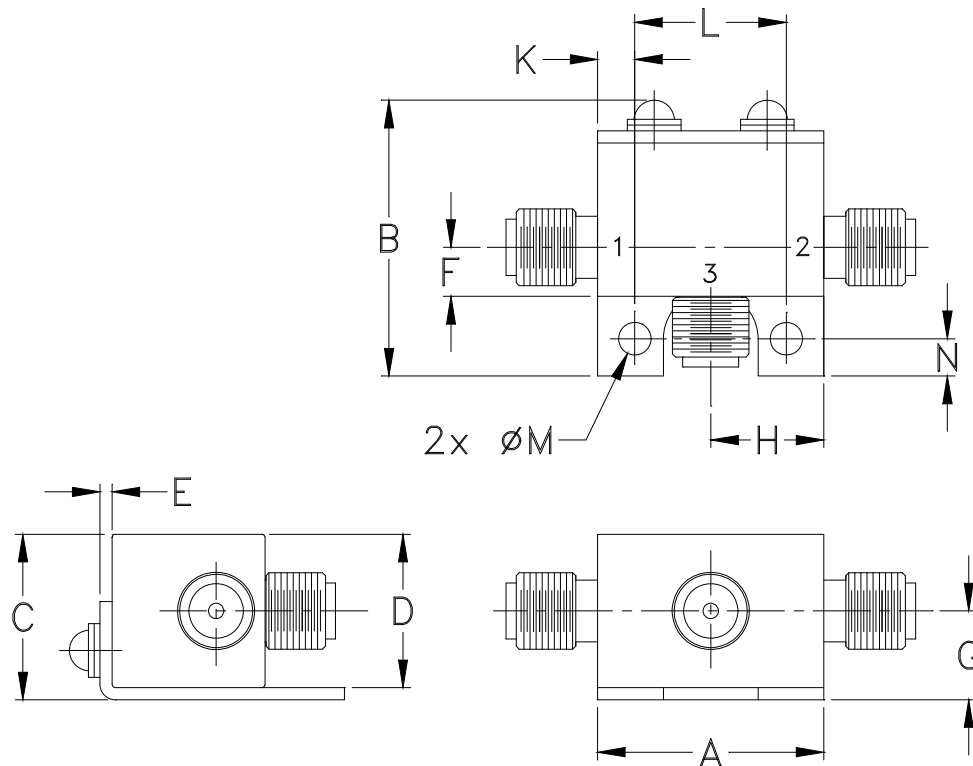
	(-dBm)	(-dBc)										
0	-	-	+3	35	16	---	---	---	---	---	---	---
1	-	12	+0	36	28	42	---	---	---	---	---	---
2	65	43	30	39	36	51	40	---	---	---	---	---
3	65	47	50	60	41	49	58	59	---	---	---	---
4	---	---	67	62	57	63	56	62	58	---	---	---
5	---	---	---	69	71	77	65	63	76	69	---	---
6	---	---	---	---	75	>80	78	76	74	75	70	---
7	---	---	---	---	---	79	>80	>80	>80	78	>80	77
8	---	---	---	---	---	---	>80	>80	>80	>80	>80	>80
9	---	---	---	---	---	---	---	72	>80	>80	>80	>80
10	---	---	---	---	---	---	---	---	>80	>80	>80	>80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 7720 MHz; -4.00 dBm.  
 LO IN: 7750 MHz; +7.00 dBm  
 IF OUT: 30 MHz; -10.23 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.

**Mini-Circuits®**

INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified



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