Engineering Development Model

Frequency Mixer ZX05-ED12902/13

Level 10 (LO Power + 10 dBm)

Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability.
At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.

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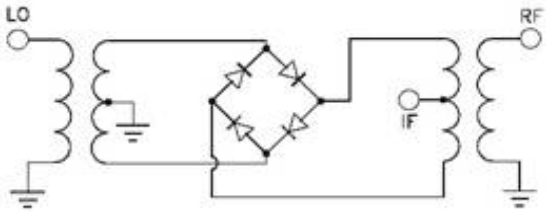
CASE STYLE : FL905

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		**Min.**	**Typ.**	**Max.**	**Units**
Frequency	**LO** (f_L to f_U)	824		4200	MHz
	RF (f_L to f_U)	824		4200	MHz
	IF	10		1500	MHz
Conversion Loss	**Total Range**		6.3		dB
LO-RF Isolation			31		dB
LO-IF Isolation			21		dB
Input IP3			+15		dBm
1 dB Compression			+5		dBm

MAXIMUM RATINGS	
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C

COAXIAL CONNECTIONS	
LO	2
RF	3
IF	1

Electrical Schematics



Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+7	+10	+13
670.0	700.0	20.43	11.94	8.06
770.0	800.0	10.25	7.57	6.62
870.0	900.0	7.92	6.82	6.25
970.0	1000.0	8.27	7.34	6.62
1070.0	1100.0	7.33	6.61	6.10
1170.0	1200.0	6.68	6.41	6.24
1270.0	1300.0	6.65	6.32	6.13
1370.0	1400.0	6.40	6.14	6.10
1470.0	1500.0	6.26	5.91	5.97
1570.0	1600.0	6.49	6.04	5.88
1670.0	1700.0	6.63	6.24	6.07
1770.0	1800.0	7.02	6.53	6.25
1870.0	1900.0	7.14	6.61	6.43
1970.0	2000.0	7.06	6.72	6.59
2070.0	2100.0	6.93	6.65	6.53
2170.0	2200.0	7.15	6.81	6.64
2270.0	2300.0	7.23	6.84	6.66
2370.0	2400.0	6.76	6.35	6.17
2470.0	2500.0	7.00	6.52	6.30
2570.0	2600.0	7.94	6.84	6.28
2650.0	2680.0	7.67	7.06	6.59
2750.0	2780.0	6.67	6.07	5.69
2830.0	2860.0	6.27	5.68	5.32
2930.0	2960.0	5.89	5.19	5.02
3010.0	3040.0	5.55	5.08	4.98
3110.0	3140.0	5.33	5.09	5.04
3190.0	3220.0	5.28	5.15	5.16
3290.0	3320.0	5.45	5.31	5.32
3370.0	3400.0	5.58	5.43	5.43
3470.0	3500.0	5.85	5.66	5.60
3550.0	3580.0	6.06	5.76	5.69
3650.0	3680.0	6.51	6.06	5.89
3730.0	3760.0	6.60	6.10	5.97
3830.0	3860.0	6.78	6.27	6.10
3910.0	3940.0	7.76	6.97	6.54
4010.0	4040.0	7.64	6.88	6.61
4090.0	4120.0	7.97	6.91	6.60
4190.0	4220.0	8.42	7.15	6.73
4270.0	4300.0	9.09	7.21	6.74
4370.0	4400.0	11.35	7.78	6.95

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+7	+10	+13
670.0	700.0	-5.55	1.84	7.06
770.0	800.0	3.04	6.08	12.64
870.0	900.0	5.37	7.67	9.43
970.0	1000.0	6.58	8.45	10.34
1070.0	1100.0	7.34	9.93	14.19
1170.0	1200.0	10.23	10.64	10.57
1270.0	1300.0	9.40	13.43	15.81
1370.0	1400.0	14.59	14.26	15.09
1470.0	1500.0	14.43	11.35	18.29
1570.0	1600.0	16.58	15.31	12.61
1670.0	1700.0	23.48	16.47	18.00
1770.0	1800.0	13.89	20.77	16.49
1870.0	1900.0	14.92	16.92	19.23
1970.0	2000.0	14.40	22.09	26.71
2070.0	2100.0	17.97	22.58	21.81
2170.0	2200.0	23.47	19.66	18.80
2270.0	2300.0	19.74	18.79	17.66
2370.0	2400.0	12.89	14.46	15.74
2470.0	2500.0	12.57	16.74	20.58
2570.0	2600.0	12.96	12.91	13.18
2650.0	2680.0	11.94	10.89	11.46
2750.0	2780.0	7.21	7.46	8.01
2830.0	2860.0	5.87	7.64	10.60
2930.0	2960.0	7.22	13.90	15.62
3010.0	3040.0	12.25	14.53	15.03
3110.0	3140.0	14.69	15.88	17.27
3190.0	3220.0	16.52	17.22	18.63
3290.0	3320.0	17.02	19.43	21.70
3370.0	3400.0	17.55	19.83	22.52
3470.0	3500.0	17.91	18.96	20.01
3550.0	3580.0	17.69	17.19	17.50
3650.0	3680.0	18.82	16.37	16.09
3730.0	3760.0	15.79	19.68	18.18
3830.0	3860.0	15.30	16.55	20.88
3910.0	3940.0	20.66	25.87	24.49
4010.0	4040.0	11.16	13.45	17.66
4090.0	4120.0	15.20	17.10	18.66
4190.0	4220.0	14.54	22.15	19.78
4270.0	4300.0	12.30	22.13	19.63
4370.0	4400.0	9.66	14.22	16.00

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+5dBm (dB) @LO (dBm)		
		+7	+10	+13
670.0	700.0	-6.52	-0.72	0.74
770.0	800.0	1.81	1.85	1.35
870.0	900.0	2.24	2.01	1.76
970.0	1000.0	1.19	1.29	1.37
1070.0	1100.0	1.53	1.45	1.32
1170.0	1200.0	1.33	1.06	0.79
1270.0	1300.0	0.84	0.68	0.54
1370.0	1400.0	0.70	0.45	0.33
1470.0	1500.0	0.79	0.63	0.40
1570.0	1600.0	0.61	0.50	0.43
1670.0	1700.0	0.58	0.40	0.34
1770.0	1800.0	0.45	0.36	0.27
1870.0	1900.0	0.45	0.31	0.17
1970.0	2000.0	0.51	0.22	0.11
2070.0	2100.0	0.50	0.21	0.12
2170.0	2200.0	0.44	0.23	0.14
2270.0	2300.0	0.39	0.26	0.19
2370.0	2400.0	0.63	0.38	0.26
2470.0	2500.0	0.58	0.36	0.24
2570.0	2600.0	0.61	0.68	0.58
2650.0	2680.0	0.69	0.67	0.68
2750.0	2780.0	1.10	1.09	1.06
2830.0	2860.0	1.30	1.16	1.00
2930.0	2960.0	1.22	1.08	0.86
3010.0	3040.0	1.28	0.78	0.61
3110.0	3140.0	1.12	0.48	0.34
3190.0	3220.0	0.98	0.39	0.27
3290.0	3320.0	0.86	0.34	0.17
3370.0	3400.0	1.13	0.61	0.39
3470.0	3500.0	1.12	0.63	0.40
3550.0	3580.0	1.05	0.56	0.35
3650.0	3680.0	0.91	0.56	0.36
3730.0	3760.0	0.80	0.48	0.30
3830.0	3860.0	0.91	0.60	0.38
3910.0	3940.0	0.55	0.43	0.36
4010.0	4040.0	0.70	0.46	0.38
4090.0	4120.0	0.55	0.38	0.29
4190.0	4220.0	0.58	0.43	0.29
4270.0	4300.0	0.41	0.47	0.33
4370.0	4400.0	-0.39	0.71	0.54

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=2512MHz (dB) @LO (dBm) +10
1412.0	1100.0	11.48
1337.2	1174.8	10.03
1262.5	1249.5	8.13
1187.7	1324.3	7.38
1112.9	1399.1	7.87
1038.1	1473.9	8.64
963.4	1548.6	8.81
888.6	1623.4	9.70
813.8	1698.2	9.97
739.0	1773.0	9.04
664.3	1847.7	7.93
589.5	1922.5	7.30
514.7	1997.3	6.91
439.9	2072.1	6.49
365.2	2146.8	6.16
290.4	2221.6	5.86
215.6	2296.4	5.55
140.9	2371.1	5.69
66.1	2445.9	6.34
10.0	2522.0	6.80
95.2	2607.2	6.94
180.5	2692.5	7.80
265.7	2777.7	8.20
350.9	2862.9	7.73
436.1	2948.1	7.17
521.4	3033.4	7.09
606.6	3118.6	7.06
691.8	3203.8	6.94
777.0	3289.0	6.73
862.3	3374.3	6.87
947.5	3459.5	6.82
1011.4	3523.4	6.97
1096.6	3608.6	7.18
1160.6	3672.6	7.31
1245.8	3757.8	7.64
1309.7	3821.7	7.82
1394.9	3906.9	8.37
1458.9	3970.9	8.98
1544.1	4056.1	10.19
1608.0	4120.0	11.34

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=813.9MHz (dB) @LO (dBm) +10
10.1	824.0	7.33
50.1	864.0	6.92
90.1	904.0	6.83
130.1	944.0	6.87
170.1	984.0	6.83
210.1	1024.0	6.96
250.1	1064.0	6.92
290.1	1104.0	6.62
330.1	1144.0	6.49
370.1	1184.0	6.79
410.1	1224.0	6.78
450.1	1264.0	6.48
490.1	1304.0	6.26
530.1	1344.0	6.26
570.1	1384.0	6.54
610.1	1424.0	6.66
650.1	1464.0	6.74
690.1	1504.0	6.81
730.1	1544.0	6.91
770.1	1584.0	7.12
810.1	1624.0	7.35
850.1	1664.0	7.36
890.1	1704.0	7.60
930.1	1744.0	7.69
970.1	1784.0	7.78
1010.1	1824.0	7.90
1050.1	1864.0	7.95
1090.1	1904.0	8.30
1130.1	1944.0	8.23
1170.1	1984.0	8.20
1210.1	2024.0	8.33
1250.1	2064.0	8.41
1290.1	2104.0	8.58
1330.1	2144.0	8.76
1370.1	2184.0	9.05
1410.1	2224.0	9.36
1450.1	2264.0	9.22
1490.1	2304.0	9.56
1530.1	2344.0	9.79
1590.1	2404.0	10.52

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=4210.1001MHz (dB) @LO (dBm) +10
1350.1	2860.0	10.66
1310.1	2900.0	10.09
1270.1	2940.0	9.51
1230.1	2980.0	9.17
1190.1	3020.0	9.43
1150.1	3060.0	9.13
1110.1	3100.0	9.02
1070.1	3140.0	8.71
1030.1	3180.0	8.66
990.1	3220.0	8.64
950.1	3260.0	8.35
910.1	3300.0	8.29
870.1	3340.0	8.22
830.1	3380.0	8.35
790.1	3420.0	8.33
750.1	3460.0	8.25
710.1	3500.0	8.37
670.1	3540.0	8.41
630.1	3580.0	8.54
610.1	3600.0	8.61
570.1	3640.0	8.78
550.1	3660.0	8.72
510.1	3700.0	8.58
490.1	3720.0	8.50
450.1	3760.0	8.30
430.1	3780.0	8.36
390.1	3820.0	8.23
370.1	3840.0	8.10
330.1	3880.0	7.89
310.1	3900.0	7.67
270.1	3940.0	7.51
250.1	3960.0	7.32
210.1	4000.0	7.03
190.1	4020.0	6.94
150.1	4060.0	6.81
130.1	4080.0	6.84
90.1	4120.0	6.93
70.1	4140.0	6.95
30.1	4180.0	6.99
10.1	4200.0	7.20

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+7	+10	+13	+7	+10	+13
700.0	58.76	60.28	50.62	25.77	25.84	26.01
800.0	51.75	42.46	40.38	23.15	23.86	25.93
900.0	37.67	37.10	37.19	22.24	24.66	27.32
1000.0	38.66	38.88	39.19	23.49	26.14	28.54
1100.0	41.39	41.98	42.28	25.00	27.63	30.04
1200.0	38.48	38.59	38.53	26.94	29.63	31.35
1300.0	37.04	35.98	35.51	29.25	31.91	32.89
1400.0	35.87	34.32	33.00	31.01	34.10	36.06
1500.0	34.54	32.74	31.02	31.05	34.32	37.34
1600.0	33.80	32.11	31.03	26.48	27.64	28.71
1700.0	34.69	33.12	32.30	23.98	24.91	25.04
1800.0	35.09	35.02	34.71	19.74	20.74	20.87
1900.0	34.61	34.40	33.62	15.29	16.35	16.74
2000.0	35.04	34.59	33.95	11.50	12.82	13.65
2100.0	35.28	34.57	33.86	9.98	11.53	12.75
2200.0	36.61	35.55	34.66	10.21	11.87	13.36
2300.0	37.07	35.41	34.06	11.15	12.91	14.59
2400.0	35.34	33.33	31.83	12.39	14.16	15.93
2500.0	35.28	33.61	32.50	13.64	15.41	17.20
2600.0	35.43	34.04	32.95	14.95	16.60	18.11
2680.0	31.64	29.05	28.12	16.23	17.80	19.12
2780.0	32.64	30.06	27.85	17.45	18.46	18.99
2860.0	31.31	28.32	26.27	18.87	19.40	19.69
2960.0	34.87	30.49	27.22	20.34	20.32	20.40
3040.0	33.66	29.39	26.53	22.24	21.90	21.24
3140.0	31.08	27.87	25.50	25.91	24.57	23.12
3220.0	30.18	27.67	25.59	28.29	26.30	24.75
3320.0	29.02	26.96	25.68	27.67	25.83	24.73
3400.0	30.22	28.59	27.35	24.99	24.48	23.98
3500.0	29.33	27.80	26.85	23.59	24.17	24.67
3580.0	28.91	27.50	26.62	22.27	22.47	23.00
3680.0	28.13	26.89	26.10	20.09	20.57	21.26
3760.0	27.99	26.96	26.15	18.35	18.97	19.79
3860.0	28.18	27.37	26.35	17.31	18.30	19.28
3940.0	29.01	27.83	26.66	17.59	18.17	19.13
4040.0	31.17	28.92	27.12	18.78	19.09	19.91
4120.0	31.99	30.01	28.15	17.94	17.94	18.66
4220.0	30.54	29.01	27.57	16.08	16.34	17.14
4300.0	31.68	29.64	27.91	15.84	16.11	17.01
4400.0	35.40	32.45	29.60	15.19	15.12	16.05

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+7	+10	+13
670.0	700.0	28.57	26.83	20.45
770.0	800.0	22.79	17.29	15.50
870.0	900.0	15.09	13.72	13.05
970.0	1000.0	14.06	13.34	12.83
1070.0	1100.0	16.74	15.81	15.29
1170.0	1200.0	19.96	19.34	19.15
1270.0	1300.0	22.98	22.29	21.82
1370.0	1400.0	25.35	25.57	26.10
1470.0	1500.0	26.91	26.53	27.22
1570.0	1600.0	27.55	27.72	27.77
1670.0	1700.0	26.43	26.24	26.37
1770.0	1800.0	26.59	26.92	26.68
1870.0	1900.0	28.72	28.65	28.35
1970.0	2000.0	33.92	33.86	33.87
2070.0	2100.0	40.21	39.43	39.14
2170.0	2200.0	36.77	36.27	36.23
2270.0	2300.0	36.79	36.94	37.10
2370.0	2400.0	37.90	38.08	38.53
2470.0	2500.0	39.77	39.40	39.31
2570.0	2600.0	37.72	37.65	38.36
2650.0	2680.0	36.40	36.72	36.78
2750.0	2780.0	34.61	33.66	32.26
2830.0	2860.0	29.30	29.69	30.26
2930.0	2960.0	28.62	26.50	26.36
3010.0	3040.0	28.93	28.71	29.07
3110.0	3140.0	26.78	26.37	26.55
3190.0	3220.0	26.06	25.14	24.85
3290.0	3320.0	28.30	27.86	28.00
3370.0	3400.0	27.52	25.53	24.33
3470.0	3500.0	20.94	20.16	19.84
3550.0	3580.0	20.96	20.65	20.53
3650.0	3680.0	21.93	21.14	21.03
3730.0	3760.0	22.87	21.63	21.35
3830.0	3860.0	23.30	21.98	21.52
3910.0	3940.0	27.44	25.65	24.31
4010.0	4040.0	30.26	29.98	31.68
4090.0	4120.0	29.00	27.04	25.67
4190.0	4220.0	28.89	24.12	22.10
4270.0	4300.0	30.66	24.91	22.33
4370.0	4400.0	30.93	25.68	24.31

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm) +7	+10	+13
670.0	700.0	8.31	4.68	3.60
770.0	800.0	2.91	2.57	2.39
870.0	900.0	2.06	1.80	1.67
970.0	1000.0	2.38	2.14	1.95
1070.0	1100.0	2.94	2.68	2.50
1170.0	1200.0	3.20	3.09	3.02
1270.0	1300.0	3.37	3.22	3.14
1370.0	1400.0	3.44	3.13	3.00
1470.0	1500.0	3.49	3.06	2.72
1570.0	1600.0	3.52	3.04	2.72
1670.0	1700.0	3.62	3.16	2.84
1770.0	1800.0	3.86	3.26	2.83
1870.0	1900.0	3.88	3.27	3.00
1970.0	2000.0	3.64	3.30	3.15
2070.0	2100.0	3.48	3.21	3.05
2170.0	2200.0	3.63	3.40	3.24
2270.0	2300.0	3.72	3.44	3.24
2370.0	2400.0	2.98	2.67	2.49
2470.0	2500.0	2.94	2.68	2.49
2570.0	2600.0	3.50	3.11	2.87
2650.0	2680.0	3.13	2.78	2.49
2750.0	2780.0	2.54	2.25	1.94
2830.0	2860.0	2.03	1.66	1.41
2930.0	2960.0	1.62	1.25	1.16
3010.0	3040.0	1.34	1.20	1.18
3110.0	3140.0	1.26	1.29	1.34
3190.0	3220.0	1.25	1.32	1.41
3290.0	3320.0	1.26	1.30	1.38
3370.0	3400.0	1.31	1.25	1.24
3470.0	3500.0	1.51	1.41	1.36
3550.0	3580.0	1.79	1.63	1.57
3650.0	3680.0	2.27	2.05	1.93
3730.0	3760.0	2.50	2.21	2.08
3830.0	3860.0	2.57	2.28	2.08
3910.0	3940.0	3.20	2.85	2.62
4010.0	4040.0	3.42	3.02	2.83
4090.0	4120.0	3.66	3.07	2.79
4190.0	4220.0	3.88	3.21	2.83
4270.0	4300.0	4.08	3.19	2.77
4370.0	4400.0	4.96	3.43	2.97

LO (MHz)	LO VSWR (:1) @LO (dBm) +7	+10	+13
700.0	28.96	27.59	19.98
800.0	18.50	11.31	8.31
900.0	5.47	4.66	5.02
1000.0	2.41	2.79	3.49
1100.0	1.36	1.82	2.44
1200.0	1.22	1.24	1.74
1300.0	1.75	1.11	1.30
1400.0	2.06	1.30	1.22
1500.0	2.23	1.54	1.52
1600.0	2.30	1.84	1.95
1700.0	2.26	2.06	2.34
1800.0	2.07	2.16	2.52
1900.0	1.81	2.03	2.50
2000.0	1.46	1.79	2.36
2100.0	1.16	1.63	2.22
2200.0	1.19	1.57	2.12
2300.0	1.47	1.60	2.05
2400.0	1.82	1.71	1.99
2500.0	2.05	1.78	1.92
2600.0	2.20	1.67	1.69
2680.0	2.22	1.70	1.66
2780.0	2.16	1.46	1.37
2860.0	2.14	1.36	1.16
2960.0	2.19	1.38	1.08
3040.0	2.27	1.38	1.09
3140.0	2.17	1.32	1.11
3220.0	2.06	1.26	1.15
3320.0	1.86	1.17	1.22
3400.0	1.75	1.10	1.30
3500.0	1.62	1.11	1.40
3580.0	1.59	1.21	1.51
3680.0	1.62	1.38	1.67
3760.0	1.76	1.55	1.81
3860.0	2.07	1.78	1.98
3940.0	2.48	2.08	2.18
4040.0	3.21	2.47	2.40
4120.0	4.26	3.05	2.69
4220.0	5.81	3.77	3.03
4300.0	7.66	4.44	3.18
4400.0	10.82	6.13	3.69

IF (OUT) (MHz)	IF VSWR @LO=4200MHz (:1) @LO (dBm) +7	+10	+13
10.0	1.40	1.07	1.31
50.0	1.39	1.12	1.34
90.0	1.46	1.17	1.34
130.0	1.56	1.25	1.38
170.0	1.67	1.31	1.38
210.0	1.81	1.40	1.42
250.0	1.97	1.48	1.44
290.0	2.18	1.60	1.51
330.0	2.42	1.72	1.57
370.0	2.74	1.93	1.69
410.0	3.04	2.11	1.81
450.0	3.34	2.36	1.98
490.0	3.73	2.61	2.16
530.0	4.15	2.88	2.34
570.0	4.55	3.15	2.55
610.0	4.86	3.37	2.69
650.0	5.28	3.71	2.95
710.0	5.72	3.98	3.16
750.0	6.03	4.27	3.39
810.0	6.30	4.46	3.56
850.0	6.53	4.66	3.73
910.0	6.78	4.88	3.92
950.0	6.81	4.89	3.92
1010.0	7.11	5.14	4.14
1050.0	7.00	5.07	4.08
1110.0	7.08	5.20	4.27
1150.0	6.81	4.98	4.11
1210.0	6.81	5.07	4.34
1250.0	6.51	4.88	4.25
1310.0	6.61	5.06	4.51
1350.0	6.35	5.02	4.67
1410.0	6.21	5.14	4.99
1450.0	6.24	5.52	5.58
1510.0	6.17	5.89	6.19
1550.0	6.32	6.49	7.02
1610.0	6.53	7.17	7.90
1650.0	6.83	7.63	8.43
1710.0	6.91	7.87	8.68
1750.0	6.94	7.90	8.64
1810.0	6.56	7.25	7.76

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Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	+11	9	9	21	28	34	42	50	32	---
1	-	33	+0	39	18	33	31	57	44	64	53	62
2	81	50	53	50	51	56	54	58	>73	69	>73	>73
3	>90	66	60	>73	56	>73	63	70	63	>73	69	>73
4	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
5	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
6	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
7	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
8	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
9	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
10	---	---	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 2512 MHz; -10.00 dBm.
LO IN: 2542 MHz; +10.00 dBm
IF OUT: 30 MHz; -16.82 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	+0	19	20	34	41	48	53	58	42	---
1	-	34	+0	41	18	38	35	66	47	67	60	65
2	61	43	45	50	41	54	41	51	57	63	73	74
3	>90	46	44	78	42	56	51	51	47	70	53	77
4	>90	66	66	61	63	56	67	63	66	67	77	71
5	>90	74	61	80	58	76	53	75	62	68	64	>83
6	>90	>83	>83	>83	73	79	79	80	71	>83	71	80
7	>90	>83	>83	>83	>83	80	81	>83	74	80	>83	>83
8	>90	>83	>83	>83	>83	>83	>83	>83	>83	82	>83	>83
9	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
10	---	---	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 2512 MHz; 0.00 dBm.
LO IN: 2542 MHz; +10.00 dBm
IF OUT: 30 MHz; -6.73 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.

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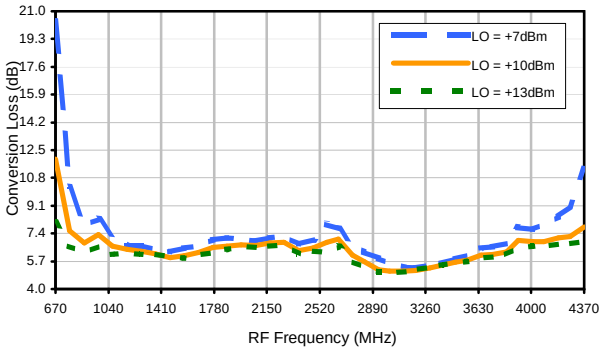
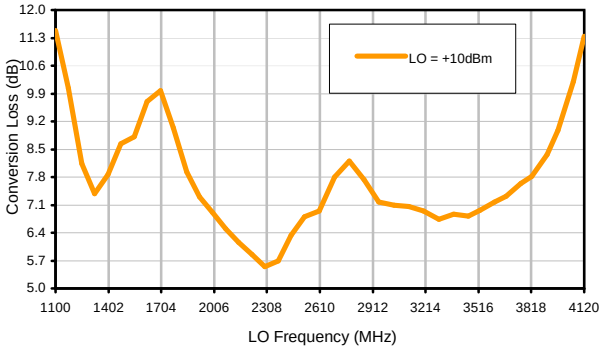
Typical Performance Curves

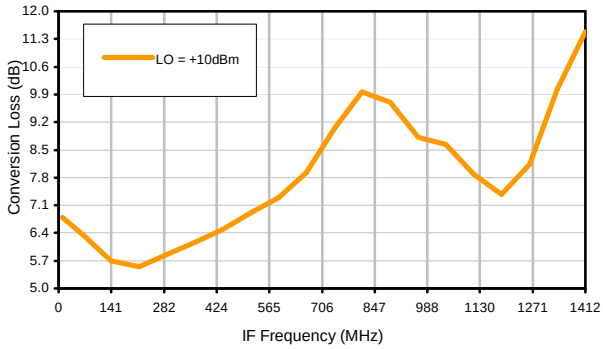
Conversion Loss @ IF=30MHz



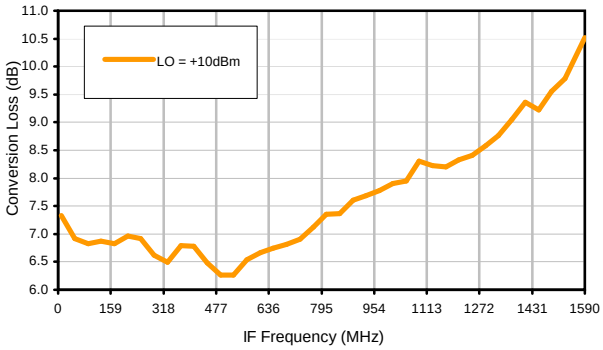
Conversion Loss vs. LO @ RF=2512MHz



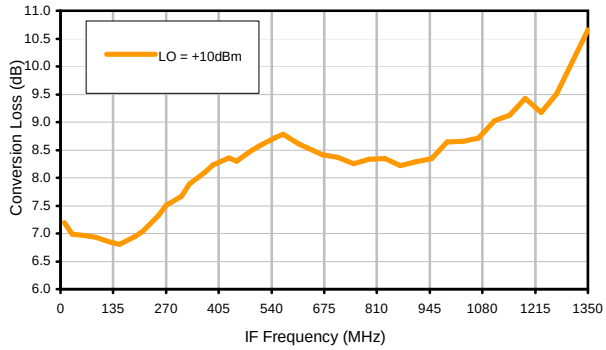
Conversion Loss vs. IF @ RF=2512MHz



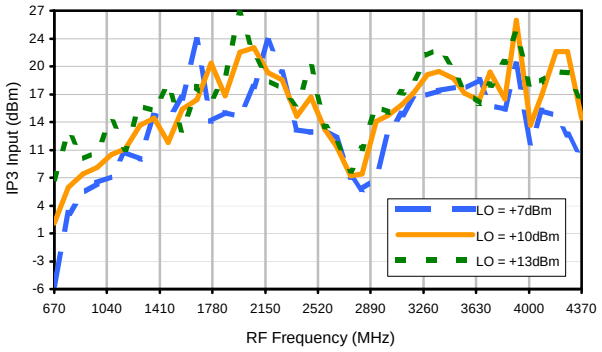
Conversion Loss vs. IF @ RF=813.9MHz



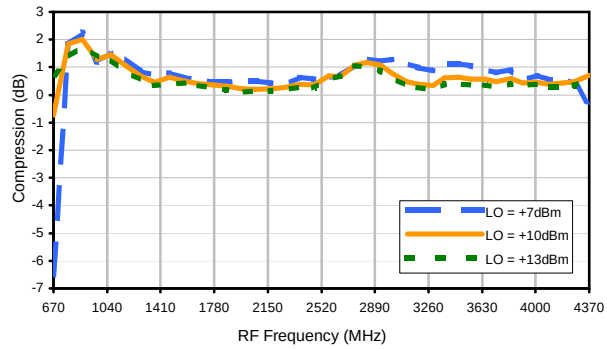
Conversion Loss vs. IF @ RF=4210.1001MHz



IP3 Input



Compression @ RF IN=+5dBm



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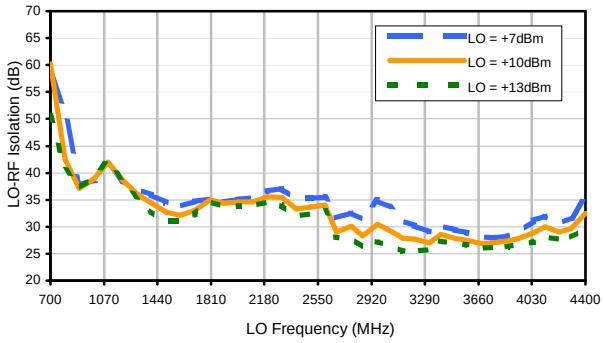
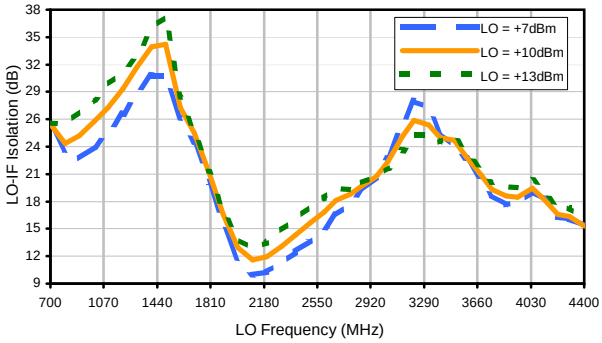
Typical Performance Curves

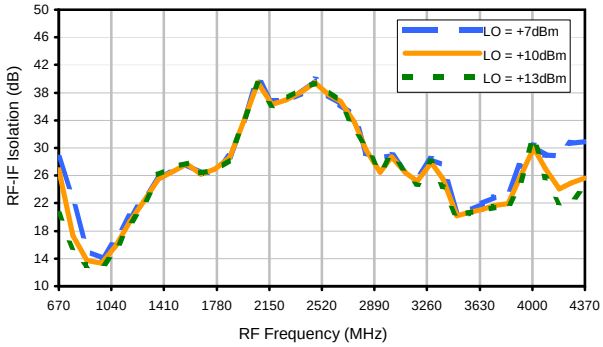
LO-RF Isolation



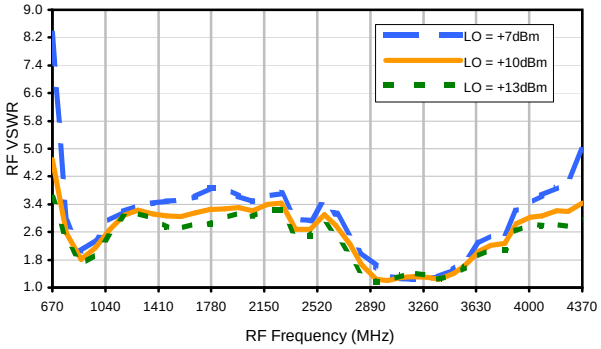
LO-IF Isolation



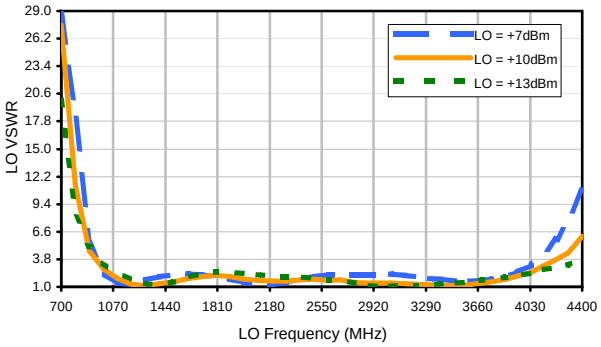
RF-IF Isolation



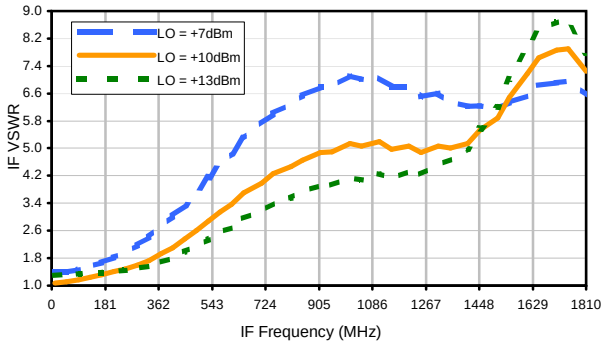
RF VSWR



LO VSWR



IF VSWR



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Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	+11	9	9	21	28	34	42	50	32	---
1	-	33	+0	39	18	33	31	57	44	64	53	62
2	81	50	53	50	51	56	54	58	>73	69	>73	>73
3	>90	66	60	>73	56	>73	63	70	63	>73	69	>73
4	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
5	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
6	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
7	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
8	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
9	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
10	---	---	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 2512 MHz; -10.00 dBm.
LO IN: 2542 MHz; +10.00 dBm
IF OUT: 30 MHz; -16.82 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	+0	19	20	34	41	48	53	58	42	---
1	-	34	+0	41	18	38	35	66	47	67	60	65
2	61	43	45	50	41	54	41	51	57	63	73	74
3	>90	46	44	78	42	56	51	51	47	70	53	77
4	>90	66	66	61	63	56	67	63	66	67	77	71
5	>90	74	61	80	58	76	53	75	62	68	64	>83
6	>90	>83	>83	>83	73	79	79	80	71	>83	71	80
7	>90	>83	>83	>83	>83	80	81	>83	74	80	>83	>83
8	>90	>83	>83	>83	>83	>83	>83	>83	>83	82	>83	>83
9	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
10	---	---	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 2512 MHz; 0.00 dBm.
LO IN: 2542 MHz; +10.00 dBm
IF OUT: 30 MHz; -6.73 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.

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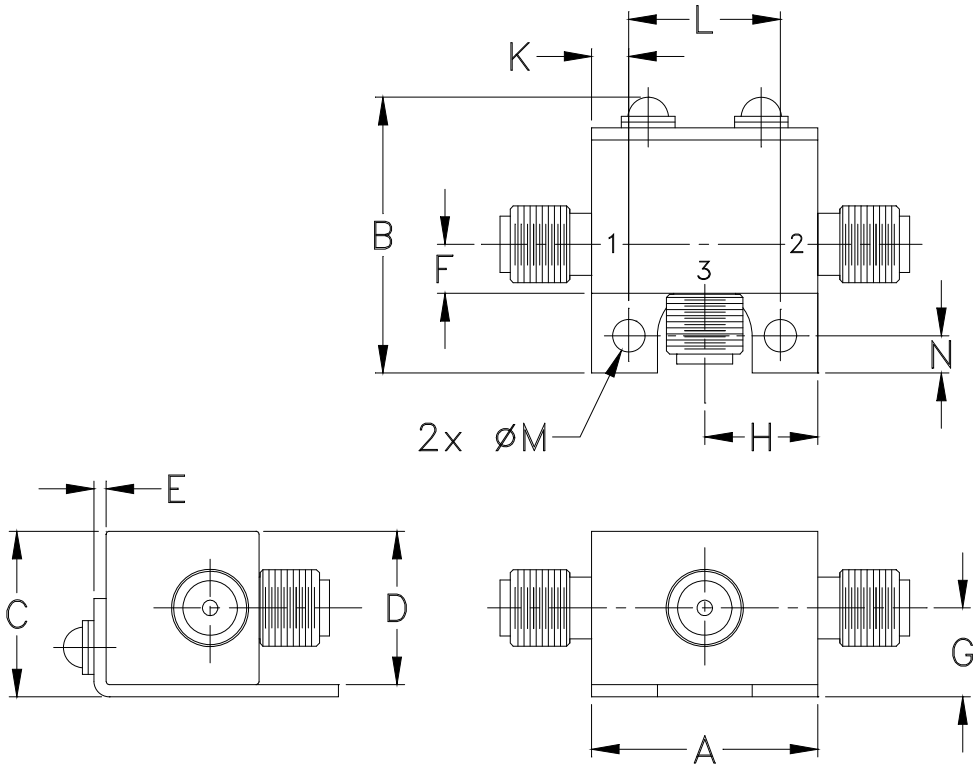
Case Style FL

FL905

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. ± .03; 3Pl. ± .015.
Tolerance on hole size and interaxes dimensions to be ±.005.

Notes:

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

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Environmental Specifications ENV28T5

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

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