Engineering Development Model

Frequency Mixer MCA1-ED12376/1

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 : DZ885

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		**Min.**	**Typ.**	**Max.**	**Units**
Frequency	**LO** (f_L to f_U)	1160		3000	MHz
	RF (f_L to f_U)	1160		3000	MHz
	IF	130		850	MHz
Conversion Loss	**Total Range**		7.7		dB
LO-RF Isolation			43		dB
LO-IF Isolation			20		dB
Input IP3			+19		dBm
1 dB Compression			+5		dBm

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

PIN CONNECTIONS	
LO	10
RF	5
IF	3
GROUND	1,2,4,6,7,8,9

Frequency Mixer MCA1-ED12376/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=130MHz (dB) @LO (dBm)		
		+7	+10	+13
1100.0	970.0	22.27	13.72	9.16
1160.5	1030.5	16.05	10.53	8.31
1221.1	1091.1	11.78	8.92	7.74
1281.6	1151.6	9.75	8.03	7.06
1342.1	1212.1	8.63	7.35	6.52
1402.7	1272.7	8.31	7.06	6.39
1463.2	1333.2	8.05	6.89	6.27
1523.7	1393.7	8.03	6.85	6.29
1584.2	1454.2	8.30	7.13	6.56
1644.8	1514.8	8.42	7.29	6.63
1705.3	1575.3	8.35	7.24	6.64
1765.8	1635.8	8.48	7.38	6.74
1826.4	1696.4	8.43	7.28	6.62
1886.9	1756.9	8.27	7.19	6.60
1947.4	1817.4	8.28	7.21	6.60
2008.0	1878.0	8.04	7.02	6.48
2068.5	1938.5	7.92	6.82	6.36
2129.0	1999.0	7.93	7.05	6.63
2189.6	2059.6	8.05	7.03	6.53
2250.1	2120.1	8.44	7.37	6.79
2310.6	2180.6	8.88	7.59	6.91
2371.2	2241.2	9.22	7.60	6.77
2431.7	2301.7	9.96	8.16	7.15
2492.2	2362.2	9.42	7.71	6.80
2552.7	2422.7	9.21	7.37	6.67
2613.3	2483.3	10.61	8.64	7.54
2673.8	2543.8	10.91	9.08	7.97
2734.3	2604.3	12.04	9.41	8.21
2794.9	2664.9	13.29	9.27	7.95
2855.4	2725.4	12.66	8.68	7.44
2915.9	2785.9	14.58	8.86	7.42
2976.5	2846.5	15.73	8.94	7.22
3016.8	2886.8	16.39	8.90	6.98
3077.3	2947.3	19.14	9.27	6.91
3117.7	2987.7	18.05	8.70	6.43
3178.2	3048.2	22.05	9.50	6.23
3218.6	3088.6	19.73	8.54	5.85
3279.1	3149.1	23.80	10.18	5.98
3319.5	3189.5	20.71	8.98	5.66
3380.0	3250.0	24.13	10.96	5.99

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+7	+10	+13
1100.0	970.0	-1.69	5.52	11.91
1160.5	1030.5	2.07	9.48	13.85
1221.1	1091.1	7.33	13.92	14.13
1281.6	1151.6	9.68	14.48	14.58
1342.1	1212.1	12.37	15.40	15.89
1402.7	1272.7	13.57	21.16	16.59
1463.2	1333.2	15.62	14.71	21.52
1523.7	1393.7	23.17	15.56	17.13
1584.2	1454.2	18.43	22.80	17.26
1644.8	1514.8	20.09	19.88	20.65
1705.3	1575.3	19.75	19.39	25.53
1765.8	1635.8	19.15	20.14	19.27
1826.4	1696.4	17.62	20.17	22.65
1886.9	1756.9	16.98	21.44	26.70
1947.4	1817.4	22.26	25.80	22.54
2008.0	1878.0	17.75	22.75	18.78
2068.5	1938.5	16.90	17.53	24.53
2129.0	1999.0	15.03	20.17	22.07
2189.6	2059.6	16.49	20.61	23.25
2250.1	2120.1	17.08	22.08	23.53
2310.6	2180.6	17.72	22.89	24.63
2371.2	2241.2	23.28	21.90	23.64
2431.7	2301.7	17.31	19.85	18.26
2492.2	2362.2	15.33	21.98	22.39
2552.7	2422.7	16.53	19.75	26.66
2613.3	2483.3	13.14	16.05	22.85
2673.8	2543.8	14.68	15.03	18.12
2734.3	2604.3	12.26	15.61	17.26
2794.9	2664.9	8.91	15.85	16.91
2855.4	2725.4	8.32	15.87	19.56
2915.9	2785.9	4.87	14.70	17.08
2976.5	2846.5	3.85	14.04	16.96
3016.8	2886.8	2.36	12.14	14.47
3077.3	2947.3	0.14	10.08	12.74
3117.7	2987.7	0.31	9.23	13.41
3178.2	3048.2	-1.98	8.29	15.63
3218.6	3088.6	-1.30	8.54	17.16
3279.1	3149.1	-2.66	8.13	16.27
3319.5	3189.5	-1.34	9.10	16.79
3380.0	3250.0	-3.20	6.77	14.27

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+5dBm (dB) @LO (dBm)		
		+7	+10	+13
1100.0	970.0	-8.50	-2.75	-0.70
1160.5	1030.5	-4.36	-1.10	-0.41
1221.1	1091.1	-1.43	-0.32	-0.09
1281.6	1151.6	-0.46	-0.15	0.08
1342.1	1212.1	-0.08	-0.12	0.01
1402.7	1272.7	0.09	0.03	0.05
1463.2	1333.2	0.23	0.07	0.10
1523.7	1393.7	0.23	0.06	0.03
1584.2	1454.2	0.13	0.07	0.03
1644.8	1514.8	0.17	-0.05	-0.02
1705.3	1575.3	0.17	0.01	0.01
1765.8	1635.8	0.20	-0.01	0.02
1826.4	1696.4	0.21	0.01	0.02
1886.9	1756.9	0.19	0.01	0.00
1947.4	1817.4	0.27	0.05	0.04
2008.0	1878.0	0.46	0.10	0.02
2068.5	1938.5	0.55	0.22	0.08
2129.0	1999.0	0.69	0.25	0.10
2189.6	2059.6	0.54	0.21	0.11
2250.1	2120.1	0.48	0.17	0.07
2310.6	2180.6	0.39	0.15	0.05
2371.2	2241.2	0.17	0.09	0.04
2431.7	2301.7	-0.05	0.05	0.08
2492.2	2362.2	-0.02	0.03	0.08
2552.7	2422.7	0.24	0.21	0.08
2613.3	2483.3	-0.13	-0.09	0.00
2673.8	2543.8	-0.48	-0.42	-0.24
2734.3	2604.3	-0.97	-0.46	-0.27
2794.9	2664.9	-1.63	-0.19	-0.01
2855.4	2725.4	-1.61	-0.28	-0.09
2915.9	2785.9	-3.02	-0.34	-0.22
2976.5	2846.5	-4.09	-0.28	-0.13
3016.8	2886.8	-4.71	-0.55	-0.09
3077.3	2947.3	-6.84	-0.54	0.01
3117.7	2987.7	-6.51	-0.40	0.11
3178.2	3048.2	-9.70	-0.63	0.34
3218.6	3088.6	-8.13	-0.23	0.32
3279.1	3149.1	-11.17	-1.12	0.35
3319.5	3189.5	-8.96	-0.61	0.30
3380.0	3250.0	-11.98	-2.04	0.35

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=2080MHz (dB) @LO (dBm) +10
1070.0	1010.0	10.54
1020.7	1059.3	9.17
971.4	1108.6	8.69
922.1	1157.9	8.53
872.8	1207.2	8.82
823.5	1256.5	8.71
774.2	1305.8	8.76
724.9	1355.1	8.68
675.6	1404.4	8.95
626.3	1453.7	9.15
577.0	1503.0	9.31
527.7	1552.3	8.92
478.4	1601.6	8.55
429.1	1650.9	8.22
379.8	1700.2	8.10
330.5	1749.5	7.69
281.2	1798.8	7.48
231.9	1848.1	7.20
182.6	1897.4	7.10
133.3	1946.7	6.73
84.0	1996.0	6.80
34.7	2045.3	6.78
10.0	2090.0	6.90
56.0	2136.0	7.04
86.7	2166.7	7.20
132.8	2212.8	7.40
163.5	2243.5	7.65
209.5	2289.5	8.23
240.2	2320.2	8.48
286.3	2366.3	8.90
317.0	2397.0	8.94
363.0	2443.0	8.98
393.7	2473.7	9.64
439.8	2519.8	9.84
470.5	2550.5	10.11
516.5	2596.5	10.09
547.2	2627.2	9.89
593.3	2673.3	10.19
624.0	2704.0	10.28
670.0	2750.0	10.54

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1149.9MHz (dB) @LO (dBm) +10
10.1	1160.0	7.81
50.6	1200.5	7.43
91.0	1240.9	7.10
131.5	1281.4	6.81
171.9	1321.8	6.53
212.4	1362.3	6.28
252.9	1402.8	6.13
293.3	1443.2	6.11
333.8	1483.7	6.20
374.2	1524.1	6.54
414.7	1564.6	6.59
455.2	1605.1	6.71
495.6	1645.5	6.86
536.1	1686.0	7.02
576.5	1726.4	7.13
617.0	1766.9	7.17
657.5	1807.4	7.12
697.9	1847.8	6.99
738.4	1888.3	6.80
778.8	1928.7	6.52
819.3	1969.2	6.47
859.8	2009.7	6.63
900.2	2050.1	6.74
960.9	2110.8	6.85
1001.4	2151.3	6.93
1062.1	2212.0	7.31
1102.5	2252.4	7.59
1163.2	2313.1	8.18
1203.7	2353.6	8.37
1264.4	2414.3	8.80
1304.8	2454.7	9.08
1365.5	2515.4	9.38
1406.0	2555.9	9.56
1466.7	2616.6	9.20
1507.1	2657.0	9.39
1567.8	2717.7	9.35
1608.3	2758.2	9.71
1669.0	2818.9	9.86
1709.4	2859.3	10.33
1770.1	2920.0	10.54

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=3010.1MHz (dB) @LO (dBm) +10
1330.1	1680.0	10.56
1289.5	1720.6	9.98
1248.9	1761.2	9.26
1208.3	1801.8	8.98
1167.6	1842.5	8.88
1127.0	1883.1	8.76
1086.4	1923.7	8.60
1045.8	1964.3	8.40
1005.2	2004.9	8.56
964.6	2045.5	8.68
923.9	2086.2	8.91
883.3	2126.8	9.02
842.7	2167.4	9.11
802.1	2208.0	9.38
761.5	2248.6	9.48
741.2	2268.9	9.70
700.6	2309.5	10.05
680.3	2329.8	9.96
639.6	2370.5	10.17
619.3	2390.8	10.14
578.7	2431.4	9.48
558.4	2451.7	9.52
517.8	2492.3	9.43
497.5	2512.6	9.13
456.9	2553.2	8.96
436.6	2573.5	8.76
395.9	2614.2	8.30
375.6	2634.5	8.23
335.0	2675.1	8.41
314.7	2695.4	8.42
274.1	2736.0	8.59
253.8	2756.3	8.84
213.2	2796.9	8.83
192.9	2817.2	8.58
152.3	2857.8	9.00
131.9	2878.2	9.11
91.3	2918.8	8.72
71.0	2939.1	9.11
30.4	2979.7	9.22
10.1	3000.0	8.75

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+7	+10	+13	+7	+10	+13
970.0	44.22	37.41	33.45	15.45	16.01	17.80
1030.5	41.25	34.70	32.63	14.41	15.67	18.10
1091.1	40.05	35.88	34.09	14.01	15.97	18.52
1151.6	42.09	39.36	37.41	14.33	16.60	19.13
1212.1	45.29	43.71	42.26	15.08	17.47	20.03
1272.7	48.66	47.13	45.28	15.95	18.34	20.82
1333.2	47.98	46.55	43.78	16.94	19.16	21.30
1393.7	44.45	44.07	42.31	18.06	19.94	21.29
1454.2	41.85	41.72	40.39	19.03	20.45	21.23
1514.8	39.85	40.14	39.45	19.91	20.68	21.12
1575.3	39.15	38.80	37.86	20.92	21.23	21.50
1635.8	36.89	36.09	35.68	23.15	23.44	23.28
1696.4	36.81	36.08	35.70	25.29	23.99	22.56
1756.9	36.82	36.42	36.32	25.64	23.91	22.66
1817.4	36.90	37.01	37.52	24.93	23.83	22.76
1878.0	37.58	37.87	38.28	23.73	23.58	22.99
1938.5	38.44	39.32	39.43	21.56	22.14	22.39
1999.0	38.25	38.57	38.59	18.66	20.09	21.25
2059.6	38.37	38.25	38.18	16.25	18.03	19.83
2120.1	39.21	38.92	38.51	14.20	16.18	18.16
2180.6	40.46	39.79	38.81	13.00	14.88	16.74
2241.2	42.92	41.74	39.61	12.85	14.67	16.27
2301.7	45.01	44.63	41.16	13.43	15.13	16.48
2362.2	48.87	48.48	43.22	14.99	16.38	17.21
2422.7	54.80	53.13	45.74	16.77	17.88	18.12
2483.3	61.78	53.39	47.51	18.77	19.68	19.66
2543.8	59.37	50.06	47.12	20.96	20.98	20.66
2604.3	64.10	55.09	49.31	23.33	22.42	21.40
2664.9	55.06	46.89	43.49	26.04	23.73	21.71
2725.4	56.83	46.96	42.15	28.96	25.92	23.53
2785.9	56.15	48.82	42.48	32.04	27.54	23.99
2846.5	53.90	48.68	43.17	34.70	28.59	24.50
2886.8	51.83	47.59	43.49	35.94	28.70	24.82
2947.3	49.80	47.26	44.54	36.78	30.03	25.74
2987.7	48.22	46.68	47.10	35.81	29.76	26.03
3048.2	46.71	45.74	49.32	35.03	31.13	27.10
3088.6	45.66	45.28	45.44	33.88	30.62	26.84
3149.1	44.78	43.63	43.02	32.80	30.82	26.94
3189.5	44.32	44.18	43.04	31.87	29.79	26.43
3250.0	43.75	43.51	41.51	30.96	29.58	26.14

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+7	+10	+13
1100.0	970.0	28.62	19.93	15.09
1160.5	1030.5	27.81	19.70	16.88
1221.1	1091.1	25.27	21.11	19.14
1281.6	1151.6	26.04	23.35	21.91
1342.1	1212.1	27.60	25.86	24.97
1402.7	1272.7	29.72	28.37	26.91
1463.2	1333.2	30.91	29.00	26.84
1523.7	1393.7	32.52	29.70	27.55
1584.2	1454.2	32.95	29.02	26.59
1644.8	1514.8	31.43	27.91	25.47
1705.3	1575.3	30.06	26.77	24.63
1765.8	1635.8	30.24	26.14	23.53
1826.4	1696.4	29.43	25.31	23.33
1886.9	1756.9	27.35	24.93	23.43
1947.4	1817.4	25.54	23.71	22.37
2008.0	1878.0	24.82	23.36	22.27
2068.5	1938.5	24.81	23.41	22.78
2129.0	1999.0	26.20	25.42	25.01
2189.6	2059.6	29.57	29.13	28.84
2250.1	2120.1	34.25	34.03	33.89
2310.6	2180.6	32.17	31.00	30.30
2371.2	2241.2	27.92	26.40	25.69
2431.7	2301.7	25.71	23.94	22.93
2492.2	2362.2	24.29	22.74	21.65
2552.7	2422.7	23.09	21.38	20.43
2613.3	2483.3	23.00	21.41	20.07
2673.8	2543.8	22.16	20.80	19.59
2734.3	2604.3	21.71	19.90	18.73
2794.9	2664.9	21.91	19.69	18.19
2855.4	2725.4	21.65	19.74	18.71
2915.9	2785.9	21.88	19.99	18.83
2976.5	2846.5	21.88	20.52	19.37
3016.8	2886.8	21.79	20.67	19.60
3077.3	2947.3	21.77	21.53	20.21
3117.7	2987.7	21.79	21.76	20.15
3178.2	3048.2	21.73	22.09	20.48
3218.6	3088.6	21.87	21.99	20.39
3279.1	3149.1	22.07	22.80	21.05
3319.5	3189.5	22.41	22.90	21.08
3380.0	3250.0	22.95	23.24	21.80

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+7	+10	+13
1100.0	970.0	8.47	4.99	3.33
1160.5	1030.5	6.28	4.24	3.52
1221.1	1091.1	4.75	3.86	3.53
1281.6	1151.6	4.21	3.61	3.31
1342.1	1212.1	3.95	3.43	3.10
1402.7	1272.7	3.86	3.29	2.92
1463.2	1333.2	3.86	3.22	2.79
1523.7	1393.7	3.88	3.24	2.83
1584.2	1454.2	3.92	3.28	2.90
1644.8	1514.8	4.01	3.39	2.96
1705.3	1575.3	3.94	3.29	2.90
1765.8	1635.8	3.95	3.26	2.82
1826.4	1696.4	3.99	3.26	2.84
1886.9	1756.9	3.81	3.17	2.79
1947.4	1817.4	3.71	3.08	2.66
2008.0	1878.0	3.59	2.96	2.55
2068.5	1938.5	3.37	2.74	2.48
2129.0	1999.0	3.30	2.86	2.63
2189.6	2059.6	3.54	3.07	2.82
2250.1	2120.1	3.68	3.19	2.92
2310.6	2180.6	3.88	3.34	3.04
2371.2	2241.2	4.08	3.43	3.08
2431.7	2301.7	4.35	3.56	3.13
2492.2	2362.2	4.29	3.52	3.07
2552.7	2422.7	3.96	3.12	2.77
2613.3	2483.3	4.48	3.61	3.08
2673.8	2543.8	4.75	3.96	3.45
2734.3	2604.3	5.16	4.09	3.60
2794.9	2664.9	5.68	4.05	3.48
2855.4	2725.4	5.47	3.92	3.39
2915.9	2785.9	6.09	3.91	3.31
2976.5	2846.5	6.32	3.82	3.14
3016.8	2886.8	6.49	3.73	3.02
3077.3	2947.3	7.44	3.85	2.84
3117.7	2987.7	6.81	3.56	2.50
3178.2	3048.2	7.63	3.62	2.15
3218.6	3088.6	6.71	3.14	1.85
3279.1	3149.1	7.38	3.52	1.80
3319.5	3189.5	6.37	2.93	1.62
3380.0	3250.0	6.63	3.31	1.60

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+7	+10	+13
970.0	15.96	11.31	6.53
1030.5	10.89	5.99	4.34
1091.1	6.15	3.68	3.25
1151.6	3.86	2.69	2.66
1212.1	2.80	2.11	2.22
1272.7	2.40	1.76	1.87
1333.2	2.31	1.57	1.65
1393.7	2.26	1.51	1.57
1454.2	2.29	1.52	1.57
1514.8	2.43	1.60	1.64
1575.3	2.40	1.70	1.78
1635.8	2.31	1.72	1.84
1696.4	2.25	1.78	1.95
1756.9	2.09	1.77	2.04
1817.4	1.89	1.72	2.04
1878.0	1.68	1.60	2.01
1938.5	1.44	1.43	1.93
1999.0	1.18	1.32	1.91
2059.6	1.24	1.43	2.03
2120.1	1.49	1.58	2.11
2180.6	1.83	1.83	2.26
2241.2	2.20	2.12	2.50
2301.7	2.61	2.40	2.67
2362.2	2.95	2.65	2.84
2422.7	3.49	2.88	2.94
2483.3	4.27	3.28	3.16
2543.8	4.67	3.44	3.29
2604.3	5.89	3.76	3.34
2664.9	7.31	4.35	3.45
2725.4	7.94	4.79	3.85
2785.9	9.53	5.44	3.88
2846.5	10.37	5.95	3.88
2886.8	10.89	6.24	3.82
2947.3	11.77	7.20	3.90
2987.7	11.85	7.08	3.83
3048.2	12.61	8.47	4.39
3088.6	12.44	8.23	4.46
3149.1	12.99	9.79	5.20
3189.5	12.52	9.38	4.93
3250.0	12.71	10.37	5.46

IF (OUT) (MHz)	IF VSWR @LO=3000MHz (:1) @LO (dBm)		
	+7	+10	+13
10.0	6.35	1.89	1.07
90.0	6.66	1.97	1.09
170.0	6.89	2.05	1.15
250.0	7.14	2.17	1.25
330.0	7.56	2.35	1.38
410.0	8.05	2.59	1.56
490.0	8.51	2.90	1.75
570.0	9.04	3.28	1.98
650.0	9.79	3.70	2.25
730.0	10.25	4.06	2.51
810.0	10.62	4.38	2.75
890.0	10.89	4.67	2.97
970.0	10.69	4.84	3.14
1050.0	10.25	4.84	3.18
1130.0	9.69	4.75	3.16
1210.0	9.53	4.73	3.12
1290.0	9.58	4.78	3.08
1370.0	9.58	4.80	3.10
1450.0	9.48	4.75	3.23
1510.0	9.08	4.62	3.37
1590.0	8.16	4.43	3.69
1650.0	7.25	4.30	4.01
1730.0	5.91	4.22	4.69
1790.0	4.73	4.21	5.23
1870.0	3.58	4.74	6.28
1930.0	3.45	5.44	6.97
2010.0	4.83	6.51	7.44
2070.0	5.68	6.39	6.81
2150.0	4.87	5.20	5.39
2210.0	4.27	4.43	4.59
2290.0	4.39	4.55	4.75
2350.0	5.30	5.38	5.56
2430.0	7.05	6.68	6.73
2490.0	8.08	7.28	7.17
2570.0	9.08	7.50	7.17
2630.0	9.58	7.34	6.73
2710.0	9.69	6.71	5.83
2770.0	9.38	6.09	5.07
2850.0	8.72	5.20	4.02
2910.0	8.39	4.73	3.44

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	+5	17	11	20	9	38	20	38	37	50
1	-	17	+0	23	14	38	27	26	43	39	48	61
2	77	58	55	59	71	70	55	59	54	67	60	>73
3	>90	>73	>73	>73	66	72	67	>73	68	>73	>73	>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	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

Test conditions: RF IN: 2080 MHz; -10.00 dBm.
LO IN: 1950 MHz; +10.00 dBm
IF OUT: 130 MHz; -16.8 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	5	28	22	32	20	51	31	50	49	63
1	-	17	+0	23	15	39	27	27	43	42	52	62
2	57	49	46	50	62	58	45	48	45	58	52	75
3	>90	60	54	65	46	53	46	61	47	55	58	63
4	>90	>83	73	75	75	70	71	73	72	71	83	78
5	>90	>83	83	>83	83	>83	77	>83	>83	>83	>83	82
6	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
7	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
8	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
9	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
10	>90	>83	>83	>83	>83	81	>83	82	>83	>83	>83	>83
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

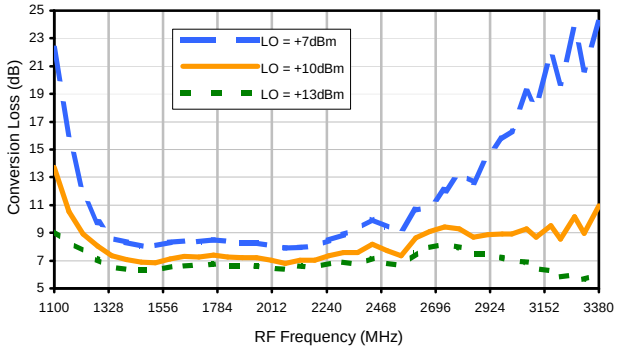
LO HARMONICS ORDER

Test conditions: RF IN: 2080 MHz; 0.00 dBm.
LO IN: 1950 MHz; +10.00 dBm
IF OUT: 130 MHz; -6.9 dBm

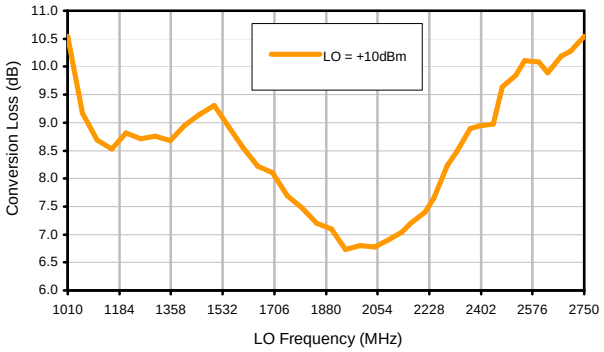
Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

Typical Performance Curves

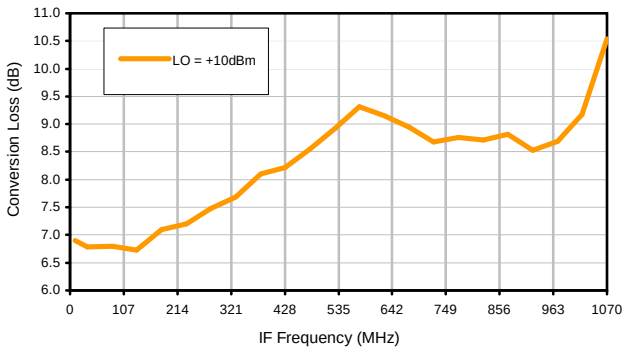
Conversion Loss @ IF=130MHz



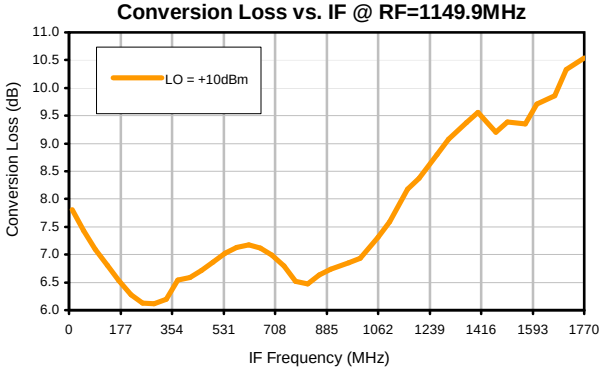
Conversion Loss vs. LO @ RF=2080MHz



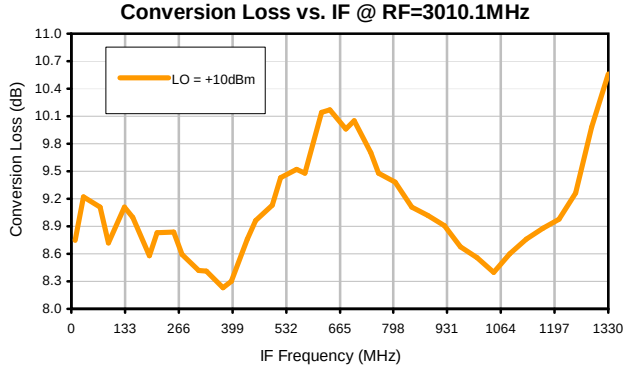
Conversion Loss vs. IF @ RF=2080MHz



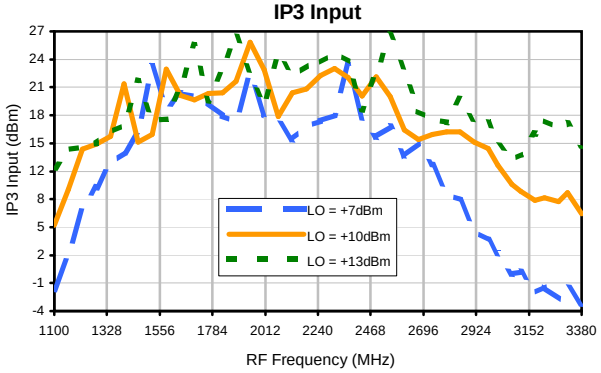
Conversion Loss vs. IF @ RF=1149.9MHz



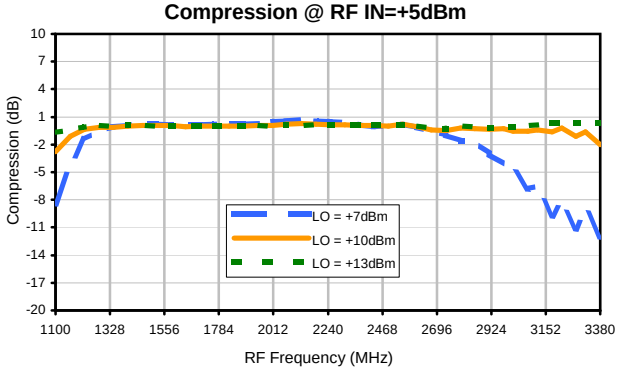
Conversion Loss vs. IF @ RF=3010.1MHz



IP3 Input

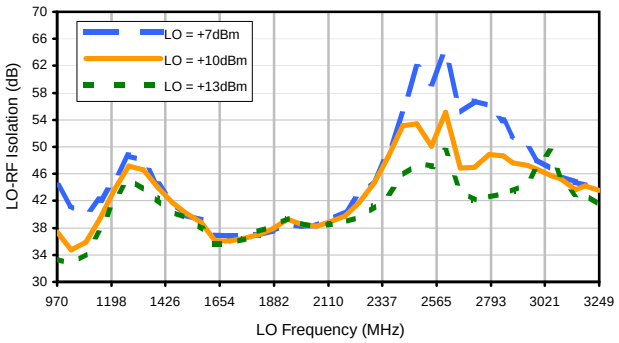


Compression @ RF IN=+5dBm

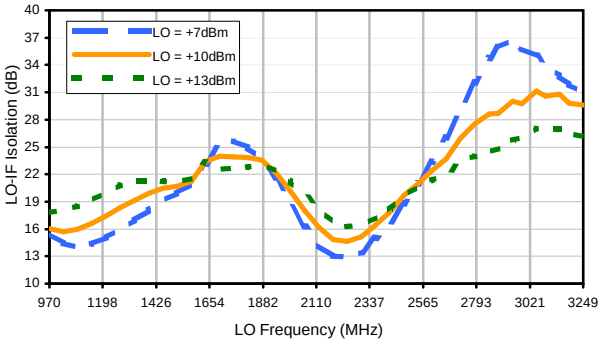


Typical Performance Curves

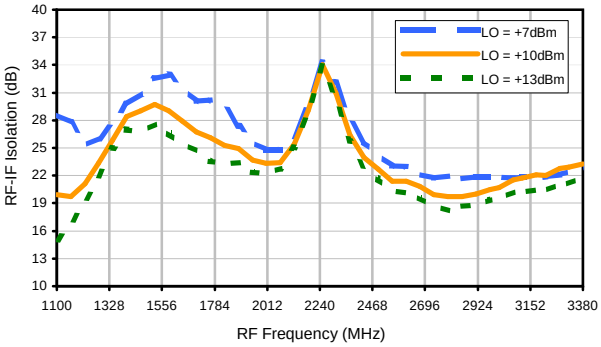
LO-RF Isolation



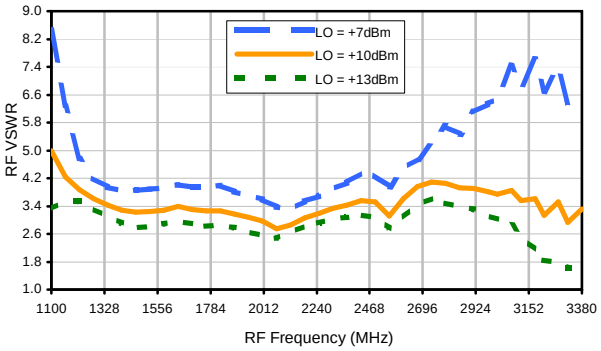
LO-IF Isolation



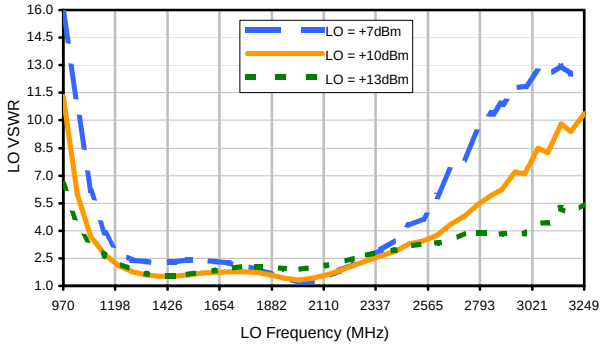
RF-IF Isolation



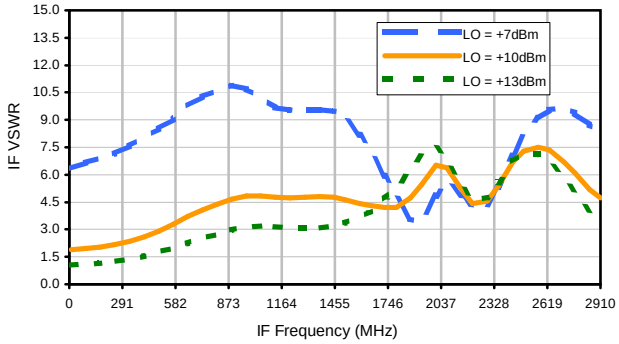
RF VSWR



LO VSWR



IF VSWR



Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	+5	17	11	20	9	38	20	38	37	50
1	-	17	+0	23	14	38	27	26	43	39	48	61
2	77	58	55	59	71	70	55	59	54	67	60	>73
3	>90	>73	>73	>73	66	72	67	>73	68	>73	>73	>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	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73	>73
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

Test conditions: **RF IN: 2080 MHz; -10.00 dBm.**
LO IN: 1950 MHz; +10.00 dBm
IF OUT: 130 MHz; -16.8 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	5	28	22	32	20	51	31	50	49	63
1	-	17	+0	23	15	39	27	27	43	42	52	62
2	57	49	46	50	62	58	45	48	45	58	52	75
3	>90	60	54	65	46	53	46	61	47	55	58	63
4	>90	>83	73	75	75	70	71	73	72	71	83	78
5	>90	>83	83	>83	83	>83	77	>83	>83	>83	>83	82
6	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
7	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
8	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
9	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
10	>90	>83	>83	>83	>83	81	>83	82	>83	>83	>83	>83
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

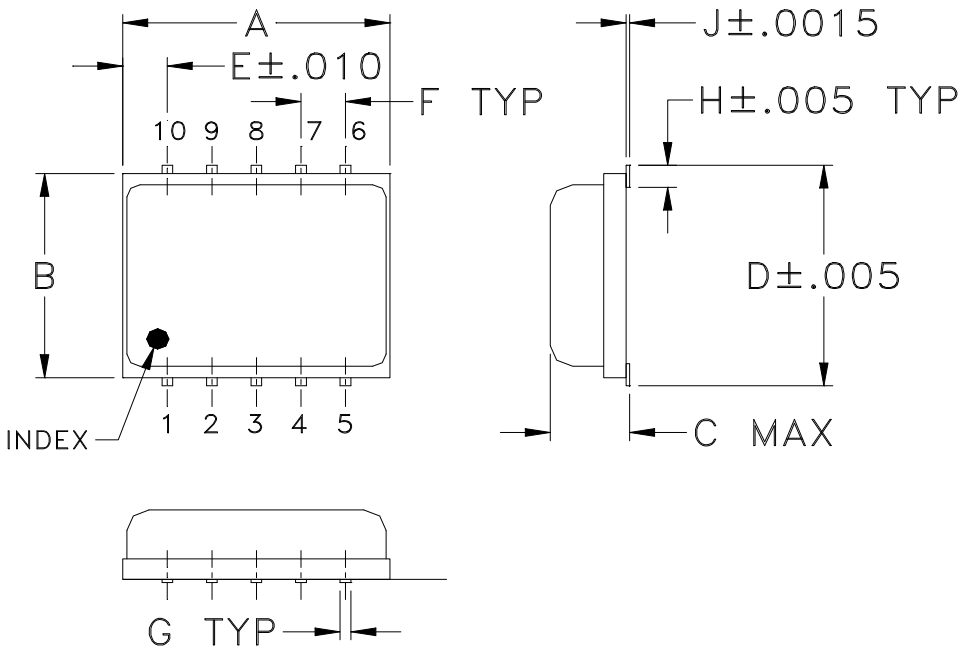
Test conditions: **RF IN: 2080 MHz; 0.00 dBm.**
LO IN: 1950 MHz; +10.00 dBm
IF OUT: 130 MHz; -6.9 dBm

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.

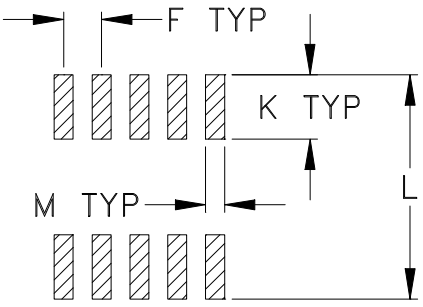
Case Style DZ

DZ885
DZ1034

Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE#	A	B	C	D	E	F	G	H	J	K	L	M	WT. GRAMS
DZ885	.30 (7.62)	.250 (6.35)	.085 (2.16)	.266 (6.76)	.050 (1.27)	.050 (1.27)	.012 (0.30)	.029 (0.74)	.004 (0.10)	.085 (2.16)	.296 (7.52)	.030 (0.76)	0.25
DZ1034			.105 (2.67)										0.3

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

Notes:

1. Case material: Plastic encapsulation on Ceramic base.
2. Termination finish:
   For RoHS Case Styles: Tin plate. All models, (+) suffix.
   For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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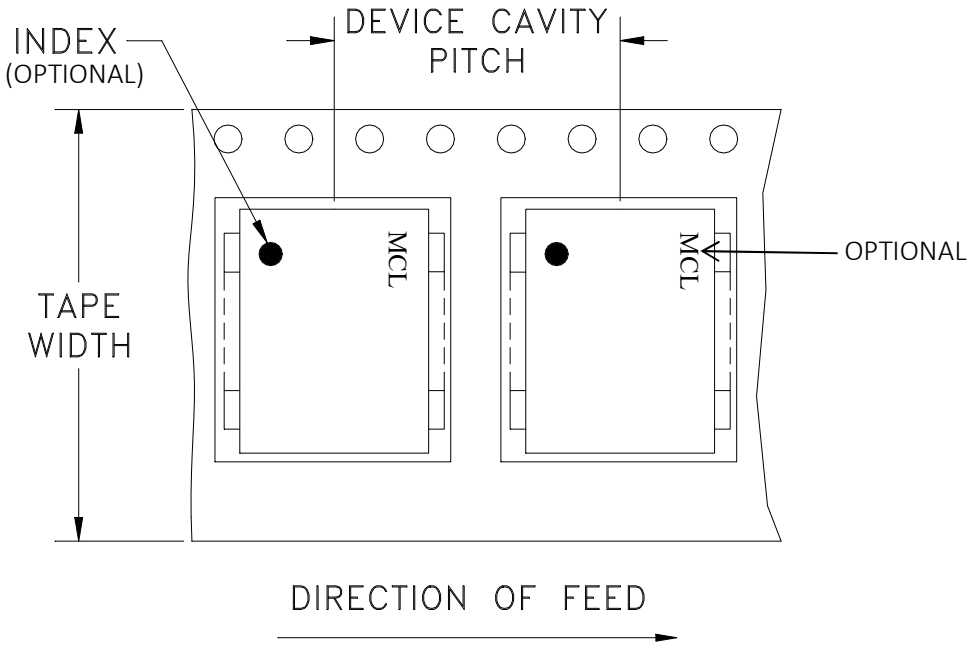
Tape & Reel Packaging TR-F34

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel see note	
16	12	7	Small quantity standard (see note)	20
				50
				100
				200
		13	Standard	500
				1000

Note: Availability of small reel quantity varies by model.
Refer to pricing and availability on individual model dashboard.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

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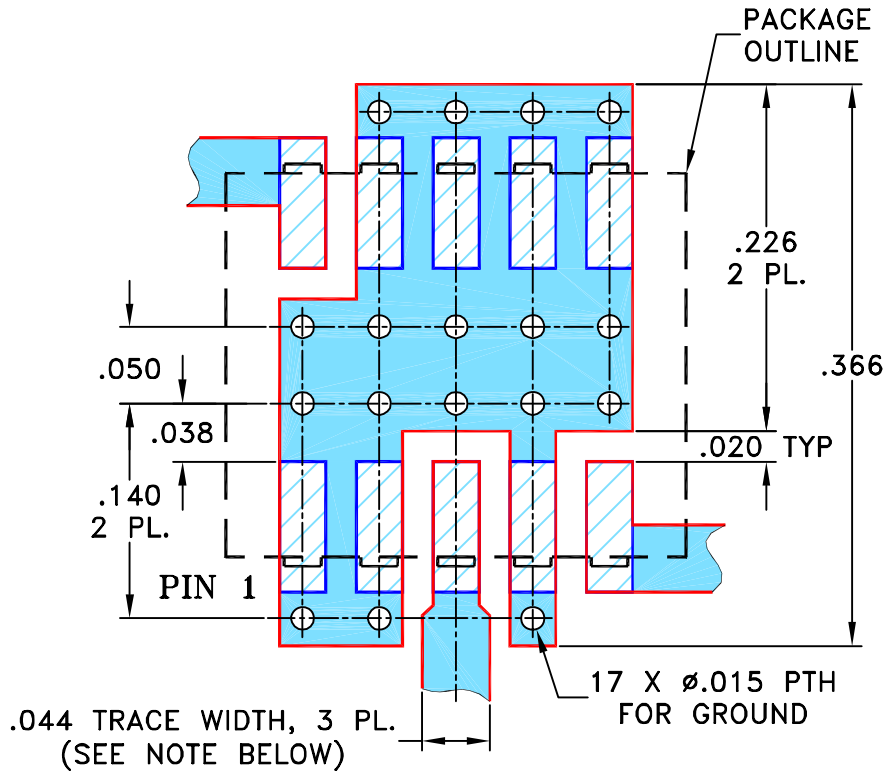
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
A	M81781	UPDATED PCB LAYOUT	06/07/02	GF	DJ
B	M82377	UPDATED DRAWING	07/31/02	AV	WL
C	M102713	ADDED NOTE 2 & "...WITH SMOBC"	01/17/06	MMG	IL
D	M135488	ADDED DZ1650, CHANGED PIN CONN.	02/02/12	GF	DJ

SUGGESTED MOUNTING CONFIGURATION FOR DZ883, DZ885 & DZ1650 CASE STYLES, "10MX01" PIN CONNECTION



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

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	AV	05/08/02
TOLERANCES ON:	CHECKED	DB	05/16/02
2 PL DECIMALS ±	APPROVED	WL	05/16/02
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

Mini-Circuits®

ASHEETA1.DWG REV:A DATE:01/12/95

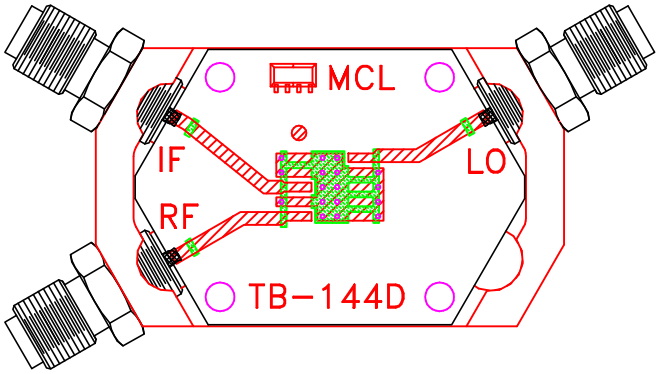
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, 10MX01, DZ883/885/1650, TB-144

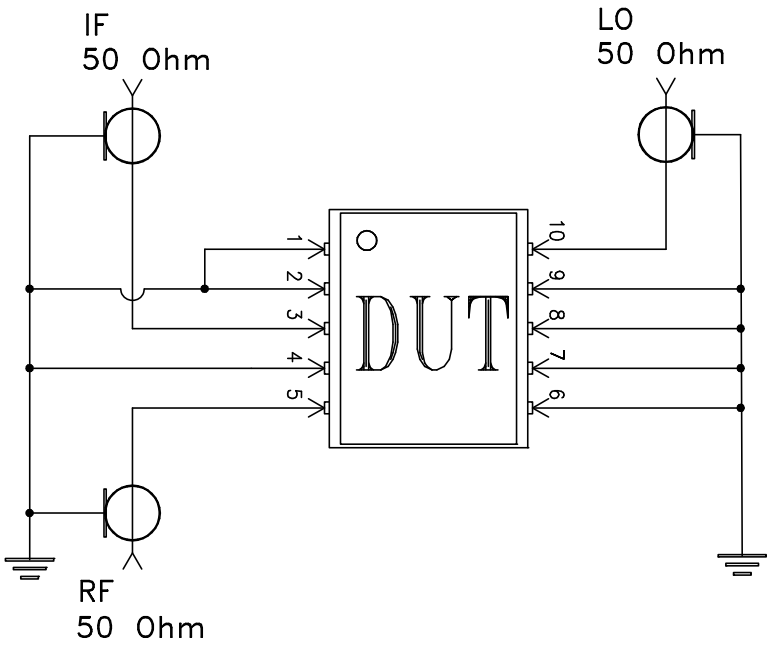
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-045	D

FILE:	SCALE:	SHEET:
98PL045	8:1	1 OF 1

Evaluation Board and Circuit



TB-144



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.020 inch.

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Environmental Specifications ENV10

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	-55° to 100°C Ambient Environment	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