Non-Catalog Model

Frequency Mixer LRMS-2UMHJ

Level 13 (LO Power +13 dBm)

Important Note

This is a non-catalog model and can be manufactured on specific request.
Pricing and delivery information can be supplied upon request.

Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : QQQ569

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		**Min.**	**Typ.**	**Max.**	**Units**
Frequency	**LO** (fL to fU)	10		1000	MHz
	RF (fL to fU)	10		1000	MHz
	IF	20		500	MHz
Conversion Loss	**mid band**		7.0	8.5	dB
	Total Range			9.5	dB
LO-RF Isolation	**Low Range**	40	52		dB
	Mid Range	30	43		dB
	Upper Range	25	33		dB
LO-IF Isolation	**Low Range**	30	53		dB
	Mid Range	25	44		dB
	Upper Range	22	39		dB
1 dB Comp. Input Power			+9		dBm

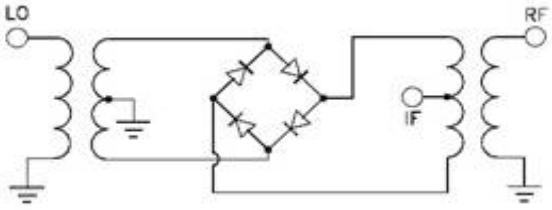
Notes: Low Range = [fL to 10fL] Mid Range = [10fL to fU/2] Upper Range = [fU/2 to fU]
mid band = [2fL to fU/2]

Phase detection, positive polarity
Aqueous washable.

MAXIMUM RATINGS	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	200mW
IF Current	40mA

PIN CONNECTIONS	
LO	1
RF	4
IF	5
GROUND	2, 3, 6

Electrical Schematics



Frequency Mixer LRMS-2UMHJ

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	6.12	5.87	5.68
70.1	100.1	6.42	6.14	6.02
130.1	160.1	6.57	6.28	6.11
190.1	220.1	6.90	6.54	6.27
250.1	280.1	7.17	6.73	6.36
310.1	340.1	7.69	7.08	6.59
370.1	400.1	7.72	6.89	6.34
430.1	460.1	8.29	7.31	6.69
490.1	520.1	8.28	7.25	6.69
550.1	580.1	8.34	7.04	6.43
610.1	640.1	9.04	7.65	6.86
670.1	700.1	8.58	7.43	6.81
730.1	760.1	8.37	7.56	7.05
790.1	820.1	8.41	7.72	7.33
870.1	900.1	8.55	8.15	7.86
930.1	960.1	8.33	8.08	7.93
1010.1	1040.1	8.00	7.80	7.67
1070.1	1100.1	7.96	7.72	7.60
1150.1	1180.1	8.08	7.69	7.57
1210.1	1240.1	8.38	7.85	7.69
1290.1	1320.1	9.09	8.21	7.94
1350.1	1380.1	9.64	8.57	8.13
1430.1	1460.1	10.22	8.94	8.49
1490.1	1520.1	10.54	9.30	8.72
1570.1	1600.1	10.93	9.48	8.95
1630.1	1660.1	10.91	9.52	8.88
1710.1	1740.1	10.55	9.37	8.79
1770.1	1800.1	10.52	9.37	8.83
1850.1	1880.1	10.29	9.19	8.78
1910.1	1940.1	10.04	9.01	8.70
1990.1	2020.1	9.90	8.99	8.71
2050.1	2080.1	9.85	8.94	8.67
2130.1	2160.1	9.78	8.76	8.49
2190.1	2220.1	9.76	8.90	8.65
2270.1	2300.1	9.89	9.10	8.84
2330.1	2360.1	9.93	9.10	8.85
2410.1	2440.1	10.10	9.30	9.01
2470.1	2500.1	10.28	9.58	9.28
2550.1	2580.1	10.56	9.88	9.58
2610.1	2640.1	10.80	10.11	9.79

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+10	+13	+16
10.1	40.1	21.78	23.54	22.13
70.1	100.1	16.87	15.49	14.59
130.1	160.1	12.75	12.96	13.91
190.1	220.1	11.10	12.29	14.49
250.1	280.1	11.08	12.94	15.89
310.1	340.1	10.63	13.23	17.01
370.1	400.1	11.21	14.84	19.20
430.1	460.1	11.84	15.96	19.03
490.1	520.1	12.91	18.04	18.90
550.1	580.1	11.65	16.92	19.04
610.1	640.1	10.75	14.86	18.28
670.1	700.1	12.58	15.76	17.91
730.1	760.1	14.48	16.00	17.31
790.1	820.1	15.03	16.69	17.72
870.1	900.1	15.75	17.19	18.89
930.1	960.1	17.00	17.37	18.11
1010.1	1040.1	20.13	19.74	19.51
1070.1	1100.1	20.24	20.92	21.35
1150.1	1180.1	20.92	24.37	25.02
1210.1	1240.1	22.07	25.01	27.21
1290.1	1320.1	22.20	24.63	27.41
1350.1	1380.1	20.53	22.85	24.69
1430.1	1460.1	19.29	22.05	22.98
1490.1	1520.1	19.94	21.86	22.64
1570.1	1600.1	18.47	22.18	21.89
1630.1	1660.1	18.38	20.32	21.04
1710.1	1740.1	18.41	19.57	20.22
1770.1	1800.1	18.77	19.38	19.79
1850.1	1880.1	18.71	18.87	19.43
1910.1	1940.1	18.94	18.83	18.77
1990.1	2020.1	18.47	19.08	20.08
2050.1	2080.1	18.81	18.65	19.55
2130.1	2160.1	18.98	18.77	19.23
2190.1	2220.1	18.05	18.73	19.37
2270.1	2300.1	18.01	17.97	18.95
2330.1	2360.1	17.71	17.56	18.77
2410.1	2440.1	17.25	17.92	18.74
2470.1	2500.1	17.43	17.99	18.91
2550.1	2580.1	16.65	17.69	18.74
2610.1	2640.1	15.75	16.97	18.15

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+9dBm (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	1.68	1.45	1.16
70.1	100.1	1.42	1.16	1.00
130.1	160.1	1.53	1.27	1.08
190.1	220.1	1.51	1.36	1.24
250.1	280.1	1.70	1.50	1.45
310.1	340.1	1.64	1.58	1.57
370.1	400.1	1.84	1.95	1.98
430.1	460.1	1.79	1.93	1.95
490.1	520.1	1.98	2.11	2.00
550.1	580.1	1.94	2.29	2.22
610.1	640.1	1.36	1.82	1.91
670.1	700.1	1.81	2.01	2.03
730.1	760.1	1.88	1.87	1.85
790.1	820.1	1.75	1.66	1.62
870.1	900.1	1.22	1.03	0.98
930.1	960.1	1.06	0.80	0.72
1010.1	1040.1	0.86	0.64	0.58
1070.1	1100.1	0.74	0.48	0.42
1150.1	1180.1	0.67	0.36	0.29
1210.1	1240.1	0.54	0.34	0.28
1290.1	1320.1	0.36	0.35	0.32
1350.1	1380.1	0.23	0.26	0.30
1430.1	1460.1	-0.01	0.17	0.23
1490.1	1520.1	-0.11	0.07	0.22
1570.1	1600.1	-0.24	0.10	0.20
1630.1	1660.1	-0.24	0.04	0.25
1710.1	1740.1	-0.13	0.09	0.30
1770.1	1800.1	-0.05	0.11	0.31
1850.1	1880.1	0.08	0.18	0.33
1910.1	1940.1	0.19	0.25	0.37
1990.1	2020.1	0.29	0.26	0.36
2050.1	2080.1	0.36	0.30	0.38
2130.1	2160.1	0.47	0.37	0.40
2190.1	2220.1	0.50	0.37	0.37
2270.1	2300.1	0.55	0.37	0.36
2330.1	2360.1	0.74	0.45	0.38
2410.1	2440.1	0.86	0.49	0.37
2470.1	2500.1	0.81	0.46	0.34
2550.1	2580.1	0.81	0.42	0.27
2610.1	2640.1	0.89	0.45	0.27

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=510.1MHz (dB) @LO (dBm) +13
490.1	20.0	6.84
480.1	30.0	6.86
470.1	40.0	6.87
460.1	50.0	6.96
450.1	60.0	7.00
440.1	70.0	7.03
430.1	80.0	7.05
420.1	90.0	7.16
410.1	100.0	7.23
400.1	110.0	7.31
390.1	120.0	7.28
380.1	130.0	7.36
370.1	140.0	7.34
360.1	150.0	7.46
350.1	160.0	7.39
340.1	170.0	7.78
330.1	180.0	7.49
320.1	190.0	7.50
310.1	200.0	7.43
300.1	210.0	7.57
290.1	220.0	7.46
280.1	230.0	7.44
260.1	250.0	7.46
250.1	260.0	7.42
230.1	280.0	7.38
220.1	290.0	7.45
200.1	310.0	7.26
190.1	320.0	7.35
170.1	340.0	7.48
160.1	350.0	7.32
140.1	370.0	7.38
130.1	380.0	7.48
110.1	400.0	7.40
100.1	410.0	7.24
80.1	430.0	7.28
70.1	440.0	7.24
50.1	460.0	7.42
40.1	470.0	7.29
20.1	490.0	7.42
10.1	500.0	7.99

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10MHz (dB) @LO (dBm) +13
10.1	20.1	6.25
30.1	40.1	5.68
50.1	60.1	5.72
70.1	80.1	5.77
90.1	100.1	5.77
110.1	120.1	5.71
130.1	140.1	5.63
150.1	160.1	5.76
170.1	180.1	5.79
190.1	200.1	5.81
210.1	220.1	5.78
230.1	240.1	5.78
270.1	280.1	5.83
290.1	300.1	5.94
330.1	340.1	5.97
350.1	360.1	5.99
390.1	400.1	5.98
410.1	420.1	6.02
450.1	460.1	6.11
470.1	480.1	6.06
510.1	520.1	6.22
530.1	540.1	6.29
570.1	580.1	6.42
590.1	600.1	6.34
630.1	640.1	6.62
650.1	660.1	6.81
690.1	700.1	7.03
710.1	720.1	7.25
750.1	760.1	7.58
770.1	780.1	7.70
810.1	820.1	8.10
830.1	840.1	8.23
870.1	880.1	8.47
890.1	900.1	8.66
930.1	940.1	9.11
950.1	960.1	9.23
990.1	1000.1	9.56
1010.1	1020.1	9.73
1050.1	1060.1	10.14
1070.1	1080.1	10.43

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1010.1MHz (dB) @LO (dBm) +13
810.1	200.0	10.25
790.1	220.0	10.11
770.1	240.0	9.99
750.1	260.0	9.97
730.1	280.0	9.87
710.1	300.0	9.73
690.1	320.0	9.66
670.1	340.0	9.57
650.1	360.0	9.47
630.1	380.0	9.39
610.1	400.0	9.27
590.1	420.0	9.28
570.1	440.0	9.14
550.1	460.0	9.29
530.1	480.0	9.12
510.1	500.0	9.30
490.1	520.0	9.07
470.1	540.0	9.16
450.1	560.0	9.31
430.1	580.0	9.09
410.1	600.0	9.24
390.1	620.0	9.10
370.1	640.0	9.06
350.1	660.0	8.96
330.1	680.0	8.84
310.1	700.0	8.79
290.1	720.0	8.66
270.1	740.0	8.64
250.1	760.0	8.55
230.1	780.0	8.47
210.1	800.0	8.42
190.1	820.0	8.33
170.1	840.0	8.27
150.1	860.0	8.14
130.1	880.0	8.04
110.1	900.0	7.94
90.1	920.0	7.89
70.1	940.0	7.90
30.1	980.0	7.98
10.1	1000.0	8.54

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+10	+13	+16	+10	+13	+16
40.1	53.58	52.76	52.03	61.38	63.16	65.60
100.1	46.46	45.71	45.14	58.41	58.69	59.28
160.1	44.05	43.26	42.67	52.10	53.17	55.82
220.1	41.79	41.16	40.74	48.21	50.34	53.66
280.1	41.16	40.75	40.38	45.02	48.40	53.56
340.1	39.95	39.83	39.37	43.69	47.94	53.35
400.1	38.42	38.16	38.09	42.07	47.89	53.41
460.1	37.21	36.42	36.18	40.55	46.63	51.04
520.1	34.60	34.62	34.38	40.22	46.19	46.70
580.1	32.99	33.46	33.79	39.06	44.50	44.57
640.1	30.77	31.02	31.73	37.80	42.36	43.37
700.1	29.36	29.41	29.97	36.52	40.41	41.08
760.1	28.03	27.95	28.19	34.99	38.38	39.29
820.1	27.52	27.10	27.27	33.57	35.69	36.39
900.1	27.86	27.06	26.51	31.92	33.44	33.98
960.1	27.99	27.20	26.54	30.98	32.54	33.29
1040.1	26.79	26.64	26.03	29.73	31.48	32.22
1100.1	26.37	26.40	26.01	28.84	30.82	31.87
1180.1	26.02	26.42	26.19	27.58	29.67	30.98
1240.1	25.78	26.46	26.60	26.85	28.88	30.34
1320.1	26.08	26.67	27.03	26.16	28.16	29.87
1380.1	25.98	26.35	26.72	25.58	27.79	29.69
1460.1	25.84	26.22	26.76	24.63	27.01	29.21
1520.1	24.96	25.77	26.39	24.04	26.48	28.80
1600.1	24.03	25.51	26.60	23.96	26.35	28.80
1660.1	22.95	25.01	26.79	26.28	28.49	30.78
1740.1	22.49	25.17	27.49	33.04	34.11	34.84
1800.1	23.23	26.15	28.19	29.45	31.03	32.32
1880.1	23.89	27.71	30.05	27.09	28.94	30.51
1940.1	24.35	29.44	32.42	26.68	28.45	29.76
2020.1	25.36	32.97	32.49	26.88	28.29	28.48
2080.1	25.93	36.35	30.84	27.36	28.16	27.37
2160.1	27.23	44.41	27.83	28.59	27.54	25.16
2220.1	30.64	35.91	25.46	29.55	25.81	23.22
2300.1	38.00	29.39	22.53	28.85	23.54	20.68
2360.1	46.46	27.43	21.59	27.20	22.13	19.34
2440.1	38.62	25.25	20.96	23.85	19.86	17.59
2500.1	30.95	23.78	20.54	21.22	18.44	16.59
2580.1	27.01	22.20	20.13	19.00	16.69	15.41
2640.1	25.71	21.77	20.08	17.92	15.98	14.95

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	16.05	17.06	17.23
70.1	100.1	20.87	21.03	21.21
130.1	160.1	21.37	21.55	21.88
190.1	220.1	21.87	22.36	22.64
250.1	280.1	23.21	23.64	24.13
310.1	340.1	24.31	25.08	25.81
370.1	400.1	26.68	27.28	27.98
430.1	460.1	30.25	31.09	30.66
490.1	520.1	33.54	32.51	31.13
550.1	580.1	33.51	31.14	29.60
610.1	640.1	28.50	27.89	27.06
670.1	700.1	25.89	26.20	26.24
730.1	760.1	24.27	24.52	24.69
790.1	820.1	22.90	23.22	23.45
870.1	900.1	21.26	21.40	21.49
930.1	960.1	20.91	20.78	20.77
1010.1	1040.1	19.88	19.68	19.55
1070.1	1100.1	18.78	18.60	18.49
1150.1	1180.1	17.65	17.55	17.47
1210.1	1240.1	17.27	17.24	17.21
1290.1	1320.1	17.11	17.14	17.11
1350.1	1380.1	16.83	16.76	16.75
1430.1	1460.1	15.78	15.69	15.64
1490.1	1520.1	14.95	14.87	14.90
1570.1	1600.1	14.21	14.21	14.22
1630.1	1660.1	14.17	14.22	14.25
1710.1	1740.1	15.69	15.65	15.61
1770.1	1800.1	15.63	15.61	15.56
1850.1	1880.1	14.64	14.72	14.77
1910.1	1940.1	14.24	14.40	14.53
1990.1	2020.1	13.91	14.13	14.36
2050.1	2080.1	13.80	14.11	14.36
2130.1	2160.1	13.68	14.00	14.27
2190.1	2220.1	13.63	13.87	14.05
2270.1	2300.1	13.31	13.41	13.48
2330.1	2360.1	12.96	12.94	12.87
2410.1	2440.1	12.27	12.19	12.07
2470.1	2500.1	11.79	11.75	11.70
2550.1	2580.1	11.21	11.22	11.29
2610.1	2640.1	10.99	11.00	11.07

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+10	+13	+16
10.1	40.1	1.40	1.36	1.42
70.1	100.1	1.14	1.06	1.07
130.1	160.1	1.18	1.09	1.05
190.1	220.1	1.30	1.21	1.17
250.1	280.1	1.43	1.36	1.31
310.1	340.1	1.65	1.56	1.49
370.1	400.1	1.90	1.77	1.69
430.1	460.1	2.26	2.08	1.96
490.1	520.1	2.59	2.38	2.24
550.1	580.1	2.94	2.61	2.42
610.1	640.1	3.40	3.00	2.72
670.1	700.1	3.50	3.15	2.93
730.1	760.1	3.60	3.34	3.15
790.1	820.1	3.73	3.50	3.34
870.1	900.1	3.69	3.58	3.48
930.1	960.1	3.47	3.43	3.39
1010.1	1040.1	3.24	3.19	3.14
1070.1	1100.1	3.12	3.03	2.98
1150.1	1180.1	3.01	2.85	2.78
1210.1	1240.1	3.03	2.83	2.73
1290.1	1320.1	3.22	2.94	2.80
1350.1	1380.1	3.43	3.12	2.95
1430.1	1460.1	3.56	3.22	3.06
1490.1	1520.1	3.60	3.30	3.10
1570.1	1600.1	3.60	3.30	3.12
1630.1	1660.1	3.56	3.29	3.10
1710.1	1740.1	3.58	3.32	3.12
1770.1	1800.1	3.70	3.40	3.17
1850.1	1880.1	3.65	3.33	3.10
1910.1	1940.1	3.49	3.16	2.95
1990.1	2020.1	3.36	3.03	2.80
2050.1	2080.1	3.29	2.92	2.69
2130.1	2160.1	3.17	2.78	2.53
2190.1	2220.1	3.01	2.66	2.44
2270.1	2300.1	2.84	2.51	2.33
2330.1	2360.1	2.77	2.44	2.25
2410.1	2440.1	2.62	2.35	2.20
2470.1	2500.1	2.44	2.25	2.13
2550.1	2580.1	2.32	2.20	2.14
2610.1	2640.1	2.26	2.18	2.16

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+10	+13	+16
40.1	1.58	2.54	3.82
100.1	1.46	2.23	3.26
160.1	1.48	2.27	3.30
220.1	1.56	2.33	3.37
280.1	1.54	2.22	3.13
340.1	1.61	2.27	3.17
400.1	1.64	2.24	3.11
460.1	1.67	2.21	3.00
520.1	1.75	2.28	3.03
580.1	1.68	2.18	2.92
640.1	1.66	2.11	2.80
700.1	1.64	2.08	2.77
760.1	1.65	2.03	2.67
820.1	1.73	2.04	2.62
900.1	1.89	2.08	2.58
960.1	2.02	2.10	2.54
1040.1	2.14	2.09	2.46
1100.1	2.24	2.07	2.38
1180.1	2.43	2.08	2.29
1240.1	2.52	2.10	2.25
1320.1	2.64	2.11	2.18
1380.1	2.75	2.12	2.10
1460.1	2.78	2.07	1.99
1520.1	2.75	2.02	1.90
1600.1	2.80	1.95	1.76
1660.1	2.81	1.89	1.64
1740.1	2.79	1.81	1.48
1800.1	2.82	1.76	1.36
1880.1	2.91	1.76	1.24
1940.1	2.92	1.77	1.22
2020.1	2.86	1.78	1.26
2080.1	2.89	1.83	1.35
2160.1	2.91	1.89	1.48
2220.1	2.72	1.88	1.56
2300.1	2.57	1.91	1.69
2360.1	2.57	1.96	1.78
2440.1	2.44	1.97	1.88
2500.1	2.28	1.96	1.94
2580.1	2.14	1.98	2.04
2640.1	2.08	2.01	2.11

IF (OUT) (MHz)	IF VSWR @LO=1000MHz (:1) @LO (dBm)		
	+10	+13	+16
10.0	1.56	1.55	1.57
30.0	1.21	1.21	1.24
50.0	1.18	1.16	1.19
70.0	1.10	1.10	1.16
90.0	1.14	1.12	1.17
110.0	1.11	1.11	1.19
130.0	1.15	1.12	1.17
150.0	1.09	1.10	1.19
170.0	1.12	1.13	1.20
190.0	1.12	1.17	1.26
210.0	1.14	1.17	1.25
230.0	1.14	1.19	1.29
250.0	1.14	1.19	1.29
270.0	1.18	1.27	1.39
290.0	1.19	1.27	1.39
310.0	1.25	1.35	1.47
330.0	1.22	1.32	1.44
350.0	1.29	1.42	1.56
370.0	1.29	1.42	1.55
390.0	1.38	1.53	1.67
410.0	1.36	1.50	1.64
430.0	1.44	1.60	1.75
450.0	1.45	1.61	1.77
470.0	1.54	1.72	1.88
490.0	1.55	1.73	1.89
510.0	1.61	1.80	1.96
530.0	1.63	1.83	1.99
550.0	1.70	1.90	2.07
590.0	1.80	2.01	2.18
610.0	1.84	2.06	2.24
650.0	1.97	2.21	2.39
670.0	1.99	2.22	2.39
710.0	2.07	2.30	2.47
730.0	2.17	2.42	2.61
770.0	2.29	2.55	2.73
790.0	2.27	2.52	2.69
830.0	2.40	2.66	2.83
850.0	2.55	2.82	3.00
890.0	2.65	2.92	3.10
910.0	2.66	2.92	3.09

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	19	13	13	28	17	28	29	41	40	52
1	-	25	+0	30	18	39	33	34	31	44	40	56
2	76	48	54	48	54	55	58	54	58	62	60	74
3	>90	68	51	58	47	56	53	76	55	59	60	74
4	>90	>77	>77	>77	74	>77	74	>77	>77	72	76	>77
5	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
6	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
7	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
8	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
9	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
10	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 505 MHz; -6.00 dBm.
LO IN: 535 MHz; +13.00 dBm
IF OUT: 30 MHz; -13.38 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	29	25	25	42	31	42	47	75	51	67
1	-	23	+0	31	19	50	45	43	45	58	53	68
2	56	36	51	44	65	49	51	50	55	53	58	68
3	85	43	33	43	39	46	46	60	39	49	49	68
4	>90	66	58	50	61	46	58	56	>87	61	57	74
5	>90	57	55	64	46	47	44	49	53	70	61	60
6	>90	60	64	71	66	56	61	60	60	76	80	61
7	>90	74	53	57	69	62	56	56	56	62	73	72
8	>90	81	81	64	65	76	78	68	63	65	67	68
9	>90	>87	>87	82	68	63	80	73	68	64	67	66
10	>90	83	>87	79	85	70	69	86	74	74	69	70
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

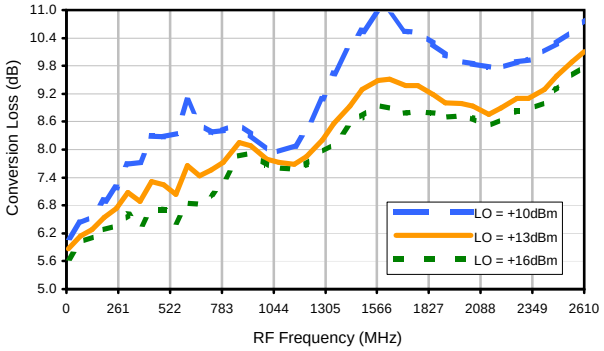
LO HARMONICS ORDER

Test conditions: RF IN: 505 MHz; 4.00 dBm.
LO IN: 535 MHz; +13.00 dBm
IF OUT: 30 MHz; -3.19 dBm

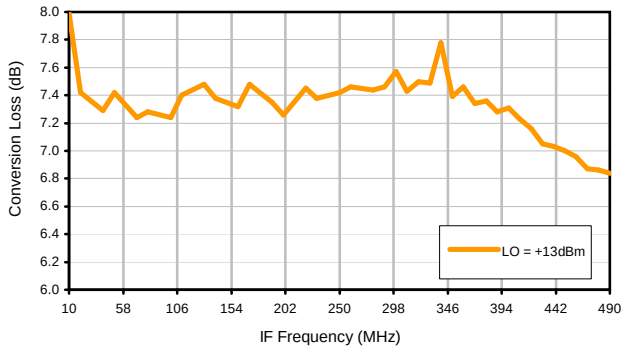
Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

Typical Performance Curves

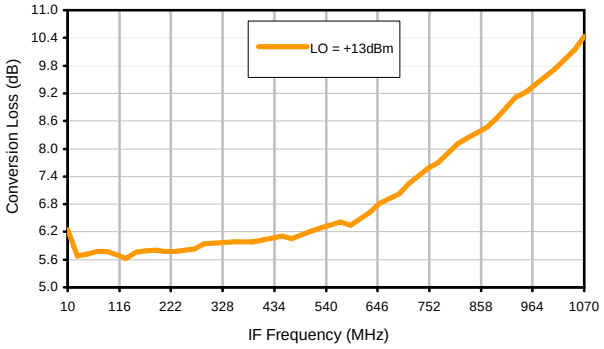
Conversion Loss @ IF=30MHz



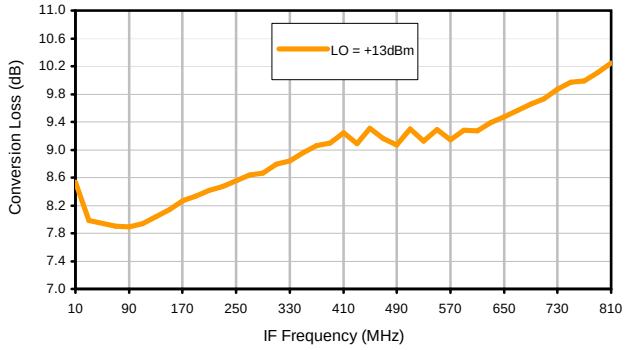
Conversion Loss vs. IF @ RF=510.1MHz



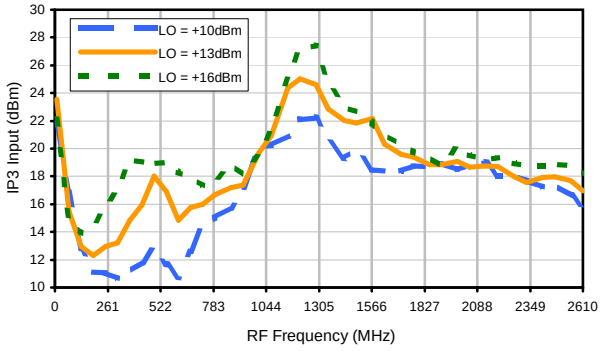
Conversion Loss vs. IF @ RF=10MHz



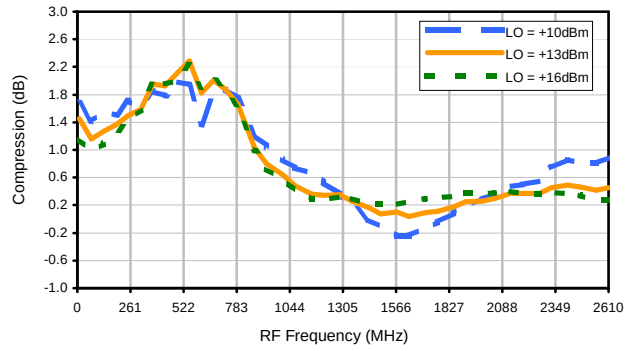
Conversion Loss vs. IF @ RF=1010.1MHz



IP3 Input

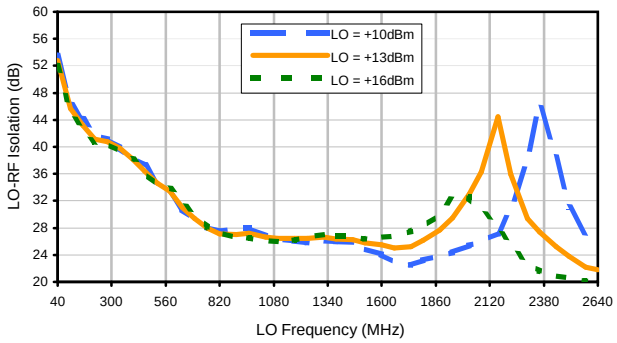


Compression @ RF IN=+9dBm

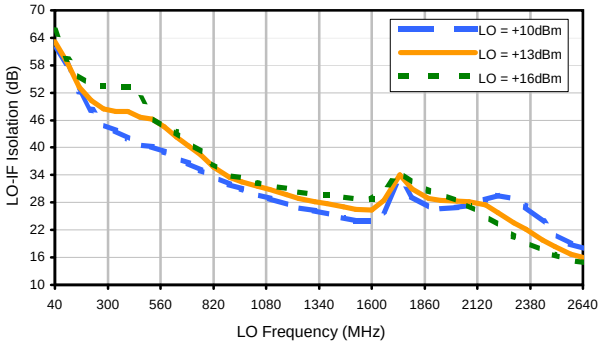


Typical Performance Curves

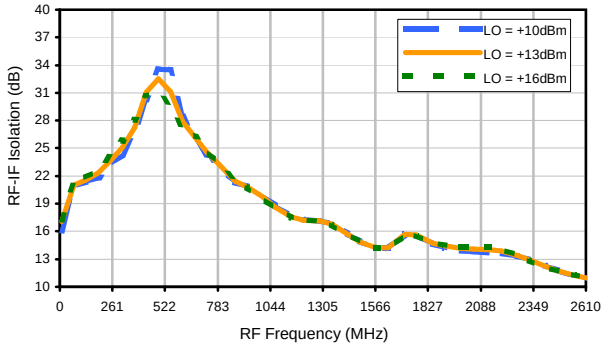
LO-RF Isolation



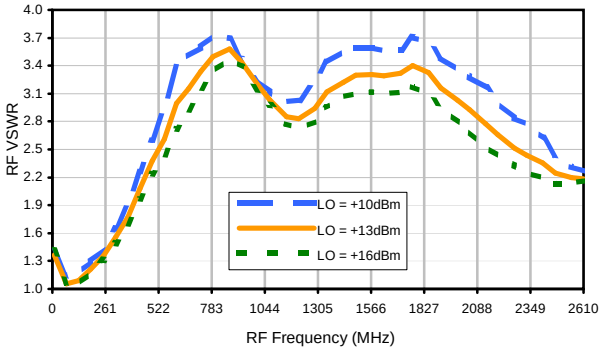
LO-IF Isolation



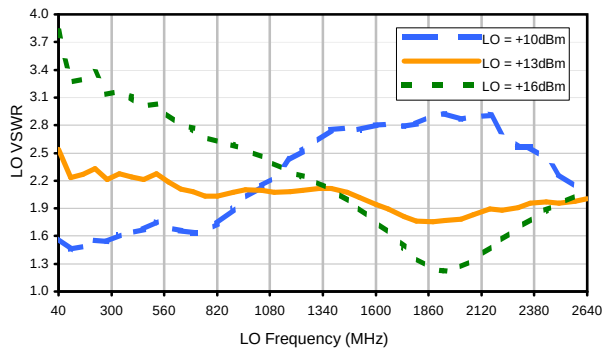
RF-IF Isolation



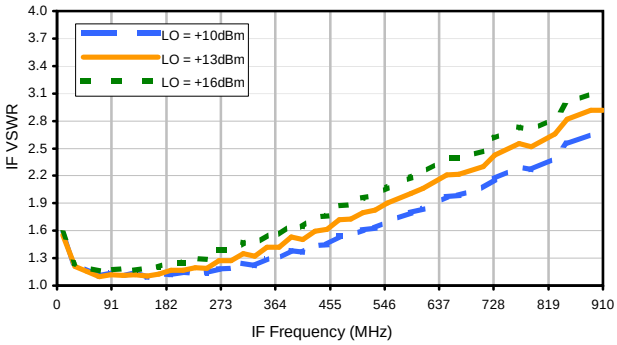
RF VSWR



LO VSWR



IF VSWR



Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	19	13	13	28	17	28	29	41	40	52
1	-	25	+0	30	18	39	33	34	31	44	40	56
2	76	48	54	48	54	55	58	54	58	62	60	74
3	>90	68	51	58	47	56	53	76	55	59	60	74
4	>90	>77	>77	>77	74	>77	74	>77	>77	72	76	>77
5	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
6	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
7	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
8	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
9	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
10	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 505 MHz; -6.00 dBm.**
LO IN: 535 MHz; +13.00 dBm
IF OUT: 30 MHz; -13.38 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	29	25	25	42	31	42	47	75	51	67
1	-	23	+0	31	19	50	45	43	45	58	53	68
2	56	36	51	44	65	49	51	50	55	53	58	68
3	85	43	33	43	39	46	46	60	39	49	49	68
4	>90	66	58	50	61	46	58	56	>87	61	57	74
5	>90	57	55	64	46	47	44	49	53	70	61	60
6	>90	60	64	71	66	56	61	60	60	76	80	61
7	>90	74	53	57	69	62	56	56	56	62	73	72
8	>90	81	81	64	65	76	78	68	63	65	67	68
9	>90	>87	>87	82	68	63	80	73	68	64	67	66
10	>90	83	>87	79	85	70	69	86	74	74	69	70
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

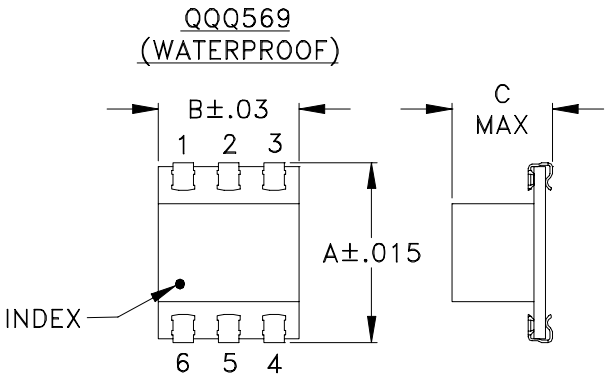
Test conditions: **RF IN: 505 MHz; 4.00 dBm.**
LO IN: 535 MHz; +13.00 dBm
IF OUT: 30 MHz; -3.19 dBm

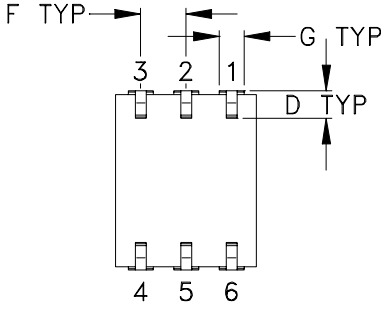
Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

Case Style QQQ

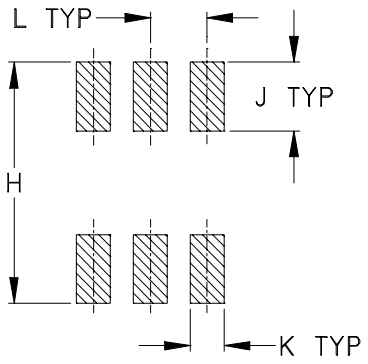
QQQ569 (waterproof)

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, GRAM
QQQ569	.390 (9.90)	.31 (7.87)	.225 (5.72)	.060 (1.52)	-	.100 (2.54)	.045 (1.14)	.420 (10.67)	.120 (3.05)	.060 (1.52)	.100 (2.54)	-	.50

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

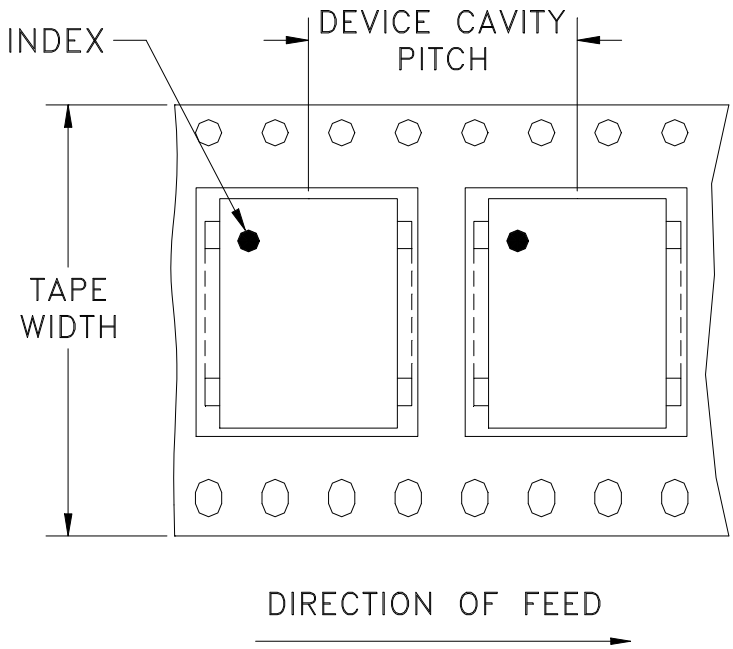
Notes:

1. Case material: Ceramic.
2. Termination finish:
   For RoHS Case Styles: Tin plate over Nickel plate.
   For RoHS-5 Case Styles: Tin-Lead 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

Tape & Reel Packaging TR-F5

DEVICE ORIENTATION IN T&R



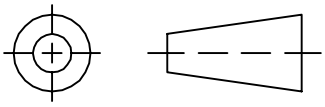
Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
32	16	13	500

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

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

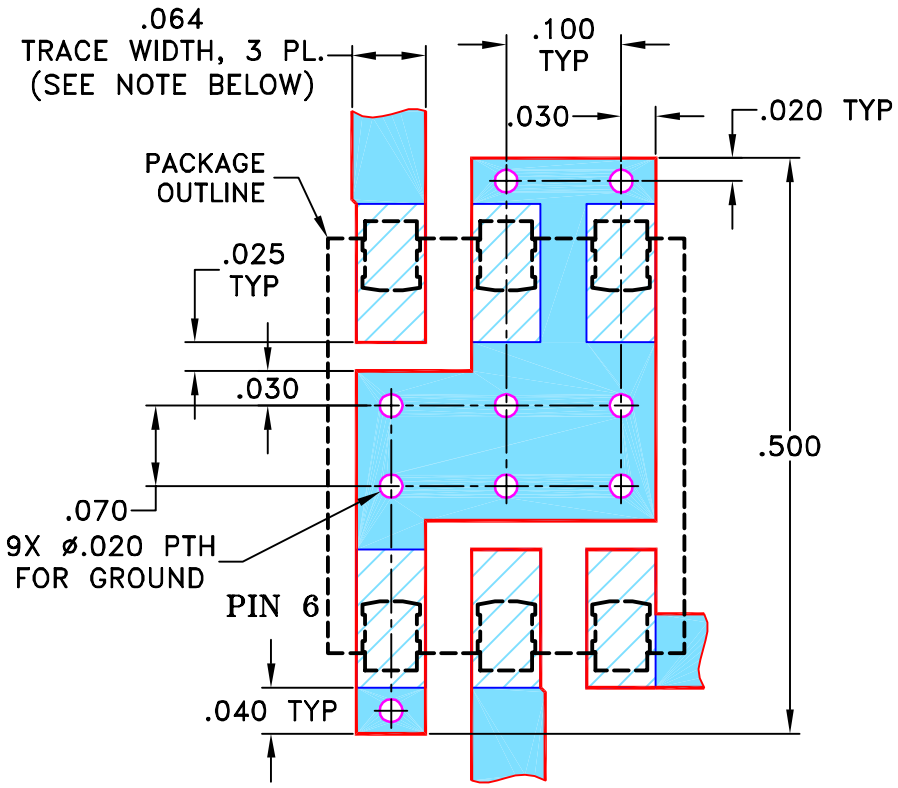
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M82272	NEW RELEASE	08/02/02	AV	DJ
A	M102713	UPDATED NOTES	01/14/06	GF	IL

SUGGESTED MOUNTING CONFIGURATION FOR QQQ569 CASE STYLE, "w" PIN CONNECTION



NOTES: 1.TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; 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	07/19/02
TOLERANCES ON:	CHECKED	WL	08/02/02
2 PL DECIMALS ±	APPROVED	DJ	08/02/02
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

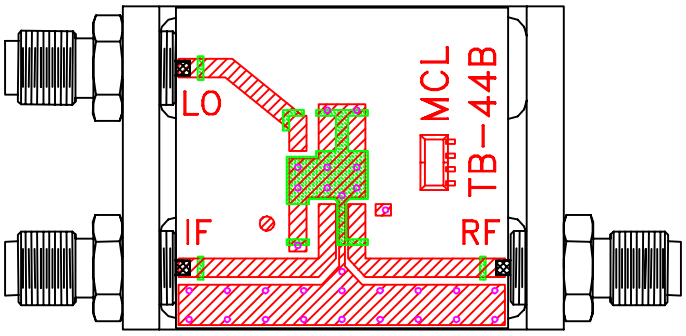
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, w, QQQ569, LRMS-J, TB-44

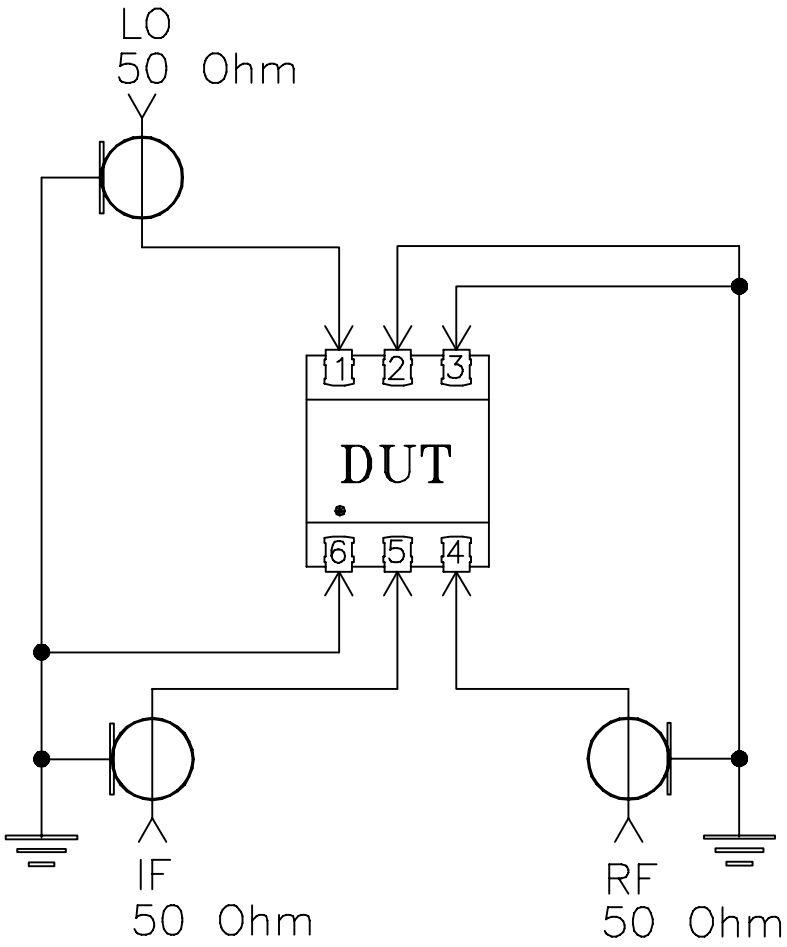
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-083	A

FILE:	SCALE:	SHEET:
98PL083	6:1	1 OF 1

Evaluation Board and Circuit



TB-44+



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.

Mini-Circuits®