Non-Catalog Model

Frequency Mixer LRMS-5MHJ

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.

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CASE STYLE : QQQ569

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		**Min.**	**Typ.**	**Max.**	**Units**
Frequency	**LO** (fL to fU)	10		1500	MHz
	RF (fL to fU)	10		1500	MHz
	IF	0		900	MHz
Conversion Loss	**mid band**		5.7	9.0	dB
	Total Range			9.5	dB
LO-RF Isolation	**Low Range**	40	58		dB
	Mid Range	20	40		dB
	Upper Range	18	26		dB
LO-IF Isolation	**Low Range**	30	50		dB
	Mid Range	18	38		dB
	Upper Range	8	17		dB
1 dB Comp. Input Power			+9		dBm

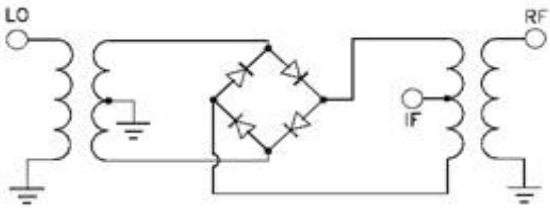
Notes: Low Range = [fL to 10fL] Mid Range = [10fL to fU/2] Upper Range = [fU/2 to fU]
mid band = [2fL to fU/2]

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-5MHJ

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	6.71	6.19	5.96
70.4	100.4	6.23	5.76	5.52
130.7	160.7	6.00	5.58	5.41
191.0	221.0	5.97	5.59	5.41
231.2	261.2	6.02	5.63	5.45
291.5	321.5	6.05	5.66	5.47
331.7	361.7	6.12	5.73	5.53
392.0	422.0	6.17	5.81	5.58
432.2	462.2	6.29	5.85	5.61
492.5	522.5	6.35	5.93	5.66
532.7	562.7	6.46	6.03	5.77
593.0	623.0	6.61	6.08	5.80
633.2	663.2	6.75	6.18	5.81
693.5	723.5	6.90	6.31	5.92
733.7	763.7	7.14	6.50	6.08
794.0	824.0	7.36	6.65	6.20
834.2	864.2	7.53	6.70	6.24
894.5	924.5	7.85	6.82	6.30
934.7	964.7	8.22	7.10	6.48
995.0	1025.0	8.41	7.57	6.84
1035.3	1065.3	8.43	7.78	7.14
1095.6	1125.6	8.43	7.98	7.52
1135.8	1165.8	8.38	8.02	7.66
1196.1	1226.1	8.37	8.09	7.81
1236.3	1266.3	8.39	8.10	7.87
1296.6	1326.6	8.49	8.19	7.97
1336.8	1366.8	8.53	8.26	8.06
1397.1	1427.1	8.70	8.40	8.21
1437.3	1467.3	8.78	8.42	8.24
1497.6	1527.6	8.89	8.41	8.23
1537.8	1567.8	8.96	8.43	8.23
1598.1	1628.1	9.16	8.48	8.29
1638.3	1668.3	9.30	8.50	8.31
1698.6	1728.6	9.51	8.58	8.38
1738.8	1768.8	9.73	8.61	8.38
1799.1	1829.1	10.34	8.73	8.42
1839.3	1869.3	11.02	8.89	8.48
1899.6	1929.6	11.84	9.14	8.57
1939.8	1969.8	13.17	9.55	8.66
2000.1	2030.1	14.33	10.07	9.03

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+10	+13	+16
10.1	40.1	19.09	21.27	23.62
70.4	100.4	20.70	23.89	21.16
130.7	160.7	20.55	18.27	20.39
191.0	221.0	16.93	18.23	20.93
231.2	261.2	16.28	18.30	21.47
291.5	321.5	15.93	18.61	22.13
331.7	361.7	16.16	19.39	22.92
392.0	422.0	17.03	20.32	25.56
432.2	462.2	16.43	20.96	26.31
492.5	522.5	17.19	19.80	24.83
532.7	562.7	18.04	20.63	23.92
593.0	623.0	17.54	24.23	25.68
633.2	663.2	15.91	21.90	24.34
693.5	723.5	16.23	19.95	25.59
733.7	763.7	17.00	20.40	21.86
794.0	824.0	17.73	19.08	18.78
834.2	864.2	16.65	18.93	21.43
894.5	924.5	15.88	20.29	25.67
934.7	964.7	15.19	19.17	24.48
995.0	1025.0	15.40	18.86	22.50
1035.3	1065.3	15.73	17.22	22.81
1095.6	1125.6	17.20	15.84	18.72
1135.8	1165.8	19.02	16.12	17.21
1196.1	1226.1	24.86	18.06	15.74
1236.3	1266.3	24.73	19.64	16.06
1296.6	1326.6	21.05	19.20	16.96
1336.8	1366.8	20.45	18.40	16.60
1397.1	1427.1	19.14	18.14	17.89
1437.3	1467.3	18.57	19.69	19.12
1497.6	1527.6	18.23	20.43	21.42
1537.8	1567.8	17.86	19.35	20.06
1598.1	1628.1	18.04	20.10	20.84
1638.3	1668.3	18.09	20.51	22.98
1698.6	1728.6	16.70	20.94	22.67
1738.8	1768.8	16.40	20.59	21.73
1799.1	1829.1	16.52	19.74	22.45
1839.3	1869.3	17.58	19.03	23.20
1899.6	1929.6	19.00	19.07	22.34
1939.8	1969.8	14.77	20.23	19.31
2000.1	2030.1	12.21	24.07	19.49

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+9dBm (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	0.98	0.77	0.64
70.4	100.4	1.33	1.09	0.90
130.7	160.7	1.47	1.16	0.97
191.0	221.0	1.49	1.18	0.99
231.2	261.2	1.49	1.18	1.01
291.5	321.5	1.49	1.19	1.02
331.7	361.7	1.52	1.24	1.07
392.0	422.0	1.60	1.30	1.16
432.2	462.2	1.71	1.44	1.26
492.5	522.5	1.82	1.55	1.35
532.7	562.7	1.92	1.61	1.45
593.0	623.0	2.00	1.78	1.59
633.2	663.2	2.06	1.89	1.72
693.5	723.5	2.22	1.97	1.82
733.7	763.7	2.12	1.90	1.76
794.0	824.0	2.12	1.88	1.77
834.2	864.2	2.05	1.92	1.78
894.5	924.5	1.88	1.98	1.80
934.7	964.7	1.52	1.78	1.69
995.0	1025.0	1.25	1.37	1.44
1035.3	1065.3	1.13	1.10	1.17
1095.6	1125.6	1.06	0.89	0.87
1135.8	1165.8	0.98	0.76	0.72
1196.1	1226.1	0.92	0.63	0.56
1236.3	1266.3	0.86	0.54	0.48
1296.6	1326.6	0.90	0.51	0.46
1336.8	1366.8	0.90	0.53	0.46
1397.1	1427.1	1.04	0.59	0.48
1437.3	1467.3	1.01	0.58	0.48
1497.6	1527.6	1.02	0.63	0.46
1537.8	1567.8	1.08	0.65	0.45
1598.1	1628.1	1.14	0.62	0.38
1638.3	1668.3	1.10	0.57	0.35
1698.6	1728.6	1.16	0.56	0.33
1738.8	1768.8	1.17	0.58	0.33
1799.1	1829.1	0.95	0.61	0.33
1839.3	1869.3	0.64	0.66	0.34
1899.6	1929.6	0.25	0.63	0.34
1939.8	1969.8	-0.55	0.60	0.38
2000.1	2030.1	-1.23	0.38	0.27

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=750.1MHz (dB) @LO (dBm) +13
730.0	20.1	6.37
711.5	38.6	6.32
693.1	57.0	6.33
674.6	75.5	6.39
656.2	93.9	6.36
637.7	112.4	6.33
619.2	130.9	6.32
600.8	149.3	6.34
582.3	167.8	6.36
563.8	186.3	6.38
545.4	204.7	6.39
526.9	223.2	6.38
508.5	241.6	6.38
490.0	260.1	6.41
471.5	278.6	6.39
453.1	297.0	6.38
434.6	315.5	6.38
416.2	333.9	6.34
397.7	352.4	6.31
379.2	370.9	6.23
360.8	389.3	6.29
342.3	407.8	6.27
323.8	426.3	6.29
305.4	444.7	6.29
286.9	463.2	6.34
268.5	481.6	6.33
250.0	500.1	6.35
231.5	518.6	6.34
213.1	537.0	6.38
194.6	555.5	6.37
176.2	573.9	6.37
157.7	592.4	6.37
139.2	610.9	6.34
120.8	629.3	6.34
102.3	647.8	6.36
83.8	666.3	6.44
65.4	684.7	6.43
46.9	703.2	6.48
28.5	721.6	6.47
10.0	740.1	6.66

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB) @LO (dBm) +13
10.0	20.1	6.37
29.8	39.9	6.18
49.6	59.7	6.33
69.3	79.4	6.38
89.1	99.2	6.33
108.9	119.0	6.29
128.7	138.8	6.26
148.4	158.5	6.26
168.2	178.3	6.26
188.0	198.1	6.29
207.8	217.9	6.24
227.6	237.7	6.22
247.3	257.4	6.28
267.1	277.2	6.31
286.9	297.0	6.28
306.7	316.8	6.27
326.4	336.5	6.33
346.2	356.3	6.30
366.0	376.1	6.37
385.8	395.9	6.36
405.6	415.7	6.33
425.3	435.4	6.39
445.1	455.2	6.39
464.9	475.0	6.44
484.7	494.8	6.41
504.4	514.5	6.42
524.2	534.3	6.43
544.0	554.1	6.45
583.6	593.7	6.41
603.3	613.4	6.44
642.9	653.0	6.48
662.7	672.8	6.50
702.2	712.3	6.53
722.0	732.1	6.60
761.6	771.7	6.65
781.3	791.4	6.70
820.9	831.0	6.75
840.7	850.8	6.81
880.2	890.3	6.89
900.0	910.1	6.91

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1500.1MHz (dB) @LO (dBm) +13
900.0	600.1	9.29
879.3	620.8	9.21
858.6	641.5	9.16
837.9	662.2	9.12
817.2	682.9	9.07
796.5	703.6	9.09
775.8	724.3	9.03
755.1	745.0	9.02
734.4	765.7	8.87
713.7	786.4	8.86
693.0	807.1	8.87
672.3	827.8	8.80
651.6	848.5	8.77
630.9	869.2	8.74
610.2	889.9	8.66
589.5	910.6	8.63
568.8	931.3	8.58
548.1	952.0	8.55
527.4	972.7	8.52
506.7	993.4	8.47
486.0	1014.1	8.49
465.3	1034.8	8.45
444.7	1055.4	8.48
424.0	1076.1	8.47
403.3	1096.8	8.46
382.6	1117.5	8.45
361.9	1138.2	8.46
341.2	1158.9	8.48
320.5	1179.6	8.48
299.8	1200.3	8.53
279.1	1221.0	8.53
258.4	1241.7	8.59
217.0	1283.1	8.64
196.3	1303.8	8.64
154.9	1345.2	8.69
134.2	1365.9	8.75
92.8	1407.3	8.76
72.1	1428.0	8.74
30.7	1469.4	8.67
10.0	1490.1	8.69

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+10	+13	+16	+10	+13	+16
10.1	80.50	81.54	80.03	64.42	76.65	71.70
70.4	63.53	68.78	76.05	46.57	55.87	57.29
130.7	56.66	61.62	70.74	42.16	52.68	50.63
191.0	52.05	56.84	63.95	38.42	47.13	49.62
231.2	50.97	56.70	64.77	37.62	47.65	46.00
291.5	48.92	54.04	61.40	35.43	45.04	45.07
331.7	48.66	54.70	63.84	34.98	46.46	42.70
392.0	48.13	54.63	67.51	33.98	46.36	41.28
432.2	48.01	55.37	69.04	34.10	48.70	38.16
492.5	47.88	57.85	62.02	33.79	50.53	36.77
532.7	48.24	59.06	58.77	34.61	49.57	35.01
593.0	48.72	63.95	51.92	35.33	43.82	32.98
633.2	49.22	57.97	48.49	36.41	39.65	30.90
693.5	49.16	55.74	46.71	38.37	36.59	28.93
733.7	49.16	55.18	45.50	41.64	35.14	27.85
794.0	49.01	54.92	45.32	47.08	32.82	26.97
834.2	49.43	55.27	45.46	40.76	30.63	26.08
894.5	48.53	57.01	46.72	33.34	27.09	23.92
934.7	47.20	60.75	47.28	31.36	25.20	22.51
995.0	44.67	64.89	50.73	29.36	23.38	20.81
1035.3	43.62	55.58	54.39	27.98	22.37	19.87
1095.6	42.01	49.05	68.95	25.92	21.43	18.76
1135.8	41.31	47.24	59.03	24.44	20.61	18.23
1196.1	40.20	44.95	51.56	22.84	19.64	17.44
1236.3	39.23	43.48	48.62	22.08	19.11	17.03
1296.6	37.57	41.04	45.51	21.16	18.50	16.52
1336.8	36.50	39.45	43.01	20.57	17.98	16.20
1397.1	35.15	37.63	40.28	19.67	17.51	15.85
1437.3	34.81	37.19	39.59	18.95	16.96	15.42
1497.6	34.00	36.26	38.37	17.97	16.31	14.79
1537.8	33.77	36.15	38.20	17.18	15.74	14.26
1598.1	32.91	35.14	36.90	16.34	15.10	13.82
1638.3	32.21	34.37	35.78	15.80	14.65	13.51
1698.6	30.82	32.92	34.34	15.11	14.31	13.37
1738.8	30.30	32.39	33.79	14.54	14.03	13.19
1799.1	29.07	30.99	32.60	14.01	13.74	13.12
1839.3	28.83	30.68	32.28	13.79	13.59	12.94
1899.6	27.80	29.44	31.03	13.35	13.39	12.90
1939.8	27.45	28.96	30.39	13.27	13.14	12.68
2000.1	26.62	27.96	29.25	13.09	13.12	12.72

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	49.39	49.96	52.62
70.4	100.4	39.78	39.13	38.59
130.7	160.7	35.45	34.74	34.52
191.0	221.0	33.54	32.73	32.19
231.2	261.2	32.52	31.92	31.63
291.5	321.5	31.83	31.18	30.75
331.7	361.7	31.41	30.72	30.26
392.0	422.0	29.87	29.48	29.13
432.2	462.2	28.76	28.54	28.26
492.5	522.5	26.96	26.76	26.48
532.7	562.7	25.50	25.35	25.11
593.0	623.0	23.58	23.39	23.27
633.2	663.2	22.29	22.18	22.00
693.5	723.5	21.00	20.90	20.88
733.7	763.7	20.40	20.29	20.15
794.0	824.0	19.82	19.74	19.68
834.2	864.2	19.71	19.71	19.78
894.5	924.5	19.52	19.96	20.20
934.7	964.7	19.11	19.79	20.21
995.0	1025.0	18.38	19.12	19.87
1035.3	1065.3	17.81	18.56	19.25
1095.6	1125.6	17.14	17.76	18.42
1135.8	1165.8	16.80	17.34	17.86
1196.1	1226.1	16.47	16.89	17.30
1236.3	1266.3	16.26	16.65	17.02
1296.6	1326.6	15.88	16.24	16.57
1336.8	1366.8	15.66	16.00	16.34
1397.1	1427.1	15.29	15.65	16.08
1437.3	1467.3	15.20	15.60	16.00
1497.6	1527.6	15.14	15.63	16.07
1537.8	1567.8	15.19	15.65	16.09
1598.1	1628.1	15.17	15.69	16.09
1638.3	1668.3	15.19	15.74	16.12
1698.6	1728.6	15.03	15.73	16.15
1738.8	1768.8	14.84	15.63	16.04
1799.1	1829.1	14.61	15.45	15.99
1839.3	1869.3	14.40	15.24	15.85
1899.6	1929.6	14.19	15.01	15.61
1939.8	1969.8	14.11	14.90	15.39
2000.1	2030.1	14.14	14.96	15.38

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+10	+13	+16
10.1	40.1	1.65	1.62	1.62
70.4	100.4	1.21	1.13	1.14
130.7	160.7	1.16	1.06	1.07
191.0	221.0	1.15	1.04	1.02
231.2	261.2	1.17	1.06	1.02
291.5	321.5	1.17	1.08	1.05
331.7	361.7	1.19	1.11	1.08
392.0	422.0	1.21	1.15	1.13
432.2	462.2	1.26	1.19	1.16
492.5	522.5	1.30	1.24	1.21
532.7	562.7	1.34	1.29	1.26
593.0	623.0	1.44	1.38	1.34
633.2	663.2	1.55	1.47	1.42
693.5	723.5	1.70	1.62	1.56
733.7	763.7	1.84	1.74	1.68
794.0	824.0	2.05	1.95	1.86
834.2	864.2	2.20	2.07	1.98
894.5	924.5	2.43	2.26	2.15
934.7	964.7	2.60	2.42	2.30
995.0	1025.0	2.77	2.66	2.53
1035.3	1065.3	2.83	2.77	2.67
1095.6	1125.6	2.86	2.85	2.80
1135.8	1165.8	2.87	2.87	2.85
1196.1	1226.1	2.87	2.87	2.86
1236.3	1266.3	2.89	2.88	2.86
1296.6	1326.6	2.95	2.93	2.90
1336.8	1366.8	3.00	2.97	2.94
1397.1	1427.1	3.06	3.02	2.98
1437.3	1467.3	3.10	3.04	2.99
1497.6	1527.6	3.14	3.05	3.01
1537.8	1567.8	3.15	3.05	3.00
1598.1	1628.1	3.17	3.05	3.00
1638.3	1668.3	3.20	3.05	2.99
1698.6	1728.6	3.26	3.08	3.01
1738.8	1768.8	3.33	3.11	3.03
1799.1	1829.1	3.48	3.17	3.06
1839.3	1869.3	3.61	3.22	3.09
1899.6	1929.6	3.80	3.32	3.15
1939.8	1969.8	3.99	3.42	3.21
2000.1	2030.1	4.16	3.54	3.34

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+10	+13	+16
10.1	1.56	2.27	3.26
70.4	1.56	2.32	3.33
130.7	1.59	2.41	3.49
191.0	1.53	2.26	3.21
231.2	1.60	2.40	3.43
291.5	1.59	2.33	3.26
331.7	1.66	2.44	3.41
392.0	1.67	2.41	3.31
432.2	1.76	2.51	3.42
492.5	1.80	2.52	3.37
532.7	1.88	2.59	3.44
593.0	1.94	2.62	3.43
633.2	2.02	2.69	3.47
693.5	2.08	2.74	3.50
733.7	2.15	2.78	3.52
794.0	2.23	2.82	3.52
834.2	2.30	2.85	3.51
894.5	2.41	2.91	3.51
934.7	2.49	2.98	3.54
995.0	2.57	3.07	3.60
1035.3	2.63	3.13	3.66
1095.6	2.68	3.14	3.65
1135.8	2.74	3.17	3.67
1196.1	2.78	3.17	3.62
1236.3	2.84	3.20	3.65
1296.6	2.92	3.20	3.62
1336.8	2.99	3.24	3.64
1397.1	3.08	3.25	3.60
1437.3	3.17	3.30	3.62
1497.6	3.27	3.30	3.58
1537.8	3.36	3.34	3.60
1598.1	3.53	3.38	3.59
1638.3	3.68	3.49	3.67
1698.6	4.03	3.66	3.76
1738.8	4.25	3.82	3.88
1799.1	4.78	4.07	4.01
1839.3	5.00	4.25	4.14
1899.6	5.58	4.57	4.29
1939.8	5.74	4.73	4.42
2000.1	6.26	5.10	4.60

IF (OUT) (MHz)	IF VSWR @LO=1500.1MHz (:1) @LO (dBm)		
	+10	+13	+16
10.0	1.55	1.31	1.13
29.8	1.44	1.22	1.05
49.6	1.38	1.17	1.03
69.3	1.38	1.17	1.01
89.1	1.41	1.19	1.03
108.9	1.43	1.22	1.03
128.7	1.44	1.22	1.05
148.4	1.42	1.20	1.03
168.2	1.39	1.17	1.01
188.0	1.39	1.17	1.01
207.8	1.41	1.18	1.00
227.6	1.41	1.18	1.01
247.3	1.41	1.18	1.00
267.1	1.43	1.20	1.02
286.9	1.43	1.20	1.02
306.7	1.40	1.17	1.04
326.4	1.38	1.15	1.05
346.2	1.38	1.15	1.03
366.0	1.40	1.16	1.03
385.8	1.40	1.16	1.03
405.6	1.40	1.16	1.04
425.3	1.37	1.13	1.06
445.1	1.34	1.11	1.09
464.9	1.37	1.13	1.08
484.7	1.41	1.17	1.05
504.4	1.41	1.16	1.04
524.2	1.37	1.13	1.07
544.0	1.35	1.11	1.09
583.6	1.40	1.15	1.09
603.3	1.42	1.16	1.05
642.9	1.37	1.12	1.08
662.7	1.35	1.10	1.11
702.2	1.42	1.15	1.06
722.0	1.42	1.15	1.06
761.6	1.39	1.12	1.08
781.3	1.38	1.12	1.09
820.9	1.40	1.13	1.08
840.7	1.41	1.13	1.08
880.2	1.38	1.11	1.12
900.0	1.37	1.11	1.14

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Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	12	29	23	34	22	53	43	60	42	58
1	-	14	+0	36	19	38	47	51	43	57	52	60
2	82	45	28	45	27	56	44	62	38	54	55	66
3	>100	39	39	43	48	47	52	49	48	61	52	64
4	>100	58	60	53	64	54	48	59	55	52	67	61
5	>100	61	51	54	55	62	48	63	60	81	65	65
6	>100	87	79	64	69	71	50	67	49	66	60	73
7	>100	84	70	77	64	78	63	67	64	75	70	84
8	>100	96	91	87	85	75	81	69	67	67	67	77
9	>100	>97	89	95	79	81	76	81	74	73	77	74
10	>100	93	92	>97	94	94	84	75	89	84	66	77
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 750.1 MHz; 4.00 dBm.
LO IN: 780.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -2.58 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	7	19	11	21	8	36	36	44	32	39
1	-	13	+0	34	18	32	38	44	34	47	42	51
2	96	53	38	52	36	59	52	52	50	54	57	62
3	>100	64	58	60	53	61	63	70	58	76	64	74
4	>100	82	>87	>87	73	66	69	76	74	82	76	77
5	>100	80	>87	83	87	81	70	80	>87	>87	87	86
6	>100	>87	87	>87	78	>87	80	68	80	>87	82	>87
7	>100	>87	>87	85	85	87	>87	86	78	>87	>87	87
8	>100	>87	86	87	84	>87	>87	>87	79	78	>87	>87
9	>100	78	82	81	83	>87	>87	>87	>87	>87	79	>87
10	>100	84	79	>87	>87	80	>87	82	86	>87	78	77
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 750.1 MHz; -6.00 dBm.
LO IN: 780.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -12.62 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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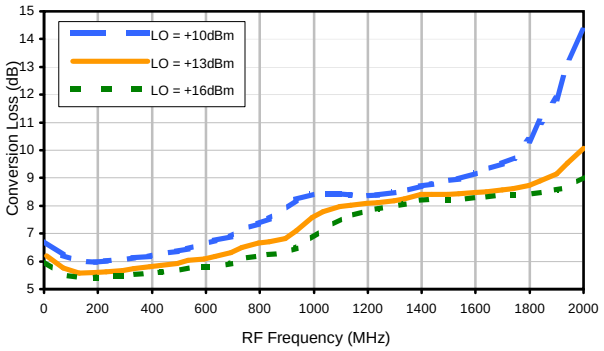
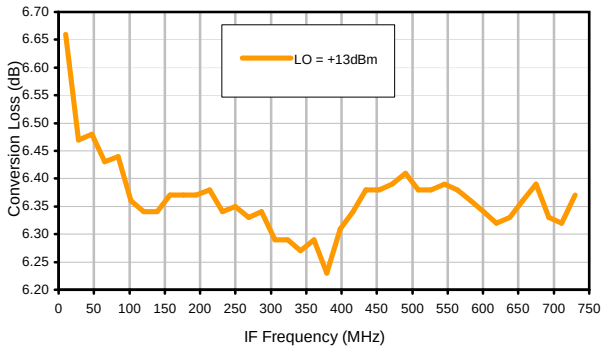
Typical Performance Curves

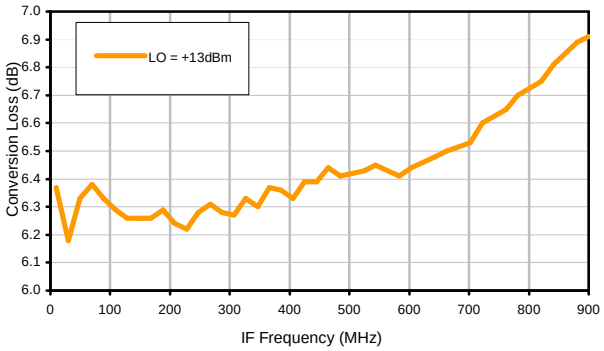
Conversion Loss @ IF=30MHz



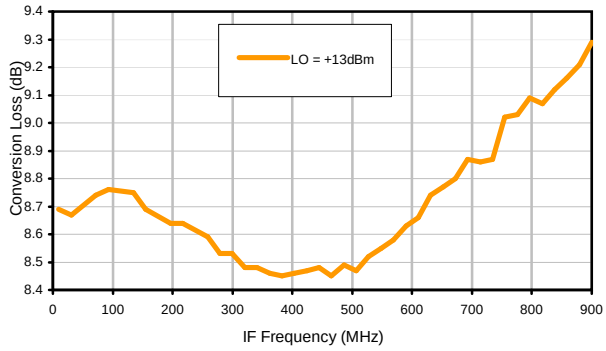
Conversion Loss vs. IF @ RF=750.1MHz



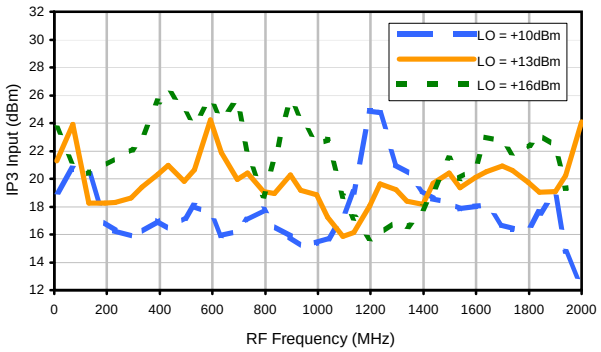
Conversion Loss vs. IF @ RF=10.1MHz



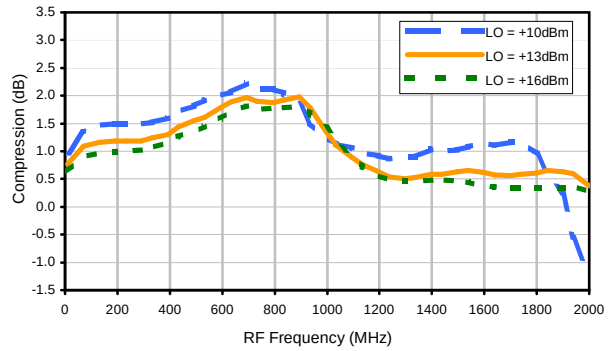
Conversion Loss vs. IF @ RF=1500.1MHz



IP3 Input



Compression @ RF IN=+9dBm



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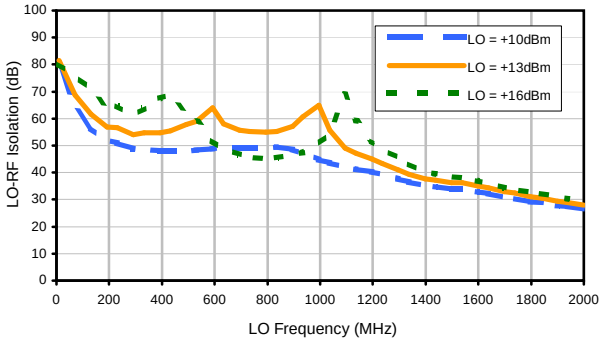
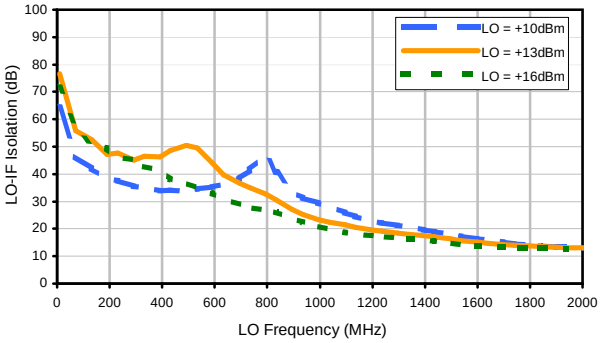
Typical Performance Curves

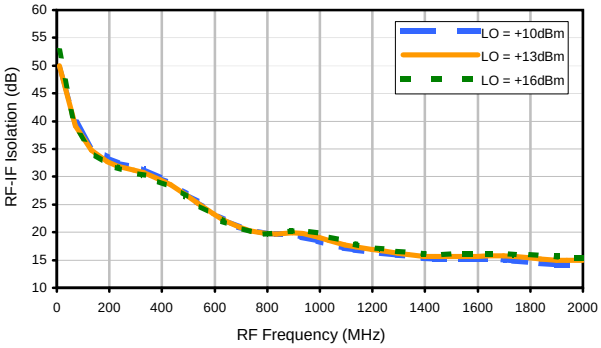
LO-RF Isolation



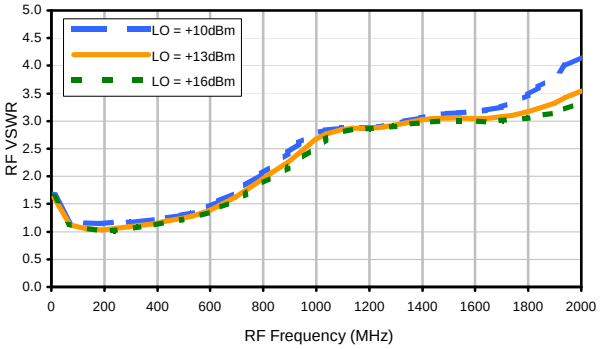
LO-IF Isolation



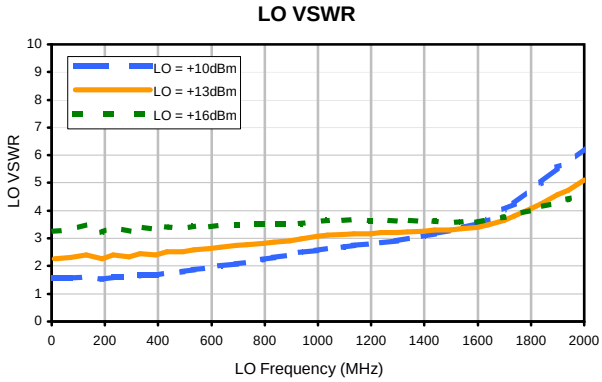
RF-IF Isolation



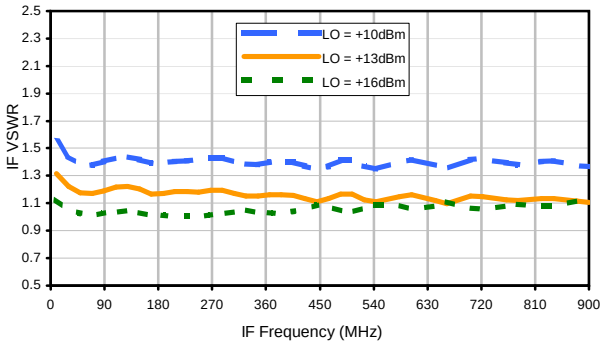
RF VSWR



LO VSWR



IF VSWR



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Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	12	29	23	34	22	53	43	60	42	58
1	-	14	+0	36	19	38	47	51	43	57	52	60
2	82	45	28	45	27	56	44	62	38	54	55	66
3	>100	39	39	43	48	47	52	49	48	61	52	64
4	>100	58	60	53	64	54	48	59	55	52	67	61
5	>100	61	51	54	55	62	48	63	60	81	65	65
6	>100	87	79	64	69	71	50	67	49	66	60	73
7	>100	84	70	77	64	78	63	67	64	75	70	84
8	>100	96	91	87	85	75	81	69	67	67	67	77
9	>100	>97	89	95	79	81	76	81	74	73	77	74
10	>100	93	92	>97	94	94	84	75	89	84	66	77
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 750.1 MHz; 4.00 dBm.
LO IN: 780.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -2.58 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	7	19	11	21	8	36	36	44	32	39
1	-	13	+0	34	18	32	38	44	34	47	42	51
2	96	53	38	52	36	59	52	52	50	54	57	62
3	>100	64	58	60	53	61	63	70	58	76	64	74
4	>100	82	>87	>87	73	66	69	76	74	82	76	77
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7	>100	>87	>87	85	85	87	>87	86	78	>87	>87	87
8	>100	>87	86	87	84	>87	>87	>87	79	78	>87	>87
9	>100	78	82	81	83	>87	>87	>87	>87	>87	79	>87
10	>100	84	79	>87	>87	80	>87	82	86	>87	78	77
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 750.1 MHz; -6.00 dBm.
LO IN: 780.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -12.62 dBm

Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
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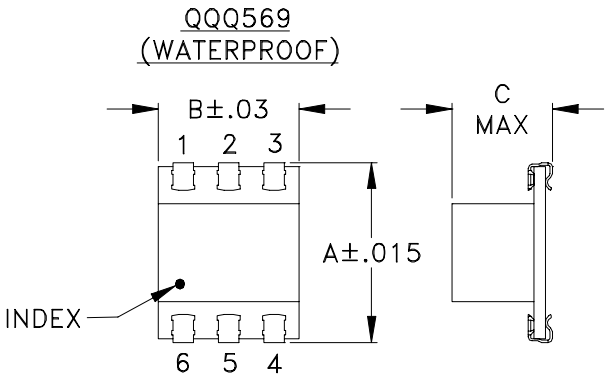
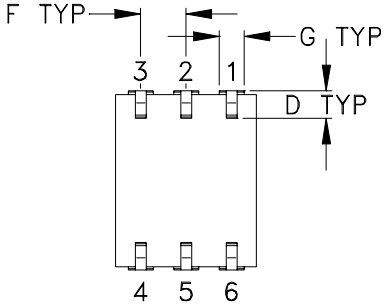
Case Style QQQ

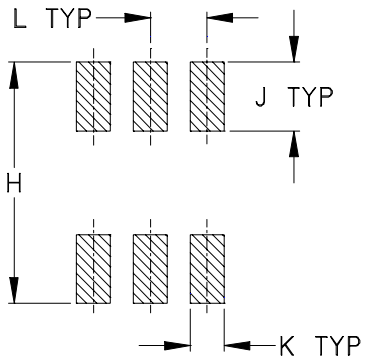
QQQ569 (waterproof)

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.

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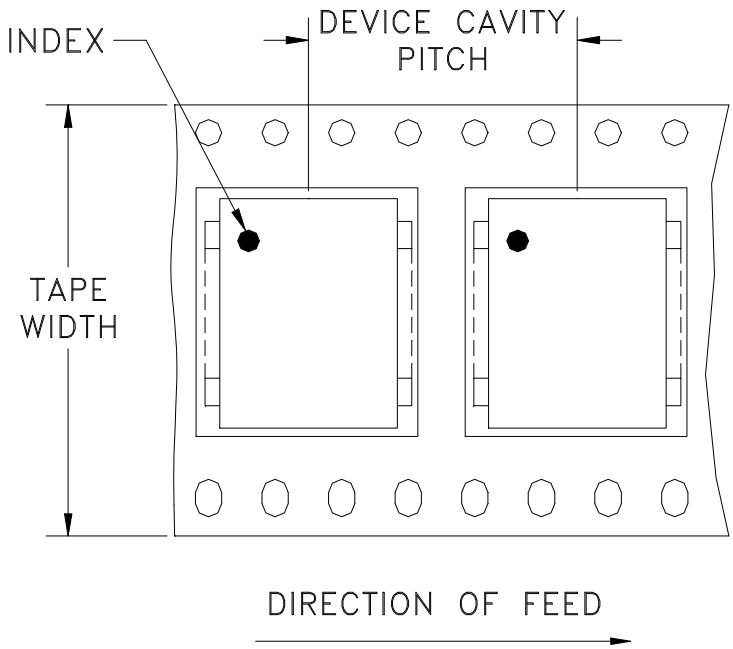
Tape & Reel Packaging TR-F5

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

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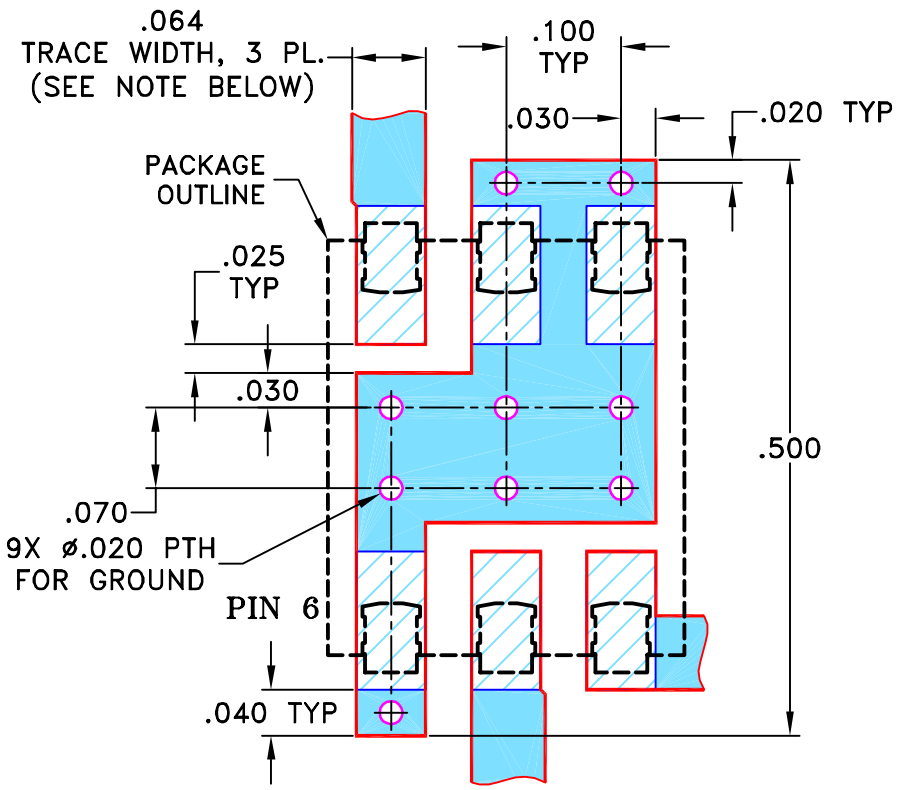
THIRD ANGLE PROJECTION

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 ±			

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

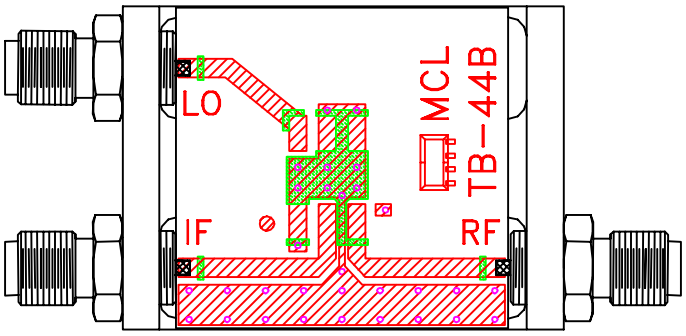
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

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

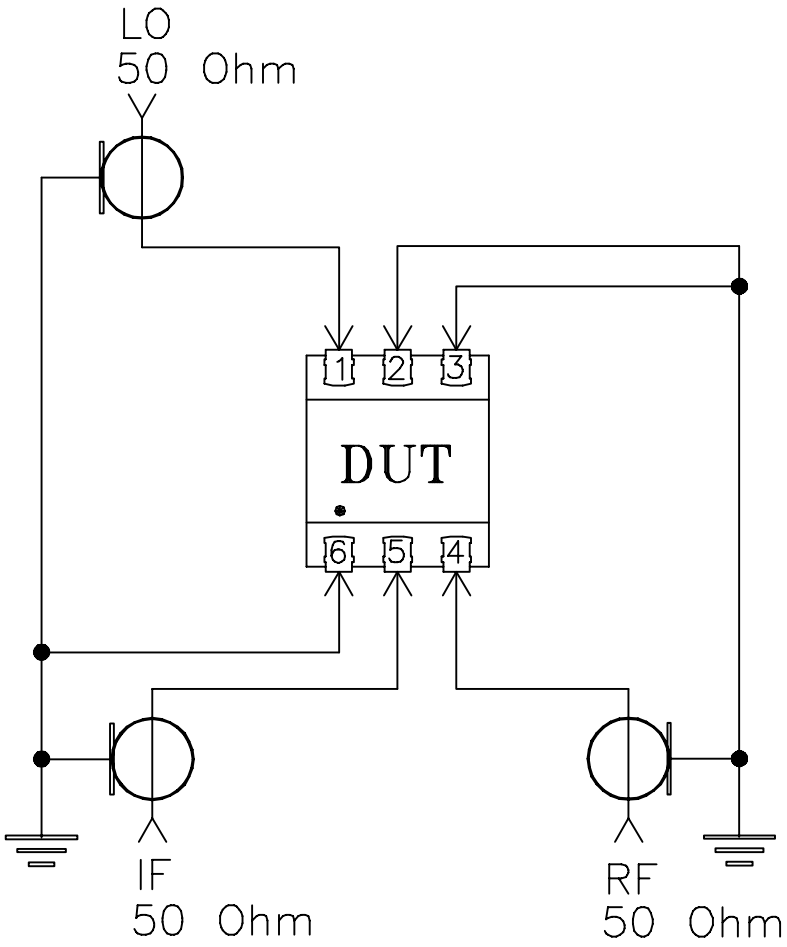
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-083	A

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.

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