

Non-Catalog Model

Frequency Mixer

Level 3 (LO Power +3 dBm)

LRMS-5LJ

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)	400		1400	MHz
	RF (fL to fU)	400		1400	MHz
	IF	0		800	MHz
Conversion Loss			7.0	9.8	dB
LO-RF Isolation		14	22		dB
LO-IF Isolation		6	18		dB
1 dB Comp. Input Power			-3		dBm

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

Mid Range = [10fL to fU/2]

Upper Range = [fU/2 to fU]

Phase detection, positive polarity

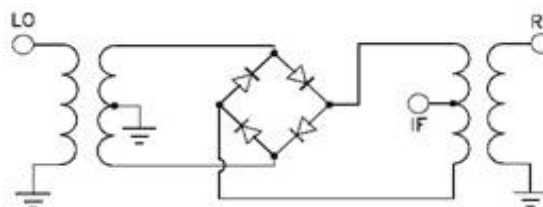
Aqueous washable.

See outline QQQ569. Footprint for L models and L models suffix J are the same.

MAXIMUM RATINGS	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

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

Electrical Schematics



Frequency Mixer

LRMS-5LJ

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		0	+3	+6
400.1	430.1	8.23	7.33	6.87
440.1	470.1	7.73	6.90	6.45
480.1	510.1	7.55	6.70	6.27
520.1	550.1	7.22	6.41	5.99
560.1	590.1	7.07	6.25	5.80
600.1	630.1	6.87	6.04	5.57
640.1	670.1	6.81	5.93	5.45
680.1	710.1	6.70	5.81	5.34
720.1	750.1	6.64	5.75	5.29
760.1	790.1	6.71	5.77	5.26
800.1	830.1	6.75	5.80	5.25
840.1	870.1	6.91	5.90	5.29
880.1	910.1	7.09	6.06	5.41
920.1	950.1	7.31	6.29	5.62
960.1	990.1	7.59	6.61	5.91
1000.1	1030.1	7.73	6.85	6.17
1040.1	1070.1	7.84	7.08	6.45
1080.1	1110.1	7.88	7.18	6.64
1120.1	1150.1	7.94	7.32	6.84
1160.1	1190.1	8.00	7.36	6.99
1200.1	1230.1	8.03	7.41	7.07
1240.1	1270.1	8.08	7.40	7.12
1280.1	1310.1	8.12	7.41	7.13
1320.1	1350.1	8.15	7.40	7.16
1360.1	1390.1	8.25	7.42	7.21
1400.1	1430.1	8.32	7.45	7.25
1440.1	1470.1	8.50	7.54	7.33
1480.1	1510.1	8.75	7.70	7.53
1520.1	1550.1	9.09	7.91	7.69
1560.1	1590.1	9.50	8.16	7.91
1600.1	1630.1	9.97	8.48	8.14
1640.1	1670.1	10.36	8.66	8.20
1680.1	1710.1	10.79	8.89	8.32
1720.1	1750.1	11.02	8.97	8.29
1760.1	1790.1	11.43	9.17	8.31
1780.1	1810.1	11.78	9.35	8.36
1820.1	1850.1	12.00	9.44	8.29
1840.1	1870.1	12.18	9.57	8.35
1880.1	1910.1	12.65	9.78	8.37
1900.1	1930.1	12.47	9.69	8.32

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		0	+3	+6
400.1	430.1	10.43	14.44	12.63
440.1	470.1	10.76	12.80	13.29
480.1	510.1	9.87	13.20	11.46
520.1	550.1	11.29	11.98	10.39
560.1	590.1	12.69	10.08	9.06
600.1	630.1	13.33	10.34	8.28
640.1	670.1	12.49	9.96	8.67
680.1	710.1	12.92	8.91	8.13
720.1	750.1	13.06	11.03	9.04
760.1	790.1	14.27	13.50	11.57
800.1	830.1	17.22	12.92	10.49
840.1	870.1	12.10	11.45	11.16
880.1	910.1	10.03	10.79	12.80
920.1	950.1	8.42	11.20	11.72
960.1	990.1	6.46	8.53	9.91
1000.1	1030.1	5.49	6.97	10.32
1040.1	1070.1	4.82	5.93	9.48
1080.1	1110.1	5.24	5.49	8.65
1120.1	1150.1	5.55	6.43	8.05
1160.1	1190.1	5.26	5.83	7.64
1200.1	1230.1	5.90	4.95	6.68
1240.1	1270.1	6.24	6.30	6.27
1280.1	1310.1	5.94	5.94	6.56
1320.1	1350.1	5.41	5.86	6.63
1360.1	1390.1	4.94	5.70	5.70
1400.1	1430.1	4.95	5.23	5.71
1440.1	1470.1	4.63	4.87	5.49
1480.1	1510.1	3.85	4.67	4.99
1520.1	1550.1	4.12	4.70	4.30
1560.1	1590.1	4.00	3.96	4.36
1600.1	1630.1	4.27	3.56	4.22
1640.1	1670.1	4.37	3.81	5.29
1680.1	1710.1	5.66	4.02	5.76
1720.1	1750.1	5.05	5.17	6.38
1760.1	1790.1	5.76	5.20	6.52
1780.1	1810.1	4.70	4.70	5.78
1820.1	1850.1	4.51	4.65	6.03
1840.1	1870.1	3.53	4.65	5.60
1880.1	1910.1	2.49	3.47	4.95
1900.1	1930.1	2.50	3.74	5.00

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=-3dBm (dB)		
		@LO (dBm)		
		0	+3	+6
400.1	430.1	0.25	0.12	0.11
440.1	470.1	0.27	0.16	0.16
480.1	510.1	0.43	0.24	0.18
520.1	550.1	0.50	0.31	0.27
560.1	590.1	0.63	0.42	0.33
600.1	630.1	0.76	0.50	0.47
640.1	670.1	0.95	0.63	0.54
680.1	710.1	1.02	0.73	0.57
720.1	750.1	1.09	0.75	0.67
760.1	790.1	1.17	0.87	0.70
800.1	830.1	1.20	0.89	0.73
840.1	870.1	1.25	1.03	0.90
880.1	910.1	1.22	1.06	0.93
920.1	950.1	1.14	1.04	0.95
960.1	990.1	0.92	0.88	0.87
1000.1	1030.1	0.82	0.76	0.75
1040.1	1070.1	0.69	0.56	0.58
1080.1	1110.1	0.68	0.50	0.49
1120.1	1150.1	0.68	0.42	0.41
1160.1	1190.1	0.71	0.39	0.35
1200.1	1230.1	0.79	0.43	0.34
1240.1	1270.1	0.87	0.54	0.44
1280.1	1310.1	0.97	0.67	0.50
1320.1	1350.1	1.05	0.74	0.57
1360.1	1390.1	1.14	0.76	0.61
1400.1	1430.1	1.16	0.85	0.69
1440.1	1470.1	1.18	0.90	0.73
1480.1	1510.1	1.14	0.90	0.68
1520.1	1550.1	1.17	0.81	0.65
1560.1	1590.1	1.09	0.83	0.60
1600.1	1630.1	0.97	0.80	0.55
1640.1	1670.1	0.89	0.85	0.55
1680.1	1710.1	0.83	0.81	0.60
1720.1	1750.1	0.71	0.84	0.66
1760.1	1790.1	0.63	0.83	0.68
1780.1	1810.1	0.58	0.84	0.74
1820.1	1850.1	0.52	0.87	0.71
1840.1	1870.1	0.43	0.80	0.73
1880.1	1910.1	0.33	0.82	0.76
1900.1	1930.1	0.38	0.83	0.73

REV. X2

LRMS-5LJ

100817

Page 1 of 5



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Frequency Mixer

LRMS-5LJ

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=900.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=400.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1400.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+3			+3			+3
500.0	400.1	5.02	10.0	410.1	7.05	800.0	600.1	8.09
479.6	420.5	4.93	30.3	430.4	7.21	779.7	620.4	8.05
459.2	440.9	4.90	50.5	450.6	7.32	759.5	640.6	7.84
438.8	461.4	4.83	70.8	470.9	7.45	739.2	660.9	7.79
418.3	481.8	4.86	91.0	491.1	7.51	719.0	681.1	7.67
397.9	502.2	4.79	111.3	511.4	7.56	698.7	701.4	7.55
377.5	522.6	4.85	131.5	531.6	7.70	678.5	721.6	7.49
357.1	543.0	4.87	151.8	551.9	7.71	658.2	741.9	7.37
336.7	563.4	4.94	172.1	572.2	7.77	637.9	762.2	7.41
316.3	583.9	5.05	192.3	592.4	7.76	617.7	782.4	7.38
295.8	604.3	5.09	212.6	612.7	7.76	597.4	802.7	7.42
275.4	624.7	5.23	232.8	632.9	7.77	577.2	822.9	7.34
255.0	645.1	5.28	253.1	653.2	7.77	556.9	843.2	7.37
234.6	665.5	5.48	273.3	673.4	7.79	536.7	863.4	7.39
214.2	685.9	5.52	293.6	693.7	7.71	516.4	883.7	7.43
193.8	706.4	5.68	313.8	713.9	7.78	496.2	903.9	7.47
173.3	726.8	5.77	334.1	734.2	7.72	475.9	924.2	7.44
152.9	747.2	5.93	354.4	754.5	7.77	455.6	944.5	7.59
132.5	767.6	6.04	374.6	774.7	7.71	435.4	964.7	7.67
112.1	788.0	6.08	394.9	795.0	7.70	415.1	985.0	7.78
71.3	828.9	6.07	415.1	815.2	7.78	394.9	1005.2	7.80
50.8	849.3	6.15	435.4	835.5	7.72	374.6	1025.5	7.83
10.0	890.1	6.13	455.6	855.7	7.83	354.4	1045.7	7.91
10.0	910.1	5.89	475.9	876.0	7.81	334.1	1066.0	7.83
50.8	950.9	6.13	496.2	896.3	8.03	313.8	1086.3	7.87
71.3	971.4	6.07	516.4	916.5	8.01	293.6	1106.5	7.74
112.1	1012.2	6.15	536.7	936.8	8.08	273.3	1126.8	7.70
132.5	1032.6	6.27	556.9	957.0	8.14	253.1	1147.0	7.61
173.3	1073.4	6.38	577.2	977.3	8.14	232.8	1167.3	7.55
193.8	1093.9	6.44	597.4	997.5	8.26	212.6	1187.5	7.52
234.6	1134.7	6.58	617.7	1017.8	8.14	192.3	1207.8	7.46
255.0	1155.1	6.57	637.9	1038.0	8.20	172.1	1228.0	7.47
295.8	1195.9	6.65	658.2	1058.3	8.06	151.8	1248.3	7.37
316.2	1216.4	6.72	678.5	1078.6	8.12	131.5	1268.6	7.39
357.1	1257.2	6.70	698.7	1098.8	8.09	111.3	1288.8	7.34
377.5	1277.6	6.69	719.0	1119.1	8.10	91.0	1309.1	7.35
418.3	1318.4	6.66	739.2	1139.3	8.11	70.8	1329.3	7.32
438.8	1338.9	6.62	759.5	1159.6	8.02	50.5	1349.6	7.29
479.6	1379.7	6.56	779.7	1179.8	8.20	30.3	1369.8	7.32
500.0	1400.1	6.61	800.0	1200.1	8.17	10.0	1390.1	7.30

REV. X2
LRMS-5LJ
100817
Page 2 of 5



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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	0	+3	+6	0	+3	+6
400.1	28.17	27.35	26.60	32.02	36.62	32.62
440.1	27.78	26.91	26.14	32.13	37.14	31.73
480.1	28.13	27.25	26.47	32.74	37.54	30.79
520.1	28.93	27.99	27.17	32.68	37.18	29.43
560.1	29.35	28.43	27.58	33.44	35.72	27.84
600.1	29.95	29.07	28.17	34.52	34.58	26.65
640.1	31.03	30.14	29.17	36.85	32.88	25.45
680.1	32.84	32.00	30.86	39.17	32.16	24.93
720.1	34.52	33.82	32.30	44.90	29.98	23.78
760.1	35.86	36.11	34.35	42.49	27.97	22.89
800.1	37.13	39.63	37.90	35.43	25.37	21.28
840.1	37.04	43.78	44.65	31.44	23.08	19.48
880.1	34.77	41.00	52.52	28.94	21.71	18.32
920.1	32.30	36.63	40.53	26.55	20.25	17.05
960.1	30.24	33.19	35.45	25.11	19.62	16.57
1000.1	28.65	30.88	32.57	23.96	19.09	16.16
1040.1	27.07	28.80	30.10	22.92	18.55	15.72
1080.1	25.82	27.19	28.26	21.84	18.01	15.33
1120.1	25.22	26.38	27.34	20.32	17.03	14.59
1160.1	24.57	25.66	26.58	19.24	16.37	14.11
1200.1	24.03	25.10	26.00	18.07	15.55	13.50
1240.1	23.65	24.78	25.70	17.15	14.96	13.10
1280.1	23.32	24.55	25.53	16.33	14.45	12.73
1320.1	22.91	24.26	25.31	15.58	13.96	12.39
1360.1	22.55	24.06	25.27	15.08	13.74	12.29
1400.1	22.09	23.72	25.06	14.43	13.33	11.98
1440.1	21.72	23.46	24.95	13.82	12.97	11.74
1480.1	21.04	22.83	24.38	13.27	12.65	11.55
1520.1	20.52	22.32	23.89	12.58	12.21	11.23
1560.1	20.07	21.81	23.35	11.66	11.50	10.64
1600.1	19.37	21.07	22.66	10.82	10.84	10.17
1640.1	18.83	20.51	22.18	9.81	9.97	9.48
1680.1	19.02	20.64	22.31	8.79	9.08	8.78
1720.1	18.86	20.46	22.19	8.01	8.36	8.21
1760.1	18.88	20.45	22.20	7.36	7.70	7.65
1780.1	19.31	20.90	22.63	7.03	7.39	7.39
1820.1	19.55	21.17	22.94	6.54	6.89	6.96
1840.1	20.31	21.95	23.73	6.33	6.68	6.76
1880.1	20.61	22.28	24.10	5.94	6.28	6.41
1900.1	21.14	22.80	24.61	5.76	6.09	6.24

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		0	+3	+6
400.1	430.1	16.31	15.49	15.06
440.1	470.1	15.81	15.00	14.61
480.1	510.1	15.41	14.55	14.13
520.1	550.1	15.39	14.52	14.00
560.1	590.1	15.72	14.93	14.40
600.1	630.1	16.33	15.71	15.26
640.1	670.1	17.12	16.66	16.29
680.1	710.1	17.90	17.53	17.22
720.1	750.1	18.92	18.41	18.08
760.1	790.1	20.20	19.10	18.36
800.1	830.1	22.06	20.25	18.85
840.1	870.1	24.20	21.86	19.86
880.1	910.1	24.40	22.42	20.39
920.1	950.1	22.56	21.67	20.40
960.1	990.1	20.27	20.06	19.52
1000.1	1030.1	18.17	18.19	18.05
1040.1	1070.1	16.78	16.84	16.88
1080.1	1110.1	15.67	15.83	15.99
1120.1	1150.1	14.89	15.12	15.35
1160.1	1190.1	14.39	14.64	14.95
1200.1	1230.1	14.13	14.40	14.76
1240.1	1270.1	14.01	14.33	14.73
1280.1	1310.1	14.00	14.37	14.78
1320.1	1350.1	14.05	14.50	14.97
1360.1	1390.1	14.14	14.69	15.24
1400.1	1430.1	14.15	14.86	15.56
1440.1	1470.1	14.06	14.93	15.79
1480.1	1510.1	13.76	14.81	15.78
1520.1	1550.1	13.40	14.59	15.67
1560.1	1590.1	13.08	14.41	15.68
1600.1	1630.1	12.89	14.30	15.82
1640.1	1670.1	12.83	14.32	16.01
1680.1	1710.1	12.97	14.56	16.38
1720.1	1750.1	13.33	14.98	16.86
1760.1	1790.1	13.71	15.36	17.20
1780.1	1810.1	13.89	15.62	17.48
1820.1	1850.1	14.46	16.26	18.09
1840.1	1870.1	14.84	16.68	18.50
1880.1	1910.1	15.43	17.38	19.16
1900.1	1930.1	16.01	18.00	19.80

REV. X2
LRMS-5LJ
100817
Page 3 of 5

Frequency Mixer

LRMS-5LJ

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=1400.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		0	+3	+6		0	+3	+6		0	+3	+6
400.1	430.1	3.90	3.55	3.39	400.1	1.27	1.76	2.44	10.0	1.82	1.33	1.31
440.1	470.1	3.20	2.92	2.81	440.1	1.30	1.80	2.49	29.8	1.57	1.23	1.06
480.1	510.1	2.71	2.48	2.39	480.1	1.33	1.83	2.51	49.5	1.48	1.19	1.15
520.1	550.1	2.33	2.13	2.05	520.1	1.33	1.85	2.54	69.3	1.46	1.11	1.14
560.1	590.1	2.02	1.85	1.77	560.1	1.37	1.89	2.58	89.0	1.51	1.18	1.08
600.1	630.1	1.82	1.64	1.56	600.1	1.40	1.93	2.60	108.8	1.53	1.18	1.07
640.1	670.1	1.62	1.44	1.36	640.1	1.45	1.99	2.67	128.5	1.52	1.18	1.11
680.1	710.1	1.55	1.33	1.22	680.1	1.47	2.00	2.65	148.3	1.52	1.16	1.11
720.1	750.1	1.49	1.26	1.11	720.1	1.51	2.03	2.68	168.0	1.51	1.18	1.11
760.1	790.1	1.64	1.40	1.23	760.1	1.55	2.06	2.68	187.8	1.54	1.20	1.08
800.1	830.1	1.77	1.52	1.36	800.1	1.60	2.10	2.71	207.5	1.58	1.23	1.09
840.1	870.1	2.09	1.82	1.63	840.1	1.66	2.16	2.77	227.3	1.58	1.22	1.11
880.1	910.1	2.32	2.04	1.83	880.1	1.70	2.19	2.76	247.0	1.57	1.23	1.12
920.1	950.1	2.68	2.38	2.15	920.1	1.76	2.27	2.85	266.8	1.55	1.21	1.13
960.1	990.1	2.95	2.66	2.41	960.1	1.81	2.29	2.85	286.5	1.56	1.22	1.11
1000.1	1030.1	3.14	2.89	2.67	1000.1	1.84	2.32	2.86	306.3	1.59	1.22	1.11
1040.1	1070.1	3.33	3.13	2.94	1040.1	1.89	2.35	2.88	326.0	1.57	1.22	1.13
1080.1	1110.1	3.37	3.22	3.10	1080.1	1.92	2.36	2.87	345.8	1.56	1.22	1.14
1120.1	1150.1	3.54	3.42	3.33	1120.1	2.00	2.44	2.95	365.5	1.55	1.21	1.13
1160.1	1190.1	3.59	3.49	3.44	1160.1	2.05	2.47	2.95	385.3	1.55	1.19	1.13
1200.1	1230.1	3.66	3.54	3.52	1200.1	2.10	2.50	2.96	405.0	1.56	1.21	1.12
1240.1	1270.1	3.64	3.50	3.47	1240.1	2.18	2.57	3.02	424.8	1.58	1.21	1.11
1280.1	1310.1	3.65	3.47	3.42	1280.1	2.22	2.57	3.00	444.5	1.57	1.21	1.11
1320.1	1350.1	3.56	3.33	3.24	1320.1	2.27	2.59	3.00	464.3	1.57	1.21	1.12
1360.1	1390.1	3.49	3.20	3.08	1360.1	2.32	2.61	2.99	484.0	1.56	1.20	1.12
1400.1	1430.1	3.40	3.07	2.90	1400.1	2.36	2.62	2.97	503.8	1.54	1.17	1.12
1440.1	1470.1	3.41	3.00	2.78	1440.1	2.43	2.66	2.99	523.5	1.53	1.17	1.12
1480.1	1510.1	3.38	2.92	2.65	1480.1	2.47	2.68	2.98	543.3	1.53	1.17	1.13
1520.1	1550.1	3.58	3.02	2.68	1520.1	2.52	2.70	2.99	563.0	1.52	1.15	1.13
1560.1	1590.1	3.58	3.00	2.62	1560.1	2.55	2.70	2.97	582.8	1.52	1.15	1.13
1600.1	1630.1	3.86	3.20	2.77	1600.1	2.61	2.74	3.00	602.5	1.48	1.13	1.15
1640.1	1670.1	3.93	3.25	2.78	1640.1	2.68	2.78	3.00	622.3	1.47	1.12	1.16
1680.1	1710.1	4.21	3.46	2.95	1680.1	2.77	2.83	3.04	642.0	1.47	1.12	1.16
1720.1	1750.1	4.39	3.57	3.00	1720.1	2.86	2.92	3.10	661.8	1.45	1.12	1.17
1760.1	1790.1	4.48	3.67	3.10	1760.1	2.92	2.96	3.09	681.5	1.44	1.11	1.18
1780.1	1810.1	4.83	3.90	3.25	1780.1	2.94	2.96	3.09	701.3	1.41	1.09	1.20
1820.1	1850.1	4.74	3.86	3.20	1820.1	3.03	3.00	3.10	721.0	1.38	1.09	1.23
1840.1	1870.1	4.74	3.86	3.20	1840.1	3.04	3.08	3.18	740.8	1.38	1.10	1.24
1880.1	1910.1	5.52	4.42	3.62	1880.1	3.06	3.07	3.15	780.3	1.35	1.09	1.24
1900.1	1930.1	5.33	4.26	3.50	1900.1	3.15	3.12	3.26	800.0	1.31	1.08	1.28

REV. X2
LRMS-5LJ
100817
Page 4 of 5

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+6	5	5	20	21	42	45	53	67	51
1	-	15	+0	26	21	30	34	41	57	54	62	66
2	112	42	36	42	36	49	51	52	76	72	75	73
3	117	67	58	57	74	64	68	69	72	70	92	81
4	116	89	87	93	79	73	79	79	83	96	100	102
5	115	108	91	94	90	94	74	88	93	97	100	98
6	109	101	103	94	103	101	95	83	91	97	100	95
7	108	101	94	100	94	93	88	86	85	91	96	96
8	120	97	96	97	105	104	104	94	95	80	90	93
9	109	105	106	95	99	103	101	101	92	96	80	87
10	124	101	101	96	106	107	105	92	103	91	87	104
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 900.1 MHz; -18.00 dBm.
LO IN: 930.01 MHz; +3.00 dBm
IF OUT: 29.91 MHz; -24.29 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	2	16	17	36	32	56	58	72	78	73
1	-	15	+0	27	23	33	39	51	62	74	69	84
2	99	32	27	36	26	40	43	47	57	75	75	75
3	116	45	39	38	45	51	50	51	56	59	84	74
4	111	58	61	53	56	48	61	57	63	64	80	91
5	110	72	62	65	56	54	60	58	71	66	86	72
6	107	91	87	73	76	85	63	62	68	69	81	82
7	122	98	120	88	92	85	76	75	71	74	87	78
8	105	99	97	100	97	87	100	82	79	78	82	86
9	113	105	108	106	109	103	97	105	95	83	81	89
10	107	109	113	114	119	117	100	105	99	94	97	91
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 900.1 MHz; -8.00 dBm.
LO IN: 930.01 MHz; +3.00 dBm
IF OUT: 29.91 MHz; -14.42 dBm

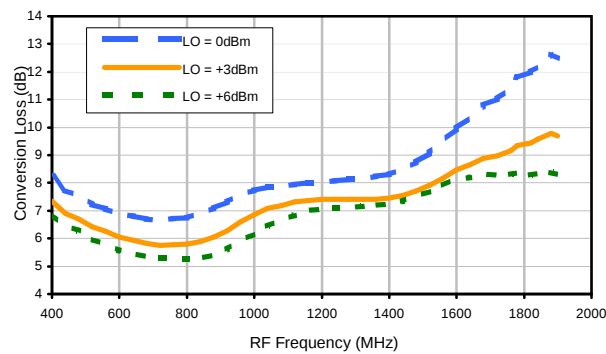
- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

REV. X2
LRMS-5LJ
100817
Page 5 of 5

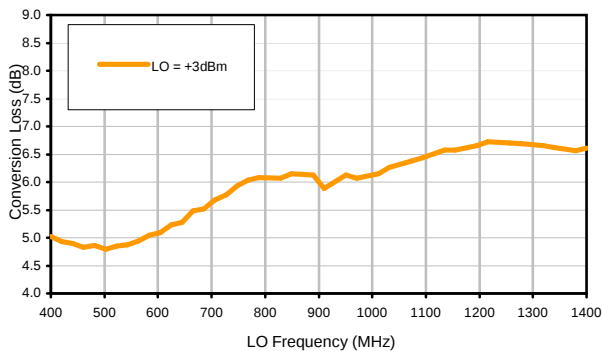


Typical Performance Curves

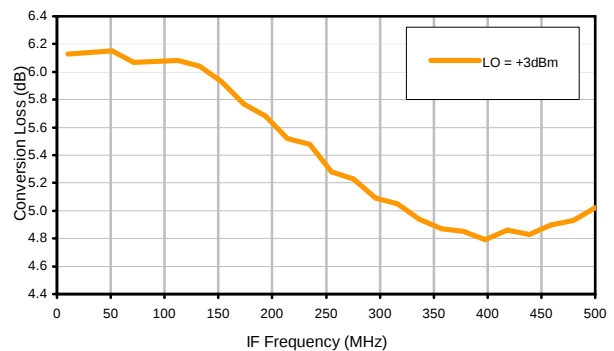
Conversion Loss @ IF=30MHz



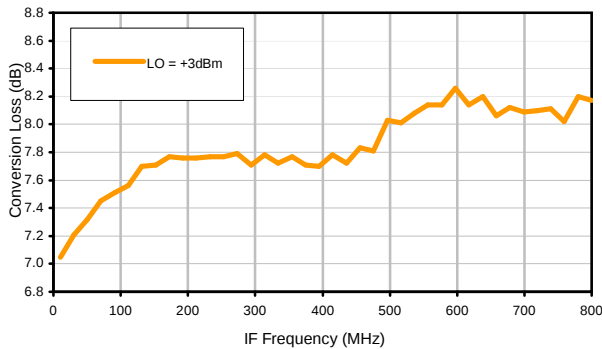
Conversion Loss vs. LO @ RF=900.1MHz



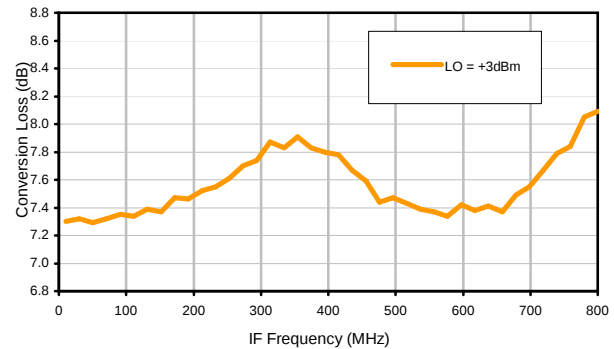
Conversion Loss vs. IF @ RF=900.1MHz



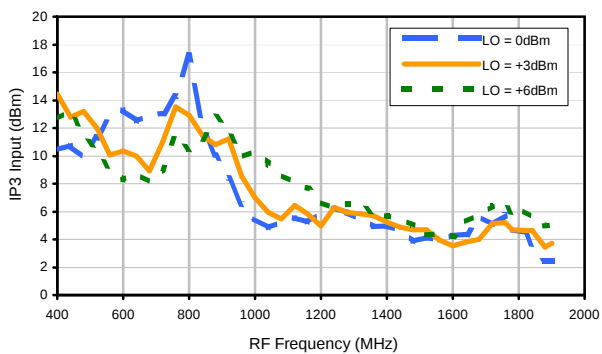
Conversion Loss vs. IF @ RF=400.1MHz



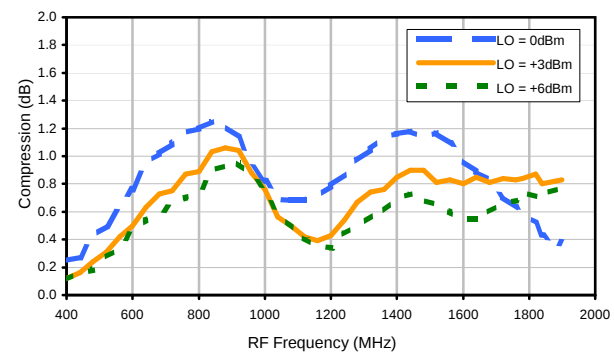
Conversion Loss vs. IF @ RF=1400.1MHz



IP3 Input

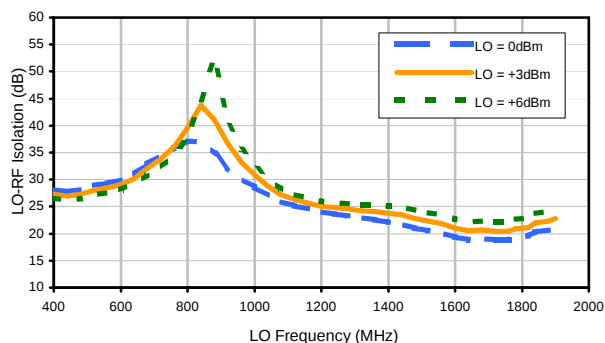


Compression @ RF IN=-3dBm

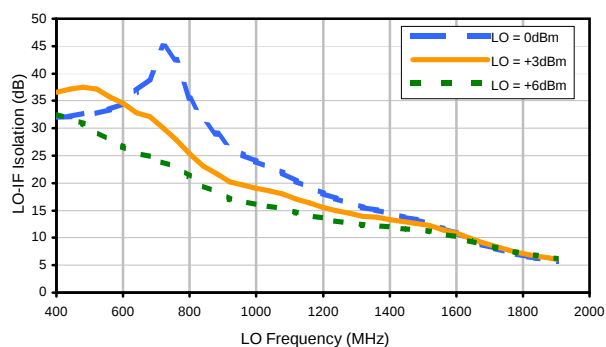


Typical Performance Curves

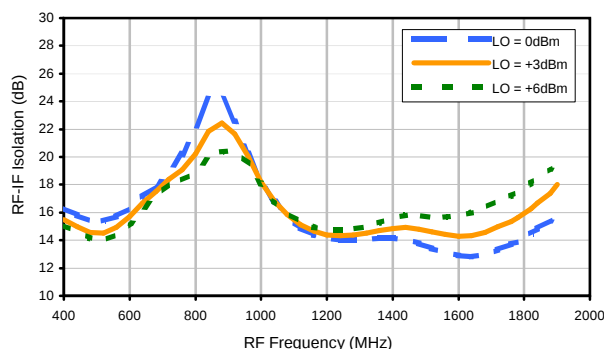
LO-RF Isolation



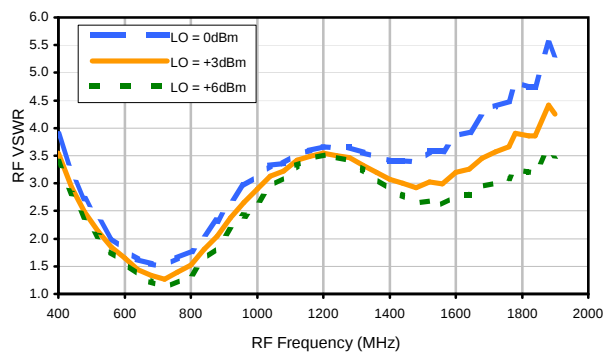
LO-IF Isolation



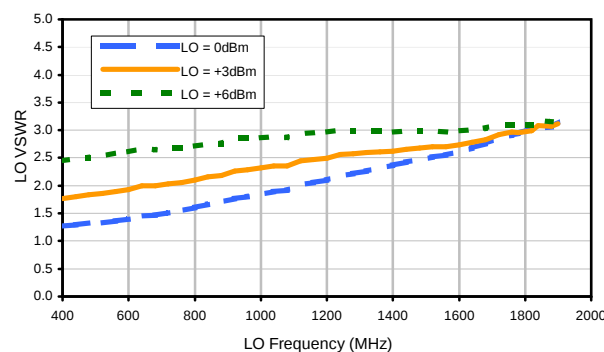
RF-IF Isolation



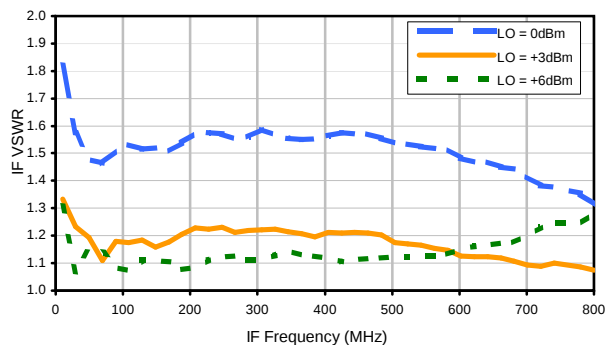
RF VSWR



LO VSWR



IF VSWR



REV. X2

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Page 2 of 3



IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS 9100 CERTIFIED • RoHS compliant

P.O. Box 350166, Brooklyn, New York 11235-0006 (718) 934-4500 Fax (718) 332-4661



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



Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+6	5	5	20	21	42	45	53	67	51
1	-	15	+0	26	21	30	34	41	57	54	62	66
2	112	42	36	42	36	49	51	52	76	72	75	73
3	117	67	58	57	74	64	68	69	72	70	92	81
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5	115	108	91	94	90	94	74	88	93	97	100	98
6	109	101	103	94	103	101	95	83	91	97	100	95
7	108	101	94	100	94	93	88	86	85	91	96	96
8	120	97	96	97	105	104	104	94	95	80	90	93
9	109	105	106	95	99	103	101	101	92	96	80	87
10	124	101	101	96	106	107	105	92	103	91	87	104
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 900.1 MHz; -18.00 dBm.
LO IN: 930.01 MHz; +3.00 dBm
IF OUT: 29.91 MHz; -24.29 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	2	16	17	36	32	56	58	72	78	73
1	-	15	+0	27	23	33	39	51	62	74	69	84
2	99	32	27	36	26	40	43	47	57	75	75	75
3	116	45	39	38	45	51	50	51	56	59	84	74
4	111	58	61	53	56	48	61	57	63	64	80	91
5	110	72	62	65	56	54	60	58	71	66	86	72
6	107	91	87	73	76	85	63	62	68	69	81	82
7	122	98	120	88	92	85	76	75	71	74	87	78
8	105	99	97	100	97	87	100	82	79	78	82	86
9	113	105	108	106	109	103	97	105	95	83	81	89
10	107	109	113	114	119	117	100	105	99	94	97	91
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

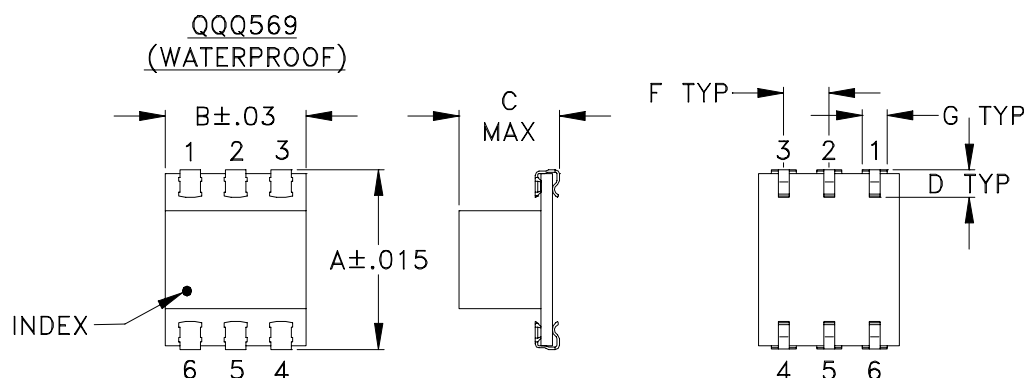
Test conditions: RF IN: 900.1 MHz; -8.00 dBm.
LO IN: 930.01 MHz; +3.00 dBm
IF OUT: 29.91 MHz; -14.42 dBm

- 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.

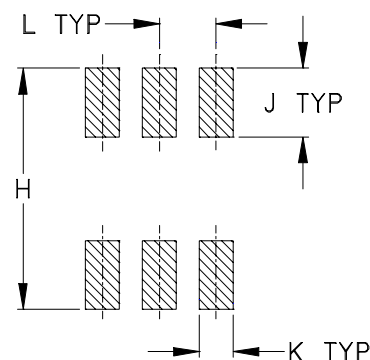
REV. X2
LRMS-5LJ
100817
Page 3 of 3



Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within $\pm .002$

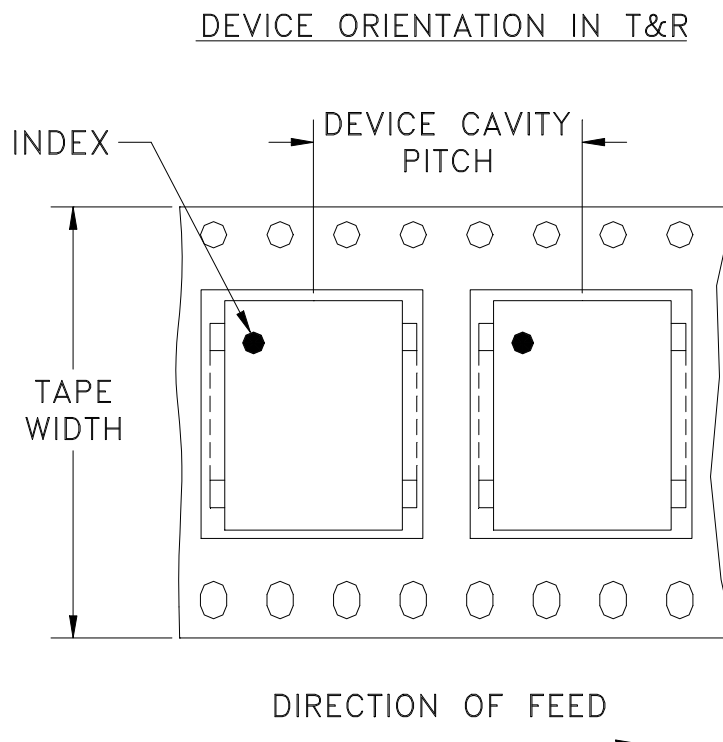
CASE#	A	B	C	D	E	F	G	H	J	K	L	M	WT, GRAM
QQQ569	.390 (9.90)	.31 (7.87)	.225 (5.72)	.060 (1.52)	-	.100 (2.54)	.045 (1.14)	.420 (10.67)	.120 (3.05)	.060 (1.52)	.100 (2.54)	-	.50

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

Notes:

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

Tape & Reel Packaging TR-F5



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



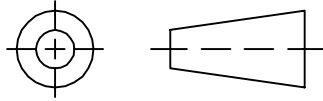
Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

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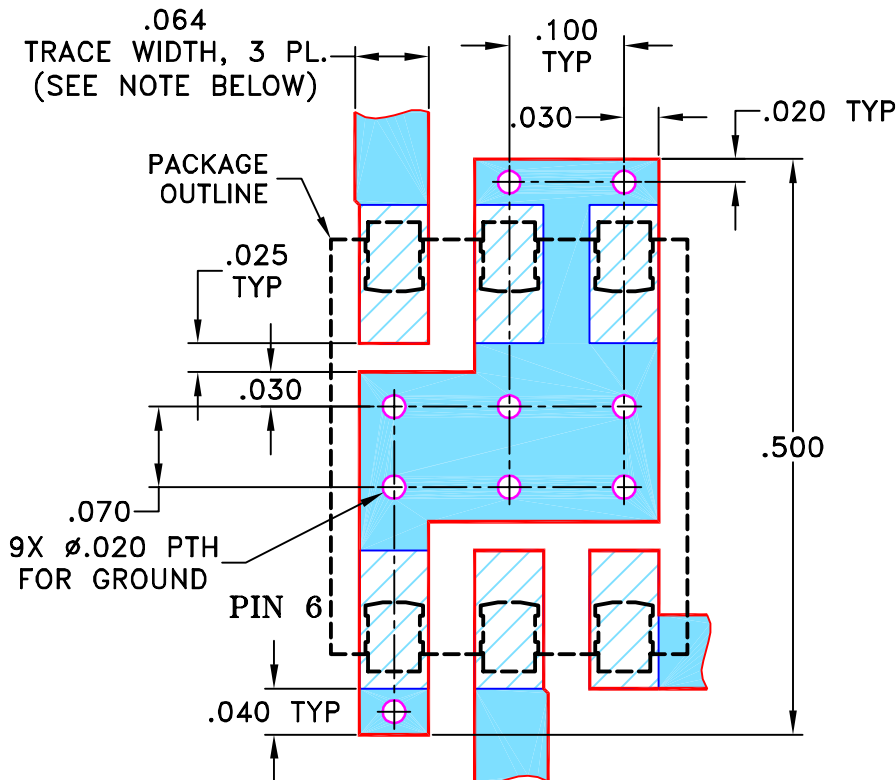
THIRD ANGLE PROJECTION



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" $\pm$ 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 $\pm$.005

APPROVED

DJ

08/02/02

ANGLES $\pm$

FRACTIONS $\pm$

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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

A

CODE IDENT

15542

DRAWING NO:

98-PL-083

REV:

A

FILE: 98PL083

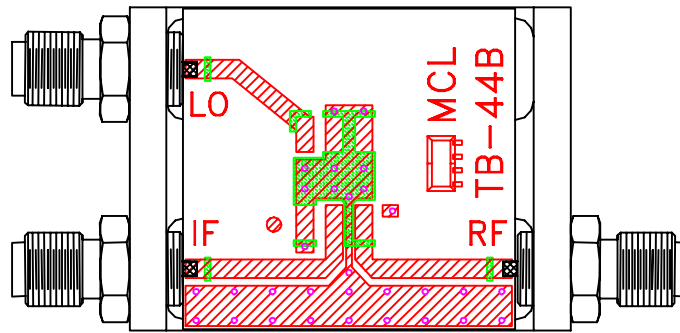
SCALE:

6:1

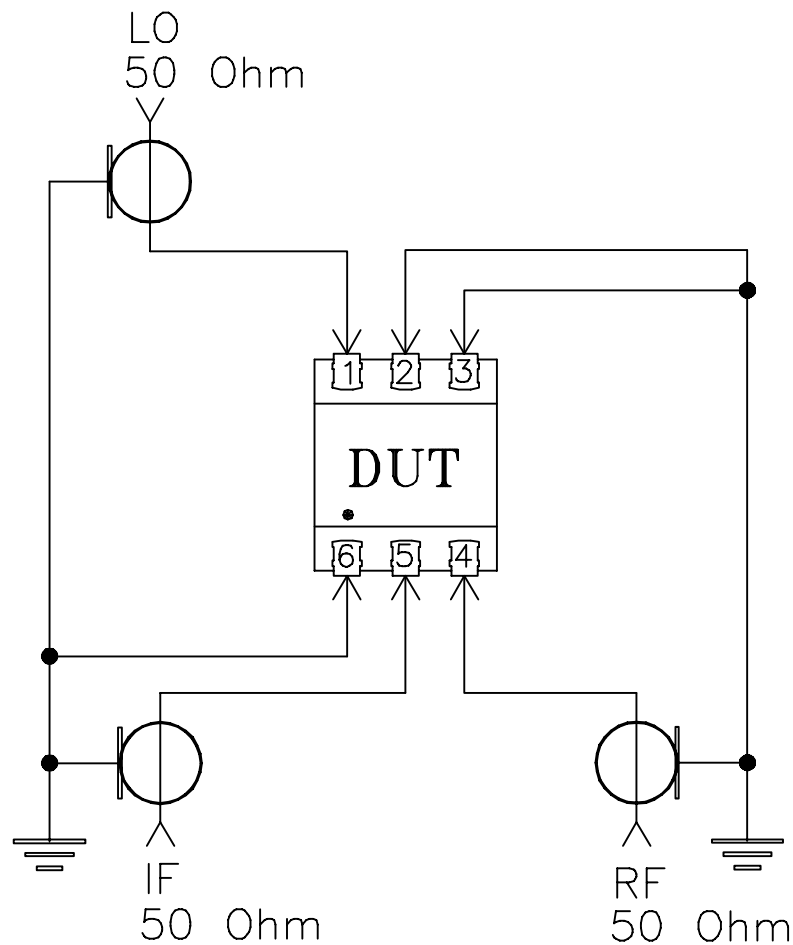
SHEET:

1 OF 1

Evaluation Board and Circuit



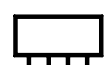
TB-44+



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.030 inch.

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