

## Non-Catalog Model

# Frequency Mixer

## Level 7 (LO Power +7 dBm)

# LRMS-11AJ

### 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
<b>Frequency</b>	<b>LO</b> (fL to fU)	1500		1900	MHz
	<b>RF</b> (fL to fU)	1500		1900	MHz
	<b>IF</b>	40		400	MHz
<b>Conversion Loss</b>			7.4	9.0	dB
<b>LO-RF Isolation</b>		17	25		dB
<b>LO-IF Isolation</b>		15	23		dB
<b>1 dB Comp. Input Power</b>			+1		dBm

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

Mid Range = [10fL to fU/2]

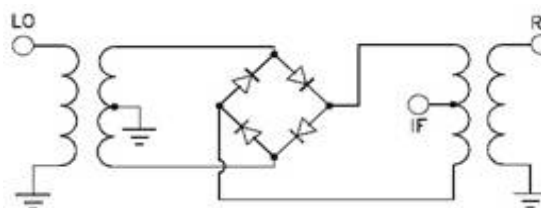
Upper Range = [fU/2 to fU]

Phase detection, positive polarity  
Aqueous washable.

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

PIN CONNECTIONS	
<b>LO</b>	1
<b>RF</b>	4
<b>IF</b>	5
<b>GROUND</b>	2, 3, 6

### Electrical Schematics



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## Typical Performance Data

RF (MHz)	LO (MHz)	CONVERSION LOSS (dB)			LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
		@LO (dBm)				@LO (dBm)			@LO (dBm)		
		+4	+7	+10		+4	+7	+10	+4	+7	+10
1500.0	1699.0	6.97	6.31	5.89	1500.0	25.4	25.2	25.1	21.1	21.1	20.6
1530.0	1729.0	6.83	6.20	5.82	1530.0	25.1	25.0	24.8	21.5	21.6	20.9
1560.0	1759.0	6.82	6.25	5.90	1560.0	25.1	25.0	24.9	22.1	22.3	21.5
1580.0	1779.0	6.69	6.10	5.74	1580.0	25.0	25.0	24.8	22.4	22.5	21.6
1590.0	1789.0	6.70	6.10	5.74	1590.0	24.9	24.9	24.7	22.7	22.8	21.9
1620.0	1819.0	6.80	6.31	5.93	1620.0	24.7	24.8	24.7	23.3	23.5	22.5
1650.0	1849.0	6.69	6.21	5.81	1650.0	24.4	24.6	24.6	24.0	24.3	23.1
1670.0	1869.0	6.80	6.41	6.04	1670.0	24.3	24.5	24.5	24.4	24.6	23.4
1680.0	1879.0	6.89	6.53	6.15	1680.0	24.2	24.4	24.4	24.7	24.9	23.7
1710.0	1511.0	6.38	6.07	6.05	1710.0	24.2	24.4	24.4	25.6	25.8	24.4
1740.0	1541.0	6.69	6.40	6.35	1740.0	24.0	24.3	24.3	26.5	26.9	25.4
1760.0	1561.0	7.11	6.74	6.62	1760.0	24.0	24.3	24.4	27.2	27.6	26.0
1770.0	1571.0	7.16	6.77	6.63	1770.0	24.0	24.3	24.4	27.5	28.2	26.4
1800.0	1601.0	7.38	7.00	6.83	1800.0	24.2	24.4	24.7	28.8	29.8	27.7
1830.0	1631.0	8.04	7.61	7.32	1830.0	24.3	24.5	24.8	30.1	31.7	29.4
1850.0	1651.0	8.02	7.60	7.29	1850.0	24.6	24.7	25.0	30.9	33.2	30.7
1860.0	1661.0	8.09	7.67	7.39	1860.0	24.7	24.8	25.1	31.2	34.1	31.6
1880.0	1681.0	8.62	8.19	7.92	1880.0	25.1	25.1	25.4	31.3	35.7	33.5
1890.0	1691.0	8.86	8.39	8.10	1890.0	25.4	25.3	25.5	31.1	36.2	34.4
1900.0	1701.0	8.93	8.44	8.14	1900.0	25.5	25.4	25.6	30.8	36.3	35.3

REV. X1  
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# Frequency Mixer

# LRMS-11AJ

## Typical Performance Data

RF/LO (MHz)	RF VSWR (:1)			LO VSWR (:1)			IF (MHz)	IF VSWR (:1)		
	@LO (dBm)			@LO (dBm)				@LO (dBm)		
	+4	+7	+10	+4	+7	+10		+4	+7	+10
1500.0	1.44	1.65	1.89	3.11	2.37	1.79	40.0	2.06	1.84	1.73
1531.0	1.43	1.68	1.94	3.17	2.38	1.76	67.0	2.06	1.88	1.74
1562.0	1.50	1.78	2.04	3.10	2.34	1.74	77.8	2.04	1.88	1.78
1572.0	1.52	1.80	2.07	3.12	2.35	1.74	104.8	2.08	1.90	1.74
1592.0	1.57	1.86	2.12	3.13	2.34	1.73	122.8	2.11	1.94	1.77
1623.0	1.71	2.00	2.27	3.05	2.31	1.70	131.8	2.11	1.94	1.77
1644.0	1.80	2.09	2.35	3.07	2.31	1.67	160.6	2.12	1.95	1.80
1654.0	1.87	2.15	2.42	3.06	2.30	1.66	187.6	2.12	1.96	1.82
1685.0	2.07	2.36	2.60	3.16	2.33	1.63	196.6	2.13	1.97	1.84
1715.0	2.40	2.71	2.95	3.21	2.33	1.60	214.6	2.12	1.98	1.85
1726.0	3.05	3.56	4.01	3.17	2.30	1.59	225.4	2.12	1.98	1.87
1746.0	2.36	2.61	2.80	3.15	2.28	1.58	252.4	2.13	2.02	1.91
1777.0	2.57	2.77	2.93	3.10	2.23	1.56	279.4	2.10	2.07	2.01
1800.0	2.70	2.89	3.02	3.03	2.19	1.55	299.2	2.13	2.05	1.97
1808.0	2.76	2.93	3.07	3.02	2.18	1.54	308.2	2.13	2.06	2.00
1838.0	2.94	3.10	3.21	2.97	2.14	1.52	335.2	2.11	2.06	2.01
1869.0	3.13	3.25	3.31	2.87	2.08	1.51	362.2	2.14	2.11	2.14
1879.0	3.19	3.26	3.33	2.86	2.06	1.50	382.0	2.09	2.10	2.12
1890.0	3.27	3.33	3.38	2.84	2.05	1.49	391.0	2.10	2.12	2.12
1900.0	3.32	3.37	3.41	2.81	2.03	1.48	400.0	2.15	1.99	2.24

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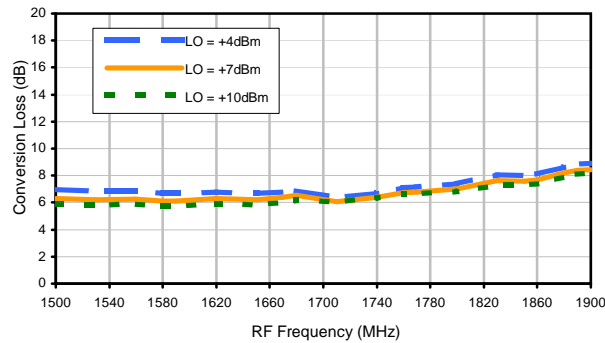


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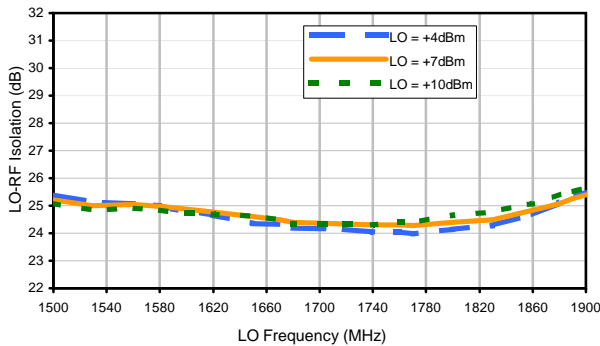


## Typical Performance Curves

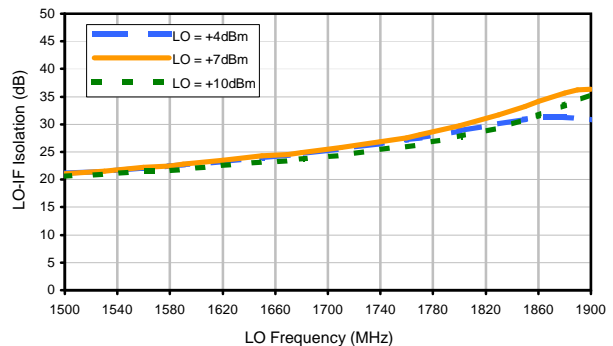
Conversion Loss



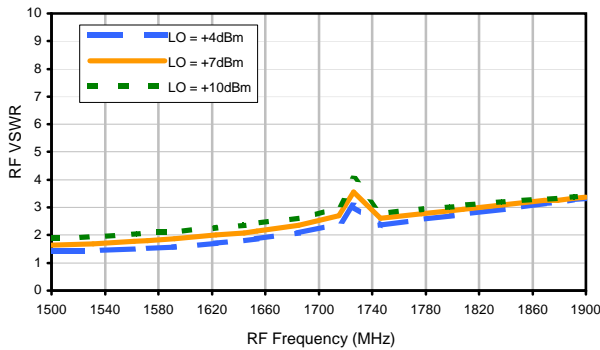
LO-RF Isolation



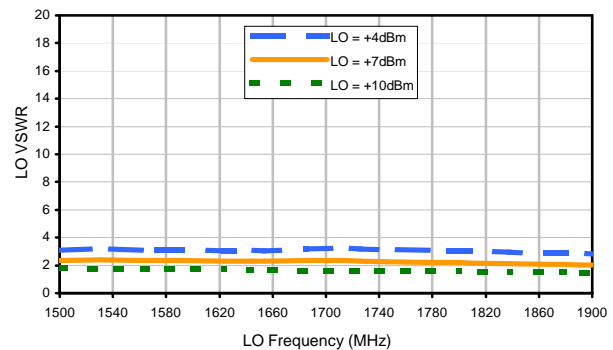
LO-IF Isolation



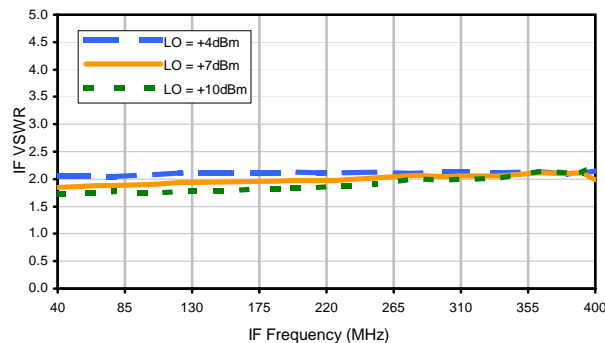
RF VSWR



LO VSWR



IF VSWR

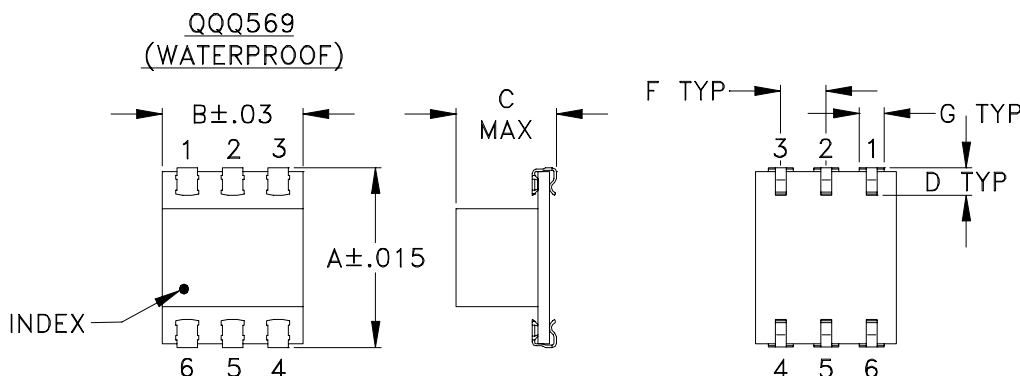


# Case Style

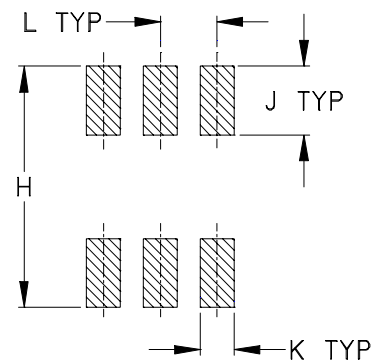
# QQQ

## QQQ569 (waterproof)

### 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.



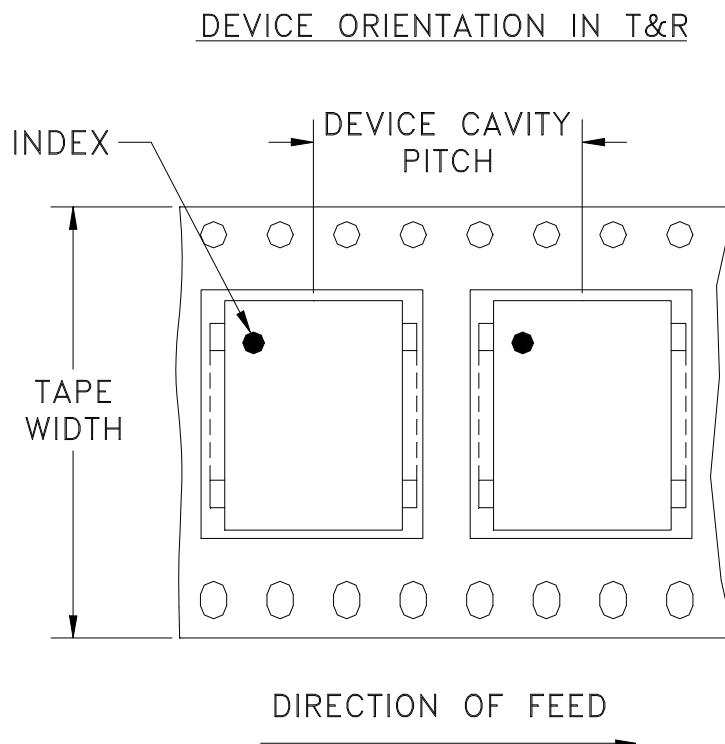
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# Tape & Reel Packaging TR-F5



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.

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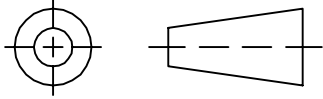
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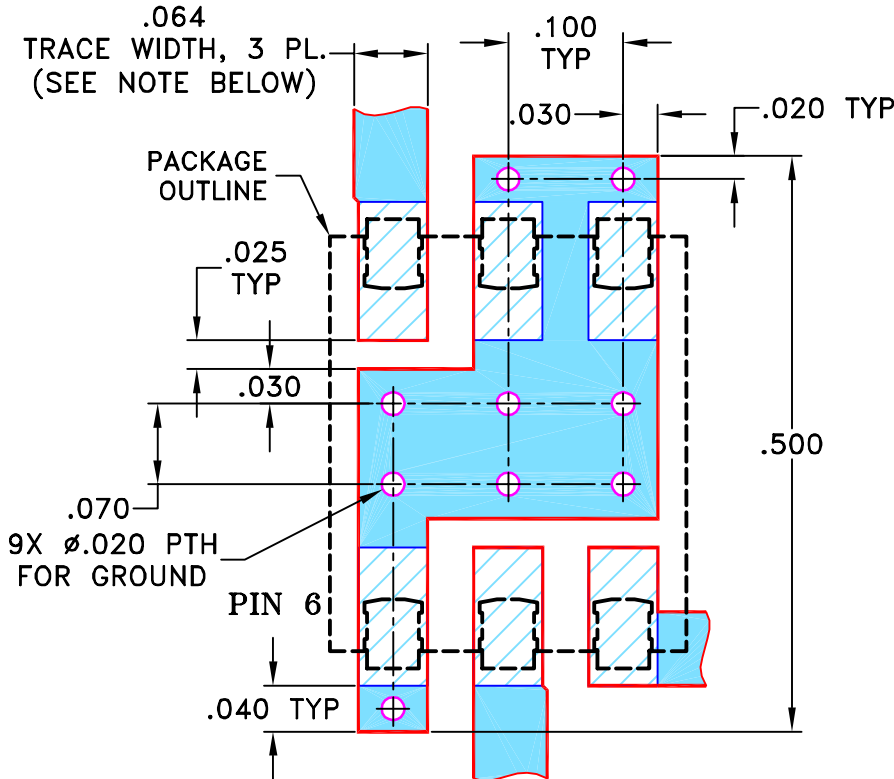
THIRD ANGLE PROJECTION



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 R04350B 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  $\pm$

APPROVED

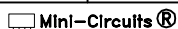
DJ

08/02/02

3 PL DECIMALS  $\pm$  .005

ANGLES  $\pm$

FRACTIONS  $\pm$



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

SIZE

CODE IDENT

DRAWING NO:

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98-PL-083

A

FILE: 98PL083

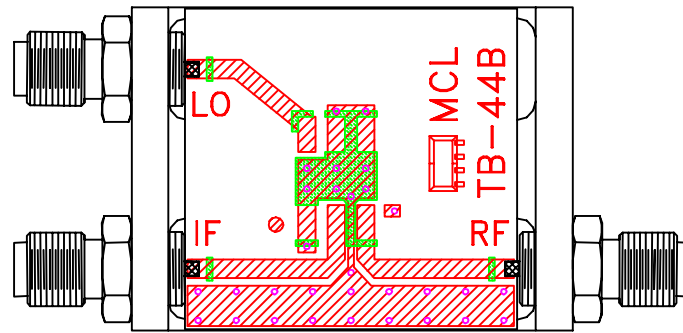
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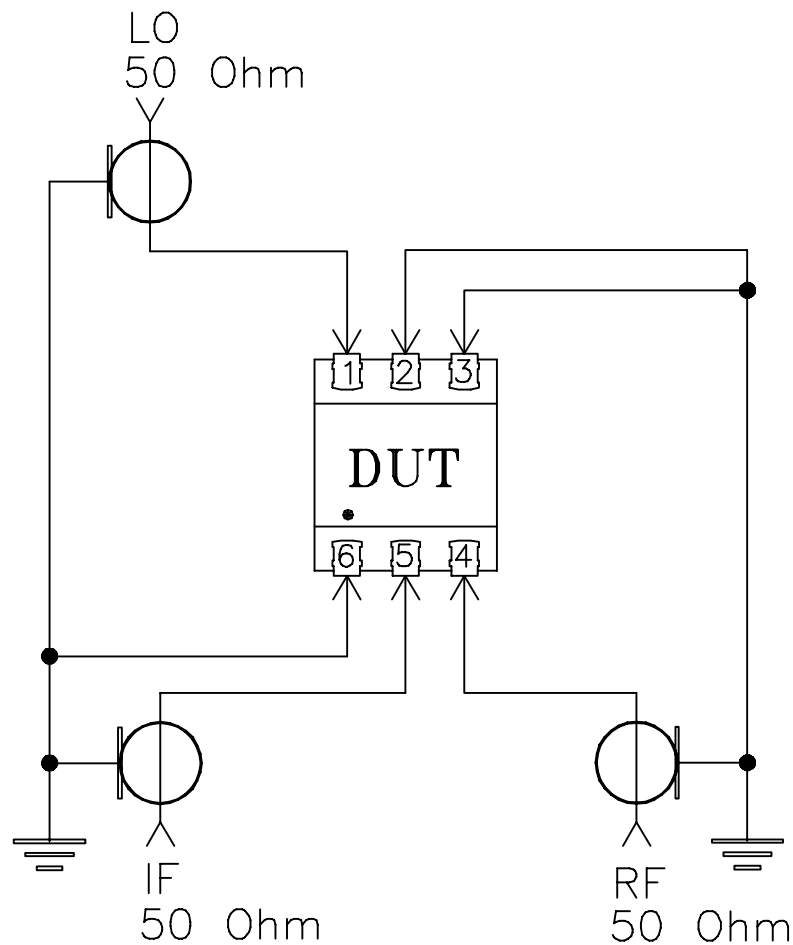
SHEET:

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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