

Surface Mount Frequency Mixer

Level 17 (LO Power +17dBm) 2 to 500 MHz

LRMS-1HJ+ LRMS-1HJ



CASE STYLE: QQQ569

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

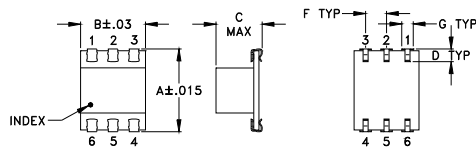
Maximum Ratings

| | |
|---|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| RF Power | 200mW |
| IF Current | 40mA |
| Permanent damage may occur if any of these limits are exceeded. | |

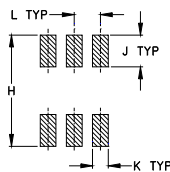
Pin Connections

| | |
|--------|-------|
| LO | 1 |
| RF | 4 |
| IF | 5 |
| GROUND | 2,3,6 |

Outline Drawing



PCB Land Pattern

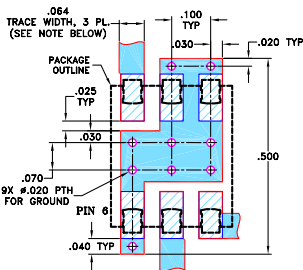


Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch/mm)

| A | B | C | D | E | F | G |
|-------|------|------|------|----|-------|------|
| .390 | .31 | .225 | .060 | -- | .100 | .045 |
| 9.91 | 7.87 | 5.72 | 1.52 | -- | 2.54 | 1.14 |
| H | J | K | L | M | wt | |
| .420 | .120 | .060 | .100 | -- | grams | |
| 10.67 | 3.05 | 1.52 | 2.54 | -- | 0.50 | |

Demo Board MCL P/N: TB-44+ Suggested PCB Layout (PL-083)



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

Notes

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.

B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.

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Features

- low conversion loss, 6.25 dB typ.
- excellent L-R isolation, 44 dB typ.
- aqueous washable
- J-leads for strain relief

Applications

- HF/VHF/UHF
- instrumentation

Electrical Specifications

| FREQUENCY (MHz) | CONVERSION LOSS (dB) | LO-RF ISOLATION (dB) | | | LO-IF ISOLATION (dB) | | | IP3 at center band (dBm) | | | | | | |
|-----------------|----------------------|----------------------|----|----|----------------------|----|----|--------------------------|----|----|----|----|----|----|
| | | L | M | U | L | M | U | | | | | | | |
| 2-500 | DC-500 | 55 | 44 | 44 | 25 | 33 | 20 | 50 | 34 | 45 | 25 | 37 | 22 | 25 |

1 dB COMP.: +14 dBm typ.

L = low range [f_l to $10 f_l$]
m = mid band [$2f_l$ to $f_l/2$]

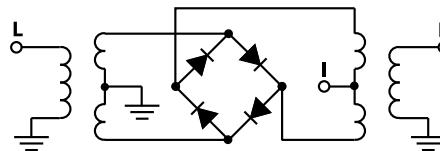
M = mid range [$10 f_l$ to $f_l/2$]

U = upper range [$f_l/2$ to f_l]

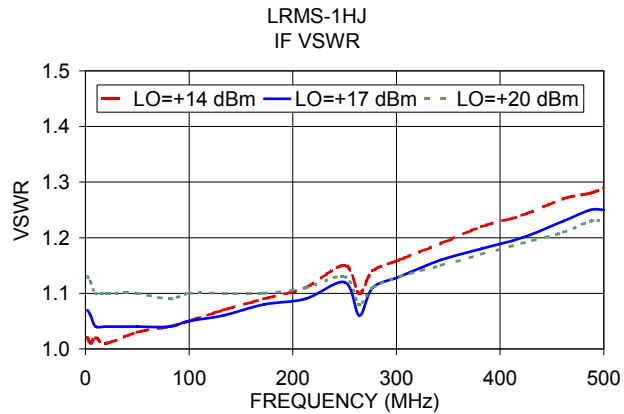
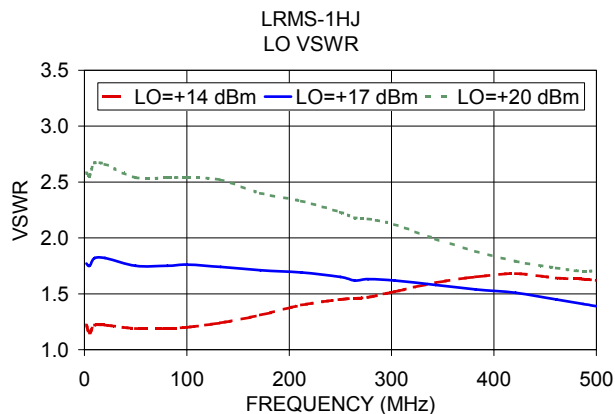
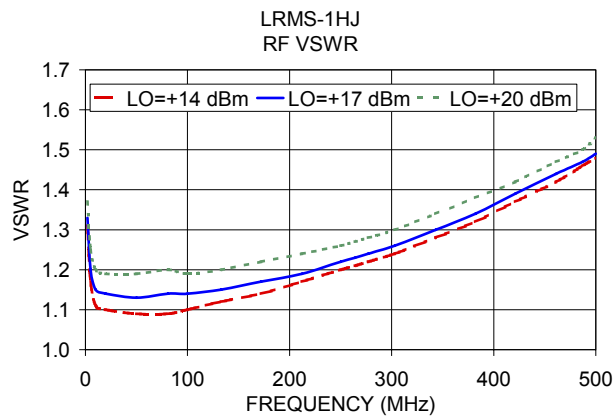
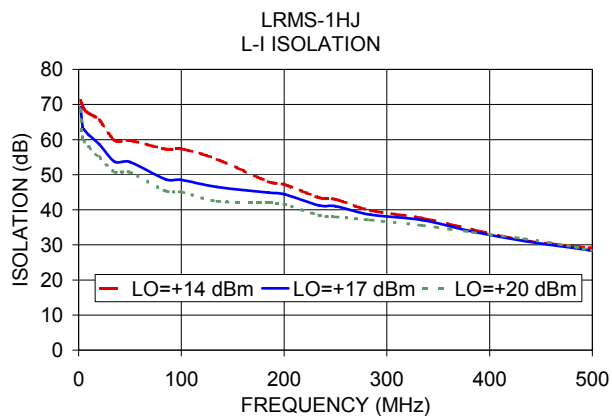
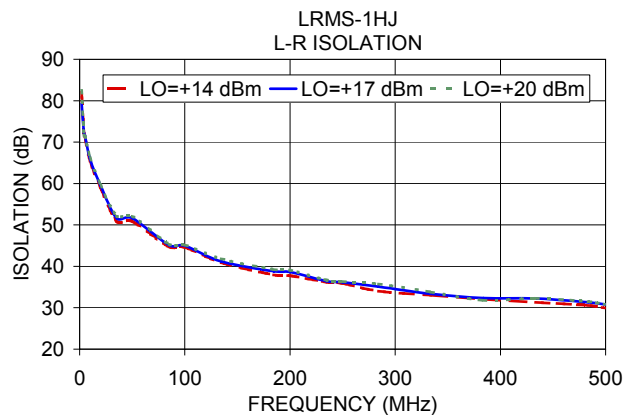
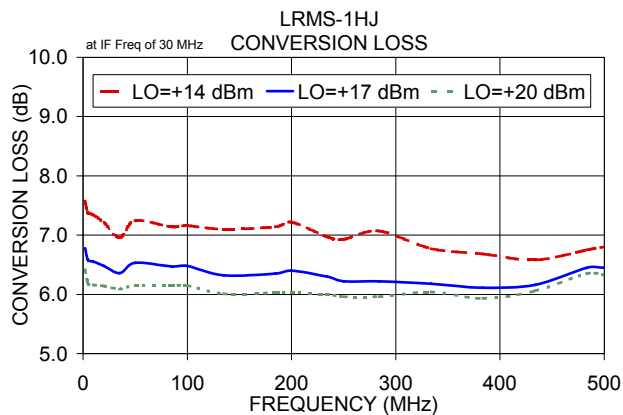
Typical Performance Data

| Frequency (MHz) | | Conversion Loss (dB) | Isolation L-R (dB) | Isolation L-I (dB) | VSWR RF Port (:1) | VSWR LO Port (:1) |
|-----------------|--------|----------------------|--------------------|--------------------|-------------------|-------------------|
| RF | LO | LO +17dBm | LO +17dBm | LO +17dBm | LO +17dBm | LO +17dBm |
| 2.00 | 32.00 | 6.78 | 79.29 | 69.19 | 1.33 | 1.77 |
| 4.00 | 34.00 | 6.60 | 72.35 | 63.39 | 1.20 | 1.75 |
| 5.00 | 35.00 | 6.57 | 71.51 | 62.98 | 1.15 | 1.82 |
| 10.00 | 40.00 | 6.55 | 65.84 | 61.30 | 1.14 | 1.82 |
| 20.00 | 50.00 | 6.48 | 59.50 | 58.68 | 1.13 | 1.75 |
| 35.20 | 65.20 | 6.36 | 51.64 | 53.67 | 1.14 | 1.75 |
| 50.00 | 80.00 | 6.53 | 51.61 | 53.63 | 1.14 | 1.76 |
| 85.00 | 55.00 | 6.47 | 45.13 | 48.67 | 1.15 | 1.74 |
| 100.00 | 70.00 | 6.48 | 44.98 | 48.52 | 1.17 | 1.71 |
| 134.80 | 104.80 | 6.32 | 41.19 | 46.50 | 1.19 | 1.69 |
| 184.60 | 154.60 | 6.35 | 38.78 | 44.90 | 1.22 | 1.65 |
| 200.00 | 170.00 | 6.40 | 38.62 | 44.42 | 1.23 | 1.62 |
| 234.40 | 204.40 | 6.30 | 36.44 | 41.20 | 1.24 | 1.63 |
| 250.00 | 220.00 | 6.22 | 36.14 | 41.01 | 1.26 | 1.62 |
| 284.20 | 254.20 | 6.22 | 35.11 | 38.57 | 1.30 | 1.58 |
| 334.00 | 304.00 | 6.18 | 33.38 | 37.07 | 1.34 | 1.54 |
| 383.80 | 353.80 | 6.11 | 32.33 | 33.77 | 1.39 | 1.51 |
| 433.60 | 403.60 | 6.16 | 32.22 | 31.10 | 1.44 | 1.45 |
| 483.40 | 453.40 | 6.45 | 31.29 | 29.09 | 1.47 | 1.41 |
| 500.00 | 470.00 | 6.45 | 30.80 | 28.30 | 1.49 | 1.39 |

Electrical Schematic



Performance Charts



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