

Surface Mount High Reliability Mixer

TUF-R3LHSM+

Level 10 (LO Power +10 dBm) 0.3 to 400 MHz



CASE STYLE: NNN150
PRICE: \$12.60 ea. QTY. (10)

+RoHS Compliant

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

Maximum Ratings

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

Permanent damage may occur if any of these limits are exceeded.

Pin Connections

| | |
|-------------|---|
| LO | 4 |
| RF | 1 |
| IF | 2 |
| GROUND | 3 |
| CASE GROUND | 3 |

Features

- hermetically sealed ceramic quad
- low conversion loss, 5.2 dB typ.
- good IP3, 15 dBm typ.
- excellent isolation, 46 dB typ; L-R, L-I
- rugged welded construction
- shielded metal case

Applications

- HF/VHF
- defense & federal communications

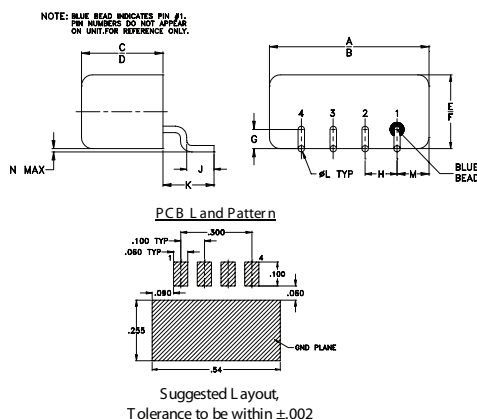
Electrical Specifications

| FREQUENCY (MHz) | CONVERSION LOSS (dB) | LO-RF ISOLATION (dB) | | | LO-IF ISOLATION (dB) | | | IP3 at center band (dBm) | | | | | | |
|-----------------|----------------------|----------------------|----|----|----------------------|----|----|--------------------------|----|----|----|----|----|----|
| | | L | M | U | L | M | U | | | | | | | |
| 0.3-400 | DC-400 | 62 | 48 | 46 | 30 | 42 | 27 | 62 | 48 | 46 | 30 | 35 | 23 | 15 |

1 dB COMP: +5 dBm typ.

L = low range [f_L to $10 f_L$] M = mid range [$10 f_L$ to $f_U/2$] U = upper range [$f_U/2$ to f_U]
m = mid band [$2 f_L$ to $f_U/2$]

Outline Drawing

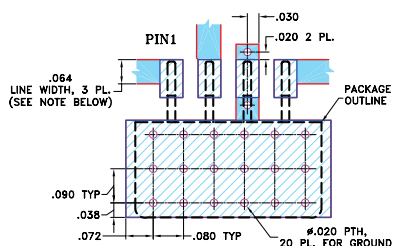


Outline Dimensions (inch/mm)

| A | B | C | D | E | F | G |
|-------|-------|------|------|------|------|------|
| .50 | .48 | .255 | .240 | .23 | .21 | .06 |
| 12.70 | 12.19 | 6.48 | 6.10 | 5.84 | 5.33 | 1.52 |

| H | J | K | L | M | N | wt |
|------|------|------|------|------|------|-------|
| .100 | .09 | .16 | .020 | .09 | .005 | grams |
| 2.54 | 2.29 | 4.06 | 0.51 | 2.29 | 0.13 | 1.9 |

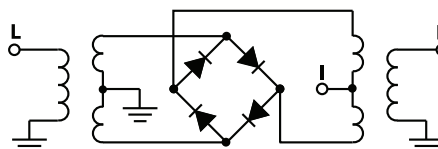
Demo Board MCL PIN: TB-201 Suggested PCB Layout (PL-081)



Typical Performance Data

| Frequency (MHz) | Conversion Loss (dB) | Isolation L-R (dB) | Isolation L-I (dB) | VSWR RF Port (:1) | VSWR LO Port (:1) |
|-----------------|----------------------|--------------------|--------------------|-------------------|-------------------|
| | | | | | |
| 0.21 | 30.21 | 5.19 | 56.65 | 1.39 | 2.17 |
| 0.71 | 30.71 | 4.83 | 56.54 | 1.45 | 2.16 |
| 1.21 | 31.21 | 4.79 | 56.55 | 1.44 | 2.16 |
| 2.71 | 32.71 | 4.74 | 56.07 | 1.26 | 2.17 |
| 5.00 | 35.00 | 4.73 | 55.18 | 1.26 | 2.17 |
| 10.50 | 40.50 | 4.74 | 54.89 | 1.27 | 2.16 |
| 29.50 | 59.50 | 4.78 | 54.74 | 1.27 | 2.17 |
| 48.50 | 78.50 | 4.81 | 54.49 | 1.27 | 2.17 |
| 67.50 | 97.50 | 4.85 | 52.02 | 1.25 | 2.17 |
| 86.50 | 116.50 | 4.83 | 49.80 | 1.23 | 2.12 |
| 105.50 | 135.50 | 4.90 | 48.21 | 1.22 | 2.12 |
| 143.50 | 173.50 | 5.05 | 45.49 | 1.18 | 2.14 |
| 162.50 | 192.50 | 5.25 | 44.62 | 1.17 | 2.11 |
| 181.50 | 211.50 | 5.30 | 43.86 | 1.14 | 2.09 |
| 200.50 | 230.50 | 5.31 | 42.46 | 1.12 | 2.15 |
| 250.00 | 280.00 | 5.45 | 40.90 | 1.13 | 2.14 |
| 270.00 | 300.00 | 5.57 | 41.21 | 1.12 | 2.18 |
| 310.00 | 340.00 | 5.66 | 42.44 | 1.13 | 2.27 |
| 350.00 | 380.00 | 5.73 | 41.37 | 1.24 | 2.27 |
| 400.00 | 430.00 | 6.20 | 39.23 | 1.18 | 2.47 |

Electrical Schematic



Mini-Circuits
ISO 9001 ISO 14001 AS 9100 CERTIFIED

For detailed performance specs & shopping online see web site

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IF/RF MICROWAVE COMPONENTS

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet are subject to Mini-Circuit's standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuit's website at www.minicircuits.com/MCLStore/terms.jsp.

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