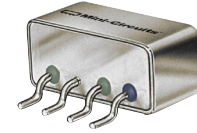


High Reliability Mixer

TUF-R1MHSM+

Level 13 (LO Power +13 dBm) 5 to 600 MHz



CASE STYLE: NNN150

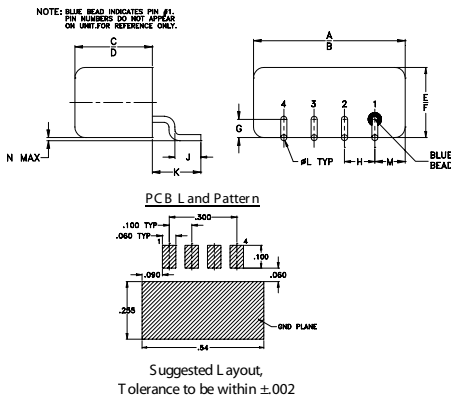
Maximum Ratings

| | |
|---|----------------|
| 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 |

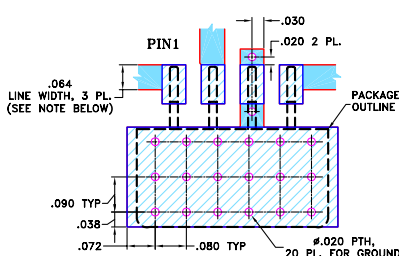
Outline Drawing



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)



Notes

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- The parts covered by this specification document 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

Features

- hermetically sealed ceramic quad
- low conversion loss, 6.0 dB typ.
- high L-R & L-I isolation, 40 dB typ.
- rugged welded construction
- shielded metal case

Applications

- VHF/UHF
- 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 | | | | | | | | | | | |
| 5-600 | DC-600 | 6.0 | 0.07 | 7.0 | 8.5 | 55 | 43 | 45 | 33 | 37 | 28 | 55 | 42 | 43 | 32 | 34 | 23 | 20 |

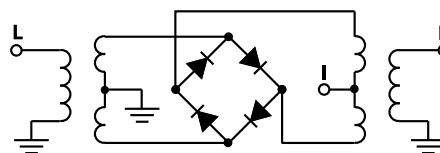
1 dB COMP.: +9 dBm typ.

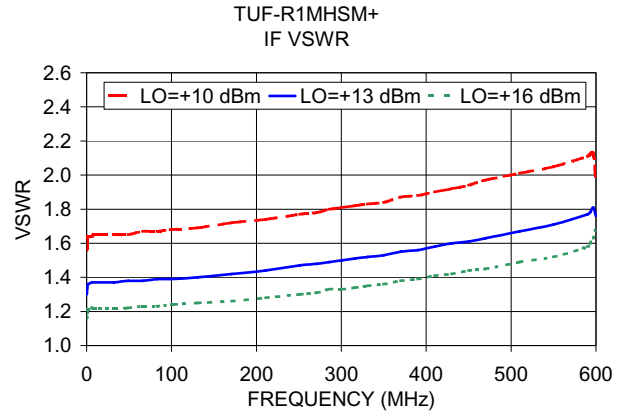
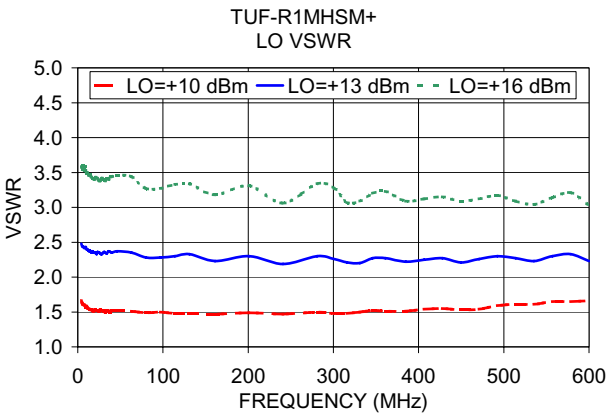
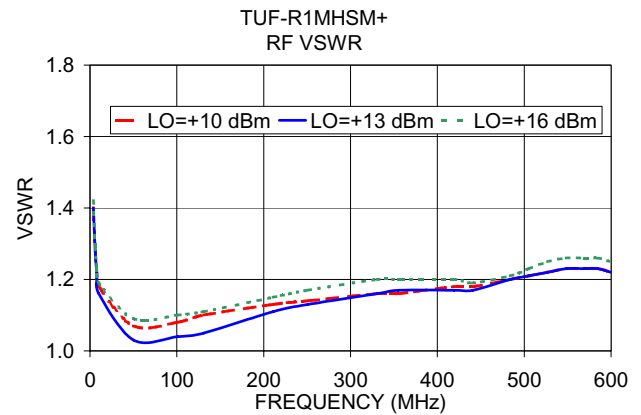
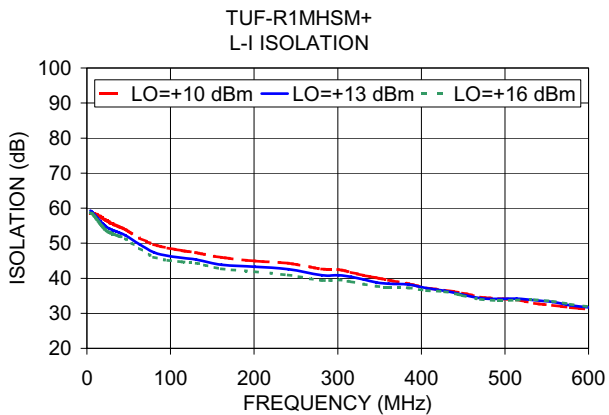
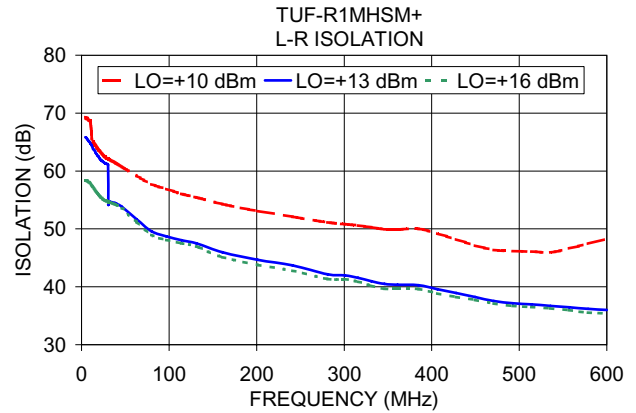
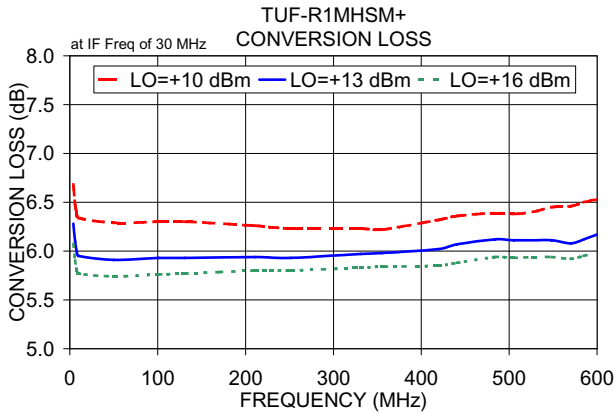
L = low range [f_L to $10 f_L$] M = mid range [$10 f_L$ to $f_U/2$] U = upper range [$f_U/2$ to f_U]
m = mid band [$2 f_L$ to $f_U/2$]

Typical Performance Data

| Frequency (MHz) | Conversion Loss (dB) | Isolation L-R (dB) | Isolation L-I (dB) | VSWR RF Port (:1) | VSWR LO Port (:1) |
|-----------------|----------------------|--------------------|--------------------|-------------------|-------------------|
| | | | | | |
| 4.00 | 34.00 | 6.28 | 54.64 | 1.40 | 2.34 |
| 6.00 | 36.00 | 6.10 | 54.57 | 1.28 | 2.37 |
| 8.00 | 38.00 | 5.99 | 54.47 | 1.21 | 2.36 |
| 10.00 | 40.00 | 5.95 | 54.33 | 1.16 | 2.35 |
| 50.00 | 80.00 | 5.91 | 49.58 | 1.03 | 2.28 |
| 101.00 | 131.00 | 5.93 | 47.52 | 1.04 | 2.33 |
| 131.00 | 161.00 | 5.93 | 45.98 | 1.05 | 2.23 |
| 211.00 | 241.00 | 5.94 | 43.69 | 1.11 | 2.19 |
| 251.00 | 281.00 | 5.93 | 42.16 | 1.13 | 2.30 |
| 331.00 | 361.00 | 5.97 | 40.35 | 1.16 | 2.27 |
| 355.00 | 385.00 | 5.98 | 40.29 | 1.17 | 2.22 |
| 419.50 | 449.50 | 6.02 | 38.24 | 1.17 | 2.21 |
| 441.00 | 471.00 | 6.07 | 37.56 | 1.17 | 2.26 |
| 484.00 | 514.00 | 6.12 | 36.97 | 1.20 | 2.27 |
| 505.50 | 535.50 | 6.11 | 36.70 | 1.21 | 2.23 |
| 527.00 | 557.00 | 6.11 | 36.47 | 1.22 | 2.30 |
| 548.50 | 578.50 | 6.11 | 36.19 | 1.23 | 2.33 |
| 570.00 | 600.00 | 6.08 | 36.00 | 1.23 | 2.23 |
| 585.00 | 615.00 | 6.12 | 36.00 | 1.23 | 2.23 |
| 600.00 | 630.00 | 6.17 | 35.53 | 1.22 | 2.40 |

Electrical Schematic





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