

Frequency Mixer

TUF-2MHSM+



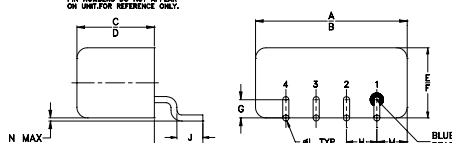
CASE STYLE: NNN150

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

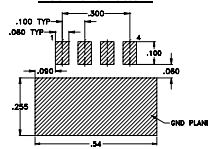
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	200mW
IF Current	40mA
Permanent damage may occur if any of these limits are exceeded	

LO	4
RF	1
IF	2
GROUND	3
CASE GROUND	3

NOTE: BLUE BEAD INDICATES PIN #1.
PIN NUMBERS DO NOT APPEAR
ON UNIT FOR REFERENCE ONLY.



PCB L and Pattern

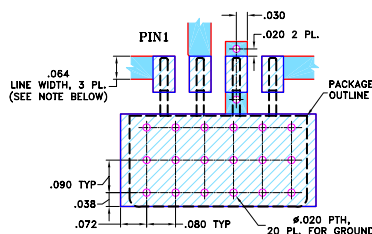


Suggested Layout,
Tolerance to be within $\pm .002$

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: 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

Notes

Notices

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.

C. The parts covered by this specification document are subject to Mini-Circuits 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-Circuits' website at www.minicircuits.com/MCStore/terms.html.

- low conversion loss, 6.0 dB typ.
- high L-R & L-I isolation, 47 dB typ.
- wideband, 50 to 1000 MHz
- rugged welded construction

- VHF/UHF
- cellular
- ISM/GSM

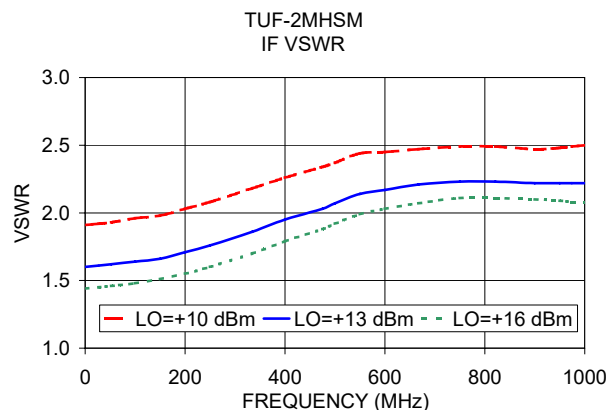
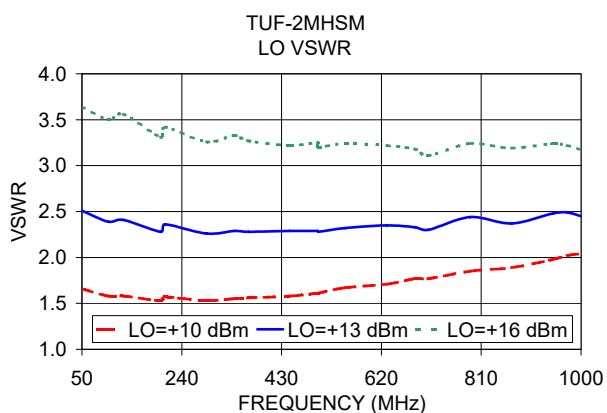
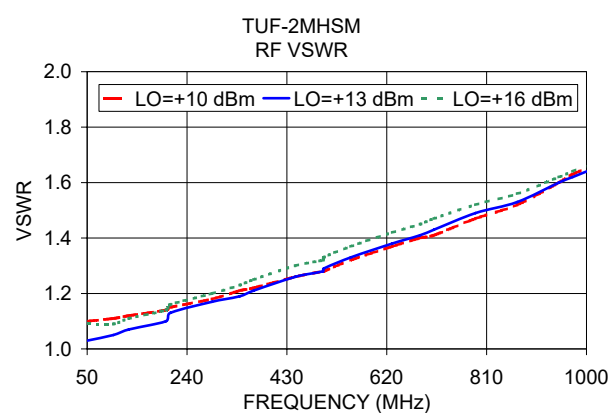
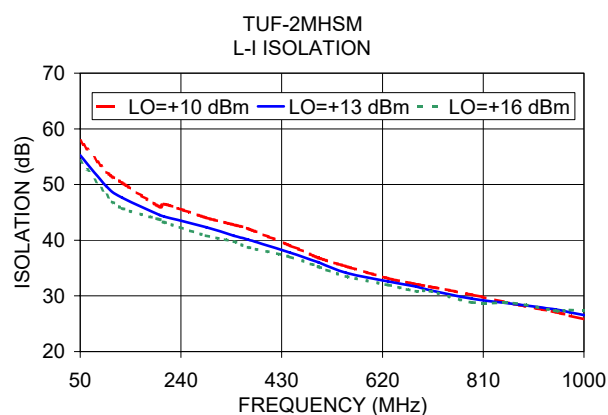
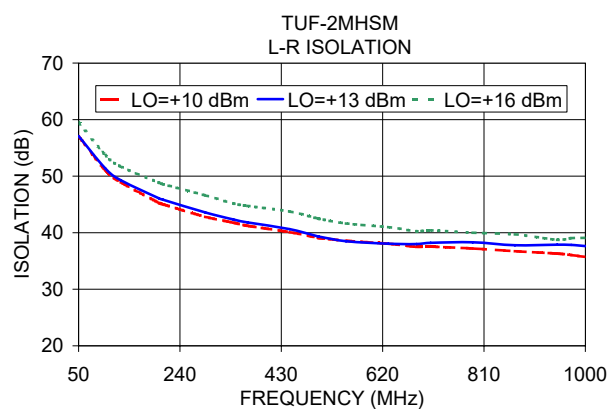
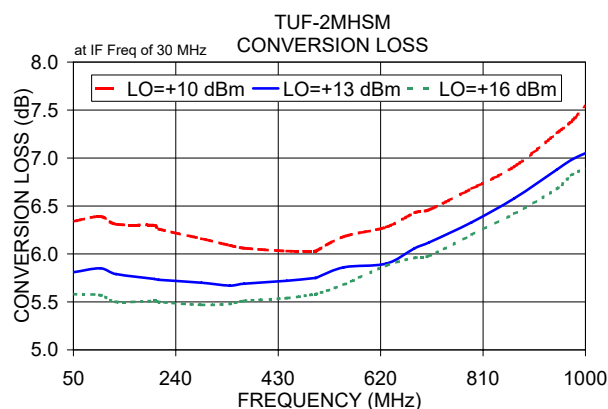
Frequency (MHz)		Conversion Loss (dB)				LO-RF Isolation (dB)						LO-IF Isolation (dB)						IP3 @ Center Band (dBm)
LO/Rf	IF	Mid-Band m			Total Range Max.	L		M		U		L		M		U		Typ.
		\bar{X}	σ	Max.		Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	
50-1000	DC-1000	6.0	0.25	7.5	9.0	58	40	47	30	37	25	55	35	47	20	32	18	19

1 dB COMP.: +9 dBm typ.

L = 50-100 MHz M = 100-500 MHz U = upper range [f./2 to f.]

m= mid band $[2f_1 \text{ to } f_2/2]$

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO	LO +13dBm	LO +13dBm	LO +13dBm	LO +13dBm	LO +13dBm
50.00	80.00	5.81	57.10	55.26	1.03	2.51
100.00	70.00	5.85	51.37	49.62	1.05	2.39
129.17	99.17	5.79	49.27	47.63	1.07	2.41
200.00	170.00	5.74	46.10	44.54	1.10	2.28
208.33	178.33	5.73	45.84	44.23	1.13	2.36
287.50	257.50	5.70	43.58	42.34	1.17	2.26
340.28	310.28	5.67	42.34	40.78	1.19	2.29
366.67	336.67	5.69	41.82	40.13	1.21	2.28
445.83	415.83	5.72	40.63	37.78	1.26	2.29
498.61	468.61	5.75	39.34	36.04	1.28	2.29
500.00	470.00	5.75	39.33	36.00	1.29	2.28
551.39	521.39	5.86	38.49	34.15	1.33	2.32
630.56	600.56	5.90	38.05	32.59	1.38	2.35
683.33	653.33	6.06	38.00	31.67	1.41	2.33
709.72	679.72	6.12	38.21	31.02	1.43	2.30
788.89	758.89	6.33	38.31	29.48	1.49	2.44
868.06	838.06	6.58	37.78	28.55	1.53	2.37
947.22	917.27	6.88	37.88	27.56	1.60	2.48
973.61	943.61	6.98	37.84	27.05	1.62	2.49
1000.00	970.00	7.05	37.64	26.57	1.64	2.45



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