

High Reliability Mixer

TUF-R2MHSM+



CASE STYLE: NNN150

PRICE: \$11.85 ea. QTY (1-9)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Maximum Ratings

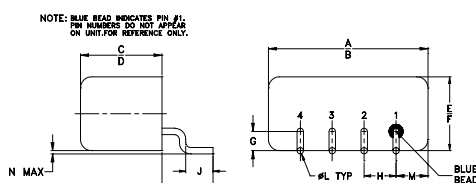
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

Permanent damage may occur if any of these limits are exceeded

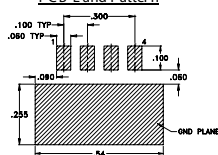
Pin Connections

LO	4
RF	1
IF	2
GROUND	3
CASE GROUND	3

Outline Drawing



PCB Land Pattern



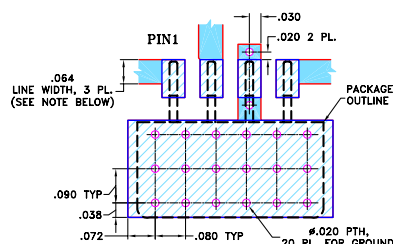
Suggested Layout,
Tolerance to be within ± 0.02

Outline Dimensions ($\frac{\text{inch}}{\text{mm}}$)

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: 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)

 MASK OVER BARE COPPER)
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Features

- hermetically sealed ceramic quad
- low conversion loss, 6.0 dB typ.
- high isolation L-R, 50 dB typ; L-I isolation, 42 dB typ.
- wideband, 50-1000 MHz
- rugged welded construction
- shielded metal case

Applications

- VHF/UHF
- cellular
- ISM/GSM

Electrical Specifications

Frequency (MHz)		Conversion Loss (dB)				LO-RF Isolation (dB)						LO-IF Isolation (dB)						IP3 at center band (dBm)	
LO/RF IF		Mid-Band m				L		M		U		L		M		U		Typ.	
f _L -f _U		$\overline{X}$	σ	Max.	Total Range Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.		
50-1000	DC-1000	6.0	0.1	7.5	9.0	58	40	50	33	42	30	52	40	42	28	32	21	19	

1 dB COMP.: +9 dBm typ.

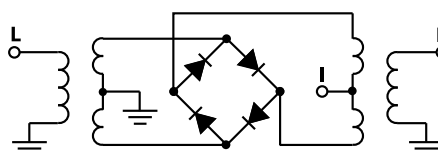
L = 50-100 MHz M = 100-500 MHz U = upper range [$f_c/2$ to f_c]

m = mid band [2f. to f./2]

Typical Performance Data

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 +13dBm	LO +13dBm	LO +13dBm	LO +13dBm	LO +13dBm
50.10	80.10	6.12	59.14	51.59	1.08	2.29
130.10	160.10	6.01	55.25	46.07	1.05	2.36
210.10	240.10	5.92	52.62	43.85	1.12	2.38
250.10	280.10	5.93	52.04	43.21	1.13	2.26
330.10	360.10	5.93	49.85	41.03	1.18	2.30
410.10	440.10	5.97	48.97	39.17	1.21	2.34
450.10	480.10	5.97	47.51	37.58	1.23	2.30
490.10	520.10	6.02	45.84	36.19	1.25	2.35
530.10	560.10	6.09	44.76	34.80	1.28	2.34
570.10	600.10	6.14	44.42	34.15	1.31	2.39
650.10	680.10	6.23	45.44	33.34	1.38	2.38
690.10	720.10	6.28	45.00	32.35	1.36	2.43
730.10	760.10	6.42	45.66	31.27	1.35	2.43
770.10	800.10	6.55	44.65	30.54	1.29	2.48
850.10	880.10	6.72	43.70	29.60	1.30	2.47
890.10	920.10	6.90	42.70	29.01	1.29	2.49
930.10	960.10	6.95	42.15	28.45	1.37	2.47
970.10	1000.10	6.95	41.63	28.03	1.48	2.49
990.10	1020.10	6.94	41.43	27.96	1.51	2.50
1030.10	1060.10	6.98	41.63	28.11	1.65	2.55

Electrical Schematic



For detailed performance specs
& shopping online see web site



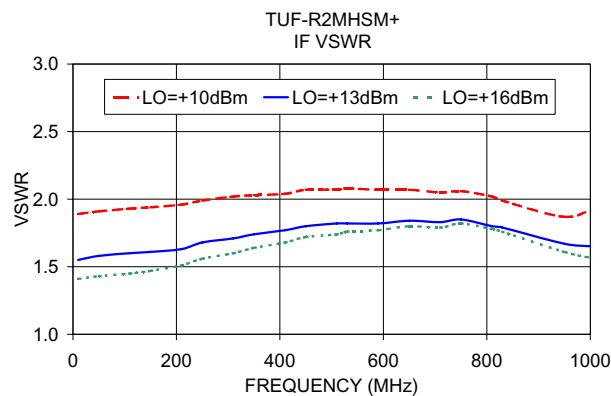
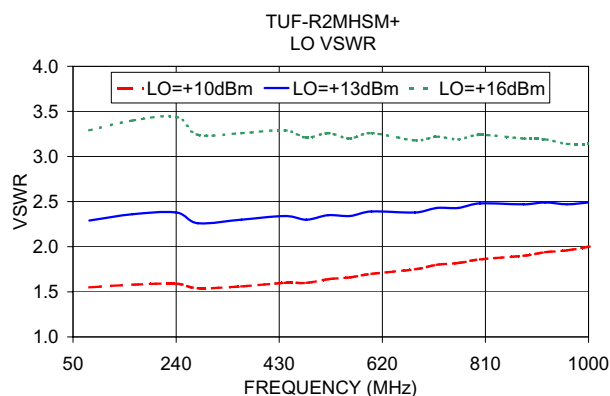
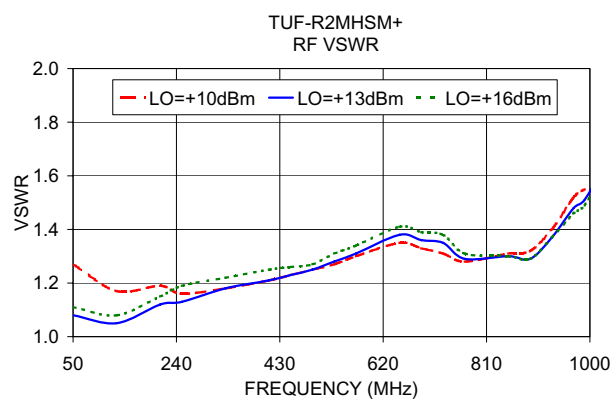
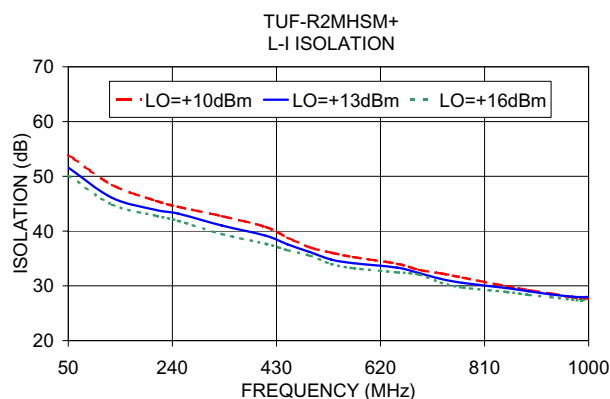
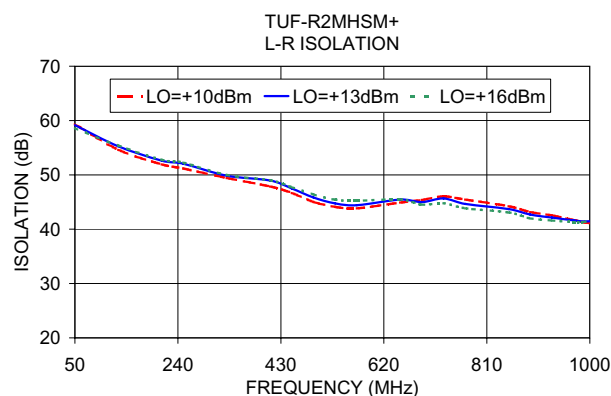
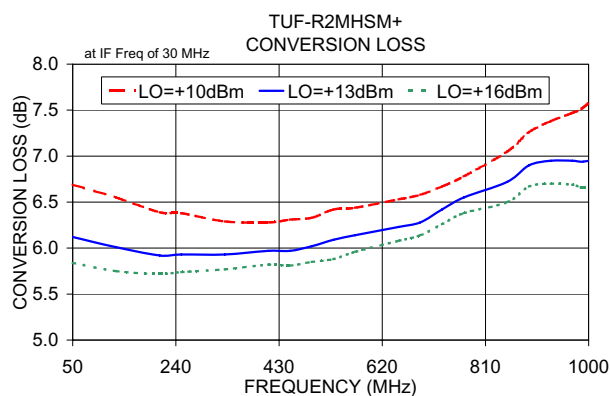
IF/RF MICROWAVE COMPONENTS

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 are performance data and are based on Mini-Circuits' applicable established test procedures and conditions. Performance data and conditions are subject to change without notice. 3. The parts covered by this specification sheet are subject to Mini-Circuits standard limited warranty and terms and conditions, collectively, "Standard Terms." Purchasers of the parts are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and properties thereunder, please visit Mini-Circuits.us/web site at www.minicircuits.com/MCI/Store/terms.htm.

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Page 1 of 2

Performance Charts

TUF-R2MHSM+



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IF/RF MICROWAVE COMPONENTS

For detailed performance specs
& shopping online see web site

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