Surface Mount

High Reliability Mixer

TUF-R1MHSM+

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

Generic photo used for illustration purposes only

CASE STYLE: NNN150

+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

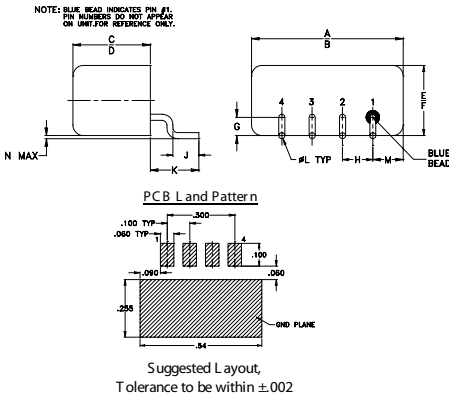
Features

- hermetically sealed ceramic quad
- low conversion loss, 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

Outline Drawing



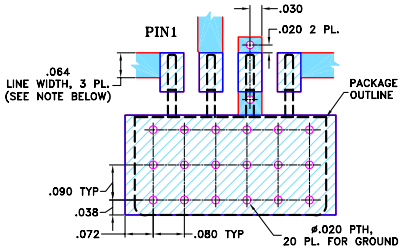
Suggested Layout,
Tolerance to be within ±.002

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: 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

Electrical Specifications

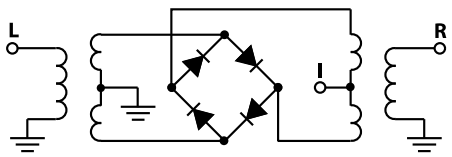
FREQUENCY (MHz)		CONVERSION LOSS (dB)				LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)						IP3 at center band (dBm)
		Mid-Band m			Total Range	L		M		U		L		M		U		
LO/RF	IF																	
f_L-f_U		$\overline{X}$	σ	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.
5-600	DC-600	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 [2f_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)
		LO	LO	LO	LO	LO
RF	LO	+13dBm	+13dBm	+13dBm	+13dBm	+13dBm
4.00	34.00	6.28	54.64	53.43	1.40	2.34
6.00	36.00	6.10	54.57	53.25	1.28	2.37
8.00	38.00	5.99	54.47	53.04	1.21	2.36
10.00	40.00	5.95	54.33	52.89	1.16	2.35
50.00	80.00	5.91	49.58	47.41	1.03	2.28
101.00	131.00	5.93	47.52	45.29	1.04	2.33
131.00	161.00	5.93	45.98	43.86	1.05	2.23
211.00	241.00	5.94	43.69	42.58	1.11	2.19
251.00	281.00	5.93	42.16	40.86	1.13	2.30
331.00	361.00	5.97	40.35	38.43	1.16	2.27
355.00	385.00	5.98	40.29	38.20	1.17	2.22
419.50	449.50	6.02	38.24	35.31	1.17	2.21
441.00	471.00	6.07	37.56	34.30	1.17	2.26
484.00	514.00	6.12	36.97	34.19	1.20	2.27
505.50	535.50	6.11	36.70	33.71	1.21	2.23
527.00	557.00	6.11	36.47	33.20	1.22	2.30
548.50	578.50	6.11	36.19	32.30	1.23	2.33
570.00	600.00	6.08	36.00	31.73	1.23	2.23
585.00	615.00	6.12	36.00	31.73	1.23	2.23
600.00	630.00	6.17	35.53	30.83	1.22	2.40

Electrical Schematic



Notes

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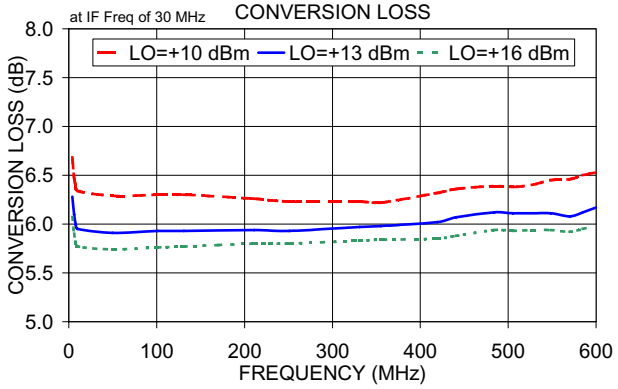
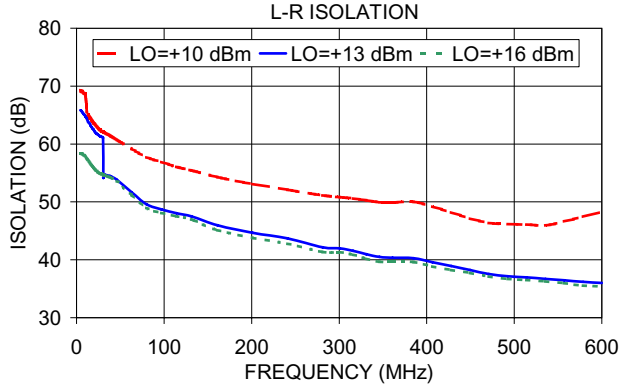
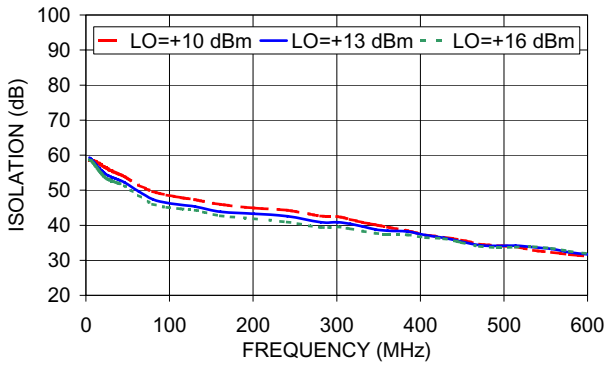
TUF-R1MHSM+
CONVERSION LOSS



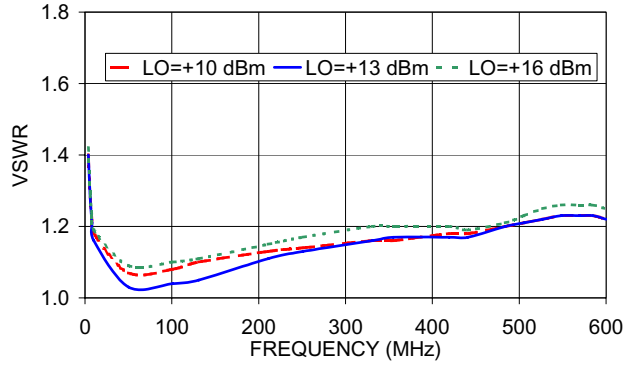
TUF-R1MHSM+
L-R ISOLATION



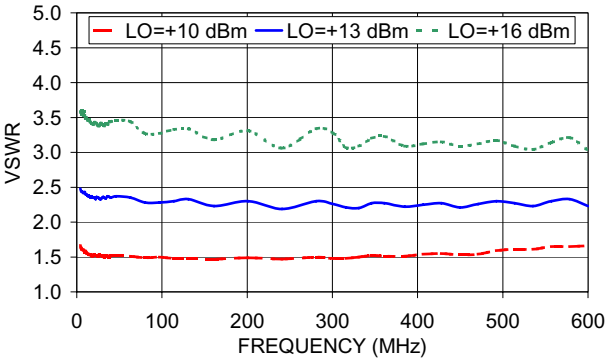
TUF-R1MHSM+
L-I ISOLATION



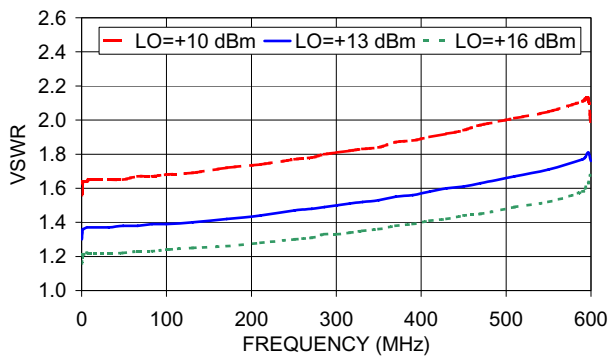
TUF-R1MHSM+
RF VSWR



TUF-R1MHSM+
LO VSWR



TUF-R1MHSM+
IF VSWR



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