

Surface Mount High Reliability Mixer

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

TUF-R3LHSM+



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)
LO/RF f_L - f_U	IF	Mid-Band m				L	M	U	L	M	U							
		$\bar{X}$	σ	Max.	Total Range Max.													
		Typ.	Min.	Typ.	Min.							Typ.	Min.	Typ.	Min.	Typ.	Min.	
0.3-400	DC-400	5.2	0.05	7.0	8.0	62	48	46	30	42	27	62	48	46	30	35	23	15

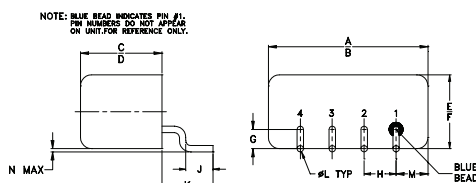
1 dB COMP.: +5 dBm typ.

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 $f_U/2$]

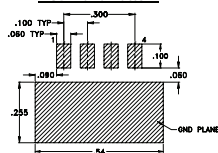
Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm
0.21	30.21	5.19	56.65	55.61	1.39	2.17
0.71	30.71	4.83	56.54	55.59	1.45	2.16
1.21	31.21	4.79	56.55	55.57	1.44	2.16
2.71	32.71	4.74	56.07	55.27	1.26	2.17
5.00	35.00	4.73	55.18	55.13	1.26	2.17
10.50	40.50	4.74	54.89	54.46	1.27	2.16
29.50	59.50	4.78	54.74	54.07	1.27	2.17
48.50	78.50	4.81	54.49	53.83	1.27	2.17
67.50	97.50	4.85	52.02	50.57	1.25	2.17
86.50	116.50	4.83	49.80	48.43	1.23	2.12
105.50	135.50	4.90	48.21	47.38	1.22	2.12
143.50	173.50	5.05	45.49	46.13	1.18	2.14
162.50	192.50	5.25	44.62	44.97	1.17	2.11
181.50	211.50	5.30	43.86	44.28	1.14	2.09
200.50	230.50	5.31	42.46	45.88	1.12	2.15
250.00	280.00	5.45	40.90	42.21	1.13	2.14
270.00	300.00	5.57	41.21	38.82	1.12	2.18
310.00	340.00	5.66	42.44	36.51	1.13	2.27
350.00	380.00	5.73	41.37	34.67	1.24	2.27
400.00	430.00	6.20	39.23	30.01	1.18	2.47

Outline Drawing



PCB Land Pattern

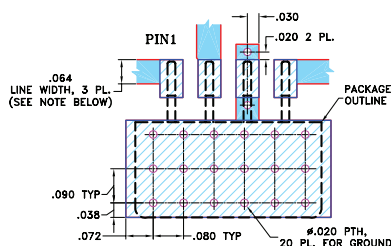


Suggested Layout,
Tolerance to be within ± 0.002

Outline Dimensions (inch/mm)

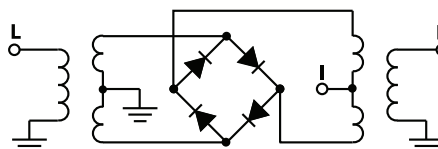
A	B	C	D	E	F	G
.50	.48	.255	.240	.23	.21	.06
12.70	12.19	6.48	6.10	5.84	5.33	1.52
H	J	K	L	M	N	wt
.100	.09	.16	.020	.09	.005	grams
2.54	2.29	4.06	0.51	2.29	0.13	1.9

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



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B 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.
3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Electrical Schematic



Mini-Circuits
ISO 9001 ISO 14001 AS 9100 CERTIFIED

IF/RF MICROWAVE COMPONENTS
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