

Surface Mount

Level 13 (LO Power +13 dBm) 0.3 to 400 MHz

Maximum Ratings

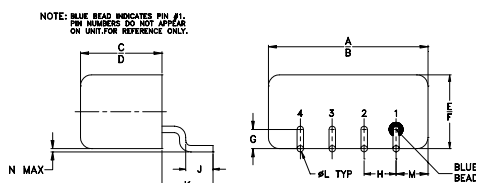
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

Permanent damage may occur if any of these limits are exceeded.

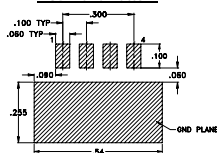
Pin Connections

LO	4
RF	1
IF	2
GROUND	3
CASE GROUND	3

Outline Drawing



PCB L and Pattern



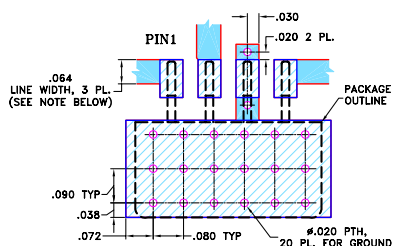
Suggested Layout,
Tolerance to be within $\pm .002$

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)

 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Features

- hermetically sealed ceramic quad
- low conversion loss, 5.0 dB typ.
- good IP3, 18 dBm typ.
- excellent isolation L-R, 50 dB typ; L-I, 50 dB typ.
- rugged welded construction
- shielded metal case

Applications

- HF/VHF
- defense & federal communications



CASE STYLE: NNN150
PRICE: \$12.85 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.

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			Total Range Max.	L		M		U		L		M		U		
		$\bar{X}$	σ	Max.		Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	
0.3-400	DC-400	5.0	0.03	7.0	8.0	65	50	50	33	43	28	62	48	50	33	38	25	18

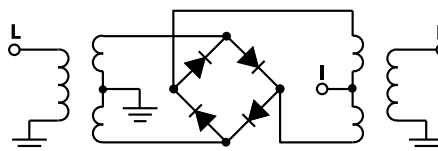
1 dB COMP.: +8 dBm typ.

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)
RF	LO	LO +13dBm	LO +13dBm	LO +13dBm	LO +13dBm	LO +13dBm
0.21	30.21	5.35	56.50	61.40	1.55	2.24
0.71	30.71	4.77	56.40	61.20	1.57	2.23
1.21	31.21	4.65	56.33	61.29	1.56	2.23
2.71	32.71	4.55	56.11	61.08	1.22	2.22
5.00	35.00	4.51	56.06	60.98	1.22	2.25
10.50	40.50	4.52	55.65	60.48	1.23	2.23
29.50	59.50	4.56	55.50	60.07	1.23	2.26
48.50	78.50	4.74	55.38	59.90	1.23	2.26
67.50	97.50	4.75	52.78	55.86	1.22	2.30
86.50	116.50	4.78	50.01	53.42	1.20	2.16
105.50	135.50	4.81	48.81	53.58	1.20	2.16
143.50	173.50	4.95	46.16	52.77	1.17	2.30
162.50	192.50	4.97	45.47	49.30	1.15	2.24
181.50	211.50	5.00	45.02	48.00	1.13	2.15
200.50	230.50	4.99	42.12	55.32	1.09	2.27
250.00	280.00	5.20	40.22	42.52	1.07	2.18
270.00	300.00	5.25	41.95	39.12	1.03	2.29
310.00	340.00	5.21	44.82	40.01	1.06	2.46
350.00	380.00	5.32	41.50	36.70	1.06	2.46
400.00	430.00	6.00	38.04	30.75	1.20	2.77

Electrical Schematic



For detailed performance specs
& shopping online see web site



332-4661 The Design Engineers Search Engine

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 and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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/MCStore/terms.jsp.

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