

Surface Mount Frequency Mixer

Level 10 (LO Power +10 dBm) 1 to 2000 MHz

SYM-11LH+ SYM-11LH



CASE STYLE: TTT167
PRICE: \$11.95 ea. QTY (1-9)

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

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

Maximum Ratings

Operating Temperature	-40°C to 85°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	2
RF	1
IF	3
GROUND	4,5,6

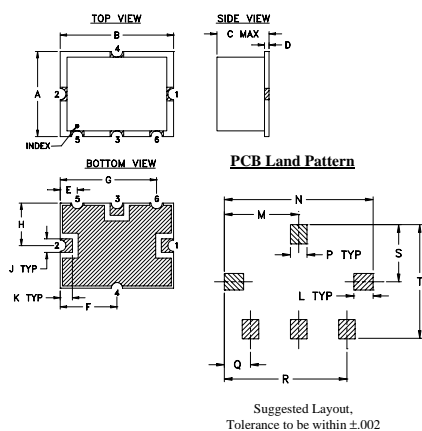
Features

- wideband, 1 to 2000 MHz
- low conversion loss, 7.0 dB typ.
- good isolation, 45 dB typ. L-R, 33 dB typ. L-I

Applications

- cellular
- ISM/GSM
- satellite distribution
- GPS

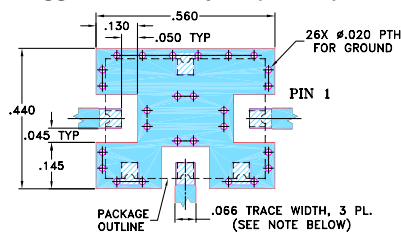
Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K
.38	.50	.23	.020	.075	.250	.425	.187	.050	.050
9.65	12.70	5.84	0.51	1.91	6.35	10.80	4.75	1.27	1.27
L	M	N	P	Q	R	S	T	wt.	
.070	.270	.540	.060	.095	.445	.208	.415	grams	
1.78	6.86	13.72	1.52	2.41	11.30	5.28	10.54	0.8	

Demo Board MCL P/N: TB-12 Suggested PCB Layout (PL-079)



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	L	M	U	L	M	U								
f_L - f_U	\bar{X}	σ	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.						
1-2000	10-600	7.0	.10	8.3	9.85	60	40	45	25	37	25	59	40	33	20	25	20	14

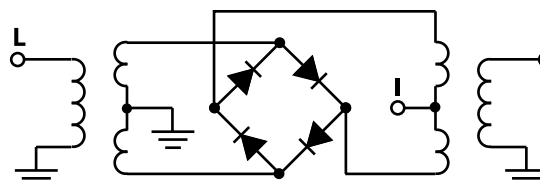
1 dB COMP.: +5 dBm typ.

L=low range(f_L to $10f_L$)
M= mid range($10f_L$ 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 +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm
1.00	31.00	6.50	61.00	60.60	1.69	2.23
5.00	35.00	6.40	60.80	60.00	1.91	2.25
10.00	40.00	6.30	60.77	59.99	1.92	2.23
20.00	50.00	6.10	61.07	59.34	1.91	2.18
50.00	80.00	5.93	60.38	54.58	1.89	2.10
80.00	110.00	5.94	59.60	51.54	1.92	2.14
100.00	130.00	5.84	58.27	48.96	1.94	2.14
250.00	280.00	6.38	48.22	36.40	2.12	2.08
440.00	470.00	6.40	45.06	34.17	2.58	2.10
500.00	530.00	7.29	42.23	31.50	2.65	2.12
700.00	730.00	7.50	38.46	29.07	2.84	2.06
830.00	860.00	7.95	38.08	28.07	3.11	1.92
1000.00	1030.00	7.91	37.94	28.08	3.38	2.08
1090.00	1120.00	8.16	36.12	27.65	3.38	1.92
1250.00	1280.00	8.27	36.11	27.37	3.26	1.97
1480.00	1510.00	8.38	36.02	25.08	3.57	1.97
1610.00	1640.00	8.70	36.26	25.19	3.44	1.94
1870.00	1900.00	8.97	35.66	25.82	3.44	1.89
1970.00	2000.00	8.88	33.51	28.03	3.50	1.85
2000.00	1970.00	8.78	32.77	31.12	3.44	1.84

Electrical Schematic



Mini-Circuits
ISO 9001 ISO 14001 AS 9100 CERTIFIED

For detailed performance specs
& shopping online see web site

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at minicircuits.com

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 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/MCLStore/terms.jsp.

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Performance Charts

