

# Surface Mount Frequency Mixer

Level 7 (LO Power +7 dBm) 1 to 2500 MHz

## SYM-11+ SYM-11



### Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

### Pin Connections

LO	2
RF	1
IF	3
GROUND	4,5,6

### Features

- wideband, 1 to 2500 MHz
- low conversion loss, 7.0 dB typ.
- good isolation, 40 dB typ. L-R, 35 dB typ. L-I

CASE STYLE: TTT167  
PRICE: \$9.95 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.

### Applications

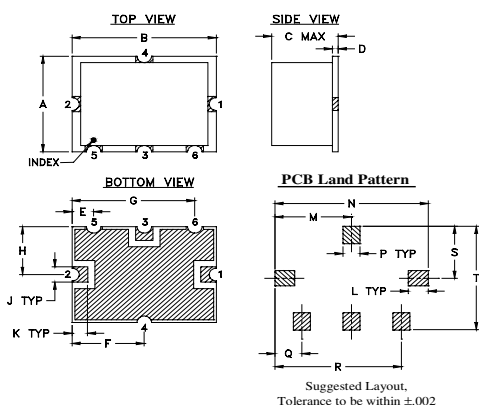
- cellular
- PCS
- satellite distribution
- ISM/GPS

### 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								
$f_L - f_U$	$\bar{X}$	$\sigma$	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.							
1-2500	10-600	7.0	.30	9.0	10.5	63	40	40	24	34	20	61	40	35	20	28	15	10

1 dB COMP.: +1 dBm typ.

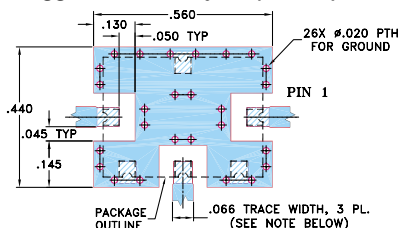
### Outline Drawing



### 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		
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)

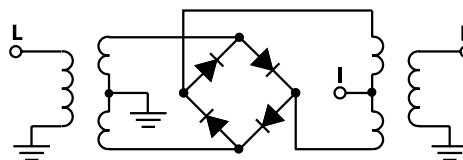


- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. GROUND PAD SHALL BE FREE OF SOLDER MASK IF REQUIRED FOR SOLDERING.  
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.  
■ DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER), SEE NOTE 2.  
■ DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### 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 +7dBm	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm
1.00	31.00	6.40	68.00	60.00	1.68	2.55
5.00	35.00	6.30	67.00	60.00	1.94	2.49
10.00	40.00	6.10	66.89	59.19	1.96	2.49
20.00	50.00	5.90	66.40	58.44	1.94	2.46
50.00	80.00	5.73	63.88	53.42	1.92	2.37
100.00	130.00	5.68	62.97	52.21	1.96	2.40
194.12	224.12	5.91	53.44	41.55	2.01	2.32
482.35	512.35	6.54	48.24	36.56	2.61	2.35
500.00	530.00	6.50	46.35	34.52	2.72	2.46
914.71	944.71	7.93	42.55	30.52	3.06	2.58
1000.00	1030.00	7.97	38.96	27.74	3.11	2.55
1058.82	1088.82	7.96	37.68	27.44	3.16	2.37
1250.00	1280.00	8.08	37.80	26.59	3.26	2.52
1347.06	1377.06	8.20	37.25	25.51	3.26	2.35
1635.29	1665.29	8.62	36.02	23.96	3.16	2.61
2000.00	2030.00	8.57	37.44	39.22	3.11	2.55
2067.65	2097.65	8.47	38.87	50.34	3.06	2.46
2355.88	2385.88	8.58	39.98	32.54	2.65	2.40
2470.00	2500.00	8.79	36.58	29.89	2.04	2.12
2500.00	2470.00	8.92	35.35	28.76	1.99	2.08

### Electrical Schematic



**Mini-Circuits®**  
ISO 9001 ISO 14001 CERTIFIED

ALL NEW  
minicircuits.com

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

RF/IF MICROWAVE COMPONENTS

REV. B  
M112207  
SYM-11  
DJ/TD/AM  
070926  
Page 1 of 2

## Performance Charts

