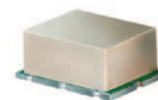


# Surface Mount Frequency Mixer

# SYM-2+ SYM-2

## Level 7 (LO Power +7 dBm) 2 to 1000 MHz



CASE STYLE: TTT166  
PRICE: \$11.95 ea. QTY (1-9)

### 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

- low conversion loss, 5.4 dB typ.
- excellent L-R & L-I isolation, 50 dB typ.
- IF response to DC

### Applications

- VHF TV
- cellular
- GSM/ISM

**+ 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.

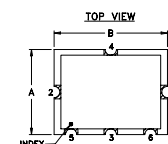
### Electrical Specifications

FREQUENCY (MHz)	CONVERSION LOSS (dB)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			IP3 at center band (dBm)										
		L	M	U	L	M	U											
2-1000	DC-1000	5.4	.10	7.2	9.5	70	45	50	30	40	25	63	40	48	24	37	20	17

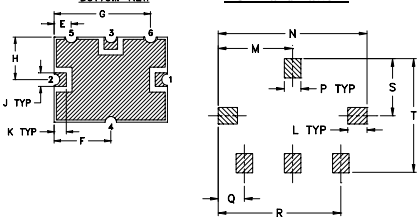
1 dB COMP.: +1 dBm typ.

L = low range [ $f_1$  to  $10 f_1$ ]  
M = mid band [ $2f_1$  to  $f_1/2$ ]  
U = upper range [ $f_1/2$  to  $f_1$ ]

### Outline Drawing



### PCB Land Pattern

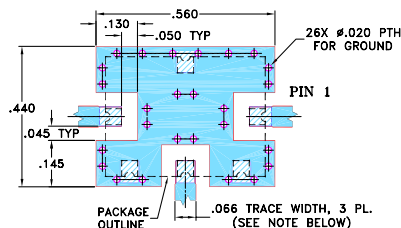


Suggested Layout,  
Tolerance to be within ±.002

### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	
.38	.50	.15	.020	.075	.250	.425	.187	.050	
9.65	12.70	3.81	0.51	1.91	6.35	10.80	4.75	1.27	
K	L	M	N	P	Q	R	S	T	wt.
.050	.070	.270	.540	.060	.095	.445	.208	.415	grams
1.27	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)

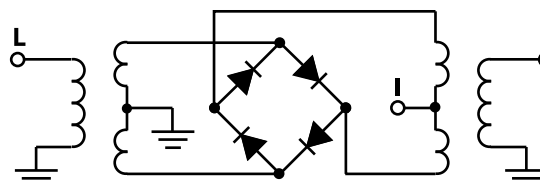


- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. GROUND PAD SHALL BE FREE OF SOLDER MASK IF REQUIRED FOR SOLDERING.  
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- 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	LO +7dBm		
1.00	31.00	7.23	>67.00	>67.00	1.30	2.70				
2.00	32.00	6.50	>67.00	>67.00	1.15	2.63				
5.00	35.00	5.80	>67.00	>67.00	1.07	2.77				
10.00	40.00	5.62	>67.00	>67.00	1.06	2.55				
20.00	50.00	5.68	>67.00	>67.00	1.07	2.41				
50.00	80.00	5.58	61.94	63.74	1.09	2.37				
100.00	70.00	5.53	54.33	54.76	1.11	2.29				
167.34	137.34	5.57	48.65	47.61	1.16	2.20				
233.87	203.87	5.72	45.10	43.03	1.18	2.16				
300.40	270.40	5.45	42.56	40.00	1.20	2.13				
366.94	336.94	5.73	40.45	37.57	1.22	2.06				
466.74	436.74	5.82	38.33	34.32	1.23	2.13				
500.00	470.00	5.72	38.80	34.10	1.26	2.09				
599.81	569.81	6.02	37.43	32.81	1.29	2.09				
666.34	636.34	6.11	37.94	31.57	1.34	2.04				
799.41	769.41	6.27	36.06	29.67	1.40	2.13				
832.68	802.68	6.46	35.22	28.79	1.47	2.19				
899.21	869.21	7.00	33.77	26.14	1.55	2.24				
932.48	902.48	7.37	33.17	25.03	1.66	2.28				
1000.00	969.00	7.63	32.49	23.59	1.72	2.30				

### Electrical Schematic



**Mini-Circuits**  
ISO 9001 ISO 14001 AS 9100 CERTIFIED

For detailed performance specs & shopping online see web site

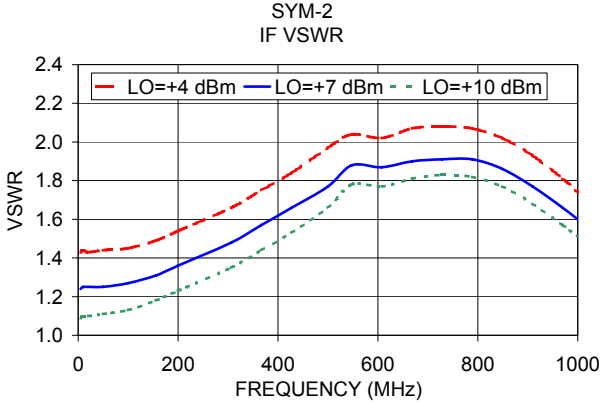
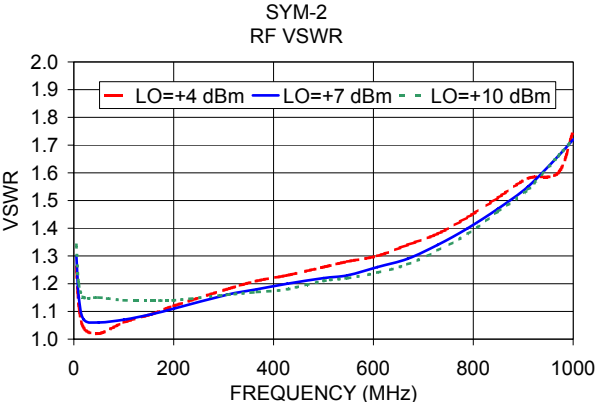
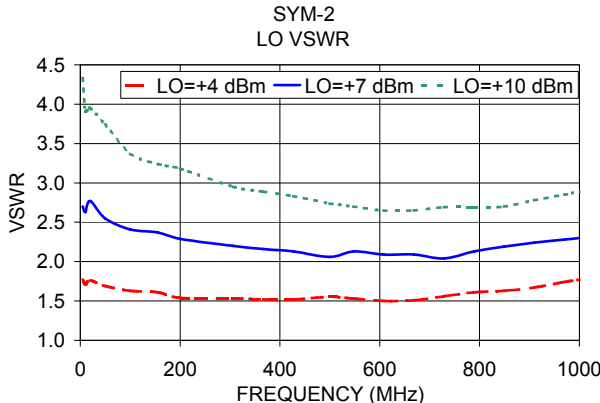
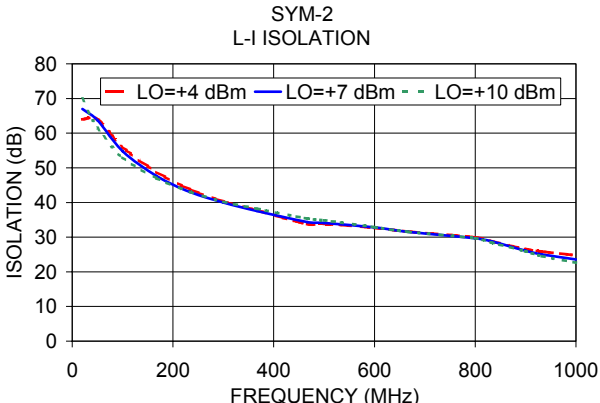
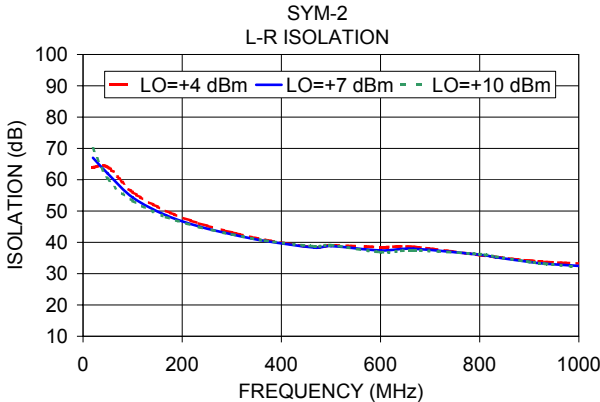
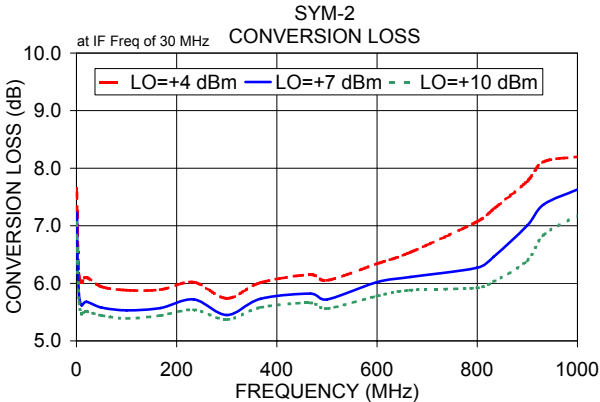
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

IF/RF MICROWAVE COMPONENTS

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Performance Charts



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