

# High IP3 Frequency Mixer

## SYM-20DHW+ SYM-20DHW

Level 17 (LO Power +17 dBm) 10 to 2000 MHz



### Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	200mW
IF Current	40mA

### Pin Connections

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

### Features

- low conversion loss, 6.2 dB typ.
- high IP3, 27 dBm typ.
- wideband, 10 to 2000 MHz
- excellent L-R isolation, 42 dB typ.;
- & L-I isolation, 40 dB typ.
- triple balanced mixer

### Applications

- GPS
- UHF

CASE STYLE: TTT167  
PRICE: \$17.95 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.*

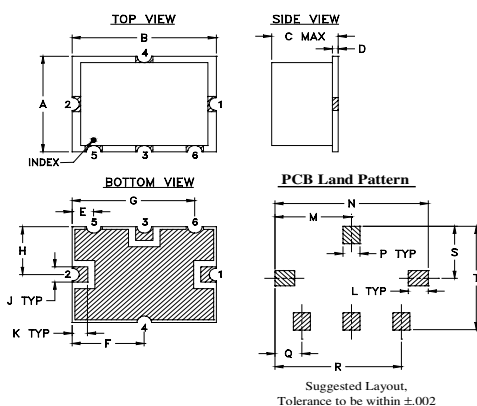
### Electrical Specifications

FREQUENCY (MHz)	CONVERSION LOSS (dB)		LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			IP3 at center band (dBm)						
	LO/RF	IF	L	M	U	L	M	U							
10-2000	10-1800	6.2	33	20	40	25	37	22	44	30	42	28	34	22	27

1 dB COMP.: +14 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  $f_u/2$ ]

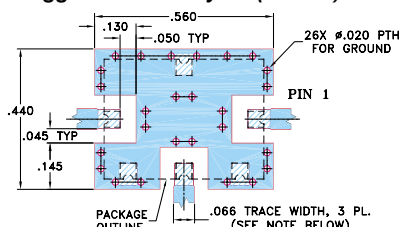
### Outline Drawing



### 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)

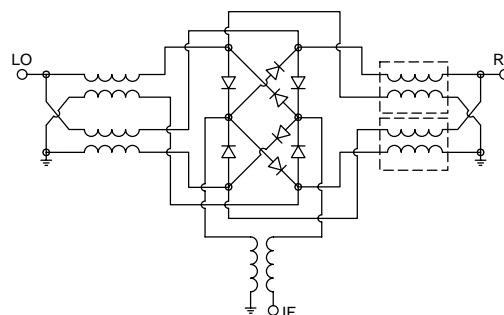


- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. GROUND PAD SHALL BE FREE OF SOLDER MASK IF REQUIRED FOR SOLDERING.  
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.  
■ 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 +17dBm	LO +17dBm	LO +17dBm	LO +17dBm	LO +17dBm
10.00	40.00	6.63	31.10	48.70	1.63	1.75
16.69	46.69	6.46	31.60	49.00	1.39	1.70
27.86	57.86	6.23	32.40	48.80	1.26	1.73
46.49	76.49	5.99	33.70	49.60	1.17	1.69
77.60	107.60	5.93	34.60	49.60	1.16	1.62
129.51	159.51	5.88	35.50	49.90	1.18	1.69
216.16	246.16	6.00	36.50	49.70	1.28	1.75
360.78	390.78	6.20	37.10	46.10	1.61	1.57
602.15	632.15	6.65	38.70	41.10	2.27	1.50
1005.00	1035.00	6.43	37.20	37.80	2.49	1.38
1104.50	1134.50	6.18	36.20	36.80	2.23	1.36
1204.00	1234.00	6.06	36.10	35.70	1.97	1.34
1303.50	1333.50	6.16	35.50	35.10	1.88	1.35
1403.00	1433.00	6.09	34.50	35.50	1.70	1.37
1502.50	1532.50	6.01	34.90	35.20	1.58	1.43
1602.00	1632.00	6.16	35.50	35.50	1.49	1.45
1700.00	1730.00	6.60	35.70	35.40	1.48	1.39
1801.00	1831.00	6.86	35.40	34.30	1.41	1.32
1900.50	1930.50	7.16	33.50	33.30	1.39	1.29
2000.00	2030.00	7.36	32.00	31.40	1.28	1.28

### Electrical Schematic



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RF/IF MICROWAVE COMPONENTS

REV. C  
M112207  
SYM-20DHW  
DJ/TD/AM  
071211  
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## Performance Charts

