

Frequency Mixer

SYM-11+ SYM-11

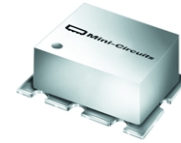
Level 7 (LO Power +7dBm) 1 to 2500 MHz

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

Applications

- cellular
- PCS
- satellite distribution
- GPS/ISM



CASE STYLE: TTT167
PRICE: \$9.95 ea. QTY (1-9)

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

See our web site for RoHS Compliance methodologies and qualifications.

Mixer Electrical Specifications

MODEL NO.	FREQUENCY (MHz)		CONVERSION LOSS (dB)				LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)						IP3@ center band Typ. (dBm)	E FACTOR
	LO/RF $f_L - f_U$	IF	Mid-Band \bar{x}	σ	Max.	Total Range Max.	L Typ.	M Typ.	U Typ.	L Min.	M Min.	U Min.	L Typ.	M Typ.	U Typ.	L Min.	M Min.	U Min.		
SYM-11(+)	1-2500	10-600	7.0	.30	9.0	10.5	63	40	40	24	34	20	61	40	35	20	28	15	10	0.3

1 dB COMP.: +1 dBm typ.
E= (IP3(dBm)-LO Power(dBm))/10

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 $f_U/2$]

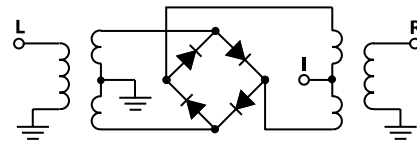
Pin Connections

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

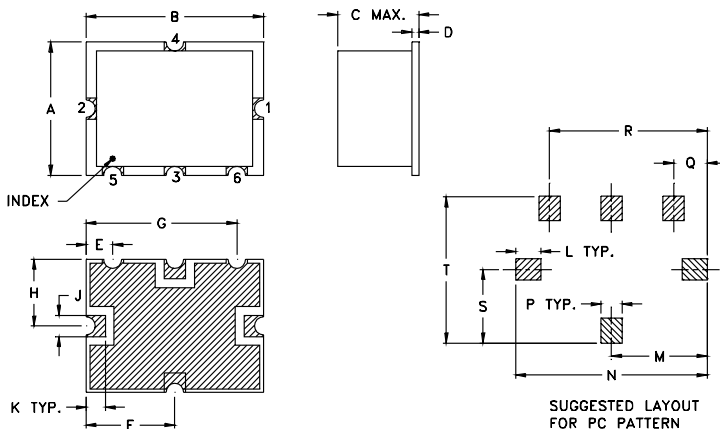
Maximum Ratings

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

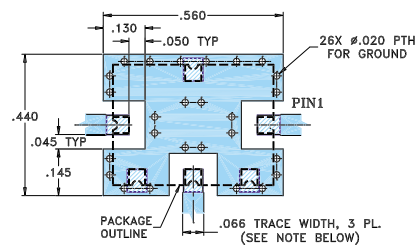
electrical schematic



Outline Drawing



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



- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS 0.030" ± 0.002", COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. IF YOUR PCB DESIGN RULES ALLOW, GROUND VIAS SHOULD BE PLACED UNDER THE LAND PATTERN FOR BETTER RF PERFORMANCE. OTHERWISE GROUND VIAS SHOULD BE PLACED AS CLOSE TO LAND PATTERN AS POSSIBLE.
3. GROUND PAD SHALL BE FREE OF SOLDERMASK IF REQUIRED FOR SOLDERING.

■ DENOTES PCB COPPER LAYOUT
▨ DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	wt.
.375	.500	.15	.020	.075	.250	.425	.187	.050	.050	.070	.270	.540	.060	.095	.445	.208	.415	grams
9.53	12.70	3.81	0.51	1.91	6.35	10.80	4.75	1.27	1.27	1.78	6.86	13.72	1.52	2.41	11.30	5.28	10.54	g



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Mini-Circuits ISO 9001 & ISO 14001 Certified

INTERNET <http://www.minicircuits.com>



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SYM-11
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Typical Performance Data

Frequency		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF port (:1)	VSWR LO port (:1)
RF MHz	LO MHz	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

Performance Charts

