

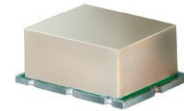
Frequency Mixer

SYM-63LH+

Level 10 (LO Power +10 dBm) 1 to 6000 MHz

The Big Deal

- Ultra broadband, 1 to 6000 MHz
- High isolation and good conversion loss across the band
- Low profile compact package



CASE STYLE: TTT166

Product Overview

Model SYM-63LH+ is an ultra broadband double balanced mixer utilizing core and wire transformers and a diode quad in a ring configuration. The transformers are designed to provide ultra wide bandwidth using simulation software together with Mini-Circuits proprietary transformer technology. These mixers provide an IF response from DC to 1000 MHz and are especially useful in wideband system applications such as IED.

Key Features

Feature	Advantages
Low conversion loss, 8dB for wide bandwidth	Low loss enables lower NF front ends thereby improving system sensitivity.
High LO to RF isolation	Less susceptibility to the LO signal interfering with system performance. Reduced levels of unwanted responses especially in a wideband system.
Broadband matching	The IF port VSWR is less than 1.5 to 1 over the specified frequency range. This simplifies the cascading of an amplifier following the mixer.
Compact low profile package 0.38 x 0.50 x 0.15"	Enables high density packaging
Insensitive to LO power level variations	Enable the use of an LO amplifier with reduced specs for gain flatness, consequently improving the potential to lower LO amplifier costs.



ISO 9001 ISO 14001 AS 9100 CERTIFIED

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IF/RF MICROWAVE COMPONENTS

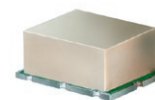
For detailed performance specs
& shopping online see web site

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-Circuits 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-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp.

Surface Mount Frequency Mixer

SYM-63LH+

Level 10 (LO Power +10 dBm) 1 to 6000 MHz



CASE STYLE: TTT166
PRICE: \$12.95 ea. QTY (10-49)

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

- ultra wide bandwidth, 1-6000 MHz
- IF response to DC

Applications

- test equipment
- cable TV
- cellular
- PCS
- satellite distribution
- ISM/GPS
- WCDMA
- defence communications

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

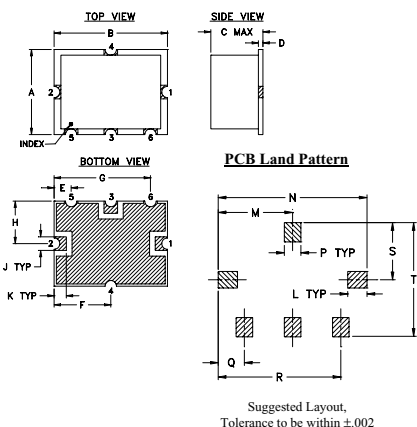
The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Electrical Specifications @ 25°C

FREQUENCY (MHz)	CONVERSION LOSS* (dB)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			IP3 at center band (dBm)						
		L	M	U	L	M	U							
1-6000	DC-1000	65	45	35	20	29	20	60	40	25	14	19	12	14

1 dB COMP: +3 dBm typ.
* Conversion Loss at 30 MHz IF.
L = low range [f_c to $10 f_c$]
M = mid range [$10 f_c$ to $f_c/2$]
U = upper range [$f_c/2$ to f_c]
 m = mid band [$2f_c$ to $f_c/2$]
 σ is a measure of repeatability from unit to unit.

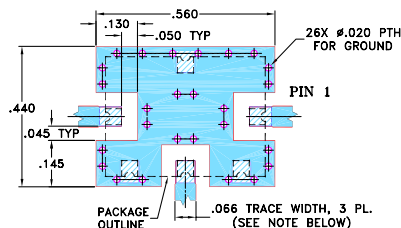
Outline Drawing



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

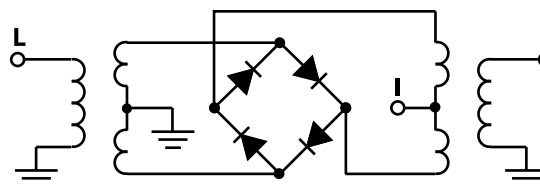
Demo Board MCL P/N: TB-12 Suggested PCB Layout (PL-079)



Typical Performance Data

Frequency (MHz)	Conversion Loss (dB)		Isolation (dB)		VSWR RF Port (:1)		VSWR LO Port (:1)	
	LO	LO +10dBm	L-R	L-I	LO	LO +10dBm	LO	LO +10dBm
1.00	31.00	5.83	65.41	60.62	1.68	3.60		
10.00	40.00	6.07	63.21	58.28	1.09	3.54		
100.00	130.00	6.21	53.47	46.17	1.04	3.45		
145.00	175.00	6.21	51.34	43.08	1.04	3.46		
505.00	535.00	6.28	42.90	33.70	1.37	2.72		
1000.00	1030.00	6.65	41.76	34.89	2.07	1.72		
1500.00	1530.00	7.31	32.97	23.84	2.07	1.27		
2000.00	2030.00	6.87	30.92	24.37	2.01	1.70		
3000.00	3030.00	8.60	26.67	34.89	2.42	2.64		
4000.00	4030.00	7.94	28.22	18.49	1.76	2.75		
5000.00	5030.00	8.24	36.41	19.92	2.09	2.09		
5100.00	5130.00	8.18	38.17	20.34	2.05	2.18		
5200.00	5230.00	8.20	40.26	20.55	1.86	2.33		
5300.00	5330.00	8.25	42.62	20.82	1.65	2.57		
5400.00	5430.00	8.34	43.72	21.01	1.60	2.77		
5500.00	5530.00	8.43	42.20	21.03	1.76	2.76		
5600.00	5630.00	8.60	39.70	21.01	2.11	2.84		
5700.00	5730.00	8.76	37.69	21.00	2.61	2.88		
5800.00	5830.00	8.85	36.36	20.92	2.89	2.84		
6000.00	6030.00	9.28	34.92	20.45	2.77	2.19		

Electrical Schematic



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