

Surface Mount Frequency Mixer

SYM-63LH+

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



Generic photo used for illustration purposes only

CASE STYLE: TTT166

+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	10, 20, 50, 100, 200
13"	500

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

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.

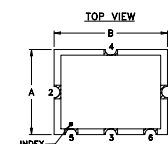
* Conversion Loss at 30 MHz IF.

σ is a measure of repeatability from unit to unit.

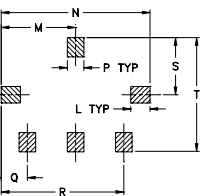
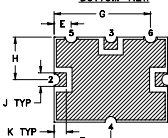
L = low range [f_c to $10 f_c$]
U = upper range [$f_c/2$ to f_c]

M = mid range [$10 f_c$ to $f_c/2$]
m = mid band [$2f_c$ to $f_c/2$]

Outline Drawing



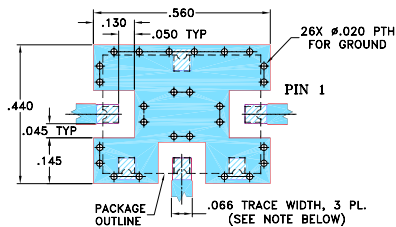
PCB Land Pattern



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 R04350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
 2. THE USE OF SOLDER MASK OVER THE GROUND AREA UNDER THE UNIT AS SHOWN IS RECOMMENDED TO PREVENT POTENTIAL SHORTING. IF USER CHOOSES TO EXPOSE METAL UNDER THE ENTIRE UNIT GROUND PAD FOR IMPROVED GROUNDING, IT IS RECOMMENDED A SOLDER MASK DAM BE APPLIED AROUND EACH GROUND PAD TO ENSURE FILLET AND CONNECTION AT GROUND PADS.
 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

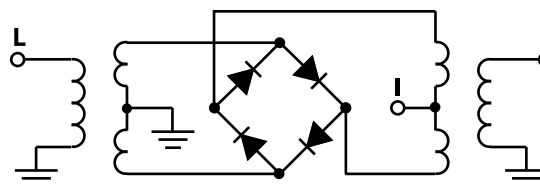
Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
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Typical Performance Data

Frequency (MHz)	Conversion Loss (dB)		Isolation (dB)		VSWR	
	LO +10dBm	RF +10dBm	L-R (dB)	L-I (dB)	RF Port (:1)	LO Port (:1)
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

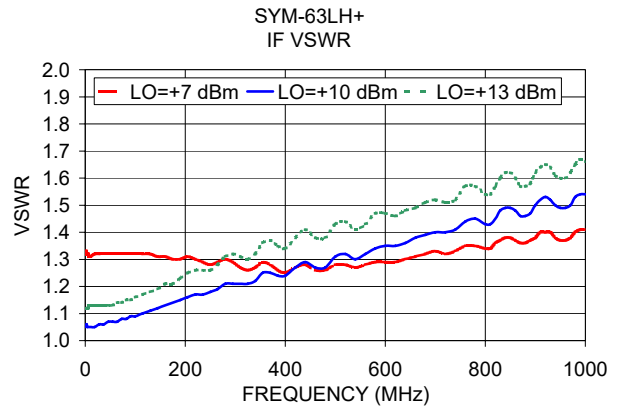
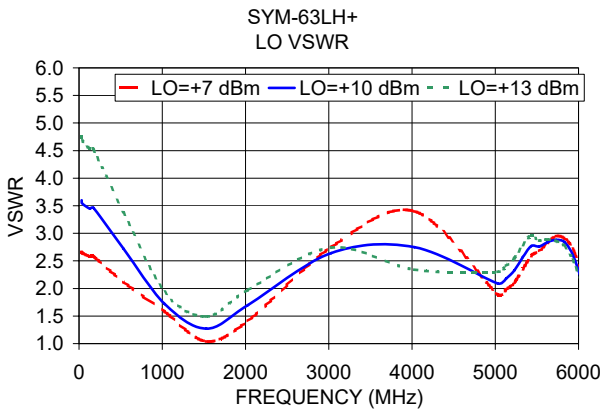
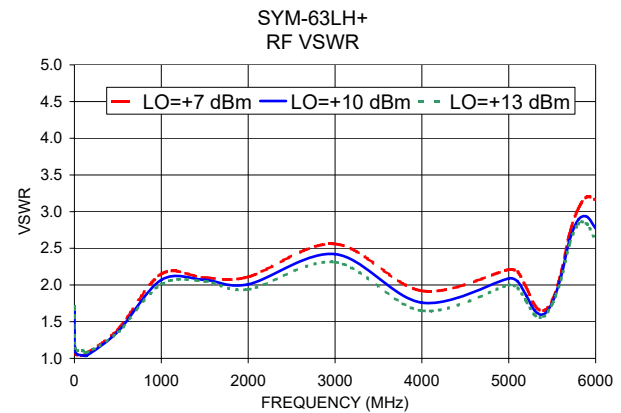
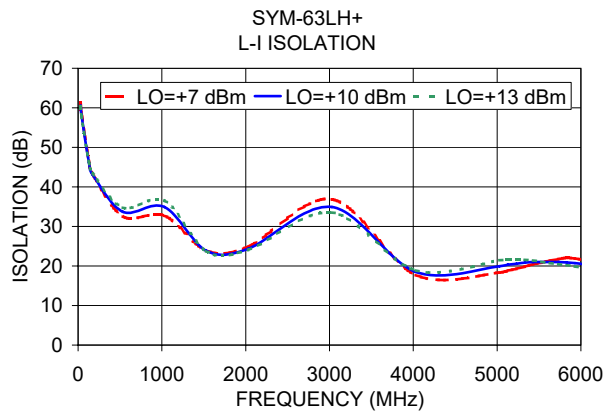
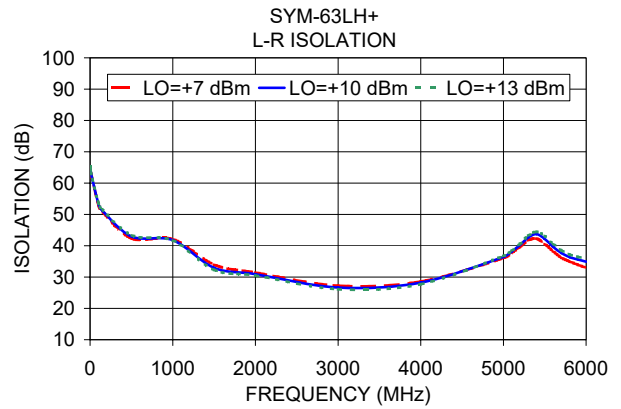
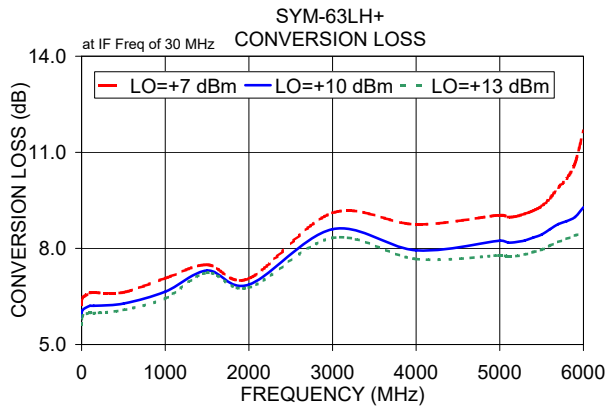
Electrical Schematic



Mini-Circuits

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