Surface Mount

Frequency Mixer

SYM-30DLHW+
SYM-30DLHW

Level 10 (LO Power +10 dBm) 5 to 3000 MHz

Generic photo used for illustration purposes only

CASE STYLE: TTT167

+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

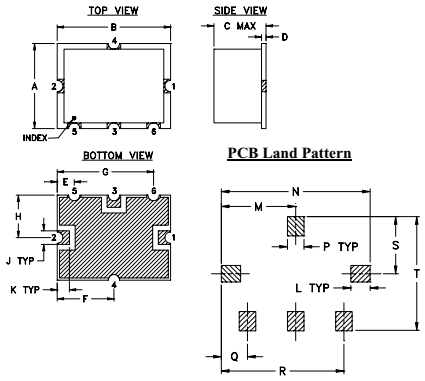
Features

- wideband, 5 to 3000 MHz
- good L-R isolation, 36 dB typ.
- excellent L-I isolation, 45 dB typ.
- low conversion loss, 6.5 dB typ.

Applications

- CDMA
- GSM
- DCS
- PCN

Outline Drawing



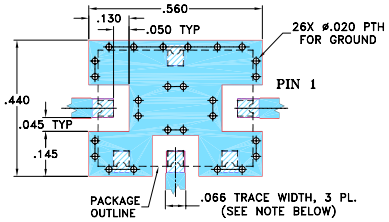
Suggested Layout,
Tolerance to be within ±.002

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	
.070	.270	.540	.060	.095	.445	.208	.415	wt.
1.78	6.86	13.72	1.52	2.41	11.30	5.28	10.54	grams 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. 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

Electrical Specifications

FREQUENCY (MHz)		CONVERSION LOSS* (dB)				LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)						IP3* at center band (dBm)
		Mid-Band m			Total Range	L		M		U		L		M		U		
LO/RF f_L-f_U	IF	$\overline{X}$	σ	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.
5-3000	5-1500	6.5	.15	8.4	9.2	36	28	37	29	33	23	41	32	45	37	47	31	19

1 dB COMP.: +5 dBm typ.
*IP3 at 800-900 MHz. and 1800-1900 MHz

L = low range [f_L to 10 f_L]
m= mid band [2f_L to f_U/2]

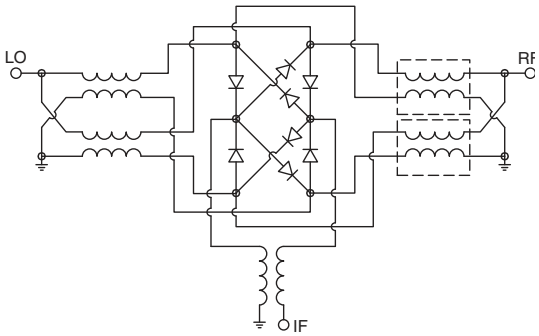
M = mid range [10 f_L to f_U/2]

U = upper range [f_U/2 to f_U]

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 +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm
5.10	35.11	6.58	35.88	38.87	1.13	1.62
100.10	130.11	6.53	36.17	43.33	1.08	1.61
221.15	251.16	6.50	36.39	43.27	1.13	1.60
434.31	464.32	6.51	36.54	43.55	1.26	1.57
647.47	677.48	6.40	36.89	43.37	1.43	1.53
860.63	890.64	6.55	37.21	44.80	1.62	1.50
1073.78	1103.79	6.73	38.11	47.46	1.76	1.46
1215.89	1245.90	6.36	38.74	50.49	1.80	1.44
1429.05	1459.06	6.22	38.31	55.18	1.69	1.37
1600.10	1630.11	6.19	37.88	58.14	1.50	1.33
1815.49	1845.50	6.36	35.43	54.55	1.29	1.22
2030.87	2060.88	6.80	32.79	49.03	1.27	1.13
2246.25	2276.26	7.17	31.15	51.13	1.32	1.04
2353.95	2383.96	7.26	30.54	54.00	1.27	1.01
2461.64	2491.65	7.28	30.28	53.61	1.17	1.07
2569.33	2599.34	7.27	30.13	51.62	1.03	1.15
2677.02	2707.03	7.33	30.10	48.05	1.13	1.24
2784.72	2814.73	7.43	30.14	46.47	1.29	1.33
2892.41	2922.42	7.53	30.39	43.08	1.45	1.43
3000.10	3030.11	7.67	32.41	40.55	1.57	1.51

Electrical Schematic



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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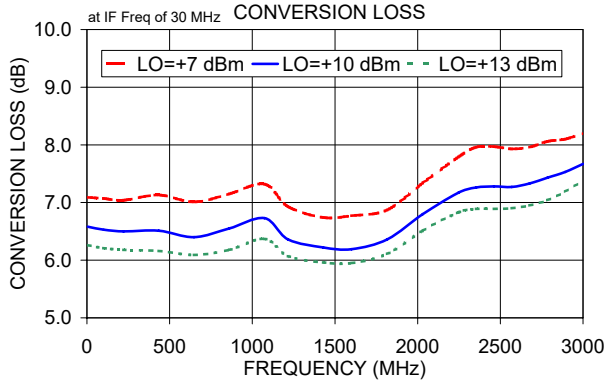
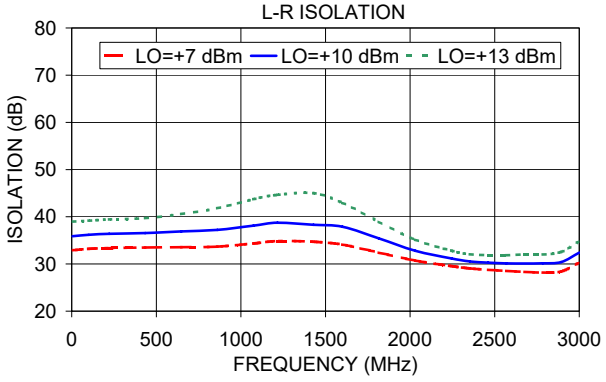
Performance Charts

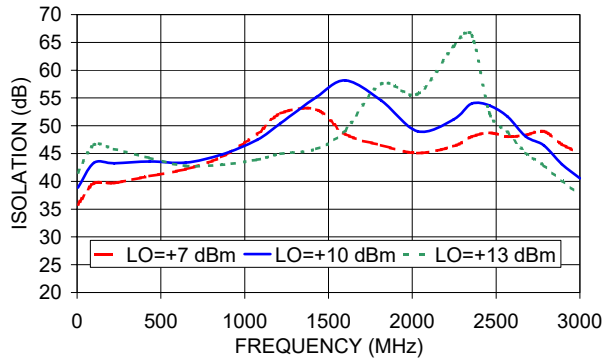
SYM-30DLHW
at IF Freq of 30 MHz CONVERSION LOSS



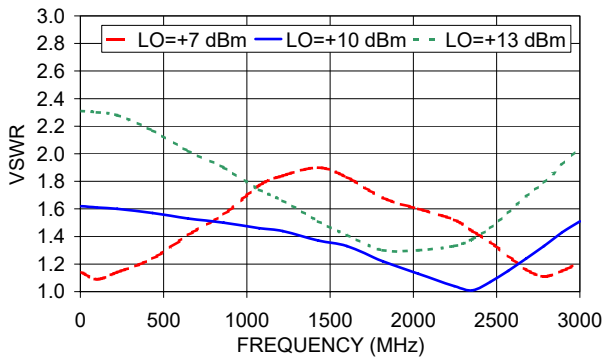
SYM-30DLHW
L-R ISOLATION



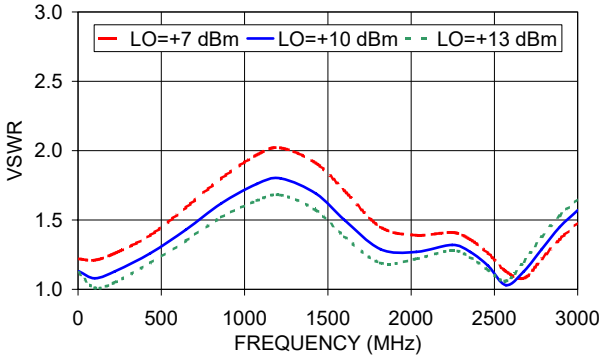
SYM-30DLHW
L-I ISOLATION



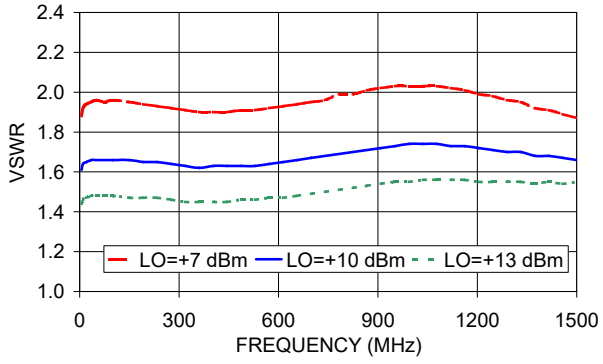
SYM-30DLHW
LO VSWR



SYM-30DLHW
RF VSWR



SYM-30DLHW
IF VSWR



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