Surface Mount

I&Q Modulator

50Ω 868 to 895 MHz

SYIQ-895M+

CASE STY: TTT1289

+RoHS Compliant

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

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
LO Power	50mW
I&Q Current	40mA

Permanent damage may occur if any of these limits are exceeded.

Pin Connections

LO (carrier)	2
RF (signal)	1
I (0°)(ref.)	3
Q (90°)*	4
GROUND	5,6,7,8

*Q= I +90° for lower sideband suppression

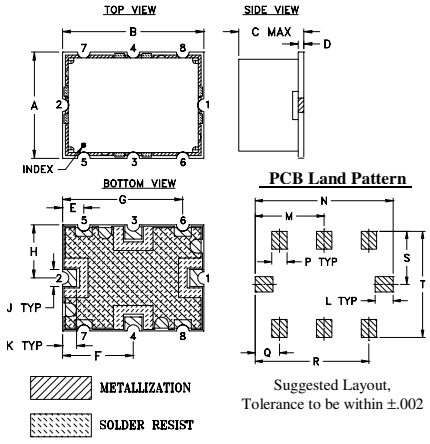
Features

- low conversion loss, 6.4dB typ.
- excellent 3rd and 5th order harmonic suppression
- good carrier and sideband rejections
- good VSWR all ports, RF 1.35:1 typ., LO 1.3:1 typ., I&Q 1.35:1 typ.
- shielded case

Applications

- cellular
- radar and communication systems

Outline Drawing

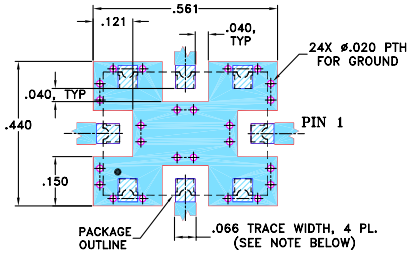


Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K
.38	.50	.23	.020	.075	.250	.425	.187	.060	.050
9.65	12.70	5.84	0.51	1.91	6.35	10.80	4.75	1.52	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-459+
Suggested PCB Layout (PL-280)



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. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Modulator Electrical Specifications

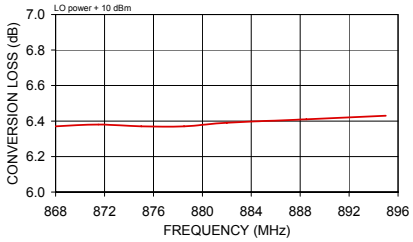
FREQUENCY (MHz) RF (SIGNAL) LO (CARRIER)		I&Q		CONVERSION LOSS (dB)			CARRIER REJECTION (-dBc)		SIDEBAND REJECTION (-dBc)		HARMONIC SUPPRESSION (-dBc) 3XI/Q		5XI/Q	
f_L	f_U	Min.	Max.	$\overline{X}$	σ	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.
868	895	DC	5	6.4	0.10	7.5	38	30	39	30	45	35	64	50

1. Operating LO power: 10±1dBm
2. 1dB Compression: 1 dBm typical.
3. Conversion Loss: (I + Q) power, dBm - RF power, dBm.
4. Carrier and sideband rejections measured at -5dBm I/Q power.

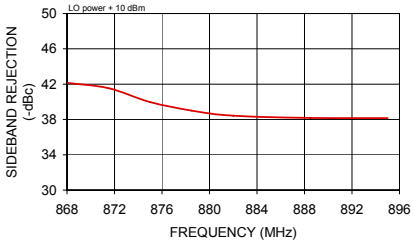
Typical Performance Data

Carrier Freq. (MHz)	Conversion Loss $\overline{x}$ (dB)	σ (dB)	Sideband Rejection $(\overline{x})$ LSB (-dBc)	USB (-dBc)	Carrier Rejection $(\overline{x})$ LSB (-dBc)	USB (-dBc)	3rd Harmonic Suppression $(\overline{x})$ LSB (-dBc)	USB (-dBc)	5th. Harmonic Suppression $(\overline{x})$ LSB (-dBc)	USB (-dBc)	DC Offset $(\overline{x})$ (mV)
868.00	6.37	0.06	42.15	42.93	36.93	37.03	44.46	59.83	67.77	64.01	1.54
871.50	6.38	0.06	41.54	41.56	37.35	37.41	44.73	59.66	68.39	63.72	1.54
875.00	6.37	0.07	39.97	40.22	37.95	37.98	44.92	58.95	68.72	63.65	1.53
878.50	6.37	0.07	39.00	39.39	38.67	38.64	44.96	58.43	68.44	63.72	1.51
882.00	6.39	0.07	38.42	38.89	39.42	39.38	44.90	57.98	67.57	63.89	1.48
888.50	6.41	0.06	38.17	38.55	39.85	40.83	44.84	55.82	65.63	63.68	1.42
895.00	6.43	0.07	38.16	38.50	40.01	40.00	44.89	52.30	64.99	62.73	1.39

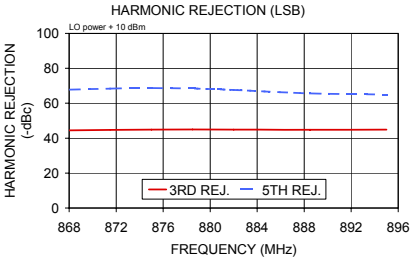
SYIQ-895M+
CONVERSION LOSS



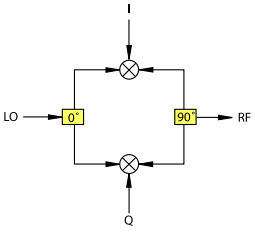
SYIQ-895M+
SIDEBAND REJECTION (LSB)



SYIQ-895M+
HARMONIC REJECTION (LSB)



I&Q modulation block diagram



Notes
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