

# Surface Mount I&Q Modulator

50Ω 868 to 895 MHz

## SYIQ-895M+



### Maximum Ratings

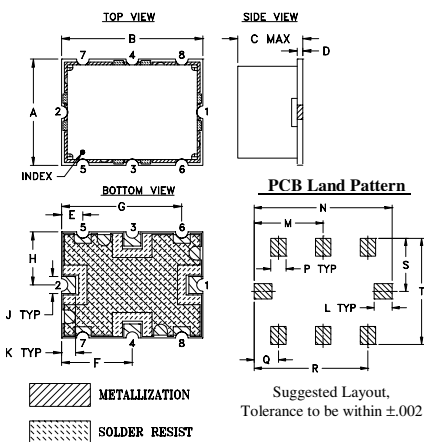
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
LO Power	50mW
I&Q Current	40mA
Permanent damage may occur if any of these limits are exceeded.	

### 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

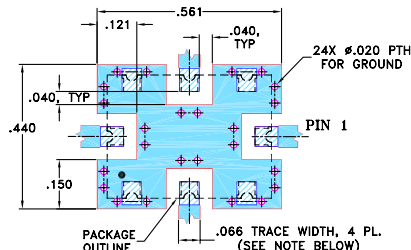
### Outline Drawing



### 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

### 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

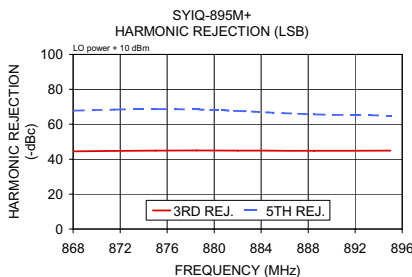
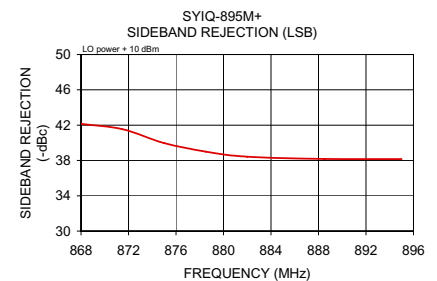
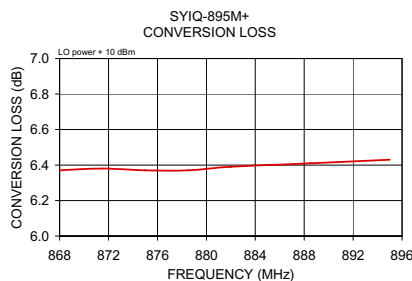
### Modulator Electrical Specifications

FREQUENCY (MHz)		CONVERSION LOSS (dB)		CARRIER REJECTION (-dBc)		SIDE BAND REJECTION (-dBc)		HARMONIC SUPPRESSION (-dBc)						
RF (SIGNAL)	LO (CARRIER)	I&Q						3XI/Q	5XI/Q					
f <sub>L</sub>	f <sub>U</sub>	Min.	Max.	$\bar{x}$	$\sigma$	Max.	Typ.	Min.	Typ.	Min.				
868	895	DC	5	6.4	0.10	7.5	38	30	39	30	45	35	64	50

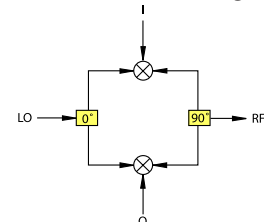
1. Operating LO power: 10±1dBm
2. 1dB Compression: 1 dBm typical
3. Conversion Loss: (I + Q) power, dBm - RF power, dBm.
4. Carrier and sideband rejections measured at -5dBm I/Q power.

### Typical Performance Data

Carrier Freq. (MHz)	Conversion Loss		Sideband Rejection (x)		Carrier Rejection (x)		3rd Harmonic Suppression (x)		5th Harmonic Suppression (x)		DC Offset (mV)
	$\bar{x}$ (dB)	$\sigma$ (dB)	LSB (-dBc)	USB (-dBc)	LSB (-dBc)	USB (-dBc)	LSB (-dBc)	USB (-dBc)	LSB (-dBc)	USB (-dBc)	
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



### I&Q modulation block diagram



For detailed performance specs & shopping online see web site

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