Plug-In

I&Q Demodulator

MIQY-140D

50Ω 137 to 143 MHz

CASE STYLE: C07

Maximum Ratings

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

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

Pin Connections

LO (carrier)	13
RF (signal)	1
I (0°)(ref.)	8
Q (90°)*	5
ISOLATE**	10,11
GROUND	2,3,4,6,7,9,12,14,15,16

*Q= I +90° for LO<RF
Q= I -90° for LO>RF
**external variable capacitors can be connected at pins 10&11 to ground for improvement of phase unbalance.

Features

- good amplitude and phase unbalance
- excellent 3rd and 5th harmonic suppression

Applications

- radar
- communication systems

Demodulator Electrical Specifications

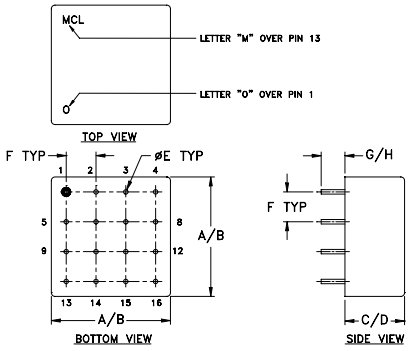
MODEL NO.	FREQUENCY (MHz) RF (SIGNAL) LO (CARRIER) f_L	f_U	I&Q Min.	I&Q Max.	CONVERSION LOSS (dB) $\bar{x}$	σ	Max.	AMPLITUDE UNBALANCE (dB) Typ.	Max.	PHASE UNBALANCE (Deg.) with reference to 90° Typ.	Max.	HARMONIC SUPPRESSION (dBc) 3XI/Q Typ.	Min.	5XI/Q Typ.	Min.
MIQY-140D	137	143	DC	5	5.5	0.25	7.0	0.10	0.6	0.5	3.0	47	35	70	50

Note:
1. Operating LO Power: 10±0.5 dBm
2. 1 dB Compression at +4 dBm RF input
3. DC offset 1mV typ.
4. Conversion Loss=RF power, dBm - (I+Q) power, dBm

Typical Performance Data

Frequency (MHz) RF	I&Q	Conversion Loss (dB)	Amplitude Unbalance (dB)	Phase (I&Q) (deg.)	Frequency (MHz) LO	RF	DC Offset (mV)
140.10	0.30	5.52	0.05	89.79	137.00	137.10	-0.08
140.48	0.66	5.50	0.05	89.81	137.46	137.56	-0.16
140.85	1.03	5.49	0.06	89.93	137.92	138.02	-0.06
140.98	1.15	5.49	0.10	89.99	138.08	138.18	-0.13
141.23	1.38	5.49	0.08	90.09	138.39	138.49	-0.13
141.61	1.75	5.50	0.06	89.96	138.85	138.95	-0.19
141.86	1.99	5.50	0.04	89.97	139.15	139.25	-0.14
141.99	2.11	5.50	0.06	90.00	139.31	139.41	-0.08
142.36	2.47	5.50	0.10	90.17	139.77	139.87	-0.07
142.74	2.83	5.50	0.11	90.19	140.23	140.33	-0.07
142.86	2.96	5.51	0.07	90.04	140.39	140.49	-0.11
143.12	3.19	5.51	0.08	90.14	140.69	140.79	-0.18
143.49	3.56	5.51	0.12	90.22	141.15	141.25	-0.17
143.74	3.79	5.51	0.08	89.94	141.46	141.56	-0.14
143.87	3.92	5.51	0.13	90.00	141.62	141.72	-0.19

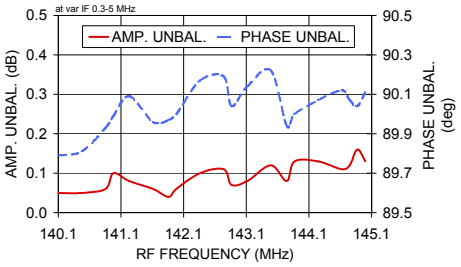
Outline Drawing



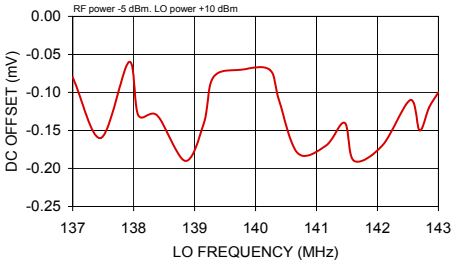
Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	wt
.770	.810	.380	.410	.030	.200	.20	.14	grams
19.56	20.57	9.65	10.41	0.76	5.08	5.08	3.56	11.0

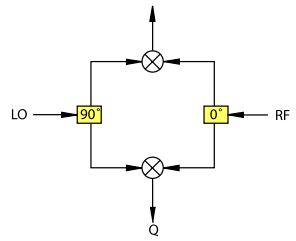
MIQY-140D
AMPLITUDE & PHASE UNBALANCE



MIQY-140D
DC OFFSET



I&Q demodulation block diagram



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.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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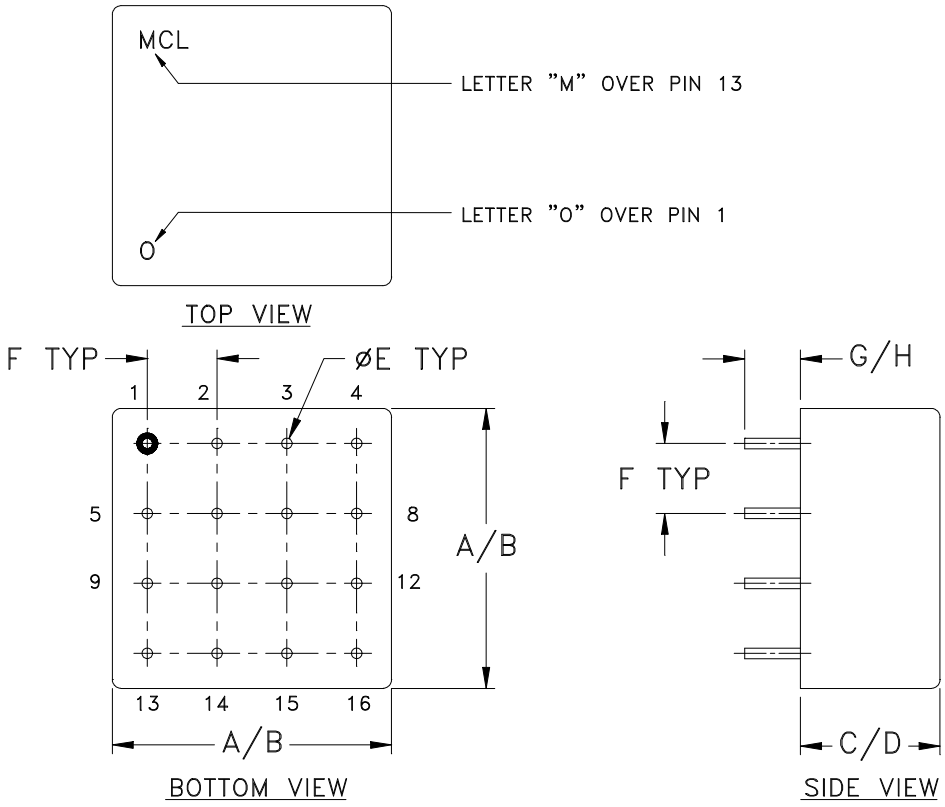
Case Style C

Outline Dimensions

C07



CASE#	A	B	C	D	E	F	G	H	WT. GRAM
C07	.770 (19.56)	.810 (20.57)	.380 (9.65)	.410 (10.41)	.030 (.76)	.200 (5.08)	.20 (5.08)	.14 (3.56)	11.0

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .015

Notes:

1. Header material: C.R.S.
   Pin material: #52 alloy.
   Cover material: Cupro-Nickel.
2. Pin finish: Electro Tin-Silver..
3. Tolerance on pin diameter +/-.005 inch.
4. Glass meniscus 0.015 inch max.
5. Blue bead indicates Pin 1. Pin numbers do not appear on unit, for reference only.

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Environmental Specifications ENV01

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Moisture Resistance	10 cycles, 24 hours per cycle	MIL-STD-202, Method 106, Condition A, except 50°C and end point electrical test done within 12 hours
Solderability	10X Magnification	J-STD-002, 95% Coverage
Resistance to Solder Heat	260°C for 10 seconds	MIL-STD-202, Method 210, Condition B
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215
Terminal Strength	4 1/2 Pound Pull	MIL-STD-202, Method 211, Condition A

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Gross Leak	125°C Bubble Test	MIL-STD-202, Method 112, Condition D
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D