



Rev. V2

# Open Carrier Double-Balanced Mixer For Microwave Telecommunications

Features

- LO & RF: 2.0 TO 10.0 GHz
- IF: DC TO 2.0 GHz
- LO DRIVE: +7 dBm (NOMINAL)
- MICROSTRIP INTERFACE

#### Description

The MC4107 is a double balanced mixer, designed for use in military, commercial and test equipment applications. The design utilizes Schottky ring quad diodes and broadband soft dielectric and ferrite baluns to attain excellent performance. This mixer can also be used as a phase detector and/or bi-phase modulator since the IF port is DC coupled to the diodes. The use of high temperature solder and welded assembly processes used internally makes it ideal for use in manual, semi-automated assembly. Environmental screening available to MIL-STD-883, MIL-STD-202, or MIL-DTL-28837, consult factory.



## **Ordering Information**

Part Number	Package		
MC4107	Open Carrier		
MC4107-2	Open Carrier		

### Electrical Specifications: $Z_0 = 50\Omega$ Lo = +7 dBm (Downconverter application only)

Parameter	Test Conditions	Units	Typical	Superior Guaranteed	
Parameter	Test Conditions			+25ºC	-54º to +85ºC
SSB Conversion Loss (max) & SSB Noise Figure (max)	fR = 4  to  8  GHz, $fL = 4  to  8  GHz$ , $fI = 0  to  1  GHzfR = 3  to  9  GHz$ , $fL = 3  to  9  GHz$ , $fI = 0  to  1.5  GHzfR = 2  to  10  GHz$ , $fL = 2  to  10  GHz$ , $fI = 0  to  2  GHz$	dB dB dB	5.7 6.7 7.3	6.5 7.5 8.0	7.0 8.0 8.5
Isolation, L to R (min)	fR = 4 to 8 GHz fR = 3 to 9 GHz fR = 2 to 10 GHz	dB dB dB	35 24 24	28 17 17	26 15 15
Isolation, L to I (min)	fR = 4 to 8 GHz fR = 3 to 9 GHz fR = 2 to 10 GHz	dB dB dB	28 22 20	20 15 12	18 13 10
Isolation, R to I (min)	fL = 2 to 10 GHz	dB	30		
1 dB Conversion Comp.	fL = +7 dBm	dBm	+0		
Input IP3	fR1 = 3.9 GHz at -10 dBm, fR2 = 3.92 at -10 dBm, fL = 4.2 GHz at +7 dBm fR1 = 7.4 GHz at -10 dBm, fR2 = 7.42 at -10 dBm, fL = 6.4 GHz at +7 dBm	dBm dBm	+10 +12		

1

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed. PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available.

Commitment to produce in volume is not guaranteed.

North America Tel: 800.366.2266
Europe Tel: +353.21.244.6400
India Tel: +91.80.4155721
China Tel: +86.21.2407.1588

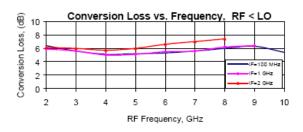
Visit www.macomtech.com for additional data sheets and product information.

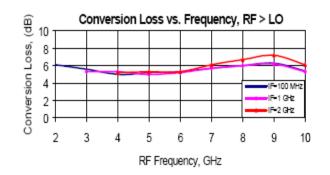
*M/A-COM* Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

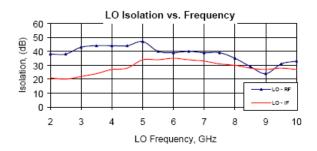


Open Carrier Double-Balanced Mixer For Microwave Telecommunications

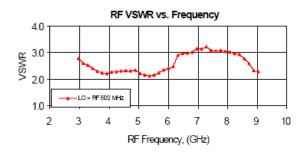
## **Typical Performance Curves**







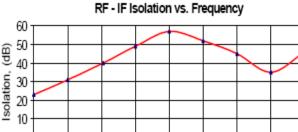


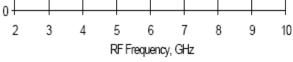


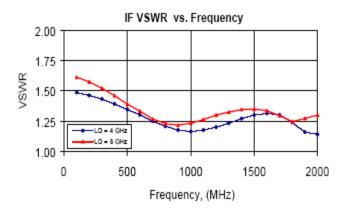
2

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed. PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology

Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.







North America Tel: 800.366.2266
Europe Tel: +353.21.244.6400
India Tel: +91.80.4155721
China Tel: +86.21.2407.1588

Visit www.macomtech.com for additional data sheets and product information.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

Rev. V2



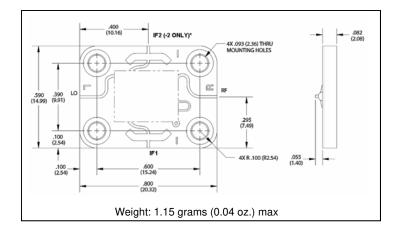
# Open Carrier Double-Balanced Mixer For Microwave Telecommunications

#### Rev. V2

#### **Absolute Maximum Ratings**

Parameter	Absolute Maximum
Operating Temperature	-40ºC to +85ºC
Storage Temperature	-65ºC to +100ºC
Peak Input Power	+20 dBm max @ +25°C +17 dBm max @ +85°C
Peak Input Current	50 mA DC

# **Outline Drawing: Open Carrier \* MC4107**



\*For the base model, only the IF1 port is connected. For the "-2" model, only the IF2 port is connected.

 Dimensions are inches (millimeters) ±0.015 (0.38) unless otherwise specified.

3

Visit www.macomtech.com for additional data sheets and product information.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.