# 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: +13 dBm (NOMINAL)
- MICROSTRIP INTERFACE

## Description

The MC4113 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.

Product Image

use of high cesses used mi-automated MIL-STD-883,

## **Ordering Information**

Part Number	Package		
MC4113	Open Carrier		
MC4113-2	Open Carrier		

### Electrical Specifications: $Z_0 = 50\Omega$ Lo = +13 dBm (Downconverter application only)

Parameter	Test Conditions	Units	Typical	Guaranteed	
Farameter	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	5.5 6.5 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 23 23	28 17 17	25 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	27 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 = +13 dBm	dBm	+6		
Input IP3	fR1 = 3.9 GHz at -5 dBm, fR2 = 3.92 at -5 dBm, fL = 4.2 GHz at +13 dBm fR1 = 7.4 GHz at -5 dBm, fR2 = 7.42 at -5 dBm, fL = 6.4 GHz at +13 dBm	dBm dBm	+14 +17		

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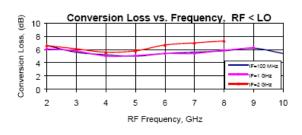
Rev. V2

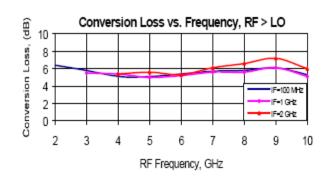


Rev. V2

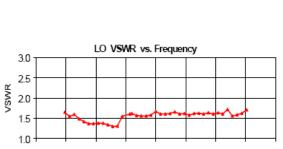
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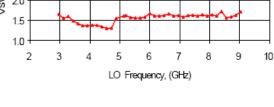
## **Typical Performance Curves**

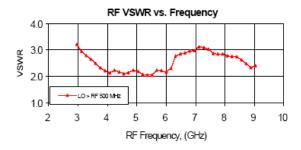




LO Isolation vs. Frequency 60 50 Isolation, (dB) 40 30 20 0-86 10 LO 0 3 8 9 10 2 4 6 5 7 LO Frequency, GHz



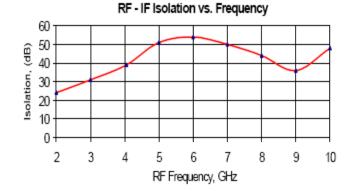


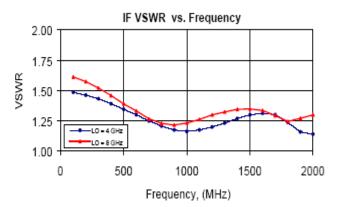


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