

# Open Carrier Double-Balanced Mixer For Microwave Telecommunications

**MC4110**  
V1

## Features

- LO 2.0 to 10.0 GHz
- RF 2.0 to 10.0 GHz
- IF DC to 2.0 GHz
- LO Drive +10 dBm (nominal)
- Microstrip Interface

## Description

The MC4110 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 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. Environmental screening available to MIL-STD-883, MIL-STD-202, or MIL-DTL-28837, consult factory.

## Product Image



## Ordering Information

Part Number	Package
MC4110	Open Carrier
MC4110 -2	Open Carrier

## Electrical Specifications: $Z_0 = 50\Omega$ $L_o = +10$ dBm (Downconverter application only)

Parameter	Test Conditions	Units	Typical	Guaranteed	
				+25°C	-40° to +85°C
SSB Conversion Loss (max)	fR = 4 to 8 GHz, fL = 4 to 8.GHz, fl = DC to 1 GHz fR = 3 to 9 GHz, fL = 3 to 9 GHz, fl = DC to 1.5 GHz fR = 2 to 10 GHz, fL = 2 to 10 GHz, fl = DC to 2 GHz	dB	5.5 dB 6.2 dB 7.2 dB	6.5 7.5 8.0	7.0 8.0 8.5
SSB Noise Figure (max)	Within 1 dB of conversion loss	dB	—	—	—
Isolation, L to R (min)	fL = 4.0 to 8.0 GHz fL = 3.0 to 9.0 GHz fL = 2.0 to 10.0 GHz	dB	35 22 22	28 17 17	26 15 15
Isolation, L to I (min)	fL = 4.0 to 8.0 GHz fL = 3.0 to 9.0 GHz fL = 2.0 to 10.0 GHz	dB	28 22 20	20 15 12	18 13 10
Isolation, R to I (min)	fR = 2.0 to 10.0 GHz	dB	30		
1 dB Conversion Comp.	fL = +10 dBm	dBm	+3		
Input IP3	fR1 = 3.90 GHz at -5 dBm, fR2 = 3.92 at -5 dBm, fL = 4.2 GHz at +10 dBm fR1 = 7.40 GHz at -5 dBm, fR2 = 7.42 GHz at -5 dBm, fL = 6.4 GHz at +10 dBm.	dBm	+12 +14		

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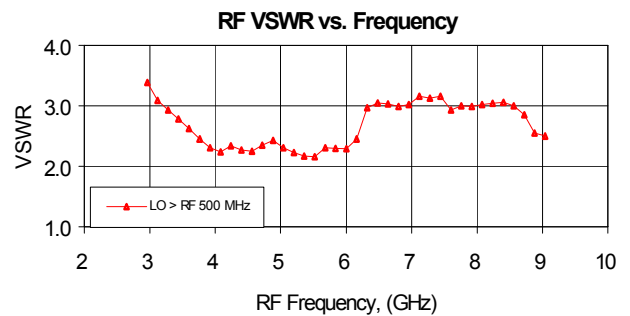
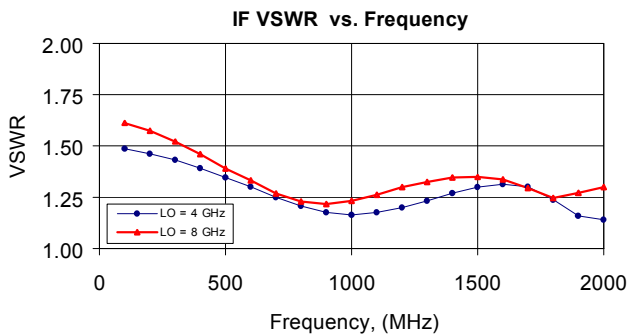
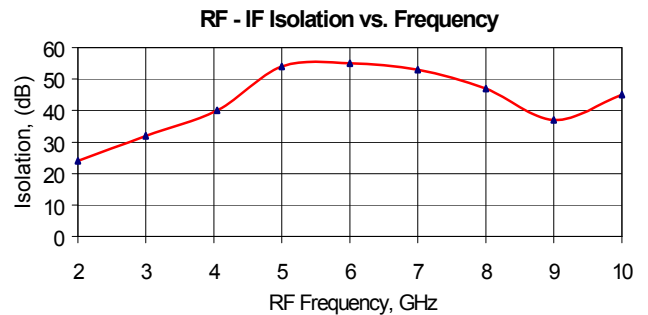
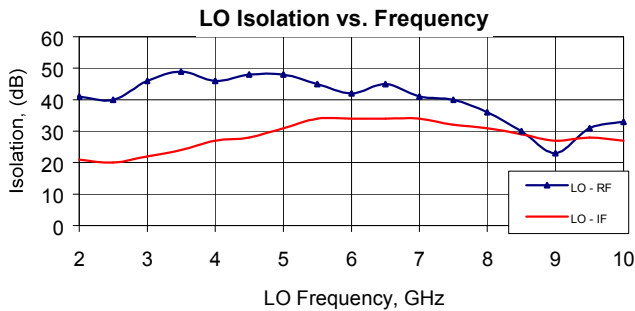
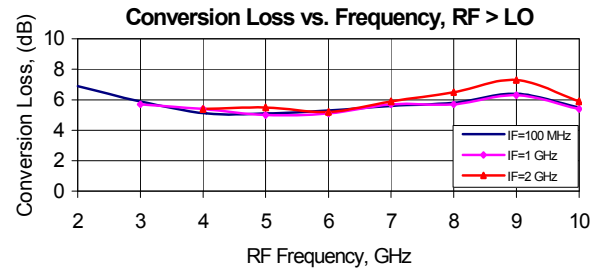
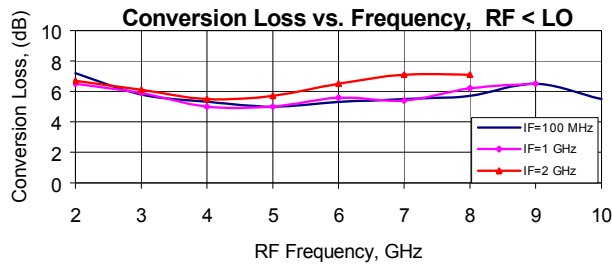
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**Typical Performance Curves**



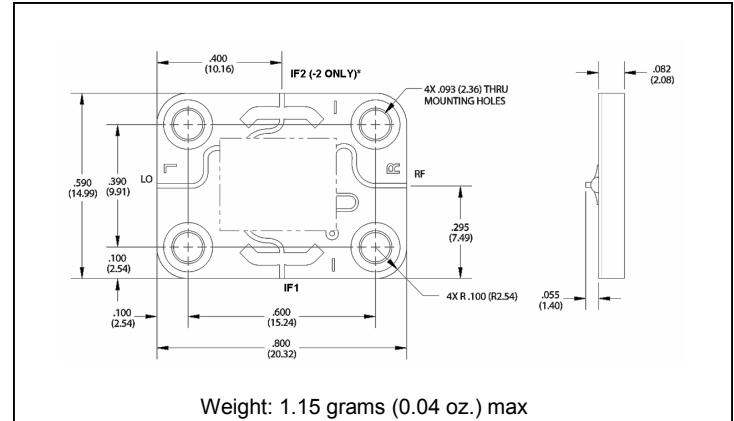
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**Absolute Maximum Ratings**

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

**Outline Drawing: Open Carrier \*MC4110**



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

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