

## **Open Carrier Double-Balanced Mixer** For Microwave Telecommunications

Rev. V2

#### **Features**

LO & RF: 4.0 TO 20.0 GHz

IF: DC TO 4.0 GHz

LO DRIVE: +10 dBm (NOMINAL)

MICROSTRIP INTERFACE

### Description

The MC4510 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
MC4510	Open Carrier
MC4510-2	Open Carrier

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

Parameter	Test Conditions	Units	Typical	Guaranteed	
Parameter	rest Conditions			+25°C	-54º to +85ºC
SSB Conversion Loss (max) & SSB Noise Figure (max)	$fR=6\ to\ 18\ GHz\ ,\ fL=6\ to\ 18\ GHz\ ,\ fI=0\ to\ 2\ GHz$ $fR=6\ to\ 18\ GHz\ ,\ fL=6\ to\ 18\ GHz\ ,\ fI=0\ to\ 4\ GHz$ $fR=4\ to\ 20\ GHz\ ,\ fL=4\ to\ 20\ GHz\ ,\ fI=0\ to\ 4\ GHz$	dB dB dB	6.0 6.5 7.5	7.5 8.0 9.0	8.0 8.5 9.5
Isolation, L to R (min)	fL = 8 to 16 GHz fL = 6 to 18 GHz fL = 4 to 20 GHz	dB dB dB	38 33 25	28 22 15	26 20 13
Isolation, L to I (min)	fL = 8 to 16 GHz fL = 6 to 18 GHz fL = 4 to 20 GHz	dB dB dB	32 30 25	22 18 15	20 16 13
Isolation, R to I (min)	fL = 4 to 20 GHz	dB	32		
1 dB Conversion Comp.	fL = +10 dBm	dBm	+4		
Input IP3	fR1 = 8.4 GHz at -5 dBm, fR2 = 8.42 GHz at -5 dBm, fL = 8.6 GHz at +10 dBm fR1 = 14.4 GHz at -5 dBm, fR2 = 14.42 GHz at -5 dBm, fL = 15.4 GHz at +10 dBm	dBm dBm	+13 +14		

Solutions has under development. Performance is based on engineering tests. Specifications are

typical. Mechanical outline has been fixed. Engineering samples

Commitment to produce in volume is not du

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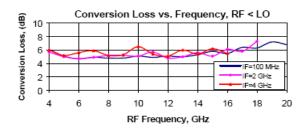
<sup>•</sup> China Tel: +86.21.2407.1588 Visit www.macomtech.com for additional data sheets and product information.

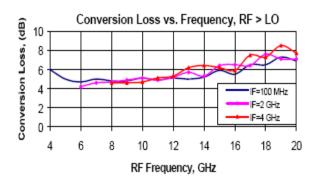


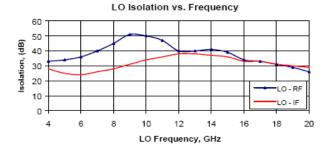
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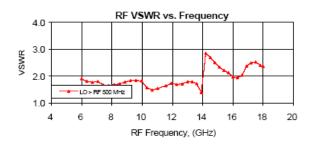
### **Typical Performance Curves**



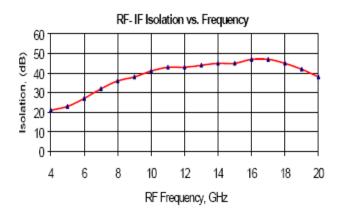


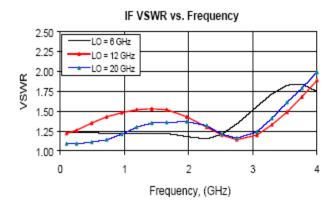






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ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not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

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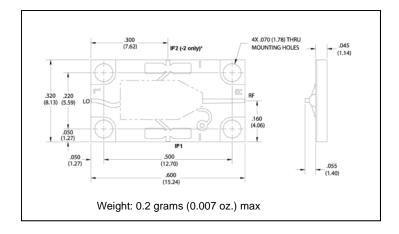
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### **Absolute Maximum Ratings**

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 \* MC4510**



\*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.

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