

Electronics

Open Carrier Double-Balanced Mixer For Microwave Telecommunications



MC4520

Features

- LO 4.0 to 20.0 Ghz
- RF 4.0 to 20.0 GHz
- IF DC to 4.0 GHz
- LO Drive +20 dBm (nominal)
- Microstrip Interface

Description

The MC4520 is a double balanced mixer, designed for military, commercial and test equipment applications. The design utilizes Schottky ring quad diodes and broadband soft dielectric balans 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 is available to MIL-STD-883, MIL-STD-202 or MIL-M-28837, consult factory.

Ordering Information

Part Number	Package
MC4520	Open Carrier
MC4520-2	Open Carrier

Electrical Specifications: $Z_0 = 50\Omega$ Lo = +20 dBm (Downconverter application only)

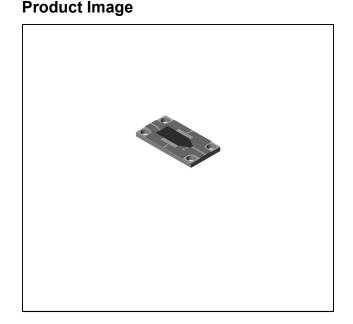
Parameter	Test Conditions	Units	Typical	Guaranteed	
				+25°C	-40° to +85°C
SSB Conversion Loss (max)	$\label{eq:rescaled} \begin{array}{l} {\rm fR} = \! 6.0 \mbox{ to } 18.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ DC to } 2.0 \mbox{ GHz }\\ {\rm fR} = \! 6.0 \mbox{ to } 18.0 \mbox{ GHz }, \mbox{ fl } = \! 6.0 \mbox{ to } 18.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ DC to } 4.0 \mbox{ GHz }\\ {\rm fR} = \! 4.0 \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \! 4.0 \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ DC to } 4.0 \mbox{ GHz }\\ {\rm fR} = \! 4.0 \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \! 4.0 \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ DC to } 4.0 \mbox{ GHz }\\ {\rm fR} = \! 4.0 \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \! 4.0 \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ DC to } 4.0 \mbox{ GHz }\\ {\rm fR} = \! 4.0 \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ DC to } 4.0 \mbox{ GHz }\\ {\rm fR} = \! 4.0 \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ DC to } 4.0 \mbox{ GHz }\\ {\rm fR} = \! 4.0 \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ to } 20.0 \mbox{ fl } = \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ to } 20.0 \mbox{ GHz }, \mbox{ fl } = \mbox{ to } 20.0 \mbox{ Hz }, \mbox{ to } 20.0 \mbo$	dB	6.5 7.0 7.5	8.0 8.5 9.0	8.5 9.0 9.5
SSB Noise Figure (max)	Within 1 dB of conversion loss	dB			
Isolation, L to R (min)	fL = 8.0 to 16.0 GHz fL = 6.0 to 18.0 GHz fL = 4.0 to 20.0 GHz	dB	35 30 25	25 20 12	23 18 10
Isolation, L to I (min)	fL = 8.0 to 16.0 GHz fL = 6.0 to 18.0 GHz fL = 4.0 to 20.0 GHz	dB	32 30 28	25 20 12	23 18 10
Isolation, R to I (min)	fR = 4.0 to 20.0 GHz	dB	35		
1 dB Conversion Comp.	fL = +20 dBm	dBm	+13		
Input IP3	fR1 = 8.4 GHz at –5 dBm, fR2 = 8.42 GHz at –5 dBm, fL = 8.6 GHz at +20 dBm fR1 = 14.4 GHz at –5 dBm, fR2 = 14.42 GHz at –5 dBm, fL = 15.4 GHz at +20 dBm	dBm	+20 +18		

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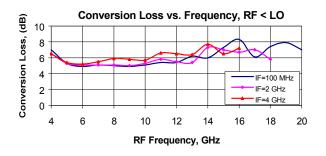
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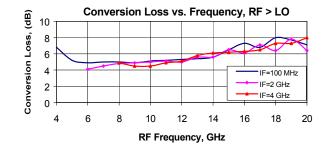


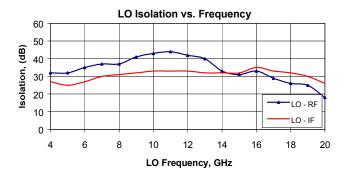


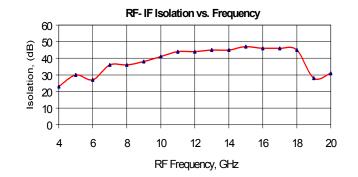


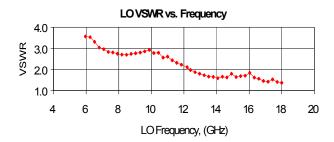
Typical Performance Curves

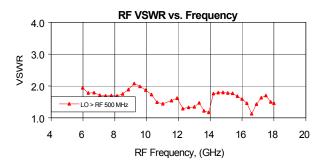












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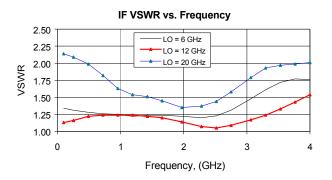
MC4520

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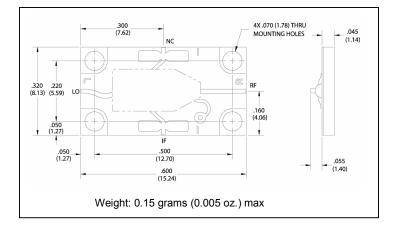
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Absolute Maximum Ratings

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

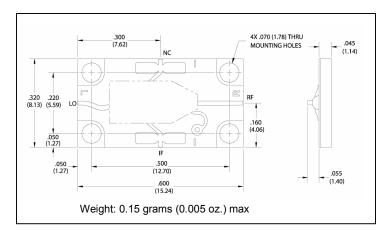


Outline Drawing: Open Carrier * MC4520



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

Outline Drawing: Open Carrier * MC4520-2



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