

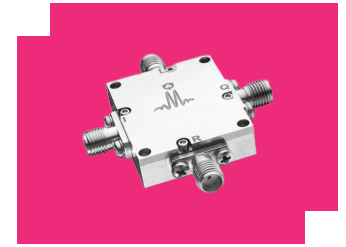
# IQ-4509LXP

## Quadrature-If Double-Balanced Mixers

### DEVICE OVERVIEW

#### General Description

The IQ-4509 is a passive IQ mixer. This broadband mixer spans 4.5 to 9 GHz on the RF and LO ports with an IF from DC to 500 MHz. Up to 23 dB of image rejection is available due to the excellent phase and amplitude balance of its LO quadrature hybrid. IQ series mixers have generally been replaced with MMIQ mixers with superior performance, repeatability, and availability. IQ series mixers are still used in legacy systems and are suitable for laboratory use.



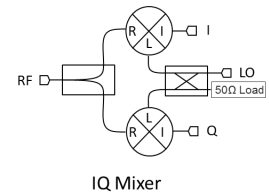
#### Features

- LO/RF 4.5 to 9.0 GHz
- IF DC to 500 MHz
- 5.5 dB Typical Conversion Loss
- 30 dB Typical LO to RF Isolation
- 4 Degree Typical Quadrature Phase Deviation
- .3 dB Typical Amplitude Deviation

#### Applications

N/A

#### Functional Block Diagram



#### Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification	Recommended Replacement
<a href="#">IQ-4509MXP</a>	Quadrature-If Double-Balanced Mixers	XP	<a href="#">Standard</a>	Non-RoHS	End of Life	EAR99	<a href="#">MMIQ-0416LS</a>
<a href="#">IQ-4509LXP</a>	Quadrature-If Double-Balanced Mixers	XP	<a href="#">Standard</a>	Non-RoHS	End of Life	EAR99	<a href="#">MMIQ-0416LS</a>


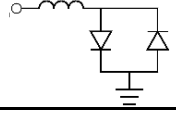
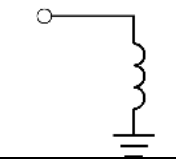
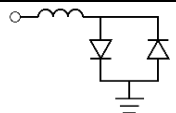
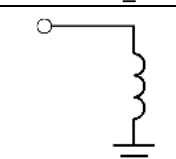
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**Port Configuration and Functions**

**Port Functions**

Port	Function	Connector Type	Description	Equivalent Circuit for Package
GND	Ground	-	XP package ground taken through metal housing.	<b>GND</b> 
I	I Input / Output	SMAF	I port is diode coupled and AC matched to 50Ω over the specified I port frequency range.	
LO	LO Input	SMAF	LO port is DC short and AC matched to 50Ω over the specified LO frequency range.	
Q	Q Input / Output	SMAF	Q port is diode coupled and AC matched to 50Ω over the specified Q port frequency range.	
RF	RF Input / Output	SMAF	RF port is DC short and AC matched to 50Ω over the specified RF frequency range.	

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**Specifications**

**Package Information**

Parameter	Details	Rating
Weight	Package name: XP	30g
Dimensions	-	20.32 x 20.32 mm

**Recommended Operating Conditions**

Parameter	Min	Nominal	Max	Unit
LO Input Power	10	-	13	-

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**Electrical Specifications**

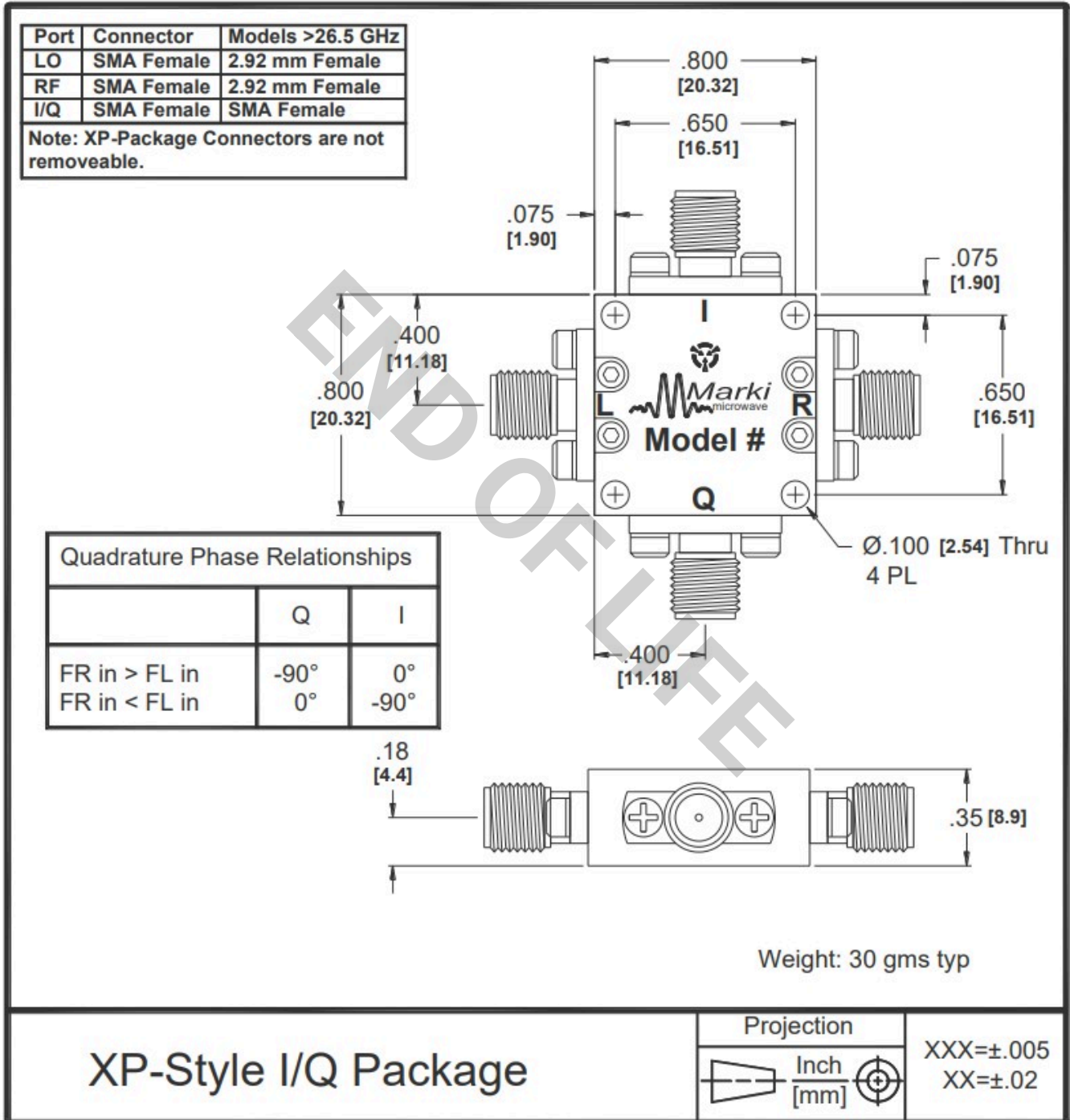
Specifications guaranteed from -55 to +100°C, measured in a 50-Ohm system.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Conversion Loss	LO/RF=4.5-9 GHz IF=DC-.5 GHz	4.5	9	-	5.5	7	dB
Image Rejection	LO/RF=4.5-9 GHz IF=DC-.5 GHz	4.5	9	18	23	-	dB
Input 1 dB Compression	LO/RF=4.5-9 GHz LO drive level, L Diode Option=10-13 dBm	4.5	9	-	4	-	dBm
Input IP3	LO/RF=4.5-9 GHz LO drive level, L Diode Option=10-13 dBm	4.5	9	-	14	-	dBm
I/Q Amplitude Deviation	LO/RF=4.5-9 GHz IF=DC-.5 GHz	4.5	9	-	0.3	-	dB
I/Q Quadrature Phase Deviation	LO/RF=4.5-9 GHz IF=DC-.5 GHz	4.5	9	-	4	-	°
Isolation, LO to IF	LO/RF=4.5-9 GHz	4.5	9	-	20	-	dB
Isolation, LO to RF	LO/RF=4.5-9 GHz	4.5	9	20	30	-	dB
Isolation, RF to IF	LO/RF=4.5-9 GHz	4.5	9	-	20	-	dB
IF Frequency Range	-	-	-	0	-	0.5	GHz
RF Frequency Range	-	-	-	4.5	-	9	GHz

**Mechanical Data**

**Outline Drawing**

Download : [Outline 2D Drawing](#)



## Notes

1. Mixer Conversion Loss Plot IF frequency is 70 MHz.
2. Mixer Noise Figure typically measures within 0.5 dB of conversion loss for IF frequencies greater than 5 MHz.
3. Conversion Loss typically degrades less than 0.5 dB for LO drives 2 dB below the lowest and 3 dB above highest nominal LO drive levels.
4. Conversion Loss typically degrades less than 0.5 dB at +100°C and improves less than 0.5 dB at -55°C.
5. Maximum input power is +26 dBm at +25°C, derated linearly to +23 dBm at +100°C.
6. Specifications are subject to change without notice. Contact Marki Microwave for the most recent specifications and data sheets.
7. Catalog mixer circuits are continually improved. Configuration control requires custom mixer model numbers and specifications.

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