Sales: 408-778-9952 | General: 408-778-4200 | Fax: 408-778-4300
Sales & Customer Support: sales@markimicrowave.com
Tech Support: support@markimicrowave.com

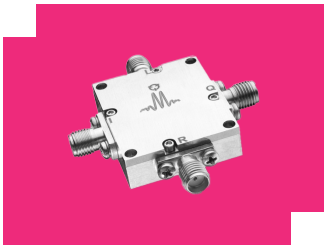
IQ-1545LMP

Quadrature-IF Double-Balanced Mixers

DEVICE OVERVIEW

General Description

The IQ-1545 is a passive IQ mixer. This broadband mixer spans 1.5 to 4.5 GHz on the RF and LO ports with an IF from DC to 500 MHz. Up to 25 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.



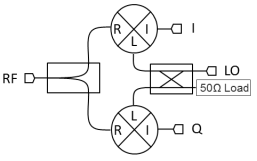
Features

- LO/RF 1.5 to 4.5 GHz
- IF DC to 500 MHz
- 5.5 dB Typical Conversion Loss
- 43 dB Typical LO to RF Isolation
- 3 degree Typ Quadrature Phase Deviation
- .3 dB Typical Amplitude Deviation

Applications

N/A

Functional Block Diagram



IQ Mixer

Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification	Recommended Replacement
IQ-1545LMP	Quadrature-IF Double-Balanced Mixers	MP	Standard	Non-RoHS	Not Recommended for New Design	EAR99	-

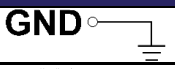
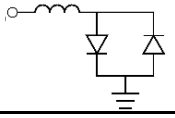
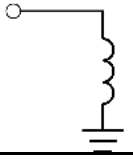
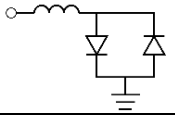
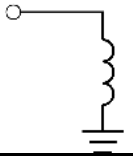
Table Of Contents

Revision History

Revision Code	Revision Date	Comment
A	2023-02-01	Updated Outline Drawing
B	2023-10-30	Updated Electrical Specifications to clarify that testing is performed as an image reject mixer with a 20-200 MHz IF Hybrid. Updated production test minimum specifications.

Port Configuration and Functions

Port Functions

Port	Function	Connector Type	Description	Equivalent Circuit for Package
GND	Ground	-	MP package ground taken through metal housing.	
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.	

Specifications

Package Information

Parameter	Details	Rating
Weight	Package name: MP	30g
Dimensions	-	26.92 x 32 mm

Recommended Operating Conditions

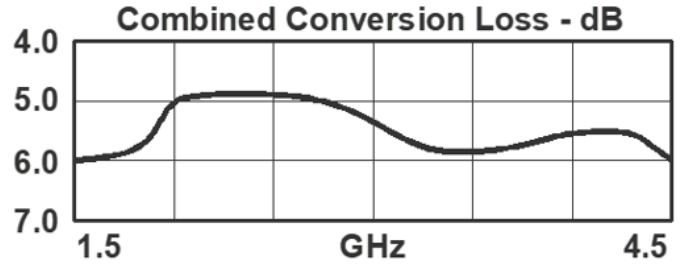
Parameter	Min	Nominal	Max	Unit
LO Input Power	10	-	13	-

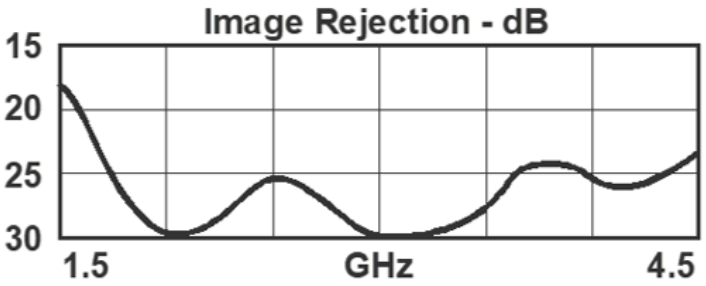
Electrical Specifications

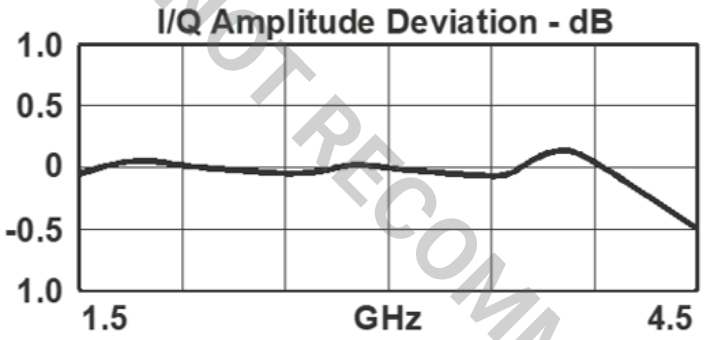
Specifications guaranteed from -55 to +100°C, measured in a 50-Ohm system. All specifications measured as an image reject mixer with a 20-200 MHz IF Hybrid.

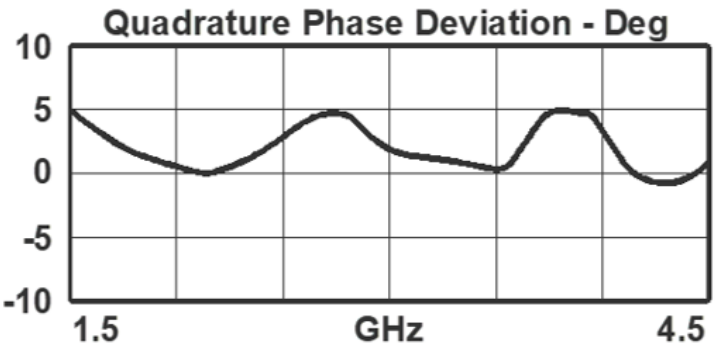
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Conversion Loss	LO/RF=1.5-4.5 GHz IF=DC-0.5 GHz	1.5	4.5	-	5.5	10	dB
Image Rejection	LO/RF=1.5-4.5 GHz IF=DC-0.5 GHz	1.5	4.5	14	25	-	dB
Input 1 dB Compression	LO/RF=1.5-4.5 GHz LO drive level, L Diode Option=10-13 dBm	1.5	4.5	-	4	-	dBm
Input IP3	LO/RF=1.5-4.5 GHz LO drive level, L Diode Option=10-13 dBm	1.5	4.5	-	14	-	dBm
I/Q Amplitude Deviation	LO/RF=1.5-4.5 GHz IF=DC-0.5 GHz	1.5	4.5	-	0.3	-	dB
I/Q Quadrature Phase Deviation	LO/RF=1.5-4.5 GHz IF=DC-0.5 GHz	1.5	4.5	-	3	-	°
Isolation, LO to IF	LO/RF=1.5-4.5 GHz	1.5	4.5	-	30	-	dB
Isolation, LO to RF	LO/RF=1.5-4.5 GHz	1.5	4.5	32	43	-	dB
Isolation, RF to IF	LO/RF=1.5-4.5 GHz	1.5	4.5	-	30	-	dB
IF Frequency Range	-	-	-	0	-	0.5	GHz
RF Frequency Range	-	-	-	1.5	-	4.5	GHz

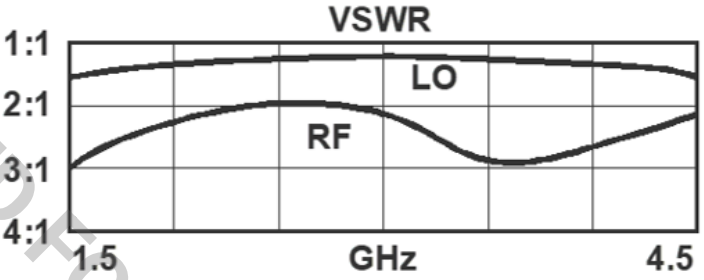
Typical Performance Plots









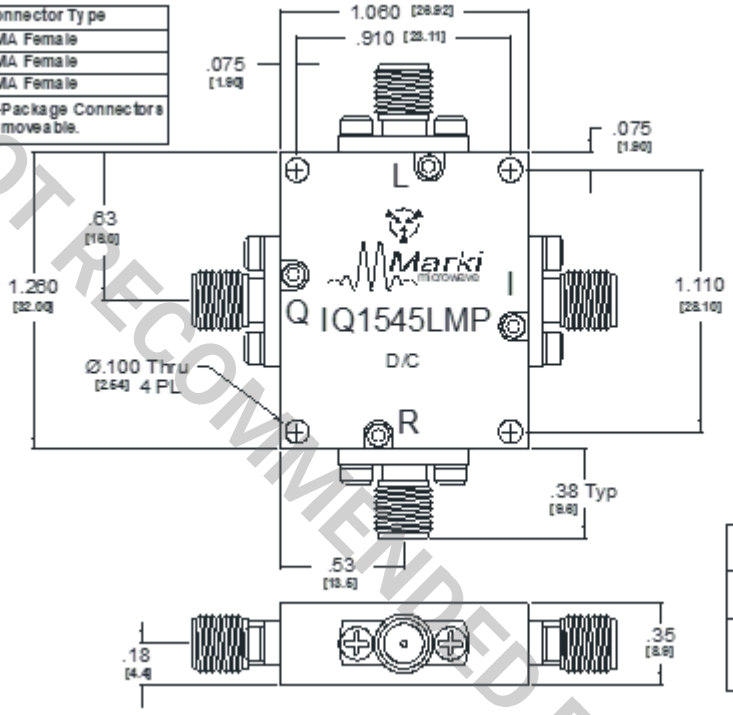


Mechanical Data

Outline Drawing

Download : Outline 2D Drawing | Outline 3D Drawing | Outline 3D STP

Port	Connector Type
LO	SMA Female
RF	SMA Female
I/Q	SMA Female
Note: MP-Package Connectors are not removeable.	



Quadrature Phase Relationships		
	I	Q
FR in > FL in	-90°	0°
FR in < FL in	0°	-90°

Notes

DATA SHEET 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.

DISCLAIMER