

M1-0310HP

High Isolation Double-Balanced Mixers

DEVICE OVERVIEW

General Description

M1 double balanced mixers are hybrid assemblies that have been hand-tuned to feature low conversion loss and high isolations and a DC IF response. M1 mixers have generally been replaced with MM1 mixers with superior performance, repeatability, and availability. M1 mixers are still used in legacy systems and are suitable for laboratory use.



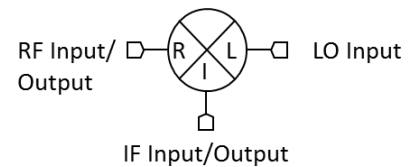
Features

- LO/RF 3.0 to 10.0 GHz
- IF DC to 3.0 GHz
- 6.0 dB Typical Conversion Loss
- 50 dB Typical LO to RF Isolation
- Carrier and Surface Mount Outlines
- Multi-Octave Band RF and LO

Applications

N/A

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification	Recommended Replacement
M1-0310HP	High Isolation Double-Balanced Mixers	P	<u>Standard</u>	<u>Consult Factory</u>	End of Life	EAR99	<u>MM1-0312HS</u>
<u>M1-0310MP</u>	High Isolation Double-Balanced Mixers	P	<u>Standard</u>	Non-RoHS	End of Life	EAR99	<u>MM1-0312HSMM1-0212HS</u>
<u>M1-0310LP</u>	High Isolation Double-Balanced Mixers	P	<u>Standard</u>	<u>Consult Factory</u>	Not Recommended for New Design	EAR99	<u>MM1-0312HSMM1-0212LS</u>

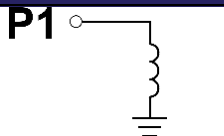
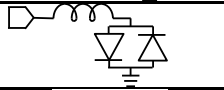
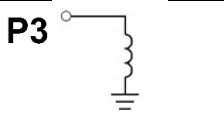
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Port Configuration and Functions

Port Functions

Port	Function	Connector Type	Description	Equivalent Circuit for Package
Port 1	LO	SMAF	Port 1 is DC short for the P package.	
Port 2	IF	SMAF	Port 2 is diode connected for the P Package.	
Port 3	RF	SMAF	Port 3 is DC short for the P Package.	

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Specifications

Package Information

Parameter	Details	Rating
Weight	Package name: P	18g
Dimensions	-	20.32 x 14.99 mm

Recommended Operating Conditions

Parameter	Min	Nominal	Max	Unit
LO Input Power	16	-	19	-

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Electrical Specifications

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

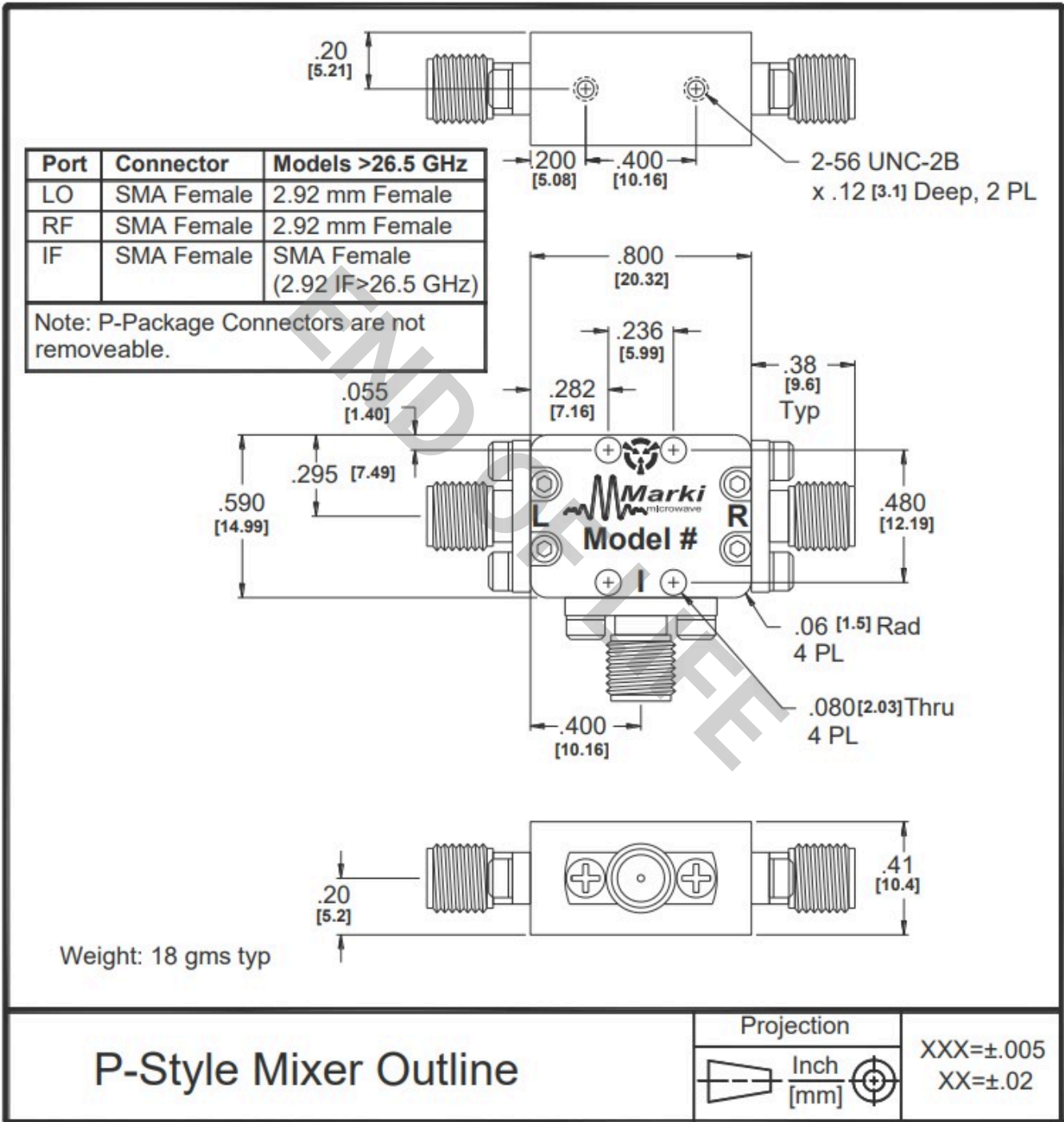
Parameter	Test Conditions	Min	Typ	Max	Unit
Conversion Loss	LO/RF=3-10 GHz IF=1-3 GHz	-	6.5	9.5	dB
Conversion Loss	LO/RF=3-10 GHz IF=DC-1 GHz	-	6	9	dB
Input 1 dB Compression	LO/RF=3-10 GHz LO drive level, H Diode Option=16-19 dBm	-	11	-	dBm
Input IP3	LO/RF=3-10 GHz LO drive level, H Diode Option=16-19 dBm	-	21	-	dBm
Isolation, LO to IF ¹	LO/RF=3-10 GHz	-	40	-	dB
Isolation, LO to RF ²	LO/RF=3-10 GHz	-	40	-	dB
Isolation, RF to IF ³	LO/RF=3-10 GHz	-	25	-	dB
IF Frequency Range	-	0	-	10	GHz
Input IP3	-	-	21	-	dBm
Input P1dB	-	-	11	-	dBm
RF Frequency Range	-	3	-	12	GHz

^[1]^[2]^[3] High 2nd/3rd LO Harmonics can mix to produce a higher intermodulation output than the actual isolation output.

Mechanical Data

Outline Drawing

Download : [Outline 3D Drawing](#) | [Outline 3D STP](#)



Notes

1. Mixer Conversion Loss Plot IF frequency is 100 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 +23 dBm at +25°C, derated linearly to +20 dBm at +100°C.
6. Specifications are subject to change without notice. Contact Marki Microwave for the most recent specifications and data sheets.
7. Standard configuration for A, B, and C outlines are with connectors and bottom spacer.
8. Catalog mixer circuits are continually improved. Configuration control requires custom mixer model numbers and specifications.

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