

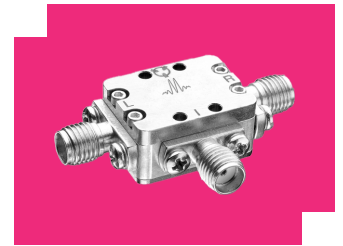
# M1-0420MA

## Double-Balanced Mixer

### 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.



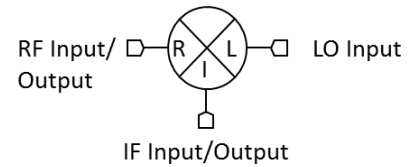
#### Features

- LO/RF 4.0 to 20.0 GHz
- IF DC to 4.0 GHz
- 6.0 dB Typical Conversion Loss
- 35 dB Typical LO to RF Isolation
- Very-Broadband RF and LO

#### Applications

N/A

#### Functional Block Diagram



#### Part Ordering Options

Part Number	Description	Connectors	Green Status	Product Lifecycle	Export Classification
<a href="#">M1-0420LP</a>	Double-Balanced Mixers	<a href="#">Standard</a>	<a href="#">Consult Factory</a>	End of Life	EAR99
M1-0420MA	Double-Balanced Mixer	-		Released	EAR99
<a href="#">M1-0420MP</a>	Double-Balanced Mixers	<a href="#">Standard</a>	<a href="#">Consult Factory</a>	End of Life	EAR99
<a href="#">M1-0420SP</a>	Double-Balanced Mixers	<a href="#">Standard</a>	Non-RoHS	End of Life	EAR99
<a href="#">M1-0420HP</a>	Double-Balanced Mixers	<a href="#">Standard</a>	<a href="#">Consult Factory</a>	End of Life	EAR99

## Table Of Contents

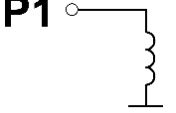
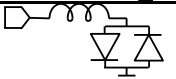
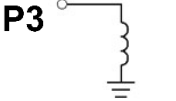
- **Device Overview**
  - General Description
  - Features
  - Applications
  - Functional Block Diagram
- **Port Configuration and Functions**
  - Port Functions
- **Revision History**
- **Specifications**
  - Electrical Specifications
  - Typical Performance Plots
- **Mechanical Data**
  - Outline Drawing

## Revision History

Revision Code	Revision Date	Comment
-	2015-07-01	Initial Release
A	2025-11-13	Updated Conversion Loss Spec
B	2025-11-19	Typical Performance Plots Added

**Port Configuration and Functions**

**Port Functions**

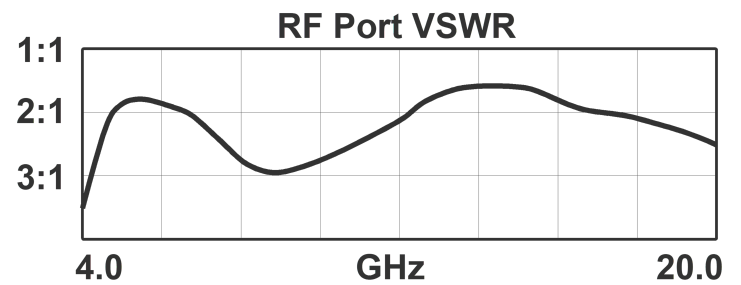
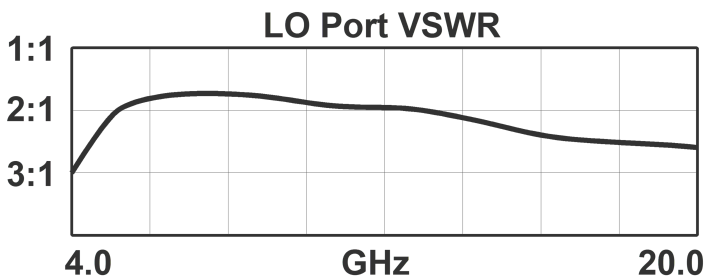
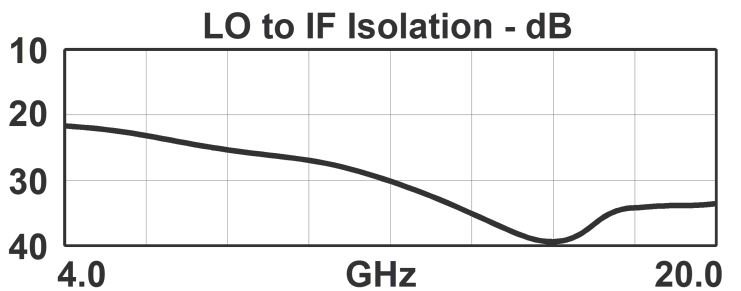
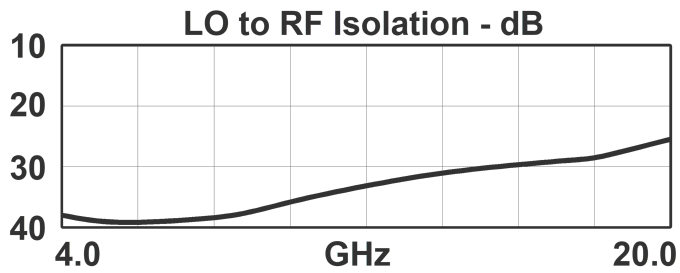
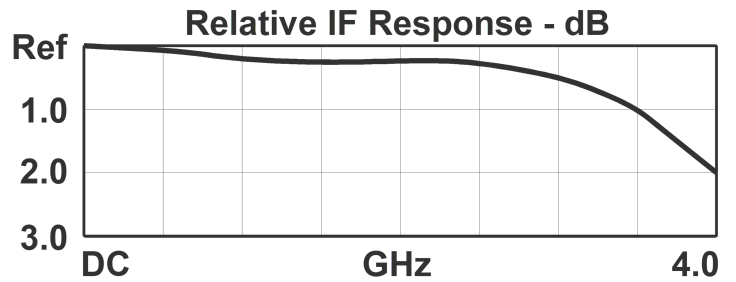
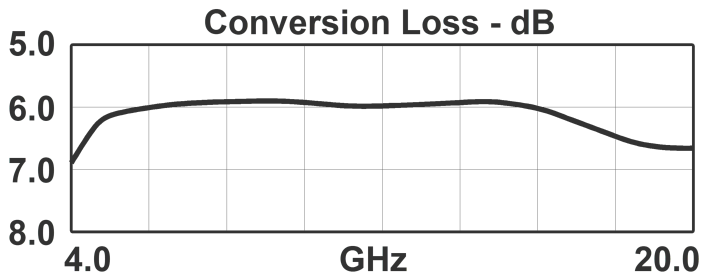
Port	Function	Connector Type	Description	DC Equivalent Circuit
Port 1	LO	-	Port 1 is DC short for the P package.	<b>P1</b> 
Port 2	IF	-	Port 2 is diode connected for the P Package.	
Port 3	RF	-	Port 3 is DC short for the P Package.	<b>P3</b> 

**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=4-5GHz IF=91MHz	-	8	10	dB
Conversion Loss	LO/RF=5-20GHz IF=91MHz	-	6	8	dB
Isolation, LO to RF	LO/RF=4-20 GHz	20	35	-	dB
Isolation, LO to IF	LO/RF=4-20 GHz	-	30	-	dB
Isolation, RF to IF	LO/RF=4-20 GHz	-	25	-	dB
Input 1 dB Compression	-	-	5	-	dBm
Input IP3	-	-	15	-	dBm
RF Frequency Range	-	4	-	20	GHz
IF Frequency Range	-	0	-	4	GHz
LO Frequency Range	-	4	-	20	GHz

**Typical Performance Plots**

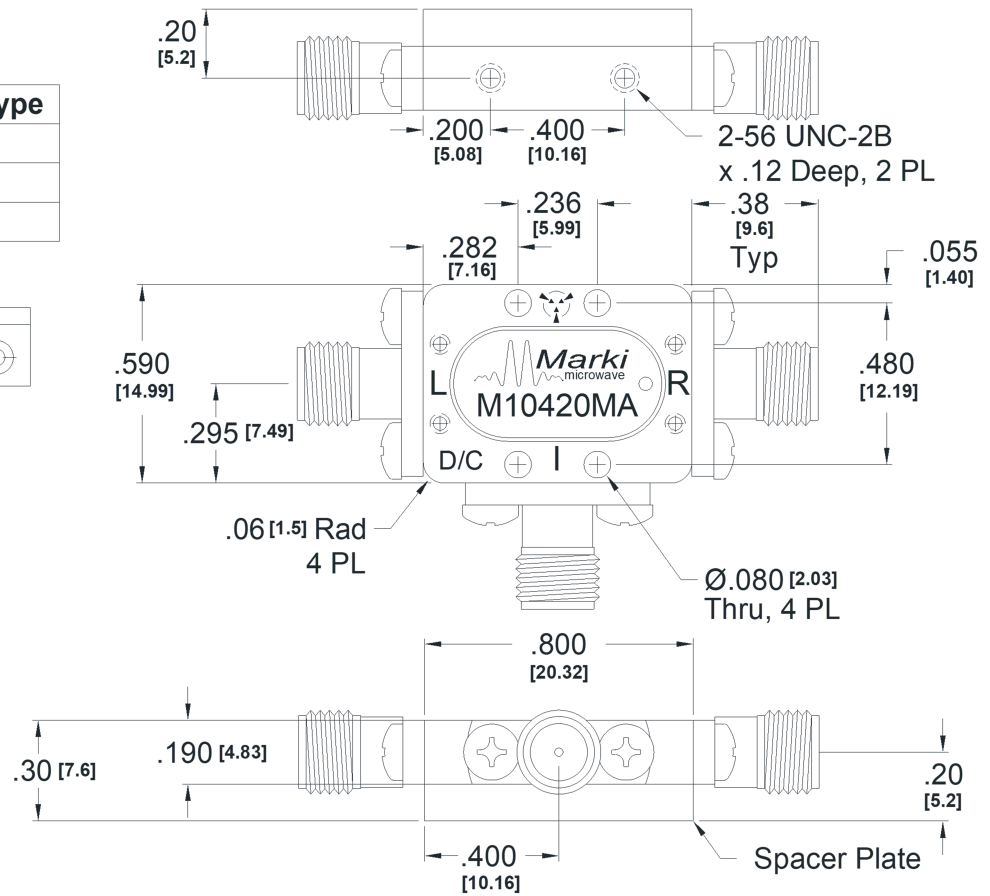
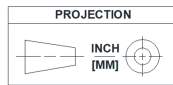


**Mechanical Data**

**Outline Drawing**

Download : [Outline 2D Drawing](#)

Port	Connector Type
LO	SMA Female
RF	SMA Female
IF	SMA Female



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