

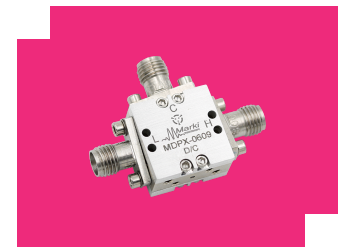
# MDPX-0609

## Passive MMIC DC-6 GHz Diplexer/Reflectionless Filter

### DEVICE OVERVIEW

#### General Description

The MDPX-0609 is a broadband passive MMIC diplexer, a combination high pass and loss pass filter, capable of multiplexing low frequency DC to 6 GHz and high frequency 9 to 26.5 GHz signals. It can also be used as a reflectionless high pass or low pass filter when terminated with an internal/external 50 Ohm load. Passive GaAs MMIC technology allows production of smaller filter constructions that replace larger form factor circuit board constructions. Tight fabrication tolerances allow for less unit-to-unit variation than traditional filter technologies. The MDPX-0609 is available as a connectorized module and as wire bondable die. Low unit to unit variation allows for accurate simulations using the provided S3P file taken from measured production units.



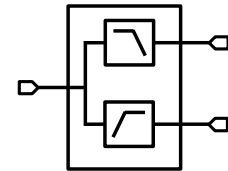
#### Features

- 8 GHz Crossover Point
- Low <1dB typical Insertion Loss in Pass band
- High Stop Band Suppression
- Reflectionless Filter
- RoHS Compliant

#### Applications

- Reflectionless Filter Applications
- RF Transceivers

#### Functional Block Diagram



#### Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification
MDPX-0609	Passive MMIC DC-6 GHz Diplexer/Reflectionless Filter	UB	<u>Standard</u>	REACH RoHS	Released	EAR99

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### Revision History

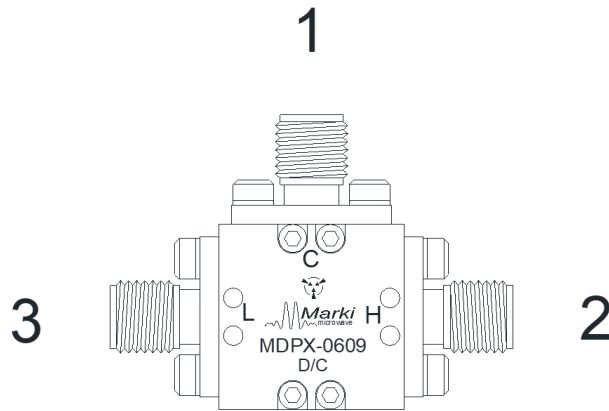
Revision Code	Revision Date	Comment
-	2021-07-01	Datasheet initial Release
A	2022-05-01	CH Wire Bondable Die Added

## MDPX-0609

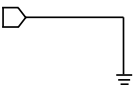
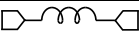
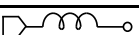
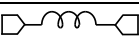
Passive MMIC DC-6 GHz Diplexer/Reflectionless Filter

### Port Configuration and Functions

#### Port Diagram



#### Port Functions

Port	Function	Connector Type	Description	Equivalent Circuit for Package
GND	Ground	-	Package ground provided through metal housing and outer coax conductor.	
Port 1	Input/common	SMAF	Port 1 is DC short to Port 3 and open to Port 2 and ground.	
Port 2	High Pass Filter	SMAF	Port 2 is DC open to all other ports and ground.	
Port 3	Low Pass Filter	SMAF	Port 3 is DC short to Port 1 and open to Port 2.	

## MDPX-0609

### Passive MMIC DC-6 GHz Diplexer/Reflectionless Filter

## Specifications

### Absolute Maximum Ratings

Parameter	Maximum Rating	Unit
Maximum Storage Temperature	100	°C
Maximum Survivable Operating Temperature	100	°C
Minimum Storage Temperature	-65	°C
Minimum Survivable Operating Temperature	-65	°C
RF Power Handling	30	dBm
Spec Guaranteed Operating Temperature	25	°C

### Package Information

Parameter	Details	Rating
Dimensions	-	16.26x9.93 mm

#### Electrical Specifications

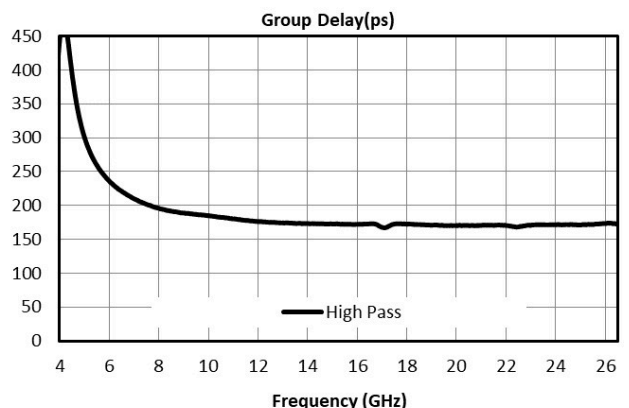
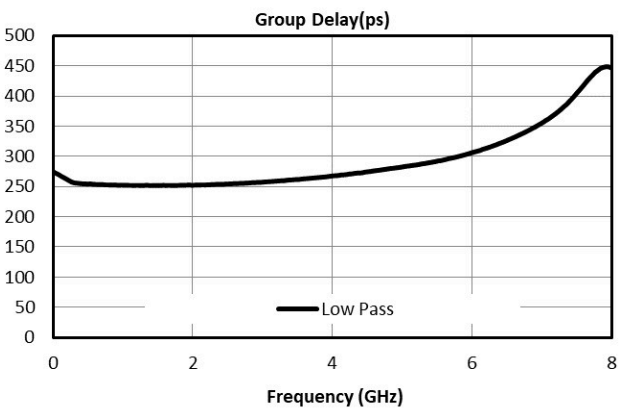
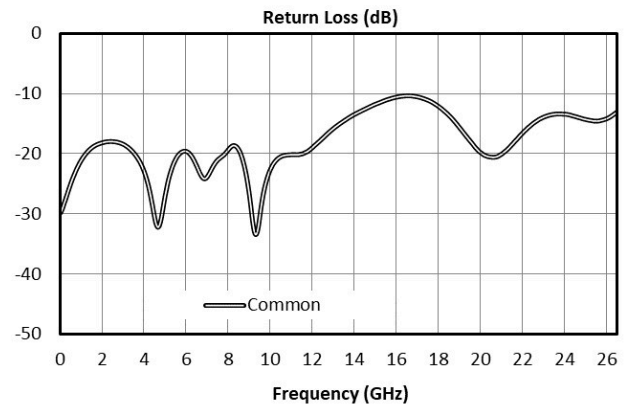
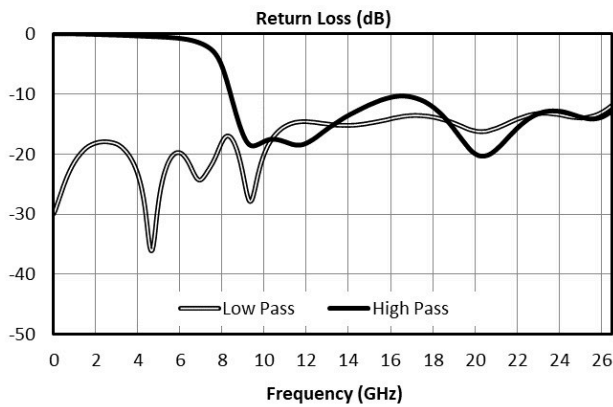
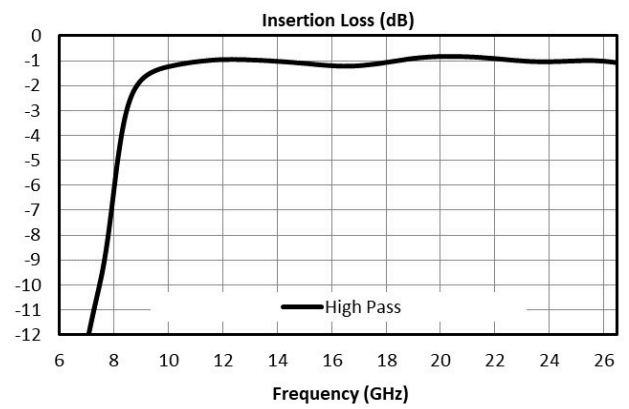
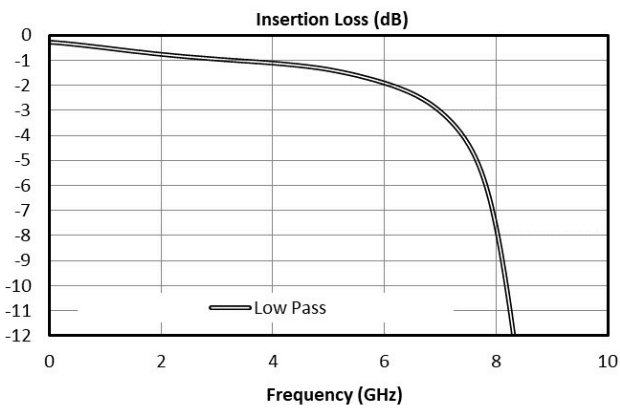
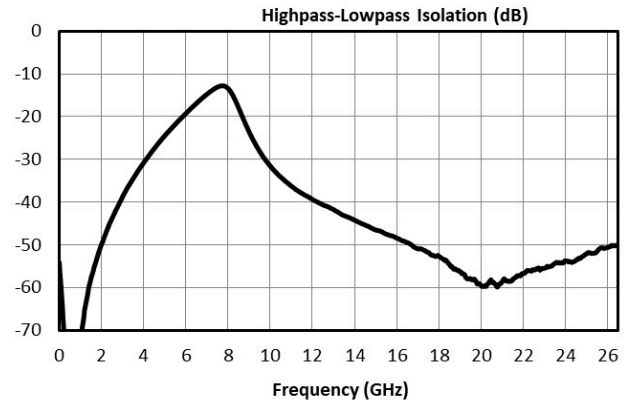
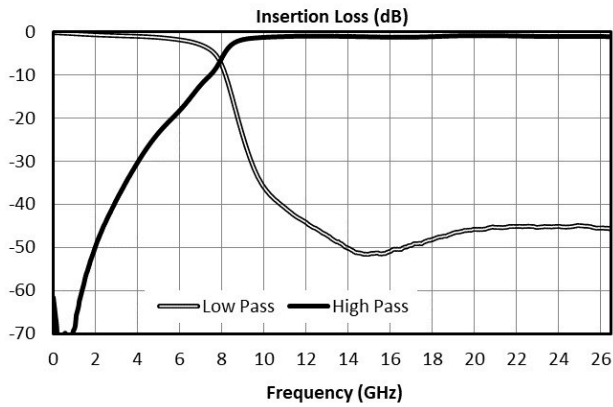
Specifications guaranteed +25°C for UB package, measured in a 50Ω system.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
30 dBc Low Pass Rejection Point	DC to 4 GHz	0	4	20	51	-	dB
Common Port Return Loss	9 to 26.5 GHz	9	26.5	7	15	-	dB
Common Port Return Loss	DC to 6 GHz	0	6	13	22	-	dB
High Frequency Passband	-	-	-	9	-	26.5	GHz
High Pass Filter, Pass Band Insertion Loss	9 to 26.5 GHz	9	26.5	-	1	-	dB
High Pass Filter, Pass Band Return Loss	9 to 26.5 GHz	9	26.5	7	15	-	dB
Impedance	-	-	-	-	50	-	Ω
Isolation	12 to 26.5 GHz	12	26.5	30	58	-	dB
Isolation	4 to 6 GHz	4	6	-	25	-	dB
Isolation	DC to 4 GHz	0	4	20	51	-	dB
Low Frequency Passband	-	-	-	0	-	6	GHz
Low Pass Filter, Pass Band Insertion Loss	DC to 6 GHz	0	6	-	0.9	-	dB
Low Pass Filter, Pass Band Return Loss	DC to 6 GHz	0	6	13	22	-	dB
Low Pass Filter, Stop Band Rejection	12 to 26.5 GHz	12	26.5	30	47	-	dB

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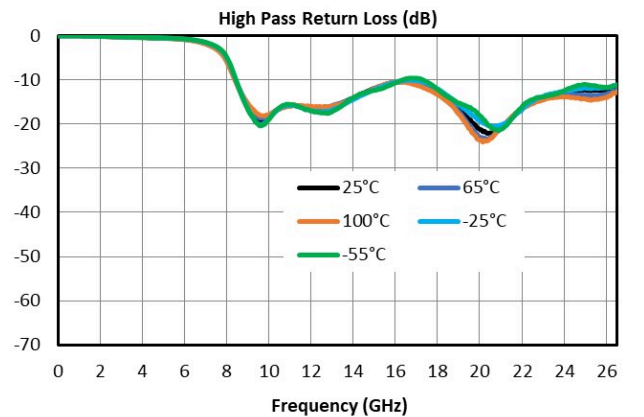
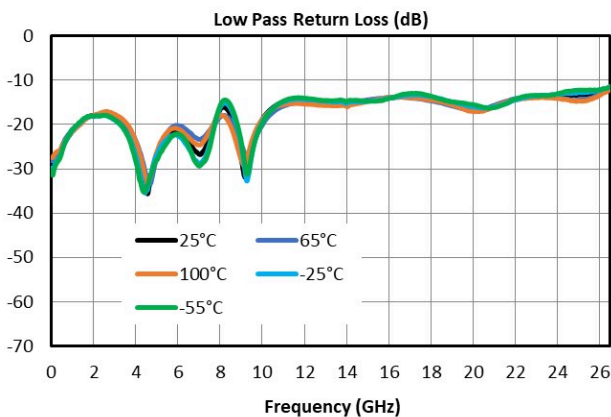
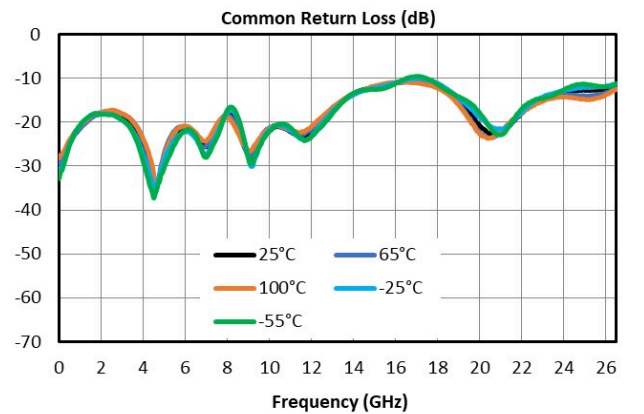
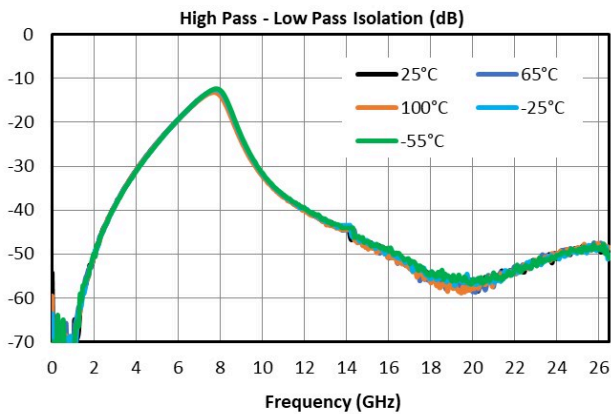
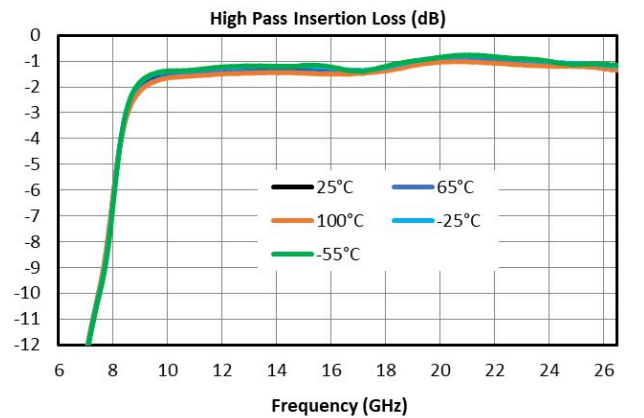
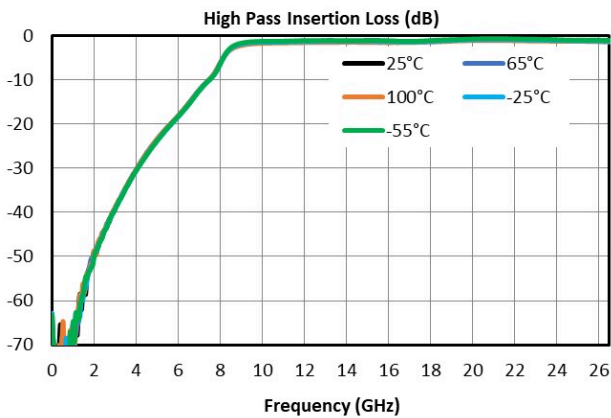
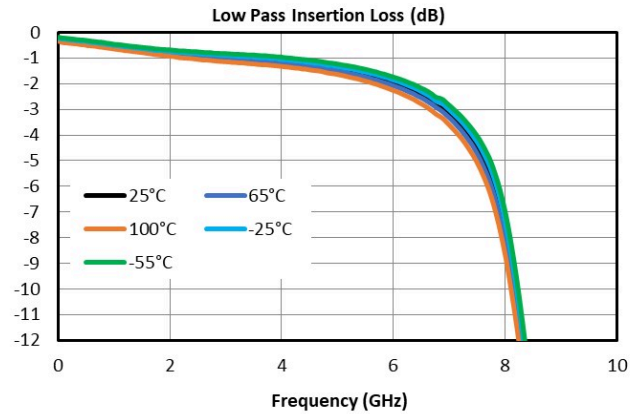
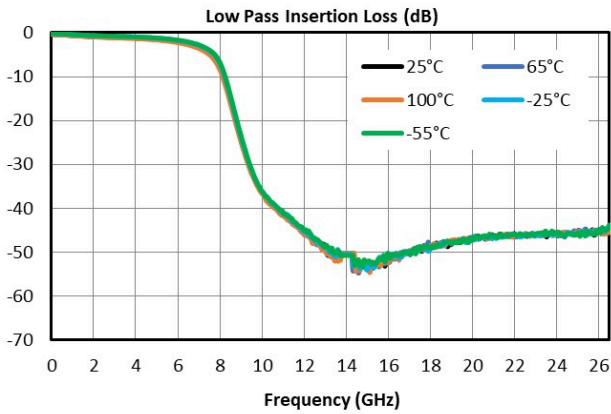
### Typical Performance Plots



# MDPX-0609

## Passive MMIC DC-6 GHz Diplexer/Reflectionless Filter

### Typical Performance Plots over temperature

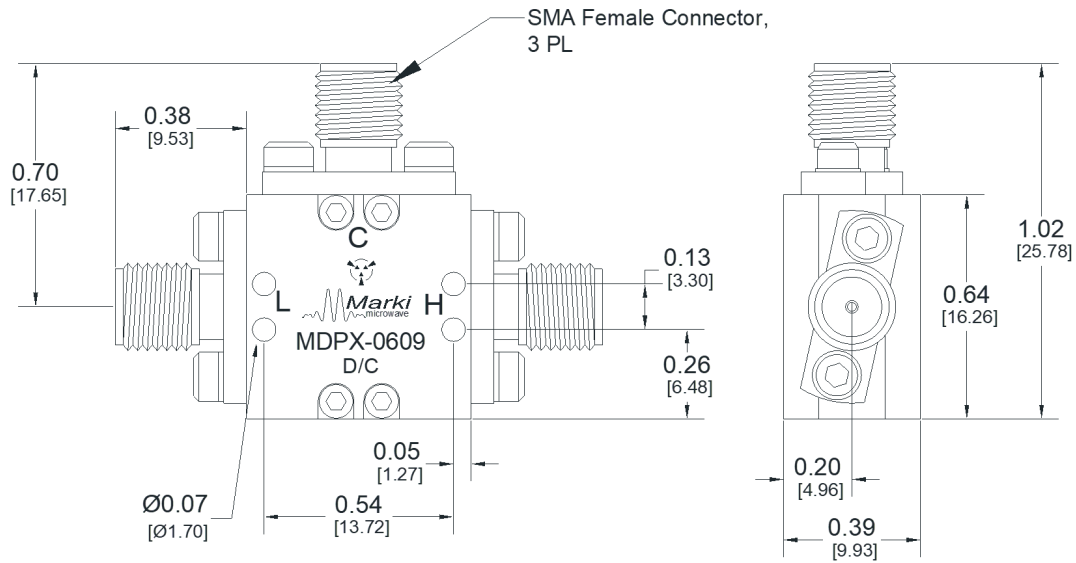
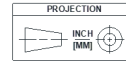


### Mechanical Data

### Outline Drawing

Download : [Outline 2D Drawing](#) | [Outline 3D Drawing](#) | [Outline 3D STP](#)

All measurements are Typical.



## Notes

### DATA SHEET NOTES:

1. Group delay calculated using wrapped phase response.
2. Specifications are subject to change without notice. Contact Marki Microwave for the most recent specifications and data sheets.
3. Catalog circuits are continually improved. Configuration control requires custom model numbers and specifications.

Note: Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to device with only one parameter set at the limit and all other parameters set at or below their nominal value. Exceeding any of the limits listed here may result in permanent damage to the device.

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