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

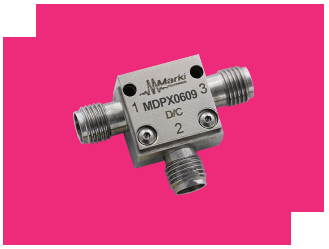
MDPX-0609BH

Passive MMIC DC-6 / 9-26.5 GHz Diplexer/Reflectionless Filter

DEVICE OVERVIEW

General Description

The MDPX-0609BH 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 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 2.92mm 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.



Download s-parameters here

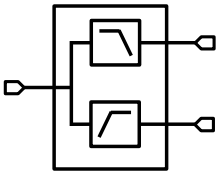
Features

- Crossover Frequency, 7.9 GHz
- Low Passband Insertion Loss, < 1dB Typical
- High Stop Band Suppression, > 45 dB Typical
- 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-0609BH	Passive MMIC DC-6 / 9-26.5 GHz Diplexer/Reflectionless Filter	BH	-	REACH RoHS	Released	EAR99

Table Of Contents

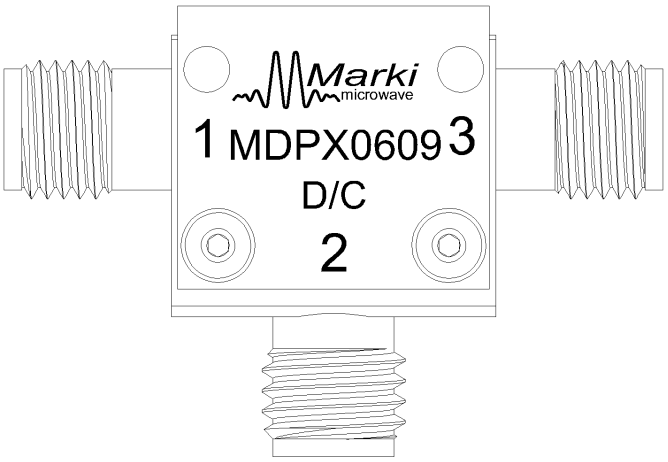
Revision History

Revision Code	Revision Date	Comment
-	2026-06-04	Initial Release

Port Configuration and Functions

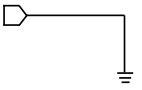
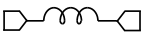
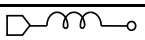
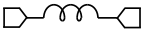
Port Diagram

The MDPX-0609BH can be used as a Diplexer, reflectionless LPF, or reflectionless HPF depending on the configuration of each port which can be seen below in the Configuration Array.

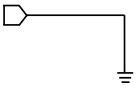
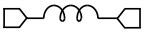
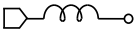
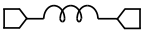


Port Functions

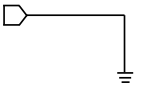
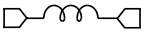
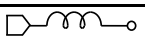
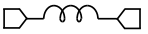
Configuration A

Port	Function	Connector Type	Description	DC Equivalent Circuit
GND	Ground	-	BH package ground provided through metal housing and outer coax conductor.	
Port 1	Input/common	2.92F	Port 1 is DC short to Port 3 and open to Port 2 and ground.	
Port 2	RF High Band	2.92F	Port 2 is DC open to all other ports and ground.	
Port 3	RF Low Band	2.92F	Port 3 is DC short to Port 1 and open to Port 2.	

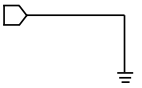
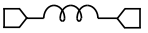
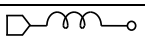
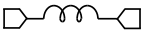
Configuration B

Port	Function	Connector Type	Description	DC Equivalent Circuit
GND	Ground	-	BH package ground provided through metal housing and outer coax conductor.	
Port 1	RF Low Band	2.92F	Port 1 is DC short to Port 3 and open to Port 2 and ground.	
Port 2	Terminated	2.92F	Port 2 is DC open to all other ports and ground. For reflectionless LPF, this port can be left open or terminated for this configuration.	
Port 3	Input/common	2.92F	Port 3 is DC short to Port 1 and open to Port 2.	

Configuration C

Port	Function	Connector Type	Description	DC Equivalent Circuit
GND	Ground	-	BH package ground provided through metal housing and outer coax conductor.	
Port 1	Input/common	2.92F	Port 1 is DC short to Port 3 and open to Port 2 and ground.	
Port 2	Terminated	2.92F	Port 2 is DC open to all other ports and ground.	
Port 3	RF Low Band	2.92F	Port 3 is DC short to Port 1 and open to Port 2.	

Configuration D

Port	Function	Connector Type	Description	DC Equivalent Circuit
GND	Ground	-	BH package ground provided through metal housing and outer coax conductor.	
Port 1	Input/common	2.92F	Port 1 is DC short to Port 3 and open to Port 2 and ground.	
Port 2	RF High Band	2.92F	Port 2 is DC open to all other ports and ground.	
Port 3	Terminated	2.92F	Port 3 is DC short to Port 1 and open to Port 2.	

Specifications

Absolute Maximum Ratings

Parameter	Maximum Rating	Unit
Maximum Operating Temperature	100	°C
Maximum Storage Temperature	100	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C

Package Information

Parameter	Details	Rating
Weight	Package name: BH	12g
Dimensions	-	29.01 x 19.84 mm

Electrical Specifications

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

Parameter	Port Configuration	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
1 dBc High Passband	A	Configuration A, Temp = 25°C	9.26	-	-	-	-	GHz
3 dBc High Passband	A	Configuration A, Temp = 25°C	8.36	-	-	-	-	GHz
30 dBc High Pass Rejection Point	A	Configuration A, Temp = 25°C	3.96	-	-	-	-	GHz
High Pass Filter, Pass Band Return Loss	A	Configuration A, Temp = 25°C	-	-	-	13	-	dB
High Pass Isolation	A	Configuration A, Temp = 25°C	-	-	-	44	-	dB
High Pass Group Delay	A	Configuration A, Temp = 25°C	-	-	-	120	-	ps
1 dBc Low Passband	A	Configuration A, Temp = 25°C	-	4.76	-	-	-	GHz
3 dBc Low Passband	A	Configuration A, Temp = 25°C	-	7.06	-	-	-	GHz
30 dBc Low Pass Rejection Point	A	Configuration A, Temp = 25°C	-	9.36	-	-	-	GHz
Low Pass Filter, Pass Band Return Loss	A	Configuration A, Temp = 25°C	-	-	-	19	-	dB
Low Pass Isolation	A	Configuration A, Temp = 25°C	-	-	-	26	-	dB
Low Pass Group Delay	A	Configuration A, Temp = 25°C	-	-	-	200	-	ps
Crossover Isolation	A	Configuration A, Temp = 25°C	-	-	-	13	-	dB
Cross Over Frequency	A	Configuration A, Temp = 25°C	-	-	-	7.91	-	GHz
Common Port Return Loss	A	Configuration A, Temp = 25°C	-	-	-	18	-	dB
Impedance	A	Configuration A, Temp = 25°C	-	-	-	50	-	Ω

MDPX-0609BH

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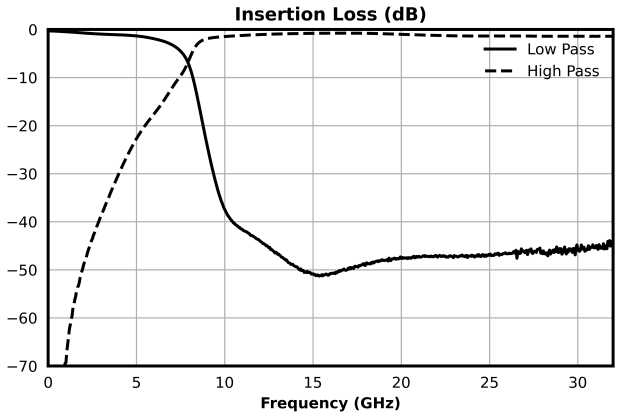
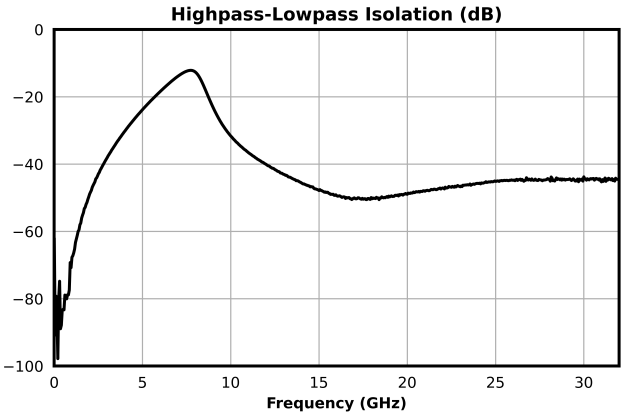
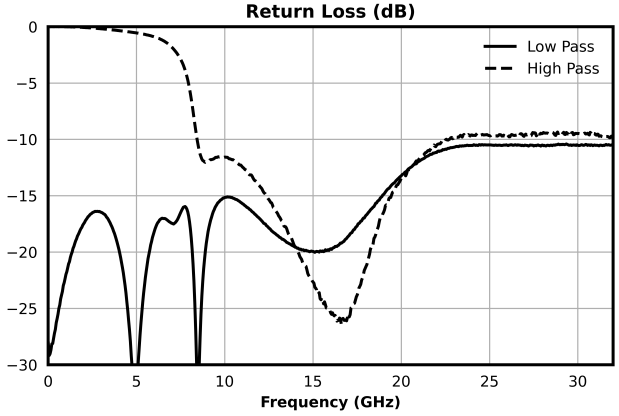
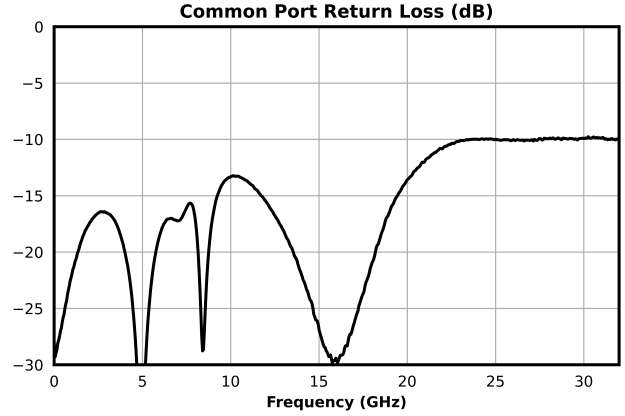
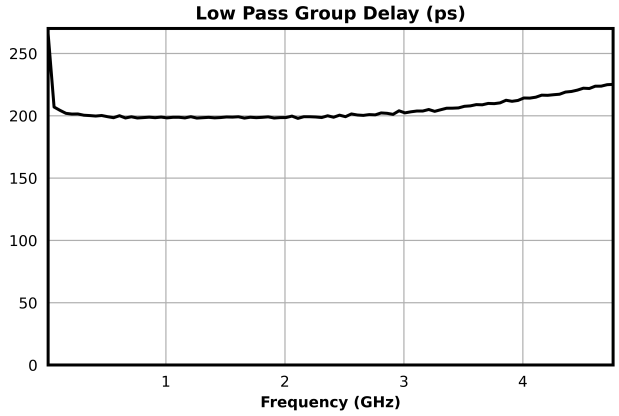
Typical Performance Plot

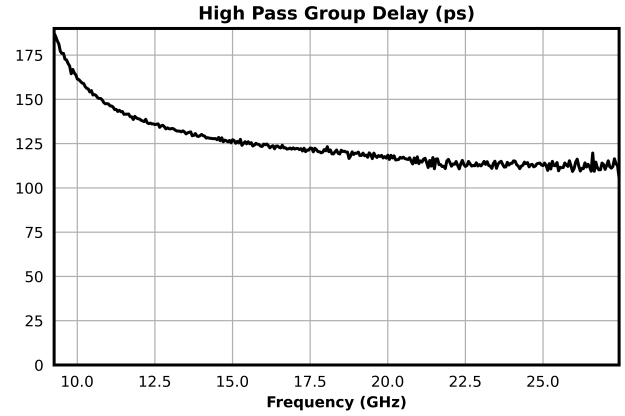












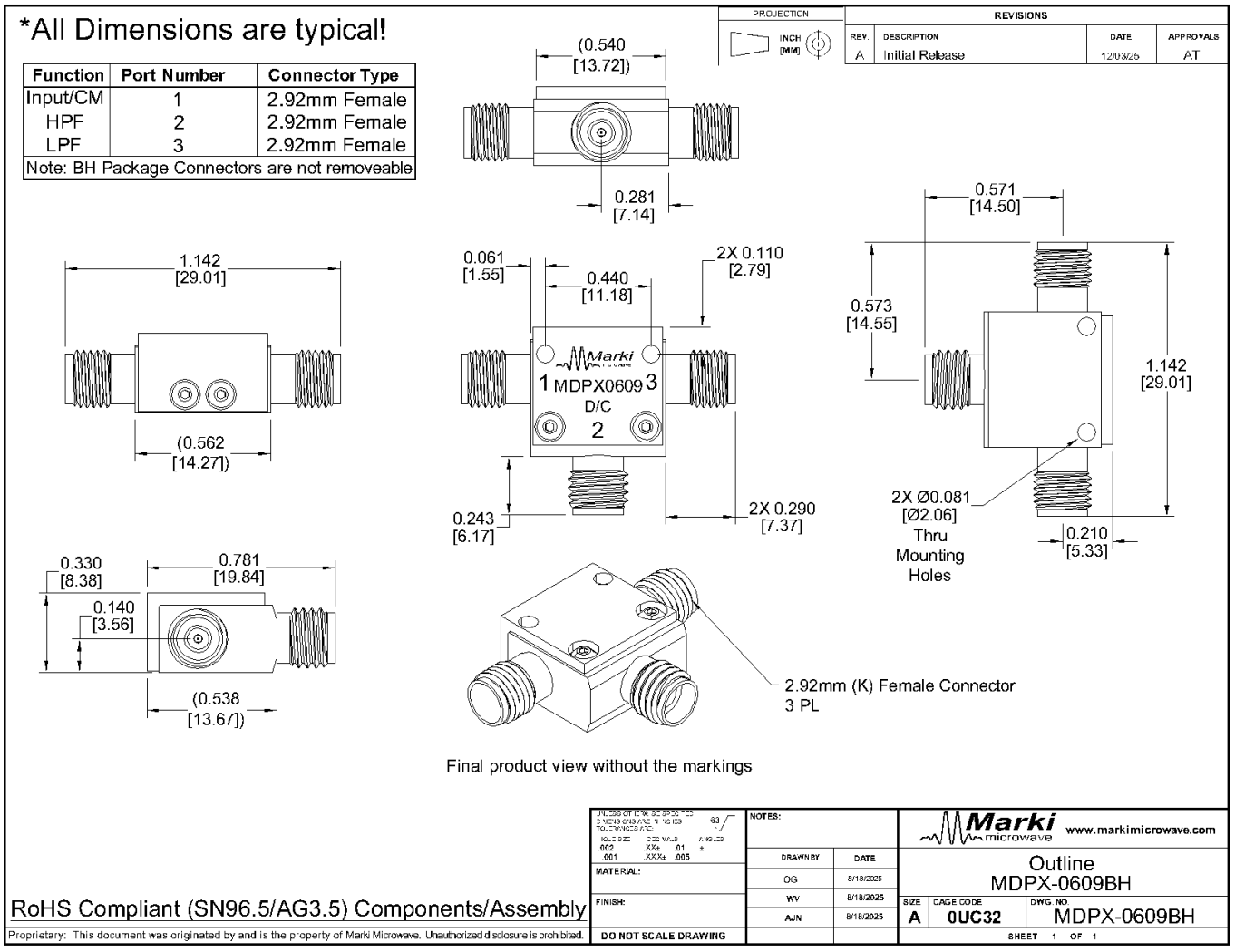
MDPX-0609BH

Passive MMIC DC-6 / 9-26.5 GHz
Diplexer/Reflectionless Filter

Mechanical Data

Outline Drawing

Download : Outline 2D Drawing



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.

DISCLAIMER