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Sales & Customer Support: sales@markimicrowave.com
Tech Support: support@markimicrowave.com

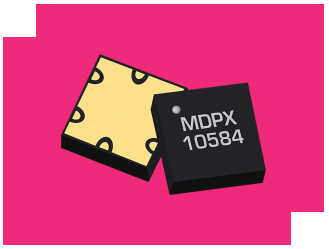
MDPX-00009CSP3

Passive MMIC 7.4GHz Reflectionless Diplexer

DEVICE OVERVIEW

General Description

The MDPX-00009CSP3 is a MMIC surface mount balanced diplexer featuring a 7.4 GHz crossover frequency and high 30 dB isolation between the lowpass and highpass ports. The reflectionless architecture provides excellent return losses both in-band and out-of-band for the lowpass and highpass ports. 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-00009CSP3 is available as a 3.5x3.5mm CSP3. Low unit to unit variation allows for accurate simulations using the provided S3P file taken from measured production units.



Download s-parameters here

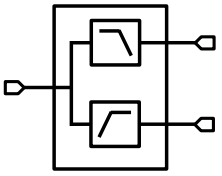
Features

- Low Insertion Loss, ≤ 0.7 dB Typical
- Crossover Point, 7.4 GHz
- Return Losses, 25 dB Typical
- Highpass-Lowpass Isolation, 30 dB Typical
- Reflectionless Diplexer
- Excellent In-Band and Out-of-Band Return Losses

Applications

N/A

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
MDPX-00009CSP3	Passive MMIC 7.4GHz Reflectionless Diplexer	CSP3	RoHS REACH	Released	EAR99
EVB-MDPX-00009	Evaluation Board, Passive MMIC 7.4GHz Reflectionless Diplexer	EVB	RoHS REACH	Released	EAR99

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Table Of Contents

Revision History

Revision Code	Revision Date	Comment
-	2025-10-21	Initial Release

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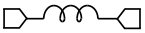
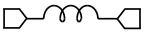
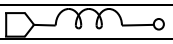
Port Configuration and Functions

Port Functions

Port	Function	Description	DC Equivalent Circuit
Pin 1	Common/Input	Pin 1 is DC short to Pin 3 and open to GND and Pin 5.	
Pin 3	Low Pass Filter	Pin 3 is DC short to Pin 1 and open to GND and Pin 5	
Pin 5	High Pass Filter	Pin 5 is DC open to Pin 1, Pin 3, and GND	

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Specifications

Absolute Maximum Ratings

Parameter	Maximum Rating	Unit
Maximum Operating Temperature	100	°C
Maximum Storage Temperature	125	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C
DC Current	24	mA

Package Information

Parameter	Details	Rating
ESD	< 250 Volts	HBM Class 0
Dimensions	-	3.50 x 3.50 mm
Moisture Sensitivity Level	-	MSL 1

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Electrical Specifications

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
High Pass Center Freq	Configuration A, Temp = 25°C	-	-	-	22.93	-	GHz
1 dBc High Passband	Configuration A, Temp = 25°C	10.89	-	-	-	-	GHz
3 dBc High Passband	Configuration A, Temp = 25°C	7.23	-	-	-	-	GHz
30 dBc High Pass Rejection Point	Configuration A, Temp = 25°C	0.27	0.27	-	-	-	GHz
High Pass Insertion Loss @ fc	Configuration A, Temp = 25°C	-	-	-	0.7	-	dB
High Passband Return Loss	Configuration A, Temp = 25°C	-	-	-	18	-	dB
High Pass Isolation	Configuration A, Temp = 25°C	-	-	-	30	-	dB
High Pass Group Delay	Configuration A, Temp = 25°C	-	-	-	54	-	ps
Low Pass Center Freq	Configuration A, Temp = 25°C	-	-	-	1.92	-	GHz
1 dBc Low Passband	Configuration A, Temp = 25°C	-	3.82	-	-	-	GHz
3 dBc Low Passband	Configuration A, Temp = 25°C	-	7.09	-	-	-	GHz
30 dBc Low Pass Rejection Point	Configuration A, Temp = 25°C	19.83	19.83	-	-	-	GHz
Low Pass Insertion Loss @ fc	Configuration A, Temp = 25°C	-	-	-	0.5	-	dB
Low Passband Return Loss	Configuration A, Temp = 25°C	-	-	-	33	-	dB
Low Pass Isolation	Configuration A, Temp = 25°C	-	-	-	29	-	dB
Crossover Isolation	Configuration A, Temp = 25°C	-	-	-	27	-	dB
Cross Over Frequency	Configuration A, Temp = 25°C	-	-	-	7.45	-	GHz
Common Port Return Loss	Configuration A, Temp = 25°C	-	-	-	25	-	dB
Impedance	Configuration A, Temp = 25°C	-	-	-	50	-	Ω
High Pass Group Delay	Configuration A, Temp = 25°C	-	-	-	54	-	ps
Low Pass Group Delay	Configuration A, Temp = 25°C	-	-	-	61	-	ps

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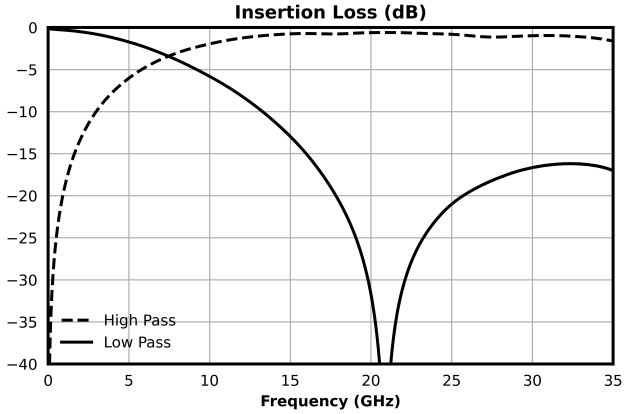
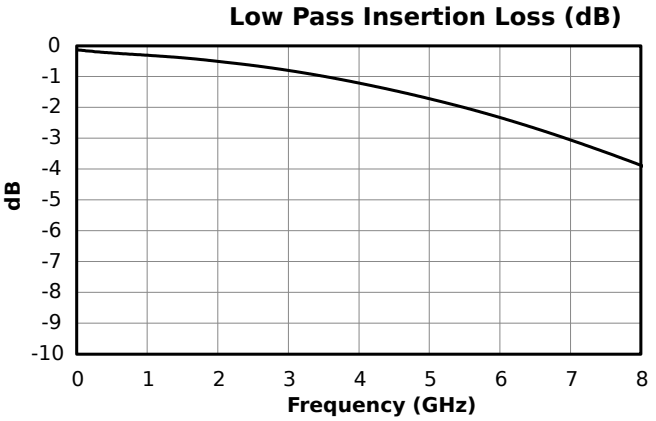
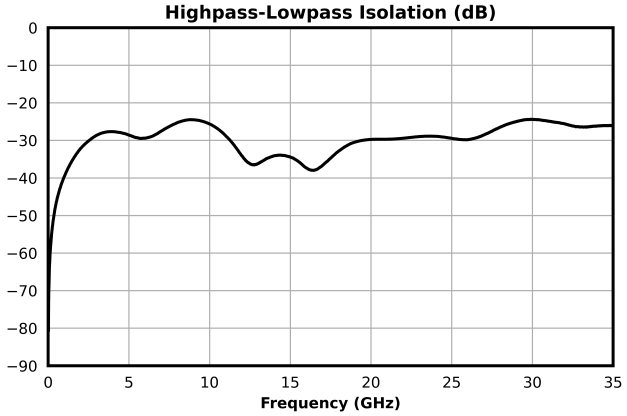
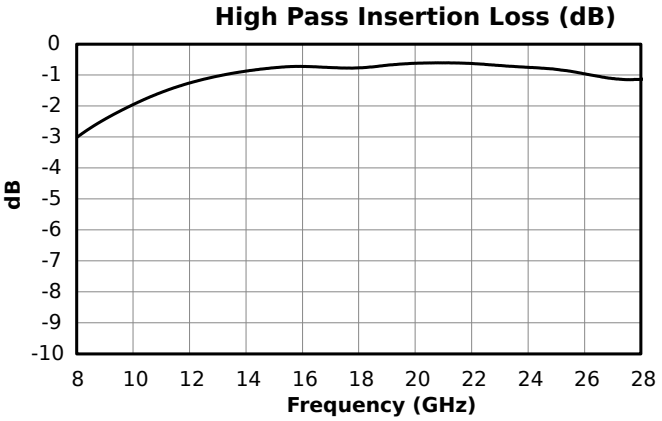
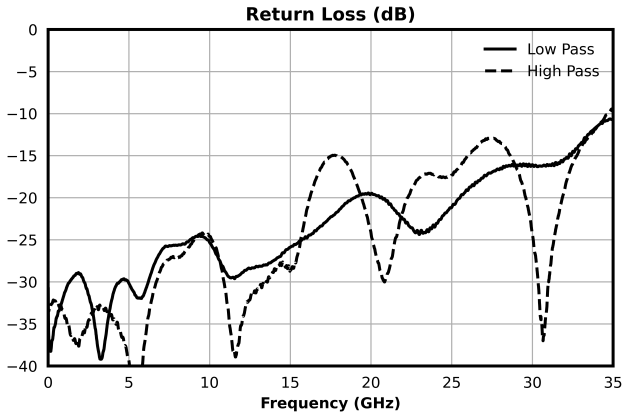
Typical Performance Plot

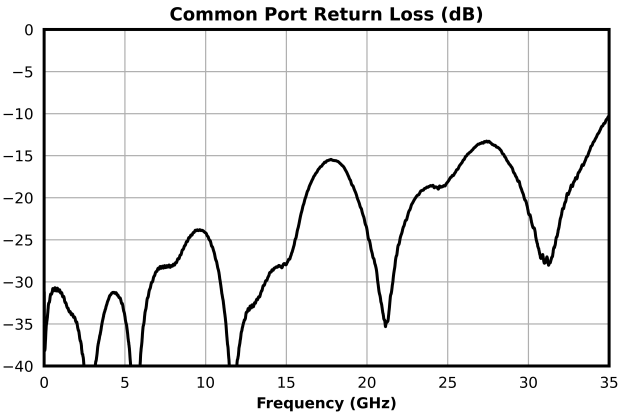


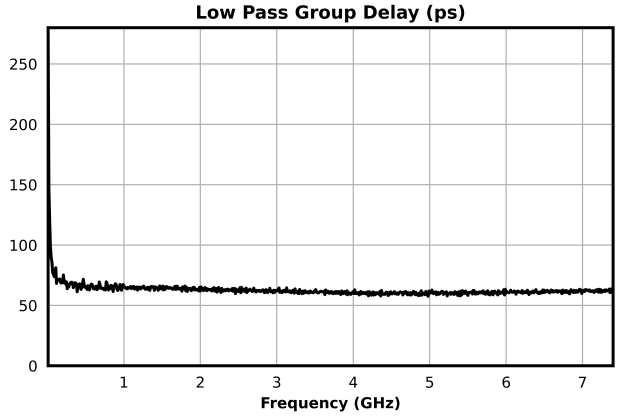


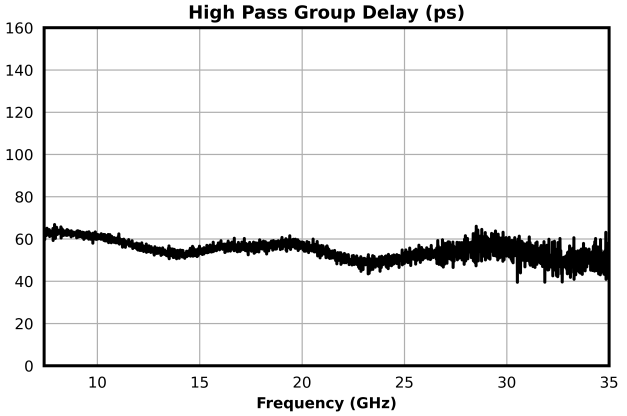












All measurements are de-embedded from the fixture with Automatic Fixture Removal (AFR).

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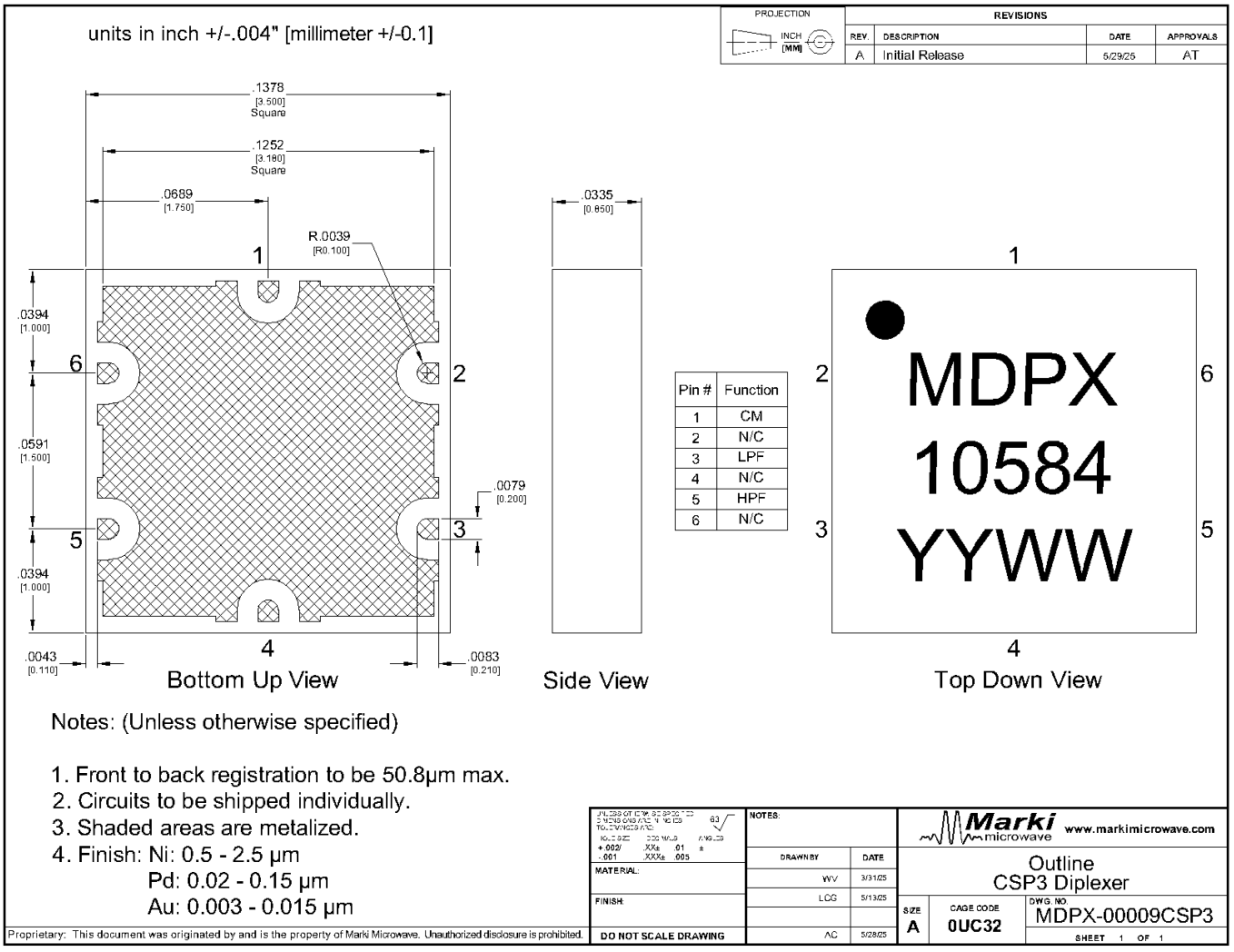
Mechanical Data

Outline Drawing

Download : Outline 2D Drawing



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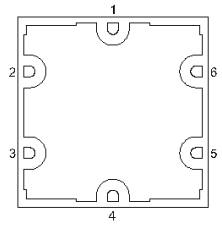
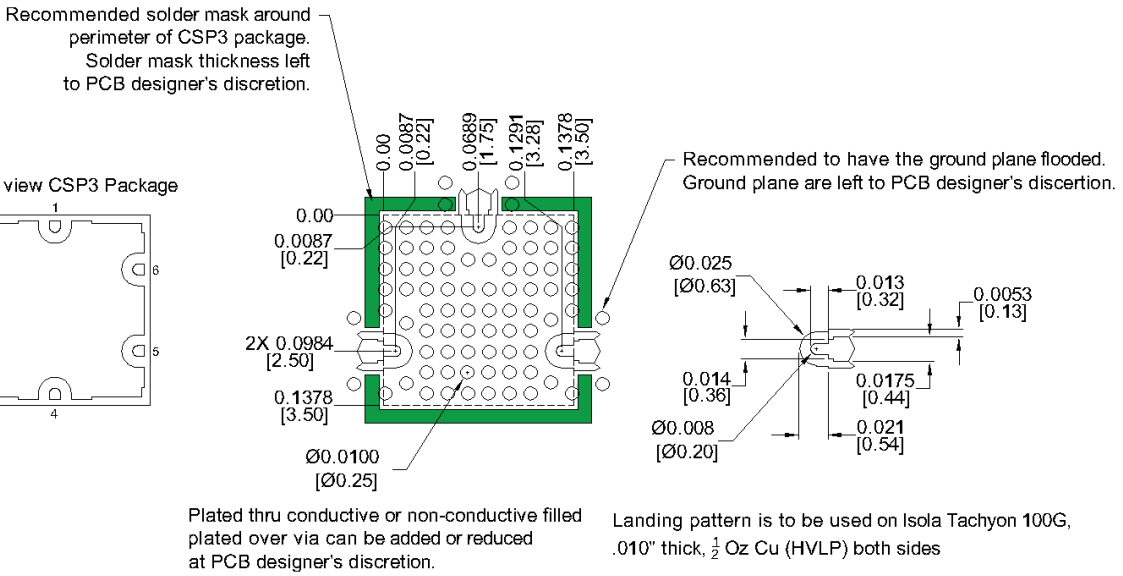
Footprint Image

Pin #	Function
1	CM
2	N/C
3	LPF
4	N/C
5	HPF
6	N/C





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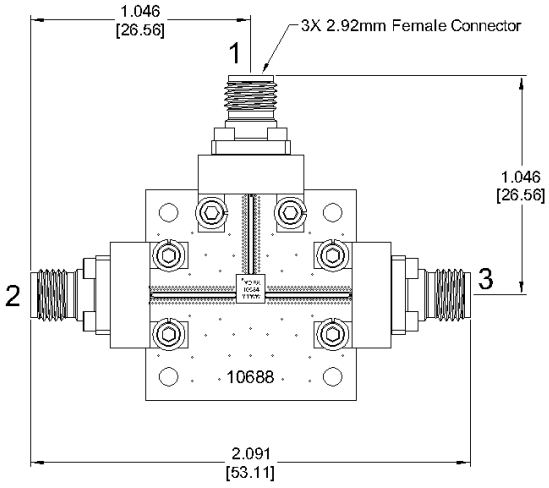
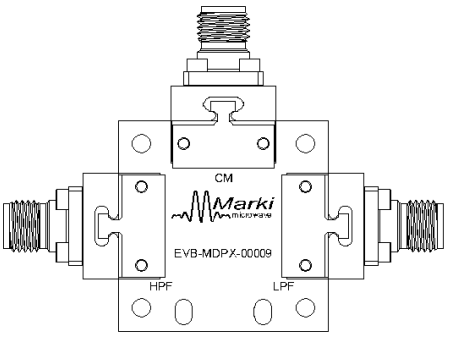
Evaluation Board - Outline Drawing

*All Dimensions are Typical

PROJECTION: INCH [MM]

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVALS
A	Initial Release	5/29/25	AT





Back Side Marking

Port #	Function	Connector Type
1	CM	2.92mm
2	LPF	2.92mm
3	HPF	2.92mm

Note: RoHS Compliant Assembly

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: ROUND SIZE .XXX ±.005 .XX ±.02 .XXX ±.010 ANGLES ±1° 63

MATERIAL:

FINISH:

DO NOT SCALE DRAWING

NOTES:

DRAWN BY	DATE
WV	5/2/25
LCG	5/13/25
WV	5/28/25

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Outline
Eval Board CSP3 3 Port

SIZE	CAGE CODE	DWG. NO.
A	0UC32	EVB-MDPX-00009

SHEET 1 OF 1

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