

# MPD4-0422CSP2

## 4 - 22 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

### DEVICE OVERVIEW

#### General Description

The MPD4-0422CSP2 is a small footprint MMIC 4-22 GHz 4-Way power divider/power splitter featuring high 30 dB isolation and low 1 dB insertion loss in our compact CSP2 chip scale package. It is much smaller than a printed PCB Wilkinson Power Divider/Combiner. It can be used as an equal amplitude/phase power splitter or a power combiner with excellent isolation. Tight fabrication tolerances result in less unit-to-unit variation than traditional power divider technologies, allowing for accurate simulations using the provided S5P file taken from measured production units. The 2.5 mm CSP2 package enables extreme miniaturization of SMT footprint making the MPD4-0422CSP2 ideal for applications prioritizing low SWaP.



[Download s-parameters here](#)

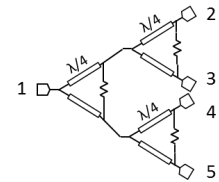
#### Features

- 4-way splitter or combiner in a compact 2.5mm package
- Low 1 dB typical insertion loss
- High 30 dB isolation
- Excellent 0.1 dB amplitude and 0.5° phase balance
- This product embodies Marki Microwave's U.S. Pat. 11,869,858.

#### Applications

- Test Equipment
- Electronic Warfare
- Radar and satellite communications
- High Channel Count Systems

#### Functional Block Diagram



#### Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
MPD4-0422CSP2	4 - 22 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter	CSP2	REACH RoHS	Released	EAR99
<a href="#">EVB-MPD4-0422</a>	Evaluation Board, 4 - 22 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter	EVB	RoHS REACH	Released	EAR99

## MPD4-0422CSP2

### 4 - 22 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

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#### Revision History

Revision Code	Revision Date	Comment
-	2024-09-09	Initial Release
A	2025-04-28	Updated Moisture Sensitivity from MSL3 to MSL1
B	2025-08-27	Port Functions Description Updated
C	2025-10-09	Power Handling Updated
D	2025-12-17	Power Handling Updated

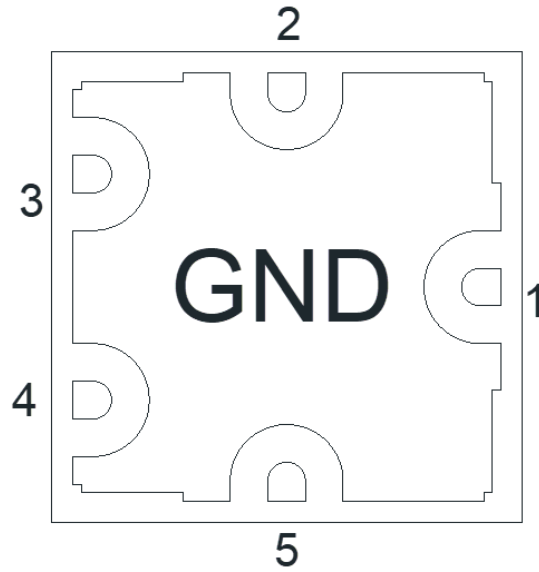
## MPD4-0422CSP2

4 - 22 GHz MMIC 4-Way Wilkinson Power  
Divider/Power Splitter

### Port Configuration and Functions

#### Port Diagram

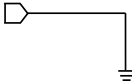





A bottom-up view of the MPD4-0422CSP2 package outline drawing is shown below. The MMIC Power dividers are passive reciprocal devices allowing either power splitting or power combining.



## MPD4-0422CSP2

### 4 - 22 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

#### Port Functions

Port	Function	Description	DC Equivalent Circuit
Ground Paddle	Gnd	Ground paddle should be connected to RF ground	
Pin 1	Common	Pin 1 is the common input/output pin. It is DC open to the other 4 pins and open to ground.	
Pin 2	Input/Output 1	Pin 2 is an input/output pin. It is DC short to the other 4 pins and open to ground.	
Pin 3	Input/Output 2	Pin 3 is an input/output pin. It is DC short to the other 4 pins and open to ground.	
Pin 4	Input/Output 3	Pin 4 is an input/output pin. It is DC short to the other 4 pins and open to ground.	
Pin 5	Input/Output 4	Pin 5 is an input/output pin. It is DC short to the other 4 pins and open to ground.	

## Specifications

### Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Unit
DC Current	40	mA
Maximum Operating Temperature	100	°C
Maximum Storage Temperature	125	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C
RF Power Handling as a Power Divider	8	W

### Package Information

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Dimensions	-	2.50 x 2.50 mm
Moisture Sensitivity Level	-	MSL 1

## MPD4-0422CSP2

### 4 - 22 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

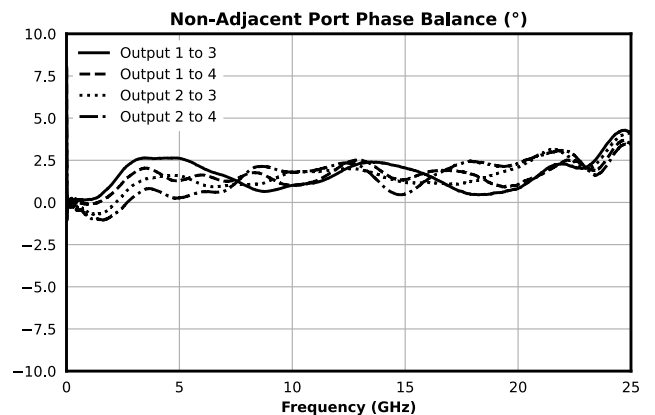
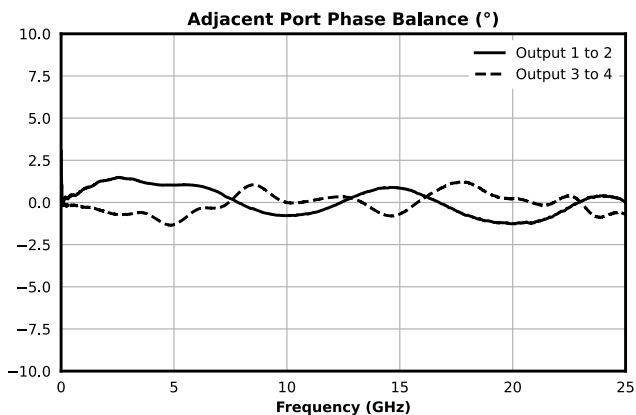
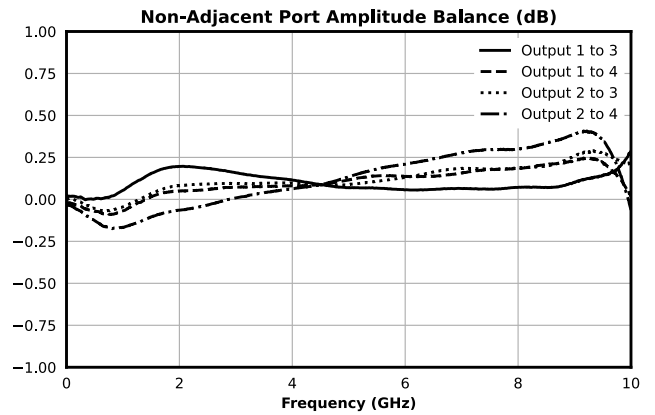
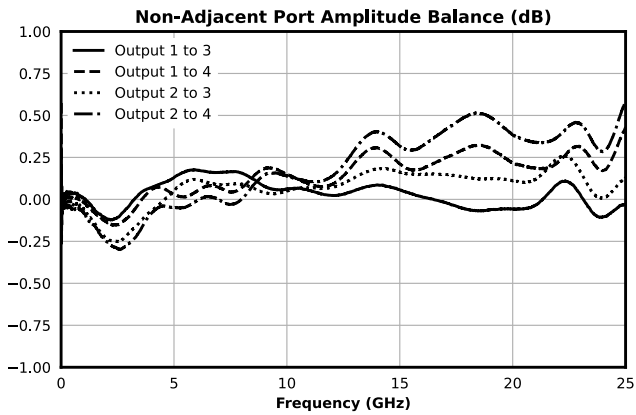
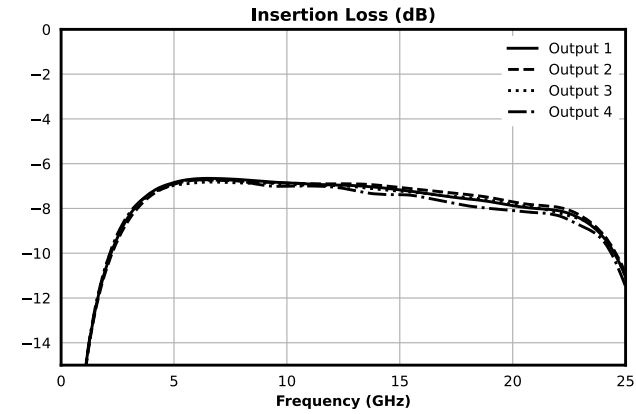
#### Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system. Min and Max limits are guaranteed at TA=+25°C.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Impedance	-	-	-	-	50	-	Ω
Output Return Loss	-	4	22	-	18	-	dB
Excess Insertion Loss <sup>1</sup>	-	4	18	-	1	-	dB
Excess Insertion Loss <sup>2</sup>	-	18	22	-	2	-	dB
Common Port Return Loss	-	4	22	-	17	-	dB
Isolation	Adjacent Ports	4	6	-	15	-	dB
Isolation	Adjacent Ports	6	22	-	22	-	dB
Isolation	Non-Adjacent Ports	4	6	-	30	-	dB
Isolation	Non-Adjacent Ports	6	22	-	30	-	dB
Amplitude Balance	Adjacent Ports	4	22	-	0.1	-	dB
Amplitude Balance	Non-Adjacent Ports	4	22	-	0.1	-	dB
Phase Balance	Adjacent Ports	4	22	-	0.5	-	°
Phase Balance	Non-Adjacent Ports	4	22	-	1.24	-	°
Nominal Phase Shift	-	4	22	-	0	-	°
Nominal Power Splitting	-	4	22	-	6	-	dB

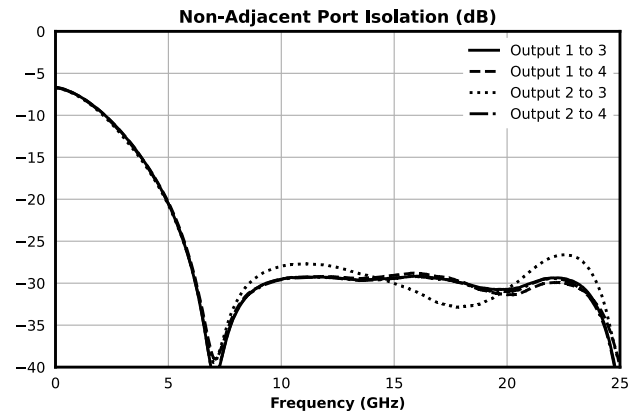
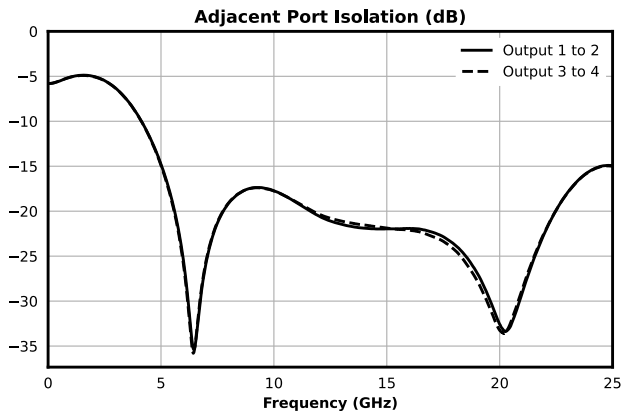
<sup>[1][2]</sup> Excess Insertion Loss is loss in addition to power splitting loss, calculated as (Common Port to Output Port Insertion Loss) – (Power splitting loss of 6 dB)

### Typical Performance Plots



## MPD4-0422CSP2

### 4 - 22 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

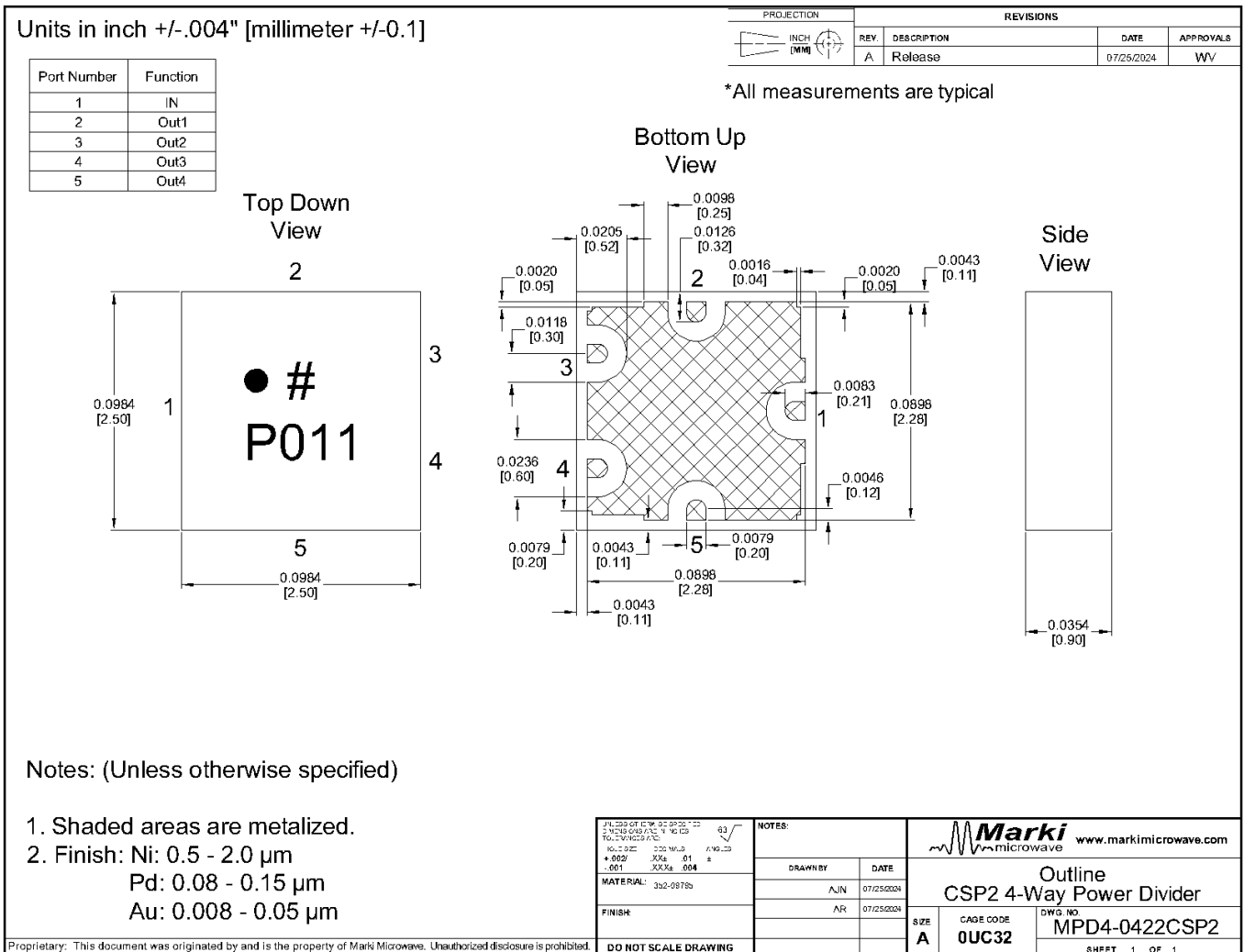


Measured data is de-embedded from fixture using automatic fixture removal (AFR).

### Mechanical Data

### Outline Drawing

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

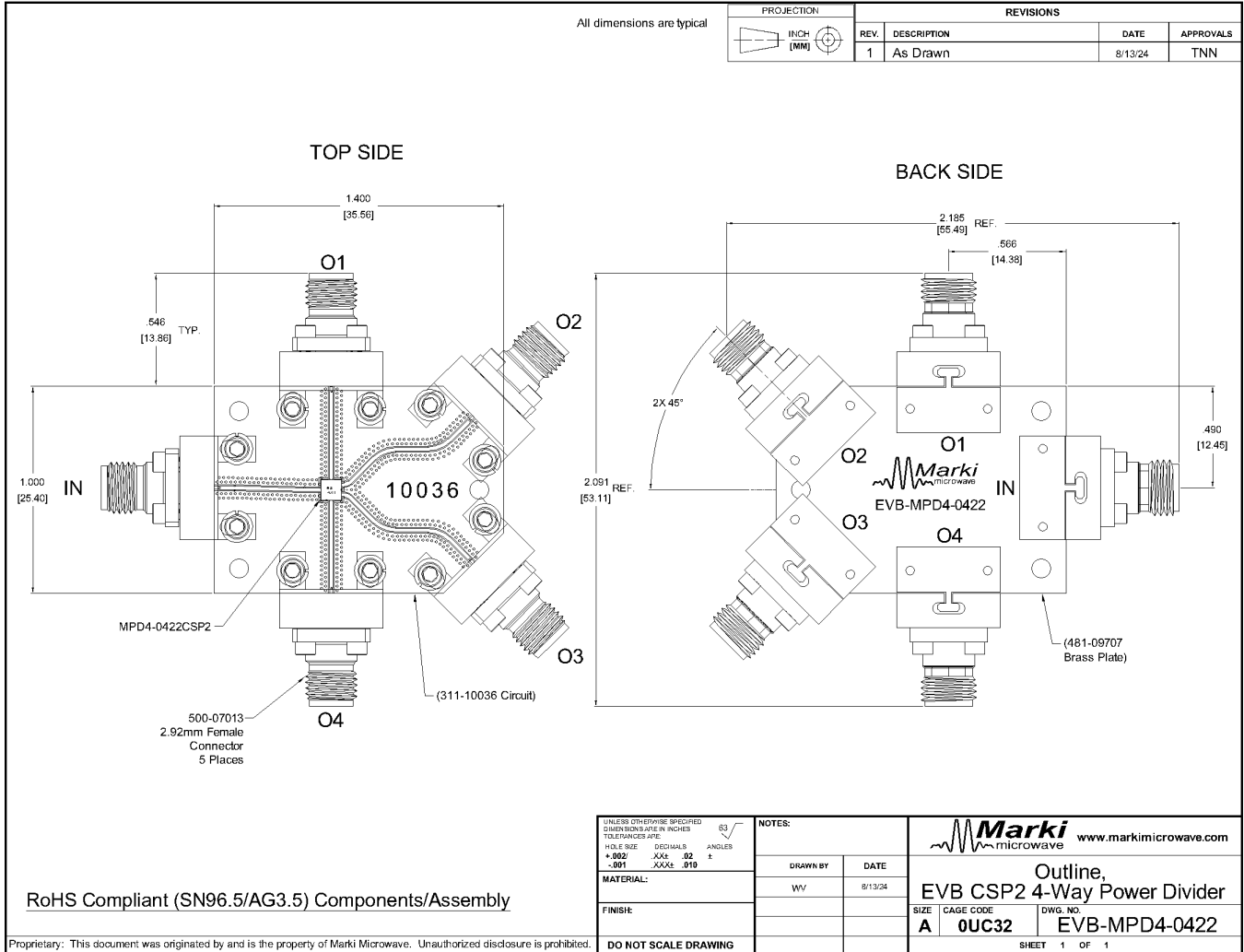




# MPD4-0422CSP2

## 4 - 22 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

### Evaluation Board - Outline Drawing



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