

# MPD-0R402FCSP2

## 0.4 - 2.5 GHz MMIC 2-Way Wilkinson Power Divider/Power Splitter, Front Ports

### DEVICE OVERVIEW

#### General Description

The MPD-0R402FCSP2 is a small footprint MMIC 0.4-2.5 GHz 2-Way power divider/power splitter featuring high 20 dB isolation and low 0.9 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 S3P file taken from measured production units. The MPD-0R402FCSP2 features front port outputs opposite to the common port. For side port outputs, refer to the MPD-0R402SCSP2. The 2.5 mm CSP2 package enables extreme miniaturization of SMT footprint making the MPD-0R402FCSP2 ideal for applications prioritizing low SWaP.



[Download s-parameters here](#)

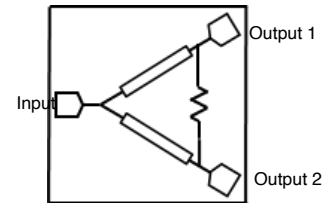
#### Features

- 2-way splitter or combiner in a compact 2.5mm package
- Front ports
- Low 0.9 dB typical insertion loss
- High 20 dB isolation
- Excellent 0.1 dB amplitude and 0.3° 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
MPD-0R402FCSP2	0.4 - 2.5 GHz MMIC 2-Way Wilkinson Power Divider/Power Splitter, Front Ports	CSP2	REACH RoHS	Released	EAR99
EVB-MPD-0R402F	Evaluation Board, 0.4 - 2.5 GHz MMIC 2-Way Wilkinson Power Divider/Power Splitter, Front Ports	EVB	RoHS REACH	Released	EAR99

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#### Revision History

Revision Code	Revision Date	Comment
-	2024-10-24	Initial Release
A	2025-04-28	Updated Moisture Sensitivity from MSL3 to MSL1

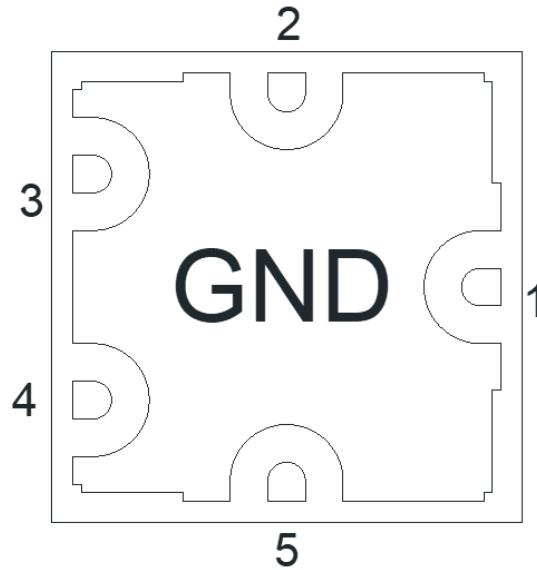
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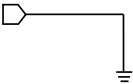



### Port Configuration and Functions

#### Port Diagram

A bottom-up view of the MPD-0R402FCSP2 package outline drawing is shown below. The MMIC Power dividers are passive reciprocal devices allowing either power splitting or power combining.



#### Port Functions

Port	Function	Description	Equivalent Circuit for Package
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 short to Pin 3 and Pin 4 and open to ground.	
Pin 3	Input/Output 1	Pin 3 is an input/output pin. It is DC short to the common and Pin 4 and open to ground.	
Pin 4	Input/Output 2	Pin 4 is an input/output pin. It is DC short to the common and Pin 3 and open to ground.	

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## 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

### Package Information

Parameter	Details	Rating
Dimensions	-	2.50 x 2.50 mm
Moisture Sensitivity Level	-	MSL 1

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#### Electrical Specifications

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

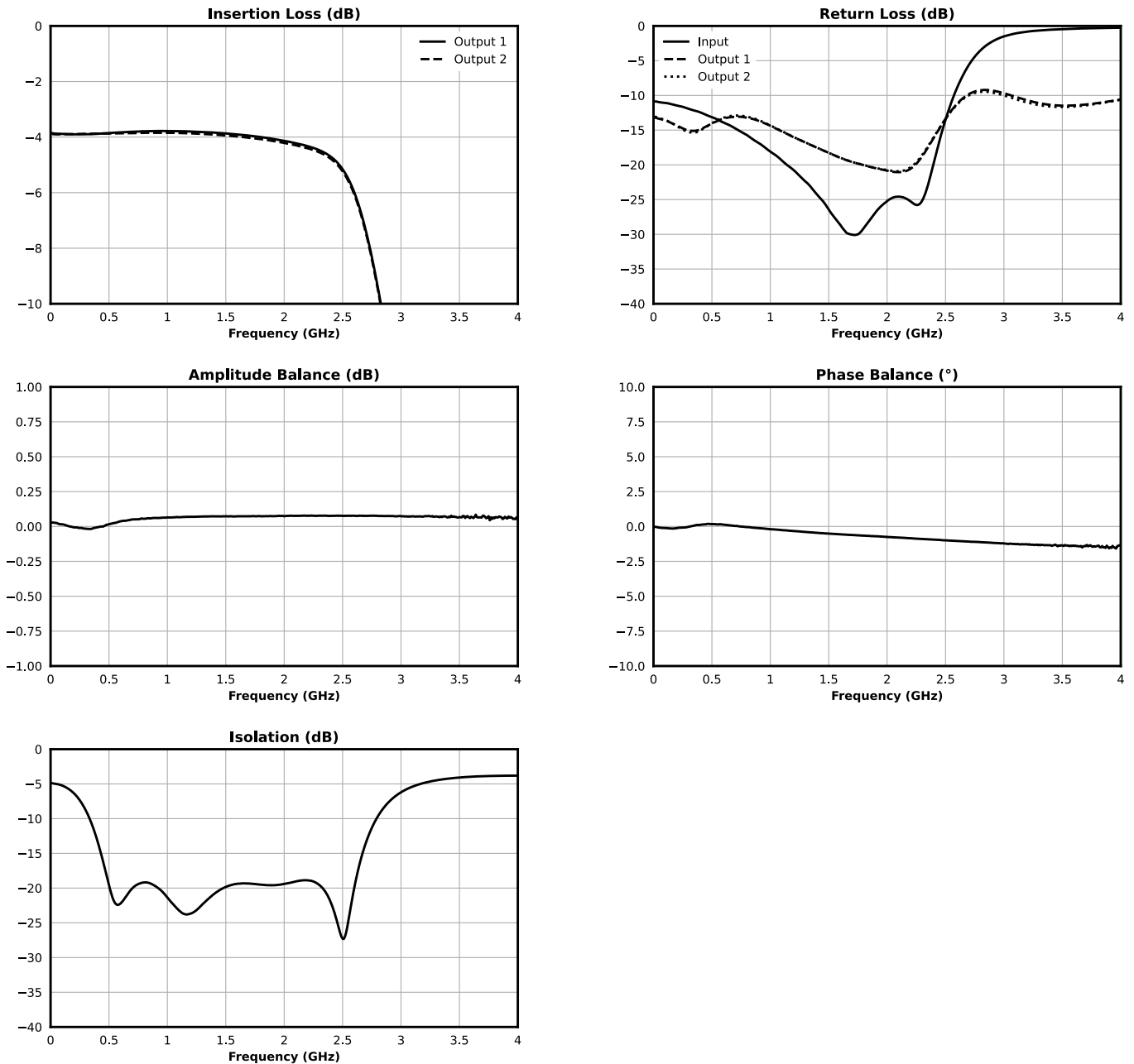
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Amplitude Balance	-	0.4	2.5	-	0.07	-	dB
Common Return Loss	-	0.4	2.5	-	21	-	dB
Excess Insertion Loss <sup>1</sup>	-	0.4	2.5	-	0.9	-	dB
Impedance	-	-	-	-	50	-	Ω
Isolation	-	0.4	2.5	-	20	-	dB
Nominal Phase Shift	-	0.4	2.5	-	0	-	°
Nominal Power Splitting (dB)	-	0.4	2.5	-	3	-	dB
Output Return Loss	-	0.4	2.5	-	16	-	dB
Phase Balance	-	0.4	2.5	-	0.33	-	°

<sup>[1]</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 3 dB)

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### Typical Performance Plots



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

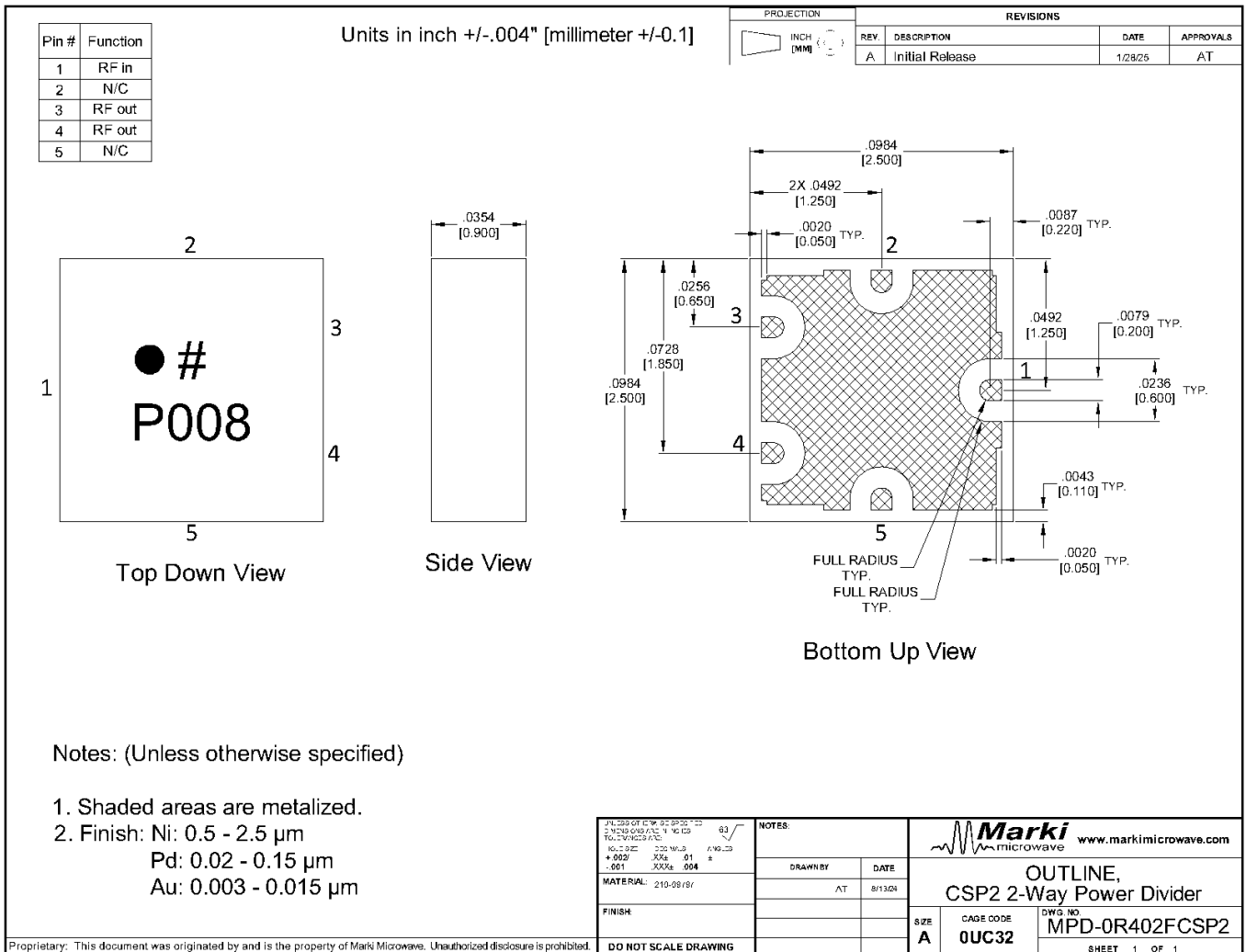
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## Mechanical Data

## Outline Drawing

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

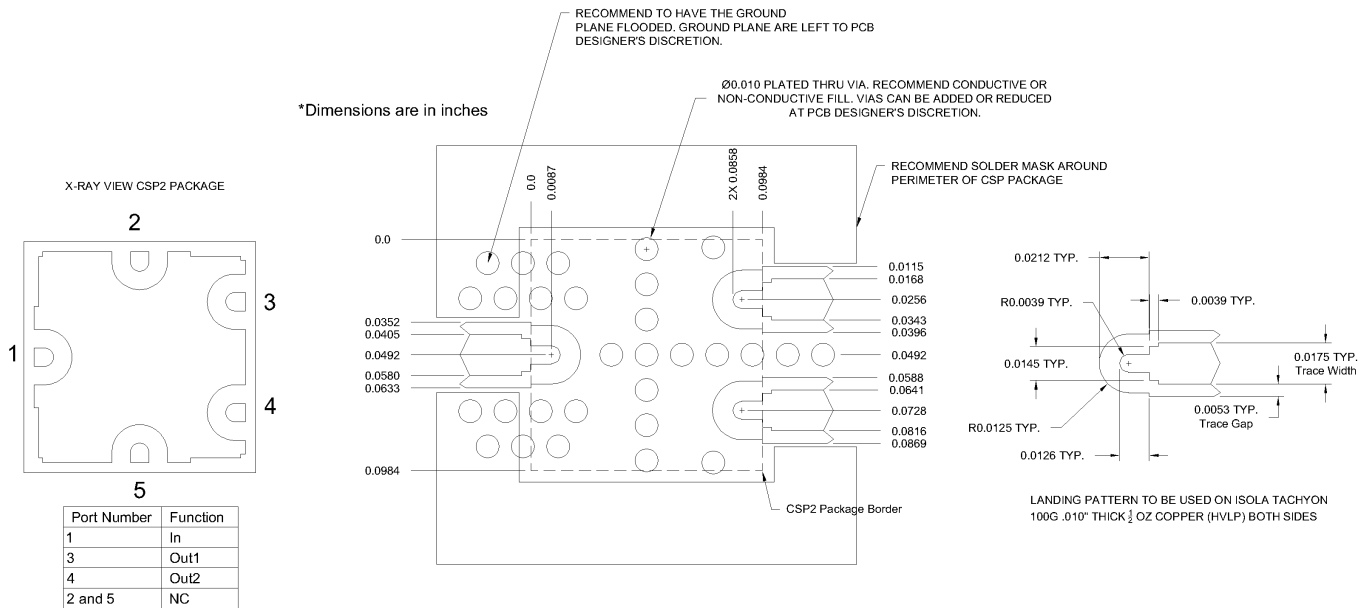


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#### Footprint Image

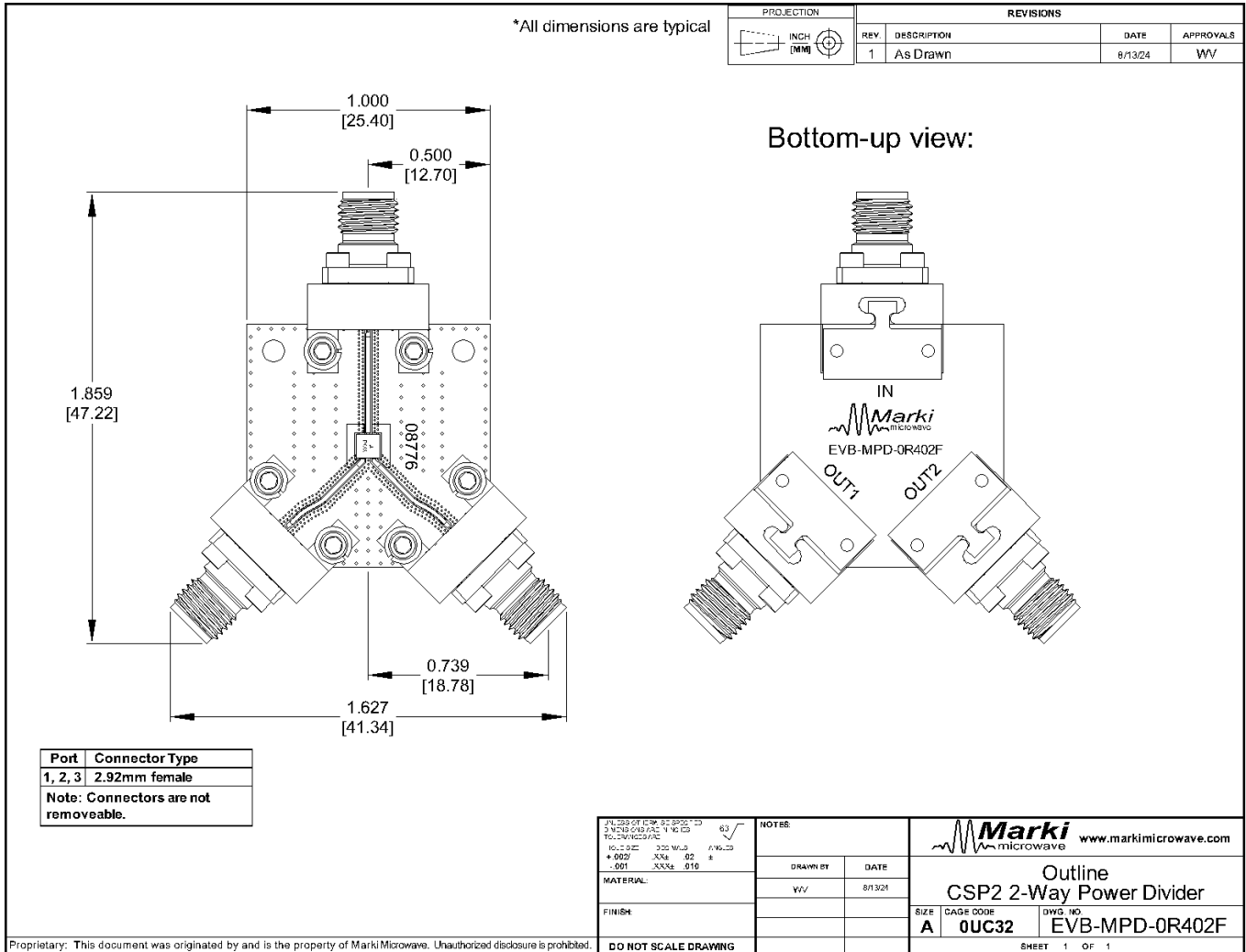
Download : [Footprint Drawing](#)



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## Evaluation Board - Outline Drawing



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