

MPD4-0108CSP2

1 - 8 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

DEVICE OVERVIEW

General Description

The MPD4-0108CSP2 is a small footprint MMIC 4-Way Wilkinson power divider/power splitter featuring high isolation in our compact CSP2 chip scale package. The MPD4-0108CSP2 uses a mix of lumped element and distributed circuits to significantly reduce the footprint while maintaining isolation at low frequencies. 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 2.5 mm CSP2 package enables extreme miniaturization of SMT footprint making the MPD4-0108CSP2 ideal for applications prioritizing low SWaP.

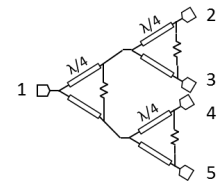
Features

- Can be used as a splitter or combiner
- Excellent equal amplitude and phase balance
- High isolation
- Compact 2.5 x 2.5mm CSP2 package
- 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
-------------	-------------	---------	--------------	-------------------	-----------------------

MPD4-0108CSP2

1 - 8 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

Table Of Contents

■ Device Overview

General Description
Features
Applications
Functional Block Diagram

■ Port Configuration and Functions

Port Diagram
Port Functions

■ Revision History

■ Specifications

Absolute Maximum Ratings
Package Information
Electrical Specifications
Typical Performance Plots

■ Mechanical Data

Outline Drawing

■ Footprint Image

Revision History

Revision Code	Revision Date	Comment
G1	2024-08-23	Pre-Release

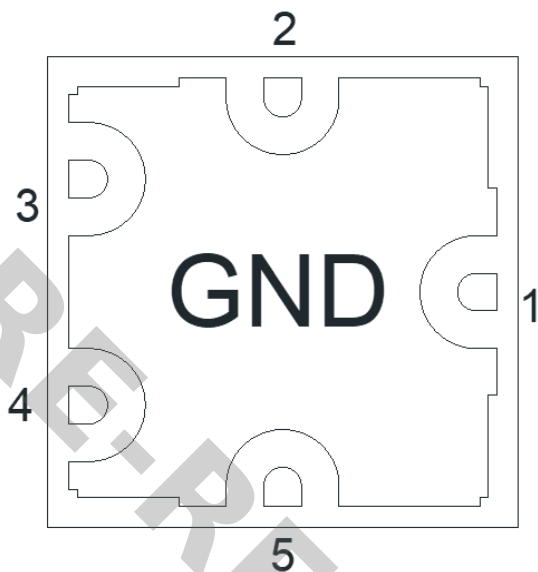
MPD4-0108CSP2

**1 - 8 GHz MMIC 4-Way Wilkinson Power
Divider/Power Splitter**

Port Configuration and Functions

Port Diagram

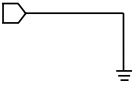
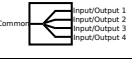
A bottom-up view of the MPD4-0108CSP2 package outline drawing is shown below. The MMIC Power dividers are passive reciprocal devices allowing either power splitting or power combining.



MPD4-0108CSP2

1 - 8 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

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 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

Package Information

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

PRE-RELEASE

MPD4-0108CSP2

1 - 8 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.

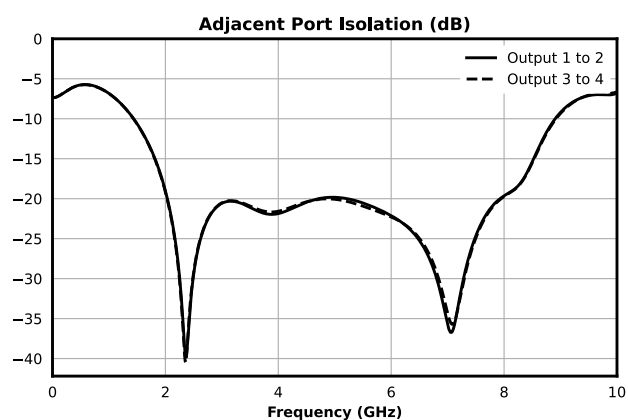
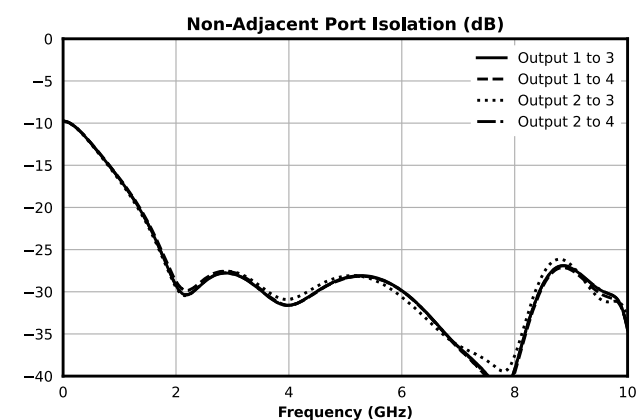
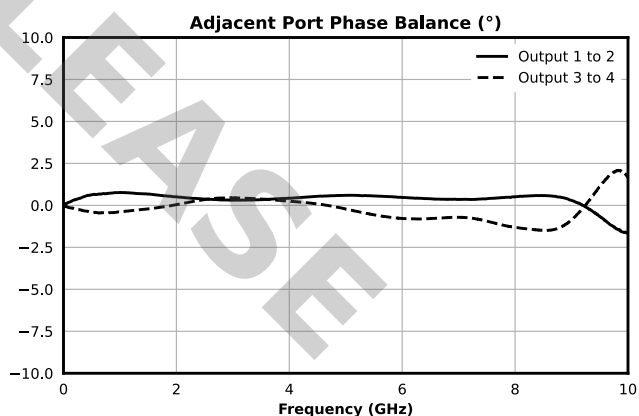
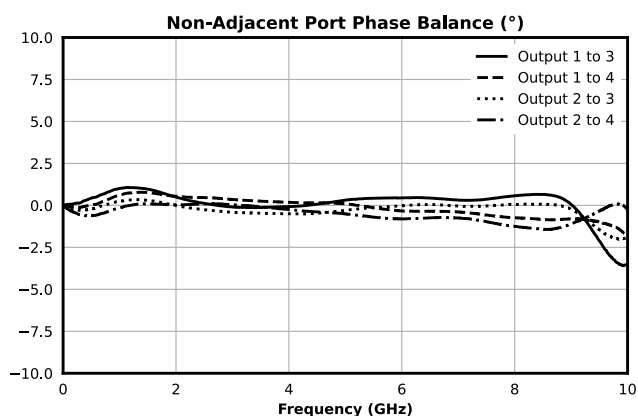
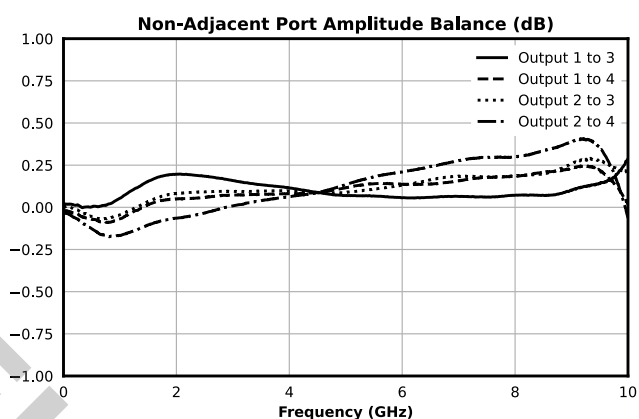
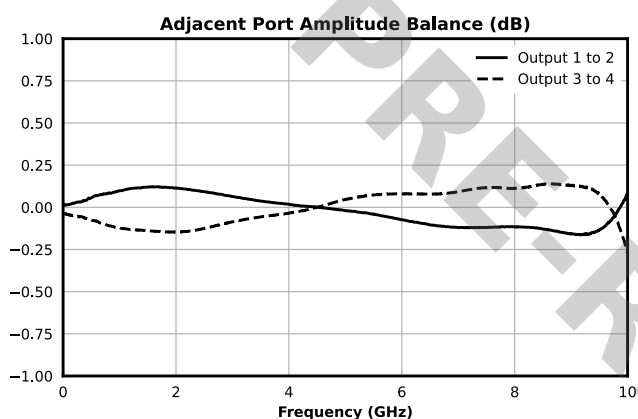
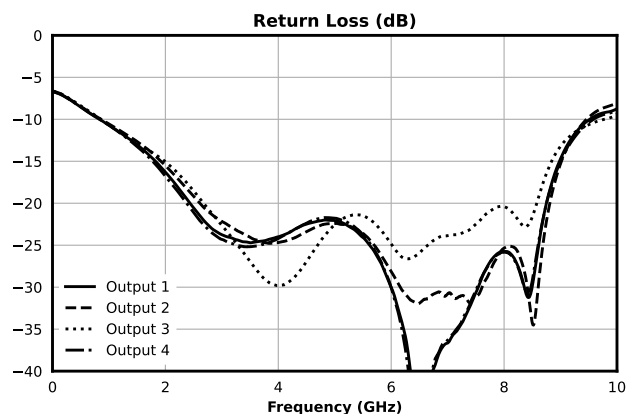
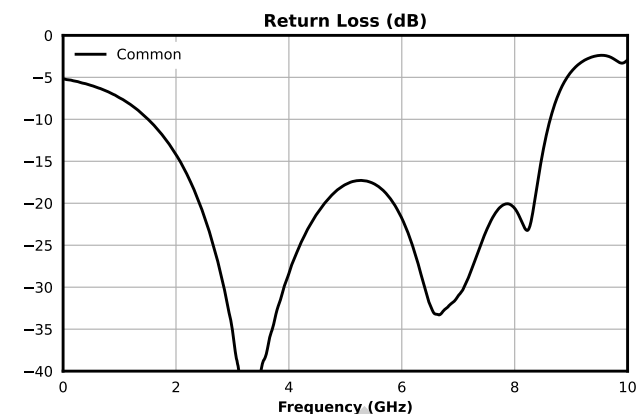
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Nominal Phase Shift	-	2	6	-	0	-	°
Phase Balance	Adjacent Ports	2	6	-	0.34	-	°
Phase Balance	Non-Adjacent Ports	2	6	-	0.13	-	°
Excess Insertion Loss ¹	-	2	6	-	1.3	-	dB
Isolation	Adjacent Ports	2	6	-	21	-	dB
Isolation	Non-Adjacent Ports	2	6	-	29	-	dB
Impedance	-	-	-	-	50	-	Ω
Amplitude Balance	Adjacent Ports	2	6	-	0.04	-	dB
Amplitude Balance	Non-Adjacent Ports	2	6	-	0.06	-	dB
Common Return Loss	-	2	6	-	22	-	dB
Nominal Power Splitting (dB)	-	2	6	-	6	-	dB
Output Return Loss	-	2	6	-	23	-	dB

^[1] Excess Insertion Loss = (Common Port to Output Port Insertion Loss) - 6dB

MPD4-0108CSP2

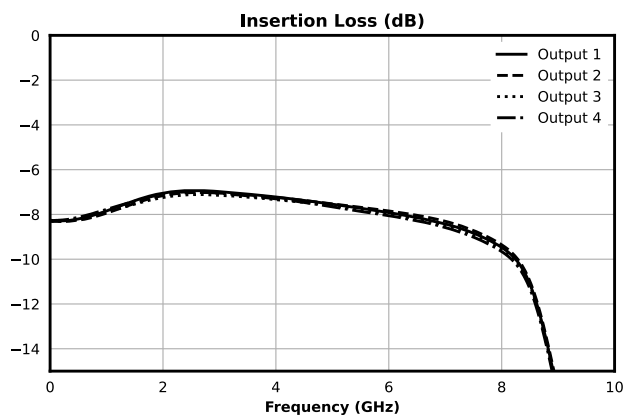
1 - 8 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

Typical Performance Plots



MPD4-0108CSP2

1 - 8 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter



Measured data is de-embedded from fixture using AFR.

PRE-RELEASE

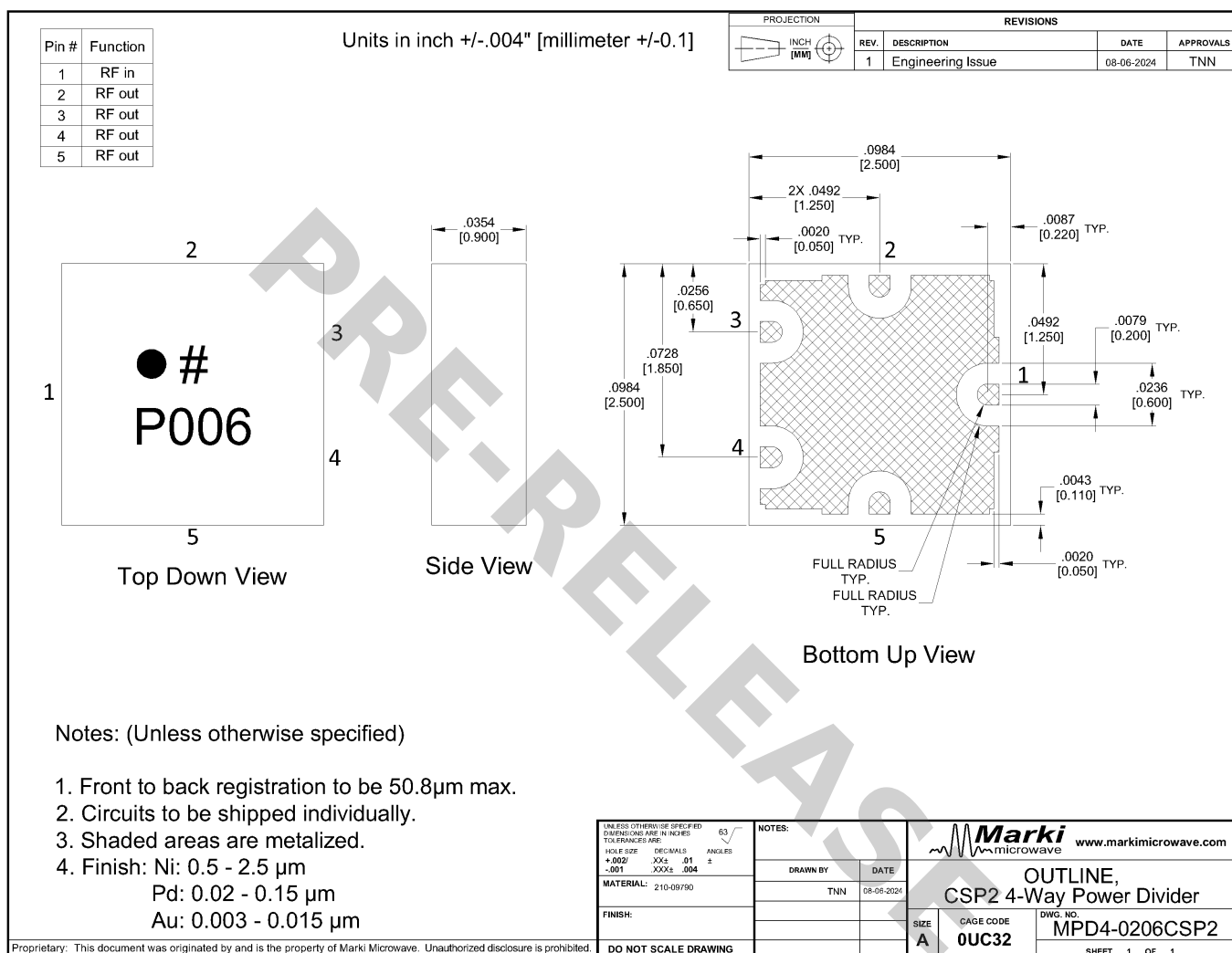
MPD4-0108CSP2

1 - 8 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

Mechanical Data

Outline Drawing

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

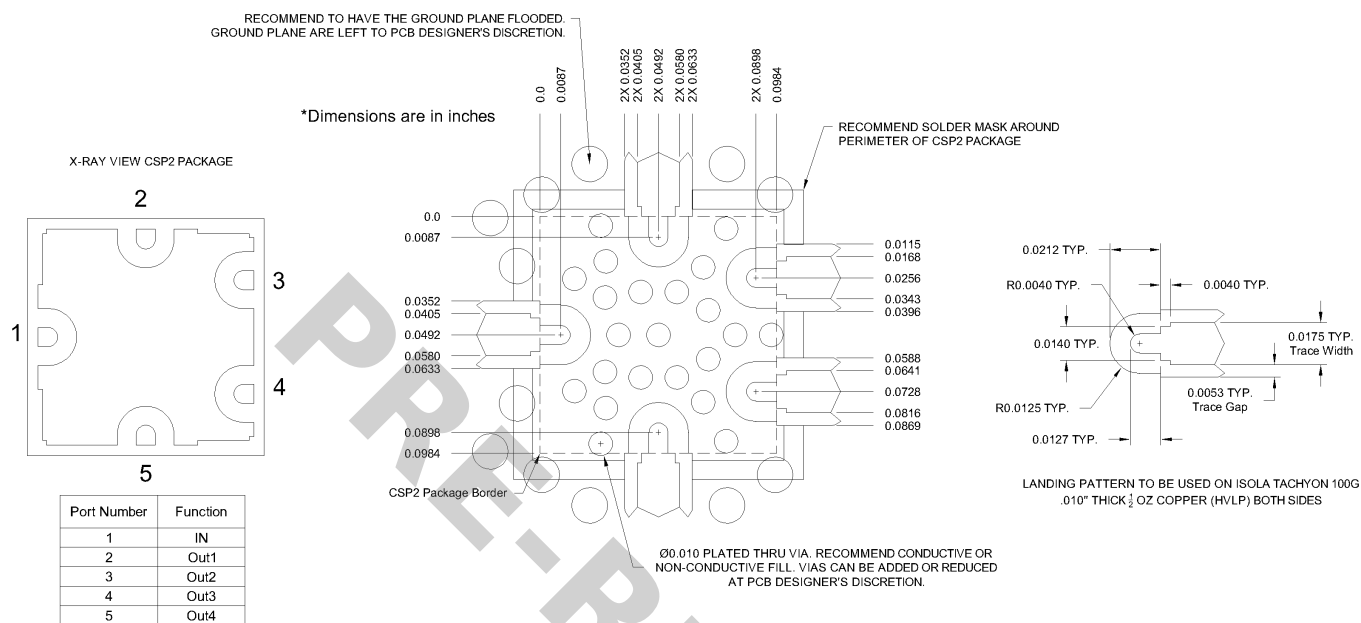


MPD4-0108CSP2

1 - 8 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

Footprint Image

Download : [Footprint Drawing](#)



MPD4-0108CSP2

1 - 8 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

DISCLAIMER

MARKI MICROWAVE, INC., ("MARKI") PROVIDES TECHNICAL SPECIFICATIONS AND DATA (INCLUDING DATASHEETS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, AND OTHER INFORMATION AND RESOURCES "AS IS" AND WITH ALL FAULTS. MARKI DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

These resources are intended for developers skilled in the art designing with Marki products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards and other requirements. Marki makes no guarantee regarding the suitability of its products for any particular purpose, nor does Marki assume any liability whatsoever arising out of your use or application of any Marki product. Marki grants you permission to use these resources only for development of an application that uses Marki products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Marki intellectual property or to any third-party intellectual property. Marki reserves the right to make changes to the product(s) or information contained herein without notice.

MARKI MICROWAVE and T3 MIXER are trademarks or registered trademarks of Marki Microwave, Inc. All other trademarks used are the property of their respective owners.

© 2024, Marki Microwave, Inc.