

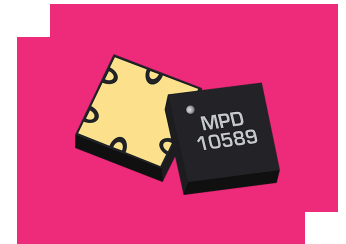
MPBR-0022CSP3

DC - 22 GHz MMIC 2-Way High Isolation Power Divider/Power Splitter

DEVICE OVERVIEW

General Description

The MPBR-0022CSP3 is a small footprint MMIC DC-22 GHz 2-Way high isolation power divider/power splitter featuring high 35 dB isolation and 4.6 dB insertion loss in our compact CSP3 chip scale package. It is much smaller than a printed PCB Power Divider/Combiner. It can be used as an equal amplitude/phase power splitter or a power combiner with higher isolation compared to standard Wilkinson power dividers, making it ideal for applications that demand the highest 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 3.5 mm CSP3 package enables extreme miniaturization of SMT footprint making the MPBR-0022CSP3 ideal for applications prioritizing low SWaP. If lower loss is required, refer to our MPBR-0122CSP3.



[Download s-parameters here](#)

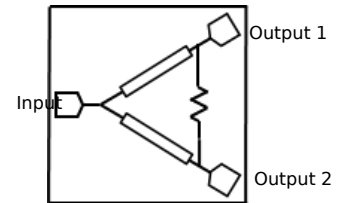
Features

- High 35 dB isolation
- 2-way splitter or combiner in a compact 3.5mm package
- 4.6 dB typical insertion loss
- Excellent 0.1 dB amplitude and 0.9° 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
MPBR-0022CSP3	DC - 22 GHz MMIC 2-Way High Isolation Power Divider/Power Splitter	CSP3	REACH RoHS	Released	EAR99
<u>EVB-MPBR-0022</u>	Evaluation Board, DC - 22 GHz MMIC 2-Way High Isolation Power Divider/Power Splitter	EVB	RoHS REACH	Released	EAR99

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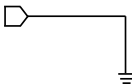



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Revision History

Revision Code	Revision Date	Comment
-	2025-08-18	Initial Release
A	2025-08-25	Updated Power Handling and Max Current Rating
B	2025-12-08	Updated Max Power Handling
C	2026-01-09	Updated Max Power Handling

Port Configuration and Functions

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 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 5 and open to ground.	
Pin 5	Input/Output 2	Pin 5 is an input/output pin. It is DC short to the common and Pin 3 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	10	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	2	W
RF Power Handling, as a Combiner	0.5	W

Package Information

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Dimensions	-	3.50 x 3.50 mm
Moisture Sensitivity Level	-	MSL 1

Electrical Specifications

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

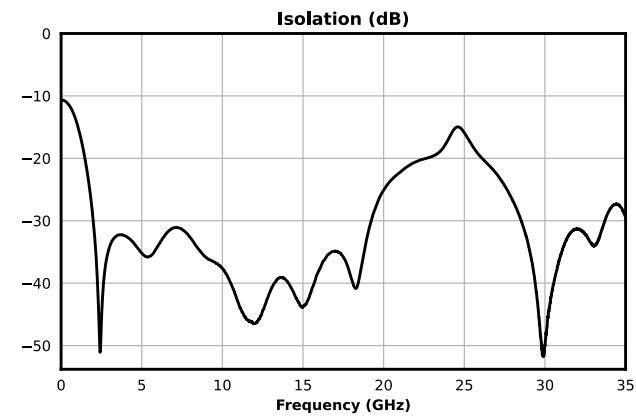
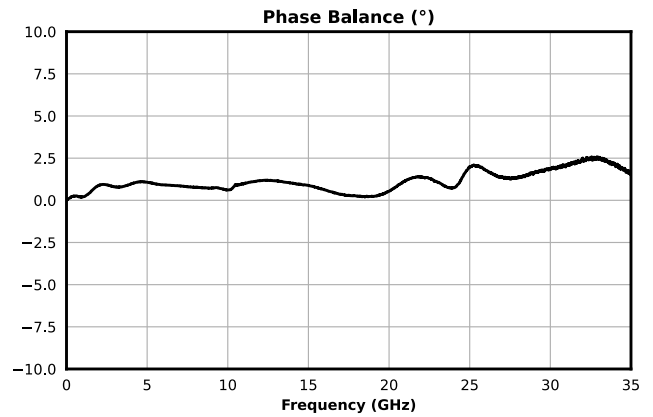
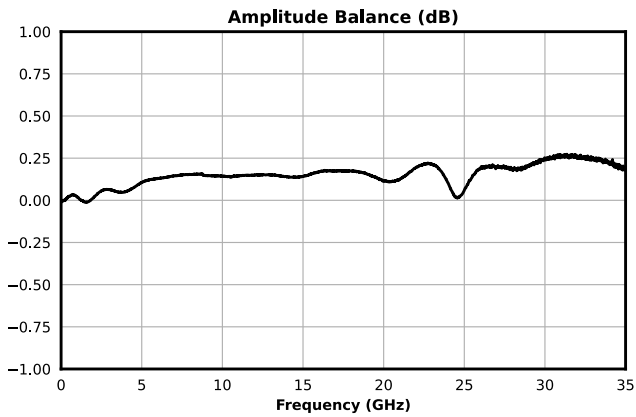
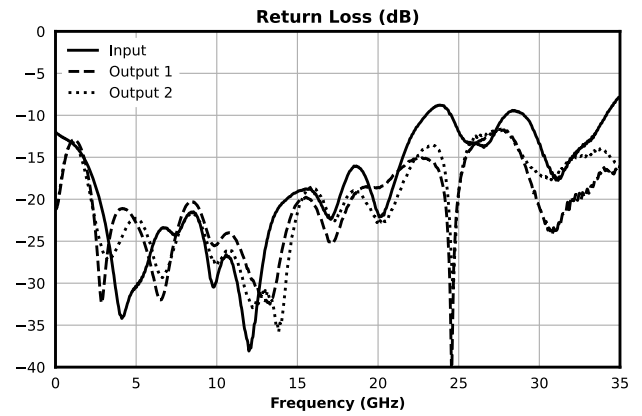
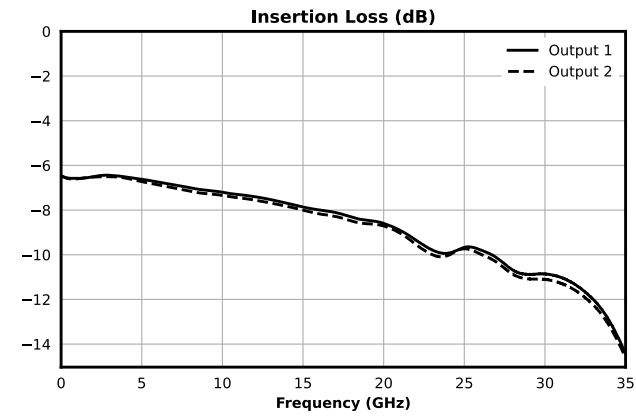
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Amplitude Balance	-	2	22	-	0.1	-	dB
Common Port Return Loss	-	2	22	-	22	-	dB
Excess Insertion Loss ¹	-	2	22	-	4.6	-	dB
Impedance	-	2	22	-	50	-	Ω
Isolation	-	2	22	-	35	-	dB
Nominal Phase Shift	-	2	22	-	0	-	°
Nominal Power Splitting	-	2	22	-	3	-	dB
Output Return Loss	-	2	22	-	23	-	dB
Phase Balance	-	2	22	-	0.9	-	°

^[1] 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).

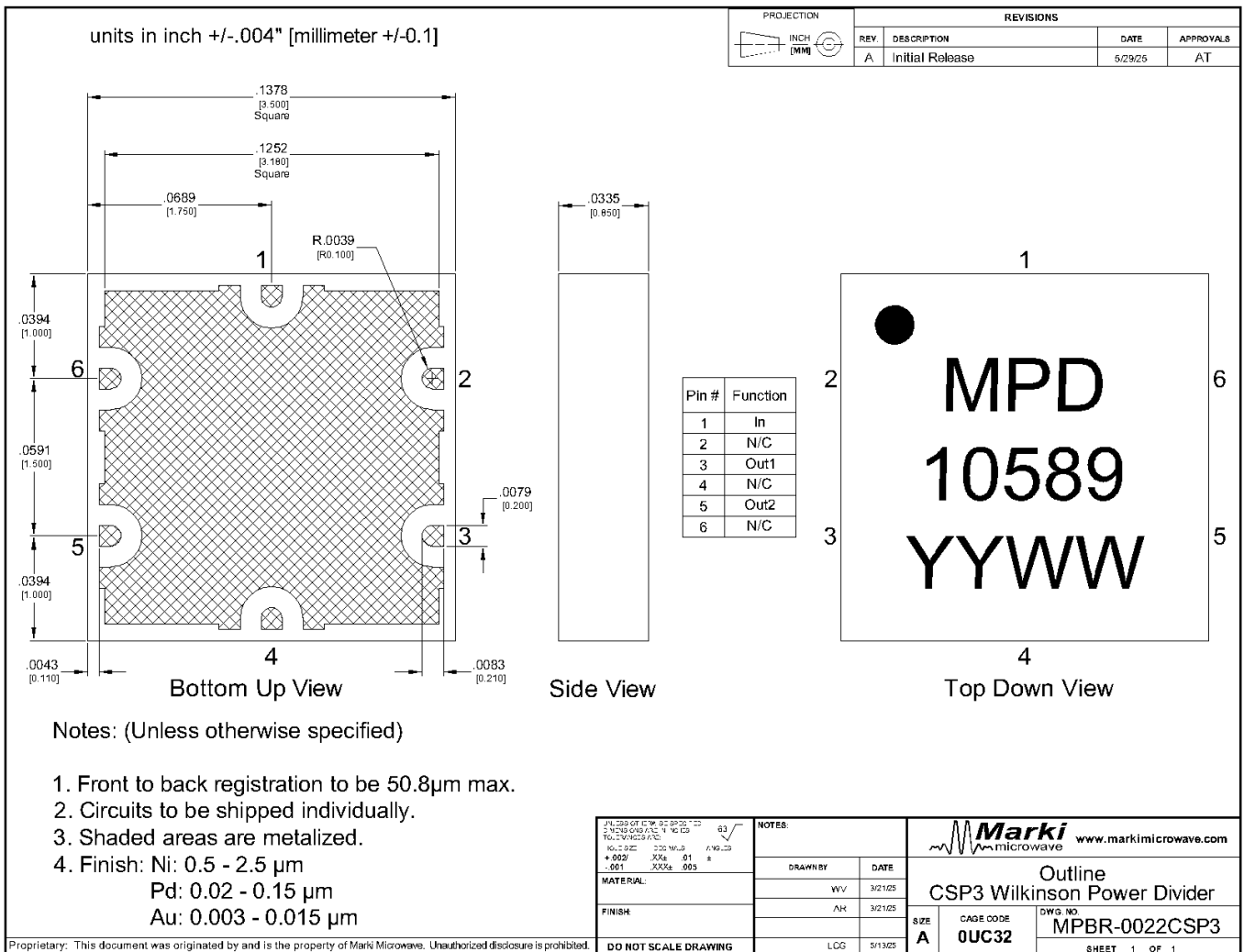
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Mechanical Data

Outline Drawing

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

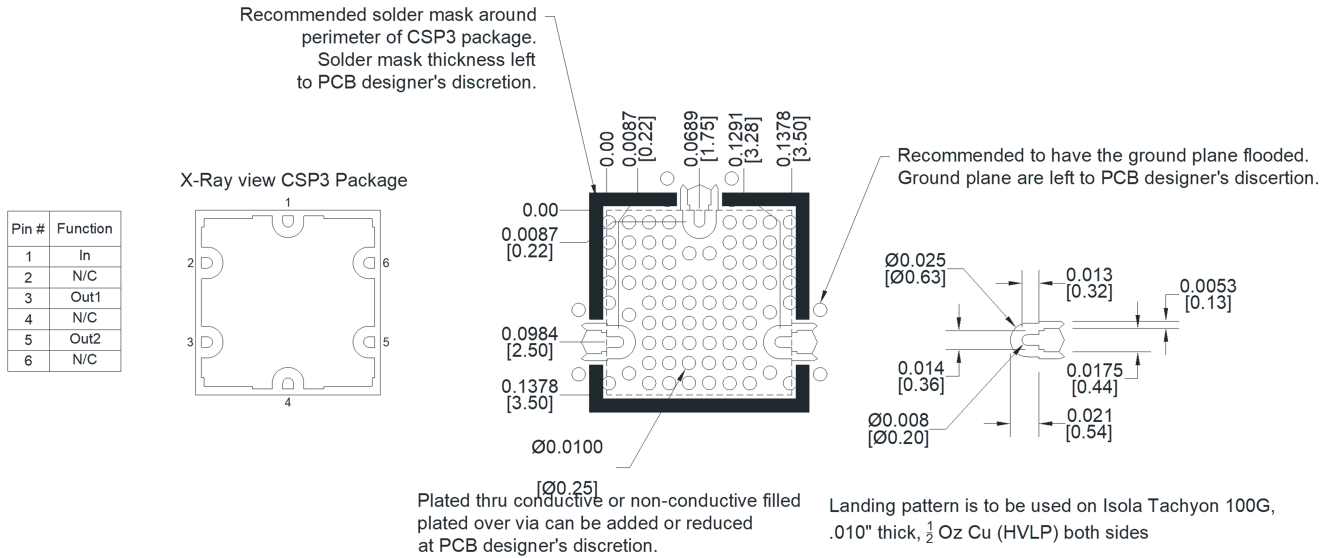


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Footprint Image

Download : [Footprint Drawing](#)



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