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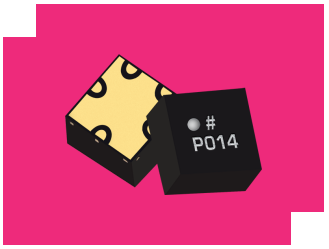
MPD4-1260CSP2

12 - 60 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

DEVICE OVERVIEW

General Description

The MPD4-1260CSP2 is a small footprint MMIC 12-60 GHz 4-Way power divider/power splitter featuring high 29 dB isolation and low 1.1 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 MPD4-1260CSP2 ideal for applications prioritizing low SWaP.



Download s-parameters here

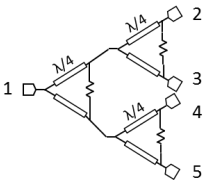
Features

- 4-way splitter or combiner in a compact 2.5mm package
- Side ports
- Low 1.1 dB insertion loss
- High 29 dB isolation
- Excellent 0.3 dB amplitude and 1.9° 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
MPD4-1260CSP2	12 - 60 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter	CSP2	REACH RoHS	Released	EAR99
EVB-MPD4-1260	Evaluation Board, 12 - 60 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter	EVB	RoHS REACH	Released	EAR99

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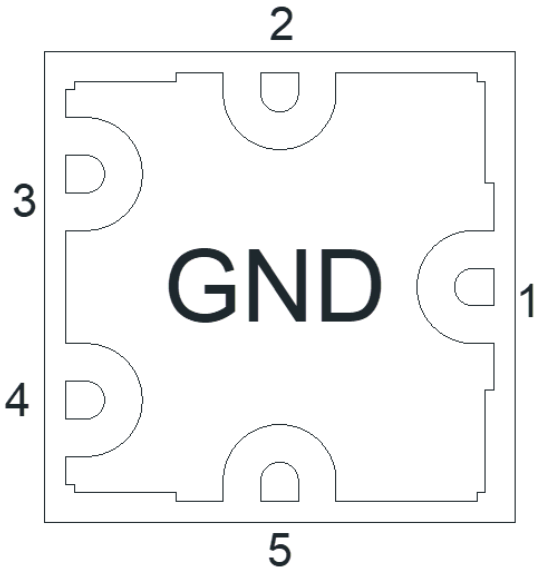
Revision History

Revision Code	Revision Date	Comment
-	2025-10-03	Initial Release
A	2026-02-25	Power Handling Updated

Port Configuration and Functions

Port Diagram

A bottom-up view of the MPD4-1260CSP2 package outline drawing is shown below. The MMIC Power dividers are passive reciprocal devices allowing either power splitting or power combining.

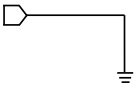
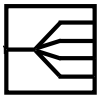
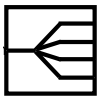
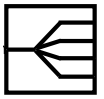
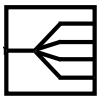
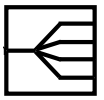


Port Functions

Configuration Combiner

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

Configuration Divider

Port	Function	Description	DC Equivalent Circuit
Ground Paddle	Gnd	Ground paddle should be connected to RF ground	
Pin 1	RF Input	Pin 1 is the input pin. It is DC short to the other 4 pins and open to ground.	
Pin 2	Divider Output 1	Pin 2 is an input pin. It is DC short to the other 4 pins and open to ground.	
Pin 3	Divider Output 2	Pin 3 is an output pin. It is DC short to the other 4 pins and open to ground.	
Pin 4	Divided Output 3	Pin 4 is an output pin. It is DC short to the other 4 pins and open to ground.	
Pin 5	Divider Output 4	Pin 5 is an 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	10	W
RF Power Handling as a Power Combiner	1	W

Package Information

Parameter	Details	Rating
Dimensions	-	2.50 x 2.50 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	Port Configuration	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Amplitude Balance	-	Adjacent Ports	12	60	-	0.36	-	dB
Amplitude Balance	-	Non-Adjacent Ports	12	60	-	0.25	-	dB
Common Port Return Loss	-	-	12	60	-	18	-	dB
Excess Insertion Loss [1]	-	-	12	60	-	1.1	-	dB
Impedance	-	-	-	-	-	50	-	Ω
Isolation	-	Adjacent Ports	12	60	-	24	-	dB
Isolation	-	Non-Adjacent Ports	12	60	-	29	-	dB
Nominal Phase Shift	-	-	12	60	-	0	-	°
Nominal Power Splitting	-	-	12	60	-	6	-	dB
Output Return Loss	-	-	12	60	-	18	-	dB
Phase Balance	-	Adjacent Ports	12	60	-	2.2	-	°
Phase Balance	-	Non-Adjacent Ports	12	60	-	1.9	-	°

[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 6 dB)

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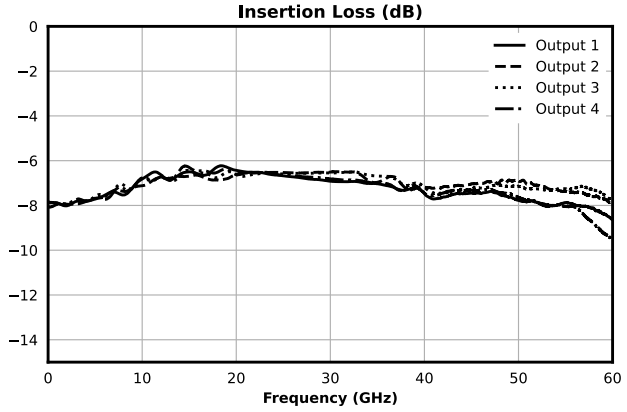
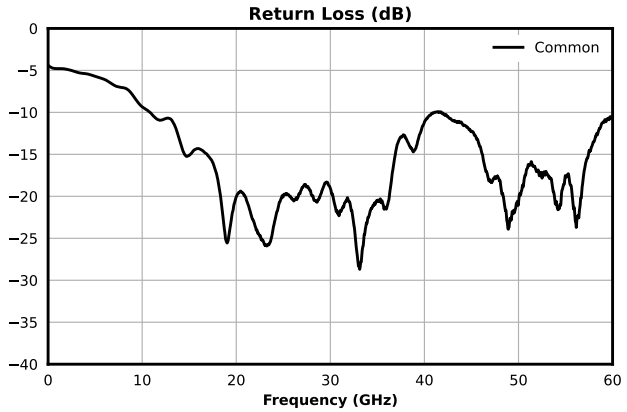
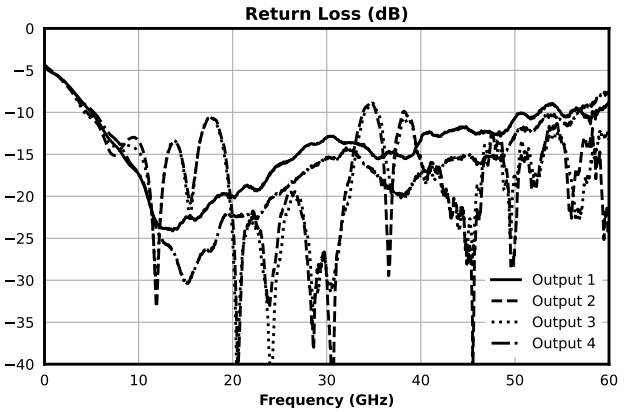
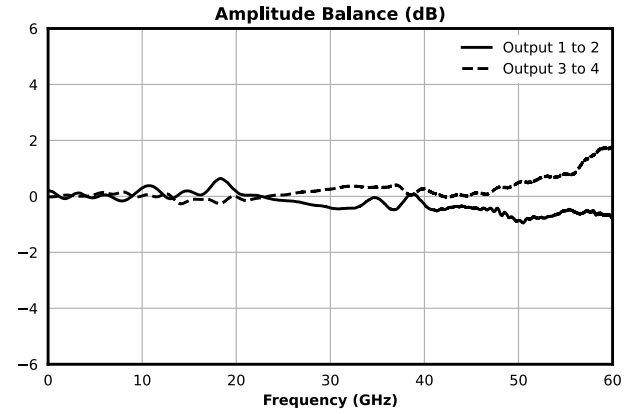
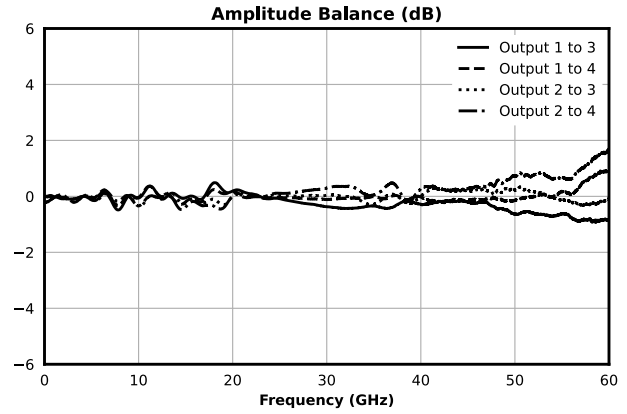
Typical Performance Plots

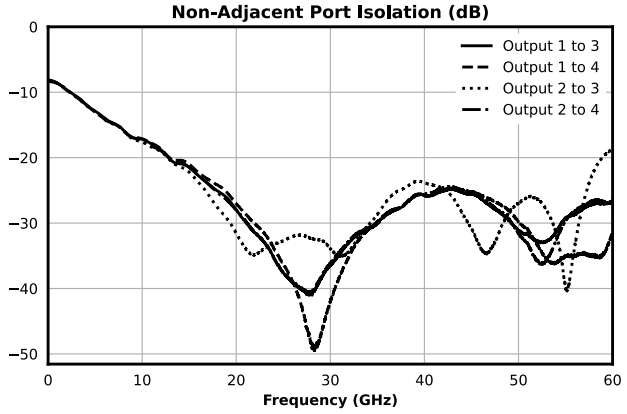


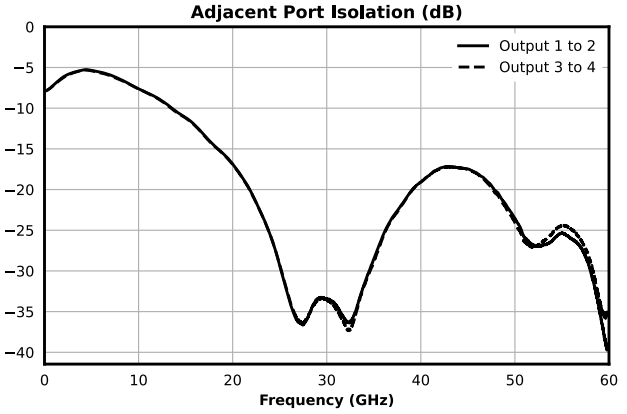


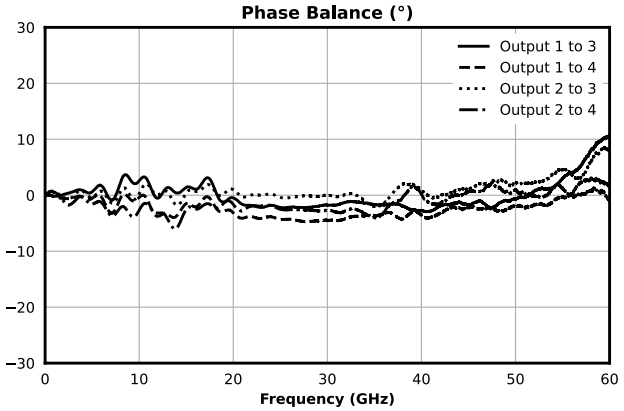


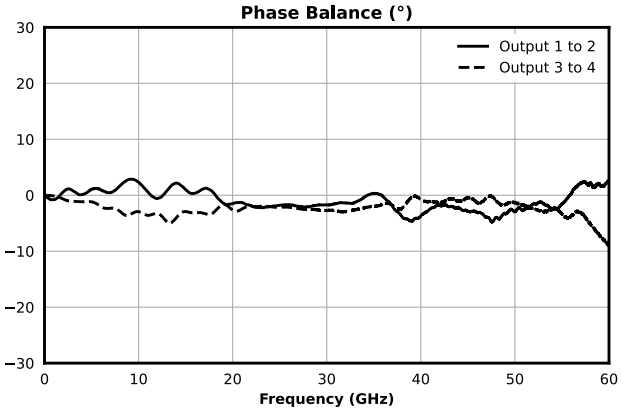












Measured data is de-embedded from fixture using automatic fixture removal (AFR). See Footprint notes for trace information.

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Mechanical Data

Outline Drawing

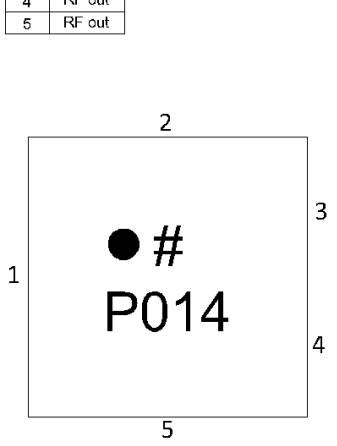
Download : Outline 2D Drawing | Outline 3D Drawing | Outline 3D STP

Pin #	Function
1	RF in
2	RF out
3	RF out
4	RF out
5	RF out

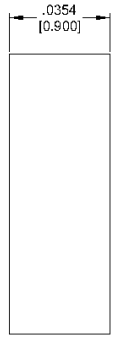
Units in inch +/-.004" [millimeter +/-0.1]

PROJECTION: INCH [MM]

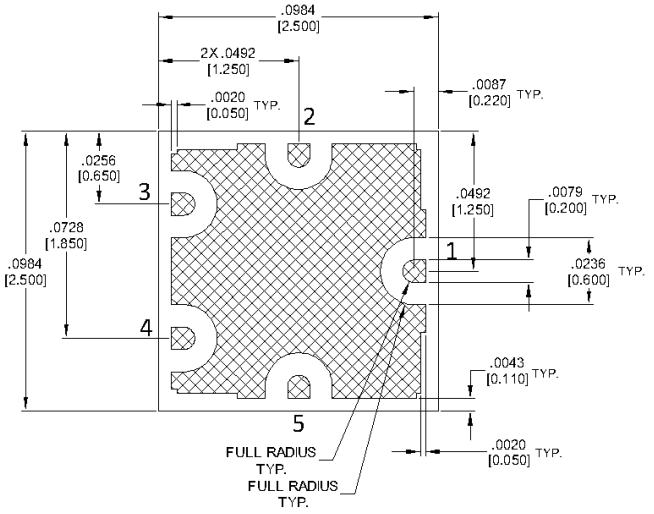
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVALS
2	Dwg. was MPD4-1053CSP2	10/15/24	AT



Top Down View



Side View



Bottom Up View

Notes: (Unless otherwise specified)

1. Shaded areas are metalized.
2. Finish: Ni: 0.5 - 2.5 µm
   Pd: 0.02 - 0.15 µm
   Au: 0.003 - 0.015 µm

MATERIAL: 210-09759
FINISH:
DO NOT SCALE DRAWING

NOTES:

DRAWN BY	DATE
TNN	08-05-2024

Marki microwave www.markimicrowave.com

OUTLINE,
CSP2 4-Way Power Divider

SIZE	CAGE CODE	DWG. NO.
A	0UC32	MPD4-1260CSP2

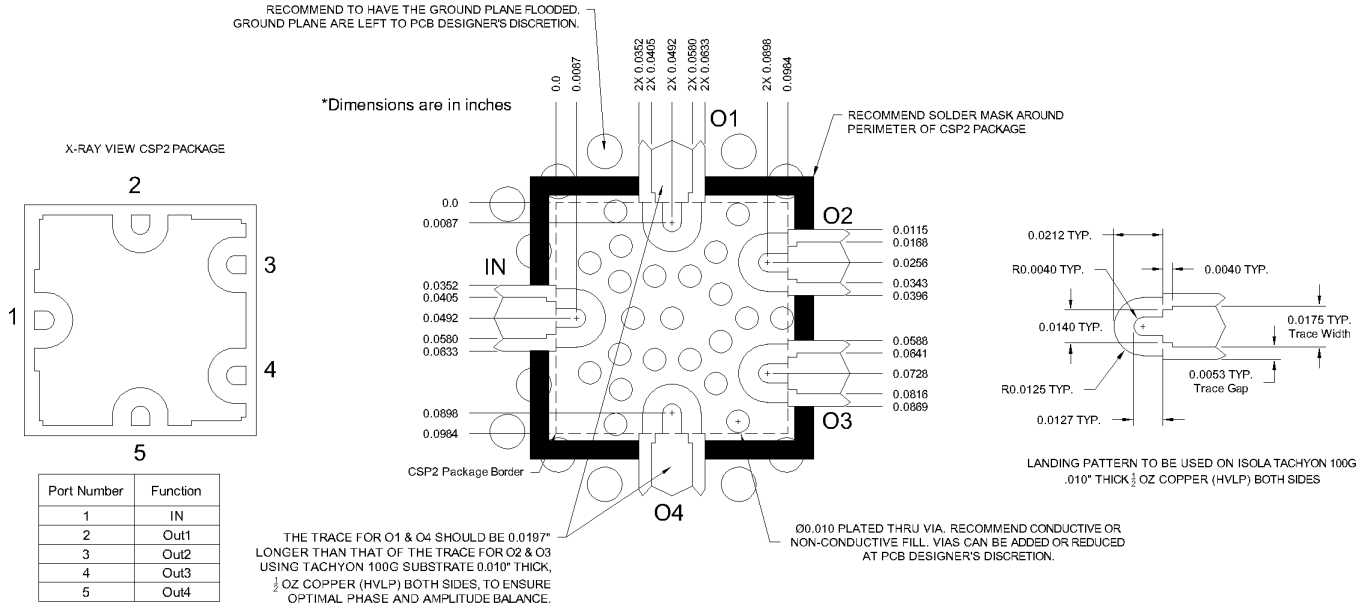
SHEET 1 OF 1

MPD4-1260CSP2

12 - 60 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

Footprint Image

Download : Footprint Drawing

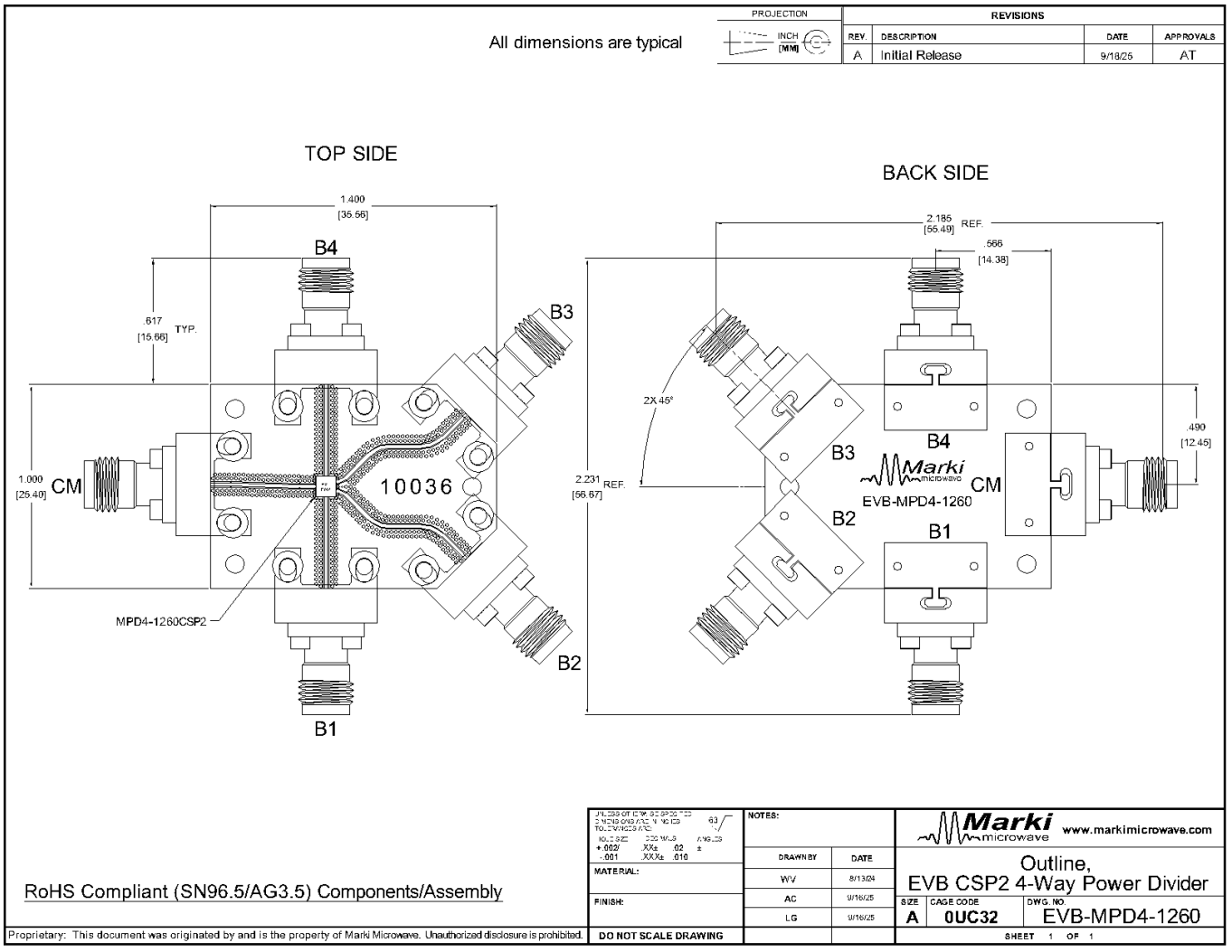


Port Number	Function
1	IN
2	Out1
3	Out2
4	Out3
5	Out4

MPD4-1260CSP2

12 - 60 GHz MMIC 4-Way Wilkinson Power Divider/Power Splitter

Evaluation Board - Outline Drawing



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