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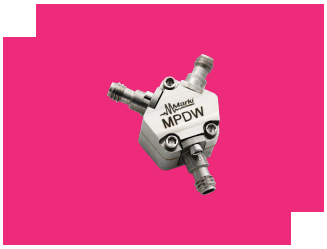
# MPDW-10110M2

## 10 – 110 GHz MMIC 2-way Power Divider/Combiner

## DEVICE OVERVIEW

### General Description

The MPDW-10110M2 is a mmWave 2-way Wilkinson power divider featuring high isolation in our connectorized miniature M2-package enabling operation up to 110 GHz. Passive GaAs MMIC technology allows production of smaller constructions that replace larger form factor circuit board constructions. 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. Power dividers are passive reciprocal devices that can be used either as power combiners or as power dividers. The MPDW-10110M2 is available as a 1.0mm connectorized module.



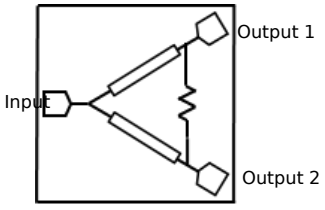

### Features

N/A

### Applications

- Test Equipment
- Electronic warfare equipment
- Radar and satellite communications

### Functional Block Diagram




### Part Ordering Options

| Part Number | Description | Package | Connectors | Green Status | Product Lifecycle | Export Classification |
|---|---|---|---|---|---|---|
| MPDW-10110M2 | 10 – 110 GHz MMIC 2-way Power Divider/Combiner | M2 | Standard | REACH RoHS | Released | EAR99 |

## Table Of Contents



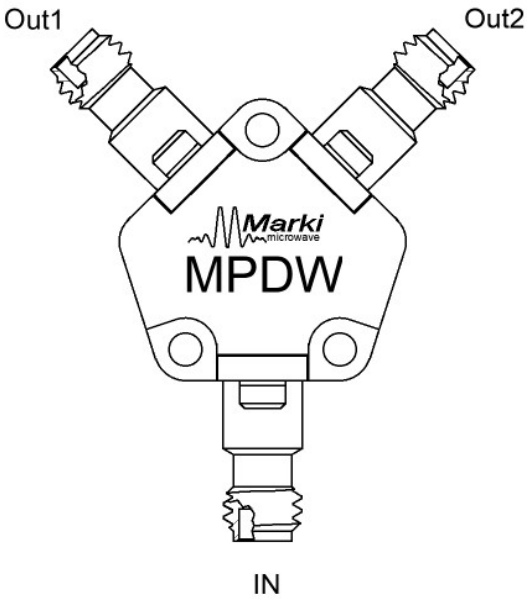
## Revision History

| Revision Code | Revision Date | Comment |
|---|---|---|
| - | 2023-05-01 | Initial Datasheet Release |

## Port Configuration and Functions

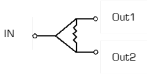
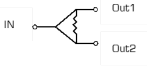
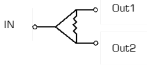
### Port Diagram

A bottom-up view of the MPDW-10110M2's M2 package outline drawing is shown below. The MMIC Power dividers are passive reciprocal devices allowing either power splitting or power combining.

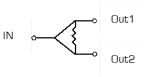
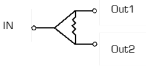
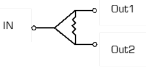



## Port Functions

#### Configuration Power Combiner

| Port | Function | Connector Type | Description | DC Equivalent Circuit |
|---|---|---|---|---|
| GND | Ground | - | M2 package ground provided through metal housing and outer coax conductor. |   |
| In 1 | Input 1 | 1.0F | The Input 1 port is DC short to the other two ports and open to ground. |   |
| In 2 | Input 2 | 1.0F | The Input 2 port is DC short to the other two ports and open to ground. |   |
| Output | Output | 1.0F | The common port is DC short to the other two ports and open to ground. |   |

**Configuration Power Divider**

| Port | Function | Connector Type | Description | DC Equivalent Circuit |
|---|---|---|---|---|
| GND | Ground | - | M2 package ground provided through metal housing and outer coax conductor. |   |
| In | Input | 1.0F | The common port is DC short to the other two ports and open to ground. |   |
| Out1 | Output 1 | 1.0F | The output 1 port is DC short to the other two ports and open to ground. |   |
| Out2 | Output 2 | 1.0F | The output 2 port is DC short to the other two ports 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 | 140 | mA |
| Maximum Operating Temperature | 100 | °C |
| Maximum Storage Temperature | 125 | °C |
| Minimum Operating Temperature | -55 | °C |
| Minimum Storage Temperature | -65 | °C |
| Power Handling, at any Port | 1 | W |

### Package Information

| Parameter | Details | Rating |
|---|---|---|
| ESD | 250 to < 500 Volts | HBM Class 1A |
| Dimensions | - | 21.65 x 26.31 mm |

## Electrical Specifications

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

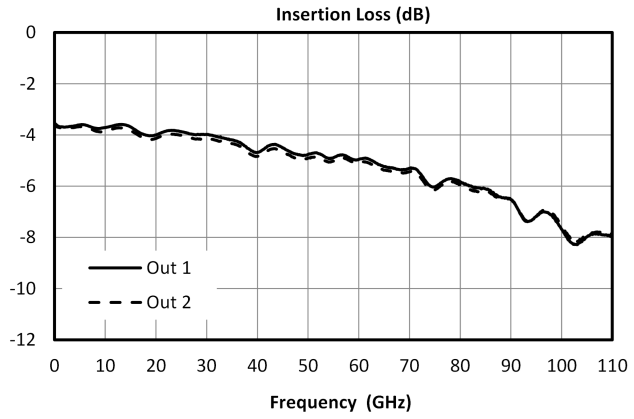
| Parameter | Port Configuration | Test Conditions | Minimum Frequency (GHz) | Maximum Frequency (GHz) | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|---|
| Amplitude Balance | - | - | 10 | 110 | - | 0.25 | - | dB |
| Excess Insertion Loss [1] | - | - | 10 | 110 | - | 3 | - | dB |
| Impedance | - | - | 10 | 110 | - | 50 | - | Ω |
| Isolation | - | - | 10 | 110 | - | 20 | - | dB |
| Nominal Phase Shift | - | - | 10 | 110 | - | 0 | - | ° |
| Nominal Power Splitting | - | - | 10 | 110 | - | 3 | - | dB |
| Phase Balance | - | - | 10 | 110 | - | 5 | - | ° |
| Return Loss | - | - | 10 | 110 | - | 10 | - | dB |

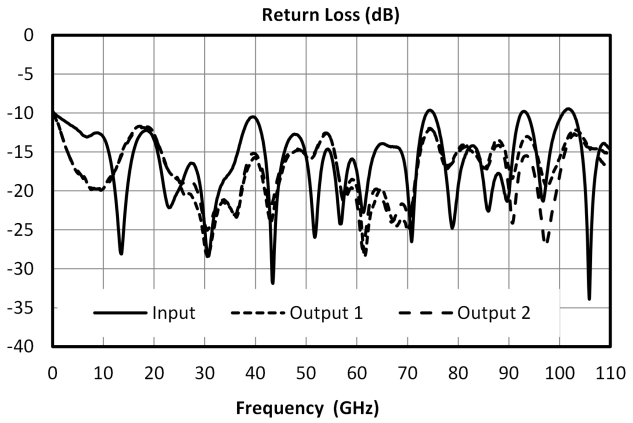
[1] Excess Insertion Loss = (Input Port to Common Port Insertion Loss) - 3dB

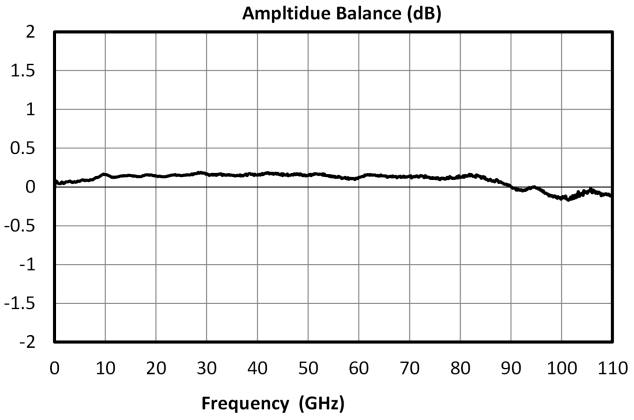
# MPDW-10110M2

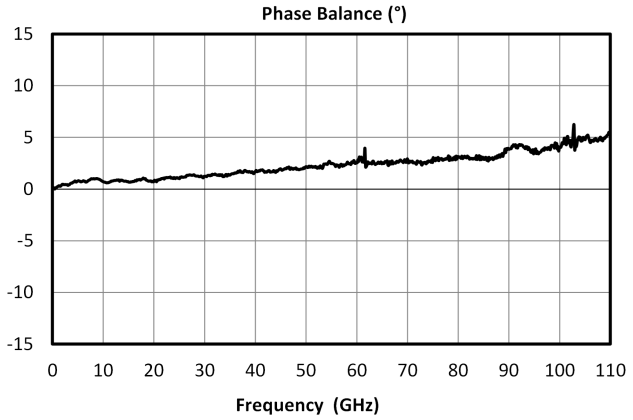
## 10 – 110 GHz MMIC 2-way Power Divider/Combiner

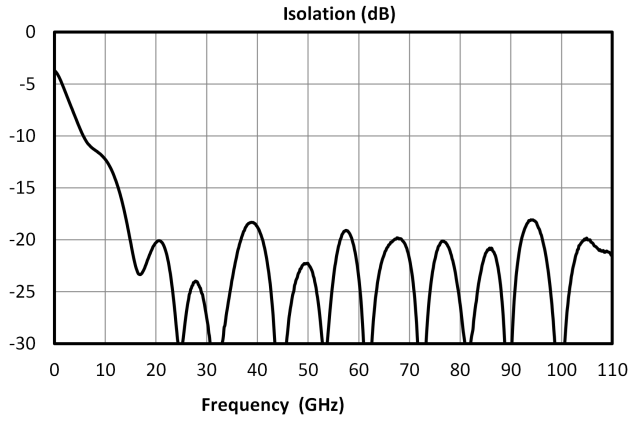
## Typical Performance Plots



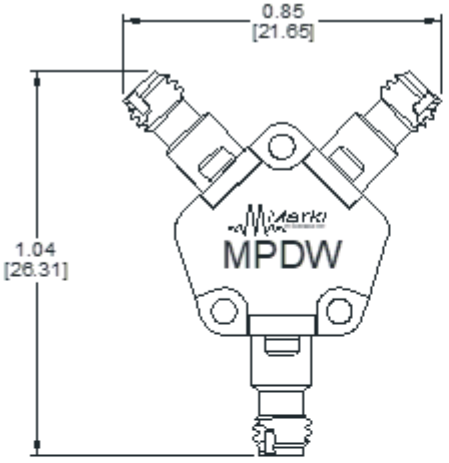
# MPDW-10110M2

## 10 – 110 GHz MMIC 2-way Power Divider/Combiner

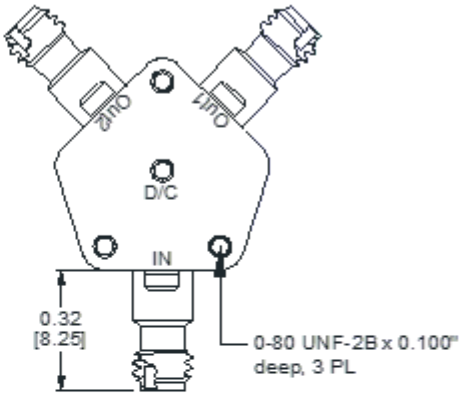
## Mechanical Data

### Outline Drawing

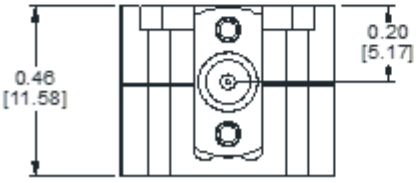
Download : Outline 3D Drawing | Outline 3D STP




Topside View




Bottomside View




1.00 mm Connector View

All measurements are typical

Note: Connectors are not removeable. Do not attempt replacing.

| Port | Connector Type |
|---|---|
| 1,2,3 | 1.00 mm Female |

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