

DC Pass

# Power Splitter/Combiner

ZN2PD-E653+

2 Way-0° 50Ω 10 to 65 GHz

## The Big Deal

- Ultra-wideband, 10 to 65 GHz
- Low insertion loss, 1.2 dB
- High Isolation, 22 dB
- 10W power handling
- Low amplitude unbalance, 0.1 dB



CASE STYLE: UU2234

## Product Overview

Mini-Circuits' ZN2PD-E653+ is an ultra-wideband coaxial 2-way 0° splitter/combiner providing coverage from 10 to 65 GHz, supporting a wide range of applications including 5G, Ku-Band, K-Band, and Ka-Band SatCom, microwave point-to-point backhaul, instrumentation and many more. This model provides 10W power handling as a splitter and very low insertion loss across the entire operating frequency range, minimizing power dissipation and delivering excellent signal power transmission from input to output. The ZN2PD-E653+ comes housed in a rugged aluminum alloy case measuring 1.84 x 1.0 x 0.37" with 1.85mm connectors.

## Key Features

| Feature                         | Advantages  |
|---------------------------------|---|
| Ultra-wideband, 10 to 65 GHz    | Extremely wide frequency range supports many broadband applications in a single model.  |
| Low insertion loss, 1.2 dB      | The combination of 10W power handling and low insertion loss makes this model a suitable candidate for distributing signals while maintaining excellent transmission of signal power. |
| High isolation, 22 dB           | Minimizes interference between ports.   |
| High power handling, 10W        | The ZN2PD-E653+ is suitable for systems with a wide range of power requirements.  |
| Low amplitude unbalance, 1.2 dB | Produces nearly equal output signals, ideal for parallel path and multichannel systems.   |
| DC Passing, 440 mA              | Supports applications where DC power is needed through the RF line.   |

### Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.  
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)



# Power Splitter/Combiner

**ZN2PD-E653+**

2 Way-0° 50Ω 10 to 65 GHz



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Connectors Model  
1.85mm Female ZN2PD-E653+

**+RoHS Compliant**

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

## Maximum Ratings

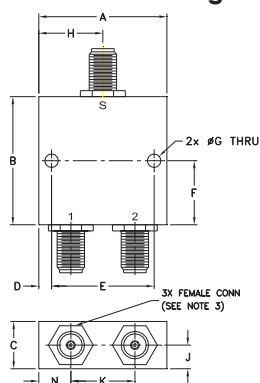
|                              |                |
|------------------------------|----------------|
| Operating Temperature        | -55°C to 100°C |
| Storage Temperature          | -55°C to 100°C |
| Power Input (as a splitter)* | 10W max.       |
| Internal Dissipation         | 1 W max.       |
| DC Current                   | 440mA          |

Permanent damage may occur if any of these limits are exceeded.  
\*Assume output match of 2.0:1 or better. Derate linearly to 10% with arbitrary load.

## Coaxial Connections

|          |   |
|----------|---|
| SUM PORT | S |
| PORT 1   | 1 |
| PORT 2   | 2 |

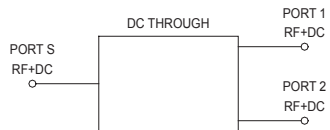
## Outline Drawing



## Outline Dimensions (inch mm)

|       |       |       |      |       |       |      |
|-------|-------|-------|------|-------|-------|------|
| A     | B     | C     | D    | E     | F     | G    |
| 1.00  | 1.00  | .370  | .101 | .800  | .500  | .106 |
| 25.40 | 25.40 | 9.40  | 2.57 | 20.32 | 12.70 | 2.69 |
| H     | J     | K     | L    | N     | wt    |      |
| .500  | .185  | .500  | .375 | .25   | grams |      |
| 12.70 | 4.70  | 12.70 | 9.53 | 6.35  | 55    |      |

## Electrical Schematic



## Features

- Super wideband, 10 to 65 GHz
- Low insertion loss, 1.2 dB typ.
- Excellent isolation, 22 dB typ.

## Applications

- 5G
- Fixed satellite
- Mobile
- Space research

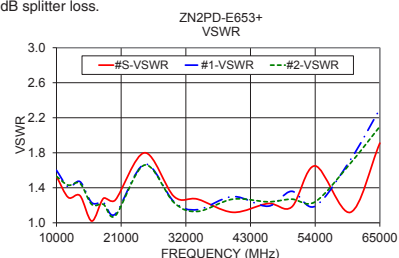
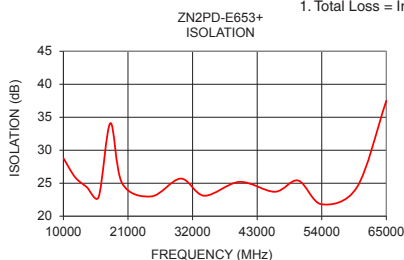
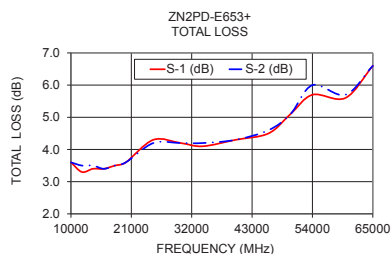
## Electrical Specifications at 25°C

| Parameter                   | Frequency (GHz) | Min. | Typ. | Max. | Unit   |
|-----------------------------|-----------------|------|------|------|--------|
| Frequency Range             |                 | 10   |      | 65   | GHz    |
| Insertion Loss Above 3.0 dB | 10 - 50         | —    | 1.2  | 2.7  | dB     |
|                             | 50 - 65         | —    | 3.1  | 4.7  |        |
| Isolation                   | 10 - 50         | 14.6 | 22   | —    | dB     |
|                             | 50 - 65         | 14.6 | 21   | —    |        |
| Phase Unbalance             | 10 - 50         | —    | 1.0  | 15   | Degree |
|                             | 50 - 65         | —    | 1.9  | 15   |        |
| Amplitude Unbalance         | 10 - 50         | —    | 0.10 | 1.5  | dB     |
|                             | 50 - 65         | —    | 0.10 | 1.5  |        |
| VSWR (Port S)               | 10 - 50         | —    | 1.22 | 2.2  | :1     |
|                             | 50 - 65         | —    | 1.41 | 2.6  |        |
| VSWR (Port 1-2)             | 10 - 50         | —    | 1.26 | 2.2  | :1     |
|                             | 50 - 65         | —    | 1.40 | 2.6  |        |

## Typical Performance Data

| Frequency (MHz) | Total Loss <sup>1</sup> (dB) |      | Amplitude Unbalance (dB) | Isolation (dB) | Phase Unbalance (deg.) | VSWR S | VSWR 1 | VSWR 2 |
|-----------------|------------------------------|------|--------------------------|----------------|------------------------|--------|--------|--------|
|                 | S-1                          | S-2  |                          |                |                        |        |        |        |
| 10000           | 3.60                         | 3.60 | 0.00                     | 28.80          | 1.66                   | 1.53   | 1.60   | 1.53   |
| 12000           | 3.30                         | 3.50 | 0.14                     | 25.90          | 0.70                   | 1.29   | 1.41   | 1.43   |
| 14000           | 3.40                         | 3.50 | 0.02                     | 24.40          | 0.34                   | 1.31   | 1.47   | 1.45   |
| 16000           | 3.40                         | 3.40 | 0.02                     | 22.90          | 0.64                   | 1.02   | 1.23   | 1.21   |
| 18000           | 3.50                         | 3.50 | 0.02                     | 34.10          | 0.59                   | 1.28   | 1.23   | 1.21   |
| 20000           | 3.60                         | 3.60 | 0.02                     | 25.00          | 0.61                   | 1.26   | 1.10   | 1.08   |
| 25000           | 4.30                         | 4.20 | 0.08                     | 23.00          | 1.33                   | 1.80   | 1.67   | 1.66   |
| 30000           | 4.20                         | 4.20 | 0.03                     | 25.70          | 2.19                   | 1.30   | 1.24   | 1.23   |
| 34000           | 4.10                         | 4.20 | 0.12                     | 23.10          | 1.36                   | 1.27   | 1.15   | 1.13   |
| 40000           | 4.30                         | 4.30 | 0.02                     | 25.20          | 1.35                   | 1.12   | 1.30   | 1.27   |
| 46000           | 4.50                         | 4.60 | 0.11                     | 23.70          | 0.78                   | 1.22   | 1.19   | 1.24   |
| 50000           | 5.10                         | 5.10 | 0.04                     | 25.40          | 1.42                   | 1.18   | 1.36   | 1.27   |
| 54000           | 5.70                         | 6.00 | 0.29                     | 21.80          | 1.44                   | 1.65   | 1.19   | 1.24   |
| 60000           | 5.60                         | 5.70 | 0.05                     | 24.40          | 1.68                   | 1.12   | 1.72   | 1.68   |
| 65000           | 6.60                         | 6.60 | 0.04                     | 37.50          | 1.13                   | 1.91   | 2.30   | 2.10   |

1. Total Loss = Insertion Loss + 3dB splitter loss.



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