



Mini-Circuits

DC PASS, HIGH POWER

# Power Splitter/Combiner **ZN4PD-5R183-S+**

4 Way-0° 50Ω 500 to 18000 MHz

## THE BIG DEAL

- Super wideband, 0.5 to 18 GHz
- High Isolation, 24 dB typ.
- 20W power handling
- Low amplitude unbalance, 0.23 dB typ.

## APPLICATIONS

- Fixed satellite
- Space research
- Mobile



Generic photo used for illustration purposes only

|            |                |
|------------|----------------|
| Model No.  | ZN4PD-5R183-S+ |
| Case Style | UU2625-1       |
| Connectors | SMA            |

### +RoHS Compliant

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

## PRODUCT OVERVIEW

Mini-Circuits' ZN4PD-5R183-S+ is a super wideband 4-way 0° splitter/combiner providing coverage from 0.5 to 18 GHz, supporting a wide range of applications including L-Band, S-Band, C-Band, X-Band, KU-Band and many more. This model provides 20W 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 ZN4PD-5R183-S+ comes housed in a case measuring 6.25 x 2.98 x 0.5" with SMA connectors.

## KEY FEATURES

| Feature                                                                                                                       | Advantages                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Ultra-wideband, 0.5 to 18 GHz                                                                                                 | Extremely wide frequency range supports many broadband applications in a single model.  |
| High isolation, 24 dB typ. at 13 GHz                                                                                          | Minimizes interference between ports.                                                   |
| High power handling: <ul style="list-style-type: none"><li>• 20W as a splitter at 25°C</li><li>• 4.5W as a combiner</li></ul> | The ZN4PD-5R183-S+ is suitable for systems with a wide range of power requirements.     |
| Low amplitude unbalance, 0.23 dB typ. at 13 GHz                                                                               | Produces nearly equal output signals, ideal for parallel path and multichannel systems. |
| DC Passing, 630mA                                                                                                             | Supports applications where DC power is needed through the RF line.                     |

REV. B  
ECO-013913  
ZN4PD-5R183-S+  
JG/CP/AM  
220725





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## ELECTRICAL SPECIFICATIONS AT 25°C

| Parameter                    | Frequency (MHz) | Min. | Typ. | Max.  | Unit   |
|------------------------------|-----------------|------|------|-------|--------|
| Frequency Range              |                 | 500  |      | 18000 | MHz    |
| Insertion Loss, above 6.0 dB | 500-5000        |      | 0.5  | 1.2   | dB     |
|                              | 5000-10000      |      | 1.2  | 1.9   |        |
|                              | 10000-15000     |      | 1.9  | 2.9   |        |
|                              | 15000-18000     |      | 2.4  | 3.5   |        |
| Isolation                    | 500-600         | 12.5 | 15   | —     | dB     |
|                              | 600-5000        | 15   | 25   | —     |        |
|                              | 5000-10000      | 15   | 24   | —     |        |
|                              | 10000-15000     | 15   | 24   | —     |        |
|                              | 15000-18000     | 13   | 26   | —     |        |
| Phase Unbalance              | 500-5000        |      | 0.50 | 3.7   | Degree |
|                              | 5000-10000      |      | 1.90 | 5.7   |        |
|                              | 10000-15000     |      | 3.00 | 6.9   |        |
|                              | 15000-18000     |      | 3.90 | 8.0   |        |
| Amplitude Unbalance          | 500-5000        |      | 0.02 | 0.2   | dB     |
|                              | 5000-10000      |      | 0.10 | 0.6   |        |
|                              | 10000-15000     |      | 0.23 | 1.0   |        |
|                              | 15000-18000     |      | 0.38 | 1.2   |        |
| VSWR (Port S)                | 500-5000        |      | 1.14 | 1.8   | :1     |
|                              | 5000-10000      |      | 1.14 | 1.8   |        |
|                              | 10000-15000     |      | 1.14 | 1.8   |        |
|                              | 15000-18000     |      | 1.18 | 1.8   |        |
| VSWR (Port 1-4)              | 500-5000        |      | 1.09 | 1.6   | :1     |
|                              | 5000-10000      |      | 1.08 | 1.6   |        |
|                              | 10000-15000     |      | 1.10 | 1.6   |        |
|                              | 15000-18000     |      | 1.11 | 1.6   |        |

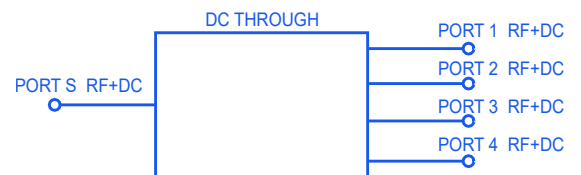
## MAXIMUM RATINGS

| Parameter                   | Ratings        |
|-----------------------------|----------------|
| Operating Temperature       | -55°C to 100°C |
| Storage Temperature         | -55°C to 100°C |
| Power Input (as a splitter) | 20W* max.      |
| Internal Dissipation        | 4.5W max.      |
| DC Pass                     | 630 mA         |

\*Derate linearly to 14W at 100°C

Permanent damage may occur if any of these limits are exceeded.

## ELECTRICAL SCHEMATIC





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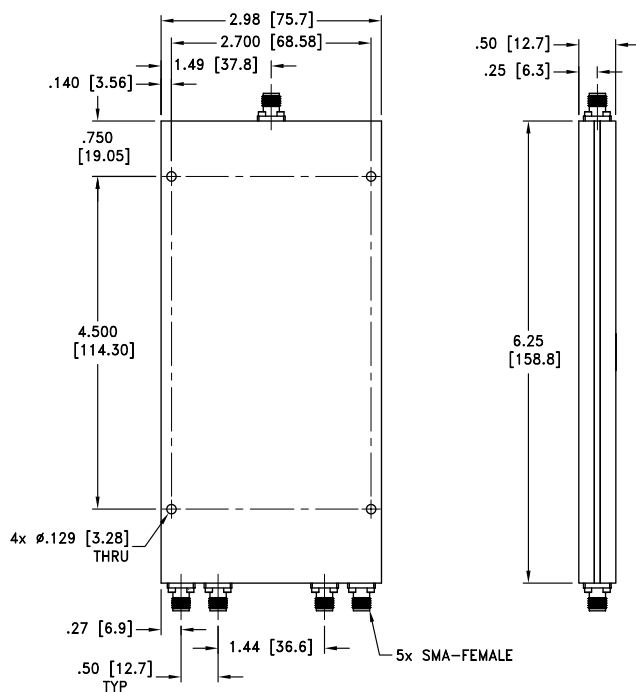
# Power Splitter/Combiner **ZN4PD-5R183-S+**

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## COAXIAL CONNECTIONS

|          |   |
|----------|---|
| SUM PORT | S |
| PORT 1   | 1 |
| PORT 2   | 2 |
| PORT 3   | 3 |
| PORT 4   | 4 |

## OUTLINE DRAWING



Weight: 340 grams

Dimensions are in inches (mm). Tolerances: 2 Pl. ±.03; 3 Pl. ±.015





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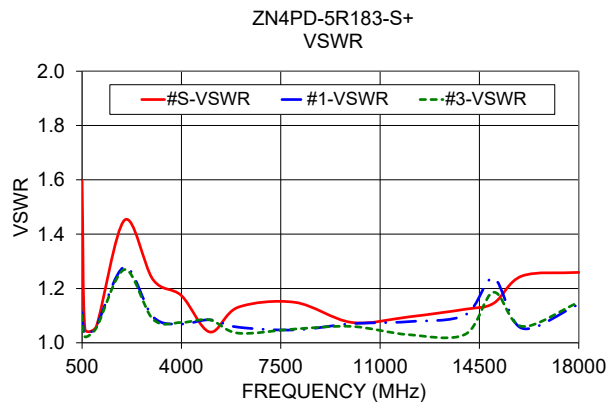
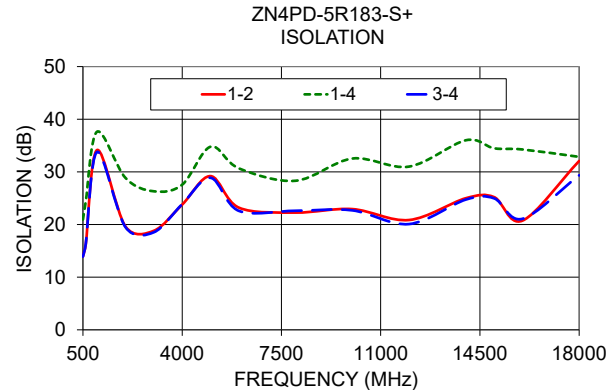
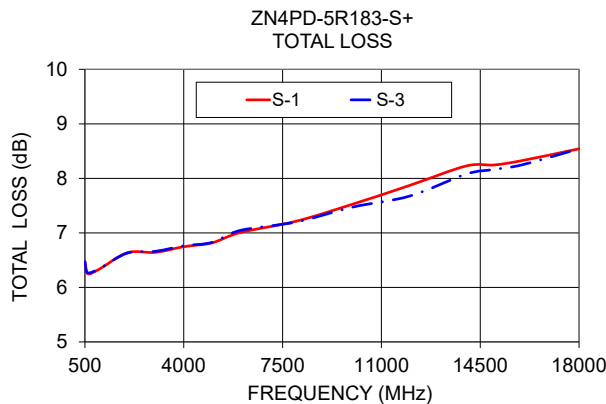
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## TYPICAL PERFORMANCE DATA

| Freq.<br>(MHz) | Total Loss <sup>1</sup><br>(dB) |      |      |      | Amp<br>Unb.<br>(dB) | Isolation<br>(dB) |       |       | Phase<br>Unb.<br>(deg.) | VSWR<br>(:1) |      |      |      |      |
|----------------|---------------------------------|------|------|------|---------------------|-------------------|-------|-------|-------------------------|--------------|------|------|------|------|
|                | S-1                             | S-2  | S-3  | S-4  |                     | 1-2               | 1-4   | 3-4   |                         | S            | 1    | 2    | 3    | 4    |
| 500            | 6.47                            | 6.47 | 6.47 | 6.48 | 0.00                | 13.95             | 20.95 | 13.90 | 0.14                    | 1.60         | 1.11 | 1.11 | 1.10 | 1.10 |
| 600            | 6.25                            | 6.25 | 6.27 | 6.26 | 0.02                | 16.27             | 24.41 | 16.34 | 0.19                    | 1.05         | 1.03 | 1.03 | 1.02 | 1.02 |
| 1000           | 6.33                            | 6.33 | 6.34 | 6.34 | 0.01                | 34.16             | 37.64 | 33.79 | 0.35                    | 1.06         | 1.06 | 1.06 | 1.05 | 1.05 |
| 2000           | 6.64                            | 6.62 | 6.63 | 6.63 | 0.01                | 19.63             | 28.86 | 19.50 | 0.60                    | 1.45         | 1.28 | 1.27 | 1.27 | 1.27 |
| 3000           | 6.64                            | 6.66 | 6.66 | 6.65 | 0.02                | 18.81             | 26.32 | 18.53 | 0.73                    | 1.23         | 1.10 | 1.10 | 1.09 | 1.10 |
| 4000           | 6.75                            | 6.76 | 6.76 | 6.73 | 0.03                | 23.79             | 27.57 | 23.87 | 1.30                    | 1.17         | 1.07 | 1.08 | 1.07 | 1.07 |
| 5000           | 6.82                            | 6.80 | 6.82 | 6.80 | 0.03                | 29.19             | 34.78 | 28.87 | 1.40                    | 1.04         | 1.08 | 1.07 | 1.08 | 1.08 |
| 6000           | 7.01                            | 7.03 | 7.04 | 6.96 | 0.09                | 23.20             | 30.67 | 22.59 | 1.76                    | 1.13         | 1.06 | 1.05 | 1.04 | 1.06 |
| 8000           | 7.22                            | 7.14 | 7.20 | 7.17 | 0.08                | 22.27             | 28.31 | 22.62 | 3.04                    | 1.15         | 1.05 | 1.05 | 1.05 | 1.05 |
| 10000          | 7.53                            | 7.53 | 7.48 | 7.45 | 0.08                | 22.93             | 32.54 | 22.69 | 2.78                    | 1.07         | 1.07 | 1.07 | 1.06 | 1.06 |
| 12000          | 7.87                            | 7.71 | 7.68 | 7.78 | 0.20                | 20.86             | 31.00 | 20.09 | 3.61                    | 1.10         | 1.08 | 1.07 | 1.03 | 1.10 |
| 14000          | 8.23                            | 8.12 | 8.08 | 8.04 | 0.18                | 24.99             | 36.00 | 24.74 | 3.87                    | 1.12         | 1.10 | 1.07 | 1.03 | 1.11 |
| 15000          | 8.25                            | 8.14 | 8.16 | 8.01 | 0.24                | 25.21             | 34.48 | 24.97 | 4.92                    | 1.15         | 1.24 | 1.23 | 1.19 | 1.28 |
| 16000          | 8.33                            | 8.19 | 8.25 | 8.10 | 0.22                | 20.74             | 34.26 | 21.09 | 4.54                    | 1.25         | 1.05 | 1.07 | 1.06 | 1.01 |
| 18000          | 8.54                            | 8.51 | 8.54 | 8.36 | 0.18                | 32.08             | 32.85 | 29.35 | 4.95                    | 1.26         | 1.14 | 1.14 | 1.15 | 1.16 |

1. Total Loss = Insertion Loss + 6dB splitter theoretical loss.



## 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-Circuits' applicable established test performance criteria and measurement instructions.
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