DC Pass

Power Splitter/Combiner ZN4PD1-183W+

4 Way-0° 50Ω 4000 to 18000 MHz

The Big Deal

- Ultra-wideband, 4000 to 18000 MHz
- High power handling, 30W as a splitter
- Low insertion loss, 0.7 dB

CASE STYLE: UU2303

Product Overview

Mini-Circuits' ZN4PD1-183W+ is a 4-way 0˚ splitter/combiner covering a wide range of applications from 4000 to 18000 MHz including test and measurement, EW, SatCom and more. This model is capable of handling up to 30W RF input power as a splitter and passing up to 4A DC current from the sum port to all output ports (100mA each port). Its outstanding combination of high power and low loss minimize intrinsic losses and provide excellent signal fidelity from input to output. It also provides high port-to-port isolation, excellent VSWR and low amplitude and phase unbalance. It comes housed in a rugged aluminum alloy case with SMA connectors at all ports.

Key Features

Feature	Advantages
Ultra-wideband, 4000 to 18000 MHz	ZN4PD1-183W+ covers a wide range of applications with a single device.
High power handling, 30W as a splitter	Suitable for many high power applications.
Low insertion loss, 0.7 dB	Very low insertion loss minimizes intrinsic losses, making this model a suitable candidate for high power signal distribution applications where low loss is a requirement.
Low unbalance: • 0.25 dB amplitude unbalance • 3˚ phase unbalance	ZN4PD1-183W+ produces nearly equal output signals, ideal for parallel path / multichannel systems.
DC Passing, 0.4A (100mA each port)	Supports applications where DC power is needed at later stages in the system.

DC Pass

Power Splitter/Combiner

ZN4PD1-183W+

4 Way-0° 50Ω 4000 to 18000 MHz

Generic photo used for illustration purposes only

CASE STYLE: UU2303

Connectors	Model
SMA	ZN4PD1-183W-S+

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

Maximum Ratings

Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 85°C
Power Input (as a splitter)	30W max.
Internal Dissipation	0.45W max.
DC Current	0.4 A (100mA for each port)

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

Coaxial Connections

SUM PORT	S
PORT 1	1
PORT 2	2
PORT 3	3
PORT 4	4

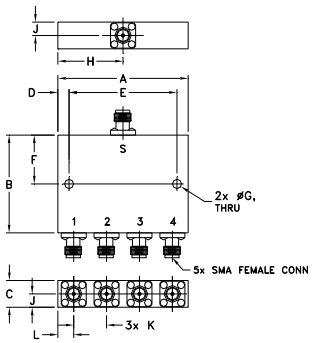
Features

- wideband, 4000 to 18000 MHz
- low insertion loss, 0.7 dB typ.
- low amplitude unbalance, 0.25 dB typ.
- low phase unbalance,3 deg. typ.
- excellent output VSWR, 1.2:1
- DC Pass from sum port to all output ports

Applications

- wideband test and measurement
- electronic warfare
- satellite instrumentation

Outline Drawing

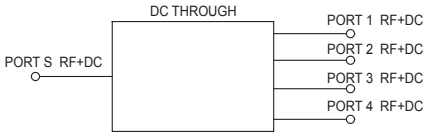


Outline Dimensions (inch / mm)

A	B	C	D	E	F
1.98	1.46	.40	.17	1.640	.73
50.29	37.08	10.16	4.32	41.66	18.54

G	H	J	K	L	wt
.137	.99	.20	.500	.24	grams
3.48	25.15	5.08	12.70	6.10	62

Electrical Schematic



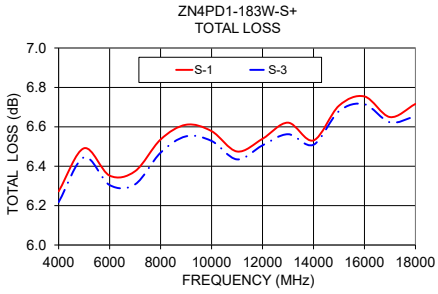
Electrical Specifications at 25°C

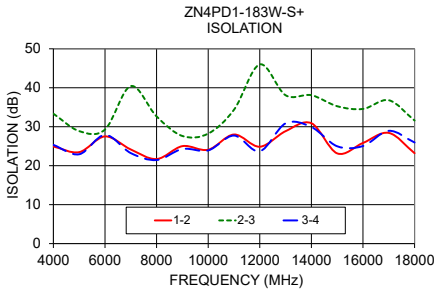
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		4000	—	18000	MHz
Insertion Loss (above theoretical 6.0 dB)	4000-18000	—	0.7	0.9	dB
Isolation	4000-18000	18	22	—	dB
Phase Unbalance	4000-18000	—	3	6	Degree
Amplitude Unbalance	4000-18000	—	0.25	0.5	dB
VSWR (Port S)	4000-18000	—	1.4	1.6	:1
VSWR Output (Port 1-4)	4000-18000	—	1.2	1.4	:1

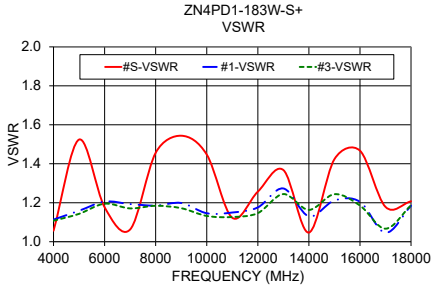
Typical Performance Data

Freq. (MHz)	Total Loss[1] (dB)				Amp. Unbal. (dB)	Isolation (dB)			VSWR S	VSWR 1	VSWR 2	VSWR 3	VSWR 4
	S-1	S-2	S-3	S-4		1-2	2-3	3-4					
4000	6.27	6.22	6.22	6.19	0.08	24.92	33.34	25.34	1.06	1.11	1.09	1.11	1.11
5000	6.49	6.45	6.45	6.41	0.08	23.48	28.88	22.94	1.52	1.16	1.13	1.14	1.16
6000	6.35	6.31	6.30	6.27	0.08	27.51	29.27	27.90	1.18	1.21	1.17	1.19	1.20
7000	6.37	6.32	6.31	6.27	0.10	24.16	40.43	23.23	1.06	1.19	1.16	1.17	1.19
8000	6.54	6.50	6.47	6.43	0.11	21.71	32.64	21.45	1.46	1.19	1.19	1.18	1.21
9000	6.61	6.59	6.55	6.49	0.12	25.02	27.62	24.28	1.54	1.20	1.15	1.17	1.19
10000	6.58	6.56	6.53	6.46	0.12	24.10	28.24	23.92	1.45	1.15	1.16	1.13	1.09
11000	6.47	6.46	6.43	6.35	0.13	28.00	34.36	27.73	1.12	1.15	1.13	1.13	1.10
12000	6.54	6.52	6.51	6.41	0.13	24.87	45.99	23.70	1.26	1.18	1.12	1.15	1.15
13000	6.62	6.61	6.56	6.46	0.17	28.86	38.07	30.86	1.37	1.27	1.24	1.24	1.24
14000	6.53	6.53	6.51	6.37	0.16	30.89	38.09	29.92	1.05	1.13	1.10	1.16	1.15
15000	6.71	6.71	6.68	6.53	0.18	23.16	35.26	24.98	1.42	1.21	1.17	1.24	1.23
16000	6.75	6.77	6.71	6.54	0.24	25.84	34.57	25.05	1.47	1.20	1.24	1.19	1.17
17000	6.65	6.67	6.62	6.42	0.25	28.41	36.80	28.95	1.18	1.05	1.05	1.07	1.04
18000	6.72	6.74	6.65	6.42	0.32	23.20	31.59	25.96	1.21	1.18	1.11	1.19	1.17

1. Total Loss = Insertion Loss + 6dB splitter 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-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

4 Way-0° Power Splitter/Combiner ZN4PD1-183W-S+

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS[1] (dB)				AMP UNBAL. (dB)	ISOLATION (dB)			PHASE UNBAL. (Deg)
	S1	S2	S3	S4		1-2	2-3	3-4	
4000	6.27	6.22	6.22	6.19	0.08	24.92	33.34	25.34	0.95
4200	6.30	6.25	6.25	6.22	0.08	31.98	32.77	32.88	1.00
4400	6.36	6.31	6.31	6.28	0.08	33.44	31.66	32.62	1.04
4600	6.43	6.39	6.38	6.35	0.08	27.47	30.50	26.75	1.08
4800	6.48	6.44	6.43	6.40	0.08	24.62	29.60	24.01	1.14
5000	6.49	6.45	6.45	6.41	0.08	23.48	28.88	22.94	1.22
5100	6.48	6.44	6.43	6.40	0.08	23.38	28.60	22.85	1.28
5200	6.45	6.42	6.41	6.37	0.08	23.59	28.39	23.06	1.30
5400	6.40	6.36	6.34	6.31	0.09	24.83	28.17	24.39	1.35
5600	6.34	6.31	6.29	6.25	0.09	27.17	28.19	27.00	1.36
5800	6.33	6.29	6.27	6.24	0.09	29.11	28.57	29.56	1.38
6000	6.35	6.31	6.30	6.27	0.08	27.51	29.27	27.90	1.41
6200	6.39	6.34	6.35	6.31	0.08	24.72	30.23	24.69	1.49
6400	6.41	6.36	6.37	6.34	0.08	22.84	31.55	22.56	1.58
6600	6.41	6.36	6.36	6.33	0.08	22.08	33.41	21.61	1.71
6800	6.39	6.34	6.33	6.29	0.09	22.42	36.11	21.77	1.78
7000	6.37	6.32	6.31	6.27	0.10	24.16	40.43	23.23	1.80
7200	6.38	6.33	6.31	6.27	0.11	27.89	49.53	26.39	1.82
7400	6.43	6.38	6.35	6.31	0.11	35.16	45.86	31.76	1.82
7600	6.48	6.43	6.41	6.37	0.11	30.39	38.98	29.74	1.85
7800	6.52	6.47	6.45	6.41	0.11	24.69	35.08	24.52	1.91
8000	6.54	6.50	6.47	6.43	0.11	21.71	32.64	21.45	1.99
8200	6.55	6.51	6.48	6.43	0.12	20.23	30.91	19.88	2.02
8400	6.57	6.54	6.50	6.45	0.12	19.82	29.59	19.39	2.05
8600	6.60	6.57	6.53	6.48	0.13	20.42	28.70	19.87	2.07
8800	6.63	6.60	6.56	6.50	0.12	22.05	28.00	21.38	2.07
9000	6.61	6.59	6.55	6.49	0.12	25.02	27.62	24.28	2.08
9200	6.56	6.54	6.51	6.45	0.11	29.36	27.32	29.07	2.20
9400	6.51	6.49	6.46	6.40	0.11	31.17	27.18	33.31	2.27
9600	6.50	6.47	6.45	6.38	0.12	27.64	27.31	28.75	2.38
9800	6.52	6.50	6.47	6.40	0.12	25.06	27.65	25.37	2.39
10000	6.58	6.56	6.53	6.46	0.12	24.10	28.24	23.92	2.42
11000	6.47	6.46	6.43	6.35	0.13	28.00	34.36	27.73	2.68
12000	6.54	6.52	6.51	6.41	0.13	24.87	45.99	23.70	3.06
13000	6.62	6.61	6.56	6.46	0.17	28.86	38.07	30.86	3.33
14000	6.53	6.53	6.51	6.37	0.16	30.89	38.09	29.92	3.50
15000	6.71	6.71	6.68	6.53	0.18	23.16	35.26	24.98	3.73
15500	6.78	6.79	6.77	6.61	0.18	22.32	34.27	23.02	4.04
16000	6.75	6.77	6.71	6.54	0.24	25.84	34.57	25.05	4.30
16500	6.66	6.68	6.61	6.43	0.25	28.60	36.21	27.55	4.28
17000	6.65	6.67	6.62	6.42	0.25	28.41	36.80	28.95	4.52
17500	6.67	6.67	6.63	6.43	0.25	30.50	34.89	34.99	4.77
18000	6.72	6.74	6.65	6.42	0.32	23.20	31.59	25.96	5.17

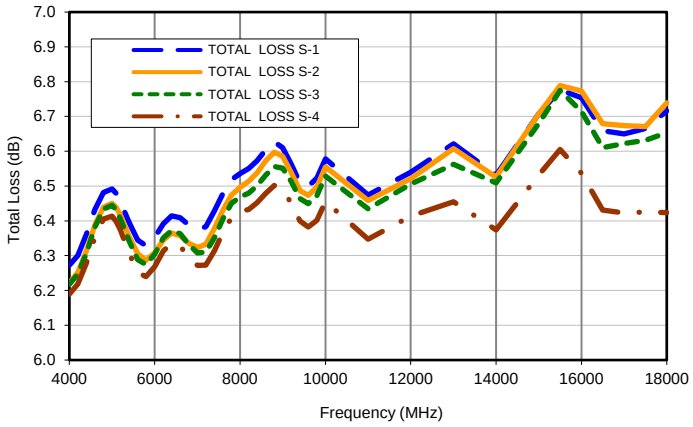
FREQ. (MHz)	VSWR (:1)				
	S	1	2	3	4
4000	1.06	1.11	1.09	1.11	1.11
4200	1.17	1.14	1.12	1.13	1.13
4400	1.31	1.18	1.15	1.17	1.17
4600	1.44	1.20	1.17	1.19	1.20
4800	1.52	1.19	1.16	1.18	1.19
5000	1.52	1.16	1.13	1.14	1.16
5100	1.50	1.13	1.10	1.12	1.13
5200	1.45	1.10	1.07	1.08	1.10
5400	1.32	1.06	1.02	1.02	1.04
5600	1.17	1.08	1.06	1.07	1.07
5800	1.10	1.15	1.12	1.14	1.14
6000	1.18	1.21	1.17	1.19	1.20
6200	1.27	1.23	1.19	1.22	1.24
6400	1.31	1.23	1.18	1.21	1.23
6600	1.27	1.20	1.15	1.19	1.21
6800	1.18	1.18	1.14	1.16	1.18
7000	1.06	1.19	1.16	1.17	1.19
7200	1.11	1.24	1.20	1.21	1.23
7400	1.24	1.28	1.24	1.26	1.28
7600	1.36	1.29	1.26	1.27	1.30
7800	1.43	1.26	1.24	1.25	1.28
8000	1.46	1.19	1.19	1.18	1.21
8200	1.47	1.10	1.13	1.11	1.12
8400	1.50	1.05	1.10	1.07	1.04
8600	1.55	1.12	1.12	1.11	1.08
8800	1.57	1.18	1.14	1.15	1.15
9000	1.54	1.20	1.15	1.17	1.19
9200	1.46	1.18	1.12	1.15	1.18
9400	1.36	1.12	1.06	1.10	1.14
9600	1.31	1.05	1.02	1.03	1.06
9800	1.35	1.07	1.10	1.06	1.02
10000	1.45	1.15	1.16	1.13	1.09
11000	1.12	1.15	1.13	1.13	1.10
12000	1.26	1.18	1.12	1.15	1.15
13000	1.37	1.27	1.24	1.24	1.24
14000	1.05	1.13	1.10	1.16	1.15
15000	1.42	1.21	1.17	1.24	1.23
15500	1.55	1.22	1.18	1.24	1.20
16000	1.47	1.20	1.24	1.19	1.17
16500	1.23	1.10	1.16	1.07	1.10
17000	1.18	1.05	1.05	1.07	1.04
17500	1.08	1.09	1.06	1.11	1.11
18000	1.21	1.18	1.11	1.19	1.17

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

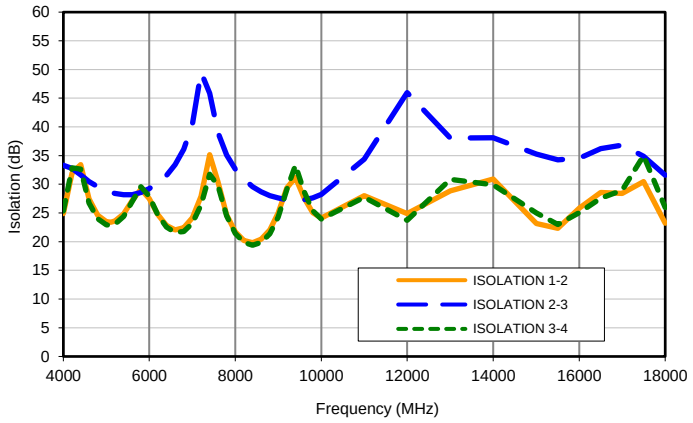
4 Way-0° Power Splitter/Combiner ZN4PD1-183W-S+

Typical Performance Curves

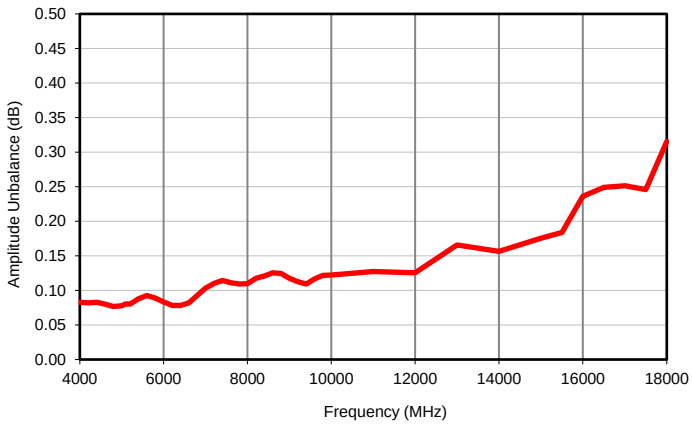
Total Loss



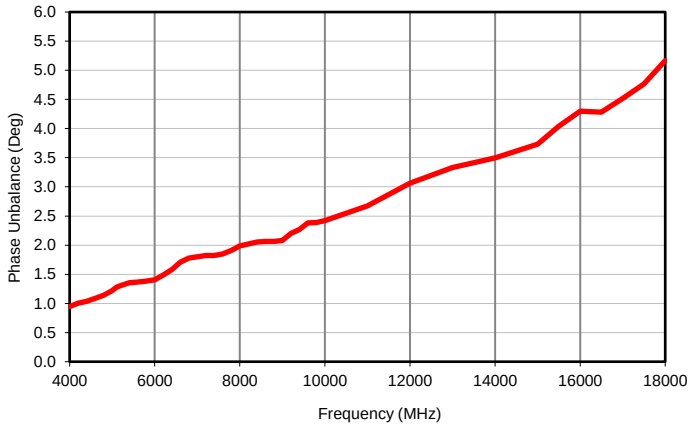
Isolation



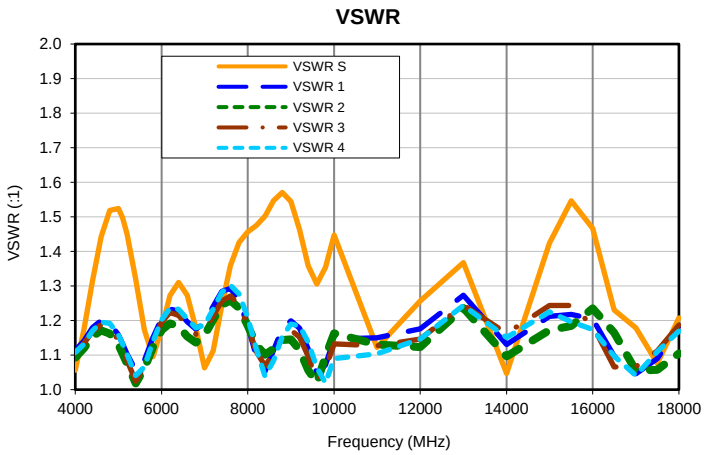
Amplitude Unbalance



Phase Unbalance

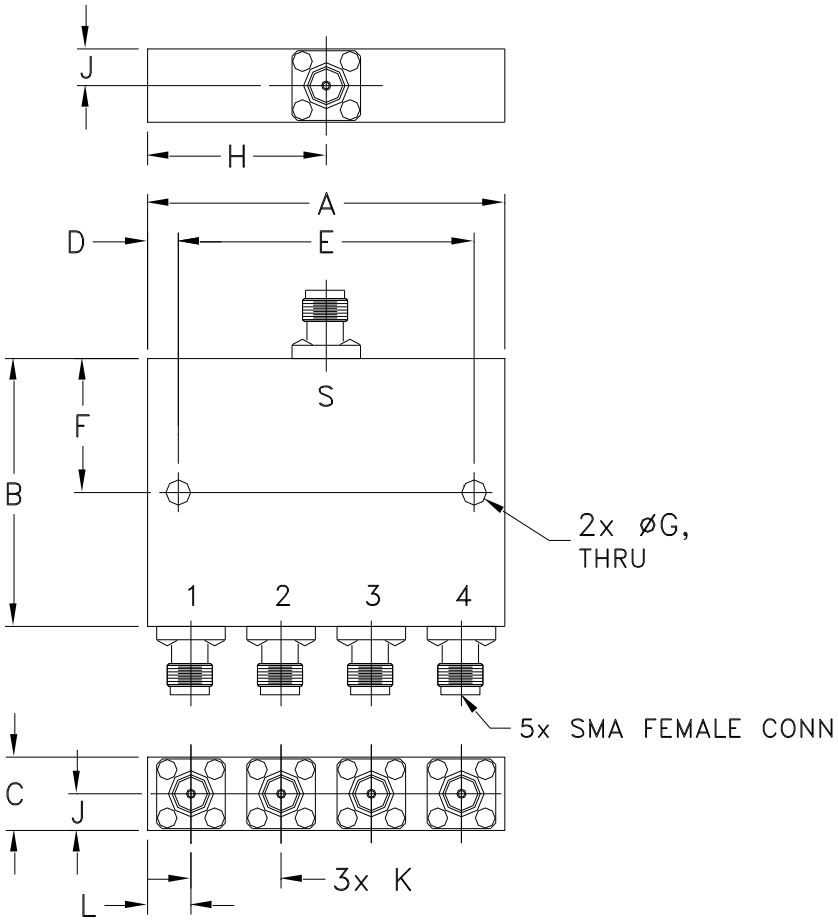


VSWR



Case Style UU

Outline Dimensions UU2303



CASE#	A	B	C	D	E	F	G	H	J	K	L	WT. GRAMS
UU2303	1.98 (50.29)	1.46 (37.08)	.40 (10.16)	.17 (4.32)	1.640 (41.66)	.73 (18.54)	.137 (3.48)	.99 (25.15)	.20 (5.08)	.500 (12.70)	.24 (6.10)	62

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

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Refer to the individual model data sheet for the type of connectors available.

Mini-Circuits

Environmental Specifications **ENV28T8**

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I