High Power, DC Pass

Power Splitter/Combiner ZB4PD-462W+

4 Way-0° 50Ω 30 W 380 to 4600 MHz

The Big Deal

- High power, 30W as a splitter
- Low insertion loss, 1.3 dB
- Low unbalance, 0.1 dB, 1˚
- Good isolation, 23 dB



CASE STYLE: UU1305-1

Product Overview

Mini-Circuits' ZB4PD-462W+ is a 4-way 0˚ splitter/combiner providing high power handling and low insertion loss across the 380 to 4600 MHz frequency range, covering many popular wireless communications bands as well as satellite IF. Its outstanding combination of high power and low loss minimize power dissipation due to intrinsic losses and provide excellent power transmission from input to output. This model also provides high port-to-port isolation and very low amplitude and phase unbalance. It comes housed in a rugged aluminum alloy case with your choice of SMA or N-Type connectors.

Key Features

Feature	Advantages
Wideband, 380 to 4600 MHz	ZB4PD-462W+ covers many popular wireless communications bands, making it suitable for a wide variety of applications.
High power handling: • 30W as a splitter • 1W as a combiner	Suitable for many high power applications.
Low insertion loss, 1.3 dB	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: • 0.1 dB amplitude unbalance • 1˚ phase unbalance	ZB4PD-462W+ produces nearly equal output signals, ideal for parallel path / multichannel systems.
High isolation, 25 dB	Minimizes interference between input ports.
DC Passing, 1.0A (250mA each port)	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

High Power, DC Pass

Power Splitter/Combiner

ZB4PD-462W+

4 Way-0° 50Ω 30 W 380 to 4600 MHz



Generic photo used for illustration purposes only

CASE STYLE: UU1305-1

Connectors	Model
N-TYPE	ZB4PD-462W-N+
SMA	ZB4PD-462W-S+

+RoHS Compliant

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

Maximum Ratings

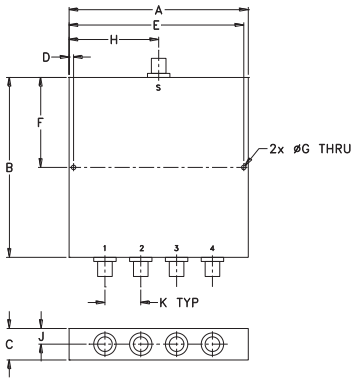
Operating Temperature(@<30W)	-55°C to 60°C
Operating Temperature(@<10W)	-55°C to 100°C
Storage Temperature	-55°C to 100°C
DC Current	1.0 A (250mA for each port)

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

Outline Drawing

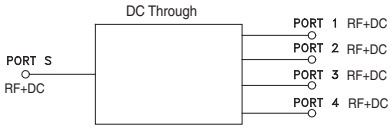


Outline Dimensions (inch / mm)

A	B	C	D	E	F
5.00	5.00	0.88	0.13	4.875	2.50
127.00	127.00	22.35	3.30	123.83	63.50

G	H	J	K	wt
0.125	2.500	0.44	1.00	grams
3.18	63.50	11.18	25.40	560

Electrical Schematic



Features

- wideband, 380 to 4600 MHz
- high isolation, 23 dB typ.
- good input matching VSWR, 1.3:1 typ.
- up to 30W power input as a splitter

Applications

- UHF TV
- cellular/ISM/GSM
- satellite distribution
- GPS/L-BAND (MARSAT)
- PCS/DCS/UMTS
- ISM
- MMDS
- SATCOM

Electrical Specifications

Parameter		Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range			380		4600	MHz
Insertion Loss (above theoretical 6.0 dB)		380-1600	—	0.5	1.2	dB
		1600-3600	—	0.9	1.7	
		3600-4600	—	1.3	2.2	
Isolation		380-1600	14	22	—	dB
		1600-3600	16	23	—	
		3600-4600	16	22	—	
Phase Unbalance		380-1600	—	0.6	4	Degree
		1600-3600	—	1	7	
		3600-4600	—	2	9	
Amplitude Unbalance		380-1600	—	0.1	0.5	dB
		1600-3600	—	0.1	0.6	
		3600-4600	—	0.2	0.8	
VSWR (Port S)		380-1600	—	1.3	1.9	:1
		1600-3600	—	1.3	1.9	
		3600-4600	—	1.3	1.9	
VSWR (Port 1-8)		380-1600	—	1.1	1.4	:1
		1600-3600	—	1.2	1.7	
		3600-4600	—	1.2	1.7	
Power Handling[3]	**As Splitter**[1]	380-4600	—	—	30	Watt
	As Combiner[2]	380-4600	—	—	1.0	

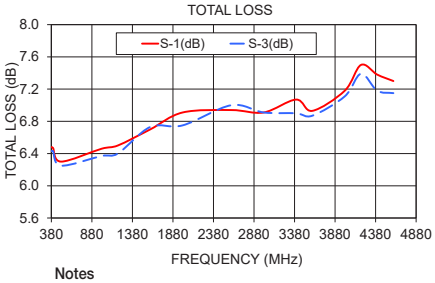
1. All outputs must terminate 50 ohm (VSWR 1.5:1 or better). Over 25°C to 60°C, derate linearly to 20 Watt/max.
2. As a combiner of non-coherent signals, max. power per port is 1.0 watt power rating divided by number of ports.
3. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 60°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 10°C/W.

Typical Performance Data

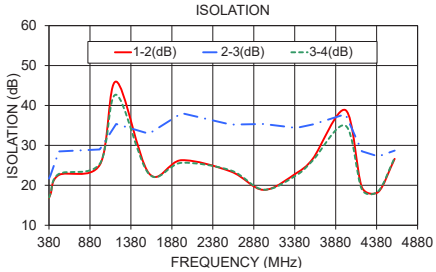
Freq. (MHz)	Total Loss[1] (dB)				Amp. Unb. (dB)	Isolation (dB)			Phase Unb. (deg.)	VSWR S	VSWR 1	VSWR 2	VSWR 3	VSWR 4
	S-1	S-2	S-3	S-4		1-2	2-3	3-4						
380.00	6.48	6.46	6.43	6.46	0.05	16.82	21.68	16.90	0.22	1.63	1.20	1.20	1.21	1.21
400.00	6.47	6.46	6.43	6.46	0.04	17.89	22.61	18.00	0.24	1.60	1.19	1.19	1.20	1.20
500.00	6.30	6.29	6.25	6.30	0.05	22.58	28.48	22.85	0.20	1.25	1.08	1.08	1.09	1.09
1000.00	6.46	6.40	6.37	6.46	0.09	25.12	28.98	25.40	0.39	1.31	1.24	1.22	1.22	1.24
1200.00	6.50	6.46	6.40	6.50	0.10	45.98	35.36	42.69	0.64	1.36	1.26	1.25	1.27	1.26
1600.00	6.70	6.77	6.73	6.69	0.09	23.00	32.93	22.85	0.63	1.34	1.26	1.27	1.28	1.28
2000.00	6.91	6.85	6.75	6.86	0.16	26.30	38.07	25.64	0.64	1.14	1.25	1.24	1.28	1.26
2600.00	6.94	6.86	7.00	6.96	0.14	23.46	35.20	23.73	1.42	1.37	1.33	1.34	1.35	1.40
3000.00	6.91	6.94	6.91	6.84	0.10	18.86	35.37	18.91	1.02	1.40	1.28	1.32	1.33	1.32
3400.00	7.07	7.06	6.90	6.97	0.17	23.05	34.37	22.53	1.12	1.21	1.22	1.22	1.21	1.25
3600.00	6.93	6.96	6.87	6.84	0.12	26.63	35.25	26.21	0.89	1.27	1.12	1.14	1.11	1.14
4000.00	7.18	7.10	7.11	7.11	0.09	38.84	37.83	34.94	1.13	1.30	1.03	1.07	1.05	1.03
4200.00	7.50	7.39	7.39	7.46	0.11	19.53	28.53	18.99	1.41	1.65	1.16	1.16	1.18	1.21
4400.00	7.38	7.33	7.18	7.32	0.20	18.32	27.25	18.53	1.78	1.36	1.17	1.19	1.17	1.18
4600.00	7.30	7.30	7.15	7.27	0.16	26.63	28.69	26.91	1.31	1.23	1.24	1.18	1.18	1.19

1. Total Loss = Insertion Loss + 6.0 dB splitter theoretical loss.

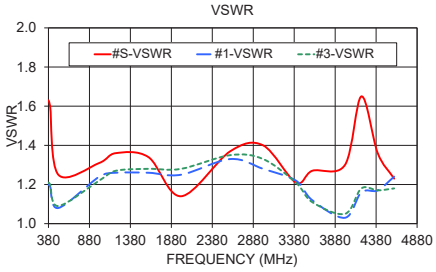
ZB4PD-462W-S+
TOTAL LOSS



ZB4PD-462W-S+
ISOLATION



ZB4PD-462W-S+
VSWR



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

REV. C
M153965
ZB4PD-462W+
ED-14873/1
SZ/CP/AM
201118

Mini-Circuits®
www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com