

High Power Combiner

4 Way-0° 50Ω 600 to 2300 MHz

ZB4PD-232-50W+

Maximum Ratings

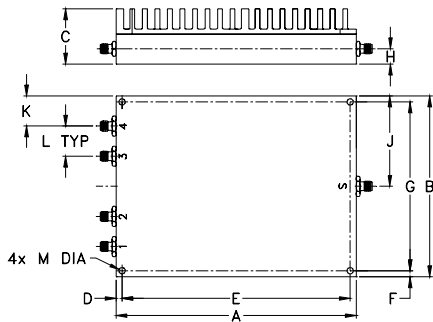
Operating Temperature	-55°C to 90°C
Storage Temperature	-55°C to 100°C
DC Current	600 A (150mA for each port)

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	G	H	J	K	L	M	wt
6.00	4.50	1.38	.15	5.700	.15	4.200	.38	2.25	.75	.75	.156	grams
152.40	114.30	35.05	3.81	144.78	3.81	106.68	9.65	57.15	19.05	19.05	3.96	960

Features

- high isolation, 28 dB typ.
- good input matching VSWR, 1.20 typ.
- high power, 100W (as splitter), 50W (as combiner)
- good output matching VSWR, 1.10:1 typ.

Applications

- cellular
- ISM
- WCDMA
- PCS
- DCS

Electrical Specifications

FREQ. RANGE (MHz)	ISOLATION (dB)		INSERTION LOSS (dB) ABOVE 6.0 dB		PHASE UNBALANCE (Degrees)		AMPLITUDE UNBALANCE (dB)		POWER INPUT ¹ (W)	
	Typ.	Min.	Typ.	Max.	Typ.	Max.	Typ.	Max.	as combiner ² Max.	as splitter Max.
600-2300	19	16	1.1	2.0	0.9	10.0	0.05	0.70	50	100
800-1000	28	22	0.5	0.8	1.2	4.0	0.05	0.30	50	100
1800-2000	28	20	0.9	1.4	2.5	6.0	0.15	0.50	50	100
2000-2300	28	16	1.2	2.0	4.0	10.0	0.25	0.70	50	100

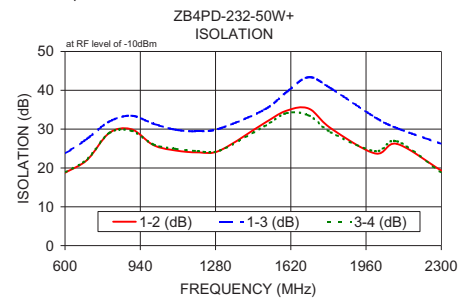
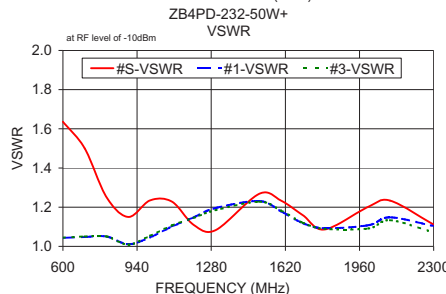
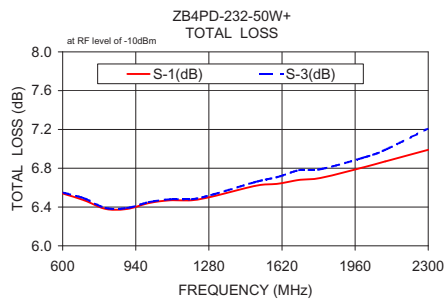
1. Over -55°C to +55°C. Derate linearly to 20% of rating at 90°C

2. As a combiner of non-coherent signals, max. power per port is power rating divided by number of ports.

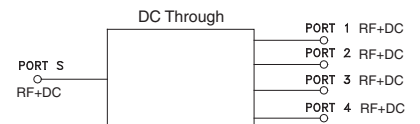
Typical Performance Data

Freq. (MHz)	Total Loss ¹ (dB)				Amp. Unbal. (dB)	Isolation (dB)			Phase Unbal. (deg.)	VSWR S	VSWR 1	VSWR 2	VSWR 3	VSWR 4
	S-1	S-2	S-3	S-4		1-2	1-3	3-4						
600.00	6.54	6.56	6.55	6.57	0.03	18.75	23.68	18.88	0.83	1.64	1.04	1.04	1.04	1.04
700.00	6.47	6.49	6.49	6.50	0.03	22.07	27.52	22.25	0.97	1.50	1.05	1.04	1.05	1.04
800.00	6.38	6.39	6.39	6.40	0.02	29.02	31.94	29.02	1.12	1.25	1.05	1.05	1.05	1.05
900.00	6.38	6.39	6.39	6.40	0.03	29.96	33.46	29.57	1.26	1.15	1.01	1.02	1.01	1.02
1000.00	6.44	6.45	6.45	6.46	0.02	25.87	31.39	26.04	1.39	1.23	1.05	1.04	1.05	1.04
1100.00	6.47	6.47	6.48	6.49	0.03	24.50	29.84	24.93	1.56	1.23	1.10	1.09	1.11	1.09
1200.00	6.47	6.48	6.48	6.50	0.03	24.01	29.45	24.35	1.76	1.11	1.15	1.14	1.15	1.13
1300.00	6.51	6.52	6.53	6.54	0.03	24.49	30.17	24.51	1.99	1.08	1.20	1.19	1.18	1.18
1500.00	6.62	6.63	6.66	6.68	0.05	31.54	35.00	30.74	2.50	1.27	1.23	1.24	1.23	1.24
1600.00	6.64	6.65	6.71	6.70	0.07	34.73	39.50	34.09	2.74	1.23	1.18	1.19	1.18	1.20
1700.00	6.68	6.71	6.78	6.76	0.10	35.32	43.37	33.57	2.74	1.16	1.12	1.12	1.12	1.14
1800.00	6.70	6.70	6.79	6.79	0.09	30.26	40.54	29.21	2.91	1.09	1.09	1.09	1.09	1.11
2000.00	6.81	6.80	6.91	6.91	0.11	23.76	33.07	24.33	3.44	1.20	1.11	1.08	1.09	1.07
2100.00	6.87	6.86	6.99	6.98	0.13	26.18	30.25	26.88	3.79	1.23	1.15	1.12	1.13	1.11
2300.00	6.99	6.99	7.21	7.18	0.22	19.30	26.23	18.78	4.83	1.11	1.10	1.12	1.07	1.09

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



electrical schematic



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

ZB4PD-232-50W+

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS ¹				AMP. UNBAL. (dB)	ISOLATION			PHASE UNBAL. (deg.)	FREQ. (MHz)	VSWR				
	S-1	S-2	S-3	S-4		1-2	1-3	3-4			S	1	2	3	4
600.0	6.54	6.56	6.55	6.57	0.03	18.75	23.68	18.88	0.83	600.0	1.64	1.04	1.04	1.04	1.04
640.0	6.53	6.55	6.54	6.56	0.03	19.79	25.11	19.95	0.88	640.0	1.61	1.04	1.03	1.04	1.03
660.0	6.51	6.53	6.53	6.54	0.03	20.44	25.87	20.60	0.92	660.0	1.58	1.04	1.03	1.04	1.03
680.0	6.50	6.52	6.51	6.52	0.03	21.19	26.68	21.36	0.94	680.0	1.54	1.04	1.03	1.05	1.04
700.0	6.47	6.49	6.49	6.50	0.03	22.07	27.52	22.25	0.97	700.0	1.50	1.05	1.04	1.05	1.04
720.0	6.45	6.47	6.46	6.48	0.02	23.10	28.39	23.29	1.00	720.0	1.45	1.05	1.04	1.05	1.05
740.0	6.43	6.44	6.44	6.45	0.02	24.31	29.29	24.49	1.03	740.0	1.40	1.05	1.05	1.06	1.05
760.0	6.41	6.42	6.42	6.43	0.02	25.71	30.20	25.87	1.06	760.0	1.35	1.05	1.05	1.06	1.05
780.0	6.39	6.41	6.41	6.42	0.02	27.30	31.10	27.41	1.09	780.0	1.30	1.05	1.05	1.05	1.06
800.0	6.38	6.39	6.39	6.40	0.02	29.02	31.94	29.02	1.12	800.0	1.25	1.05	1.05	1.05	1.05
900.0	6.38	6.39	6.39	6.40	0.03	29.96	33.46	29.57	1.26	900.0	1.15	1.01	1.02	1.01	1.02
1000.0	6.44	6.45	6.45	6.46	0.02	25.87	31.39	26.04	1.39	1000.0	1.23	1.05	1.04	1.05	1.04
1100.0	6.47	6.47	6.48	6.49	0.03	24.50	29.84	24.93	1.56	1100.0	1.23	1.10	1.09	1.11	1.09
1200.0	6.47	6.48	6.48	6.50	0.03	24.01	29.45	24.35	1.76	1200.0	1.11	1.15	1.14	1.15	1.13
1300.0	6.51	6.52	6.53	6.54	0.03	24.49	30.17	24.51	1.99	1300.0	1.08	1.20	1.19	1.18	1.18
1400.0	6.58	6.58	6.61	6.62	0.04	26.91	31.97	26.54	2.24	1400.0	1.21	1.23	1.24	1.23	1.23
1500.0	6.62	6.63	6.66	6.68	0.05	31.54	35.00	30.74	2.50	1500.0	1.27	1.23	1.24	1.23	1.24
1600.0	6.64	6.65	6.71	6.70	0.07	34.73	39.50	34.09	2.74	1600.0	1.23	1.18	1.19	1.18	1.20
1700.0	6.68	6.71	6.78	6.76	0.10	35.32	43.37	33.57	2.74	1700.0	1.16	1.12	1.12	1.12	1.14
1800.0	6.70	6.70	6.79	6.79	0.09	30.26	40.54	29.21	2.91	1800.0	1.09	1.09	1.09	1.09	1.11
1900.0	6.76	6.75	6.85	6.85	0.10	25.15	36.58	25.25	3.13	1900.0	1.11	1.09	1.08	1.07	1.08
2000.0	6.81	6.80	6.91	6.91	0.11	23.76	33.07	24.33	3.44	2000.0	1.20	1.11	1.08	1.09	1.07
2100.0	6.87	6.86	6.99	6.98	0.13	26.18	30.25	26.88	3.79	2100.0	1.23	1.15	1.12	1.13	1.11
2200.0	6.92	6.91	7.07	7.06	0.16	28.58	27.88	27.28	4.26	2200.0	1.18	1.16	1.15	1.14	1.14
2220.0	6.93	6.92	7.09	7.08	0.17	26.71	27.49	25.50	4.37	2220.0	1.17	1.15	1.15	1.13	1.14
2240.0	6.94	6.94	7.12	7.09	0.18	24.64	27.12	23.65	4.48	2240.0	1.15	1.15	1.15	1.12	1.13
2260.0	6.95	6.95	7.14	7.12	0.19	22.67	26.78	21.88	4.59	2260.0	1.13	1.13	1.14	1.11	1.12
2280.0	6.97	6.97	7.17	7.15	0.20	20.89	26.49	20.26	4.71	2280.0	1.12	1.12	1.14	1.09	1.11
2300.0	6.99	6.99	7.21	7.18	0.22	19.30	26.23	18.78	4.83	2300.0	1.11	1.10	1.12	1.07	1.09

¹Total Loss = Insertion Loss + 6dB Splitter Loss



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IF/RF MICROWAVE COMPONENTS



REV. X2

ZB4PD-232-50W+

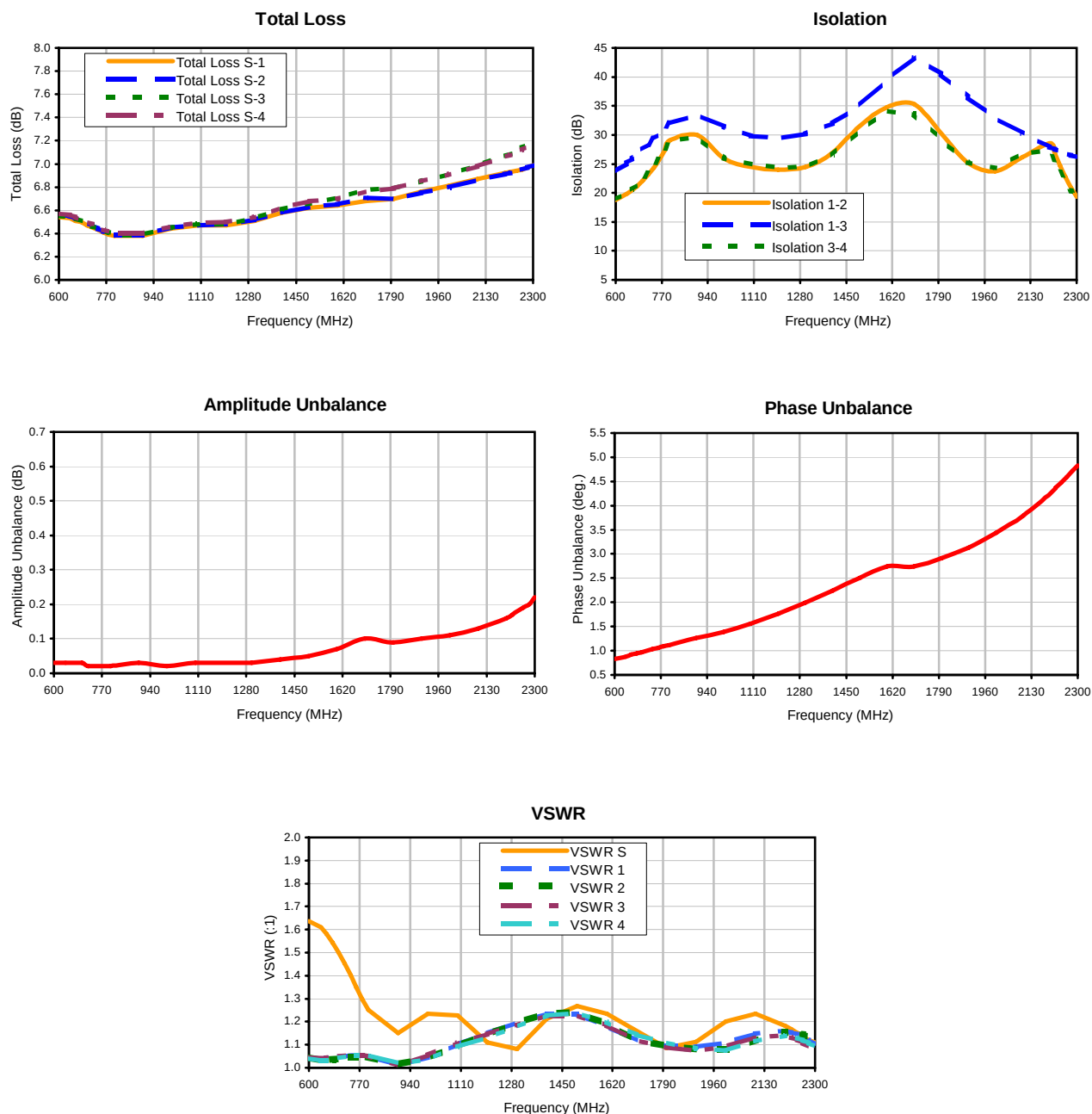
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4 Way-0° Power Splitter/Combiner

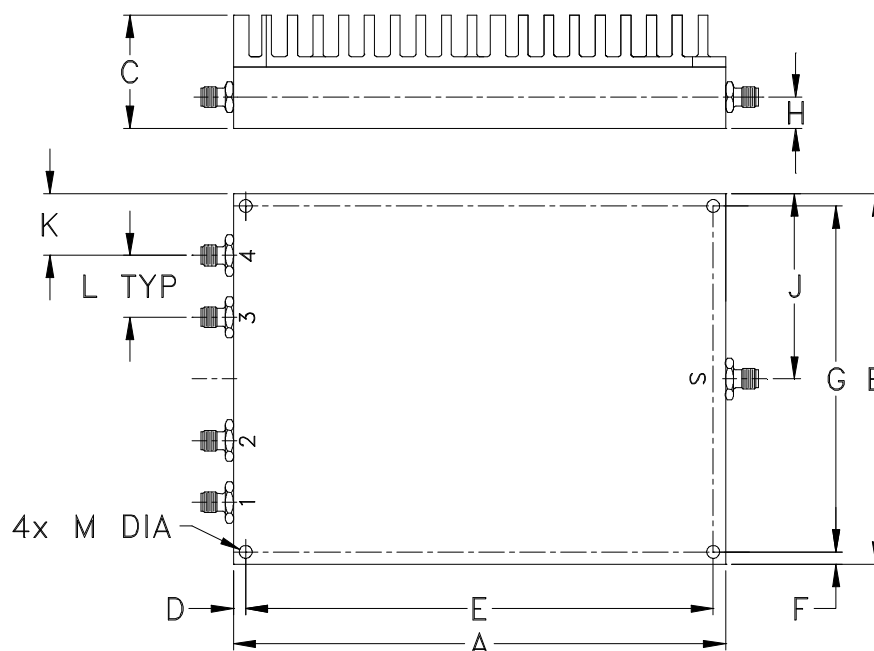
ZB4PD-232-50W+

Typical Performance Curves



Outline Dimensions

BV278-1



CASE #	A	B	C	D	E	F	G	H	J	K
BV278-1	6.00 (152.40)	4.50 (114.30)	1.38 (35.05)	.15 (3.81)	5.700 (144.78)	.15 (3.81)	4.200 (106.68)	.38 (9.65)	2.25 (57.15)	.75 (19.05)

CASE #	L	M	WT. GRAMS
BV278-1	.75 (19.05)	.156 (3.96)	960

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

Notes:

- Case material: Aluminum alloy.
- Case finish:
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
- Heat sink finish: Black Anodize.



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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 90° 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