DC Pass

High Power Combiner

ZB4PD-282-50W+

4 Way-0° 50Ω 500 to 2750 MHz

CASE STYLE: BV278-2

Connectors	Model
N-TYPE	ZB4PD-282-50W+

+RoHS Compliant

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

Maximum Ratings

Operating Temperature	0°C to 50°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	100W max.
Internal Dissipation	45W max.
DC Current (each port)	0.5A max.

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

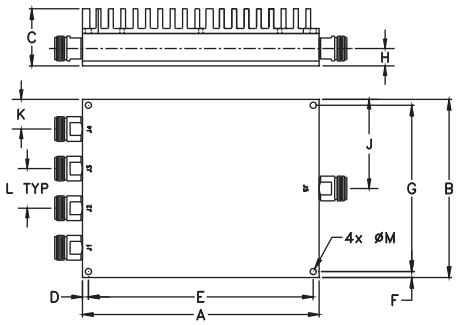
Features

- usable, 500 to 2800 MHz
- low insertion loss, 1.5 dB typ.
- low amplitude unbalance, 0.3 dB typ.
- excellent output VSWR, 1.2:1 typ.
- DC Pass from sum port to all output ports

Applications

- high band PCS
- UNII
- WIMAX
- WiFi
- bluetooth

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
6.00	4.50	1.45	.15	5.700	.15	4.200
152.40	114.30	36.83	3.81	144.78	3.81	106.68

H	J	K	L	M	N	wt
.44	2.25	.75	1	.156	0.82	grams
11.18	57.15	19.05	25.40	3.96	20.83	1100

Electrical Schematic

Electrical Specifications at 25°C

Parameter		Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range			500		2750	MHz
Insertion Loss Above 6.0 dB		700-2700 500-2750	— —	1.5 1.8	2.2 2.5	dB
Isolation		700-2700 500-2750	15 15	20 21	— —	dB
Phase Unbalance		700-2700 500-2750	— —	5 6	18 19	Degree
Amplitude Unbalance		700-2700 500-2750	— —	0.3 0.4	0.6 0.7	dB
VSWR (Port S)		700-2700 500-2750	— —	1.25 1.4	1.85	:1
VSWR (Port 1-4)		700-2700 500-2750	— —	1.15 1.2	1.5 1.5	:1
Power Input[1]	**as splitter**	700-2700 500-2750	— —	— —	100 100	W
	as combiner[1]	700-2700 500-2750	— —	— —	50 40	

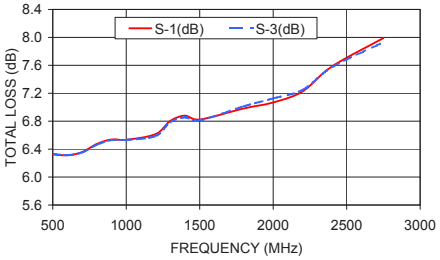
1. As a combiner of non-coherent signals, max. power per port is power rating divided by four ports.

Typical Performance Data

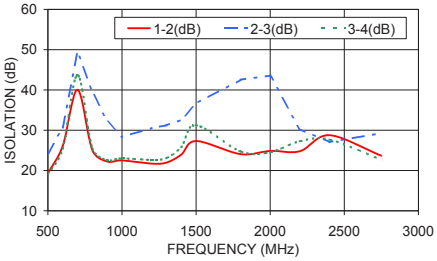
Freq. (MHz)	Total Loss[1] (dB) S-1	S-2	S-3	S-4	Amp. Unb. (dB)	Isolation (dB) 1-2	2-3	3-4	Phase Unb. (deg.)	VSWR S	VSWR 1	VSWR 2	VSWR 3	VSWR 4
500.00	6.32	6.33	6.33	6.38	0.05	19.33	24.19	19.08	0.89	1.28	1.07	1.09	1.06	1.07
600.00	6.31	6.31	6.31	6.36	0.05	26.13	30.67	25.45	1.13	1.15	1.06	1.09	1.06	1.08
700.00	6.36	6.37	6.35	6.38	0.02	40.05	49.46	43.69	1.25	1.10	1.09	1.11	1.09	1.10
800.00	6.47	6.48	6.46	6.51	0.04	25.03	39.57	25.50	1.83	1.33	1.09	1.11	1.09	1.10
900.00	6.54	6.53	6.53	6.61	0.08	22.23	32.27	22.57	1.84	1.41	1.09	1.08	1.07	1.07
1000.00	6.53	6.53	6.53	6.56	0.04	22.50	28.35	23.00	1.95	1.28	1.10	1.06	1.07	1.06
1200.00	6.62	6.59	6.59	6.61	0.03	21.71	30.55	22.64	2.56	1.18	1.14	1.10	1.08	1.08
1300.00	6.81	6.83	6.79	6.79	0.05	21.97	31.24	23.10	2.76	1.34	1.21	1.17	1.14	1.14
1400.00	6.88	6.94	6.85	6.84	0.10	23.93	32.56	25.80	3.00	1.37	1.26	1.23	1.17	1.17
1500.00	6.82	6.86	6.81	6.78	0.08	27.32	36.64	31.25	3.68	1.27	1.23	1.23	1.14	1.14
1800.00	6.98	7.07	7.01	6.94	0.13	24.08	42.55	24.73	3.85	1.08	1.08	1.10	1.02	1.03
2000.00	7.07	7.11	7.13	7.14	0.07	24.87	43.55	24.51	4.44	1.13	1.02	1.06	1.06	1.08
2200.00	7.23	7.27	7.25	7.22	0.05	24.79	30.24	27.26	4.86	1.25	1.01	1.05	1.07	1.08
2400.00	7.58	7.56	7.57	7.61	0.05	28.77	27.06	27.68	5.26	1.34	1.06	1.10	1.13	1.15
2750.00	7.99	7.89	7.93	7.87	0.12	23.67	29.29	22.68	5.96	1.37	1.06	1.04	1.05	1.05

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

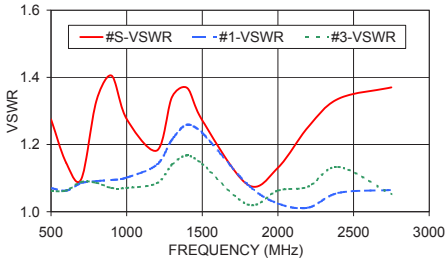
ZB4PD-282-50W+
TOTAL LOSS



ZB4PD-282-50W+
ISOLATION



ZB4PD-282-50W+
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

4 Way-0° Power Splitter/Combiner ZB4PD-282-50W+

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	
500.0	6.32	6.33	6.33	6.38	0.05	19.33	24.19	19.08	0.89
550.0	6.31	6.34	6.34	6.38	0.06	22.64	27.03	22.21	1.08
600.0	6.31	6.31	6.31	6.36	0.05	26.13	30.67	25.45	1.13
650.0	6.31	6.32	6.31	6.34	0.04	35.31	33.90	33.41	1.16
700.0	6.36	6.37	6.35	6.38	0.02	40.05	49.46	43.69	1.25
750.0	6.42	6.42	6.41	6.43	0.01	28.39	40.24	29.17	1.69
800.0	6.47	6.48	6.46	6.51	0.04	25.03	39.57	25.50	1.83
850.0	6.56	6.58	6.55	6.60	0.05	22.19	30.29	22.49	1.87
900.0	6.54	6.53	6.53	6.61	0.08	22.23	32.27	22.57	1.84
950.0	6.63	6.63	6.61	6.64	0.03	21.75	27.81	22.13	1.92
1000.0	6.53	6.53	6.53	6.56	0.04	22.50	28.35	23.00	1.95
1050.0	6.51	6.54	6.51	6.54	0.03	24.16	26.51	25.04	2.16
1100.0	6.52	6.49	6.50	6.52	0.03	22.97	28.29	23.87	2.20
1150.0	6.51	6.57	6.53	6.53	0.06	23.67	25.82	24.68	2.21
1200.0	6.62	6.59	6.59	6.61	0.03	21.71	30.55	22.64	2.56
1300.0	6.81	6.83	6.79	6.79	0.05	21.97	31.24	23.10	2.76
1400.0	6.88	6.94	6.85	6.84	0.10	23.93	32.56	25.80	3.00
1500.0	6.82	6.86	6.81	6.78	0.08	27.32	36.64	31.25	3.68
1600.0	6.78	6.80	6.76	6.78	0.04	28.63	40.74	31.74	3.74
1700.0	6.83	6.87	6.81	6.84	0.06	28.09	42.56	30.20	3.77
1800.0	6.98	7.07	7.01	6.94	0.13	24.08	42.55	24.73	3.85
1900.0	7.05	7.07	7.07	7.08	0.04	23.38	39.13	23.13	4.42
2000.0	7.07	7.11	7.13	7.14	0.07	24.87	43.55	24.51	4.44
2100.0	7.11	7.14	7.12	7.12	0.03	26.45	36.11	27.50	4.44
2200.0	7.23	7.27	7.25	7.22	0.05	24.79	30.24	27.26	4.86
2300.0	7.36	7.41	7.37	7.38	0.05	24.22	28.19	25.80	5.12
2400.0	7.58	7.56	7.57	7.61	0.05	28.77	27.06	27.68	5.26
2500.0	7.79	7.76	7.83	7.81	0.07	26.70	27.60	25.53	5.36
2550.0	7.80	7.83	7.82	7.76	0.08	28.29	36.51	26.80	5.37
2600.0	7.78	7.83	7.90	7.79	0.12	27.40	28.69	27.52	5.53
2650.0	7.75	7.70	7.74	7.66	0.10	28.29	38.73	27.54	5.60
2700.0	7.73	7.77	7.80	7.72	0.08	32.77	28.30	31.07	5.49
2750.0	7.99	7.89	7.93	7.87	0.12	23.67	29.29	22.68	5.96

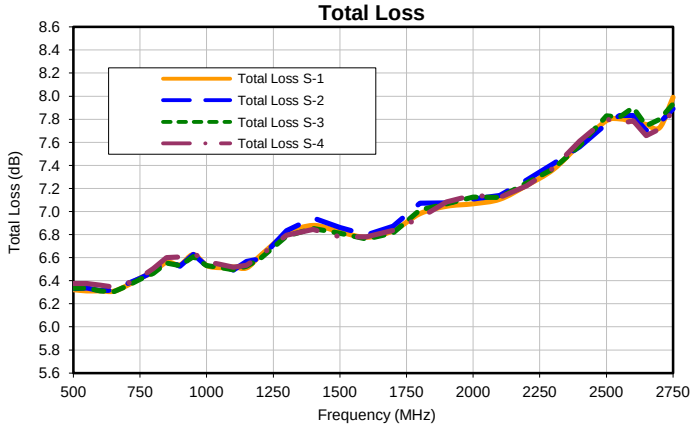
FREQ. (MHz)	VSWR (:1)				
	S	1	2	3	4
500.0	1.28	1.07	1.09	1.06	1.07
550.0	1.24	1.06	1.08	1.06	1.07
600.0	1.15	1.06	1.09	1.06	1.08
650.0	1.03	1.07	1.10	1.08	1.09
700.0	1.10	1.09	1.11	1.09	1.10
750.0	1.21	1.09	1.11	1.09	1.11
800.0	1.33	1.09	1.11	1.09	1.10
850.0	1.40	1.09	1.09	1.08	1.08
900.0	1.41	1.09	1.08	1.07	1.07
950.0	1.37	1.10	1.07	1.07	1.06
1000.0	1.28	1.10	1.06	1.07	1.06
1050.0	1.17	1.10	1.06	1.07	1.06
1100.0	1.06	1.10	1.06	1.06	1.05
1150.0	1.07	1.11	1.07	1.07	1.06
1200.0	1.18	1.14	1.10	1.08	1.08
1300.0	1.34	1.21	1.17	1.14	1.14
1400.0	1.37	1.26	1.23	1.17	1.17
1500.0	1.27	1.23	1.23	1.14	1.14
1600.0	1.13	1.17	1.18	1.09	1.09
1700.0	1.04	1.12	1.14	1.06	1.06
1800.0	1.08	1.08	1.10	1.02	1.03
1900.0	1.11	1.04	1.07	1.03	1.04
2000.0	1.13	1.02	1.06	1.06	1.08
2100.0	1.17	1.02	1.07	1.08	1.09
2200.0	1.25	1.01	1.05	1.07	1.08
2300.0	1.30	1.04	1.04	1.10	1.11
2400.0	1.34	1.06	1.10	1.13	1.15
2500.0	1.38	1.07	1.15	1.14	1.14
2550.0	1.33	1.07	1.14	1.12	1.12
2600.0	1.24	1.08	1.12	1.10	1.09
2650.0	1.09	1.08	1.09	1.07	1.05
2700.0	1.09	1.08	1.05	1.05	1.04
2750.0	1.37	1.06	1.04	1.05	1.05

[1]Total Loss = Insertion Loss + 6dB Splitter Loss

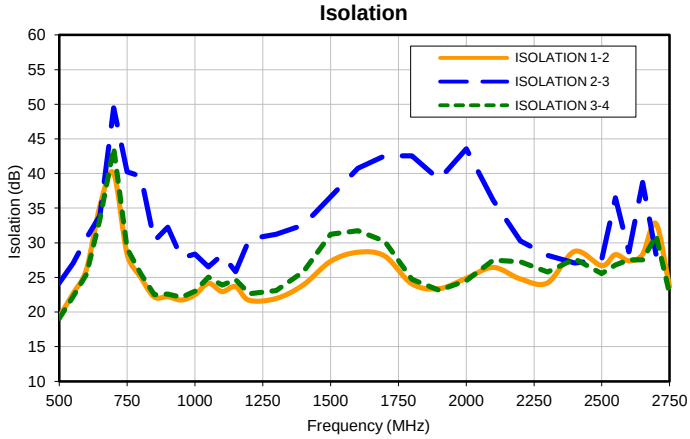
4 Way-0° Power Splitter/Combiner ZB4PD-282-50W+

Typical Performance Curves

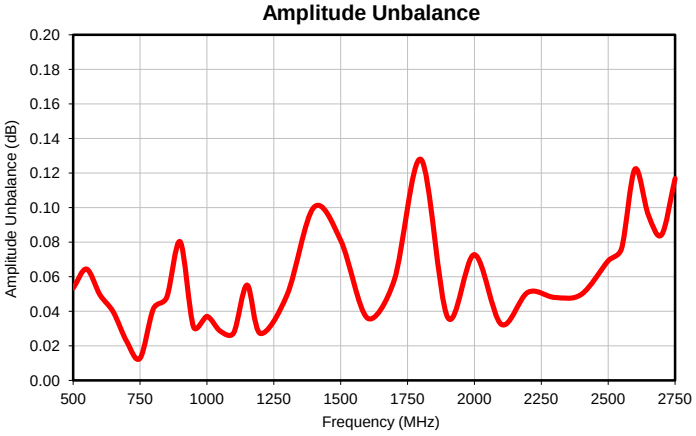
Total Loss



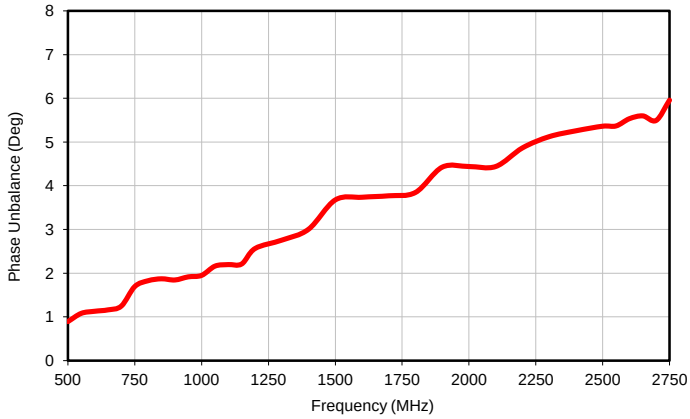
Isolation



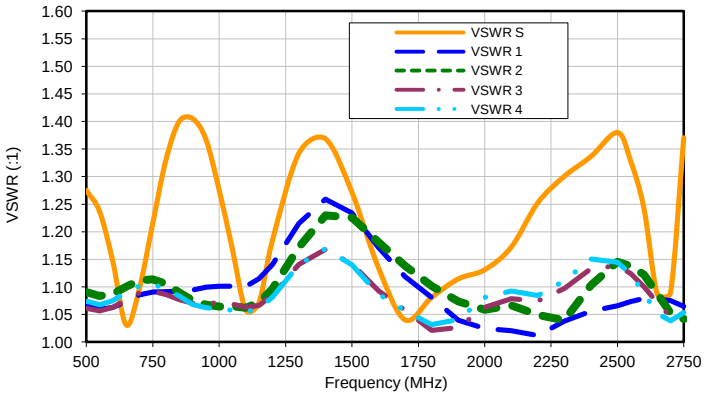
Amplitude Unbalance



Phase Unbalance



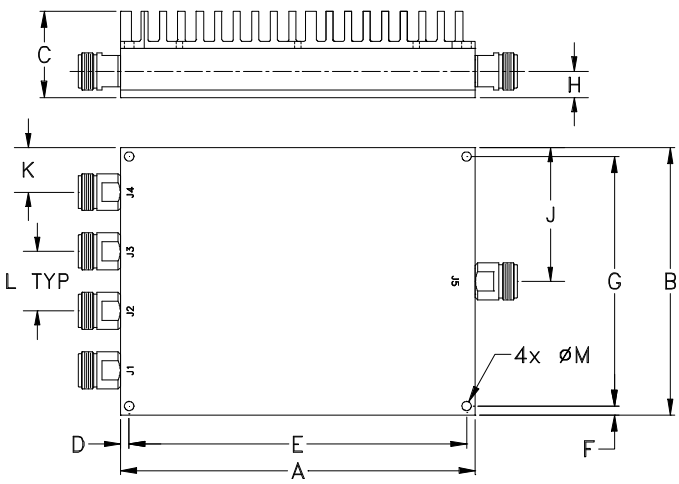
VSWR

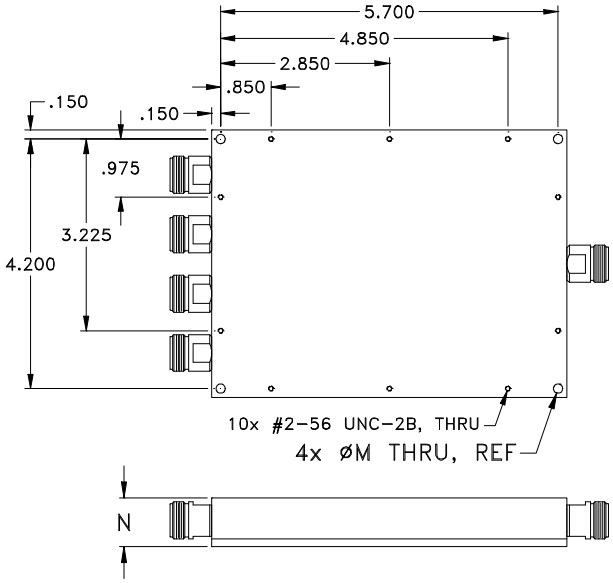


Case Style BV

Outline Dimensions

BV278-2





MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK

CASE #	A	B	C	D	E	F	G	H	J	K
BV278-2	6.00 (152.40)	4.50 (114.30)	1.45 (36.83)	.15 (3.81)	5.700 (144.78)	.15 (3.81)	4.200 (106.68)	.44 (11.18)	2.25 (57.15)	.75 (19.05)

CASE #	L	M	N	WT. GRAMS	WT. GRAMS WITHOUT HEATSINK
BV278-2	1.00 (25.40)	.156 (3.96)	.82 (20.83)	1100	800

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3Pl. ± .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. Heat sink finish: Black Anodize.

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Environmental Specifications **ENV28T15**

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	-0° to 50° 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