

# Coaxial High Power Combiner

## ZB4PD-52-20W+

4 Way-0° 50Ω 10 to 500 MHz



BNC version shown  
CASE STYLE: Z54

Connectors	Model
BNC	ZB4PD-52-20W+
SMA	ZB4PD-52-20W-S+
N-TYPE	ZB4PD-52-20W-N+

**+RoHS Compliant**

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

### Maximum Ratings

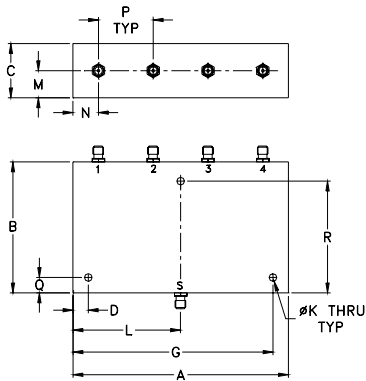
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	20W
Internal Dissipation	3W

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	G	K	
3.50	2.13	.88	.250	3.250	.125	
88.90	54.10	22.35	6.35	82.55	3.18	
L	M	N	P	Q	R	wt
1.750	.44	.415	.89	.250	1.813	grams
44.45	11.18	10.54	22.61	6.35	46.05	250

### Electrical Schematic



### Features

- high input power, 20W as splitter
- wideband, 10 to 500 MHz
- high isolation, 32 dB typ.
- excellent amplitude unbalance, 0.1 dB typ.
- excellent phase unbalance, 1 deg. typ.
- excellent matching VSWR, 1.1:1 typ.
- rugged, shielded case

### Applications

- VHF/UHF
- receivers/transmitters

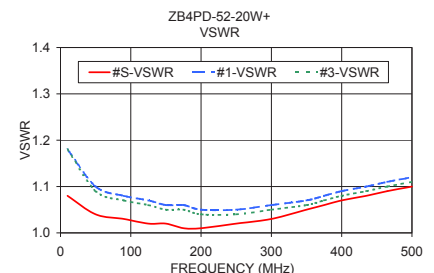
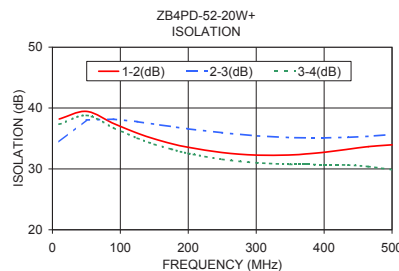
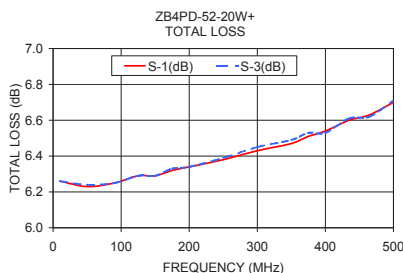
### Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
<b>Frequency Range</b>		10		500	MHz
<b>Insertion Loss</b> (above theoretical 6.0 dB)	10 - 100 100 - 250 250 - 500	—	0.3 0.4 0.8	0.6 0.7 1.2	dB
<b>Isolation</b>	10 - 100 100 - 250 250 - 500	24 24 20	34 29 26	—	dB
<b>Phase Unbalance</b>	10 - 100 100 - 250 250 - 500	—	1 2 3	3 4 6	Degree
<b>Amplitude Unbalance</b>	10 - 100 100 - 250 250 - 500	—	0.05 0.1 0.3	0.2 0.3 0.6	dB
<b>VSWR (Port S)</b>	10 - 100 100 - 250 250 - 500	—	1.1 1.1 1.2	1.3 1.2 1.4	:1
<b>VSWR (Port 1-4)</b>	10 - 100 100 - 250 250 - 500	—	1.2 1.1 1.1	1.4 1.3 1.4	:1

### Typical Performance Data

Freq. (MHz)	Total Loss <sup>1</sup> (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						
10.00	6.26	6.26	6.26	6.25	0.01	38.20	34.47	37.34	0.04	1.08	1.18	1.18	1.18	1.18
50.00	6.23	6.24	6.24	6.23	0.01	39.45	38.03	38.79	0.11	1.04	1.10	1.10	1.09	1.10
90.00	6.25	6.26	6.25	6.24	0.01	37.45	38.16	36.73	0.22	1.03	1.08	1.08	1.07	1.08
125.00	6.29	6.30	6.29	6.28	0.02	35.87	37.76	35.05	0.28	1.02	1.07	1.07	1.06	1.07
150.00	6.29	6.31	6.29	6.28	0.02	34.93	37.34	34.04	0.40	1.02	1.06	1.06	1.05	1.06
175.00	6.32	6.33	6.33	6.31	0.02	34.16	36.96	33.24	0.41	1.01	1.06	1.06	1.05	1.06
200.00	6.34	6.36	6.34	6.32	0.04	33.55	36.58	32.55	0.47	1.01	1.05	1.05	1.04	1.05
250.00	6.38	6.41	6.39	6.36	0.05	32.68	35.94	31.57	0.58	1.02	1.05	1.04	1.04	1.04
300.00	6.43	6.46	6.45	6.39	0.07	32.27	35.43	31.01	0.70	1.03	1.06	1.05	1.05	1.05
350.00	6.47	6.52	6.49	6.42	0.10	32.29	35.14	30.75	0.84	1.05	1.07	1.06	1.06	1.06
375.00	6.51	6.56	6.53	6.45	0.11	32.48	35.10	30.73	0.83	1.06	1.08	1.07	1.07	1.06
400.00	6.54	6.60	6.53	6.46	0.14	32.73	35.09	30.68	0.93	1.07	1.09	1.08	1.08	1.07
435.00	6.60	6.66	6.61	6.50	0.16	33.23	35.18	30.63	0.93	1.08	1.10	1.09	1.09	1.08
465.00	6.63	6.71	6.62	6.51	0.20	33.66	35.35	30.38	1.06	1.09	1.11	1.10	1.10	1.09
500.00	6.70	6.78	6.71	6.56	0.22	33.96	35.66	29.87	1.02	1.10	1.12	1.11	1.11	1.09

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



### Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuit's 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-Circuit's website at [www.minicircuits.com/WCLStore/terms.jsp](http://www.minicircuits.com/WCLStore/terms.jsp)



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REV. A  
M151107  
ZB4PD-52-20W+  
ED-13268/1  
HY/CP/AM  
151015

# 4 Way-0° Power Splitter/Combiner

# ZB4PD-52-20W+

## Typical Performance Data

FREQ. (MHz)	TOTAL LOSS <sup>1</sup> (dB)				AMP UNBAL. (dB)	ISOLATION (dB)			PHASE UNBAL. (Deg)	FREQ. (MHz)	VSWR (:1)				
	S1	S2	S3	S4		1-2	2-3	3-4			S	1	2	3	4
10.0	6.26	6.26	6.26	6.25	0.01	38.20	34.47	37.34	0.04	10.0	1.08	1.18	1.18	1.18	1.18
30.0	6.22	6.22	6.22	6.22	0.01	39.94	37.18	39.20	0.07	30.0	1.05	1.12	1.12	1.11	1.12
50.0	6.23	6.24	6.24	6.23	0.01	39.45	38.03	38.79	0.11	50.0	1.04	1.10	1.10	1.09	1.10
70.0	6.24	6.25	6.24	6.24	0.01	38.47	38.26	37.81	0.17	70.0	1.04	1.09	1.09	1.08	1.09
90.0	6.25	6.26	6.25	6.24	0.01	37.45	38.16	36.73	0.22	90.0	1.03	1.08	1.08	1.07	1.08
100.0	6.26	6.27	6.26	6.25	0.01	36.96	38.06	36.21	0.25	100.0	1.03	1.08	1.08	1.07	1.08
125.0	6.29	6.30	6.29	6.28	0.02	35.87	37.76	35.05	0.28	125.0	1.02	1.07	1.07	1.06	1.07
150.0	6.29	6.31	6.29	6.28	0.02	34.93	37.34	34.04	0.40	150.0	1.02	1.06	1.06	1.05	1.06
175.0	6.32	6.33	6.33	6.31	0.02	34.16	36.96	33.24	0.41	175.0	1.01	1.06	1.06	1.05	1.06
200.0	6.34	6.36	6.34	6.32	0.04	33.55	36.58	32.55	0.47	200.0	1.01	1.05	1.05	1.04	1.05
225.0	6.35	6.37	6.36	6.33	0.04	33.03	36.21	32.00	0.55	225.0	1.01	1.05	1.05	1.04	1.05
250.0	6.38	6.41	6.39	6.36	0.05	32.68	35.94	31.57	0.58	250.0	1.02	1.05	1.04	1.04	1.04
275.0	6.40	6.43	6.40	6.37	0.06	32.41	35.65	31.23	0.67	275.0	1.03	1.05	1.05	1.04	1.05
300.0	6.43	6.46	6.45	6.39	0.07	32.27	35.43	31.01	0.70	300.0	1.03	1.06	1.05	1.05	1.05
325.0	6.45	6.50	6.45	6.41	0.09	32.24	35.29	30.86	0.74	325.0	1.04	1.07	1.06	1.06	1.05
350.0	6.47	6.52	6.49	6.42	0.10	32.29	35.14	30.75	0.84	350.0	1.05	1.07	1.06	1.06	1.06
375.0	6.51	6.56	6.53	6.45	0.11	32.48	35.10	30.73	0.83	375.0	1.06	1.08	1.07	1.07	1.06
400.0	6.54	6.60	6.53	6.46	0.14	32.73	35.09	30.68	0.93	400.0	1.07	1.09	1.08	1.08	1.07
420.0	6.56	6.62	6.58	6.48	0.14	33.00	35.11	30.66	0.97	420.0	1.08	1.10	1.09	1.09	1.08
435.0	6.60	6.66	6.61	6.50	0.16	33.23	35.18	30.63	0.93	435.0	1.08	1.10	1.09	1.09	1.08
450.0	6.61	6.69	6.61	6.51	0.18	33.47	35.27	30.54	0.94	450.0	1.09	1.11	1.10	1.10	1.08
465.0	6.63	6.71	6.62	6.51	0.20	33.66	35.35	30.38	1.06	465.0	1.09	1.11	1.10	1.10	1.09
480.0	6.65	6.73	6.66	6.52	0.20	33.84	35.45	30.20	1.15	480.0	1.10	1.12	1.10	1.10	1.09
500.0	6.70	6.78	6.71	6.56	0.22	33.96	35.66	29.87	1.02	500.0	1.10	1.12	1.11	1.11	1.09

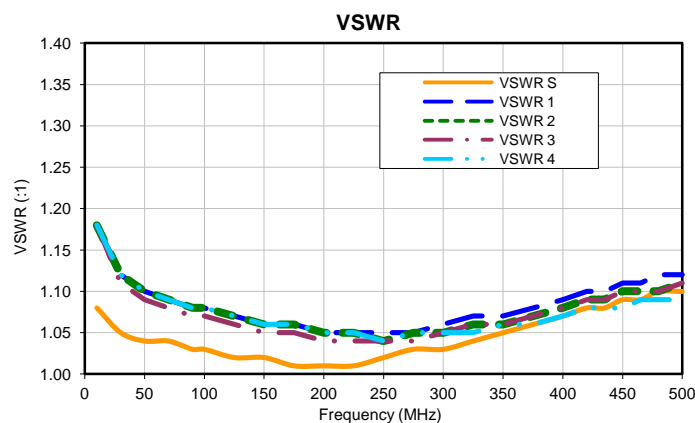
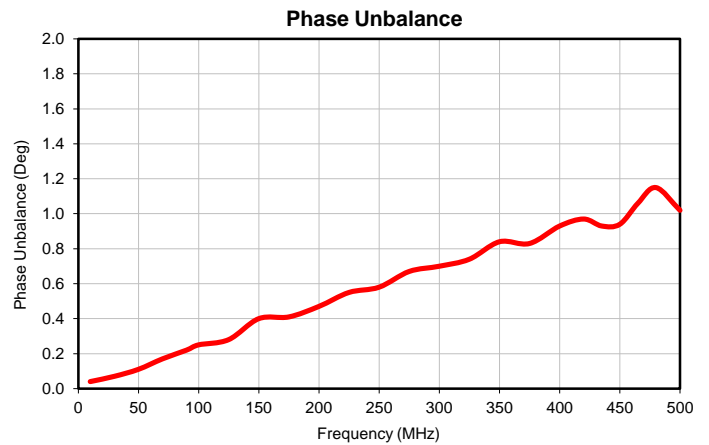
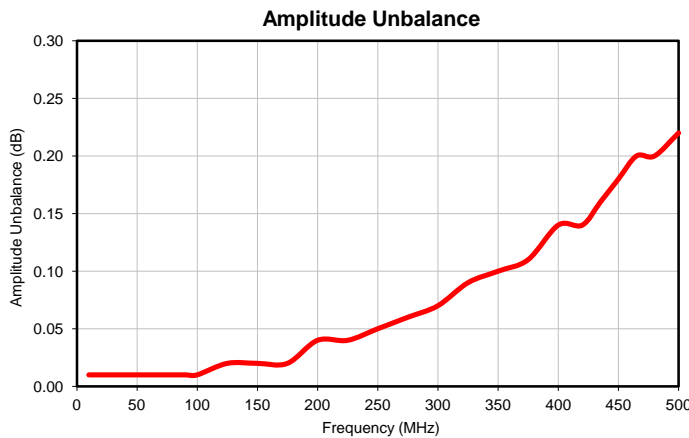
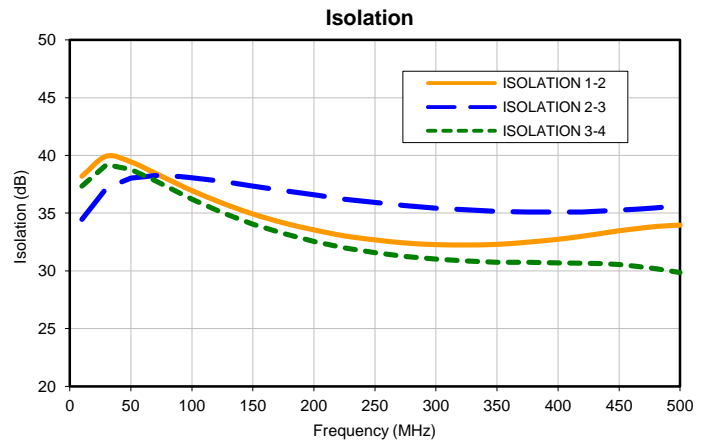
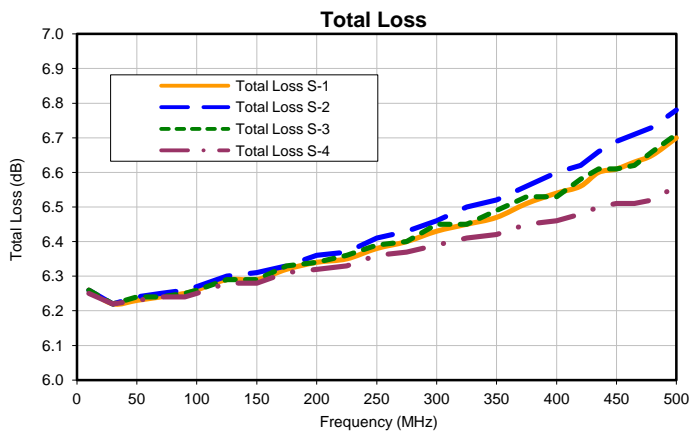
<sup>1</sup>Total Loss = Insertion Loss + 6dB Splitter Loss



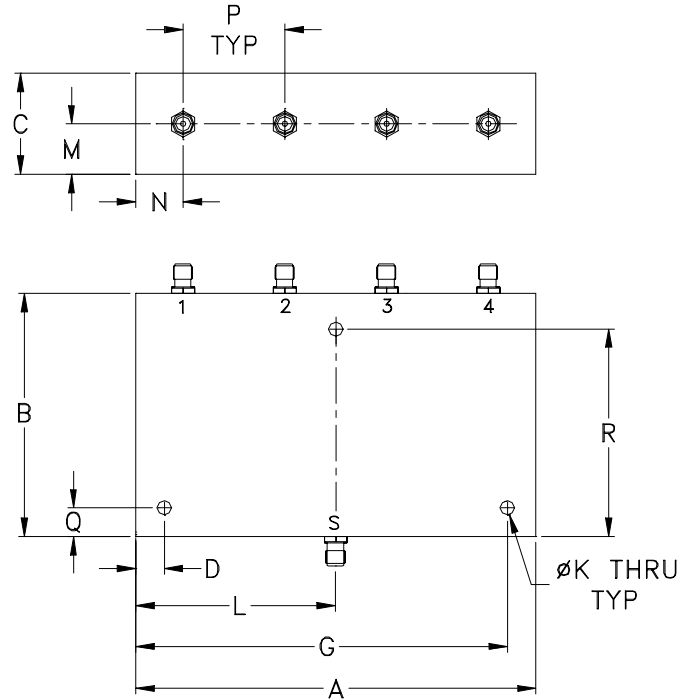
# 4 Way-0° Power Splitter/Combiner

# ZB4PD-52-20W+

## Typical Performance Curves



### Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
Z54	3.50 (88.90)	2.13 (54.10)	.88 (22.35)	.250 (6.35)	--	--	3.250 (82.55)	--	--	.125 (3.17)	1.750 (44.45)	.44 (11.18)	.415 (10.54)

CASE#	P	Q	R	WT.GRAMS
Z54	.89 (22.61)	.250 (6.35)	1.813 (46.05)	250

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

#### Notes:

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

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.

<b>Specification</b>	<b>Test/Inspection Condition</b>	<b>Reference/Spec</b>
Operating Temperature	-55° to 100°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