

# Coaxial High Power Combiner

## ZB4PD-52-20W+

4 Way-0° 50Ω 10 to 500 MHz



Generic photo used for illustration purposes only

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

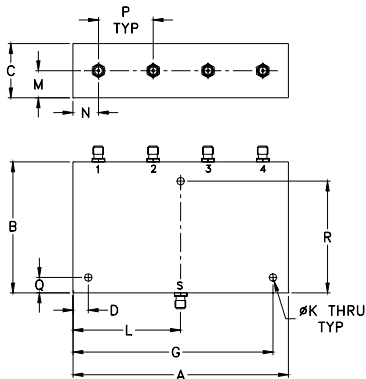
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	20W
Internal Dissipation	3W

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
1.750	.44	.415	.89	.250	1.813
44.45	11.18	10.54	22.61	6.35	46.05
					wt
					grams
					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

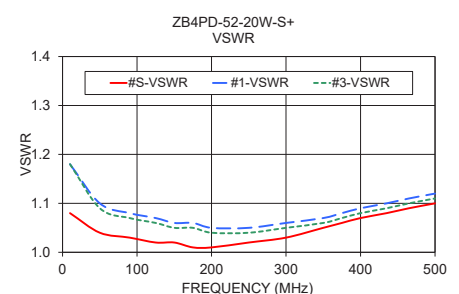
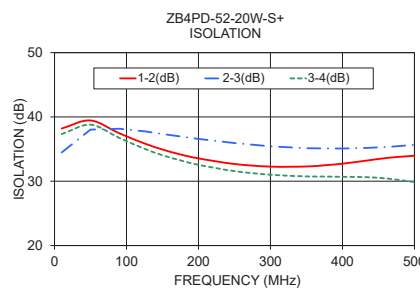
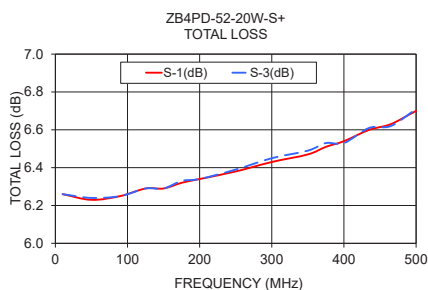
### Electrical Specifications at 25°C

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-Circuits' applicable established test performance criteria and measurement instructions.
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M151107  
ZB4PD-52-20W+  
ED-13268/1  
HY/CP/AM  
201120

# 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

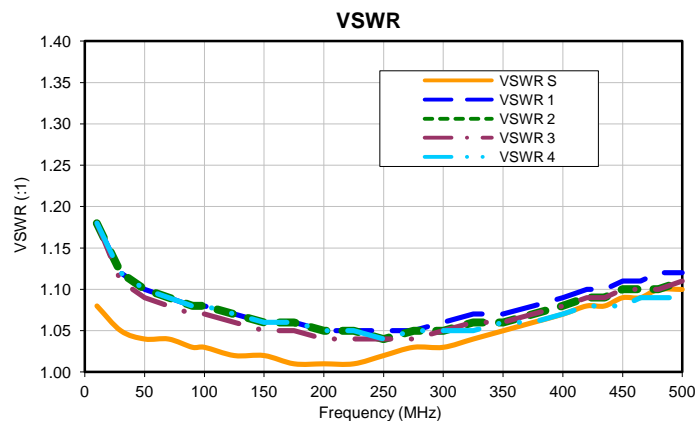
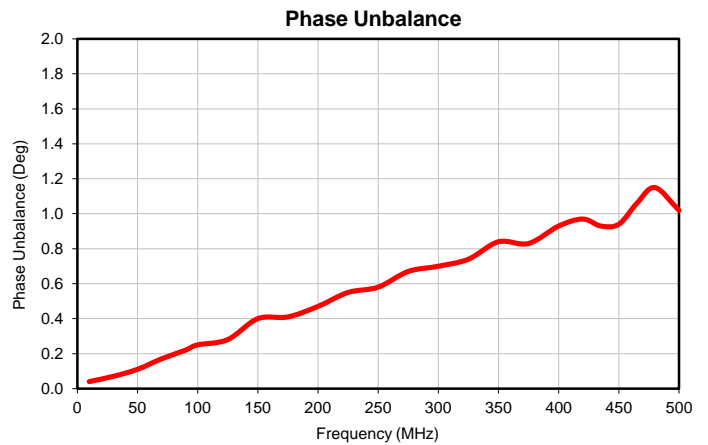
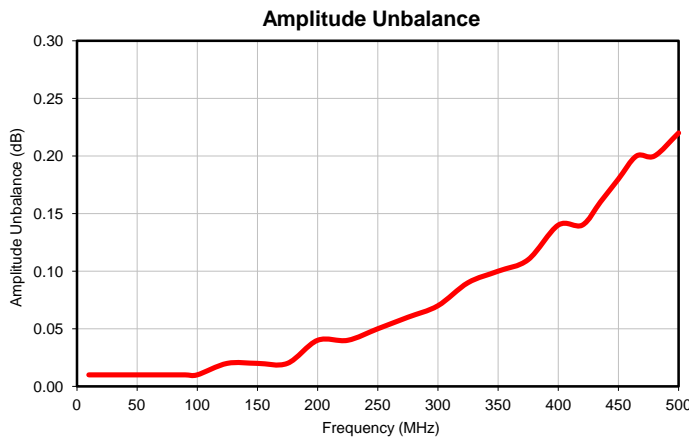
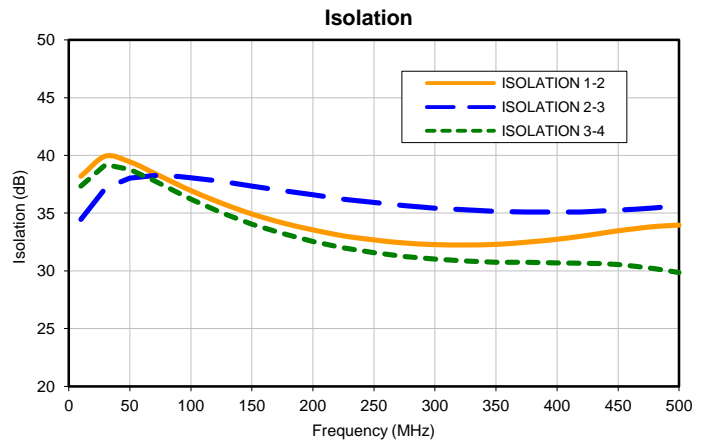
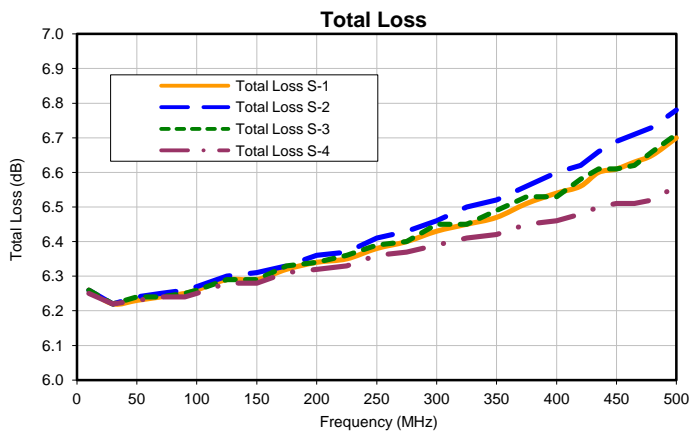
<sup>1</sup>Total Loss = Insertion Loss + 6dB Splitter Loss



# 4 Way-0° Power Splitter/Combiner

# ZB4PD-52-20W+

## Typical Performance Curves



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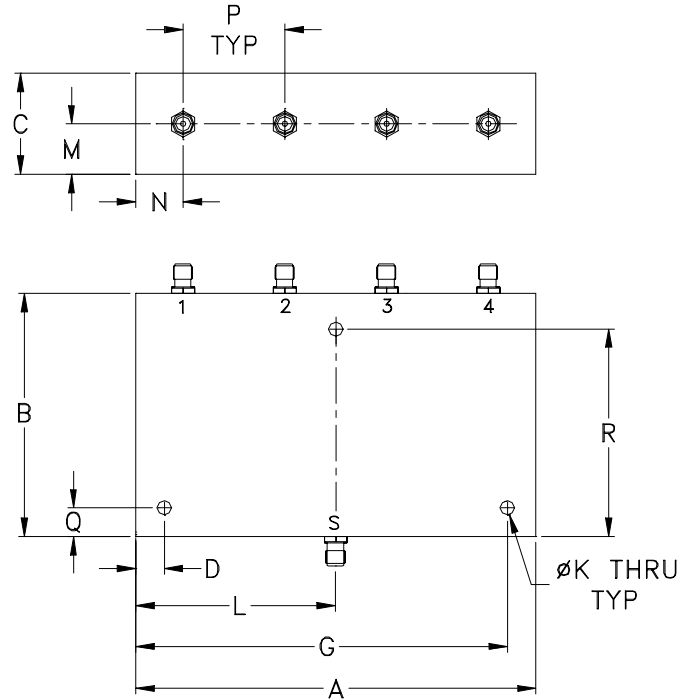


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IF/RF MICROWAVE COMPONENTS

REV. OR  
ZB4PD-52-20W+  
2/24/2014  
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### 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.



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<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