

DC Pass

# Power Splitter/Combiner

ZN6PD1-63-S+

6 Way-0° 50Ω 600 to 6000 MHz

## The Big Deal

- Wideband, 600 to 6000 MHz
- Low insertion loss, 2.0 dB
- High-Power Handling, 20W as a splitter



CASE STYLE: UU2372-1

## Product Overview

Mini-Circuits' ZN6PD1-63-S+ is a 6-way 0° splitter/combiner supporting a wide variety of applications from 600 to 6000 MHz. This model is capable of handling up to 20W RF input power as a splitter and provides low insertion loss, high isolation. This model covers all cellular bands including LTE through WiFi in a single unit.

## Key Features

Feature	Advantages
Wideband, 600 to 6000 MHz	ZN6PD1-63-S+ supports bandwidth requirements for a wide variety of applications.
High power handling: <ul style="list-style-type: none"><li>• 20W as a splitter</li><li>• 1.5W as a combiner</li></ul>	Suitable for a variety of system power requirements.
Low insertion loss, 2.0 dB	Provides good signal power transmission, making this model ideal for signal distribution applications where low loss is a requirement.
DC Passing, 0.6A (100mA each port)	Supports applications where DC power is needed at later stages in the system.

### 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](http://www.minicircuits.com/MCLStore/terms.jsp)



# Power Splitter/Combiner

## ZN6PD1-63-S+

6 Way-0° 50Ω 600 to 6000 MHz

### Maximum Ratings

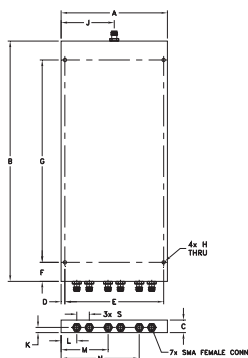
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	20W max.
Internal Dissipation	2.25W max.
DC Current	0.6A(100mA for each port)

Permanent damage may occur if any of these limits are exceeded.

### Coaxial Connections

SUM PORT	S
PORT 1,2,3,4,5,6	1,2,3,4,5,6

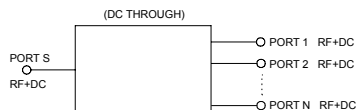
### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J
4.25	9.50	.50	.15	3.95	.75	8.00	.136	2.13
107.95	241.30	12.70	3.81	100.33	19.05	203.20	3.45	54.10
K	L	M	N	P	Q	R	S	wt
.205	.63	1.88	3.13	-	-	-	0.5	grams
5.21	16.00	47.75	79.50	-	-	-	12.70	600

### Electrical Schematic



### Features

- wideband, 600 to 6000 MHz
- low insertion loss, 2.0 dB typ.
- good isolation, 20 dB typ.
- rugged, shielded case
- up to 20W power input as splitter

### Applications

- UNII
- all cellular bands including LTE
- WiFi
- bluetooth



CASE STYLE: UU2372-1

Connectors	Model
SMA	ZN6PD1-63-S+

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

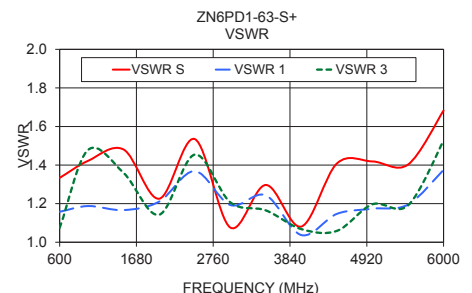
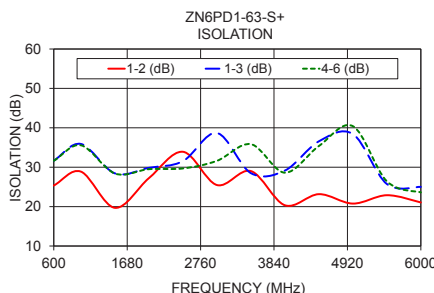
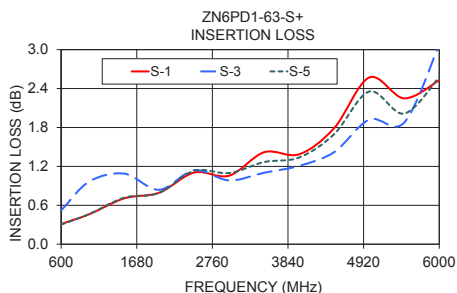
### Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
<b>Frequency Range</b>		600		6000	MHz
<b>Insertion Loss</b> (above theoretical 7.8 dB)	600 - 3000 3000 - 6000	—	1.0 2.5	1.6 3.5	dB
<b>Isolation</b>	600 - 6000	14	20	—	dB
<b>Phase Unbalance</b>	600 - 3000 3000 - 6000	—	8 10	12 18	Degree
<b>Amplitude Unbalance</b>	600 - 3000 3000 - 6000	—	0.5 0.8	0.8 1.4	dB
<b>VSWR (Port S)</b>	600 - 6000	—	1.5	—	:1
<b>VSWR (Port 1-6)</b>	600 - 6000	—	1.4	—	:1
<b>Power Handling<sup>1</sup></b>	as splitter			20	W
	as combiner <sup>2</sup>			1.5	

1. Over 25°C to 100°C. Derate linearly to 50% of rating at 100°C.  
2. As a combiner of non-coherent signals max power per port is 1.5Watt power rating divided by number of ports.

### Typical Performance Data

Frequency (MHz)	Insertion Loss (dB)			Amplitude Unbalance (dB)	Isolation (dB)			Phase Unbal. (deg.)	VSWR S	VSWR 1	VSWR 3
	S-1	S-3	S-5		1-2	1-3	4-6				
600	0.31	0.52	0.30	0.23	25.36	31.66	31.64	0.73	1.33	1.16	1.07
1000	0.46	0.96	0.46	0.51	28.88	35.90	35.57	2.84	1.42	1.19	1.48
1500	0.71	1.09	0.72	0.39	19.69	28.44	28.40	3.32	1.48	1.17	1.36
2000	0.79	0.84	0.79	0.09	27.24	29.84	29.51	4.35	1.23	1.21	1.14
2500	1.10	1.14	1.13	0.06	33.92	31.53	29.69	5.98	1.53	1.37	1.45
3000	1.06	0.98	1.10	0.12	25.48	38.69	31.62	5.87	1.08	1.19	1.21
3500	1.42	1.10	1.27	0.32	29.02	28.50	35.85	5.86	1.30	1.24	1.17
4000	1.39	1.21	1.34	0.25	20.34	29.15	28.61	6.39	1.08	1.04	1.07
4500	1.79	1.42	1.70	0.46	23.16	36.57	35.38	6.02	1.41	1.15	1.06
5000	2.57	1.92	2.35	0.65	20.77	38.42	40.42	5.93	1.42	1.17	1.20
5500	2.25	1.88	2.01	0.41	22.89	25.74	26.43	4.87	1.40	1.20	1.19
6000	2.53	3.08	2.58	0.55	21.06	25.01	23.62	7.59	1.68	1.38	1.53



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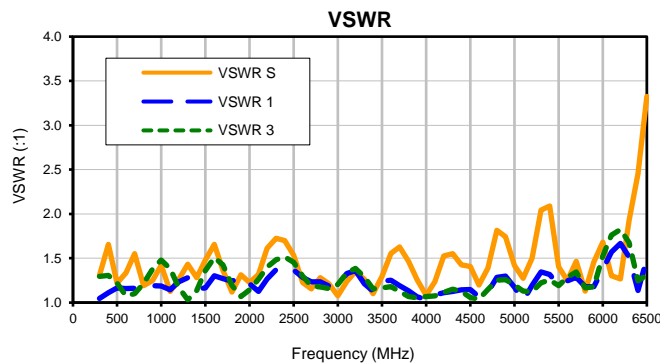
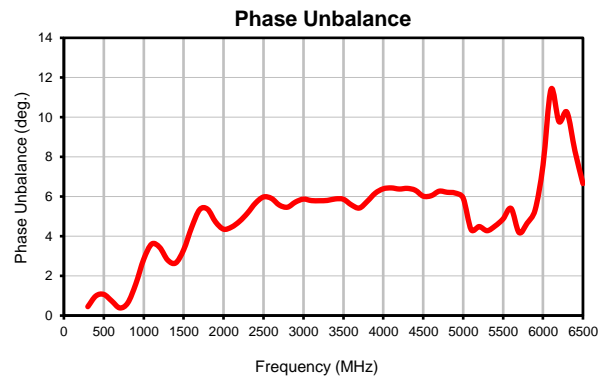
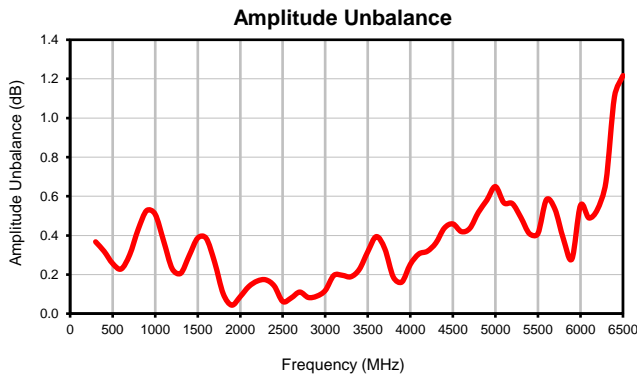
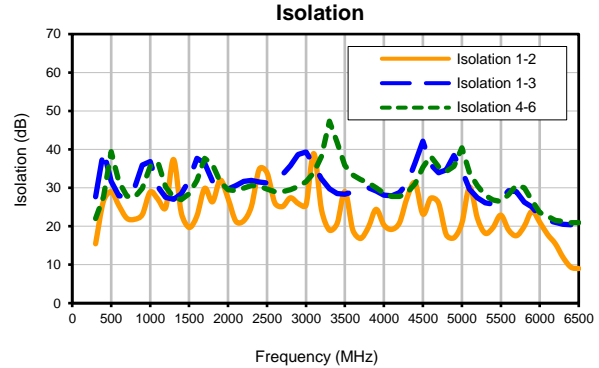
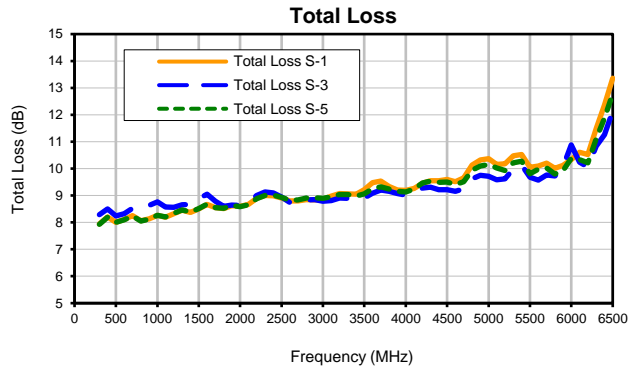


## Typical Performance Data

FREQ. (MHz)	TOTAL LOSS <sup>1</sup>			AMP. UNBAL. (dB)	ISOLATION			PHASE UNBAL. (deg.)	FREQ. (MHz)	VSWR		
	S-1	(dB) S-3	S-5		(dB) 1-2	1-3	4-6			S	(:1) 1	3
300	7.94	8.29	7.93	0.37	15.44	22.03	22.00	0.45	300	1.31	1.05	1.30
400	8.20	8.50	8.19	0.32	26.47	27.69	27.65	0.99	400	1.66	1.11	1.31
500	8.01	8.24	8.00	0.26	29.03	39.68	39.46	1.07	500	1.22	1.16	1.22
600	8.11	8.32	8.10	0.23	25.36	31.66	31.64	0.73	600	1.33	1.16	1.07
700	8.25	8.53	8.24	0.30	22.11	27.92	27.88	0.39	700	1.55	1.16	1.10
800	8.07	8.48	8.06	0.43	21.82	27.56	27.49	0.64	800	1.19	1.17	1.22
900	8.13	8.64	8.12	0.53	23.05	29.98	29.85	1.59	900	1.25	1.19	1.38
1000	8.26	8.76	8.26	0.51	28.88	35.90	35.57	2.84	1000	1.42	1.19	1.48
1100	8.20	8.57	8.21	0.37	27.06	36.86	36.65	3.61	1100	1.13	1.14	1.38
1200	8.33	8.56	8.34	0.23	24.87	30.30	30.26	3.44	1200	1.26	1.24	1.17
1300	8.45	8.66	8.46	0.21	37.38	27.54	27.50	2.80	1300	1.43	1.28	1.03
1400	8.37	8.67	8.38	0.30	23.49	26.97	26.93	2.65	1400	1.28	1.15	1.14
1500	8.51	8.89	8.52	0.39	19.69	28.44	28.40	3.32	1500	1.48	1.17	1.36
1600	8.67	9.05	8.68	0.38	22.67	31.91	31.90	4.44	1600	1.66	1.30	1.51
1700	8.55	8.79	8.55	0.26	29.87	37.66	37.71	5.34	1700	1.37	1.27	1.43
1800	8.52	8.60	8.53	0.10	26.37	36.41	36.16	5.36	1800	1.12	1.24	1.20
1900	8.63	8.64	8.63	0.04	32.02	31.81	31.52	4.72	1900	1.31	1.29	1.07
2000	8.59	8.64	8.59	0.09	27.24	29.84	29.51	4.35	2000	1.23	1.21	1.14
2100	8.67	8.75	8.66	0.14	21.31	29.67	29.23	4.46	2100	1.32	1.13	1.26
2200	8.90	9.00	8.88	0.17	21.40	30.63	29.95	4.75	2200	1.61	1.27	1.40
2300	9.00	9.13	9.01	0.17	25.22	31.66	30.59	5.17	2300	1.72	1.37	1.48
2400	8.99	9.10	9.01	0.14	34.85	31.95	30.43	5.67	2400	1.70	1.40	1.51
2500	8.90	8.94	8.93	0.06	33.92	31.53	29.69	5.98	2500	1.53	1.37	1.45
2600	8.80	8.74	8.82	0.08	26.08	31.27	29.05	5.91	2600	1.23	1.28	1.30
2700	8.80	8.72	8.83	0.11	25.14	31.91	29.01	5.57	2700	1.15	1.24	1.19
2800	8.84	8.83	8.91	0.08	27.41	33.47	29.52	5.46	2800	1.28	1.24	1.18
2900	8.83	8.85	8.92	0.09	25.94	35.78	30.33	5.72	2900	1.21	1.19	1.16
3000	8.86	8.78	8.90	0.12	25.48	38.69	31.62	5.87	3000	1.08	1.19	1.21
3100	8.97	8.82	8.95	0.20	38.92	39.30	33.94	5.80	3100	1.24	1.33	1.33
3200	9.08	8.91	9.04	0.20	24.23	35.94	38.16	5.79	3200	1.35	1.36	1.39
3300	9.06	8.89	9.04	0.19	19.01	32.35	47.34	5.80	3300	1.26	1.21	1.29
3400	9.05	8.83	8.98	0.23	20.73	29.80	41.85	5.88	3400	1.10	1.13	1.15
3500	9.22	8.90	9.07	0.32	29.02	28.50	35.85	5.86	3500	1.30	1.24	1.17
3600	9.48	9.09	9.25	0.39	19.07	28.35	33.35	5.58	3600	1.55	1.25	1.18
3700	9.54	9.21	9.32	0.33	16.83	28.93	32.17	5.42	3700	1.63	1.19	1.12
3800	9.34	9.16	9.23	0.19	19.72	29.74	31.26	5.76	3800	1.46	1.13	1.07
3900	9.20	9.07	9.16	0.16	24.41	30.02	30.00	6.17	3900	1.26	1.07	1.06
4000	9.19	9.01	9.14	0.25	20.34	29.15	28.61	6.39	4000	1.08	1.04	1.07
4100	9.26	9.07	9.24	0.30	19.19	28.13	27.77	6.43	4100	1.23	1.08	1.08
4200	9.46	9.27	9.47	0.32	20.89	27.90	27.80	6.38	4200	1.53	1.11	1.11
4300	9.55	9.31	9.54	0.36	27.56	28.73	28.78	6.41	4300	1.55	1.13	1.15
4400	9.55	9.22	9.49	0.44	31.28	31.16	31.09	6.32	4400	1.43	1.14	1.13
4500	9.59	9.22	9.50	0.46	23.16	36.57	35.38	6.02	4500	1.41	1.15	1.06
4600	9.51	9.15	9.40	0.42	27.30	42.15	38.23	6.04	4600	1.20	1.07	1.04
4700	9.65	9.25	9.52	0.44	26.11	36.13	35.53	6.27	4700	1.39	1.12	1.15
4800	10.13	9.62	9.94	0.52	17.81	33.89	34.28	6.21	4800	1.81	1.29	1.25
4900	10.33	9.75	10.10	0.58	17.02	34.66	35.62	6.18	4900	1.74	1.30	1.26
5000	10.37	9.72	10.15	0.65	20.77	38.42	40.42	5.93	5000	1.42	1.17	1.20
5100	10.16	9.59	10.02	0.57	30.20	34.52	33.81	4.33	5100	1.28	1.02	1.13
5200	10.18	9.63	9.93	0.56	22.07	29.61	30.60	4.49	5200	1.50	1.19	1.12
5300	10.47	9.99	10.22	0.49	18.20	27.44	28.02	4.28	5300	2.04	1.35	1.22
5400	10.52	10.13	10.27	0.41	19.65	26.13	26.87	4.52	5400	2.09	1.32	1.26
5500	10.05	9.68	9.81	0.41	22.89	25.74	26.43	4.87	5500	1.40	1.20	1.19
5600	10.10	9.57	9.98	0.58	19.03	27.10	28.24	5.40	5600	1.25	1.24	1.29
5700	10.21	9.76	10.02	0.53	17.55	29.30	30.71	4.18	5700	1.46	1.28	1.35
5800	10.01	9.73	9.80	0.38	19.97	29.01	30.04	4.65	5800	1.13	1.18	1.17
5900	10.12	10.07	9.92	0.28	23.93	26.30	26.69	5.31	5900	1.46	1.18	1.18
6000	10.33	10.88	10.38	0.55	21.06	25.01	23.62	7.59	6000	1.68	1.38	1.53
6100	10.60	10.24	10.34	0.49	17.87	22.59	22.59	11.40	6100	1.30	1.57	1.76
6200	10.53	10.07	10.21	0.53	15.45	21.52	21.54	9.78	6200	1.27	1.67	1.82
6300	11.49	10.83	11.11	0.67	11.87	21.05	21.28	10.25	6300	1.93	1.52	1.68
6400	12.37	11.26	11.89	1.11	9.36	20.53	20.93	8.29	6400	2.46	1.14	1.24
6500	13.36	12.14	12.78	1.22	9.01	20.39	20.97	6.65	6500	3.32	1.49	1.31

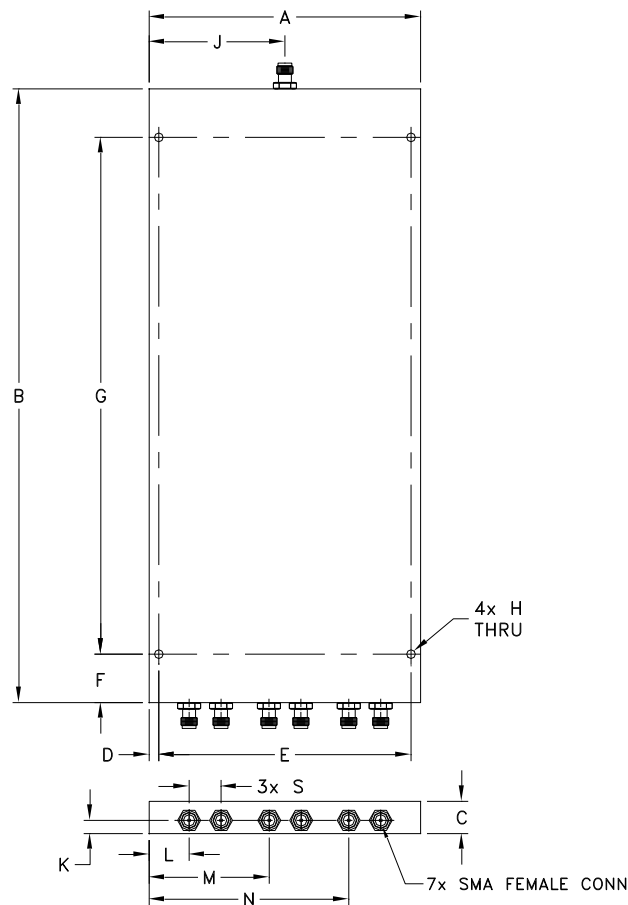
<sup>1</sup>Total Loss = Insertion Loss + 7.8dB Splitter Loss

## Typical Performance Curves



## Outline Dimensions

UU2372-1



CASE#	A	B	C	D	E	F	G	H	J	K	L	M
UU2372-1	4.25 (108.0)	9.50 (241.30)	.50 (12.70)	.15 (3.81)	3.95 (100.33)	.75 (19.05)	8.000 (203.2)	.136 (3.45)	2.13 (53.98)	.205 (5.21)	.63 (15.88)	1.88 (47.63)

CASE#	N	P	Q	R	S	WT. GRAMS
UU2372-1	3.13 (79.38)	-	-	-	.500 (12.70)	600

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.
- Refer to the individual model data sheet for the type of connectors available.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

RF/IF MICROWAVE COMPONENTS



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