High Power, DC Pass

Power Splitter/Combiner ZN2PD-9G-S+

2 Way-0° 50Ω 30W 1700 to 9000 MHz

The Big Deal

- Wideband, 1700 to 9000 MHz
- High power, up to 30W as a splitter
- Low insertion loss, 0.5 dB
- Low unbalance, 0.1 dB, 1˚
- High isolation, 22 dB

CASE STYLE: VVV180

Product Overview

Mini-Circuits' ZN2PD-9G-S+ is a 2-way 0˚ high-power splitter/combiner providing up to 30W power handling as a splitter (0.8W as a combiner) and low insertion loss across the 1700 to 9000 MHz frequency range. Its outstanding combination of high power handling and low loss minimize power dissipation and provide excellent signal power transmission from input to output. The ZN2PD-9G-S+ comes housed in a rugged aluminum alloy case measuring 1.8 x 1.75 x 0.65" with SMA connectors.

Key Features

Feature	Advantages
Wideband, 1700 to 9000 MHz	This model supports bandwidth requirements for a wide variety of applications.
High power handling: • 30W to 5800 MHz • 20W to 9000 MHz	The ZN2PD-9G-S+ is suitable for systems with a wide range of power requirements.
Low insertion loss, 0.5 dB	The combination of 30W power handling and low insertion loss makes this model a suitable candidate for distributing signals while maintaining excellent transmission of signal power.
Low unbalance: • 0.1 dB amplitude unbalance • 1˚ phase unbalance	Produces nearly equal output signals, ideal for parallel path and multichannel systems.
High isolation, 22 dB	Minimizes interference between ports.
DC Passing, 400mA (200mA each port)	Supports applications where DC power is needed through the RF line.

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

High Power, DC Pass

Power Splitter/Combiner

ZN2PD-9G-S+

2 Way-0° 50Ω 30W 1700 to 9000 MHz

Generic photo used for illustration purposes only

CASE STYLE: VVV180

Connectors	Model
SMA	ZN2PD-9G-S+

+RoHS Compliant

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

Maximum Ratings

Operating Temperature (@<30W)	-55°C to 60°C
Operating Temperature (@<10W)	-55°C to 100°C
Storage Temperature	-55°C to 100°C
DC Current	400 mA (200mA for each port)

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

Coaxial Connections

SUMPORT	S
PORT 1	1
PORT 2	2

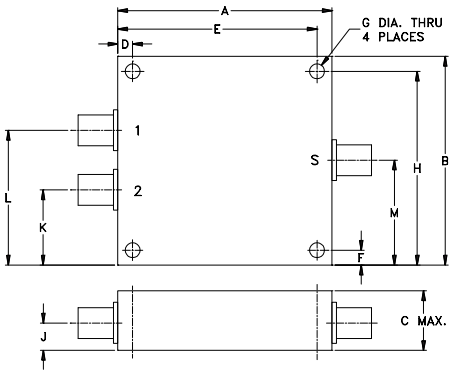
Features

- very wideband, 1700 to 9000 MHz
- low insertion loss, 0.5 dB typ.
- good isolation, 22 dB typ.
- up to 30W power input as splitter
- excellent amplitude unbalance, 0.1 dB typ.
- excellent phase unbalance, 1 deg. typ.
- rugged shielded case

Applications

- UHF/VHF
- PCS/DCS
- defense & federal communications
- wireless

Outline Drawing

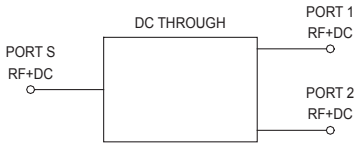


Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
1.80	1.75	.66	.125	1.675	.125	.125
45.72	44.45	16.76	3.18	42.55	3.18	3.18

H	J	K	L	M	wt
1.625	.31	.63	1.13	.88	grams
41.28	7.87	16.00	28.70	22.35	65.2

Electrical Schematic



Electrical Specifications at 25°C

Parameter		Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range			1700		9000	MHz
Insertion Loss (above theoretical 3 dB)		1700-6800 6800-9000	— —	0.5 1.0	1.2 1.4	dB
Isolation		1700-6800 6800-9000	15 17	19 22		dB
Phase Unbalance		1700-6800 6800-9000	— —	1.0 2.0	3.5 4.0	Degree
Amplitude Unbalance		1700-6800 6800-9000	— —	0.15 0.2	0.4 0.6	dB
VSWR (Port S)		1700-6800 6800-9000	— —	1.5 1.7		dB
VSWR Output (Port 1-2)		1700-6800 6800-9000	— —	1.4 1.6		dB
Power Handling[3]	**As Splitter[1]**	1700-6800 6800-9000	— —		30 20	Watt
	As Combiner[2]	1700-9000	—		0.8	

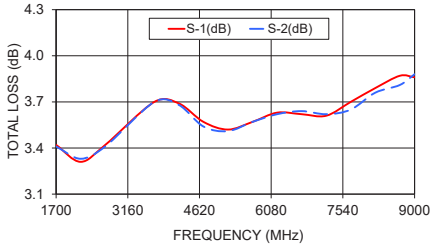
1. All outputs must terminate 50 ohm (VSWR 1.5:1 or better)
2. As a combiner of non-coherent signals, max. power per port is 0.8 watt power rating divided by number of ports.
3. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 60°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 10°C/W.

Typical Performance Data

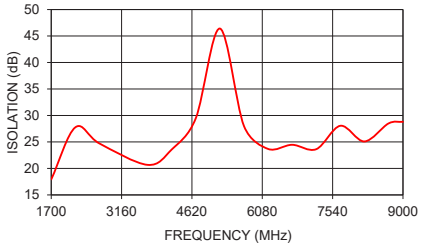
Frequency (MHz)	Total Loss[1] (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
1700.00	3.42	3.41	0.01	17.93	0.12	1.47	1.11	1.11
2200.00	3.31	3.33	0.02	27.76	0.12	1.15	1.06	1.06
2700.00	3.42	3.41	0.01	24.71	0.27	1.20	1.15	1.14
3700.00	3.70	3.70	0.00	20.67	0.32	1.66	1.42	1.41
4200.00	3.69	3.68	0.01	23.57	0.43	1.60	1.40	1.40
4700.00	3.57	3.54	0.03	29.47	0.39	1.38	1.30	1.32
5200.00	3.52	3.51	0.01	46.41	0.43	1.23	1.20	1.22
5700.00	3.57	3.57	0.00	28.00	0.49	1.17	1.12	1.15
6200.00	3.63	3.62	0.01	23.68	0.52	1.21	1.13	1.15
6700.00	3.62	3.64	0.02	24.46	0.28	1.28	1.12	1.12
7200.00	3.61	3.62	0.01	23.63	0.44	1.26	1.18	1.16
7700.00	3.70	3.65	0.05	28.05	0.68	1.24	1.18	1.11
8200.00	3.79	3.76	0.03	25.09	0.72	1.27	1.27	1.19
8700.00	3.87	3.81	0.06	28.49	1.10	1.30	1.42	1.33
9000.00	3.86	3.88	0.03	28.80	0.94	1.30	1.45	1.41

1. Total Loss = Insertion Loss + 3dB splitter loss.

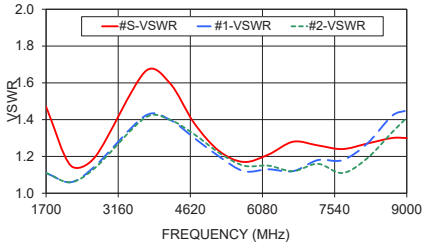
ZN2PD-9G-S+
TOTAL LOSS



ZN2PD-9G-S+
ISOLATION



ZN2PD-9G-S+
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

REV. F
M171494
ZN2PD-9G-S+
HY/CP/AM
200818

2 Way-0° Power Splitter/Combiner ZN2PD-9G+

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS[1] (dB) S-1	TOTAL LOSS[1] (dB) S-2	AMP. UNBAL. (dB)	ISOLATION (dB) 1-2	PHASE UNBAL. (deg.)	FREQ. (MHz)	VSWR (:1) S	VSWR (:1) 1	VSWR (:1) 2
1700.0	3.22	3.19	0.03	18.55	0.48	1700.0	1.43	1.11	1.09
1882.5	3.23	3.19	0.04	20.41	0.52	1882.5	1.36	1.10	1.08
2065.0	3.16	3.12	0.04	22.62	0.57	2065.0	1.29	1.09	1.07
2247.5	3.18	3.14	0.04	25.33	0.59	2247.5	1.22	1.08	1.06
2430.0	3.17	3.13	0.04	28.51	0.66	2430.0	1.15	1.07	1.04
2612.5	3.12	3.09	0.04	31.09	0.60	2612.5	1.08	1.06	1.03
2795.0	3.11	3.07	0.04	30.61	0.66	2795.0	1.01	1.07	1.03
2977.5	3.15	3.11	0.05	28.24	0.65	2977.5	1.06	1.09	1.05
3160.0	3.21	3.16	0.05	26.04	0.62	3160.0	1.14	1.11	1.08
3342.5	3.12	3.08	0.05	24.27	0.57	3342.5	1.21	1.14	1.10
3525.0	3.13	3.09	0.04	23.00	0.66	3525.0	1.29	1.17	1.13
3707.5	3.26	3.21	0.05	22.12	0.72	3707.5	1.36	1.20	1.16
3890.0	3.32	3.28	0.04	21.55	0.65	3890.0	1.42	1.23	1.18
4072.5	3.16	3.13	0.03	21.01	0.71	4072.5	1.48	1.25	1.20
4255.0	3.33	3.29	0.04	20.83	0.82	4255.0	1.52	1.27	1.22
4437.5	3.57	3.53	0.04	20.84	0.76	4437.5	1.51	1.28	1.23
4620.0	4.12	4.10	0.02	18.95	0.84	4620.0	1.33	1.32	1.26
4802.5	3.51	3.45	0.07	18.29	0.88	4802.5	1.67	1.40	1.36
4985.0	3.64	3.59	0.05	19.48	0.92	4985.0	1.70	1.40	1.34
5167.5	3.60	3.53	0.06	20.25	0.93	5167.5	1.69	1.40	1.34
5350.0	3.26	3.20	0.06	20.40	0.91	5350.0	1.67	1.40	1.35
5532.5	3.40	3.35	0.05	20.74	0.97	5532.5	1.64	1.40	1.35
5715.0	3.56	3.50	0.06	21.48	1.18	5715.0	1.61	1.40	1.35
5897.5	3.41	3.34	0.07	22.00	1.03	5897.5	1.57	1.40	1.35
6080.0	3.29	3.22	0.07	22.20	0.91	6080.0	1.53	1.39	1.35
6262.5	3.39	3.33	0.06	22.95	1.00	6262.5	1.48	1.38	1.34
6445.0	3.35	3.28	0.07	23.84	1.11	6445.0	1.44	1.36	1.33
6627.5	3.30	3.23	0.07	24.55	0.89	6627.5	1.40	1.34	1.31
6810.0	3.19	3.13	0.05	25.38	0.91	6810.0	1.35	1.32	1.30
6992.5	3.35	3.30	0.06	26.86	1.09	6992.5	1.31	1.29	1.27
7175.0	3.29	3.23	0.06	28.64	1.11	7175.0	1.27	1.26	1.25
7357.5	3.23	3.17	0.07	30.76	1.03	7357.5	1.24	1.24	1.22
7540.0	3.20	3.15	0.05	33.79	1.03	7540.0	1.21	1.21	1.20
7722.5	3.33	3.27	0.06	39.04	1.23	7722.5	1.18	1.18	1.17
7905.0	3.18	3.13	0.06	45.69	1.14	7905.0	1.15	1.16	1.15
8087.5	3.15	3.09	0.05	39.46	1.17	8087.5	1.14	1.14	1.13
8270.0	3.12	3.06	0.05	34.28	1.16	8270.0	1.14	1.14	1.12
8452.5	3.15	3.10	0.05	31.13	1.31	8452.5	1.14	1.14	1.12
8635.0	3.16	3.11	0.05	28.90	1.35	8635.0	1.15	1.14	1.12
8817.5	3.01	2.97	0.04	27.08	1.38	8817.5	1.17	1.15	1.13
9000.0	2.96	2.92	0.04	25.96	1.51	9000.0	1.19	1.16	1.15

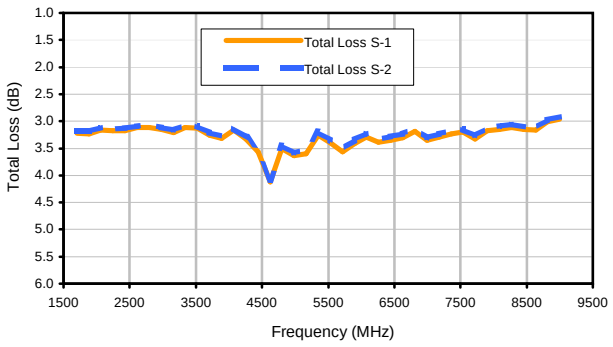
[1] Total Loss = Insertion Loss+ 3dB Splitter Loss

Mini-Circuits®
IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS9100 CERTIFIED RoHS compliant
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
The Design Engineers Search Engine finds the model you need, Instantly • For detailed performance specs & shopping online see minicircuits.com

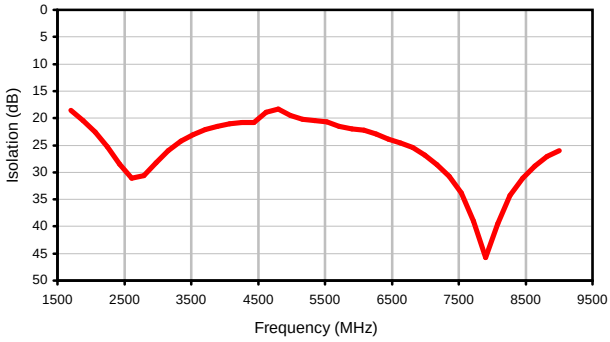
2 Way-0° Power Splitter/Combiner ZN2PD-9G+

Typical Performance Curves

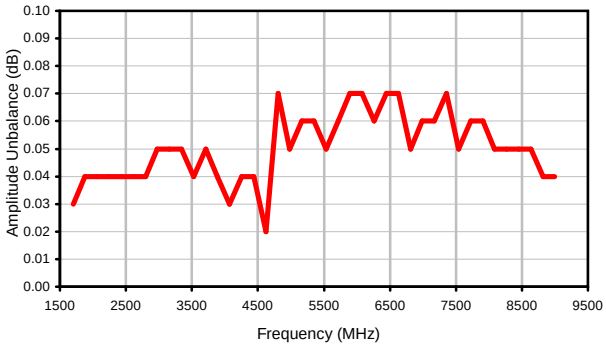
Total Loss



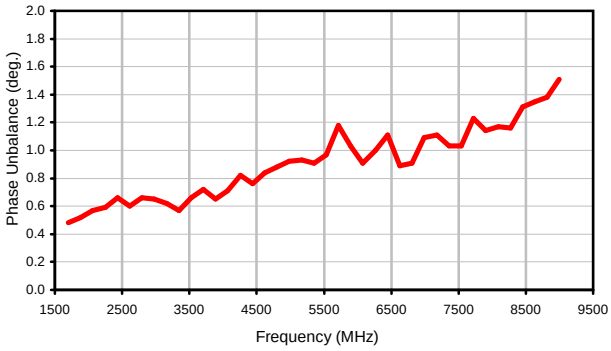
Isolation



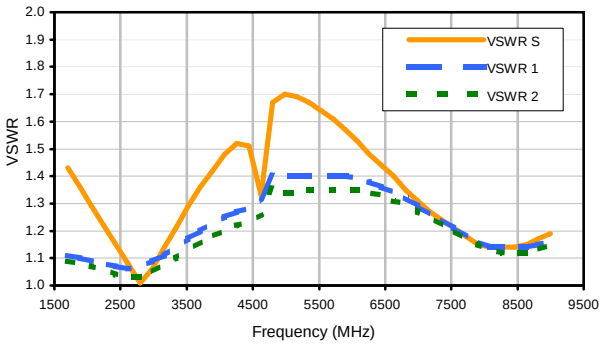
Amplitude Unbalance



Phase Unbalance



VSWR

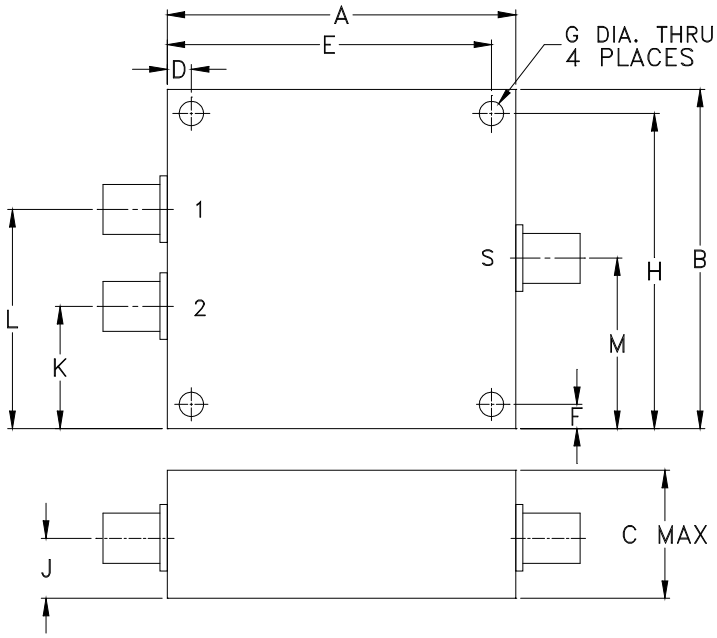


Mini-Circuits®
IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS9100 CERTIFIED RoHS compliant
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
The Design Engineers Search Engine finds the model you need, Instantly • For detailed performance specs & shopping online see minicircuits.com

Case Style V V V

Outline Dimensions

VVV180



CASE#	A	B	C	D	E	F	G	H	J	K	L
VVV180	1.80 (45.72)	1.75 (44.45)	.66 (16.76)	.125 (3.18)	1.675 (42.55)	.125 (3.18)	.125 (3.18)	1.625 (41.28)	.31 (7.87)	.63 (16.00)	1.13 (28.70)

CASE#	M	WT.GRAMS
VVV180	.88 (22.35)	65.2

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .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. Refer to the individual model data sheet for the type of connectors available.

This document and its contents are the property of Mini-Circuits

Mini-Circuits

Environmental Specifications ENV28

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 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

This document and its contents are the property of Mini-Circuits.