

DC Pass

Power Splitter/Combiner ZN2PD-V54+

2 Way-0° 50Ω 10 to 50 GHz

The Big Deal

- Ultra-wideband, 10 to 50 GHz
- Low insertion loss, 1.0 dB
- High Isolation, 23 dB
- 10W power handling
- Low amplitude unbalance, 0.1 dB



CASE STYLE: UU2234

Product Overview

Mini-Circuits' ZN2PD-V54+ is an ultra-wideband coaxial 2-way 0° splitter/combiner providing coverage from 10 to 50 GHz, supporting a wide range of applications including 5G, Ku-Band, K-Band, and Ka-Band SatCom, microwave point-to-point backhaul, instrumentation and many more. This model provides 10W power handling as a splitter and very low insertion loss across the entire operating frequency range, minimizing power dissipation and delivering excellent signal power transmission from input to output. The ZN2PD-V54+ comes housed in a rugged aluminum alloy case measuring 1.84 x 1.0 x 0.37" with 2.4mm connectors.

Key Features

Feature	Advantages
Ultra-wideband, 10 to 50 GHz	Extremely wide frequency range supports many broadband applications in a single model.
Low insertion loss, 1.0 dB	The combination of 10W power handling and low insertion loss makes this model a suitable candidate for distributing signals while maintaining excellent transmission of signal power.
High isolation, 23 dB	Minimizes interference between ports.
High power handling, 10W	The ZN2PD-V54+ is suitable for systems with a wide range of power requirements.
Low amplitude unbalance, 1.0 dB	Produces nearly equal output signals, ideal for parallel path and multichannel systems.
DC Passing, 440 mA	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



Power Splitter/Combiner

ZN2PD-V54+

2 Way-0° 50Ω 10 to 50 GHz



Generic photo used for illustration purposes only
CASE STYLE: UU2234

Connectors	Model
2.4mm Female	ZN2PD-V54+

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

Maximum Ratings

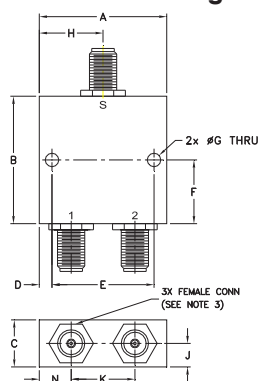
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)*	10W max.
Internal Dissipation	1 W max.
DC Current	440mA

Permanent damage may occur if any of these limits are exceeded.
*Assume output match of 2.0:1 or better. Derate linearly to 10% with arbitrary load.

Coaxial Connections

SUM PORT	S
PORT 1	1
PORT 2	2

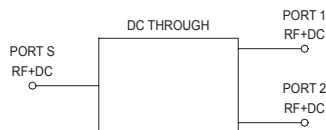
Outline Drawing



Outline Dimensions (inch mm)

A	B	C	D	E	F	G
1.00	1.00	.370	.101	.800	.500	.106
25.40	25.40	9.40	2.57	20.32	12.70	2.69
H	J	K	L	N	wt	
.500	.185	.500	.375	.25	grams	
12.70	4.70	12.70	9.53	6.35	55	

Electrical Schematic



Features

- Super wideband, 10 to 50 GHz
- Low insertion loss, 1.0 dB typ.
- Excellent isolation, 23 dB typ.

Applications

- 5G
- Fixed satellite
- Mobile
- Space research

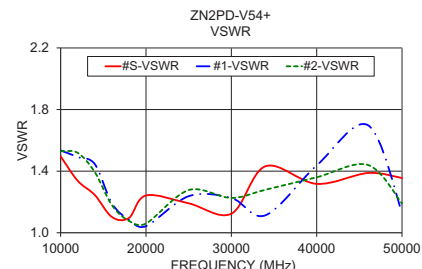
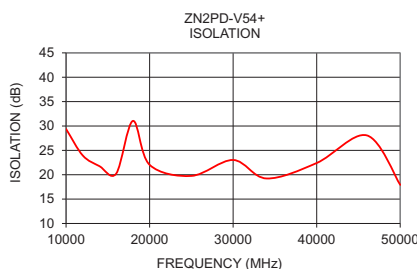
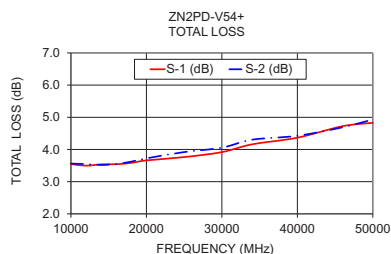
Electrical Specifications at 25°C

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Unit
Frequency Range		10		50	GHz
Insertion Loss Above 3.0 dB	10 - 40	—	1.0	2	dB
	40 - 50	—	1.8	2.5	
Isolation	10 - 40	14.6	23	—	dB
	40 - 50	14.6	22	—	
Phase Unbalance	10 - 40	—	1.4	10	Degree
	40 - 50	—	2.7	10	
Amplitude Unbalance	10 - 40	—	0.10	1	dB
	40 - 50	—	0.13	1	
VSWR (Port S)	10 - 40	—	1.20	2	:1
	40 - 50	—	1.27	2	
VSWR (Port 1-2)	10 - 40	—	1.23	2	:1
	40 - 50	—	1.24	2	

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						
10000	3.55	3.56	0.10	29.39	0.29	1.50	1.53	1.53
12000	3.50	3.55	0.14	23.95	0.01	1.34	1.49	1.52
14000	3.54	3.52	0.14	21.76	0.37	1.25	1.45	1.39
16000	3.54	3.55	0.16	20.23	0.22	1.10	1.19	1.18
18000	3.58	3.62	0.16	31.04	0.39	1.10	1.08	1.08
20000	3.66	3.72	0.15	22.04	0.73	1.24	1.04	1.06
25000	3.76	3.92	0.19	19.76	0.39	1.19	1.24	1.28
30000	3.92	4.06	0.13	23.02	0.24	1.12	1.23	1.23
34000	4.16	4.30	0.17	19.23	0.44	1.43	1.11	1.28
40000	4.37	4.43	0.11	22.40	1.35	1.32	1.44	1.36
46000	4.72	4.69	0.01	28.07	1.60	1.39	1.70	1.44
50000	4.83	4.93	0.24	17.92	0.97	1.36	1.13	1.19

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



Notes

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2 Way-0° Power Splitter/Combiner

ZN2PD-V54+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = 0 dBm @ Temperature = +25°C

FREQUENCY (MHz)	TOTAL LOSS ¹ (dB)		AMPLITUDE UNBALANCE (dB)	ISOLATION (dB) 1-2	PHASE UNBALANCE (Deg)	FREQUENCY (MHz)	VSWR (:1)		
	S-1	S-2					S	1	2
10	3.53	3.52	0.01	3.53	0.08	10	2.00	2.00	2.00
100	3.56	3.55	0.01	3.57	0.11	100	1.98	1.98	1.98
500	3.57	3.60	0.04	3.68	0.33	500	1.94	1.94	1.96
1000	3.54	3.64	0.08	3.88	0.46	1000	1.91	1.91	1.96
5000	3.61	3.73	0.25	10.22	1.27	5000	1.84	1.28	1.37
10000	3.55	3.56	0.10	29.39	0.29	10000	1.50	1.53	1.53
11000	3.54	3.55	0.13	25.05	0.00	11000	1.43	1.55	1.52
12000	3.50	3.55	0.14	23.95	0.01	12000	1.34	1.49	1.52
13000	3.47	3.51	0.12	23.40	0.11	13000	1.22	1.43	1.46
14000	3.54	3.52	0.14	21.76	0.37	14000	1.25	1.45	1.39
15000	3.58	3.55	0.17	20.20	0.34	15000	1.24	1.38	1.31
16000	3.54	3.55	0.16	20.23	0.22	16000	1.10	1.19	1.18
17000	3.56	3.60	0.15	22.82	0.32	17000	1.12	1.09	1.08
18000	3.58	3.62	0.16	31.04	0.39	18000	1.10	1.08	1.08
19000	3.60	3.65	0.15	28.73	0.45	19000	1.09	1.05	1.04
20000	3.66	3.72	0.15	22.04	0.73	20000	1.24	1.04	1.06
21000	3.71	3.76	0.21	20.02	0.90	21000	1.27	1.10	1.17
22000	3.78	3.78	0.30	20.21	0.54	22000	1.31	1.29	1.29
23000	3.81	3.79	0.23	20.97	0.22	23000	1.28	1.38	1.27
24000	3.78	3.82	0.16	20.45	0.09	24000	1.19	1.32	1.22
25000	3.76	3.92	0.19	19.76	0.39	25000	1.19	1.24	1.28
26000	3.80	4.02	0.22	20.58	0.43	26000	1.27	1.23	1.39
27000	3.86	4.04	0.29	24.05	0.07	27000	1.28	1.25	1.40
28000	3.86	3.99	0.20	30.29	0.51	28000	1.13	1.24	1.18
29000	3.91	4.02	0.13	26.12	0.17	29000	1.16	1.24	1.10
30000	3.92	4.06	0.13	23.02	0.24	30000	1.12	1.23	1.23
31000	3.93	4.11	0.18	23.76	0.48	31000	1.12	1.32	1.38
32000	3.99	4.22	0.24	26.28	0.28	32000	1.26	1.39	1.56
33000	3.97	4.20	0.24	23.10	0.29	33000	1.11	1.24	1.43
34000	4.16	4.30	0.17	19.23	0.44	34000	1.43	1.11	1.28
35000	4.28	4.39	0.16	17.78	0.16	35000	1.58	1.13	1.28
36000	4.10	4.29	0.20	18.28	0.39	36000	1.20	1.18	1.31
37000	4.12	4.39	0.12	20.51	0.95	37000	1.19	1.44	1.62
38000	4.25	4.48	0.02	22.22	0.61	38000	1.33	1.57	1.74
39000	4.32	4.45	0.05	22.13	0.51	39000	1.31	1.52	1.58
40000	4.37	4.43	0.11	22.40	1.35	40000	1.32	1.44	1.36
41000	4.33	4.41	0.34	23.88	0.58	41000	1.19	1.30	1.18
42000	4.31	4.47	0.32	22.89	1.14	42000	1.09	1.11	1.15
43000	4.36	4.55	0.08	19.88	1.86	43000	1.25	1.05	1.13
44000	4.47	4.55	0.14	19.02	1.04	44000	1.26	1.12	1.14
45000	4.56	4.50	0.18	21.20	0.63	45000	1.17	1.43	1.20
46000	4.72	4.69	0.01	28.07	1.60	46000	1.39	1.70	1.44
47000	4.75	4.90	0.22	23.63	0.76	47000	1.31	1.50	1.55
48000	4.57	4.91	0.18	18.04	0.49	48000	1.24	1.17	1.35
49000	4.87	5.18	0.20	16.68	0.10	49000	1.61	1.13	1.27
50000	4.83	4.93	0.24	17.92	0.97	50000	1.36	1.13	1.19

¹Total Loss = Insertion Loss + 3dB Splitter Loss



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IF/RF MICROWAVE COMPONENTS

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8/29/2018

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2 Way-0° Power Splitter/Combiner

ZN2PD-V54+

Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = -55°C

FREQUENCY (MHz)	TOTAL LOSS ¹ (dB)		AMPLITUDE UNBALANCE (dB)	ISOLATION (dB) 1-2	PHASE UNBALANCE (Deg)	FREQUENCY (MHz)	VSWR (:1)		
	S-1	S-2					S	1	2
10	3.53	3.53	0.01	3.55	0.11	10	1.99	1.99	1.99
100	3.55	3.56	0.00	3.58	0.00	100	1.98	1.97	1.97
500	3.59	3.59	0.01	3.67	0.00	500	1.95	1.95	1.95
1000	3.60	3.61	0.01	3.86	0.00	1000	1.93	1.93	1.93
5000	3.62	3.61	0.01	10.02	0.36	5000	1.80	1.30	1.29
10000	3.55	3.56	0.01	30.10	0.39	10000	1.51	1.50	1.53
11000	3.55	3.55	0.00	26.27	0.40	11000	1.45	1.52	1.53
12000	3.52	3.50	0.02	24.97	0.49	12000	1.33	1.48	1.47
13000	3.50	3.48	0.02	23.92	0.63	13000	1.23	1.45	1.43
14000	3.54	3.53	0.01	22.24	0.81	14000	1.28	1.47	1.46
15000	3.56	3.57	0.01	20.97	0.86	15000	1.26	1.41	1.42
16000	3.52	3.54	0.02	21.01	0.83	16000	1.08	1.24	1.26
17000	3.55	3.57	0.02	23.15	0.79	17000	1.09	1.08	1.11
18000	3.59	3.60	0.02	28.43	0.82	18000	1.13	1.06	1.08
19000	3.60	3.62	0.02	30.23	0.86	19000	1.13	1.05	1.06
20000	3.64	3.66	0.02	24.59	0.86	20000	1.16	1.01	1.04
21000	3.67	3.68	0.01	22.03	0.88	21000	1.16	1.14	1.14
22000	3.72	3.72	0.00	21.15	1.06	22000	1.21	1.26	1.23
23000	3.73	3.76	0.03	20.68	1.20	23000	1.22	1.26	1.24
24000	3.73	3.79	0.06	20.24	1.06	24000	1.17	1.21	1.22
25000	3.77	3.82	0.04	20.25	0.89	25000	1.18	1.26	1.27
26000	3.84	3.86	0.02	21.44	0.97	26000	1.27	1.34	1.32
27000	3.86	3.88	0.03	24.19	1.13	27000	1.26	1.29	1.26
28000	3.82	3.87	0.05	27.77	1.14	28000	1.09	1.13	1.14
29000	3.83	3.89	0.06	28.63	1.00	29000	1.04	1.13	1.13
30000	3.88	3.92	0.04	28.77	0.92	30000	1.09	1.24	1.21
31000	3.96	3.98	0.02	31.07	0.99	31000	1.20	1.36	1.30
32000	3.98	3.98	0.00	26.27	1.15	32000	1.13	1.34	1.25
33000	4.03	4.04	0.01	20.70	1.43	33000	1.23	1.14	1.10
34000	4.27	4.32	0.06	17.91	1.72	34000	1.65	1.19	1.25
35000	4.19	4.33	0.14	17.06	1.70	35000	1.54	1.18	1.25
36000	4.03	4.24	0.21	18.07	1.26	36000	1.14	1.24	1.41
37000	4.28	4.49	0.22	21.46	0.69	37000	1.54	1.58	1.80
38000	4.39	4.54	0.15	27.35	0.23	38000	1.61	1.65	1.82
39000	4.25	4.33	0.08	28.86	0.04	39000	1.29	1.44	1.49
40000	4.24	4.26	0.02	23.66	0.22	40000	1.03	1.26	1.20
41000	4.36	4.36	0.00	20.94	0.63	41000	1.22	1.19	1.11
42000	4.44	4.46	0.02	19.70	1.09	42000	1.39	1.20	1.11
43000	4.45	4.56	0.11	19.33	1.28	43000	1.43	1.20	1.05
44000	4.35	4.56	0.21	20.72	0.93	44000	1.21	1.04	1.22
45000	4.49	4.72	0.23	26.02	0.20	45000	1.39	1.35	1.60
46000	4.81	4.95	0.14	38.70	0.26	46000	1.64	1.61	1.73
47000	4.68	4.76	0.08	23.95	0.43	47000	1.32	1.51	1.45
48000	4.67	4.69	0.02	19.09	0.15	48000	1.24	1.20	1.15
49000	4.87	4.91	0.04	17.99	0.27	49000	1.48	1.07	1.13
50000	4.72	4.82	0.10	18.57	0.37	50000	1.26	1.16	1.10

¹Total Loss = Insertion Loss + 3dB Splitter Loss



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2 Way-0° Power Splitter/Combiner

ZN2PD-V54+

Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = +100°C

FREQUENCY (MHz)	TOTAL LOSS ¹ (dB)		AMPLITUDE UNBALANCE (dB)	ISOLATION (dB) 1-2	PHASE UNBALANCE (Deg)	FREQUENCY (MHz)	VSWR (:1)		
	S-1	S-2					S	1	2
10	3.53	3.53	0.00	3.54	0.12	10	2.00	2.00	2.00
100	3.56	3.55	0.01	3.57	0.08	100	1.98	1.97	1.98
500	3.57	3.60	0.03	3.69	0.24	500	1.94	1.94	1.96
1000	3.55	3.64	0.09	3.89	0.14	1000	1.91	1.91	1.96
5000	3.64	3.70	0.06	10.34	0.60	5000	1.86	1.27	1.34
10000	3.57	3.60	0.03	28.50	0.15	10000	1.50	1.53	1.53
11000	3.54	3.60	0.06	24.88	0.01	11000	1.41	1.52	1.49
12000	3.50	3.59	0.09	23.52	0.31	12000	1.31	1.47	1.48
13000	3.51	3.54	0.04	22.76	0.61	13000	1.20	1.44	1.44
14000	3.55	3.54	0.01	21.67	0.39	14000	1.20	1.43	1.38
15000	3.57	3.57	0.00	20.81	0.09	15000	1.18	1.33	1.30
16000	3.55	3.59	0.04	21.35	0.10	16000	1.06	1.16	1.18
17000	3.58	3.63	0.05	24.31	0.24	17000	1.08	1.06	1.08
18000	3.61	3.65	0.04	30.72	0.29	18000	1.06	1.05	1.06
19000	3.64	3.69	0.04	26.36	0.27	19000	1.13	1.04	1.04
20000	3.70	3.75	0.05	21.63	0.35	20000	1.23	1.02	1.07
21000	3.75	3.78	0.04	20.06	0.46	21000	1.26	1.14	1.19
22000	3.81	3.81	0.00	20.26	0.38	22000	1.30	1.31	1.29
23000	3.84	3.82	0.01	20.84	0.07	23000	1.26	1.36	1.27
24000	3.81	3.86	0.05	20.38	0.55	24000	1.18	1.30	1.21
25000	3.80	3.96	0.16	19.88	0.47	25000	1.17	1.22	1.27
26000	3.83	4.04	0.21	20.72	0.20	26000	1.23	1.19	1.37
27000	3.88	4.05	0.17	23.81	0.83	27000	1.23	1.21	1.38
28000	3.91	4.02	0.10	28.27	0.83	28000	1.10	1.25	1.18
29000	3.96	4.04	0.08	26.33	0.52	29000	1.10	1.28	1.08
30000	3.98	4.10	0.12	24.16	0.30	30000	1.07	1.29	1.22
31000	4.00	4.18	0.18	25.09	0.30	31000	1.16	1.37	1.41
32000	4.02	4.26	0.24	25.66	0.73	32000	1.20	1.36	1.54
33000	4.02	4.25	0.23	21.46	1.42	33000	1.11	1.18	1.38
34000	4.28	4.42	0.14	18.24	1.74	34000	1.55	1.15	1.28
35000	4.39	4.46	0.07	17.12	1.28	35000	1.63	1.16	1.28
36000	4.18	4.31	0.13	17.83	0.95	36000	1.19	1.22	1.27
37000	4.26	4.46	0.20	20.68	1.25	37000	1.29	1.54	1.63
38000	4.42	4.59	0.17	23.93	1.78	38000	1.46	1.70	1.80
39000	4.41	4.51	0.10	23.84	1.95	39000	1.30	1.58	1.59
40000	4.40	4.47	0.08	22.31	1.66	40000	1.23	1.40	1.33
41000	4.39	4.51	0.12	21.63	1.38	41000	1.23	1.23	1.14
42000	4.43	4.61	0.18	21.07	1.74	42000	1.23	1.07	1.11
43000	4.45	4.60	0.15	19.64	2.38	43000	1.24	1.07	1.14
44000	4.55	4.56	0.01	19.73	2.58	44000	1.17	1.23	1.17
45000	4.68	4.57	0.10	22.44	1.67	45000	1.21	1.54	1.23
46000	4.81	4.78	0.03	28.23	0.39	46000	1.39	1.70	1.46
47000	4.87	5.05	0.18	22.63	0.26	47000	1.28	1.45	1.53
48000	4.66	5.00	0.35	18.14	1.43	48000	1.25	1.15	1.34
49000	4.95	5.22	0.28	16.68	2.84	49000	1.60	1.12	1.24
50000	4.93	5.04	0.10	17.58	3.03	50000	1.37	1.11	1.14

¹Total Loss = Insertion Loss + 3dB Splitter Loss



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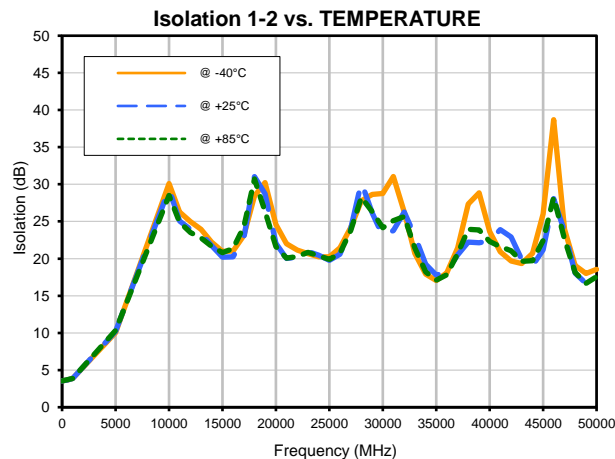
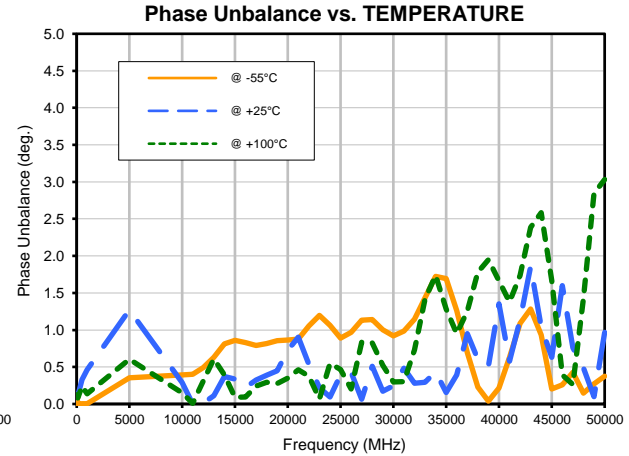
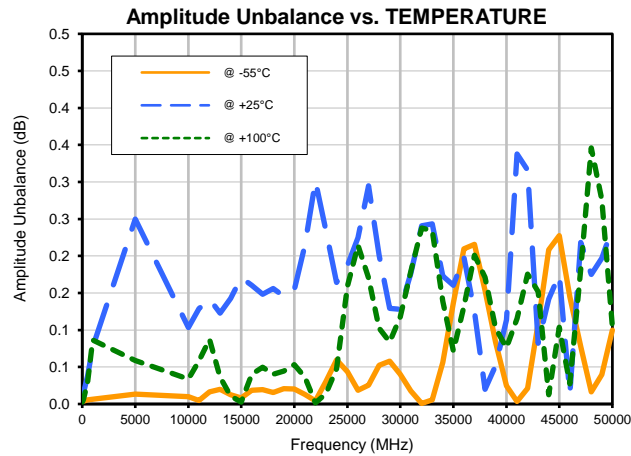
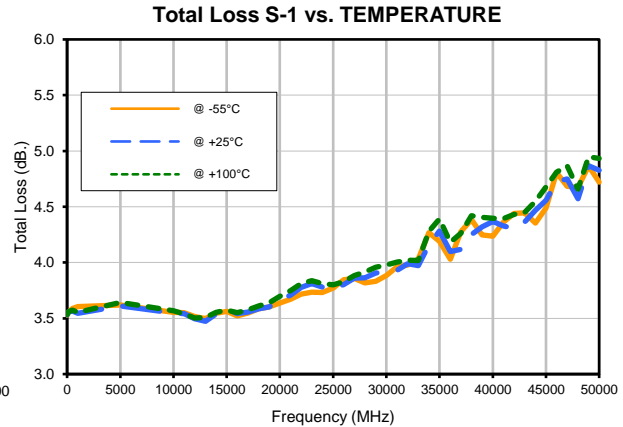
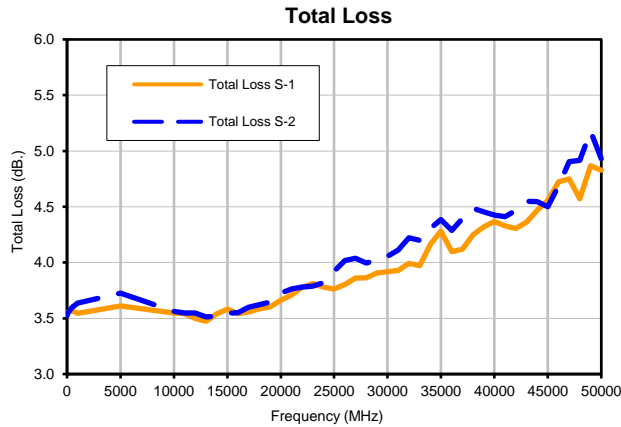
REV. OR
ZN2PD-V54+
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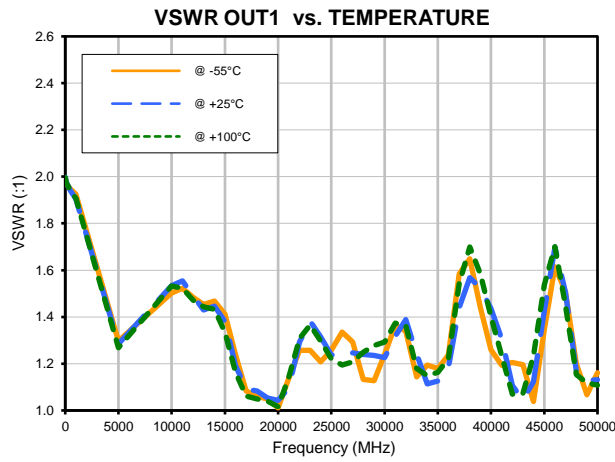
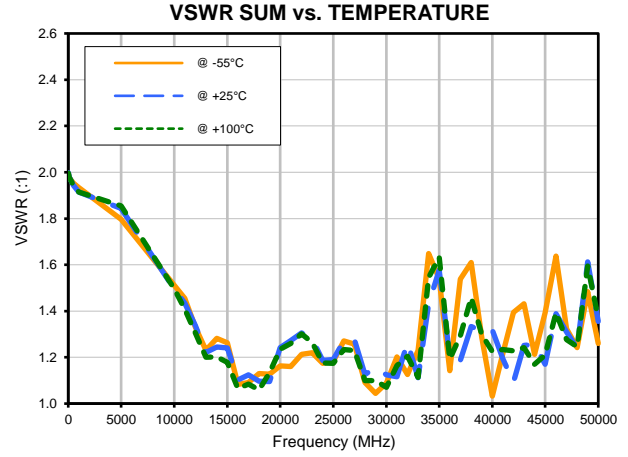
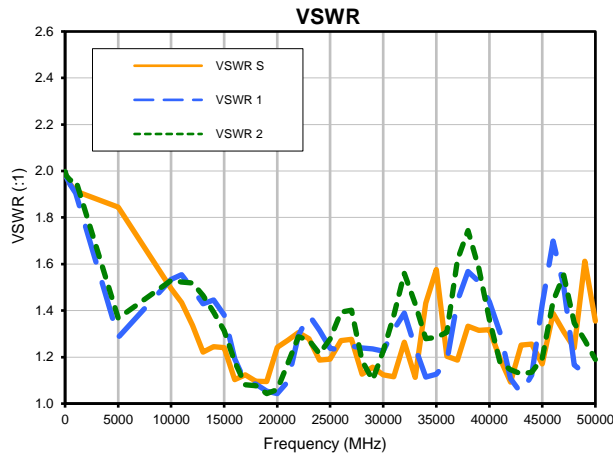
2 Way-0° Power Splitter/Combiner

ZN2PD-V54+

Typical Performance Curves



Typical Performance Curves

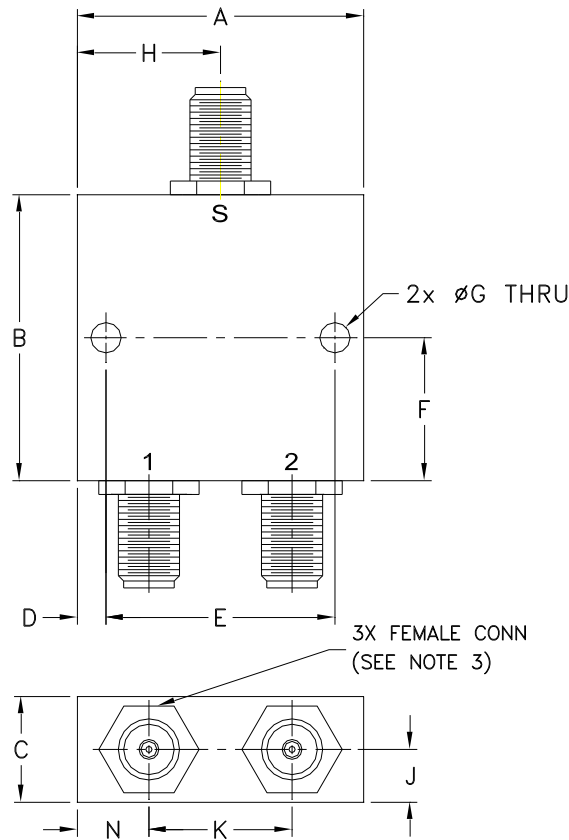


Case Style

UU

Outline Dimensions

UU2234



CASE#	A	B	C	D	E	F	G	H	J	K	L
UU2234	1.00 (25.40)	1.00 (25.40)	.370 (9.40)	.101 (2.57)	.800 (20.32)	.500 (12.70)	.106 (2.69)	.500 (12.70)	.185 (4.70)	.500 (12.70)	-- --

CASE#	M	N	P	Q	WT. GRAMS
UU2234	-- --	.25 (6.35)	-- --	-- --	55

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

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.

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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