Coaxial

Power Splitter/Combiner ZN4PD-K44+

4 Way-0° 50Ω 10 to 40 GHz

The Big Deal

- Ultra-wideband, 10 to 40 GHz
- Low insertion loss, 1.5 dB
- High Isolation, 22 dB
- 20W power handling
- Low unbalance, 0.3 dB, 6°

CASE STYLE: UU2402

Product Overview

Mini-Circuits' ZN4PD-K44+ is an ultra-wideband coaxial 4-way 0˚ splitter/combiner providing coverage from 10 to 40 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 20W 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 ZN4PD-K44+ comes housed in a rugged aluminum alloy case measuring 2.06 x 1.50 x 0.5" with 2.92mm female connectors.

Key Features

Feature	Advantages
Ultra-wideband, 10 to 40 GHz	Extremely wide frequency range supports many broadband applications in a single model.
Low insertion loss, 1.5 dB	The combination of 20W power handling and low insertion loss makes this model a suitable candidate for distributing signals while maintaining excellent transmission of signal power.
High isolation, 22 dB	Minimizes interference between ports.
High power handling, 20W as a splitter	The ZN8PD-K44+ is suitable for systems with a wide range of power requirements.
Low unbalance, 0.3 dB, 6°	Produces nearly equal output signals, ideal for parallel path and multichannel systems.

Coaxial

Power Splitter/Combiner

ZN4PD-K44+

4 Way-0° 50Ω 10 to 40 GHz

Generic photo used for illustration purposes only

CASE STYLE: UU2402

Connectors	Model
2.92 mm-Female	ZN4PD-K44+

+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 max.
Internal Dissipation	0.5W max.

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

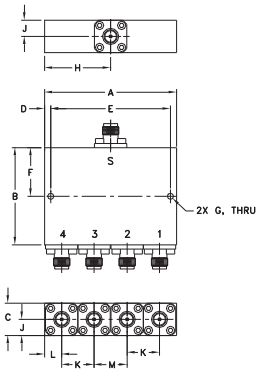
Features

- wideband, 10 to 40 GHz
- low insertion loss, 1.5 dB typ.
- low amplitude unbalance, 0.3 dB typ.
- low phase unbalance, 6.0 deg. typ.
- high isolation, 22 dB typ.

Applications

- 5G
- test equipment
- test lab
- broadband high power combining

Outline Drawing

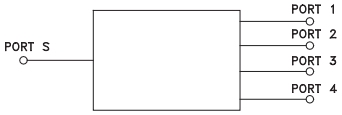


Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
2.04	1.50	.50	.10	1.850	.75	.095
51.82	38.10	12.70	2.54	46.99	19.05	2.41

H	J	K	L	M	N	wt
1.02	.25	.500	.26	.512	--	grams
25.91	6.35	12.70	6.60	13.00	--	110

Electrical Schematic



Electrical Specifications at 25°C

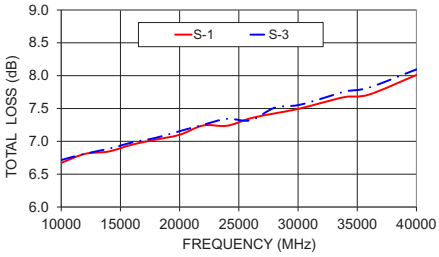
Parameter	Frequency (GHz)	Min.	Typ.	Max.	Unit
Frequency Range		10	—	40	GHz
Insertion Loss (above theoretical 6.0 dB)	10 - 40	—	1.5	2.9	dB
Isolation	10 - 40	18	22	—	dB
Phase Unbalance	10 - 40	—	6	14	Degree
Amplitude Unbalance	10 - 40	—	0.3	1.0	dB
VSWR (Port S)	10 - 40	—	1.35	1.65	:1
VSWR Output (Port 1-4)	10 - 40	—	1.3	1.65	:1

Typical Performance Data

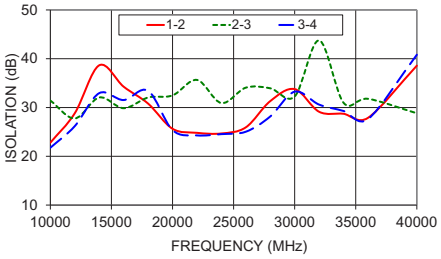
Freq. (MHz)	Total Loss[1] (dB)				Amp. Unbal. (dB)	Isolation (dB)			VSWR S	VSWR 1	VSWR 2	VSWR 3	VSWR 4
	S-1	S-2	S-3	S-4		1-2	2-3	3-4					
10000	6.67	6.68	6.72	6.70	0.04	22.79	31.42	21.76	1.05	1.12	1.12	1.12	1.10
12000	6.81	6.81	6.81	6.80	0.01	28.83	27.76	26.19	1.08	1.18	1.18	1.15	1.15
14000	6.84	6.84	6.89	6.87	0.05	38.65	32.06	32.94	1.12	1.20	1.19	1.22	1.20
16000	6.95	6.93	6.98	6.97	0.05	34.26	29.86	31.53	1.09	1.13	1.13	1.15	1.15
18000	7.03	7.01	7.05	7.04	0.04	30.80	32.05	33.44	1.08	1.18	1.20	1.16	1.13
20000	7.10	7.08	7.16	7.14	0.07	25.64	32.48	25.37	1.06	1.13	1.13	1.16	1.18
22000	7.24	7.22	7.25	7.25	0.04	24.81	35.65	24.28	1.25	1.13	1.13	1.12	1.15
24000	7.24	7.22	7.34	7.32	0.12	24.68	30.91	24.54	1.18	1.04	1.06	1.04	1.07
26000	7.35	7.34	7.32	7.31	0.04	25.93	34.07	25.04	1.10	1.23	1.24	1.14	1.15
28000	7.42	7.41	7.51	7.51	0.10	31.31	33.94	28.16	1.15	1.20	1.23	1.23	1.26
30000	7.49	7.46	7.55	7.53	0.09	33.77	32.26	33.25	1.15	1.03	1.02	1.13	1.14
32000	7.59	7.57	7.65	7.64	0.08	29.13	43.76	30.60	1.15	1.08	1.12	1.14	1.16
34000	7.68	7.67	7.76	7.77	0.10	28.71	30.97	29.29	1.24	1.15	1.19	1.20	1.27
36000	7.71	7.72	7.82	7.81	0.11	27.88	31.78	27.62	1.07	1.11	1.16	1.20	1.26
40000	8.01	8.01	8.10	8.07	0.09	38.58	28.82	40.82	1.34	1.21	1.22	1.35	1.37

1. Total Loss = Insertion Loss + 6dB splitter loss.

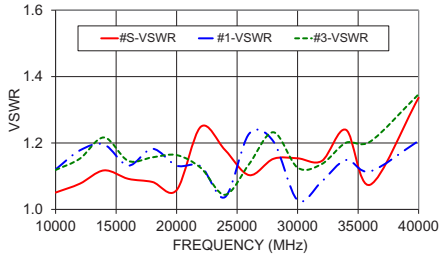
ZN4PD-K44+
TOTAL LOSS



ZN4PD-K44+
ISOLATION



ZN4PD-K44+
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

4 Way-0° Power Splitter/Combiner ZN4PD-K44+

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS[1] (dB)				AMP UNBAL. (dB)	ISOLATION (dB)			PHASE UNBAL. (Deg)
	S1	S2	S3	S4		1-2	2-3	3-4	
10000	6.67	6.68	6.72	6.70	0.04	22.79	31.42	21.76	1.50
10500	6.71	6.72	6.72	6.71	0.01	26.48	30.43	25.00	1.56
11000	6.77	6.78	6.80	6.79	0.03	41.61	29.67	38.77	1.43
11500	6.79	6.80	6.84	6.83	0.05	26.44	28.61	24.84	1.72
12000	6.81	6.81	6.81	6.80	0.01	28.83	27.76	26.19	1.80
12500	6.82	6.82	6.84	6.83	0.03	35.29	27.40	44.37	1.62
13000	6.83	6.82	6.87	6.85	0.04	25.58	27.69	26.19	1.99
13500	6.85	6.85	6.85	6.83	0.02	25.17	29.16	24.20	1.93
14000	6.84	6.84	6.89	6.87	0.05	38.65	32.06	32.94	1.82
14500	6.88	6.87	6.92	6.91	0.05	26.44	35.79	26.72	2.19
15000	6.93	6.91	6.94	6.93	0.04	23.71	35.30	22.60	2.02
15500	6.91	6.89	6.97	6.96	0.08	30.58	31.88	26.92	2.18
16000	6.95	6.93	6.98	6.97	0.05	34.26	29.86	31.53	2.55
16500	6.96	6.95	6.96	6.95	0.02	31.48	29.27	31.36	2.33
17000	7.00	6.98	7.03	7.02	0.05	29.26	29.77	29.61	2.41
17500	7.01	6.99	7.01	7.00	0.02	32.88	31.04	30.87	2.53
18000	7.03	7.01	7.05	7.04	0.04	30.80	32.05	33.44	2.32
18500	7.04	7.03	7.10	7.07	0.07	25.15	31.90	25.94	2.70
19000	7.08	7.06	7.09	7.07	0.03	29.02	31.43	29.08	2.64
19500	7.11	7.10	7.18	7.16	0.08	39.32	31.41	40.60	2.59
20000	7.10	7.08	7.16	7.14	0.07	25.64	32.48	25.37	3.08
21000	7.19	7.16	7.25	7.25	0.08	29.29	42.84	27.75	2.74
22000	7.24	7.22	7.25	7.25	0.04	24.81	35.65	24.28	3.04
23000	7.21	7.19	7.28	7.26	0.09	40.34	30.12	40.10	3.57
24000	7.24	7.22	7.34	7.32	0.12	24.68	30.91	24.54	3.39
25000	7.32	7.30	7.35	7.33	0.05	30.50	36.58	33.86	3.32
26000	7.35	7.34	7.32	7.31	0.04	25.93	34.07	25.04	3.84
27000	7.40	7.39	7.45	7.44	0.06	30.36	31.63	30.21	4.01
28000	7.42	7.41	7.51	7.51	0.10	31.31	33.94	28.16	3.63
29000	7.46	7.44	7.48	7.48	0.04	30.98	33.96	31.41	4.08
30000	7.49	7.46	7.55	7.53	0.09	33.77	32.26	33.25	4.33
32000	7.59	7.57	7.65	7.64	0.08	29.13	43.76	30.60	4.18
34000	7.68	7.67	7.76	7.77	0.10	28.71	30.97	29.29	5.02
36000	7.71	7.72	7.82	7.81	0.11	27.88	31.78	27.62	4.56
38000	7.91	7.92	8.10	8.08	0.19	24.02	40.00	24.09	5.35
40000	8.01	8.01	8.10	8.07	0.09	38.58	28.82	40.82	5.53

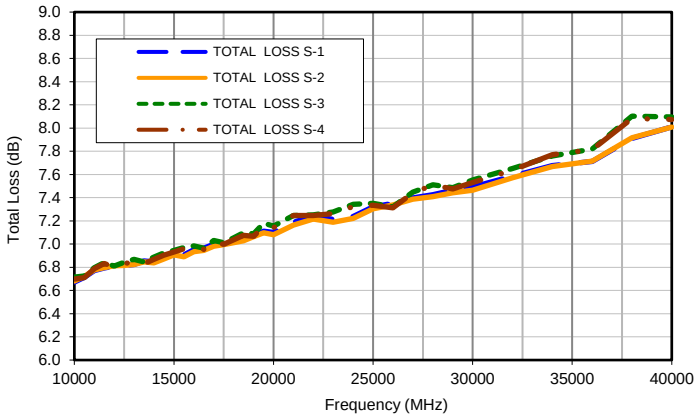
FREQ. (MHz)	VSWR (:1)				
	S	1	2	3	4
10000	1.05	1.12	1.12	1.12	1.10
10500	1.03	1.24	1.25	1.23	1.22
11000	1.14	1.29	1.30	1.30	1.30
11500	1.22	1.17	1.17	1.19	1.19
12000	1.08	1.18	1.18	1.15	1.15
12500	1.13	1.24	1.24	1.25	1.24
13000	1.13	1.08	1.08	1.12	1.11
13500	1.06	1.17	1.18	1.13	1.13
14000	1.12	1.20	1.19	1.22	1.20
14500	1.12	1.08	1.06	1.13	1.13
15000	1.14	1.06	1.05	1.10	1.09
15500	1.02	1.11	1.10	1.15	1.16
16000	1.09	1.13	1.13	1.15	1.15
16500	1.04	1.10	1.11	1.10	1.10
17000	1.14	1.08	1.10	1.07	1.06
17500	1.10	1.16	1.18	1.13	1.11
18000	1.08	1.18	1.20	1.16	1.13
18500	1.11	1.11	1.12	1.09	1.08
19000	1.04	1.21	1.22	1.17	1.15
19500	1.13	1.27	1.28	1.28	1.27
20000	1.06	1.13	1.13	1.16	1.18
21000	1.27	1.26	1.25	1.30	1.34
22000	1.25	1.13	1.13	1.12	1.15
23000	1.13	1.04	1.02	1.07	1.10
24000	1.18	1.04	1.06	1.04	1.07
25000	1.23	1.26	1.28	1.21	1.22
26000	1.10	1.23	1.24	1.14	1.15
27000	1.16	1.17	1.20	1.16	1.20
28000	1.15	1.20	1.23	1.23	1.26
29000	1.11	1.08	1.10	1.14	1.17
30000	1.15	1.03	1.02	1.13	1.14
32000	1.15	1.08	1.12	1.14	1.16
34000	1.24	1.15	1.19	1.20	1.27
36000	1.07	1.11	1.16	1.20	1.26
38000	1.40	1.16	1.20	1.37	1.38
40000	1.34	1.21	1.22	1.35	1.37

1. Total Loss = Insertion Loss + 6dB splitter loss.

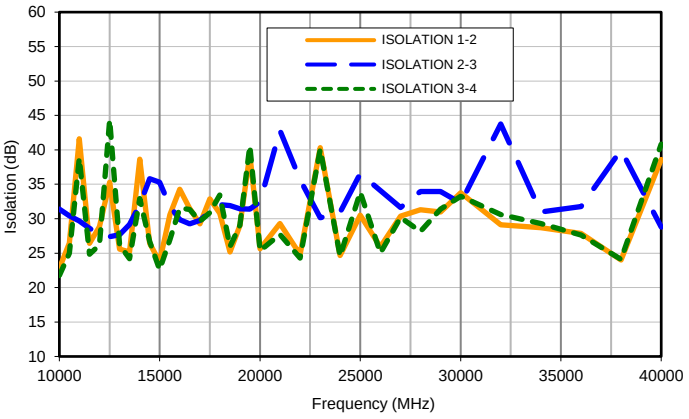
4 Way-0° Power Splitter/Combiner ZN4PD-K44+

Typical Performance Curves

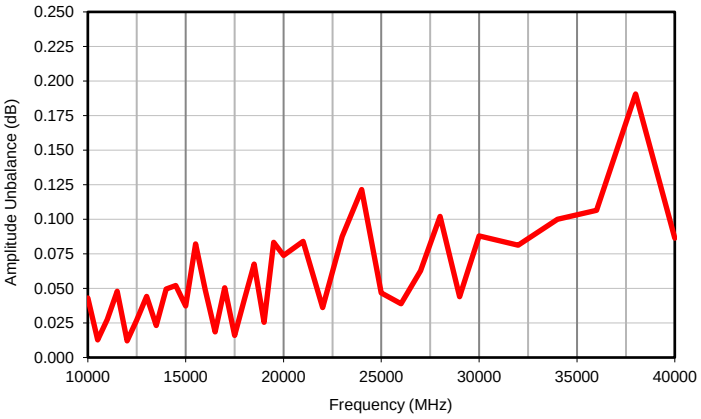
Total Loss



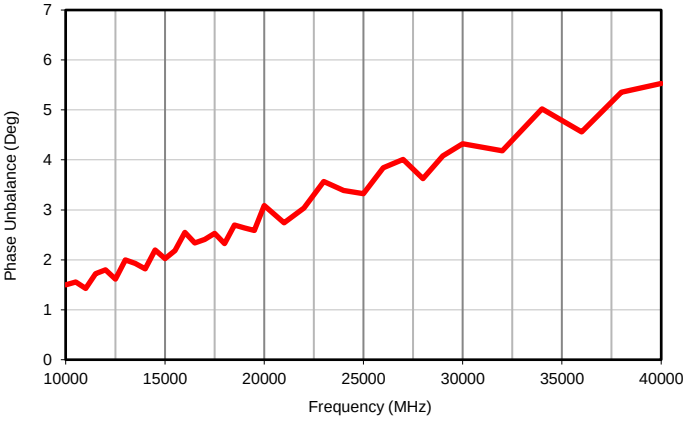
Isolation



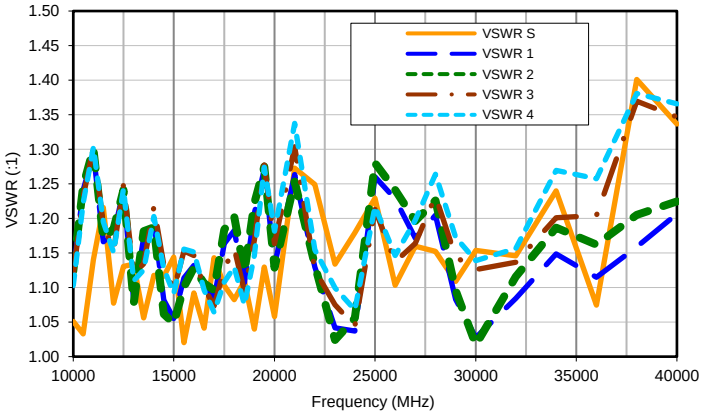
Amplitude Unbalance



Phase Unbalance



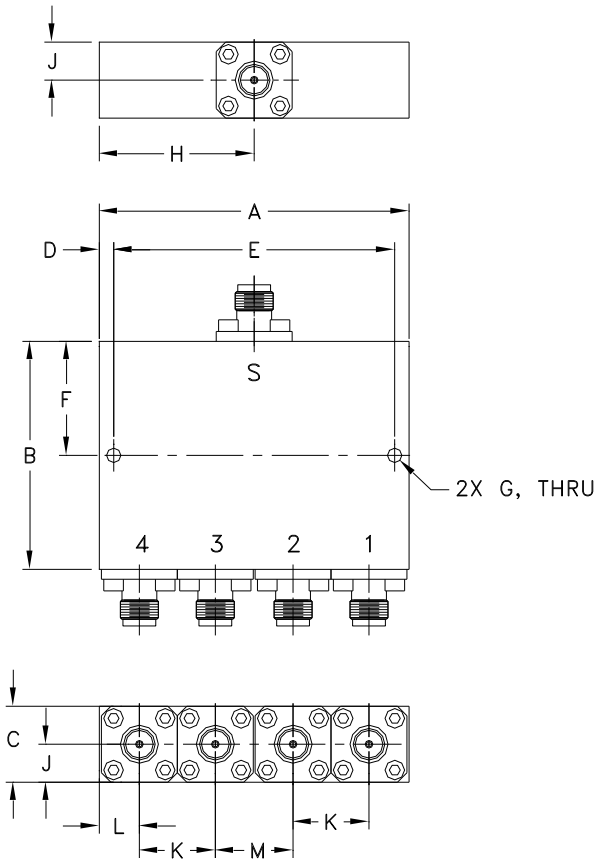
VSWR



Case Style UU

Outline Dimensions

UU2402



CASE#	A	B	C	D	E	F	G	H	J	K	L	M
UU2402	2.04 (51.70)	1.50 (38.10)	.50 (12.70)	.10 (2.54)	1.850 (47.10)	.75 (19.10)	.095 (2.41)	1.02 (25.85)	.25 (6.35)	.500 (12.70)	.26 (6.60)	.512 (13.00)

CASE#	N	WT. GRAMS
UU2402	-- --	110

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: Blue Pantone 286U coating, non-chrome or trivalent chrome based.
3. Refer to the individual model data sheet for the type of connectors available.

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