

DC Pass, High Power

Power Splitter/Combiner

ZC4PD-V24443+

4 Way-0° 50Ω 24000 to 44000 MHz

The Big Deal

- Super wideband, 24 to 44 GHz
- Low insertion loss, 1.6 dB typ.
- High Isolation, 30 dB typ.
- 16W power handling
- Low amplitude unbalance, 0.1 dB typ.



CASE STYLE: UU2413-5

Product Overview

Mini-Circuits' ZC4PD-V24443+ is a super wideband 4-way 0° splitter/combiner providing coverage from 24 to 44 GHz, supporting a wide range of applications including 5G, Ka, V and K-Band, instrumentation and many more. This model provides 16W 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 ZC4PD-V24443+ comes housed in a case measuring 2.04 x 1 x 0.5".

Key Features

Feature	Advantages
Ultra-wideband, 24 to 44 GHz	Extremely wide frequency range supports many broadband applications in a single model.
Low insertion loss, 1.6 dB typ. at 30 GHz	The combination of 16W power handling and low insertion loss makes this model a suitable candidate for distributing signals while maintaining excellent transmission of signal power.
High isolation, 30 dB typ. at 30 GHz	Minimizes interference between ports.
High power handling: • 16W as a splitter at 25°C • 0.6W as a combiner	The ZC4PD-V24443+ is suitable for systems with a wide range of power requirements.
Low amplitude unbalance, 0.1 dB typ.	Produces nearly equal output signals, ideal for parallel path and multichannel systems.
DC Passing, 389mA	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



ZC4PD-V24443+

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

REV. OR
ECO-006621
ZC4PD-V24443+
GY/CP/AM
210226
Page 2 of 2

4 Way-0° Power Splitter/Combiner

ZC4PD-V24443+

Typical Performance Data

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

FREQ. (MHz)	TOTAL LOSS ¹				AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION			VSWR				
	(dB)						(dB)			(:1)				
	S-1	S-2	S-3	S-4			1-2	1-4	3-4	S	1	2	3	4
24000	7.23	7.24	7.22	7.21	0.03	2.98	29.53	28.96	28.97	1.12	1.21	1.19	1.22	1.21
24500	7.32	7.33	7.29	7.27	0.06	2.76	27.73	29.17	29.18	1.29	1.23	1.22	1.23	1.22
25000	7.32	7.33	7.33	7.32	0.02	2.63	26.18	29.46	29.48	1.24	1.21	1.20	1.21	1.19
25500	7.28	7.30	7.32	7.30	0.04	2.95	25.72	29.99	30.01	1.08	1.21	1.21	1.22	1.21
26000	7.37	7.40	7.38	7.37	0.04	3.10	26.83	30.72	30.75	1.24	1.27	1.27	1.28	1.28
26500	7.48	7.52	7.48	7.47	0.05	3.04	29.92	31.62	31.65	1.41	1.30	1.31	1.32	1.30
27000	7.44	7.47	7.43	7.43	0.04	3.09	34.31	32.19	32.21	1.33	1.20	1.24	1.22	1.20
27500	7.36	7.39	7.35	7.36	0.04	3.12	35.90	32.51	32.55	1.10	1.10	1.11	1.11	1.14
28000	7.48	7.50	7.47	7.49	0.03	3.11	32.56	32.51	32.52	1.32	1.21	1.18	1.23	1.28
28500	7.56	7.58	7.56	7.58	0.02	3.25	28.72	32.15	32.16	1.43	1.26	1.24	1.29	1.34
29000	7.45	7.46	7.44	7.47	0.03	3.42	26.08	31.40	31.42	1.22	1.17	1.16	1.20	1.24
29500	7.47	7.49	7.45	7.47	0.05	3.50	25.55	30.61	30.64	1.25	1.15	1.10	1.16	1.22
30000	7.61	7.64	7.59	7.60	0.05	3.46	27.45	30.20	30.24	1.48	1.22	1.17	1.24	1.30
30500	7.53	7.57	7.55	7.55	0.04	3.41	31.62	29.64	29.69	1.31	1.18	1.15	1.20	1.26
31000	7.47	7.51	7.51	7.50	0.04	3.70	32.83	29.26	29.30	1.10	1.10	1.07	1.11	1.16
31500	7.64	7.67	7.63	7.63	0.04	3.84	30.66	29.12	29.16	1.41	1.11	1.06	1.09	1.16
32000	7.64	7.67	7.63	7.64	0.04	3.57	32.31	29.25	29.29	1.35	1.13	1.10	1.11	1.18
32500	7.57	7.59	7.59	7.62	0.05	3.74	39.71	29.68	29.71	1.05	1.23	1.19	1.20	1.27
33000	7.71	7.73	7.71	7.74	0.03	4.16	32.19	30.48	30.55	1.38	1.30	1.27	1.26	1.35
33500	7.76	7.80	7.70	7.74	0.10	4.13	26.82	31.40	31.43	1.42	1.23	1.24	1.20	1.29
34000	7.66	7.71	7.63	7.66	0.09	3.86	25.05	32.68	32.71	1.16	1.16	1.16	1.13	1.22
34500	7.75	7.81	7.76	7.79	0.06	4.06	25.71	34.39	34.44	1.31	1.26	1.24	1.24	1.33
35000	7.86	7.93	7.86	7.89	0.07	4.39	28.46	36.37	36.47	1.46	1.28	1.30	1.27	1.37
36000	7.77	7.82	7.73	7.75	0.09	4.29	34.60	39.90	39.89	1.09	1.10	1.11	1.08	1.18
37000	7.88	7.95	7.87	7.90	0.08	4.60	32.52	40.21	40.24	1.27	1.20	1.20	1.22	1.33
38000	7.86	7.93	7.83	7.84	0.11	4.63	30.86	38.10	38.11	1.01	1.10	1.15	1.11	1.17
39000	7.88	7.96	7.88	7.87	0.09	4.74	29.66	36.55	36.64	1.06	1.04	1.06	1.05	1.10
40000	7.96	8.02	7.94	7.93	0.09	4.81	31.39	35.17	35.31	1.13	1.06	1.06	1.09	1.10
41000	8.03	8.10	8.01	8.00	0.10	4.73	41.14	34.77	34.85	1.13	1.02	1.02	1.02	1.05
42000	8.10	8.18	8.09	8.10	0.08	4.97	31.09	34.90	35.03	1.20	1.11	1.15	1.10	1.15
43000	8.13	8.22	8.11	8.12	0.11	4.93	28.00	36.48	36.62	1.13	1.07	1.13	1.05	1.11
44000	8.31	8.42	8.30	8.32	0.12	5.14	33.51	39.34	39.39	1.35	1.27	1.34	1.25	1.33
45000	8.30	8.43	8.26	8.32	0.17	5.10	28.86	41.93	41.78	1.12	1.18	1.26	1.16	1.28

¹Total Loss = Insertion Loss + 6dB Splitter Loss



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

IF/RF MICROWAVE COMPONENTS

REV. OR
ZC4PD-V24443+
3/4/2021
Page 1 of 3

4 Way-0° Power Splitter/Combiner

ZC4PD-V24443+

Typical Performance Data

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

FREQ.	TOTAL LOSS ¹				AMP. UNBAL.	PHASE UNBAL.	ISOLATION			VSWR				
(MHz)	(dB)				(dB)	(deg.)	(dB)			(:1)				
	S-1	S-2	S-3	S-4			1-2	1-4	3-4	S	1	2	3	4
24000	7.20	7.19	7.17	7.18	0.04	3.88	28.97	28.64	28.62	1.14	1.18	1.18	1.21	1.21
24500	7.29	7.27	7.23	7.24	0.06	3.63	27.02	28.84	28.82	1.29	1.21	1.20	1.22	1.22
25000	7.27	7.26	7.27	7.28	0.02	3.56	25.68	29.16	29.15	1.23	1.19	1.19	1.20	1.20
25500	7.25	7.24	7.27	7.27	0.03	3.96	25.58	29.70	29.69	1.08	1.21	1.21	1.23	1.23
26000	7.36	7.35	7.34	7.34	0.02	4.10	27.18	30.39	30.37	1.27	1.28	1.29	1.31	1.30
26500	7.45	7.45	7.42	7.43	0.03	4.07	31.24	31.25	31.23	1.42	1.29	1.32	1.32	1.30
27000	7.38	7.38	7.35	7.37	0.03	4.09	36.79	31.76	31.75	1.30	1.18	1.23	1.20	1.18
27500	7.33	7.31	7.29	7.31	0.04	4.13	34.99	32.14	32.12	1.11	1.10	1.11	1.12	1.16
28000	7.46	7.44	7.43	7.46	0.03	4.14	30.51	32.11	32.10	1.36	1.21	1.20	1.25	1.30
28500	7.51	7.49	7.49	7.53	0.04	4.31	27.28	31.71	31.68	1.42	1.23	1.23	1.27	1.32
29000	7.39	7.37	7.35	7.40	0.05	4.52	25.50	30.97	30.95	1.19	1.13	1.14	1.17	1.21
29500	7.46	7.44	7.40	7.44	0.05	4.59	25.85	30.32	30.30	1.30	1.15	1.12	1.18	1.24
30000	7.57	7.55	7.52	7.55	0.04	4.47	28.62	29.95	29.95	1.48	1.21	1.18	1.24	1.31
30500	7.44	7.44	7.45	7.47	0.04	4.55	33.35	29.43	29.42	1.24	1.15	1.15	1.19	1.24
31000	7.44	7.43	7.44	7.46	0.03	4.87	31.94	29.11	29.10	1.16	1.08	1.07	1.10	1.15
31500	7.60	7.58	7.55	7.57	0.05	4.86	30.51	29.01	28.99	1.43	1.08	1.05	1.08	1.15
32000	7.56	7.53	7.53	7.57	0.03	4.61	33.36	29.19	29.17	1.29	1.11	1.08	1.11	1.18
32500	7.51	7.48	7.53	7.57	0.09	5.02	38.35	29.63	29.62	1.10	1.21	1.19	1.20	1.29
33000	7.66	7.64	7.62	7.68	0.06	5.41	29.65	30.39	30.41	1.41	1.25	1.25	1.25	1.34
33500	7.67	7.66	7.57	7.64	0.10	5.23	25.72	31.26	31.23	1.38	1.16	1.19	1.17	1.25
34000	7.59	7.58	7.54	7.60	0.06	5.01	24.73	32.58	32.55	1.15	1.14	1.15	1.15	1.23
34500	7.71	7.70	7.70	7.75	0.05	5.40	26.09	34.29	34.28	1.36	1.23	1.25	1.25	1.35
35000	7.78	7.78	7.75	7.80	0.05	5.74	29.50	36.26	36.23	1.43	1.21	1.28	1.24	1.34
36000	7.70	7.69	7.65	7.69	0.06	5.61	34.44	39.24	39.24	1.14	1.06	1.09	1.08	1.18
37000	7.81	7.79	7.75	7.81	0.05	6.00	31.25	39.32	39.23	1.25	1.15	1.20	1.20	1.31
38000	7.80	7.78	7.72	7.76	0.07	5.98	30.25	37.23	37.12	1.03	1.10	1.16	1.09	1.14
39000	7.81	7.79	7.77	7.79	0.05	6.13	29.81	35.69	35.64	1.07	1.08	1.10	1.08	1.11
40000	7.88	7.84	7.82	7.84	0.06	6.22	31.74	34.43	34.44	1.15	1.10	1.09	1.10	1.09
41000	7.93	7.89	7.87	7.89	0.06	6.07	42.07	34.22	34.21	1.13	1.04	1.02	1.03	1.05
42000	8.02	7.99	7.96	8.01	0.06	6.39	28.99	34.87	34.94	1.26	1.12	1.16	1.11	1.14
43000	8.00	7.98	7.95	7.99	0.05	6.31	28.13	36.97	36.97	1.12	1.06	1.13	1.06	1.13
44000	8.17	8.16	8.12	8.17	0.05	6.65	33.49	40.07	39.89	1.37	1.23	1.33	1.23	1.31
45000	8.17	8.18	8.10	8.19	0.09	6.50	28.74	40.52	40.27	1.23	1.17	1.26	1.20	1.32

¹Total Loss = Insertion Loss + 6dB Splitter Loss



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

IF/RF MICROWAVE COMPONENTS

REV. OR
ZC4PD-V24443+
3/4/2021
Page 2 of 3

4 Way-0° Power Splitter/Combiner

ZC4PD-V24443+

Typical Performance Data

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

FREQ.	TOTAL LOSS ¹				AMP. UNBAL.	PHASE UNBAL.	ISOLATION			VSWR				
(MHz)	(dB)				(dB)	(deg.)	(dB)			(:1)				
	S-1	S-2	S-3	S-4			1-2	1-4	3-4	S	1	2	3	4
24000	7.21	7.19	7.22	7.21	0.03	3.21	29.21	28.90	28.88	1.11	1.20	1.19	1.21	1.22
24500	7.32	7.29	7.26	7.27	0.06	3.16	27.28	29.06	29.03	1.29	1.22	1.22	1.22	1.22
25000	7.32	7.30	7.29	7.31	0.02	2.93	25.96	29.35	29.33	1.24	1.21	1.21	1.20	1.20
25500	7.26	7.25	7.31	7.28	0.07	3.39	25.65	29.99	29.98	1.07	1.22	1.21	1.22	1.22
26000	7.34	7.33	7.33	7.32	0.02	3.34	26.77	30.84	30.84	1.20	1.27	1.27	1.27	1.28
26500	7.44	7.43	7.43	7.43	0.01	3.42	29.85	31.72	31.71	1.39	1.29	1.31	1.30	1.30
27000	7.42	7.41	7.40	7.40	0.02	3.47	34.65	32.01	31.99	1.35	1.21	1.25	1.22	1.20
27500	7.32	7.31	7.30	7.32	0.02	3.38	36.93	32.07	32.07	1.09	1.09	1.11	1.10	1.13
28000	7.45	7.43	7.44	7.46	0.04	3.51	32.55	32.04	32.01	1.33	1.20	1.16	1.22	1.28
28500	7.54	7.51	7.52	7.55	0.04	3.65	28.37	31.66	31.63	1.46	1.25	1.24	1.28	1.34
29000	7.41	7.37	7.37	7.40	0.04	3.68	25.64	30.88	30.84	1.20	1.16	1.17	1.20	1.24
29500	7.45	7.42	7.42	7.45	0.04	3.67	25.13	30.24	30.22	1.29	1.15	1.10	1.15	1.22
30000	7.55	7.53	7.56	7.58	0.06	3.81	27.09	29.70	29.71	1.49	1.22	1.17	1.23	1.31
30500	7.44	7.42	7.46	7.47	0.05	4.13	31.86	29.11	29.09	1.30	1.17	1.15	1.20	1.26
31000	7.41	7.40	7.40	7.40	0.02	4.25	32.05	28.67	28.66	1.14	1.09	1.07	1.10	1.16
31500	7.52	7.50	7.49	7.49	0.03	4.08	29.46	28.61	28.58	1.39	1.10	1.06	1.09	1.16
32000	7.50	7.46	7.47	7.49	0.04	4.03	31.30	28.82	28.81	1.36	1.12	1.08	1.10	1.18
32500	7.46	7.42	7.43	7.46	0.04	4.04	40.93	29.47	29.45	1.11	1.22	1.18	1.19	1.27
33000	7.55	7.51	7.54	7.59	0.08	4.14	31.47	30.62	30.62	1.32	1.29	1.27	1.26	1.36
33500	7.58	7.55	7.56	7.62	0.08	4.61	26.27	32.08	32.07	1.44	1.22	1.23	1.20	1.29
34000	7.52	7.50	7.46	7.50	0.06	4.65	24.85	33.76	33.76	1.25	1.15	1.16	1.13	1.22
34500	7.59	7.57	7.54	7.58	0.04	4.38	25.85	35.92	35.89	1.27	1.24	1.24	1.23	1.33
35000	7.71	7.69	7.70	7.74	0.05	4.67	28.70	37.85	37.86	1.49	1.25	1.29	1.26	1.36
36000	7.66	7.63	7.60	7.64	0.06	4.76	35.81	40.56	40.42	1.08	1.08	1.12	1.07	1.17
37000	7.81	7.78	7.78	7.82	0.04	5.04	32.44	40.92	40.89	1.31	1.18	1.20	1.20	1.32
38000	7.81	7.79	7.76	7.79	0.05	5.03	30.15	38.86	38.77	1.05	1.11	1.17	1.11	1.17
39000	7.85	7.82	7.81	7.83	0.04	5.34	29.49	36.14	36.10	1.08	1.06	1.08	1.05	1.11
40000	7.93	7.88	7.91	7.92	0.05	5.31	30.84	34.49	34.47	1.14	1.07	1.08	1.08	1.10
41000	8.02	7.97	7.98	7.99	0.05	5.19	38.87	34.16	34.12	1.17	1.03	1.03	1.03	1.05
42000	8.10	8.04	8.05	8.06	0.05	5.78	31.03	34.91	34.96	1.23	1.11	1.15	1.10	1.16
43000	8.10	8.07	8.07	8.10	0.04	5.32	27.56	36.56	36.55	1.10	1.07	1.12	1.06	1.12
44000	8.29	8.26	8.23	8.26	0.06	5.69	32.90	39.00	38.92	1.30	1.26	1.34	1.25	1.34
45000	8.30	8.28	8.28	8.36	0.08	5.73	29.08	42.07	41.87	1.15	1.17	1.24	1.15	1.28

¹Total Loss = Insertion Loss + 6dB Splitter Loss

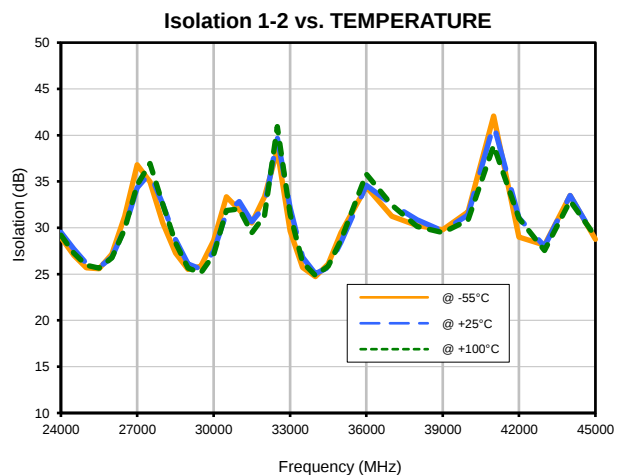
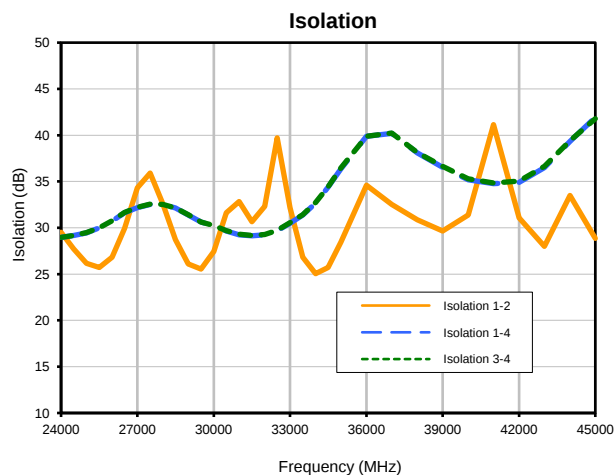
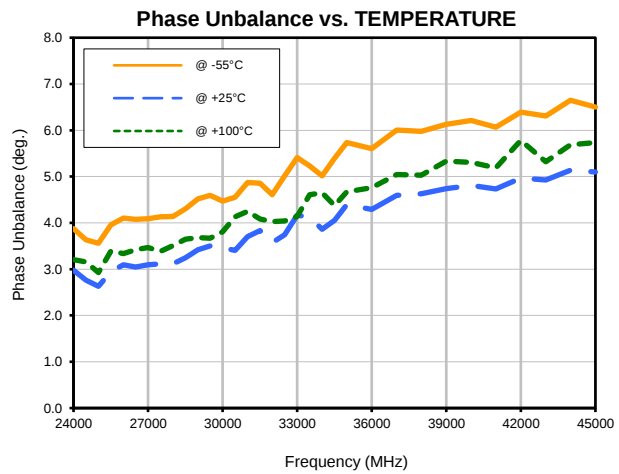
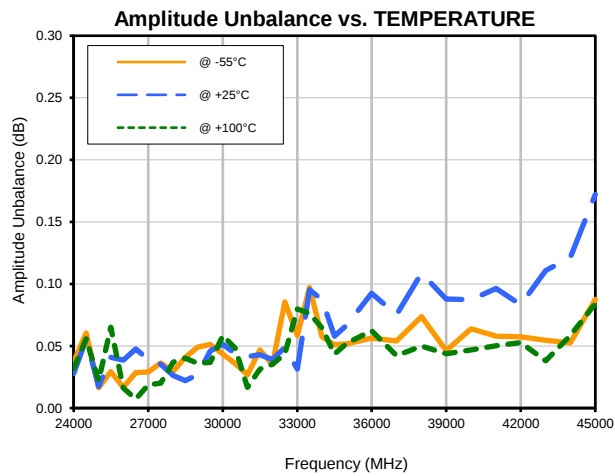
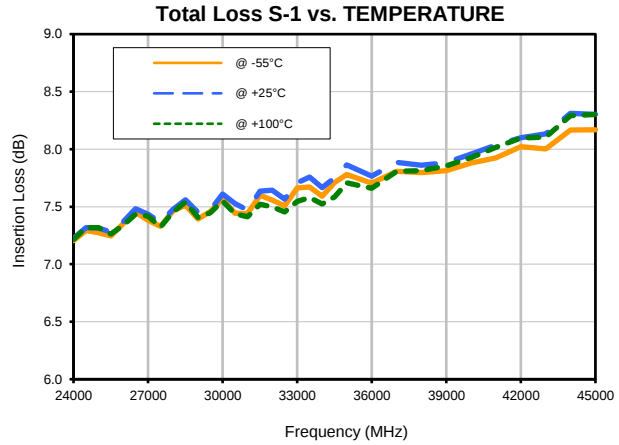
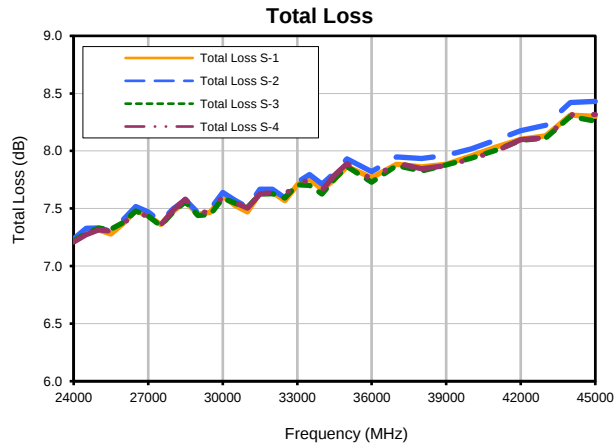


P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

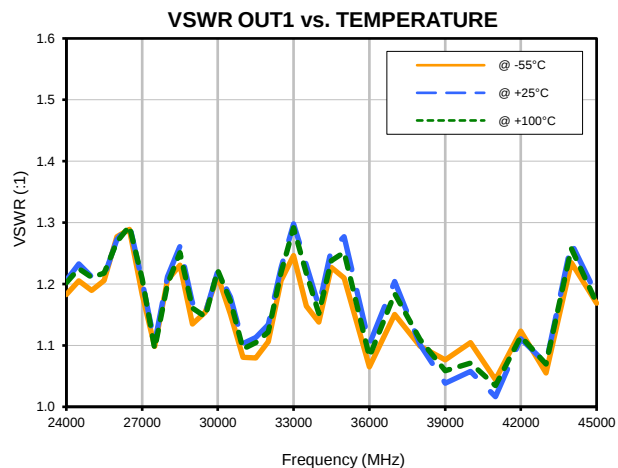
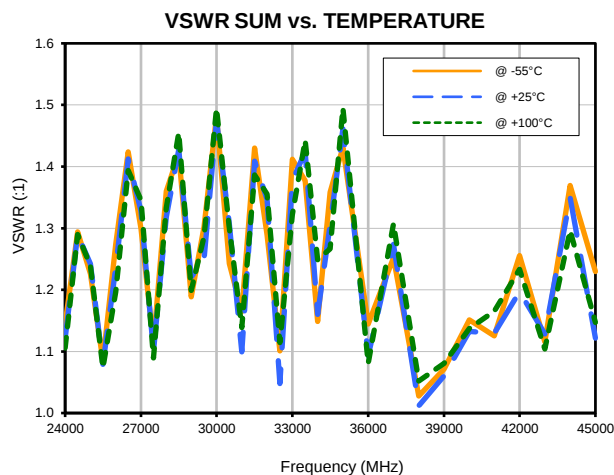
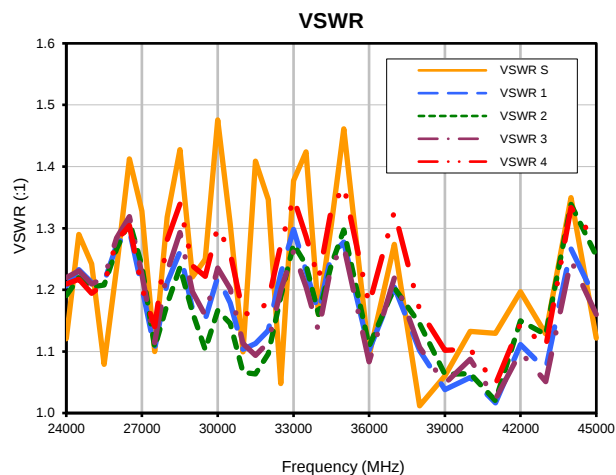
IF/RF MICROWAVE COMPONENTS

REV. OR
ZC4PD-V24443+
3/4/2021
Page 3 of 3

Typical Performance Curves

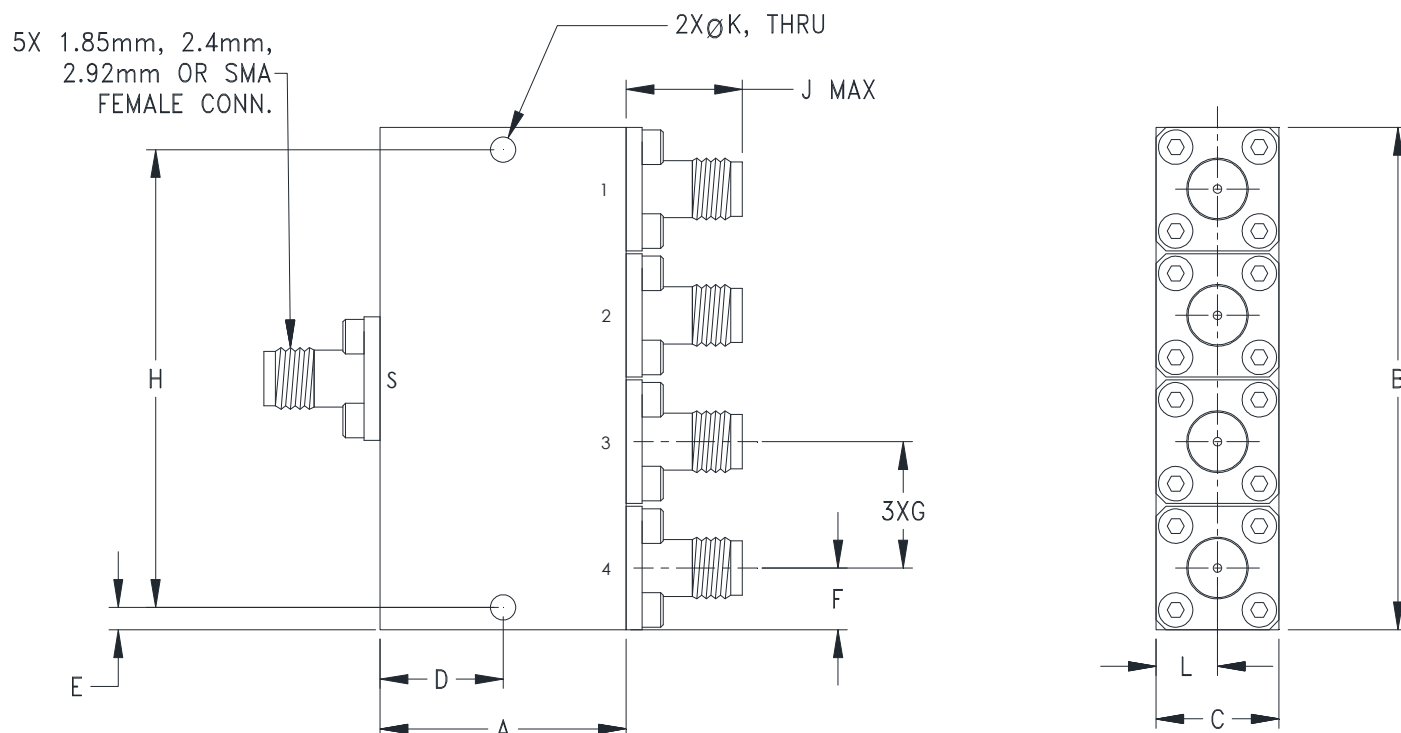


Typical Performance Curves



Outline Dimension

UU2413-5



CASE#	A	B	C	D	E	F	G	H	J	K	L
UU2413-5	1.00 (25.40)	2.04 (51.70)	.50 (12.70)	.500 (12.70)	.091 (2.30)	.25 (6.35)	.51 (13.0)	1.854 (47.10)	.47 (12.0)	.102 (2.60)	.25 (6.35)

CASE#	WT. GRAMS
UU2413-5	70

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 : Nickel Plating.



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

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.

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
Thermal Shock	-55° to 100°C, 25 cycles	MIL-STD-202, Method 107, Condition A-1 except +100°C instead of 85°C
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
Connector Durability	500 mating/unmating cycles	MIL-PRF-39012E, PARAGRAPH 4.6.12