



COAXIAL

Power Splitter/Combiner **ZC4PD-E18673+**

50Ω 4 Way-0° 18 to 67 GHz 12 W 1.85 mm Female

THE BIG DEAL

- Wideband, 18 to 67GHz
- Low Insertion Loss, 2dB typ.
- 12W Power Handling
- High Isolation, 32dB typ.
- Low Amplitude Unbalance, 0.2dB typ.
- Stripline Design

APPLICATIONS

- 5G Multiple-input and multiple-output (MIMO) and Back Haul Radio Systems
- long-term evolution (LTE) & 5G MIMO Infrastructure
- Satellite Communications
- Test & Measurement Equipment
- Radar, Electronic Warfare (EW), and Electronic Countermeasures (ECM) Defense Systems



Generic photo used for illustration purposes only

Model No.	ZC4PD-E18673+
Case Style	UU2413-5
Connectors	1.85 mm Female

+RoHS Compliant

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

PRODUCT OVERVIEW

Mini-Circuits' ZC4PD-E18673+ is an ultra wideband 4-way 0° power splitter/combiner. It provides coverage from 18 to 67 GHz, (Ka band & V band) supporting a wide range of applications including 5G, SatCom, Defense, Instrumentation and many more. This model provides 12W 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 ZC8PD-E18673+ comes housed in a case measuring 1.00 x 2.04 x 0.5" with 1.85 mm Female connectors.

KEY FEATURES

Features	Advantages
Wideband, 18 to 67 GHz	Extremely wide frequency range supports many broadband applications in a single model.
Low insertion loss, 2 dB typ.	The combination of 12W power handling and low insertion loss makes this model a suitable candidate for distributing signals while maintaining excellent transmission of signal power.
High isolation, 32 dB typ	Minimizes interference between ports
High power handling: <ul style="list-style-type: none"> • 12 W as a splitter at 25°C • 1.2 W as a combiner at 25°C 	The ZC4PD-E18673+ is suitable for systems with a wide range of power requirements
Low amplitude unbalance, 0.2 dB	Produces nearly equal output signals, ideal for parallel path and multichannel systems.
DC Passing, 350mA as a splitter	Supports applications where DC power is needed through the RF line.





COAXIAL

Power Splitter/Combiner ZC4PD-E18673+

50Ω 4 Way-0° 18 to 67 GHz 12 W 1.85 mm Female

ELECTRICAL SPECIFICATIONS AT +25 °C

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Frequency Range		18		67	GHz
Insertion Loss (above theoretical 6.0dB per port)	18-40		1.4	2.4	dB
	40-50		2.0	2.9	
	50-67		2.7	3.8	
Isolation	18-40	16	30		dB
	40-50	16	33		
	50-67	16	33		
Phase Unbalance (±) ¹	18-40		3		Degree
	40-50		5		
	50-67		6		
Amplitude Unbalance (±) ¹	18-40		0.1	0.5	dB
	40-50		0.2	0.7	
	50-67		0.2	0.9	
VSWR (Port S)	18-40		1.20	1.7	:1
	40-50		1.17	1.8	
	50-67		1.17	1.9	
VSWR (Port 1-4)	18-40		1.18	1.7	:1
	40-50		1.15	1.8	
	50-67		1.11	1.9	
Power Handling	As Splitter ¹			12	W
	As Combiner ²			1.2	

1. All outputs must be terminated with 50 ohm (VSWR 1.5:1 or better)

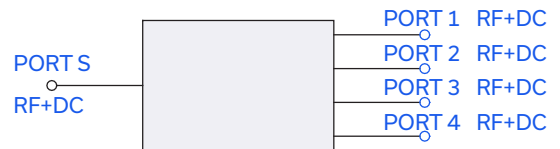
2. As a combiner of non-coherent signals, max. power per port is 0.3 watt

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Case Temperature	-50 °C to +100 °C
Storage Temperature	-50 °C to +100 °C

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

ELECTRICAL SCHEMATIC





COAXIAL

Power Splitter/Combiner ZC4PD-E18673+

Mini-Circuits

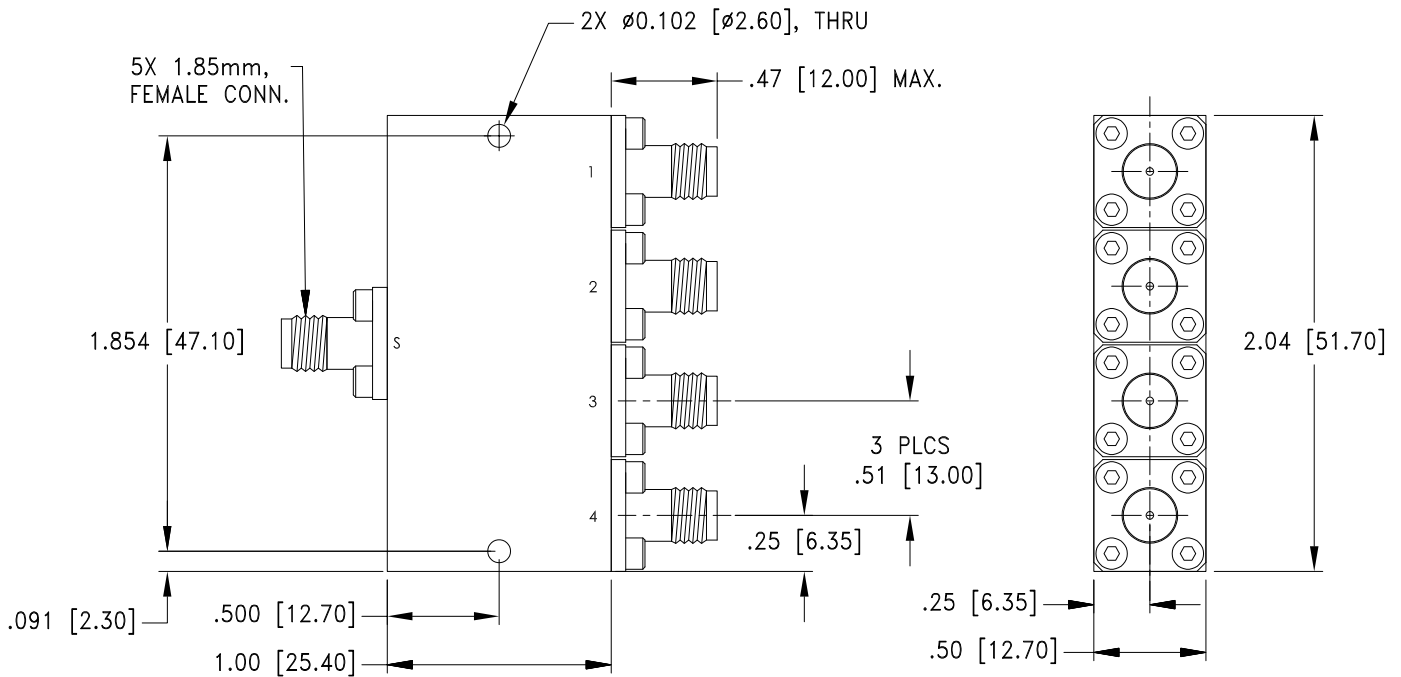
50Ω 4 Way-0° 18 to 67 GHz 12 W 1.85 mm Female

COAXIAL CONNECTIONS

Input ¹	S
Output ¹	1-4

Note1: Unit is bi-directional design

OUTLINE DRAWING



Dimensions are in inches (mm). Tolerances: 2 Pl. + .03; 3 Pl. + .015
Weight: 70 grams



COAXIAL

Power Splitter/Combiner ZC4PD-E18673+

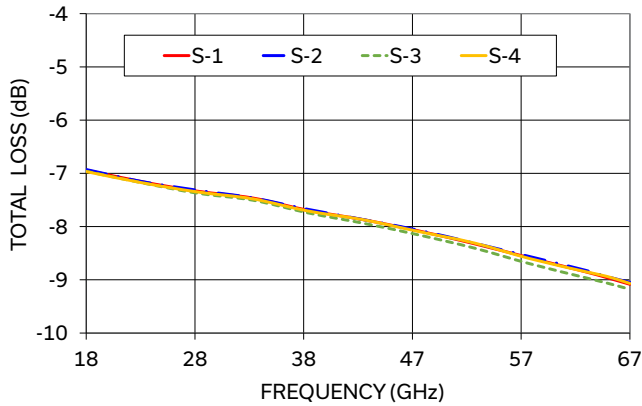
50Ω 4 Way-0° 18 to 67 GHz 12 W 1.85 mm Female

TYPICAL PERFORMANCE DATA AND CHARTS

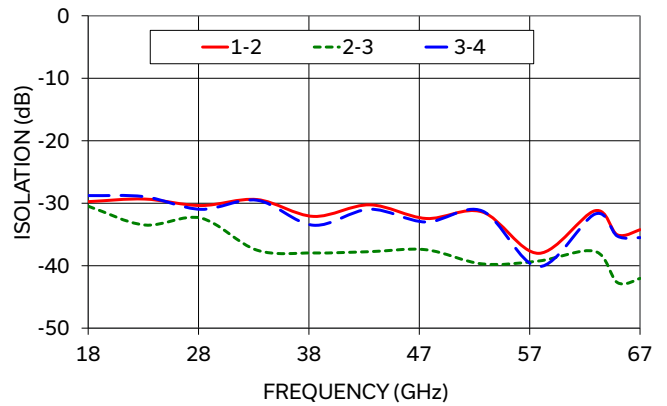
Freq. (GHz)	Total Loss ¹ (dB)				Amp Unbal. (dB)	Isolation (dB)			Phase Unbal. (deg.)	VSWR (:1)				
	S-1	S-2	S-3	S-4		1-2	2-3	3-4		S	1	2	3	4
18	6.9	6.9	7.0	7.0	0.07	29.8	30.5	28.8	1.9	1.14	1.15	1.14	1.14	1.14
23	7.2	7.2	7.2	7.2	0.08	29.3	33.5	29.0	2.4	1.28	1.14	1.14	1.14	1.14
28	7.3	7.3	7.4	7.3	0.10	30.4	32.4	31.0	3.1	1.22	1.26	1.24	1.26	1.23
33	7.5	7.5	7.5	7.5	0.12	29.4	37.5	29.5	3.6	1.11	1.07	1.10	1.08	1.09
38	7.7	7.7	7.7	7.7	0.12	32.1	38.0	33.5	3.9	1.13	1.28	1.25	1.28	1.28
43	7.9	7.9	7.9	7.9	0.15	30.3	37.8	31.0	4.5	1.16	1.17	1.18	1.18	1.15
48	8.1	8.1	8.2	8.1	0.16	32.4	37.5	33.0	5.0	1.14	1.08	1.09	1.08	1.09
53	8.3	8.3	8.4	8.3	0.19	31.4	39.7	31.3	5.6	1.13	1.09	1.10	1.08	1.06
58	8.6	8.6	8.7	8.6	0.22	38.0	39.3	40.2	6.2	1.19	1.15	1.14	1.18	1.21
63	8.8	8.8	9.0	8.8	0.22	31.2	37.7	31.7	6.4	1.21	1.11	1.14	1.12	1.11
65	9.0	8.9	9.1	8.9	0.24	35.1	42.7	35.3	6.8	1.16	1.09	1.08	1.10	1.11
67	9.1	9.0	9.2	9.1	0.25	34.2	42.0	35.5	6.9	1.25	1.19	1.19	1.21	1.23

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

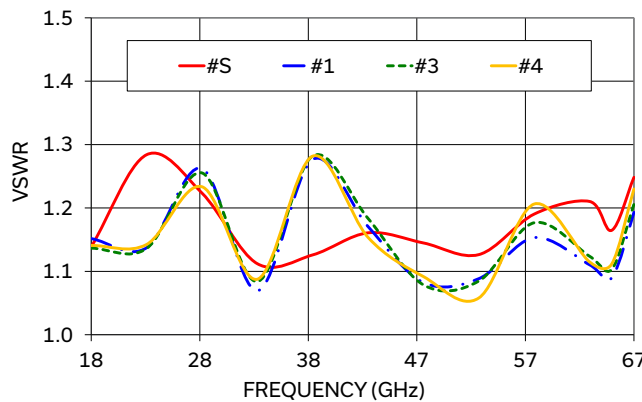
ZC4PD-E18673+
TOTAL LOSS



ZC4PD-E18673+
ISOLATION



ZC4PD-E18673+
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-Circuits' 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/terms/viewterm.html



4 Way-0° Power Splitter/Combiner

ZC4PD-E18673+

Typical Performance Data

Data tested at 25DegC

FREQ. (GHz)	INSERTION LOSS ¹ (dB)				AMP. UNBAL. ² (dB)	ISOLATION ³ (dB)			PHASE UNBAL. ⁴ (deg.)	VSWR ⁵ (:1)				
	S-1	S-2	S-3	S-4		1-2	2-3	3-4		S	1	2	3	4
18	0.9	0.9	1.0	1.0	0.1	30	30	29	2	1.14	1.15	1.14	1.14	1.14
19	1.0	1.0	1.0	1.0	0.1	29	31	30	2	1.13	1.16	1.15	1.16	1.16
20	1.0	1.0	1.1	1.1	0.1	32	32	31	2	1.22	1.19	1.18	1.18	1.18
21	1.1	1.0	1.1	1.1	0.1	23	32	23	2	1.19	1.08	1.08	1.09	1.08
22	1.1	1.1	1.2	1.2	0.1	25	33	25	2	1.28	1.10	1.10	1.10	1.10
23	1.2	1.2	1.2	1.2	0.1	29	33	29	2	1.28	1.14	1.14	1.14	1.14
24	1.1	1.1	1.2	1.1	0.1	25	33	25	3	1.11	1.14	1.14	1.13	1.13
25	1.2	1.2	1.3	1.3	0.1	30	32	30	3	1.26	1.28	1.27	1.26	1.25
26	1.3	1.3	1.3	1.3	0.1	33	31	34	3	1.20	1.30	1.29	1.28	1.27
27	1.3	1.3	1.4	1.4	0.1	31	31	31	3	1.30	1.29	1.27	1.27	1.25
28	1.3	1.3	1.4	1.3	0.1	30	32	31	3	1.22	1.26	1.24	1.26	1.23
29	1.4	1.3	1.4	1.3	0.1	32	33	32	3	1.21	1.17	1.15	1.17	1.17
30	1.4	1.4	1.4	1.4	0.1	28	35	28	3	1.22	1.08	1.07	1.09	1.09
31	1.4	1.4	1.4	1.4	0.1	34	37	33	3	1.13	1.06	1.07	1.06	1.08
32	1.4	1.4	1.5	1.4	0.1	28	41	29	3	1.20	1.08	1.09	1.07	1.06
33	1.5	1.5	1.5	1.5	0.1	29	38	30	4	1.11	1.07	1.10	1.08	1.09
34	1.5	1.5	1.6	1.5	0.1	31	35	31	4	1.14	1.15	1.14	1.14	1.12
35	1.6	1.6	1.7	1.6	0.1	33	35	35	4	1.24	1.24	1.23	1.25	1.23
36	1.6	1.6	1.7	1.6	0.1	31	35	31	4	1.16	1.30	1.27	1.29	1.27
37	1.7	1.7	1.8	1.7	0.1	36	36	33	4	1.32	1.35	1.33	1.35	1.34
38	1.7	1.7	1.7	1.7	0.1	32	38	34	4	1.13	1.28	1.25	1.28	1.28
39	1.7	1.7	1.8	1.7	0.1	33	38	32	4	1.19	1.20	1.19	1.21	1.21
40	1.8	1.8	1.8	1.8	0.1	31	37	32	4	1.21	1.16	1.15	1.16	1.15
41	1.8	1.8	1.8	1.8	0.1	34	37	37	4	1.12	1.09	1.11	1.08	1.08
42	1.9	1.9	1.9	1.9	0.1	29	36	29	4	1.25	1.14	1.16	1.14	1.13
43	1.9	1.9	1.9	1.9	0.1	30	38	31	4	1.16	1.17	1.18	1.18	1.15
44	1.9	1.9	2.0	1.9	0.1	33	39	32	5	1.12	1.23	1.23	1.25	1.21
45	2.0	2.0	2.1	2.0	0.1	33	40	34	5	1.28	1.27	1.25	1.27	1.23
46	2.0	2.0	2.1	2.0	0.2	31	38	32	5	1.18	1.22	1.20	1.22	1.19
47	2.0	2.0	2.1	2.0	0.2	36	38	37	5	1.17	1.14	1.13	1.14	1.12
48	2.1	2.1	2.2	2.1	0.2	32	37	33	5	1.14	1.08	1.09	1.08	1.09
49	2.1	2.1	2.2	2.1	0.2	35	37	36	5	1.14	1.08	1.10	1.09	1.11
50	2.2	2.2	2.2	2.2	0.2	33	37	32	5	1.12	1.08	1.11	1.08	1.11
51	2.2	2.2	2.3	2.3	0.2	30	38	30	5	1.14	1.09	1.10	1.10	1.10
52	2.3	2.3	2.4	2.3	0.2	31	39	31	5	1.14	1.06	1.09	1.08	1.10
53	2.3	2.3	2.4	2.3	0.2	31	40	31	6	1.13	1.09	1.10	1.08	1.06
54	2.4	2.4	2.5	2.4	0.2	32	38	32	6	1.11	1.10	1.11	1.11	1.10
55	2.4	2.4	2.5	2.4	0.2	29	38	30	6	1.15	1.15	1.16	1.17	1.15
56	2.5	2.5	2.6	2.5	0.2	39	38	39	6	1.31	1.20	1.22	1.22	1.24
57	2.5	2.5	2.6	2.5	0.2	31	38	31	6	1.13	1.11	1.13	1.17	1.17
58	2.6	2.6	2.7	2.6	0.2	38	39	40	6	1.19	1.15	1.14	1.18	1.21
59	2.6	2.6	2.8	2.7	0.2	30	38	30	6	1.21	1.09	1.09	1.11	1.13
60	2.7	2.7	2.8	2.7	0.2	36	38	35	6	1.16	1.10	1.11	1.15	1.15
61	2.7	2.7	2.8	2.7	0.2	30	36	29	6	1.20	1.11	1.13	1.14	1.14
62	2.8	2.8	2.9	2.8	0.2	37	36	35	6	1.20	1.11	1.13	1.15	1.13
63	2.8	2.8	3.0	2.8	0.2	31	38	32	6	1.21	1.11	1.14	1.12	1.11
64	2.9	2.9	3.0	2.9	0.2	37	41	37	7	1.16	1.10	1.11	1.09	1.08
65	3.0	2.9	3.1	2.9	0.2	35	43	35	7	1.16	1.09	1.08	1.10	1.11
66	3.0	3.0	3.1	3.0	0.2	37	44	36	7	1.18	1.12	1.12	1.16	1.18
67	3.1	3.0	3.2	3.1	0.3	34	42	36	7	1.25	1.19	1.19	1.21	1.23

1. Insertion loss is loss above theoretical loss (6dB)

2. Amplitude unbalance is average unbalance between any ports

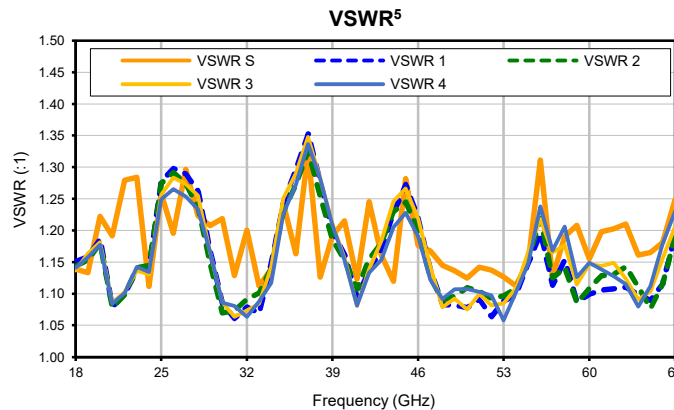
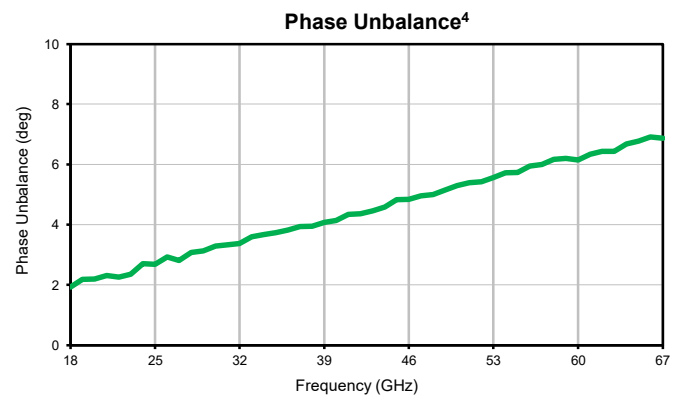
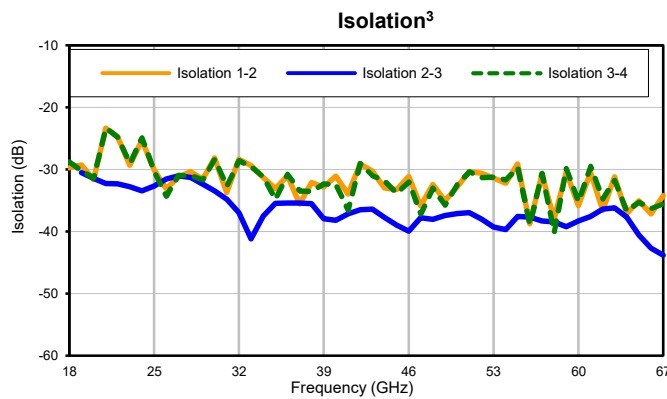
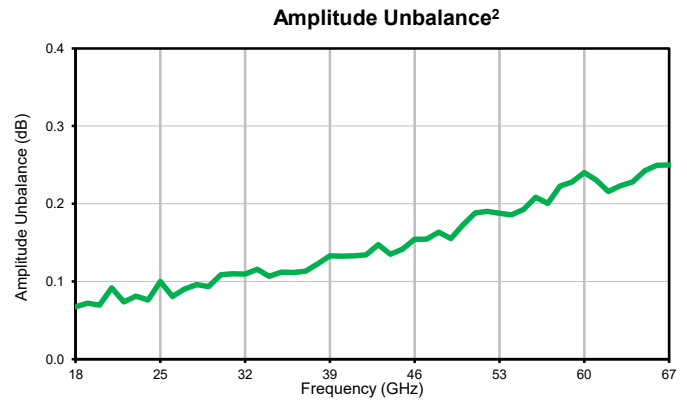
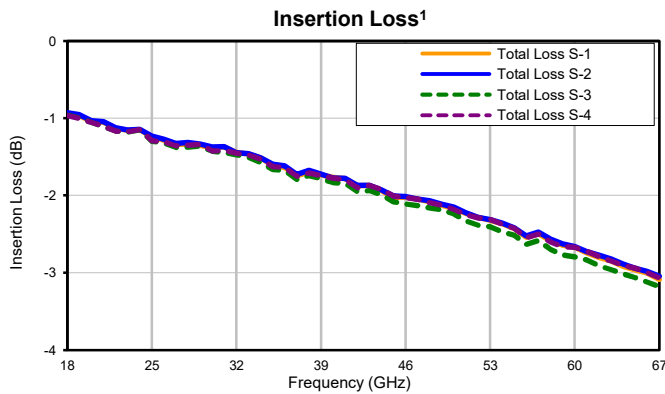
3. Isolations are representative of all combination of ports

4. Phase unbalance is average unbalance between any ports

5. VSWR is typical representation of all ports



Typical Performance Curves



Note:

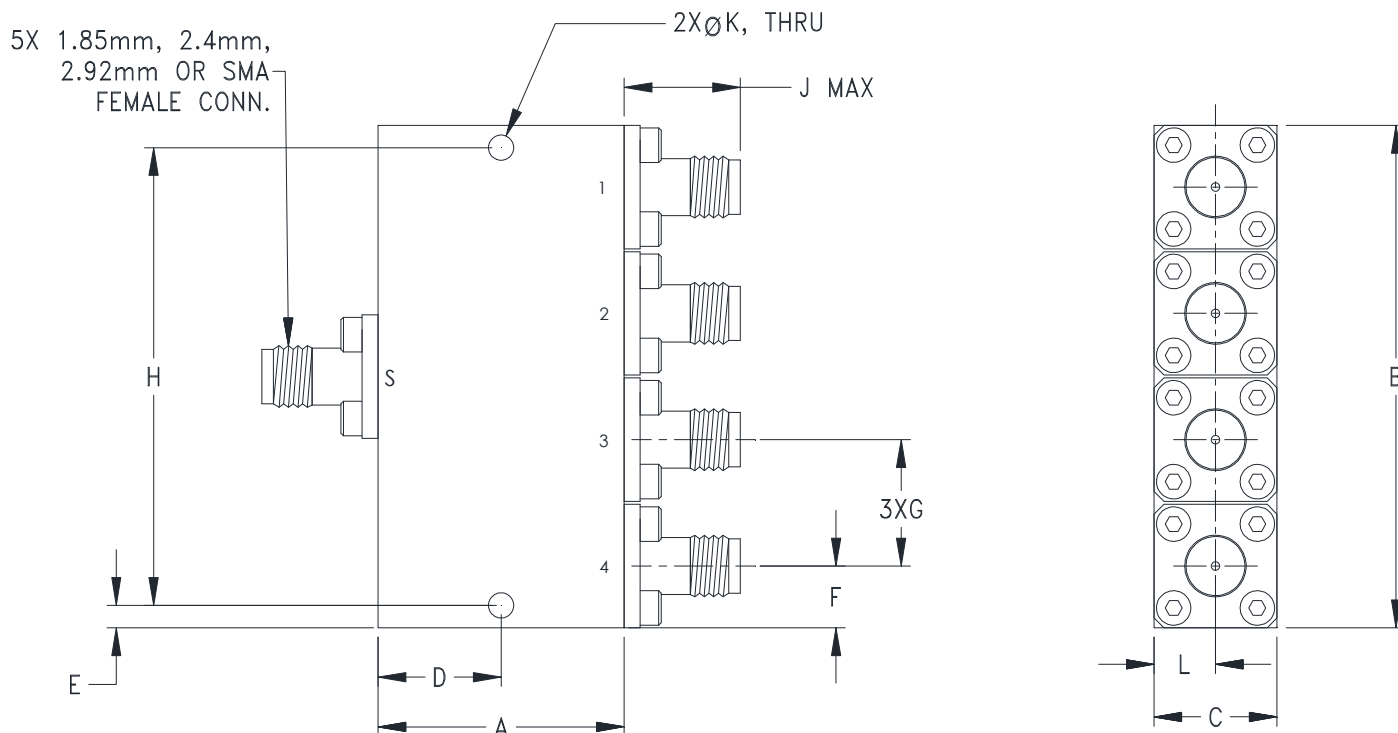
1. Insertion loss is loss above theoretical loss (6dB)
2. Amplitude unbalance is average unbalance between any ports
3. Isolations are representative of all combination of ports
4. Phase unbalance is average unbalance between any ports
5. VSWR is typical representation of all ports

Case Style

UU

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.

Mini-Circuits®
ISO 9001 ISO 14001 CERTIFIED

ALL NEW
minicircuits.com

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, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°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