Ultra-Wideband

Directional Coupler ZUDC-Series

50Ω Up to 50W 10, 20, and 30 dB 0.5 to 18 GHz

The Big Deal

- Ultra-wideband, 0.5 to 18 GHz
- Excellent Coupling Flatness, ±0.4 dB typ.
- Power Handling up to 50W

CASE STYLE: HT1967

Product Overview

The Mini-Circuits ZUDC family of ultra-wideband directional couplers offers exceptional performance spanning frequencies from 0.5 to 18 GHz. Available in models with 10, 20, and 30 dB coupling, these couplers provide excellent coupling flatness, good directivity, and power handling up to 50W. They are ideal for lab testing applications as well as for power monitoring over wide bands, among other applications.

Key Features

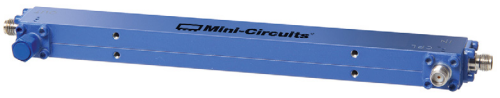
Feature	Advantages
Ultra-wide bandwidth	With a bandwidth spanning 0.5 to 18 GHz, ZUDC couplers are ideal for most lab testing applications, avoiding the need to switch components for different frequency bands.
Excellent Directivity • 22 dB at 4 GHz • 12 dB at 18 GHz	High directivity allows sampling of input powers with minimal detrimental effects due to output mismatches.
Excellent coupling flatness, +0.4 dB typ.	Excellent coupling flatness over the entire frequency range eliminates the need for compensation circuits in most cases.
Good Return Loss, 15 dB typ.	Good return loss over 0.5 to 18 GHz minimizes undesired reflections and resulting amplitude ripple.

Ultra-Wideband, DC Pass

Directional Coupler

ZUDC10-183+

50Ω 10dB Up to 50W 0.5 to 18 GHz



Generic photo used for illustration purposes only

CASE STYLE: HT1967

Connectors	Model
SMA	ZUDC10-183+

+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
DC Current	3A
Supplied Termination*	1W

* With load at coupled port (<2.0:1 VSWR)

Permanent damage may occur if any of these limits are exceeded

Coaxial Connections

INPUT	IN
OUTPUT	OUT
COUPLED	CPL
TERMINATION (50Ω) INCLUDED	—

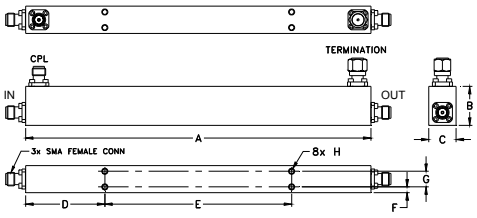
Features

- ultra wide frequency range, 0.5 to 18 GHz
- good coupling flatness, ±0.6 dB typ.
- good directivity, 22dB typ up to 4 GHz
- good VSWR, 1.4 typ up to 18 GHz, 1:15 up to 4 GHz
- DC current pass through input to output

Applications

- cellular
- lab use
- WiMax
- ISM
- GSM
- PCN

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E
6.47	.73	.51	1.48	3.500
164.34	18.54	12.95	37.59	88.90

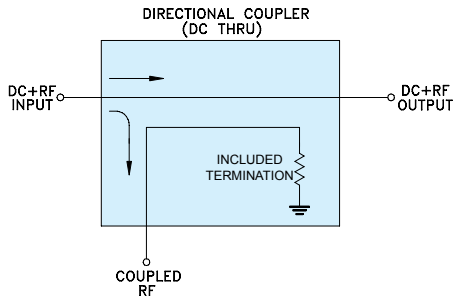
F	G	H		wt
.11	.293	#4-40		grams
2.79	7.44	UNC-2B		120.0

Electrical Specifications at 25°C

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Operating Frequency		0.5		18	GHz
Nominal Coupling (include flatness)	0.5 - 18	—	10±1.5	—	dB
Coupling Flatness	0.5 - 4	—	±0.3	±0.6	dB
	4 - 12.4		±0.3	±0.6	
	12.4 - 18		±0.4	±0.9	
Mainline Loss	0.5 - 4	—	0.8	1.1	dB
	4 -12.4	—	1.4	1.9	
	12.4 - 18	—	1.8	2.9	
Directivity	0.5 - 4	20	22	—	dB
	4 -12.4	14	17	—	
	12.4 - 18	—	12	—	
Return Loss (In & Out)	0.5 - 4	—	23	—	dB
	4 -12.4	—	17	—	
	12.4 - 18	—	15	—	
Return Loss (Coupling)	0.5 - 4	—	21	—	dB
	4 -12.4	—	18	—	
	12.4 - 18		16	—	
Input Power [1,2]	0.5 - 4	—	—	50	W
	4 -12.4	—	—	25	
	12.4 - 18	—	—	10	

1. At 25°C with no DC current. Derate linearly to 20, 10, 4W at 100°C
2. Peak power 1.5 KW

Electrical Schematic



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.
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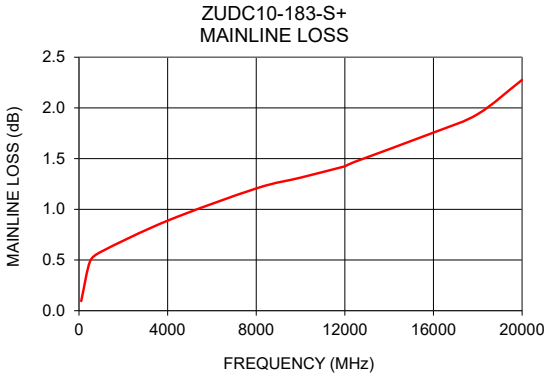
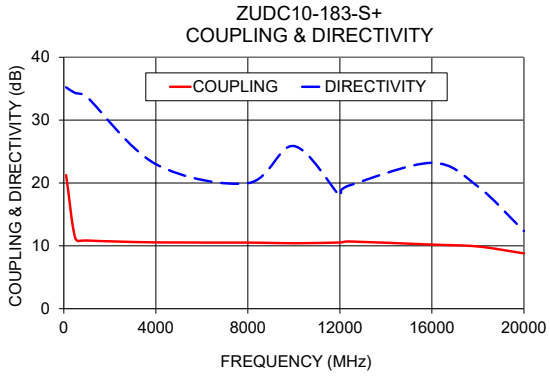
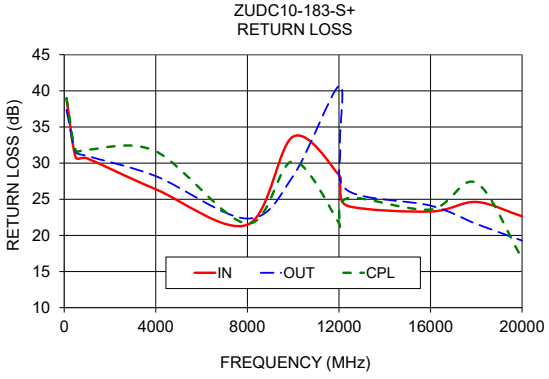
Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB) In	Return Loss (dB) Out	Return Loss (dB) Cpl
100	0.10	21.25	35.21	38.98	37.36	38.94
500	0.49	11.22	34.31	30.82	31.59	31.80
1000	0.58	10.86	33.70	30.66	30.99	31.87
4000	0.89	10.55	23.00	26.38	28.20	31.63
8000	1.21	10.52	19.97	21.48	22.33	21.63
10000	1.31	10.41	25.88	33.67	28.22	30.27
12000	1.42	10.53	17.92	28.36	40.68	21.72
12050	1.43	10.54	18.87	26.81	32.23	21.13
12400	1.46	10.70	19.60	24.06	26.17	25.16
16000	1.76	10.20	23.20	23.30	24.12	23.58
18000	1.94	9.90	19.44	24.62	21.59	27.27
20000	2.28	8.80	12.36	22.64	19.28	16.83







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