

Ultra-Wideband, DC Pass

# Directional Coupler

ZUDC10-83-S+

50Ω 10dB Up to 20W 0.3 to 8 GHz



CASE STYLE: HT1967-1

## The Big Deal

- Ultra-wideband, 0.3 to 8 GHz
- Excellent Coupling Flatness,  $\pm 0.8$  dB typ.
- Power Handling up to 20W

## Product Overview

Mini-Circuits' ZUDC10-83-S+ is an ultra-wideband directional coupler which offers exceptional performance spanning frequencies from 0.3 to 8 GHz. It provides excellent coupling flatness, good directivity, and power handling up to 20W. 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 0.3 to 8 GHz, the ZUDC10-83-S+ coupler is ideal for most lab testing applications, avoiding the need to switch components for different frequency bands.
Excellent Directivity <ul style="list-style-type: none"><li>• 24 dB at 6 GHz</li><li>• 22 dB at 8 GHz</li></ul>	High directivity allows sampling of input powers with minimal detrimental effects due to output mismatches.
Excellent coupling flatness, $\pm 0.8$ dB typ.	Excellent coupling flatness over the entire frequency range eliminates the need for compensation circuits in most cases.

### 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](http://www.minicircuits.com/MCLStore/terms.jsp)



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## ZUDC10-83-S+



*Generic photo used for illustration purposes only*

CASE STYLE: HT1967-1

Connectors	Model
SMA	ZUDC10-83-S+

**+RoHS Compliant**

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

### Maximum Ratings

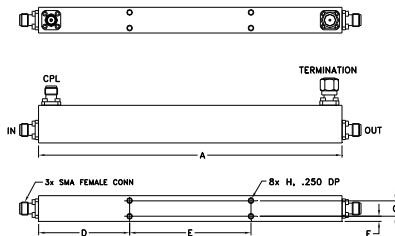
Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 85°C
DC Current	1A

Permanent damage may occur if any of these limits are exceeded

### Coaxial Connections

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

### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E
6.00	0.73	0.50	1.8	2.4
152.4	18.54	12.70	45.72	60.96
F	G	H	wt	
0.10	0.3	#4-40	grams	
2.54	7.62	UNC-2B	120	

### Features

- ultra wide frequency range, 0.3 to 8 GHz
- good directivity, 24dB typ.
- good VSWR, 1.15 typ.
- DC current pass through input to output

### Applications

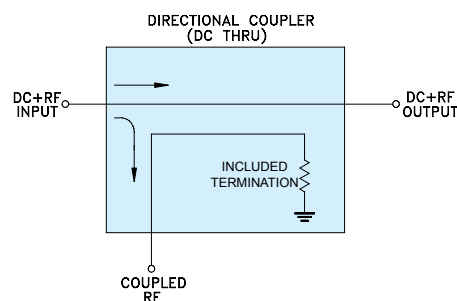
- cellular
- lab use
- WiMax
- ISM
- GSM
- PCN

### Electrical Specifications at 25°C

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Operating Frequency		0.3		8	GHz
Nominal Coupling	0.3 - 8	—	10±1.0	—	dB
Coupling Flatness	0.3 - 8	—	±0.8	±1.2	dB
Mainline Loss <sup>1,2</sup>	0.3 - 8	—	0.9	1.3	dB
Directivity <sup>3</sup>	0.3 - 6	20	24	—	dB
	6 - 8	18	22	—	dB
Return Loss (All ports)	0.3 - 6	20.8	24	—	dB
	6 - 8	17.7	22	—	dB
Input Power <sup>4</sup>	0.3 - 8	—	—	20	W

1. Doesn't include theoretical coupling loss.
2. Mainline loss max. degrades to 1.5 dB at 85°C
3. Directivity min. degrades to 16 dB at 85°C from 2-8 GHz.
4. Peak power max. 3kw (1μ, 2% duty)

### Electrical Schematic



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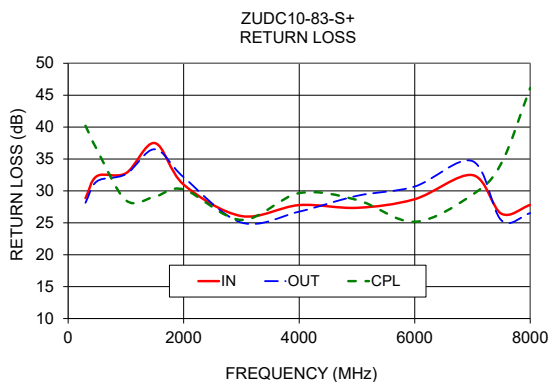
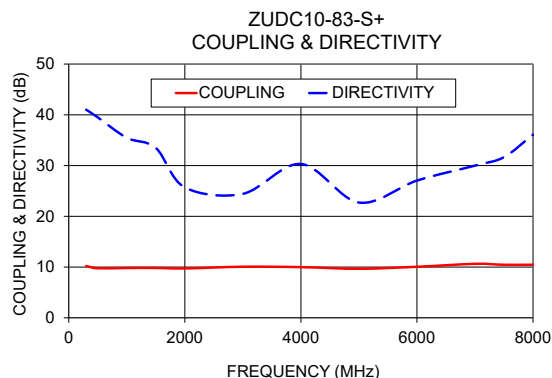
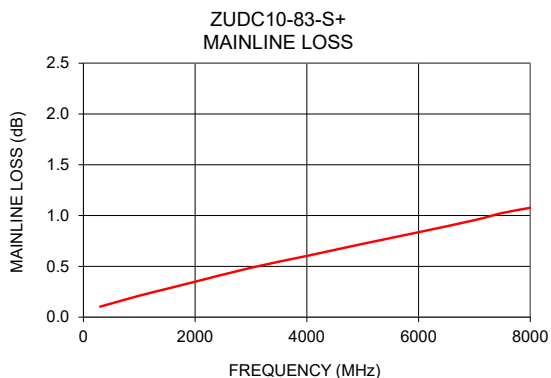
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200602  
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## Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB)		
				In	Out	Cpl
300	0.10	10.20	41.01	28.87	28.14	40.21
500	0.13	9.75	39.50	32.33	31.52	36.44
1000	0.21	9.81	35.48	32.77	32.63	28.53
1500	0.28	9.82	33.48	37.50	36.53	29.09
2000	0.35	9.72	25.70	30.99	32.14	30.23
3000	0.49	10.06	24.43	26.06	25.04	25.45
4000	0.60	9.98	30.32	27.78	26.75	29.66
5000	0.72	9.65	22.71	27.35	29.23	28.58
6000	0.84	10.06	27.04	28.70	30.69	25.16
7000	0.95	10.63	29.99	32.48	34.67	29.42
7500	1.03	10.45	31.66	26.43	25.40	34.34
8000	1.08	10.46	36.10	27.81	26.52	46.14

1. Doesn't include theoretical coupling loss. Mainline loss= insertion loss - theoretical loss (0.458 dB).



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