

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, ± 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">• 24 dB at 6 GHz• 22 dB at 8 GHz	High directivity allows sampling of input powers with minimal detrimental effects due to output mismatches.
Excellent coupling flatness, ± 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



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Maximum Ratings

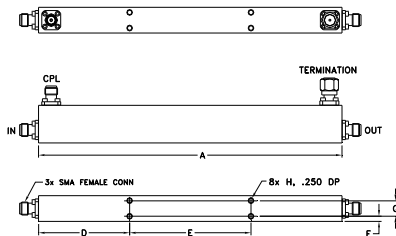
Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 85°C
DC Current	1A

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



Generic photo used for illustration purposes only

CASE STYLE: HT1967-1

Connectors	Model
SMA	ZUDC10-83-S+

+RoHS Compliant

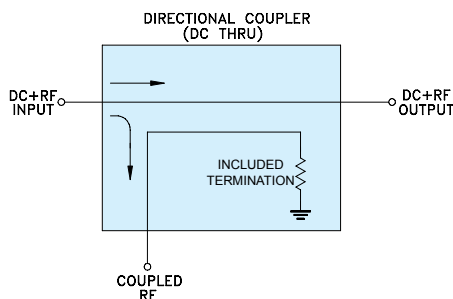
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

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 ^{1,2}	0.3 - 8	—	0.9	1.3	dB
Directivity ³	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 ⁴	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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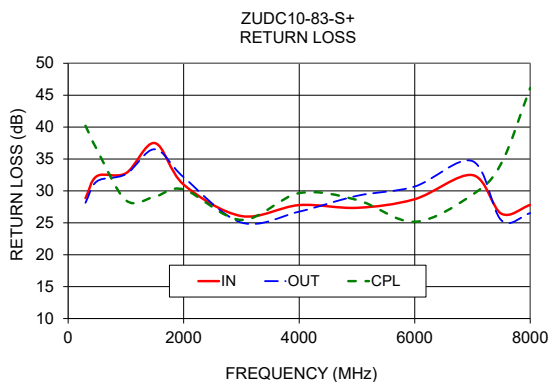
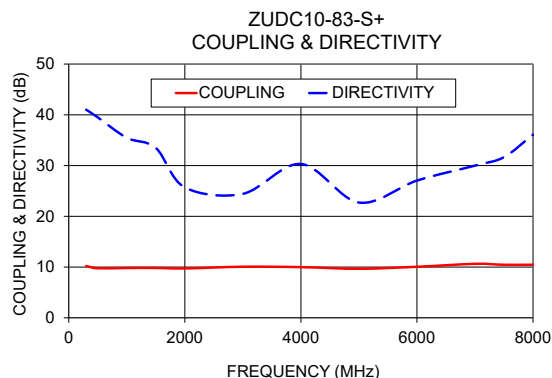
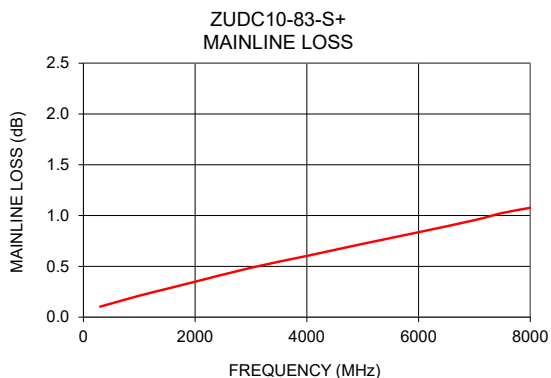
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ZUDC10-83-S+
ZL/CP/AM
200602
Page 2 of 3

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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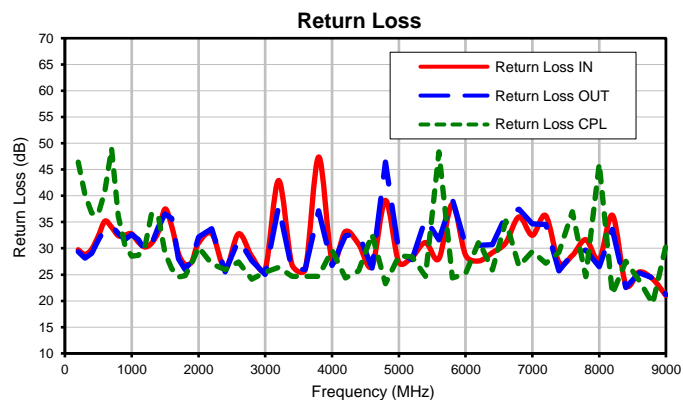
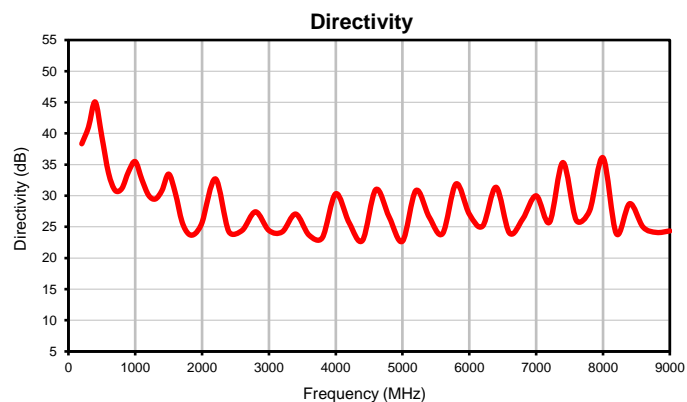
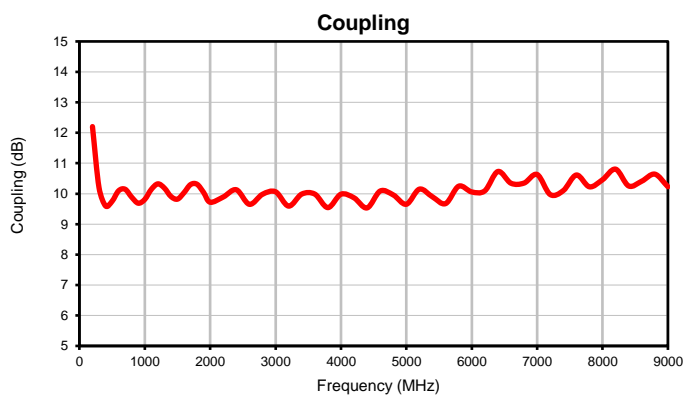
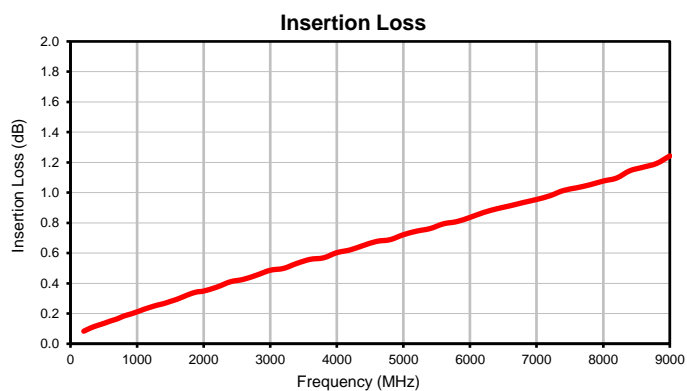
Ultra-Wideband, DC Pass
Directional Coupler

ZUDC10-83-S+

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING (dB)	DIRECTIVITY (dB)	RETURN LOSS		
				IN	OUT (dB)	CPL
200	0.08	12.20	38.34	29.73	29.37	46.41
300	0.10	10.20	41.01	28.87	28.14	40.21
400	0.12	9.60	45.06	29.82	29.03	36.72
500	0.13	9.75	39.50	32.33	31.52	36.44
600	0.15	10.10	33.65	35.18	33.80	40.85
700	0.16	10.14	30.84	34.01	34.28	49.01
800	0.18	9.88	31.17	32.40	32.83	36.10
900	0.20	9.69	33.87	32.52	31.68	30.58
1000	0.21	9.81	35.48	32.77	32.63	28.53
1100	0.23	10.14	32.58	31.18	31.64	28.70
1200	0.24	10.32	30.07	30.26	29.43	30.54
1300	0.26	10.18	29.47	31.00	30.78	36.60
1400	0.27	9.91	30.84	33.18	34.07	36.19
1500	0.28	9.82	33.48	37.50	36.53	29.09
1600	0.29	10.03	30.42	34.20	35.72	26.10
1700	0.31	10.30	25.82	29.03	28.03	24.52
1800	0.33	10.31	23.84	26.94	25.95	24.76
1900	0.34	10.04	23.95	27.39	27.85	27.20
2000	0.35	9.72	25.70	30.99	32.14	30.23
2200	0.38	9.89	32.71	32.80	33.77	27.05
2400	0.41	10.13	24.25	26.15	25.50	25.92
2600	0.43	9.65	24.43	32.77	31.65	27.42
2800	0.45	9.98	27.42	28.45	27.68	24.10
3000	0.49	10.06	24.43	26.06	25.04	25.45
3200	0.50	9.59	24.20	42.92	37.99	26.39
3400	0.53	9.99	27.06	26.92	25.87	24.66
3600	0.56	9.99	23.68	25.99	25.99	24.69
3800	0.57	9.54	23.26	47.39	37.13	24.64
4000	0.60	9.98	30.32	27.78	26.75	29.66
4200	0.62	9.86	25.69	33.20	32.40	24.35
4400	0.65	9.53	22.81	30.76	32.79	25.69
4600	0.68	10.09	30.99	26.59	26.25	32.66
4800	0.69	9.96	26.58	39.13	46.43	23.24
5000	0.72	9.65	22.71	27.35	29.23	28.58
5200	0.75	10.15	30.83	28.35	27.86	28.39
5400	0.76	9.90	26.56	31.10	35.61	24.68
5600	0.79	9.67	23.92	28.03	31.60	48.37
5800	0.81	10.25	31.89	38.40	39.37	24.37
6000	0.84	10.06	27.04	28.70	30.69	25.16
6200	0.87	10.09	25.14	27.59	30.56	31.29
6400	0.89	10.73	31.36	29.18	30.71	25.91
6600	0.91	10.34	24.01	31.02	36.17	35.20
6800	0.93	10.35	26.29	35.98	37.45	26.62
7000	0.95	10.63	29.99	32.48	34.67	29.42
7200	0.98	9.97	25.75	36.23	34.52	27.14
7400	1.01	10.10	35.33	27.30	25.71	29.23
7600	1.03	10.61	26.06	28.67	28.91	36.96
7800	1.05	10.23	27.60	31.66	29.69	24.59
8000	1.08	10.46	36.10	27.81	26.52	46.14
8200	1.10	10.81	23.91	36.29	33.64	21.31
8400	1.14	10.25	28.73	23.09	22.53	27.50
8600	1.17	10.41	24.96	25.50	25.32	23.86
8800	1.19	10.64	24.11	24.18	24.38	19.47
9000	1.24	10.23	24.35	21.02	21.19	30.50

Typical Performance Curves

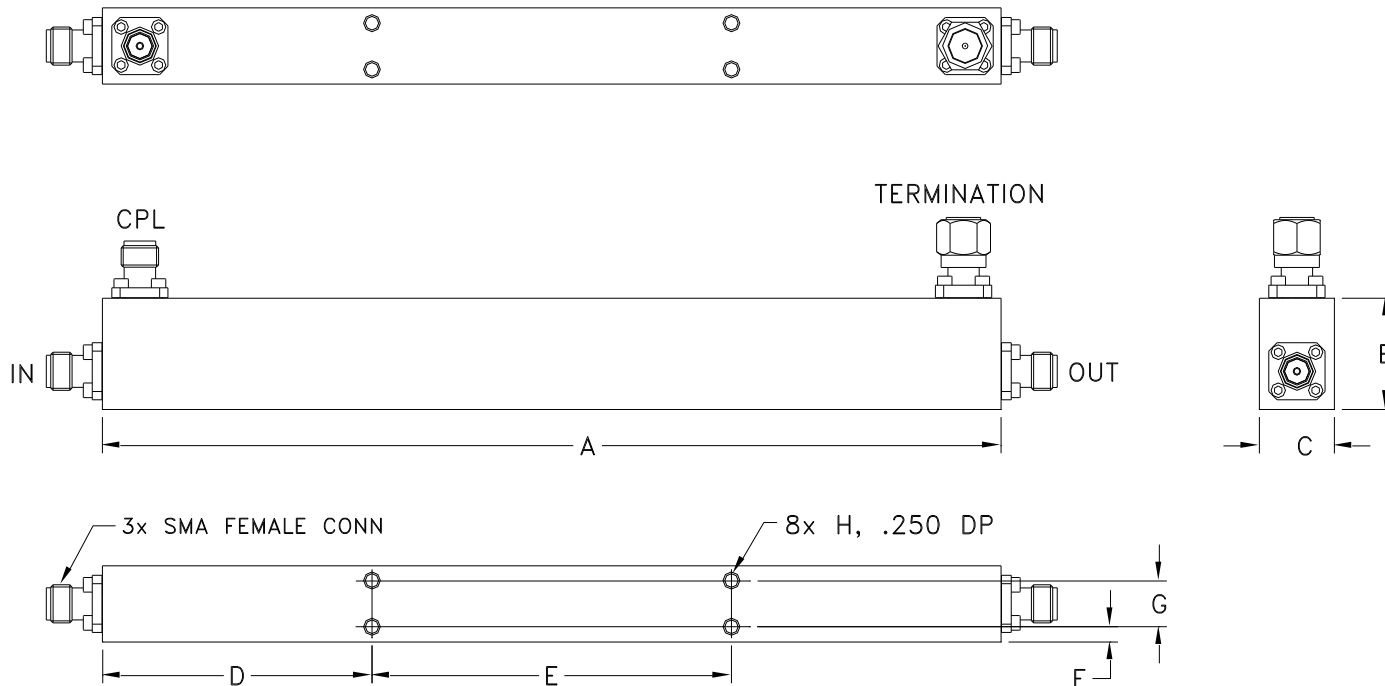


Case Style

HT

Outline Dimensions

HT1967-1



CASE #	A	B	C	D	E	F	G	H	J	K
HT1967-1	6.00 (152.40)	.73 (18.54)	.50 (12.70)	1.80 (45.72)	2.400 (60.96)	.10 (2.54)	.300 (7.62)	#4-40 UNC-2B	-- --	-- --

CASE #	L	M	WT. GRAM
HT1967-1	-- --	-- --	120.0

Dimensions are in inches (mm). Tolerances: 2Pl. $\pm .03$; 3Pl. $\pm .015$

Notes:

1. Case material: Aluminum alloy.
2. Case finish: Painting. Color: Blue, Pantone 286.

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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 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 85° C Ambient Environment	Individual Model Data Sheet
HAST	130°C, 85% RH, 96 hours	JESD22-A110
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutectic Process: 225°C peak Pb-Free Process, 245°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Vibration (High Frequency)	20g peak, 20-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-883, Method 2007.3, Condition A
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215