Wideband, DC Pass

Directional Couplers ZUDC-Series

50Ω Up to 20W 10, 15, 20, and 30 dB 2 to 18 GHz

The Big Deal

- Wideband, 2 to 18 GHz
- Excellent Coupling Flatness, ±0.4 dB typ.
- Power Handling up to 20W

CASE STYLE: HT2628

Product Overview

The Mini-Circuits ZUDC family of wideband directional couplers offers exceptional performance spanning frequencies from 2 to 18 GHz. Available in models with 10, 15, 20, and 30 dB coupling, these couplers provide excellent coupling flatness, good directivity, and power handling up to 20W. They are ideal for lab testing applications as well as for power monitoring over wide bands, among other applications.

Key Features

Feature	Advantages
Wide bandwidth	With a bandwidth spanning 2 to 18 GHz, ZUDC couplers are ideal for most lab testing applications, avoiding the need to switch components for different frequency bands.
Excellent Directivity • 17 dB typ. up to 18 GHz	High directivity allows sampling of input powers with minimal detrimental effects due to output mismatches.
Excellent coupling flatness • +0.4 dB typ. up to 18 GHz	Excellent coupling flatness over the entire frequency range eliminates the need for compensation circuits in most cases.
Good Return Loss • 15 dB typ. up to 18 GHz	Good return loss over 2 to 18 GHz minimizes undesired reflections and resulting amplitude ripple.

Wideband, DC Pass

Directional Coupler

ZUDC10-02183-S+

50Ω 10dB Up to 20W 2 to 18 GHz

Generic photo used for illustration purposes only

CASE STYLE: HT2628

Connectors	Model
SMA-Fem	ZUDC10-02183-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 100°C
Supplied Termination*	1W

* Up to 50°C derate linearly to 350 mW at 100°C

Permanent damage may occur if any of these limits are exceeded

Features

- Wide frequency range, 2 to 18 GHz
- Good coupling flatness, ±0.4 dB typ.
- Good directivity, 17 dB typ. up to 18 GHz
- Good return loss, 15 dB typ. up to 18 GHz
- DC current pass through input to output

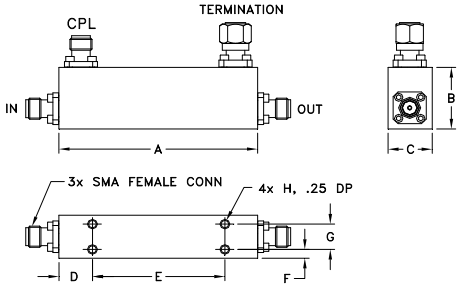
Applications

- Cellular infrastructure
- Military
- Lab use

Coaxial Connections

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

Outline Drawing

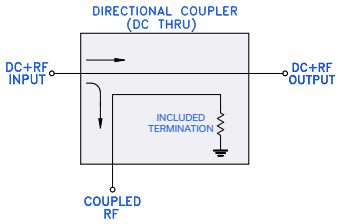


Outline Dimensions (inch / mm)

A	B	C	D	E
2.25	0.73	0.50	0.38	1.50
57.15	18.54	12.70	9.65	38.10

F	G	H	wt
0.10	0.30	#4-40	grams
2.54	7.62	UNC-2B	40

Electrical Schematic



Electrical Specifications at 25°C

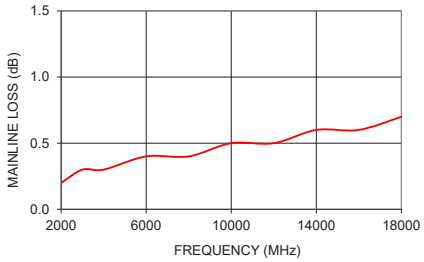
Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Operating Frequency		2		18	GHz
Nominal Coupling	2 – 18	—	10±1	—	dB
Coupling Flatness	2 – 18	—	±0.4	±0.65	dB
Mainline Loss	2 – 18	—	0.3	1.5	dB
Directivity	2 – 18	15	25	—	dB
Return Loss (In & Out)	2 – 18	14	26	—	dB
Return Loss (Coupling)	2 – 18	14	26	—	dB
Input Power**	2 – 18	—	—	20	W

**Up to 85°C derate linearly to 13.7W at 100°C

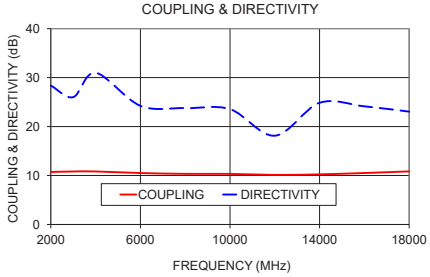
Typical Performance Data

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
2000	0.2	10.7	28.4	36.9	39.9	40.5
3000	0.3	10.8	26.0	21.5	21.6	21.8
4000	0.3	10.8	31.0	25.3	24.5	43.0
6000	0.4	10.5	24.2	20.1	19.9	32.5
8000	0.4	10.3	23.8	38.8	35.1	28.2
10000	0.5	10.3	23.6	20.3	20.7	24.2
12000	0.5	10.1	18.1	26.5	23.3	26.2
14000	0.6	10.2	24.9	25.5	21.6	24.1
16000	0.6	10.5	24.1	18.3	19.7	22.4
18000	0.7	10.8	23.0	14.7	20.5	19.7

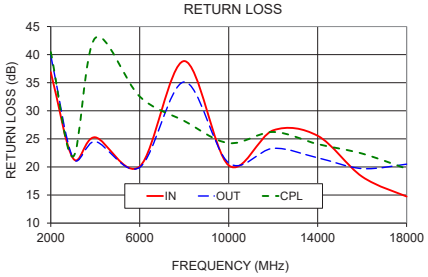
ZUDC10-02183-S+
MAINLINE LOSS



ZUDC10-02183-S+
COUPLING & DIRECTIVITY



ZUDC10-02183-S+
RETURN LOSS



Notes

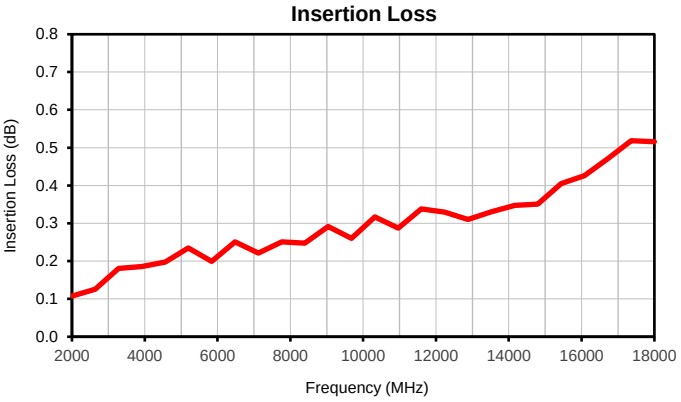
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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

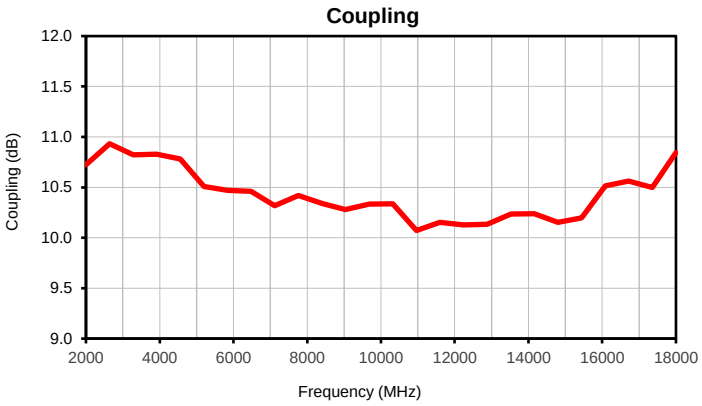
Directional Coupler ZUDC10-02183-S+

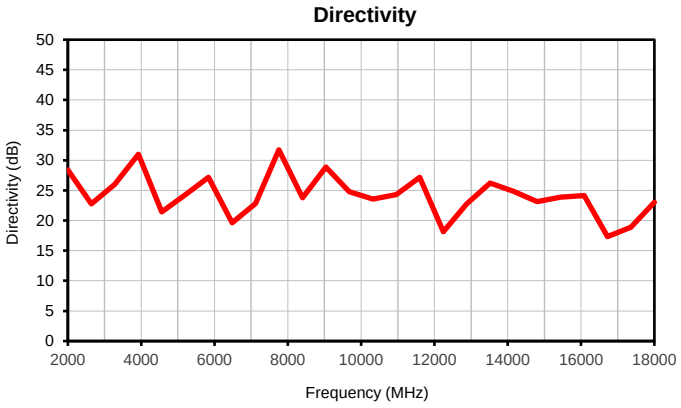
Typical Performance Data

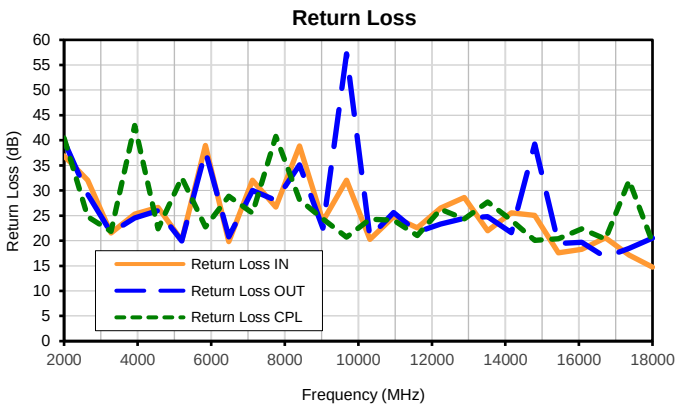
FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING (dB)	DIRECTIVITY (dB)	RETURN LOSS (dB)		
				IN	OUT	CPL
2000	0.11	10.73	28.37	36.88	39.86	40.45
2640	0.13	10.93	22.75	32.08	29.26	24.79
3280	0.18	10.82	26.01	21.54	21.57	21.84
3920	0.19	10.83	30.98	25.27	24.54	42.96
4560	0.20	10.78	21.43	26.66	25.97	22.36
5200	0.23	10.51	24.23	20.08	19.93	32.54
5840	0.20	10.47	27.18	38.97	37.77	22.72
6480	0.25	10.46	19.63	19.78	20.76	28.86
7120	0.22	10.32	22.83	32.03	29.99	25.51
7760	0.25	10.42	31.73	26.68	28.03	40.76
8400	0.25	10.34	23.77	38.85	35.13	28.19
9040	0.29	10.28	28.88	23.88	22.50	24.32
9680	0.26	10.34	24.76	32.08	57.23	20.71
10320	0.32	10.34	23.56	20.28	20.72	24.25
10960	0.29	10.07	24.31	24.81	25.61	24.06
11600	0.34	10.15	27.19	22.59	21.72	21.02
12240	0.33	10.13	18.13	26.52	23.31	26.23
12880	0.31	10.13	22.74	28.63	24.44	24.31
13520	0.33	10.23	26.19	22.00	24.77	27.69
14160	0.35	10.24	24.86	25.55	21.63	24.07
14800	0.35	10.15	23.12	25.06	39.24	20.06
15440	0.40	10.20	23.86	17.57	19.45	20.38
16080	0.43	10.51	24.13	18.27	19.70	22.38
16720	0.47	10.56	17.33	20.55	16.72	20.31
17360	0.52	10.50	18.86	17.11	18.49	32.01
18000	0.52	10.84	23.05	14.74	20.50	19.68

Typical Performance Curves



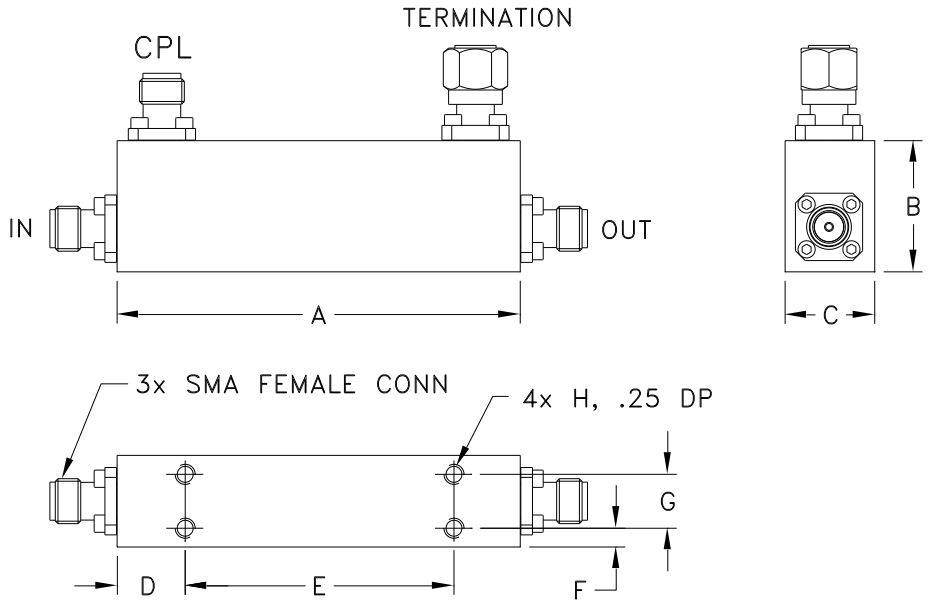






Case Style HT

Outline Dimensions HT2628



CASE #	A	B	C	D	E	F	G	H	J	K
HT2628	2.25 (57.15)	.73 (18.54)	.50 (12.70)	.38 (9.65)	1.50 (38.10)	.10 (2.54)	.30 (7.62)	#4-40 UNC-2B	-- --	-- --

CASE #	L	M	WT. GRAM
HT2628	-- --	-- --	40.0

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

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Style: Painting Color: Pantone 286.

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Mini-Circuits

Environmental Specifications ENV77

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 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