

# DC Pass Bi-Directional Coupler

## ZABDC20-252H+

50Ω Up to 100W 800 to 2500 MHz

### Maximum Ratings

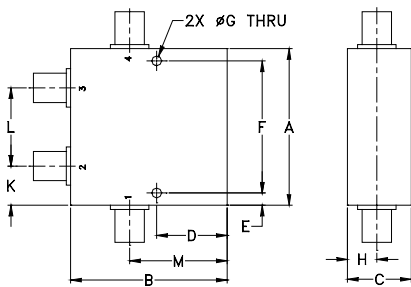
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
DC Current	2.0 A

\* Case temperature is defined as temperature on ground leads. Permanent damage may occur if any of these limits are exceeded.

### Coaxial Connections

INPUT	1
OUTPUT	4
COUPLED (forward)	2
COUPLED (reverse)	3

### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G						
2.00	2.00	.88	.90	.156	1.688	.125						
50.80	50.80	22.35	22.86	3.96	42.88	3.18						
H	J	K	L	M			wt					
.38	---	.50	1.00	1.25			grams					
9.65	---	12.70	25.40	31.75			225					

### Features

- excellent mainline loss, 0.17 dB typ.
- excellent directivity, 28 dB typ.
- high power, up to 100W
- rugged shielded case
- DC current through input to output 2.0A Max. at 50 watt RF input power

### Applications

- PCS/DCS/UMTS
- power leveling & monitoring
- VSWR measurement



Generic photo used for illustration purposes only

CASE STYLE: DD477-1

Connectors	Model
SMA	ZABDC20-252H-S+
N-TYPE	ZABDC20-252H-N+

### +RoHS Compliant

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

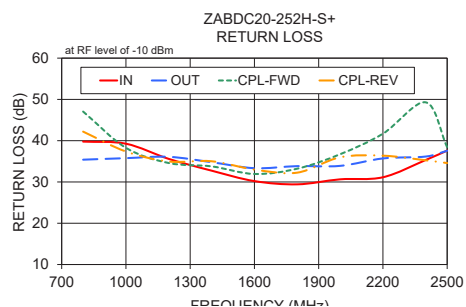
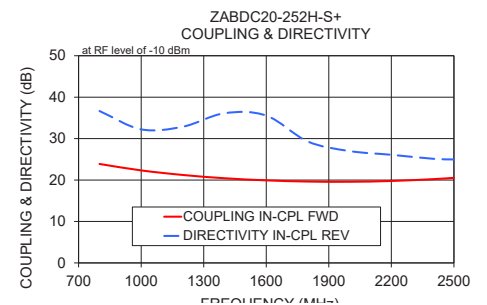
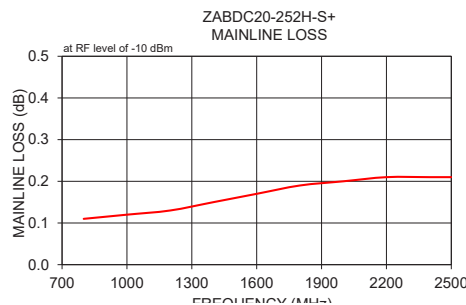
### Bi-Directional Coupler Electrical Specifications

FREQ. (MHz)	COUPLING (dB)		MAINLINE LOSS <sup>1</sup> (dB)		DIRECTIVITY (dB)		VSWR (:1)	POWER INPUT (W)		
	Norm.	Flatness	Typ.	Max.	Typ.	Min.		Typ.	Max.	
$f_L$ - $f_U$										
800-2500			0.20	0.35			28	20	1.05	50
800-1000	23±1.0	±0.9	0.15	0.25	30	23	1.05		100	
1300-2500	19.7±0.7	±0.75	0.20	0.35	28	20	1.05		50	

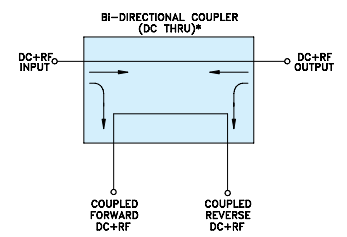
1. Mainline loss includes theoretical power loss at coupled port.

### Typical Performance Data

Frequency (MHz)	Mainline Loss (dB)	Coupling (dB)		Directivity (dB)		Return Loss (dB)			
		In-Out	In-Cpl Fwd	Out-Cpl Rev	Out-Cpl Fwd	In-Cpl Rev	In	Out	Cpl Fwd
800.00	0.11	23.88	23.85	32.78	36.66	39.78	35.40	47.06	42.20
1000.00	0.12	22.32	22.28	30.17	32.23	39.27	35.77	38.27	37.38
1200.00	0.13	21.22	21.15	31.42	32.87	35.59	36.09	34.59	34.96
1400.00	0.15	20.43	20.38	35.46	36.13	32.74	34.79	33.78	35.02
1600.00	0.17	19.92	19.86	42.35	35.55	30.21	33.34	31.94	33.00
1800.00	0.19	19.63	19.58	32.79	29.28	29.43	33.84	33.22	32.26
2000.00	0.20	19.58	19.54	28.91	26.99	30.64	33.90	36.72	35.98
2200.00	0.21	19.77	19.73	28.11	26.09	31.14	35.70	41.69	36.37
2400.00	0.21	20.21	20.16	27.14	25.13	35.33	36.16	49.29	35.25
2500.00	0.21	20.53	20.48	27.45	24.97	37.60	37.56	38.44	34.58



### Electrical Schematic



\* ELECTRICAL SCHEMATIC IS FOR BI-DIRECTIONAL COUPLER WITHOUT INTERNAL TRANSFORMERS AND RESISTORS.

### Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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/WCLStore/terms.jsp](http://www.minicircuits.com/WCLStore/terms.jsp)



# Bi-Directional Coupler

# ZABDC20-252H-S+

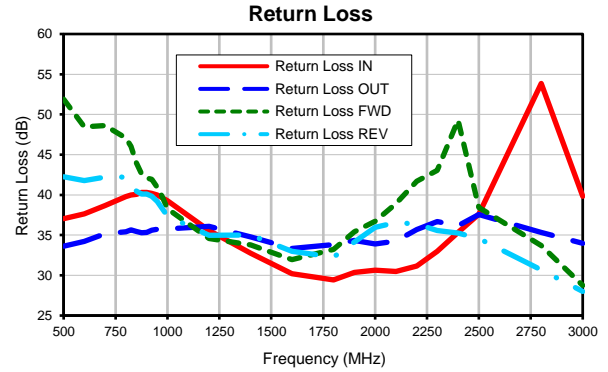
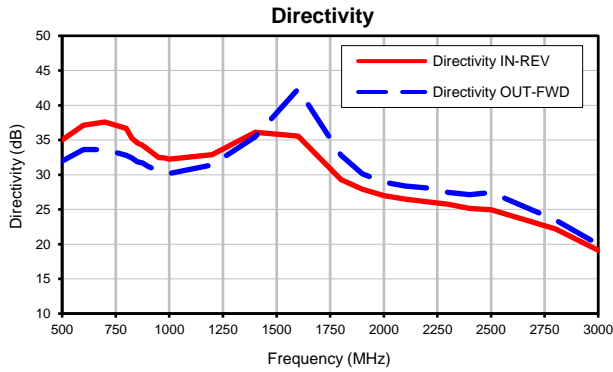
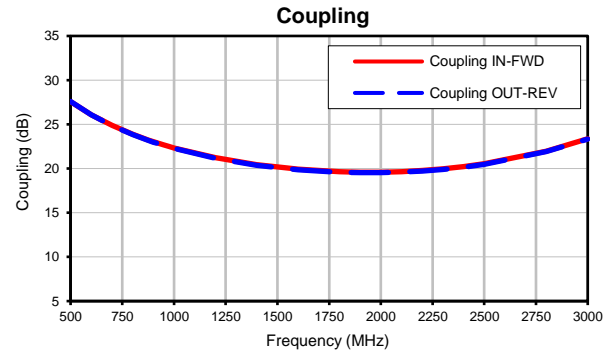
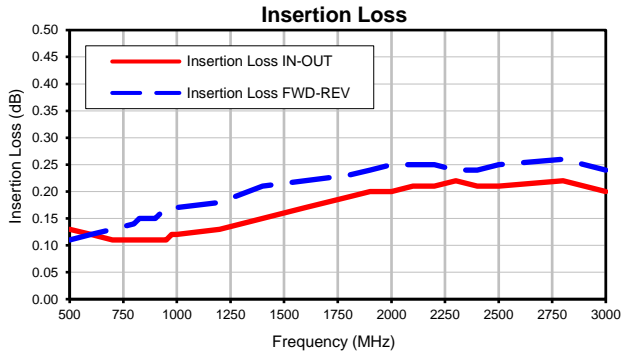
## Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)		COUPLING (dB)		DIRECTIVITY (dB)		RETURN LOSS (dB)			
	IN-OUT	FWD-REV	IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
500	0.13	0.11	27.57	27.59	35.01	31.95	37.03	33.63	51.89	42.25
600	0.12	0.12	26.09	26.09	37.11	33.64	37.65	34.20	48.47	41.77
700	0.11	0.13	24.88	24.87	37.59	33.60	38.66	35.17	48.63	42.23
800	0.11	0.14	23.88	23.85	36.66	32.78	39.78	35.40	47.06	42.20
825	0.11	0.15	23.67	23.63	35.30	32.40	40.00	35.66	46.02	41.34
850	0.11	0.15	23.45	23.41	34.60	31.88	40.06	35.47	43.98	40.47
875	0.11	0.15	23.23	23.20	34.23	31.68	40.30	35.28	42.61	40.10
900	0.11	0.15	23.03	22.99	33.68	31.23	40.31	35.34	42.11	40.11
925	0.11	0.16	22.85	22.81	33.05	30.87	40.17	35.62	41.92	39.84
950	0.11	0.16	22.67	22.63	32.46	30.53	39.98	35.75	40.95	39.20
975	0.12	0.17	22.49	22.45	32.43	30.20	39.63	35.81	39.75	38.28
1000	0.12	0.17	22.32	22.28	32.23	30.17	39.27	35.77	38.27	37.38
1200	0.13	0.18	21.22	21.15	32.87	31.42	35.59	36.09	34.59	34.96
1400	0.15	0.21	20.43	20.38	36.13	35.46	32.74	34.79	33.78	35.02
1600	0.17	0.22	19.92	19.86	35.55	42.35	30.21	33.34	31.94	33.00
1800	0.19	0.23	19.63	19.58	29.28	32.79	29.43	33.84	33.22	32.26
1900	0.20	0.24	19.58	19.54	27.91	30.13	30.35	34.34	35.41	34.12
2000	0.20	0.25	19.58	19.54	26.99	28.91	30.64	33.90	36.72	35.98
2100	0.21	0.25	19.65	19.61	26.48	28.36	30.48	34.27	38.92	36.56
2200	0.21	0.25	19.77	19.73	26.09	28.11	31.14	35.70	41.69	36.37
2300	0.22	0.24	19.96	19.91	25.73	27.46	32.97	36.69	43.05	35.56
2400	0.21	0.24	20.21	20.16	25.13	27.14	35.33	36.16	49.29	35.25
2500	0.21	0.25	20.53	20.48	24.97	27.45	37.60	37.56	38.44	34.58
2800	0.22	0.26	21.96	21.93	22.19	23.49	53.85	35.33	33.72	30.68
3000	0.20	0.24	23.38	23.35	19.12	19.98	39.81	33.98	28.75	28.00

# Bi-Directional Coupler

## Typical Performance Curves

# ZABDC20-252H-S+



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

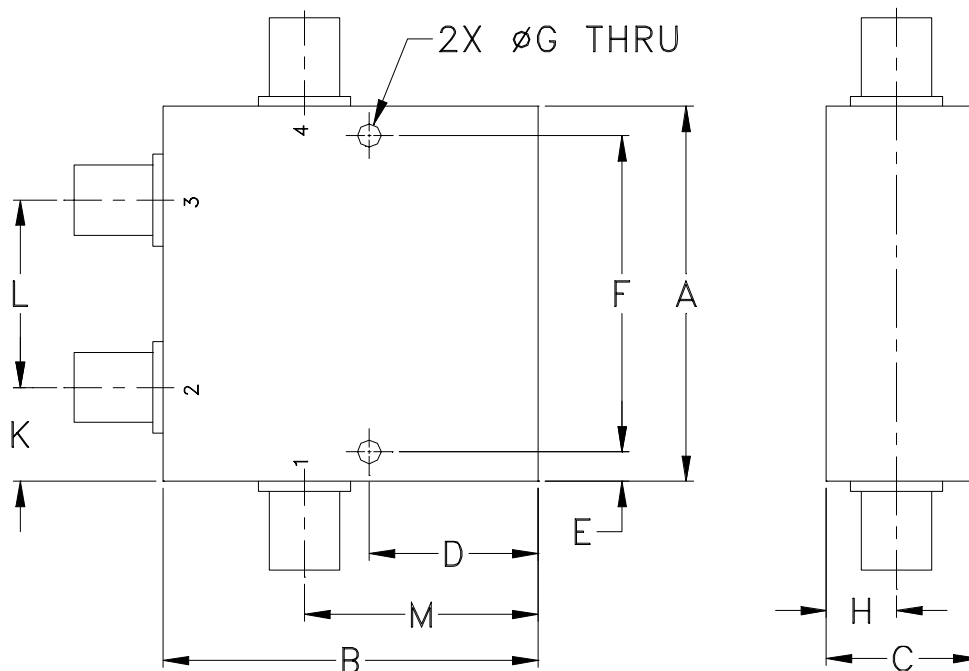


The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

IF/RF MICROWAVE COMPONENTS

REV. OR  
ZABDC20-252H-S+  
12/28/2018  
Page 1 of 1

### Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	WT, GRAM
DD477-1	2.00 (50.80)	2.00 (50.80)	.88 (22.35)	.90 (22.86)	.156 (3.96)	1.688 (42.88)	.125 (3.18)	.38 (9.65)	-- --	.50 (12.70)	1.00 (25.40)	1.25 (31.75)	225

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: Clear chemical conversion coating, non-chrome or trivalent chrome based.



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.

<b>Specification</b>	<b>Test/Inspection Condition</b>	<b>Reference/Spec</b>
Operating Temperature	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
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