Coaxial

Bi-Directional Coupler ZFBDC26-52HP-S+

50Ω Up to 50W 30 to 540 MHz

The Big Deal

- High power handling, up to 50W
- Low mainline loss, 0.25 dB
- High directivity, 23 dB typ.
- Excellent return loss, 22 dB typ

CASE STYLE: JD1252

Product Overview

Mini-Circuits' ZFBDC26-52HP-S+ is a coaxial high power, bi-directional coupler supporting applications from 30 to 540 MHz. This model is capable of handling up to 50W input power provides high directivity, low mainline loss, and excellent return loss. The coupler comes housed in a aluminum alloy case (2.00 x 2.00 x 0.88") with SMA connectors.

Key Features

Feature	Advantages
High power handling, 50W	Usable in many systems with high-power requirements
Low mainline loss, 0.25 dB typ.	Provides excellent through-path signal power transmission
Good Directivity, 23 dB typ.	High directivity allows accurate signal sampling through the coupled port with minimal measurement error.
Excellent (input/output/coupling) return loss, 22 dB typ.	Provides excellent matching in 50Ω systems with minimal signal reflection.

Coaxial

Bi-Directional Coupler ZFBDC26-52HP-S+

50Ω Up to 50W 30 to 540 MHz

Features

- Excellent mainline loss, 0.25 dB typ.
- Excellent directivity 23 dB typ.
- High Power, up to 50W

Applications

- Power leveling & monitoring
- VHF/UHF communication
- Aircraft communication band
- Military VHF/UHF radios
- Medical communication

Generic photo used for illustration purposes only

CASE STYLE: JD1252

Connectors	Model
SMA-Female	ZFBDC26-52HP-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 (MHz)	Min.	Typ.	Max.	Units
Frequency Range		30		540	MHz
Mainline Loss[1]	30 - 50	—	0.25	0.45	dB
	50 - 540	—	0.12	0.45	
Nominal Coupling	30 - 540	—	26±1.0	—	dB
Coupling Flatness (±)	30 - 260	—	0.4	0.6	dB
	260 - 540	—	0.7	1.0	
Directivity	30 - 50	17	20	—	dB
	50 - 540	16	24	—	
Return Loss (Input)	30 - 100	12	15	—	dB
	100 - 540	18	25	—	
Return Loss (Output)	30 - 100	12	15	—	dB
	100 - 540	18	25	—	
Return Loss (Coupling)	30 - 100	12	15	—	dB
	100 - 540	18	25	—	
Input Power[2]	30 - 540	—	—	50	W

1. Mainline loss includes theoretical power loss at coupled port.
2. At 25°C case temperature. Derate to 25W linearly at 65°C case temperature.

Maximum Ratings

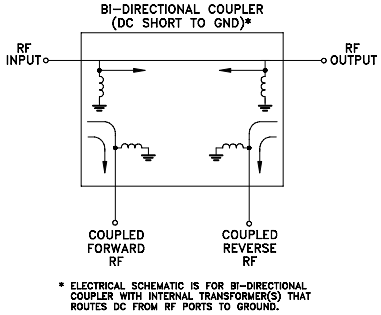
Parameter	Ratings
Operating Temperature	-55°C to 65°C
Storage Temperature	-55°C to 100°C

Permanent damage may occur if any of these limits are exceeded.

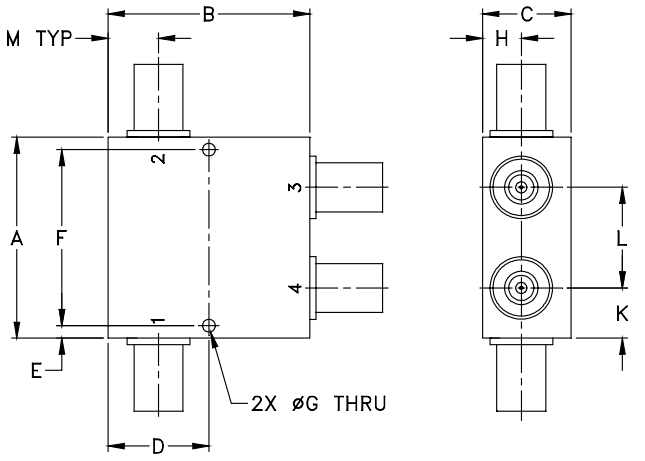
Connections

Port Markings	Function
1	INPUT
2	OUTPUT
4	Coupled In
3	Coupled Out

Electrical Schematic



Outline Drawing



Outline Dimensions (inch / mm)

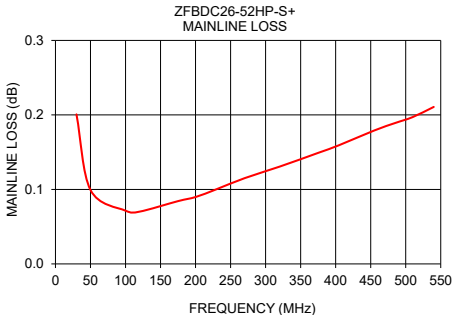
A	B	C	D	E	F	G
2.00	2.00	.88	1.000	0.13	1.750	0.125
50.80	50.80	22.35	25.40	3.30	44.45	3.18

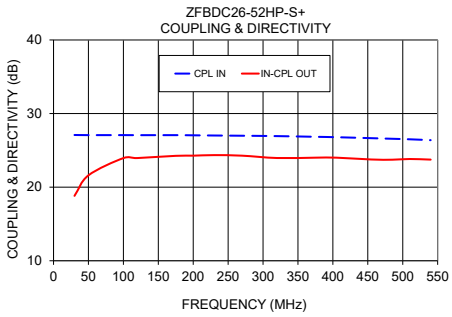
H	J	K	L	M	wt
0.38	--	0.50	1.00	0.50	grams
9.65	--	12.70	25.40	12.70	250.0

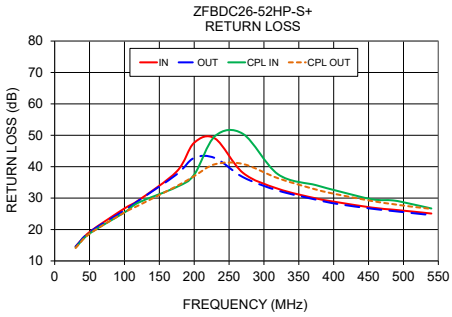
Typical Performance Data

Frequency (MHz)	Mainline Loss[1] (dB)	Coupling (dB)		Directivity (dB)		Return Loss (dB)			
	In-Out	CPL In	CPL Out	Out-CPL-In	In-CPL-Out	In	Out	CPL In	CPL Out
30	0.20	27.09	27.38	20.05	18.82	14.60	14.57	14.26	14.13
50	0.10	27.07	27.14	22.34	21.61	19.20	19.16	18.71	18.63
100	0.07	27.07	27.02	24.08	23.95	26.71	26.09	25.44	25.43
120	0.07	27.06	27.00	24.12	23.95	29.27	29.17	28.55	27.64
175	0.08	27.07	26.94	23.37	24.26	38.49	37.58	33.55	33.82
200	0.09	27.04	26.92	23.29	24.28	47.63	42.80	37.47	37.01
230	0.10	27.02	26.88	23.19	24.35	48.95	42.74	49.77	40.80
270	0.12	26.99	26.82	22.38	24.28	38.03	36.67	50.44	40.86
320	0.13	26.94	26.73	21.69	23.96	32.99	32.41	37.61	36.34
375	0.15	26.84	26.61	21.22	24.01	29.89	29.49	34.10	32.71
405	0.16	26.79	26.54	20.79	24.01	28.70	28.15	32.31	31.19
455	0.18	26.66	26.40	20.14	23.76	26.97	26.62	29.62	29.06
485	0.19	26.57	26.29	20.15	23.73	26.32	25.89	29.27	28.08
510	0.20	26.50	26.20	19.89	23.83	25.79	25.30	28.18	27.34
540	0.21	26.38	26.07	19.84	23.74	25.09	24.59	26.70	26.56

1. Mainline loss includes coupling loss







Additional 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

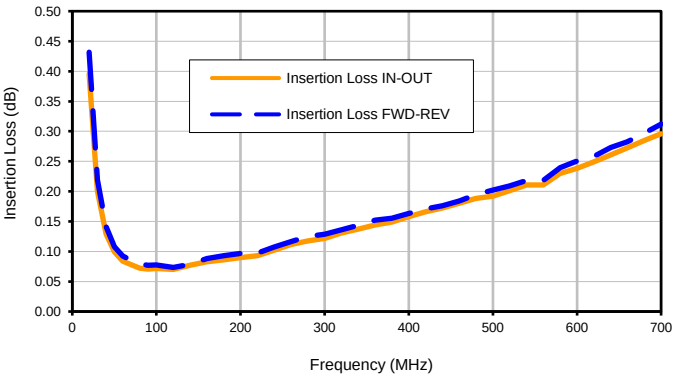
Bi-Directional Coupler ZFBDC26-52HP-S+

Typical Performance Data

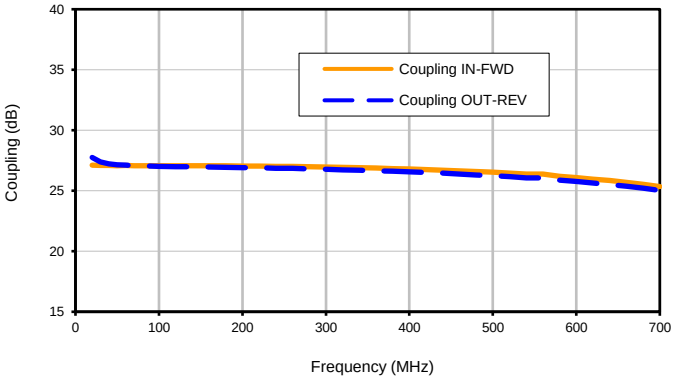
FREQ. (MHz)	INSERTION LOSS[1] (dB)		COUPLING (dB)		DIRECTIVITY (dB)		RETURN LOSS (dB)			
	IN-OUT	FWD-REV	IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
20	0.40	0.43	27.11	27.75	17.64	16.07	11.20	11.19	10.91	10.79
30	0.20	0.22	27.09	27.38	20.05	18.82	14.60	14.57	14.26	14.13
40	0.13	0.14	27.09	27.22	21.59	20.50	17.15	17.10	16.77	16.61
50	0.10	0.11	27.07	27.14	22.34	21.61	19.20	19.16	18.71	18.63
60	0.08	0.09	27.08	27.11	23.17	22.40	20.97	20.93	20.23	20.29
70	0.08	0.09	27.08	27.07	23.41	22.94	22.55	22.49	21.56	21.80
80	0.07	0.08	27.07	27.05	23.96	23.25	24.01	23.96	22.90	23.09
90	0.07	0.08	27.08	27.03	23.98	23.67	25.39	25.23	24.11	24.30
100	0.07	0.08	27.07	27.02	24.08	23.95	26.71	26.09	25.44	25.43
120	0.07	0.07	27.06	27.00	24.12	23.95	29.27	29.17	28.55	27.64
140	0.08	0.08	27.07	26.97	23.84	23.94	31.86	32.41	30.93	29.79
160	0.08	0.09	27.07	26.96	23.33	24.14	34.81	35.07	31.94	32.02
180	0.09	0.09	27.06	26.94	23.40	24.32	40.09	38.49	34.18	34.48
200	0.09	0.10	27.04	26.92	23.29	24.28	47.63	42.80	37.47	37.01
220	0.09	0.10	27.04	26.90	23.06	24.18	56.01	43.79	40.17	38.44
240	0.10	0.11	27.02	26.86	22.77	24.26	44.50	40.58	54.77	41.64
260	0.11	0.12	27.01	26.84	22.31	24.30	39.69	37.85	50.61	41.43
280	0.12	0.12	26.98	26.80	22.13	24.17	36.75	35.57	51.69	39.73
300	0.12	0.13	26.96	26.77	21.79	24.11	34.77	33.92	42.81	37.81
320	0.13	0.14	26.94	26.73	21.69	23.96	32.99	32.41	37.61	36.34
340	0.14	0.14	26.90	26.70	21.46	23.94	31.64	31.06	35.08	34.91
360	0.14	0.15	26.87	26.65	21.22	24.02	30.66	30.19	34.25	33.58
380	0.15	0.16	26.82	26.61	21.03	24.02	29.69	29.16	34.01	32.43
400	0.16	0.16	26.80	26.55	20.74	24.02	28.87	28.38	32.80	31.50
420	0.17	0.17	26.75	26.50	20.58	23.85	28.12	27.69	30.92	30.51
440	0.17	0.18	26.70	26.45	20.35	23.78	27.47	27.05	29.79	29.67
460	0.18	0.18	26.64	26.38	20.36	23.64	26.91	26.50	29.56	28.99
480	0.19	0.19	26.59	26.31	20.18	23.80	26.44	25.97	29.41	28.22
500	0.19	0.20	26.53	26.24	19.97	23.79	25.97	25.55	28.80	27.62
520	0.20	0.21	26.46	26.16	19.85	23.78	25.53	25.08	27.72	27.05
540	0.21	0.22	26.38	26.07	19.84	23.74	25.09	24.59	26.70	26.56
560	0.21	0.22	26.38	26.07	19.84	23.74	25.09	24.59	26.70	26.56
580	0.23	0.24	26.19	25.88	19.47	23.81	24.43	23.85	26.54	25.70
600	0.24	0.25	26.10	25.76	19.47	23.94	24.17	23.57	26.33	25.29
620	0.25	0.26	25.97	25.64	19.35	24.19	23.85	23.23	25.62	24.92
640	0.26	0.27	25.85	25.51	19.19	24.38	23.55	22.89	24.84	24.52
660	0.27	0.28	25.70	25.36	19.16	24.65	23.25	22.59	24.58	24.13
680	0.28	0.30	25.54	25.21	19.27	24.85	23.06	22.33	24.79	23.81
700	0.30	0.31	25.35	25.03	19.34	25.16	22.92	22.16	24.72	23.51

Typical Performance Curves

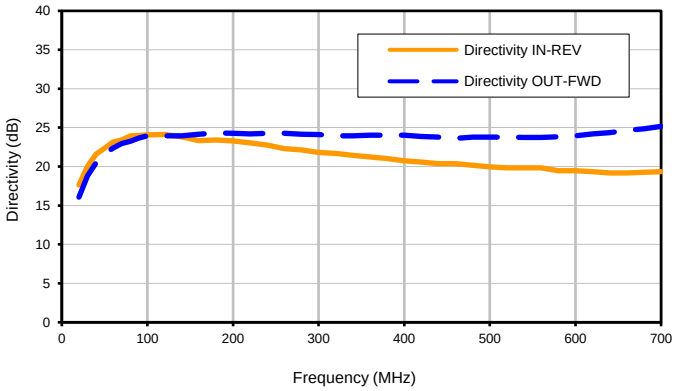
Insertion Loss



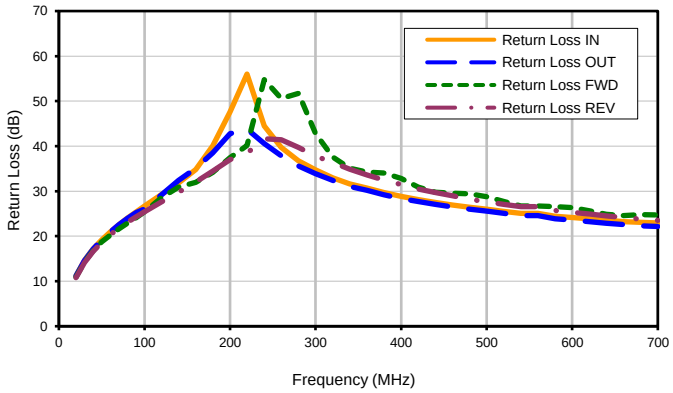
Coupling



Directivity



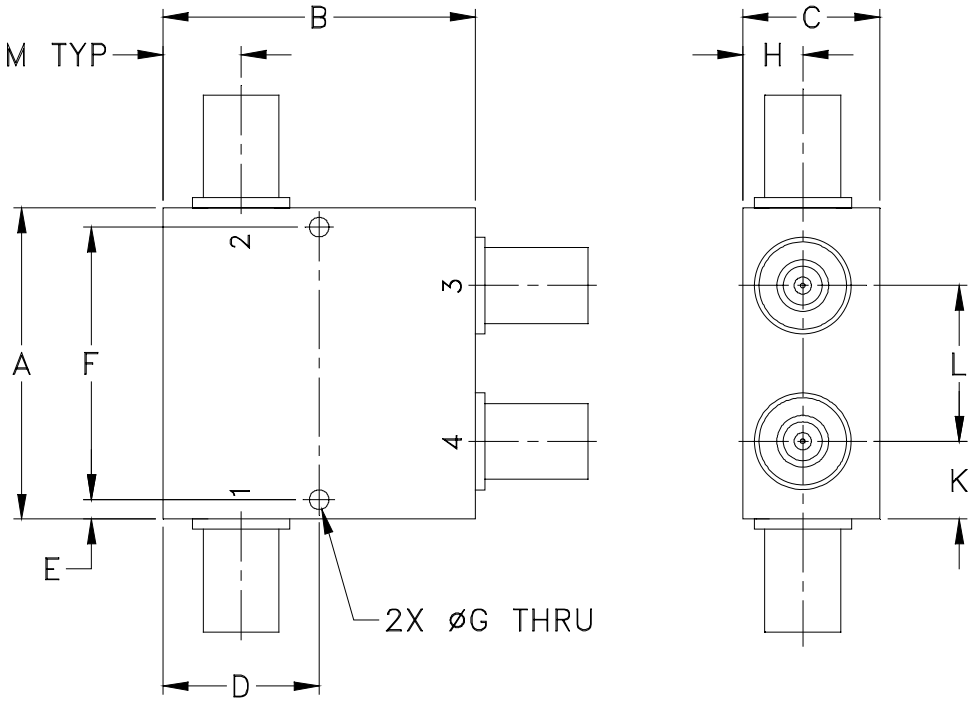
Return Loss



Case Style JD

JD1252

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	WT, GRAM
JD1252	2.00 (50.80)	2.00 (50.80)	0.88 (22.35)	1.000 (25.40)	0.13 (3.18)	1.750 (44.45)	0.125 (3.18)	0.38 (9.65)	-- --	0.50 (12.70)	1.00 (25.40)	0.50 (12.70)	250.00

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

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.

Mini-Circuits®
INTERNET http://www.minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010
Mini-Circuits ISO 9001 & ISO 14001 Certified

Mini-Circuits

Environmental Specifications ENV28

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 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