COAXIAL

Bi-Directional Coupler ZFBDC20-61HP+

50Ω Up to 25W 1 to 60 MHz

FEATURES

- Excellent mainline loss, 0.1 dB typ.
- Excellent directivity, 30 dB typ.
- Rugged shielded case

Generic photo used for illustration purposes only

CASE STYLE: JD1252

Connectors	Model
BNC	ZFBDC20-61HP+
SMA	ZFBDC20-61HP-S+
N-TYPE	ZFBDC20-61HP-N+

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- Military mobile
- Instrumentation
- Communication receivers & transmitters

ELECTRICAL SPECIFICATIONS

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		1		60	MHz
Mainline Loss[1]	1-60 10-60		0.1 0.1	0.25 0.25	dB
Coupling Nominal	1-60 10-60		20±0.6 20±0.3		dB
Coupling Flatness (±)	1-60 10-60		±0.3 ±0.3		dB
Directivity	1-60 10-60	20 20	30 30		dB
VSWR	1-60 10-60		1.07 1.07		:1
Input Power[2]	1-60 10-60			15 25	W

1. Mainline loss includes theoretical power loss at coupled port.
2. Power rating is specified up to +55°C. Power Input Specifications at +100°C is 50% value at +55°C. For specifications limits between +55°C and +100°C, derate linearly.

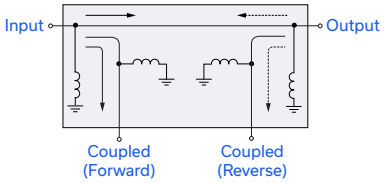
MAXIMUM RATINGS

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

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

ELECTRICAL SCHEMATIC

BI-DIRECTIONAL COUPLER*



*Electrical schematic is for Bi-Directional coupler with internal transformer(s) that routes DC from all ports to ground

REV. E
ECO-015496
ZFBDC20-61HP+
MCL NY
221019

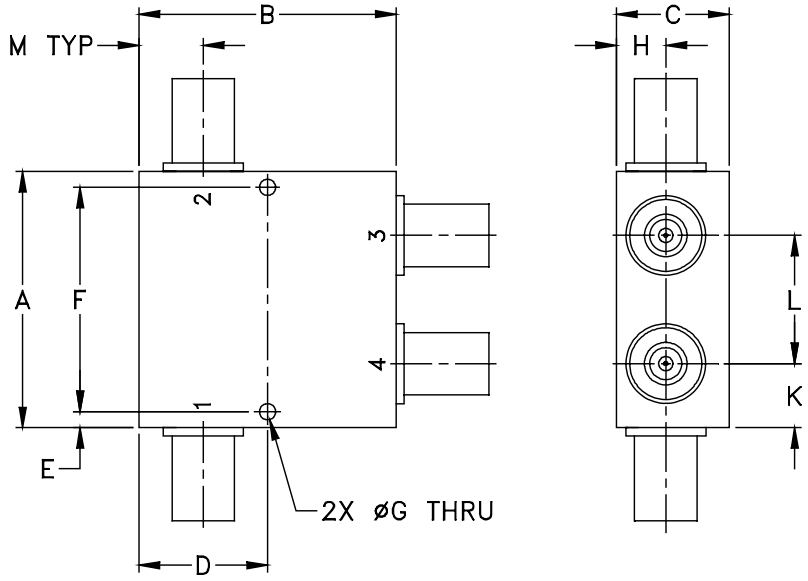
Bi-Directional Coupler ZFBDC20-61HP+

50Ω Up to 25W 1 to 60 MHz

COAXIAL CONNECTIONS

Input	1
Output	2
Coupled (Forward)	4
Coupled (Reverse)	3

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

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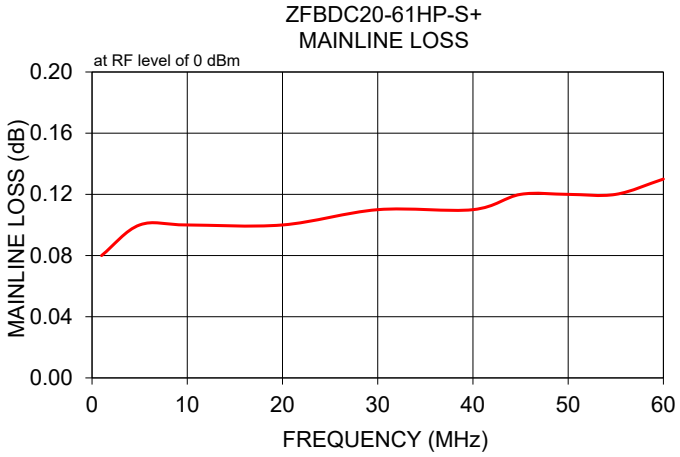
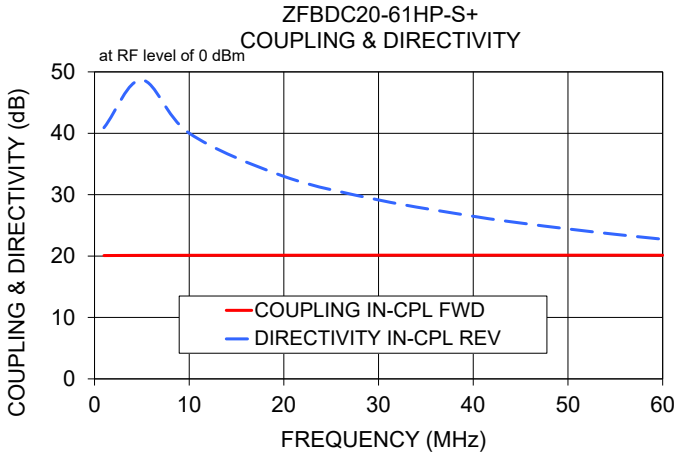
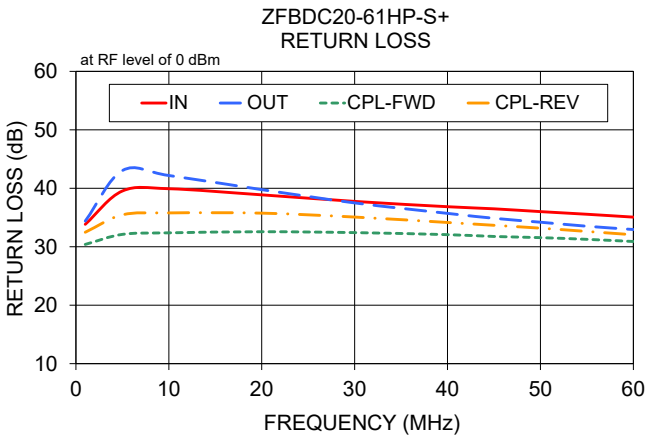
TYPICAL PERFORMANCE DATA AND CHARTS

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	Cpl Rev
1.00	0.08	20.08	20.03	40.68	40.91	33.84	34.40	30.40	32.48
5.00	0.10	20.11	20.03	47.05	48.68	39.54	43.04	32.12	35.46
10.00	0.10	20.12	20.05	39.21	40.02	39.93	42.19	32.38	35.79
20.00	0.10	20.13	20.06	32.28	32.98	38.88	39.77	32.57	35.75
30.00	0.11	20.14	20.08	28.66	29.14	37.76	37.50	32.42	35.08
40.00	0.11	20.14	20.09	26.16	26.48	36.85	35.71	32.07	34.15
45.00	0.12	20.14	20.10	25.16	25.38	36.49	34.87	31.76	33.67
50.00	0.12	20.14	20.11	24.21	24.42	36.01	34.20	31.56	33.18
55.00	0.12	20.14	20.11	23.38	23.54	35.56	33.51	31.27	32.62
60.00	0.13	20.13	20.12	22.58	22.74	35.07	32.95	30.90	32.05







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/terms/viewterm.html

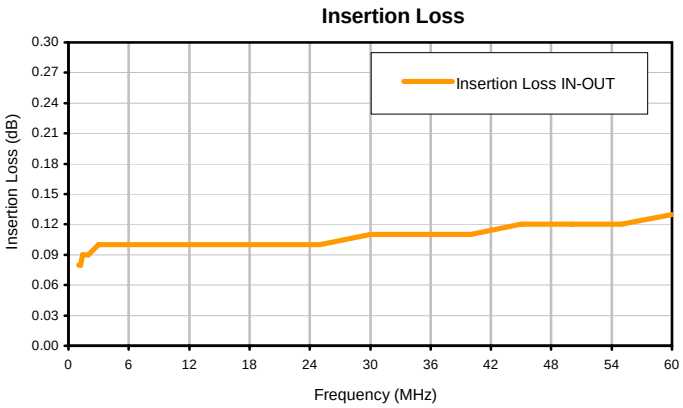
Bi-Directional Coupler ZFBDC20-61HP+

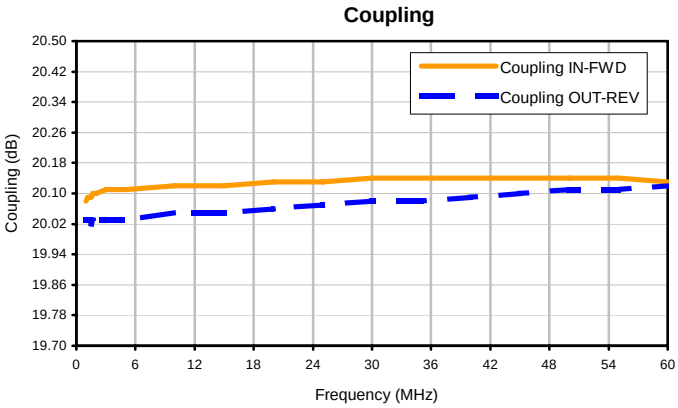
Typical Performance Data

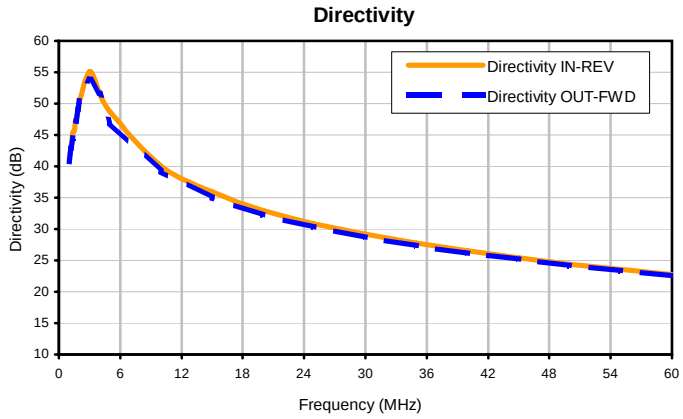
FREQ. (MHz)	INSERTION LOSS (dB)	COUPLING (dB)		DIRECTIVITY (dB)		RETURN LOSS (dB)			
	IN-OUT	IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
1.0	0.08	20.08	20.03	40.91	40.68	33.84	34.40	30.40	32.48
1.2	0.08	20.09	20.03	43.04	42.83	36.16	37.29	31.22	33.89
1.4	0.09	20.09	20.03	45.26	44.48	37.30	39.17	31.54	34.46
1.5	0.09	20.09	20.02	45.74	45.51	37.58	39.58	31.57	34.49
1.7	0.09	20.10	20.03	47.57	47.17	37.55	39.84	31.46	34.46
1.9	0.09	20.10	20.02	48.86	49.04	37.46	39.77	31.54	34.35
2.0	0.09	20.10	20.03	50.24	50.38	37.37	39.79	31.53	34.31
3.0	0.10	20.11	20.03	55.14	53.73	38.59	41.68	31.76	34.85
4.0	0.10	20.11	20.03	51.62	51.67	39.06	42.62	32.02	35.19
5.0	0.10	20.11	20.03	48.68	47.05	39.54	43.04	32.12	35.46
10.0	0.10	20.12	20.05	40.02	39.21	39.93	42.19	32.38	35.79
15.0	0.10	20.12	20.05	35.87	35.01	39.54	40.85	32.54	35.88
20.0	0.10	20.13	20.06	32.98	32.28	38.88	39.77	32.57	35.75
25.0	0.10	20.13	20.07	30.86	30.27	38.35	38.54	32.51	35.45
30.0	0.11	20.14	20.08	29.14	28.66	37.76	37.50	32.42	35.08
35.0	0.11	20.14	20.08	27.72	27.33	37.34	36.56	32.15	34.64
40.0	0.11	20.14	20.09	26.48	26.16	36.85	35.71	32.07	34.15
45.0	0.12	20.14	20.10	25.38	25.16	36.49	34.87	31.76	33.67
50.0	0.12	20.14	20.11	24.42	24.21	36.01	34.20	31.56	33.18
55.0	0.12	20.14	20.11	23.54	23.38	35.56	33.51	31.27	32.62
60.0	0.13	20.13	20.12	22.74	22.58	35.07	32.95	30.90	32.05

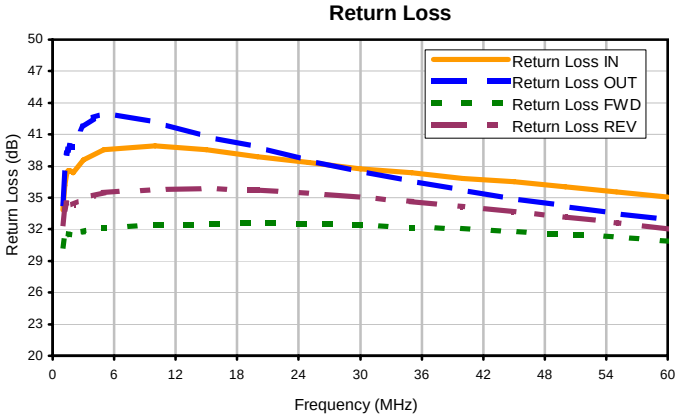
Bi-Directional Coupler ZFBDC20-61HP+

Typical Performance Curves





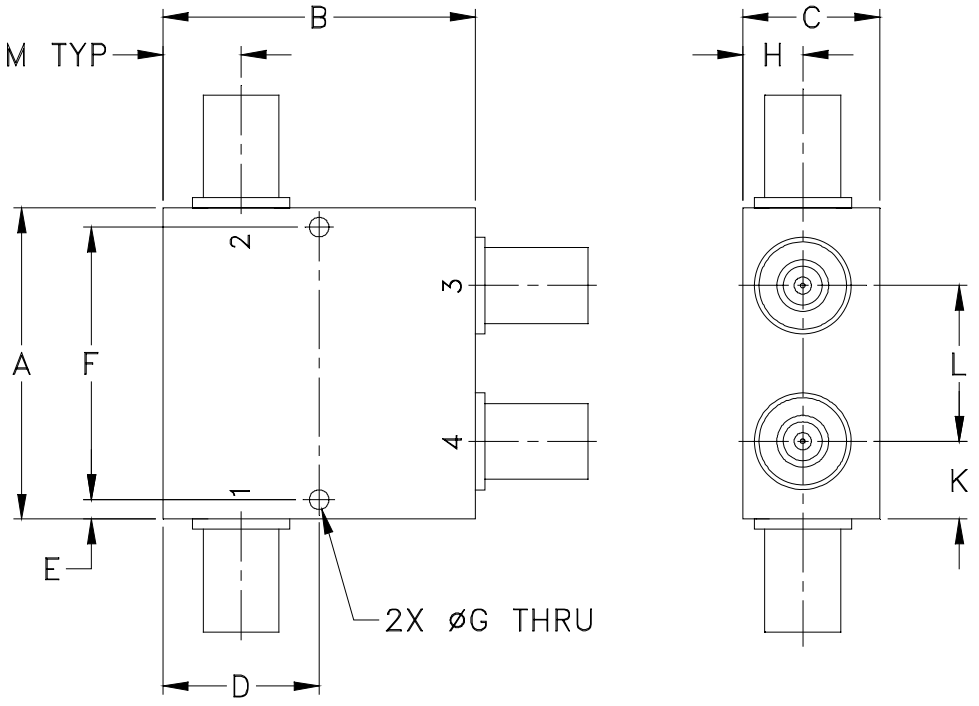




Case Style JD

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.

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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

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