COAXIAL

Bi-Directional Coupler ZFDC-20-1H+

50Ω Up to 25W 30 to 400 MHz

FEATURES

- High power, up to 25W
- Wideband, 30 to 400 MHz
- Excellent directivity, 30 dB typ.
- Low mainline loss, 0.15 dB typ.
- Rugged shielded case

Generic photo used for illustration purposes only

CASE STYLE: J17

Connectors	Model
BNC	ZFDC-20-1H+
SMA	ZFDC-20-1H-S+
N-TYPE	ZFDC-20-1H-N+
BRACKET	(OPTION"B")

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

APPLICATIONS

- VHF/UHF
- Instrumentation
- Communication receivers & transmitters
- Power leveling

ELECTRICAL SPECIFICATIONS

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		30		400	MHz
Mainline Loss[1]	30-100		0.15	0.4	dB
	100-200		0.15	0.4	
	200-400		0.3	0.4	
Coupling Nominal	30-400		20.5±0.5		dB
Coupling Flatness (±)	30-400		±0.4		dB
Directivity	30-100	25	30		dB
	100-200	25	30		
	200-400	23	30		
VSWR	30-400		1.2		:1
Input Power[2]	30-400			25	W

1. Mainline loss includes theoretical power loss at coupled port.
2. Power input will be derating linearly to 50% of rating at 100°C.

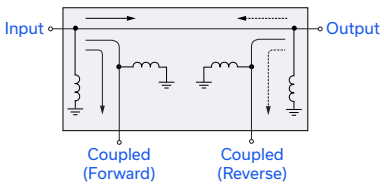
MAXIMUM RATINGS

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. L
ECO-015496
ZFDC-20-1H+
MCL NY
221024

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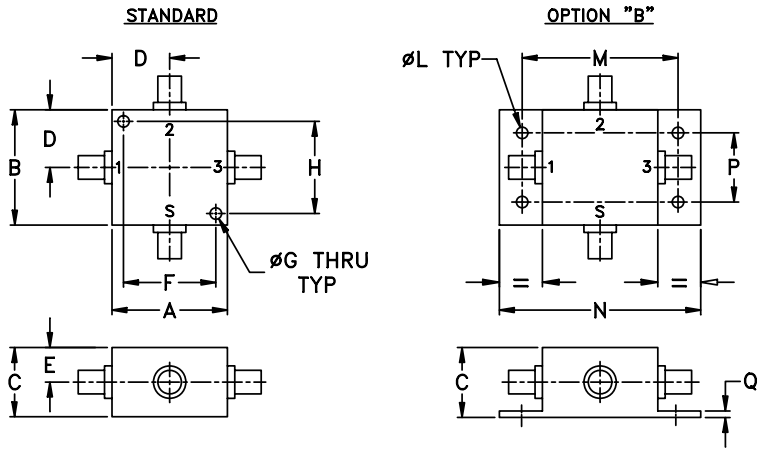
COAXIAL CONNECTIONS

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

OUTLINE DRAWING



OUTLINE DIMENSIONS (Inch / mm)

A	B	C	D	E	F	G	H
1.25	1.25	.75	.63	.38	1.000	.125	1.000
31.75	31.75	19.05	16.00	9.65	25.40	3.18	25.40

J	K	L	M	N	P	Q	wt
--	--	.125	1.688	2.18	.75	.07	grams
--	--	3.18	42.88	55.37	19.05	1.78	75.0

For option "B" with N-type connectors, dimension "C" increases to 0.94 inches.

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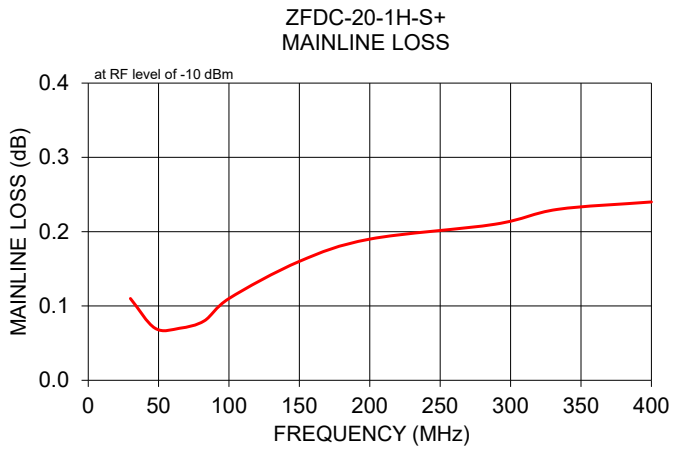
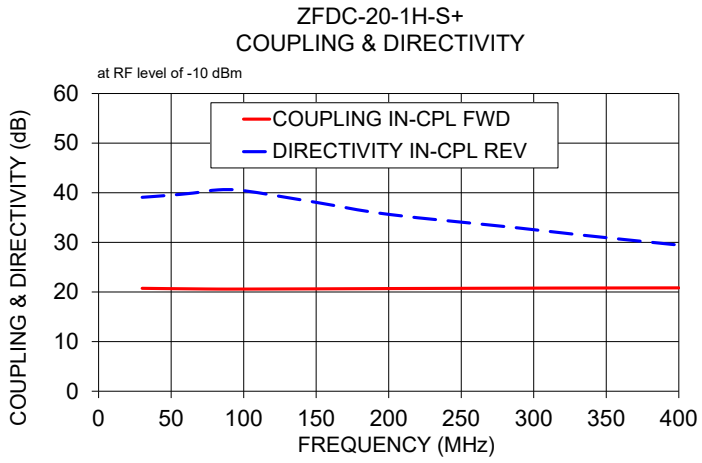
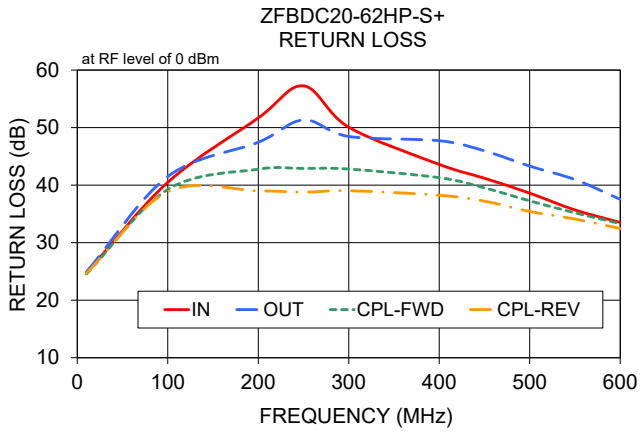
TYPICAL PERFORMANCE DATA AND CHARTS

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
30.00	0.11	20.74	20.73	36.33	39.08	17.88	17.93	17.83	17.78
47.50	0.07	20.68	20.66	36.66	39.46	21.75	21.84	22.02	21.88
65.00	0.07	20.63	20.62	36.97	39.93	24.43	24.65	25.33	25.13
82.50	0.08	20.59	20.58	37.14	40.58	26.31	27.05	28.32	28.10
100.00	0.11	20.59	20.58	37.19	40.42	27.24	28.65	30.88	30.36
150.00	0.16	20.63	20.62	38.74	38.06	27.92	30.48	33.62	34.39
200.00	0.19	20.69	20.67	36.80	35.64	29.69	30.30	33.78	39.07
288.89	0.21	20.77	20.74	33.49	32.92	29.81	29.10	30.60	35.64
333.33	0.23	20.80	20.77	31.88	31.46	29.73	28.43	28.85	31.36
400.00	0.24	20.83	20.80	29.81	29.45	28.38	27.54	26.14	26.41







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 ZFDC-20-1H+

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING (dB)	DIRECTIVITY (dB)	RETURN LOSS (dB)		
				IN	OUT	CPL
30.0	0.07	20.70	44.53	20.81	20.99	20.55
37.0	0.06	20.67	44.84	22.67	22.95	22.52
44.0	0.06	20.65	44.69	24.26	24.64	24.26
51.0	0.06	20.63	45.00	25.70	26.19	25.83
58.0	0.07	20.62	44.05	26.97	27.57	27.23
65.0	0.08	20.60	44.17	28.09	28.79	28.42
72.0	0.09	20.61	43.57	29.09	29.86	29.43
79.0	0.10	20.61	42.93	29.91	30.74	30.22
86.0	0.11	20.62	42.08	30.59	31.47	30.81
93.0	0.11	20.63	42.36	31.19	32.09	31.32
100.0	0.12	20.63	41.76	31.69	32.60	31.78
110.0	0.12	20.64	41.72	32.28	33.21	32.33
120.0	0.12	20.65	40.80	32.78	33.66	32.82
130.0	0.13	20.65	40.68	33.21	34.07	33.28
140.0	0.13	20.66	40.35	33.61	34.38	33.72
150.0	0.13	20.67	40.02	33.97	34.58	34.13
160.0	0.13	20.67	40.07	34.35	34.73	34.50
170.0	0.13	20.67	39.39	34.73	34.83	34.80
180.0	0.14	20.67	39.39	35.09	34.85	35.06
190.0	0.14	20.68	39.40	35.46	34.81	35.31
200.0	0.14	20.68	38.71	35.80	34.72	35.51
210.0	0.14	20.68	38.56	36.18	34.58	35.65
220.0	0.14	20.68	38.40	36.51	34.34	35.82
230.0	0.14	20.68	37.83	36.87	34.04	35.90
240.0	0.14	20.69	37.74	37.22	33.74	35.95
250.0	0.15	20.70	37.42	37.51	33.34	35.99
260.0	0.15	20.70	36.97	37.81	32.94	35.98
270.0	0.16	20.70	36.56	38.06	32.52	35.94
280.0	0.16	20.70	36.71	38.30	32.09	35.82
290.0	0.16	20.70	36.45	38.46	31.64	35.69
300.0	0.16	20.70	35.66	38.64	31.21	35.48
310.0	0.16	20.70	35.42	38.74	30.79	35.25
320.0	0.17	20.71	35.04	38.75	30.36	35.02
330.0	0.17	20.70	34.62	38.80	29.93	34.72
340.0	0.17	20.70	34.61	38.75	29.50	34.45
350.0	0.18	20.71	34.00	38.65	29.10	34.13
360.0	0.18	20.71	33.55	38.46	28.65	33.83
370.0	0.19	20.71	33.42	38.29	28.24	33.52
380.0	0.19	20.70	32.70	37.97	27.81	33.20
390.0	0.20	20.69	32.64	37.62	27.41	32.88
400.0	0.20	20.69	32.20	37.23	27.01	32.53

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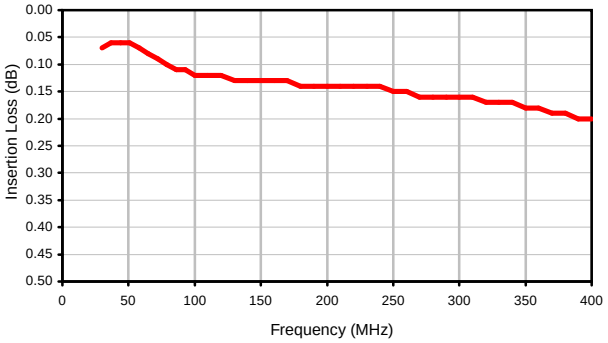
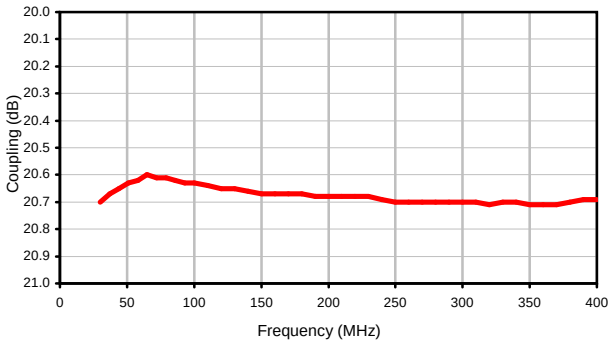
Typical Performance Curves

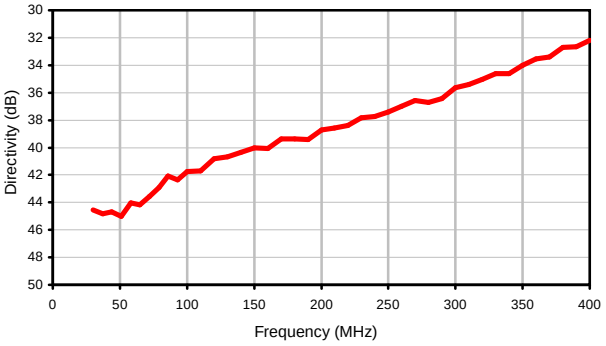
Insertion Loss



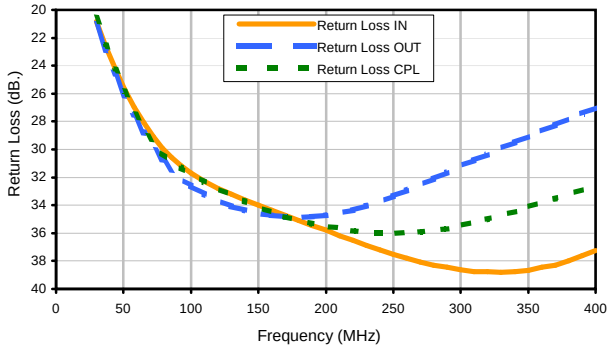
Coupling



Directivity



Return Loss



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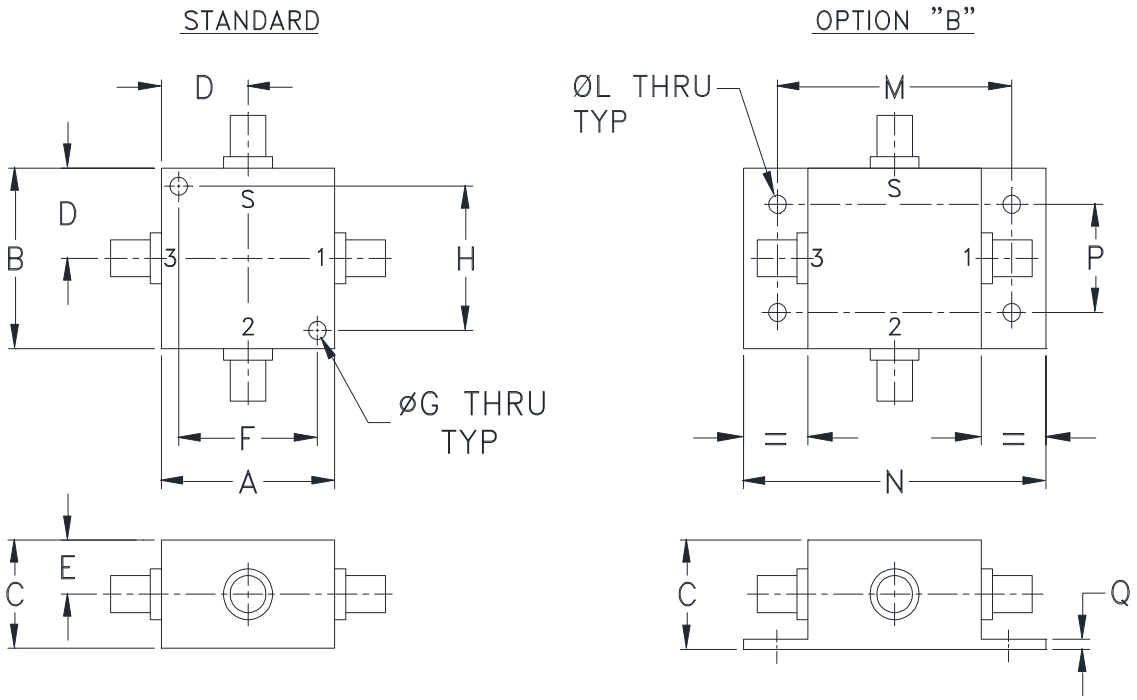
Case Style J

J17

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
J17	1.25 (31.75)	1.25 (31.75)	.75 (19.05)	.63 (16.00)	.38 (9.65)	1.000 (25.40)	.125 (3.18)	1.000 (25.40)	-- --	-- --	.125 (3.18)	1.688 (42.88)	2.18 (55.37)

CASE#	P	Q	WT. GRAMS
J17	.75 (19.05)	.07 (1.78)	75.0

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.
3. Mounting bracket available on request. Add suffix B to part number
4. For bracket version, option B, dimension "C" changes from .75 to .94 inches when connectors are type N.

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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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