Coaxial

Directional Coupler

ZFDC-20-50-S+

50Ω 20 to 2000 MHz

Generic photo used for illustration purposes only

CASE STYLE: K18

Connectors	Model
SMA	ZFDC-20-50-S+
BRACKET (OPTION"B")	

Maximum 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.

Coaxial Connections

INPUT	3
OUTPUT	1
COUPLED	2

Features

- very wideband, 20 to 2000 MHz
- excellent directivity, 25 dB typ.
- excellent mainline loss, 0.7 dB typ.
- rugged shielded case

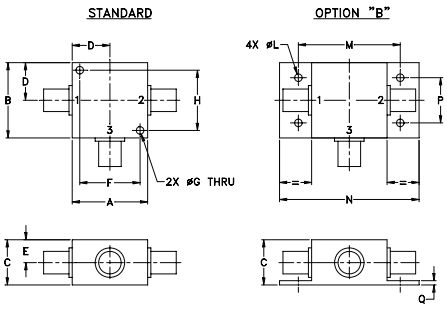
Applications

- cellular
- GPS
- instrumentation
- communication receivers & transmitters

+RoHS Compliant

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

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H
1.25	1.25	.75	.63	.38	1.00	.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	70.0

Directional Coupler Electrical Specifications

FREQ. RANGE (MHz)	COUPLING* (dB)		MAINLINE LOSS[1] (dB)						DIRECTIVITY (dB)						VSWR (:1)	POWER INPUT (W)	
			L		M		U		L		M		U			L	MU
f_L-f_U	Nom.	Flatness	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Max.	Max.
20-2000	19.5±0.5	±0.8	0.8	1.3	0.7	1.3	1.0	1.6	30	20	25	20	22	10	1.25	1.0	1.0

L = low range [f_L to 10 f_L] M = mid range [10 f_L to f_U/2] U= upper range [f_U/2 to f_U]

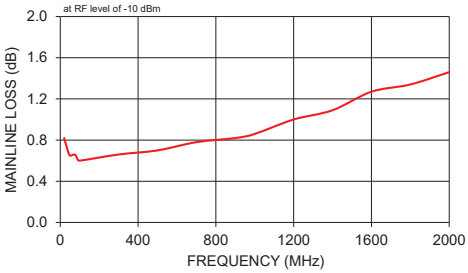
1. Mainline loss includes theoretical power loss at coupled port.

* Above 1000 MHz, coupling flatness ±1 dB

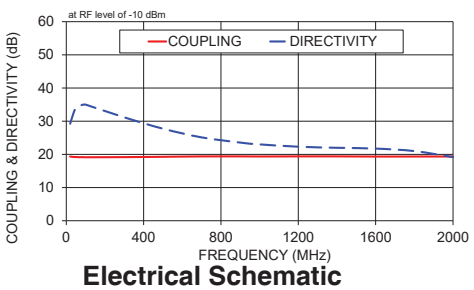
Typical Performance Data

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
20.00	0.82	19.36	29.25	17.95	19.33	21.82
50.00	0.65	19.21	33.94	21.29	23.63	24.42
80.00	0.65	19.19	34.88	22.44	25.39	25.30
100.00	0.60	19.14	35.01	22.93	26.11	25.66
300.00	0.66	19.18	31.17	25.70	28.22	28.13
1000.00	0.86	19.37	23.02	24.12	32.91	28.50
1200.00	1.00	19.40	22.32	20.46	32.70	24.27
1400.00	1.09	19.40	21.99	17.71	30.28	21.55
1600.00	1.27	19.35	21.75	15.67	27.28	19.50
1800.00	1.34	19.36	21.00	14.04	24.37	17.79
2000.00	1.46	19.37	19.19	12.70	21.84	16.24

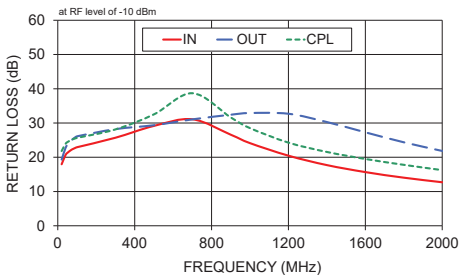
ZFDC-20-50-S+
MAINLINE LOSS



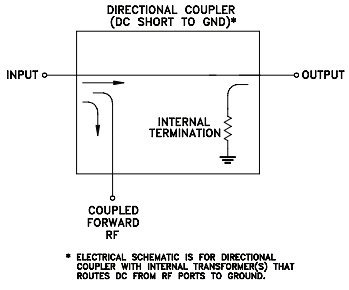
ZFDC-20-50-S+
COUPLING & DIRECTIVITY



ZFDC-20-50-S+
RETURN LOSS



Electrical Schematic



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 ZFDC-20-50+

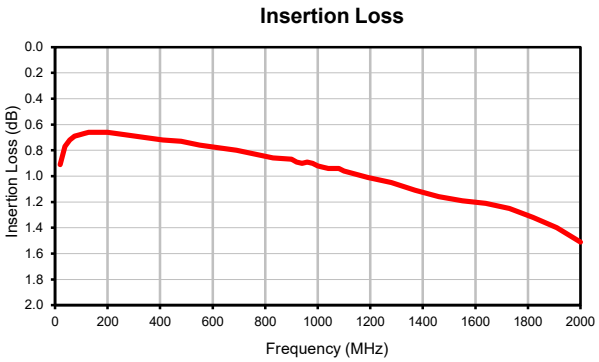
Typical Performance Data

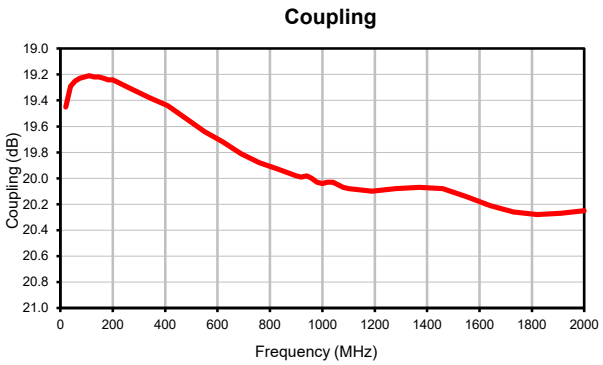
FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING (dB)	DIRECTIVITY (dB)	RETURN LOSS (dB)		
				IN	OUT	CPL
20.0	0.91	19.45	34.41	34.41	17.49	18.75
38.0	0.77	19.29	38.11	38.11	19.79	21.67
56.0	0.72	19.25	39.47	39.47	20.83	23.11
74.0	0.69	19.23	39.43	39.44	21.45	23.98
92.0	0.68	19.22	39.97	39.97	21.91	24.59
110.0	0.67	19.21	39.85	39.85	22.25	25.04
128.0	0.66	19.22	39.49	39.49	22.53	25.36
146.0	0.66	19.22	39.00	39.00	22.75	25.58
164.0	0.66	19.23	38.47	38.47	22.95	25.73
182.0	0.66	19.24	37.87	37.88	23.12	25.86
200.0	0.66	19.24	37.71	37.70	23.30	25.96
270.0	0.68	19.31	35.04	35.04	24.02	26.17
340.0	0.70	19.38	33.19	33.19	24.78	26.22
410.0	0.72	19.44	31.07	31.07	25.56	26.29
480.0	0.73	19.54	29.41	29.40	26.36	26.38
550.0	0.76	19.64	27.85	27.85	27.03	26.52
620.0	0.78	19.72	26.56	26.56	27.28	26.71
690.0	0.80	19.81	25.48	25.48	27.06	26.84
760.0	0.83	19.88	24.59	24.60	26.34	27.00
830.0	0.86	19.93	23.79	23.80	25.33	27.14
900.0	0.87	19.98	23.02	23.02	24.17	27.23
920.0	0.89	19.99	22.88	22.88	23.84	27.23
940.0	0.90	19.98	22.73	22.73	23.50	27.29
960.0	0.89	20.00	22.52	22.52	23.17	27.31
980.0	0.90	20.03	22.35	22.36	22.84	27.28
1000.0	0.92	20.04	22.23	22.23	22.52	27.23
1020.0	0.93	20.03	22.07	22.07	22.22	27.22
1040.0	0.94	20.03	21.96	21.96	21.91	27.26
1060.0	0.94	20.05	21.83	21.83	21.60	27.18
1080.0	0.94	20.07	21.70	21.70	21.30	26.96
1100.0	0.96	20.08	21.59	21.59	21.01	26.89
1190.0	1.01	20.10	21.20	21.21	19.79	26.78
1280.0	1.05	20.08	20.95	20.95	18.70	26.44
1370.0	1.11	20.07	20.86	20.86	17.74	25.81
1460.0	1.16	20.08	20.83	20.83	16.86	25.10
1550.0	1.19	20.14	20.91	20.90	16.07	24.40
1640.0	1.21	20.21	20.96	20.96	15.35	23.75
1730.0	1.25	20.26	21.19	21.19	14.68	23.05
1820.0	1.32	20.28	21.23	21.23	14.06	22.34
1910.0	1.40	20.27	21.13	21.13	13.48	21.54
2000.0	1.51	20.25	20.80	20.80	12.92	20.68

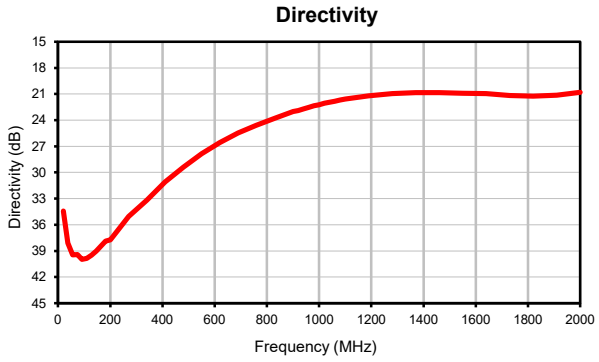
Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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.

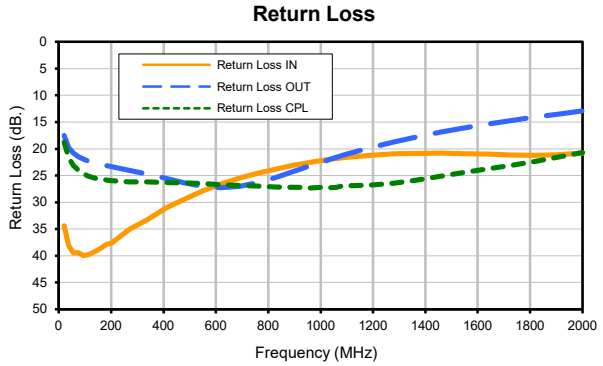
Directional Coupler ZFDC-20-50+

Typical Performance Curves







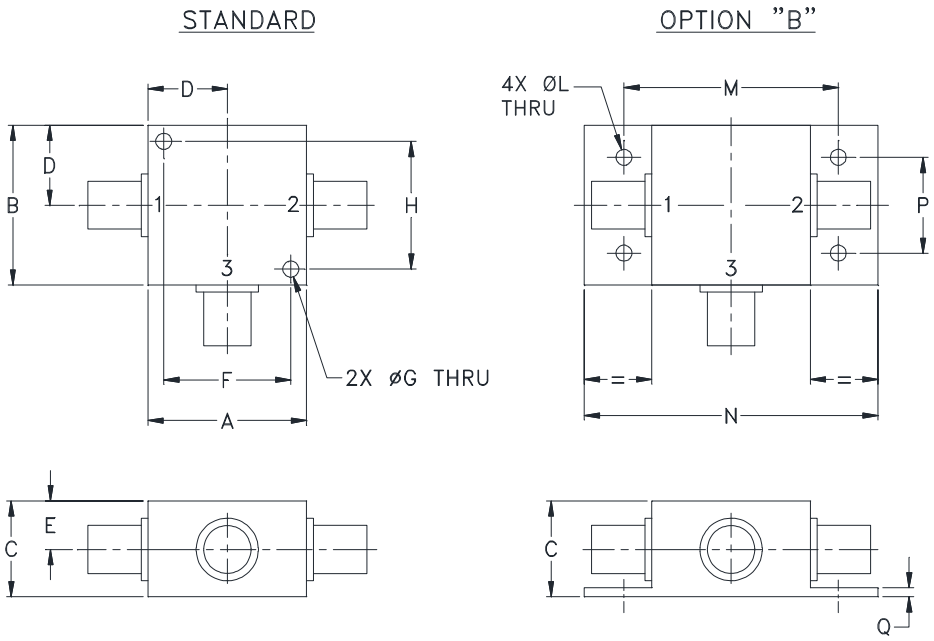


Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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.

Case Style K

K18

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
K18	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
K18	.75 (19.05)	.07 (1.78)	70.0

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 port marking 1, 2, and 3 see specifications data sheet.
5. For bracket version, option B, dimension "C" changes from .75 to .94 inches when connectors are type N.
6. Refer to the individual model data sheet for the type of connectors available.

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

This document and its contents are the property of Mini-Circuits

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

This document and its contents are the property of Mini-Circuits.