DC Pass

Directional Coupler ZADC-15-252+

50Ω Up to 8W 850 to 2500 MHz

The Big Deal

- Wideband, 850 to 2500 MHz
- Input power handling up to 8W
- Low mainline loss, 0.7 dB
- Excellent VSWR, 1.15:1

CASE STYLE: CC51-1

Product Overview

Mini-Circuits' ZADC-15-252+ is a coaxial directional coupler providing 15 dB coupling with good VSWR across the 850 to 2500 MHz frequency range. This model is capable of handling up to 8 W RF input power and passing up to 0.5 A DC current from input to output. 18 dB typical directivity allows accurate sampling of signal through the coupled port, and low mainline loss (0.7 dB typical) provides excellent transmission of signal power from input to output. The coupler comes housed in a rugged, compact aluminum alloy case (2.0 x 2.0 x 0.75").

Key Features

Feature	Advantages
Wideband, 850 to 2500 MHz	One device supports a variety of system and test lab applications.
Good directivity, 15 dB	High directivity allows accurate signal sampling through the coupled port with minimal measurement error.
RF input power handling up to 8 W	Usable in systems with medium power requirements.
Flat coupling, ±1.2 dB	Provides consistent coupling performance across frequency.
Low mainline loss, 0.7 dB typ.	Provides excellent through-path signal power transmission.
Good VSWR, 1.15:1 typ.	Well-matched for 50Ω systems with minimal signal reflection.
DC current passing up to 0.5 A	Suitable for use in systems where DC power is needed through the RF line.
Small size, 2.0 x 2.0 x 0.75"	Saves space in crowded spaces and dense system layouts.

DC Pass
Directional Coupler

ZADC-15-252+

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Generic photo used for illustration purposes only

CASE STYLE: CC51-1

Connectors	Model No.
BNC	ZADC-15-252+
SMA	ZADC-15-252-S+
N-Type	ZADC-15-252-N+

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
DC Current	0.5A

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

Coaxial Connections

INPUT	1
OUTPUT	3
COUPLED	2

Features

- excellent directivity, 18 dB typ.
- excellent VSWR, 1.15 typ.
- power input up to 8 W
- low cost
- DC current through input to output 0.5A Max.

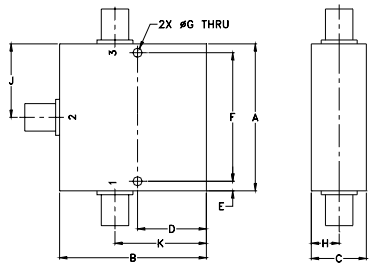
Applications

- UMTC
- PCS/DCS
- ISM/GPS
- CDMA
- TDMA

+RoHS Compliant

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

Outline Drawing

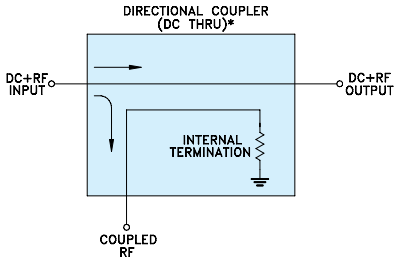


Outline Dimensions (inch / mm)

A	B	C	D	E	F
2.00	2.00	.75	.938	.13	1.750
50.80	50.80	19.05	23.83	3.30	44.45

G	H	J	K	wt
.125	.38	1.00	1.25	grams
3.18	9.65	25.40	31.75	145.0

Electrical Schematic



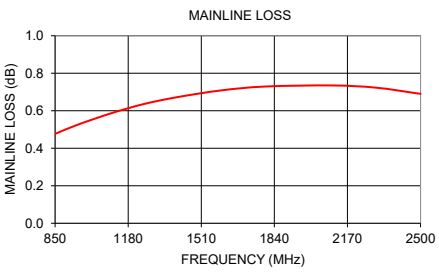
* ELECTRICAL SCHEMATIC FOR DIRECTIONAL COUPLER THAT IS DESIGNED WITHOUT INTERNAL TRANSFORMERS.

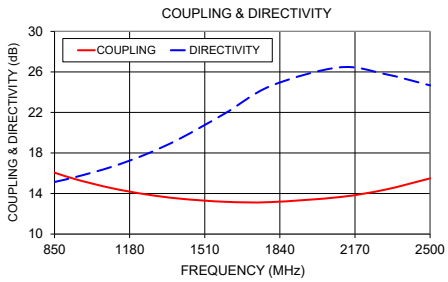
Electrical Specifications at 25°C

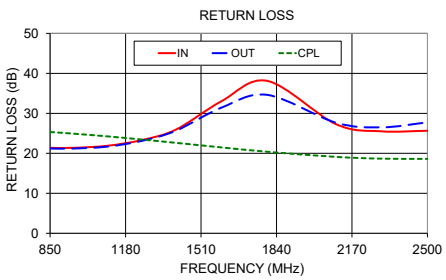
Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		850	—	2500	MHz
Mainline Loss (above theoretical 0.15 dB)	850 950 2200 2500	— — — —	0.5 0.6 0.75 0.7	0.6 0.7 0.9 0.9	dB
Coupling	950 - 2300 850 - 2500	— —	14±1.2 14.5±1.5	— —	dB
Coupling Flatness(±)	950 - 2300 850 - 2500	— —	1.1 1.5	1.4 1.7	dB
Directivity	950 - 2300 850 - 2500	12.5 12	18 16	— —	dB
Return Loss (Input)	850 - 2500	18	22	—	dB
Return Loss (Output)	850 - 2500	18	22	—	dB
Return Loss (Coupling)	850 - 2500	16	20	—	dB
Input Power	850 - 2500	—	—	8	W

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
850	0.48	16.06	15.14	21.37	21.20	25.33
950	0.52	15.36	15.67	21.37	21.20	24.93
1100	0.59	14.53	16.62	21.89	21.68	24.24
1250	0.64	13.92	17.86	23.32	23.11	23.46
1400	0.67	13.49	19.41	25.93	25.66	22.63
1600	0.71	13.18	21.92	33.06	31.45	21.48
1800	0.73	13.15	24.61	38.11	34.61	20.39
2100	0.73	13.64	26.44	27.29	27.66	19.11
2300	0.72	14.37	25.80	25.50	26.50	18.67
2500	0.69	15.49	24.67	25.65	27.74	18.61







Notes

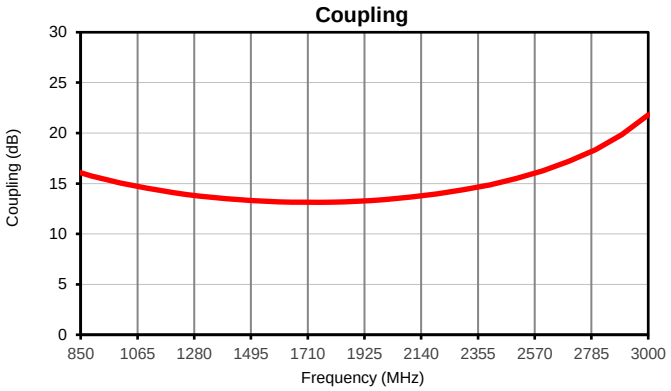
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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

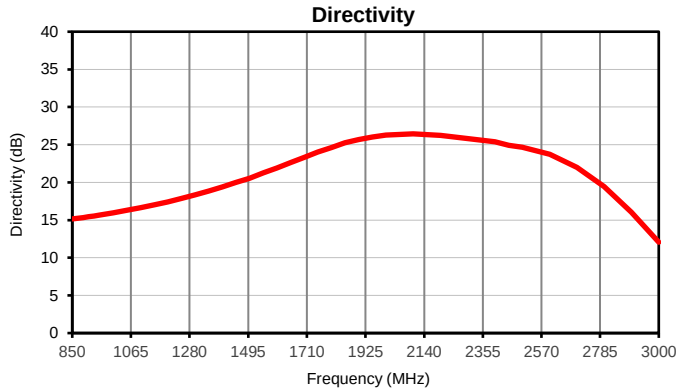
Directional Coupler ZADC-15-252-S+

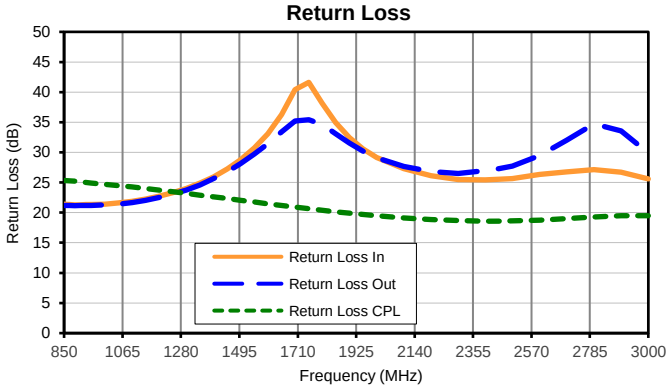
Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING (dB)	DIRECTIVITY (dB)	RETURN LOSS (dB)		
				IN	OUT	CPL
850	0.48	16.06	15.14	21.37	21.20	25.33
870	0.49	15.91	15.23	21.33	21.18	25.29
890	0.50	15.76	15.33	21.28	21.15	25.21
910	0.51	15.62	15.43	21.32	21.20	25.13
930	0.52	15.49	15.55	21.35	21.18	25.04
950	0.52	15.36	15.67	21.37	21.20	24.93
1000	0.55	15.06	15.96	21.38	21.27	24.71
1050	0.57	14.78	16.28	21.59	21.40	24.47
1100	0.59	14.53	16.62	21.89	21.68	24.24
1150	0.60	14.31	17.02	22.23	22.03	23.98
1200	0.62	14.11	17.42	22.71	22.51	23.75
1250	0.64	13.92	17.86	23.32	23.11	23.46
1300	0.65	13.76	18.35	24.02	23.76	23.18
1350	0.66	13.62	18.87	24.88	24.61	22.90
1400	0.67	13.49	19.41	25.93	25.66	22.63
1450	0.68	13.39	19.99	27.24	26.77	22.35
1500	0.69	13.30	20.57	28.78	28.16	22.05
1550	0.70	13.23	21.27	30.72	29.73	21.76
1600	0.71	13.18	21.92	33.06	31.45	21.48
1650	0.71	13.15	22.62	36.28	33.42	21.19
1700	0.72	13.13	23.32	40.41	35.19	20.94
1750	0.72	13.13	24.02	41.62	35.41	20.66
1800	0.73	13.15	24.61	38.11	34.61	20.39
1850	0.73	13.19	25.25	34.95	33.06	20.14
1900	0.73	13.25	25.69	32.45	31.54	19.91
1950	0.74	13.32	26.04	30.58	30.24	19.70
2000	0.74	13.41	26.29	29.17	29.11	19.49
2100	0.73	13.64	26.44	27.29	27.66	19.11
2200	0.73	13.96	26.24	26.13	26.79	18.85
2300	0.72	14.37	25.80	25.50	26.50	18.67
2400	0.71	14.88	25.39	25.44	26.96	18.57
2450	0.70	15.17	24.94	25.57	27.30	18.58
2500	0.69	15.49	24.67	25.65	27.74	18.61
2600	0.67	16.26	23.71	26.33	29.48	18.76
2700	0.65	17.20	21.99	26.79	32.00	18.99
2800	0.63	18.37	19.43	27.13	34.71	19.27
2900	0.61	19.85	16.05	26.69	33.59	19.48
3000	0.60	21.80	12.06	25.57	29.89	19.49

Typical Performance Curves



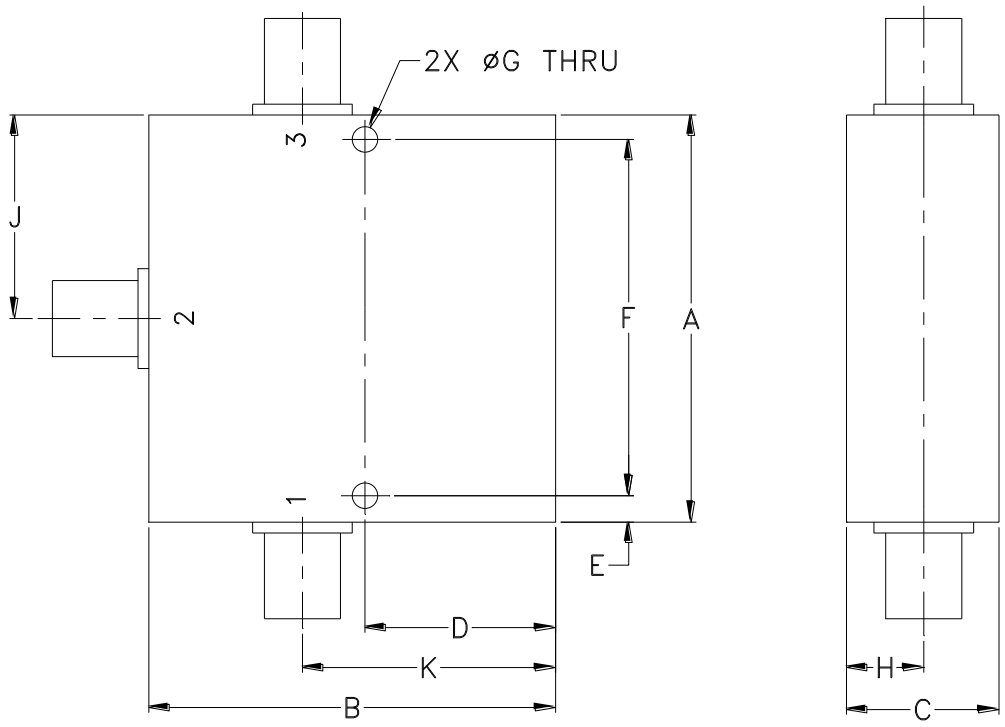




Case Style CC

Outline Dimensions

CC51-1



CASE#	A	B	C	D	E	F	G	H	J	K	WT. GRAMS
CC51-1	2.00 (50.80)	2.00 (50.80)	.75 (19.05)	.938 (23.83)	.13 (3.30)	1.750 (44.45)	.125 (3.17)	.38 (9.65)	1.00 (25.40)	1.25 (31.75)	145

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. Refer to the individual model data sheet for the type of connectors available.

Mini-Circuits

Environmental Specifications ENV02T1

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	-40° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, 95% Coverage
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	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215