

35dB, DC Pass

High Power Bi-Directional Coupler

ZGBDC35-93HP+

50Ω Up to 250W 900 to 9000 MHz

The Big Deal

- High Power Handling: 250W
- Low Insertion Loss: 0.20 dB*
- Rugged IP67 Weatherproof case



CASE STYLE: HT1762

Product Overview

Mini-Circuits ZGBDC35-93HP+ broadband high power bi-directional coupler offers excellent performance across a wide range of popular frequency bands. Built using low loss airline construction, the ZGBDC35-93HP+ can pass up to 3A of DC current from input to output and handle up to 250W CW. Rugged sealed construction makes this coupler ideal for use in field applications or remote monitoring sites; however, it is also ideal for high power lab testing.

Key Features

Feature	Advantages
Excellent Insertion Loss , 0.20 dB Typ*	With extremely low insertion loss, this coupler is ideal for critical high power applications.
Ultra High Return Loss, 26 dB Typ	Outstanding Return loss makes this coupler ideal for sensitive power measurement and other signal distribution applications.
High Power Handling, 250W	Up to 250W CW power handling, combined with low insertion loss and excellent VSWR support operation in high power applications such as transmitters, base stations and high power device characterization.
Wide bandwidth	900-9000 MHz coverage includes many popular cellular, WiMAX, LTE, ISM, satellite, P2P, aviation, maritime, defense, and radar bands
Excellent Directivity and Coupling Flatness	Typical 25 dB directivity and ± 0.8 dB of Coupling flatness provides accurate signal sampling of forward or reflected power.
Passes DC Current, 3A	Capable of passing 3A current, input to output; this coupler is suited for application using remote antenna control or other remote motorized requirements.
IP67 Weatherproof Case	With an Ingress Protection rating of IP67, the ZGBDC6-362HP+ is designed to operate in harsh outdoor applications.

*Does not include coupling loss

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



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Maximum Ratings

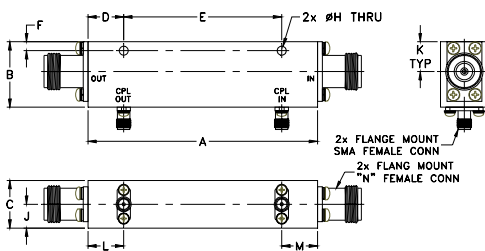
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
DC Current	3A

Permanent damage may occur if any of these limits are exceeded

Coaxial Connections

INPUT	IN (N-TYPE)
OUTPUT	OUT (N-TYPE)
COUPLED IN	CPL IN (SMA)
COUPLED OUT	CPL OUT (SMA)

Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
3.85	1.10	.80	.60	2.650	.15	—
97.79	27.94	20.32	15.24	67.31	3.81	—
H	J	K	L	M		wt
.150	.40	.50	.60	.60		grams
3.81	10.16	12.70	15.24	15.24		200.0

Features

- wide frequency range, 900-9000 MHz
- good coupling flatness, ± 0.8 dB typ.
- high directivity, 25 dB typ.
- good VSWR, 1.10:1 typ.
- high power, up to 250W
- DC current pass through input to output

Applications

- cellular
- lab use
- WiMAX
- PCN
- GSM
- ISM



CASE STYLE: HT1762

Connectors Model
N-Type/SMA ZGBDC35-93HP+

+RoHS Compliant

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

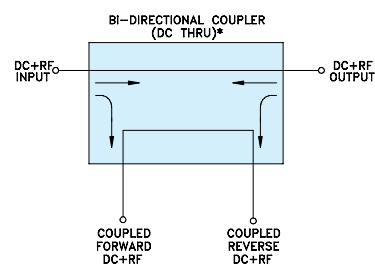
Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Operating Frequency		900		9000	MHz
Coupling	900-1050	33	35.4	37.5	
	1050-8000	31	34.5	37.5	dB
	8000-9000	31	34.3	37	
Coupling Flatness	900-1050	—	± 0.5	1.2	
	1050-8000	—	± 0.8	1.4	dB
	8000-9000	—	± 0.6	1.3	
Mainline Loss ¹	900	—	0.03	0.2	
	6000	—	0.10	0.25	dB
	9000	—	0.18	0.3	
Directivity	900	22	26	—	
	3000	20	25	—	
	6000	14	19	—	dB
	8000	12	16	—	
	9000	8	11	—	
Return Loss (Input)	900-6000	14	19	—	
	6000-9000	14	17	—	dB
Return Loss (Output)	900-6000	14	19	—	
	6000-9000	14	18	—	dB
Return Loss (Coupling)	900-6000	15	22	—	
	6000-9000	14	18	—	dB
Input Power ²	900-6000	—	—	250	W

1. Does not include coupling loss.

2. At 25°C with no DC current. Derate linearly to 200W (900-9000 MHz) and to 100W (600-9000 MHz) from 25°C to 100°C. Output load VSWR 2.0:1 max.

Electrical Schematic



* ELECTRICAL SCHEMATIC IS FOR BI-DIRECTIONAL COUPLER WITHOUT INTERNAL TRANSFORMERS AND RESISTORS.

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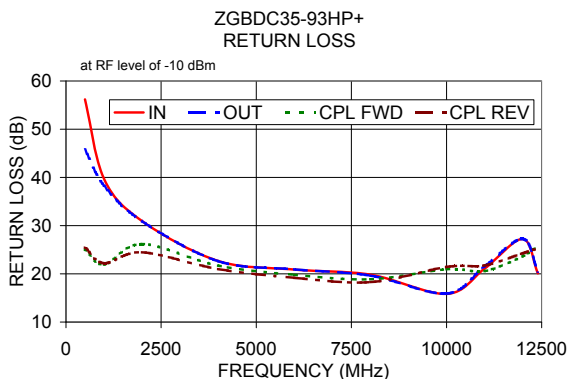
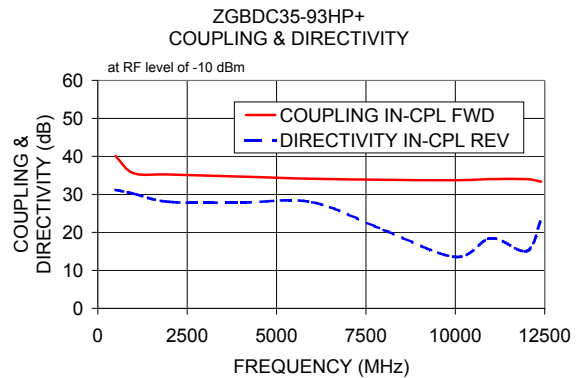
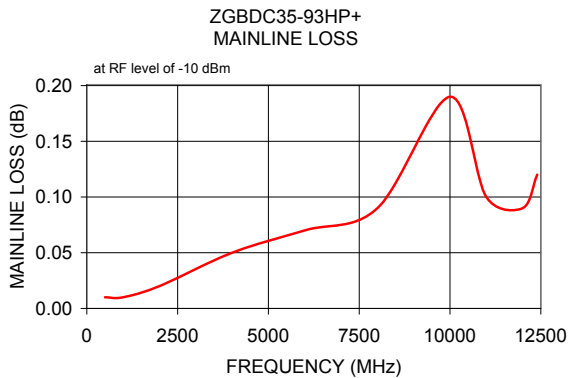


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ZGBDC35-93HP+
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Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB)		Directivity (dB)		Return Loss (dB)			
		In-Cpl Fwd	Out-Cpl Rev	Out-Cpl Fwd	In-Cpl Rev	In	Out	Cpl Fwd	Cpl Rev
500.00	0.01	40.05	40.08	28.50	31.18	56.18	45.81	25.02	25.47
1000.00	0.01	35.59	35.61	25.01	30.19	39.69	38.27	21.92	22.20
2000.00	0.02	35.22	35.28	23.57	28.02	30.95	30.91	26.19	24.46
4000.00	0.05	34.69	34.77	15.20	27.85	22.66	22.63	21.72	21.00
6000.00	0.07	34.11	34.20	22.89	27.93	20.88	20.93	19.81	19.18
8000.00	0.09	33.83	33.87	14.24	20.63	19.82	19.65	18.88	18.28
10000.00	0.19	33.72	33.85	27.60	13.53	15.85	15.92	20.95	21.44
11000.00	0.10	34.03	34.34	19.26	18.48	21.08	21.55	20.58	21.73
12000.00	0.09	34.00	34.05	18.41	15.08	27.23	27.24	23.65	24.25
12400.00	0.12	33.35	33.29	13.75	23.37	20.11	20.46	25.83	25.27



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DC PASS Bi-Directional Coupler

ZGBDC35-93HP+

Typical Performance Data

FREQ. (MHz)	INSERTION LOSS ⁽¹⁾	COUPLING		DIRECTIVITY		RETURN LOSS			
	(dB)	(dB)		(dB)		(dB)			
	IN-OUT	IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
500.0	0.01	40.05	40.08	31.18	28.50	56.18	45.81	25.02	25.47
600.0	0.01	38.70	38.71	30.75	27.45	49.44	43.74	23.96	24.45
700.0	0.01	37.63	37.67	31.20	26.97	46.59	42.51	23.18	23.66
800.0	0.01	36.79	36.81	30.71	26.05	43.68	40.72	22.57	22.98
900.0	0.01	36.10	36.13	30.70	25.58	41.73	39.88	22.21	22.56
1000.0	0.01	35.59	35.61	30.19	25.01	39.69	38.27	21.92	22.20
1100.0	0.01	35.19	35.23	29.77	24.69	37.60	37.05	21.85	22.01
1200.0	0.02	34.90	34.94	29.16	24.20	35.90	35.55	21.94	21.94
1300.0	0.02	34.72	34.76	28.49	23.73	34.12	34.06	22.07	21.93
1400.0	0.02	34.61	34.67	28.23	23.51	32.86	32.85	22.45	22.13
1500.0	0.02	34.58	34.64	27.68	23.10	31.60	31.68	22.84	22.32
1600.0	0.02	34.63	34.69	27.28	23.10	30.79	30.85	23.46	22.72
1700.0	0.02	34.72	34.80	27.36	23.10	30.17	30.30	24.09	23.07
1800.0	0.02	34.87	34.94	27.15	23.09	29.99	29.96	24.71	23.45
1900.0	0.02	35.03	35.12	27.45	23.48	30.26	30.20	25.47	23.96
2000.0	0.02	35.22	35.28	28.02	23.57	30.95	30.91	26.19	24.46
2200.0	0.02	35.53	35.59	29.95	25.30	34.85	34.44	27.17	25.30
2400.0	0.02	35.64	35.70	32.94	29.22	36.33	35.58	27.25	25.82
2600.0	0.03	35.51	35.59	32.51	32.36	29.08	28.93	26.46	25.74
2800.0	0.04	35.20	35.26	28.29	28.39	24.86	24.73	25.79	25.57
3000.0	0.05	34.80	34.85	25.55	24.15	22.88	22.85	24.76	24.76
3200.0	0.05	34.46	34.51	23.85	21.06	22.85	22.85	23.85	23.85
3400.0	0.04	34.22	34.30	23.40	18.94	25.36	25.37	22.82	22.68
3600.0	0.03	34.17	34.26	23.54	17.32	34.57	34.01	22.29	21.97
3800.0	0.03	34.32	34.43	24.79	16.14	30.98	30.69	21.83	21.28
4000.0	0.05	34.69	34.77	27.85	15.20	22.66	22.63	21.72	21.00
4200.0	0.08	35.14	35.20	33.96	14.69	19.36	19.38	21.95	20.99
4400.0	0.09	35.47	35.53	30.05	14.75	18.40	18.46	22.65	21.48
4600.0	0.08	35.54	35.63	23.87	15.59	19.54	19.60	24.09	22.58
4800.0	0.05	35.36	35.50	20.39	17.20	23.79	24.00	25.63	23.91
5000.0	0.03	35.04	35.13	18.98	19.65	38.79	45.85	26.75	25.18
5200.0	0.05	34.67	34.70	18.84	23.14	24.38	24.39	26.52	25.49
5400.0	0.09	34.31	34.37	19.69	27.79	19.16	19.05	24.47	23.94
5600.0	0.12	34.03	34.16	21.43	30.51	17.36	17.35	22.69	22.28
5800.0	0.11	33.95	34.10	24.60	26.57	17.83	17.80	20.88	20.57
6000.0	0.07	34.11	34.20	27.93	22.89	20.88	20.93	19.81	19.18
6200.0	0.04	34.39	34.47	25.17	20.47	29.56	30.72	19.30	18.36
6400.0	0.04	34.72	34.86	21.31	19.13	27.98	28.61	19.25	18.18
6600.0	0.07	35.00	35.27	18.77	18.74	20.91	20.95	19.96	18.89
6800.0	0.10	35.22	35.53	17.67	19.84	18.86	18.84	21.10	20.13
7000.0	0.09	35.28	35.50	18.17	22.58	19.62	19.55	23.06	22.31
7200.0	0.06	35.08	35.18	20.87	29.33	23.97	23.81	24.37	24.53
7400.0	0.04	34.67	34.72	26.97	27.78	43.21	37.09	23.85	24.59
7800.0	0.08	34.00	34.03	25.48	16.66	20.40	20.29	20.19	19.90
8000.0	0.09	33.83	33.87	20.63	14.24	19.82	19.65	18.88	18.28
8200.0	0.07	33.72	33.88	18.55	12.73	22.86	22.65	18.33	17.53
8400.0	0.04	33.81	34.04	17.63	11.72	35.04	35.48	18.27	17.46
8600.0	0.06	34.15	34.35	18.32	11.14	24.42	24.80	18.76	18.08
8800.0	0.10	34.66	34.73	21.08	11.05	18.59	18.77	19.52	19.20
9000.0	0.14	35.04	35.02	29.72	11.60	16.76	16.88	20.41	21.01
9200.0	0.12	35.06	35.06	26.71	13.06	17.57	17.66	21.16	23.01
9400.0	0.07	34.80	34.82	17.97	15.60	22.09	22.25	21.54	24.28
9600.0	0.05	34.44	34.47	14.55	19.17	35.49	43.92	21.45	23.85
9800.0	0.10	34.10	34.11	13.29	24.22	20.40	20.53	21.24	22.64
10000.0	0.19	33.72	33.85	13.53	27.60	15.85	15.92	20.95	21.44
11000.0	0.10	34.03	34.34	18.48	19.26	21.08	21.55	20.58	21.73
12000.0	0.09	34.00	34.05	15.08	18.41	27.23	27.24	23.65	24.25
12400.0	0.12	33.35	33.29	23.37	13.75	20.11	20.46	25.83	25.27

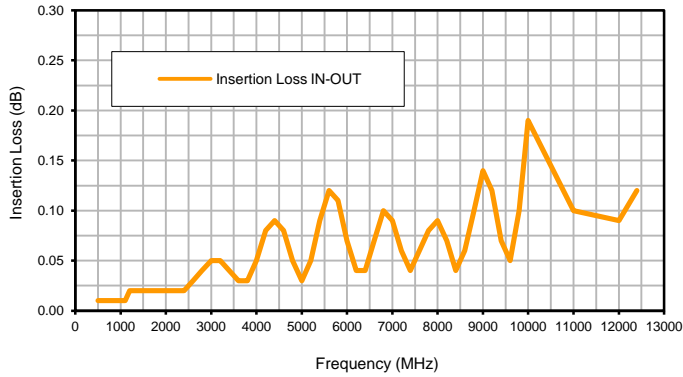
⁽¹⁾ Does not include coupling loss

DC PASS Bi-Directional Coupler

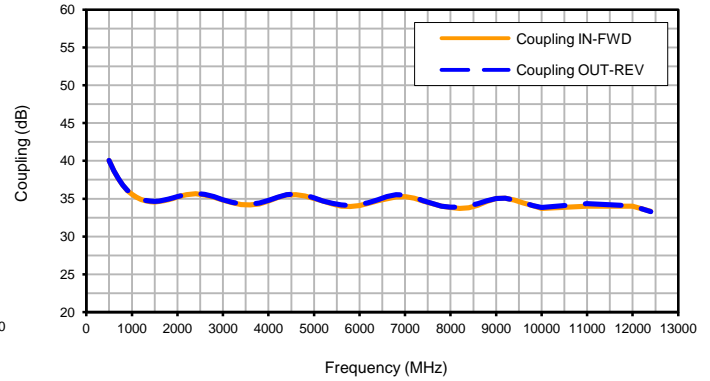
ZGBDC35-93HP+

Typical Performance Curves

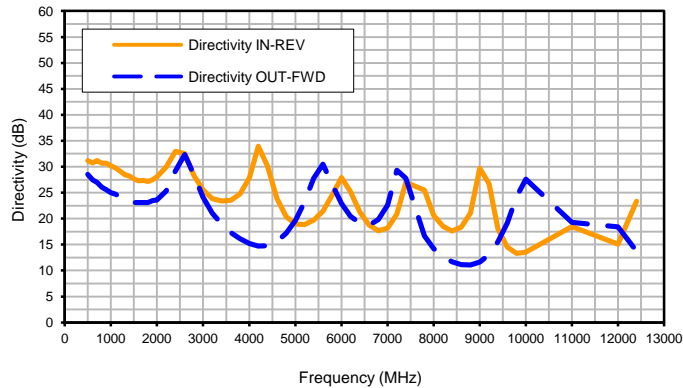
Insertion Loss



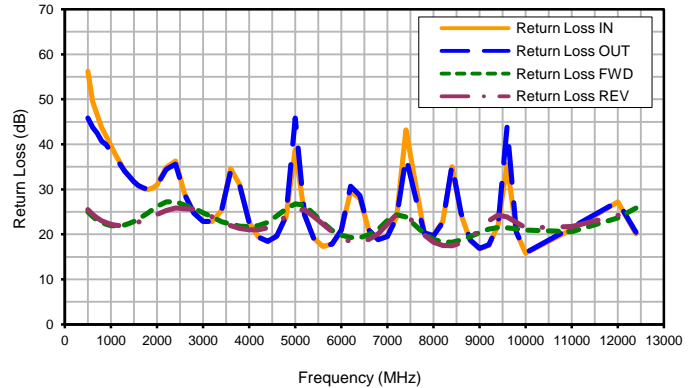
Coupling



Directivity

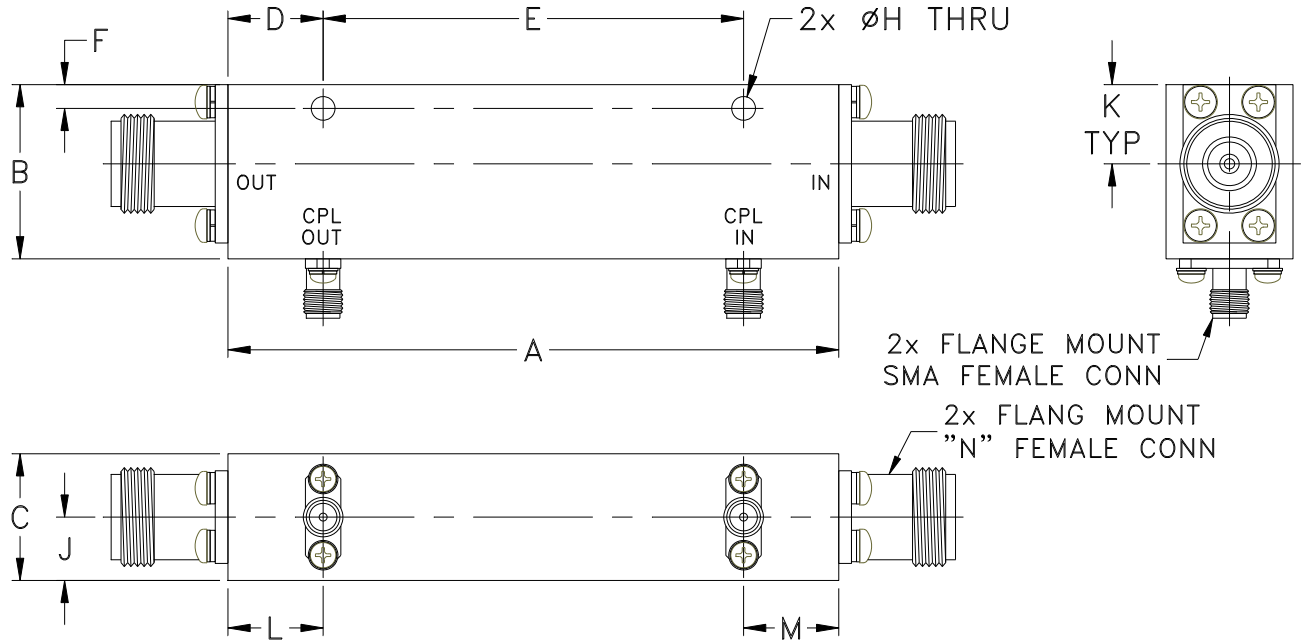


Return Loss



Outline Dimensions

HT1762



CASE #	A	B	C	D	E	F	G	H	J	K
HT1762	3.85 (97.79)	1.10 (27.94)	.80 (20.32)	.60 (15.24)	2.650 (67.31)	.15 (3.81)	- -	.150 (3.81)	.40 (10.16)	.50 (12.70)

CASE #	L	M	WT. GRAM
HT1762	.60 (15.24)	.60 (15.24)	200.0

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

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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RF/IF MICROWAVE COMPONENTS

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
Liquid Ingress	Immersion in 1 meter water, 1/2 hour	IP67, IEC60529
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
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