

20 dB Bi-Directional Coupler ZX30-20-462HP+

50Ω 2600 to 4600 MHz

The Big Deal

- High Power, 40 Watt
- Low insertion loss 0.3 dB typ.
- Miniature case size 1.0 x 0.8 inch
- Pass DC current



CASE STYLE: GW1052

Product Overview

The ZX30-20-462HP+ is a 20 dB high power bi-directional coupler that can pass up to 2A DC from input to output ports. Internally, low loss dielectric material in a micro strip configuration utilizing ADS design software allow for low insertion loss, 0.3 dB, and excellent VSWR of 1.1 to 1 typical. Packaged in a miniature Unibody case allows for excellent grounding and heat transfer.

Key Features

Feature	Advantages
High Power Handling, 40W	Useful in applications for low power and high power requirements, including reliability destructive testing
Wide Frequency coverage, 2600 to 4600 MHz	Useful in many applications including WiMax
Excellent insertion loss and port matching	Provides signal sampling for high power transmitters with a minimum of signal loss and disturbance
Very flat coupling	Allows for accurate monitoring of signal power level
Miniature package	Allows for compact system packaging and provides highest maximum power / volume figure-of-merit

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



Bi-Directional Coupler

50Ω, 20dB Coupling, 40W 2600 to 4600 MHz

ZX30-20-462HP+



Generic photo used for illustration purposes only

CASE STYLE: GW1052

Connectors Model
SMA ZX30-20-462HP+

+RoHS Compliant

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

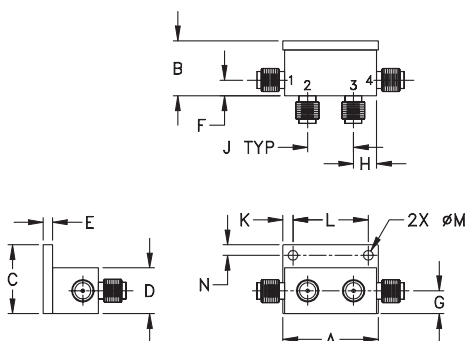
Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
DC Current	2.0A
Permanent damage may occur if any of these limits are exceeded.	

Coaxial Connections

INPUT	1
OUTPUT	4
COUPLED (forward)	2
COUPLED (reverse)	3

Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
1.04	.60	.75	.50	.10	.17	.25
26.42	15.24	19.05	12.70	2.54	4.32	6.35
H	J	K	L	M	N	wt.
.25	.50	.11	.820	.106	.12	grams
6.35	12.70	2.79	20.83	2.69	3.05	21.0

Features

- wideband, usable from 2 to 5.2 GHz
- low mainline loss, 0.3 dB typ.
- high power, 40 watt.
- DC Current through input to output 2.0A Max. at 10 Watt RF input power.
- protected by US patent, 6,790,049
- low cost

Applications

- WiMax
- defense communications
- PCS/DCS
- cellular
- DECT
- Lab test

Electrical Specifications

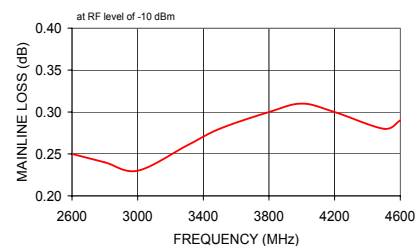
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		2600	—	4600	MHz
Coupling	2600-4600	—	19.3±0.8	—	dB
	3000-4200	—	19.3±0.8	—	dB
Coupling Flatness	2600-4600	—	—	±0.6	dB
	3000-4200	—	—	±0.4	dB
Mainline Loss ¹	2600-4600	—	0.35	0.6	dB
	3000-4200	—	0.35	0.6	dB
Directivity	2600-4600	12	20	—	dB
	3000-4200	14	25	—	dB
VSWR	2600-4600	—	1.2	—	:1
	3000-4200	—	1.2	—	:1
Input Power	2600-4600	—	—	40	W
	3000-4200	—	—	40	W

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

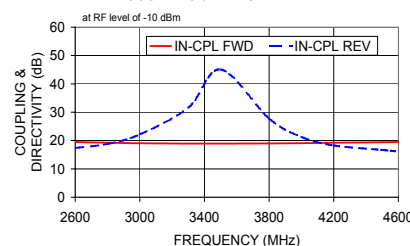
Typical Performance Data

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
2600.00	0.25	19.48	19.43	17.70	17.38	20.48	20.32	16.57	16.66
2800.00	0.24	19.24	19.21	19.31	18.83	25.39	25.24	17.34	17.46
3000.00	0.23	19.06	19.03	22.71	22.18	38.65	34.44	18.51	18.50
3300.00	0.26	18.93	18.87	32.80	31.58	28.54	26.31	21.09	20.97
3500.00	0.28	18.94	18.90	37.88	45.08	23.42	22.71	23.91	23.57
3800.00	0.30	19.01	18.99	26.13	27.76	20.93	20.59	33.06	33.55
4000.00	0.31	19.09	19.10	20.76	21.28	20.88	20.46	36.04	40.31
4200.00	0.30	19.23	19.18	18.35	18.29	22.37	22.10	26.56	27.56
4500.00	0.28	19.42	19.39	17.09	16.69	29.02	29.59	20.05	20.46
4600.00	0.29	19.52	19.47	17.13	16.11	33.27	37.32	18.77	19.22

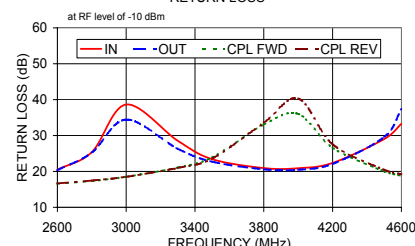
ZX30-20-462HP+
MAINLINE LOSS



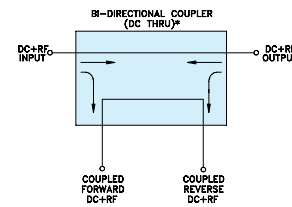
ZX30-20-462HP+
COUPLING & DIRECTIVITY



ZX30-20-462HP+
RETURN LOSS



Electrical Schematic



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

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Bi-Directional Coupler

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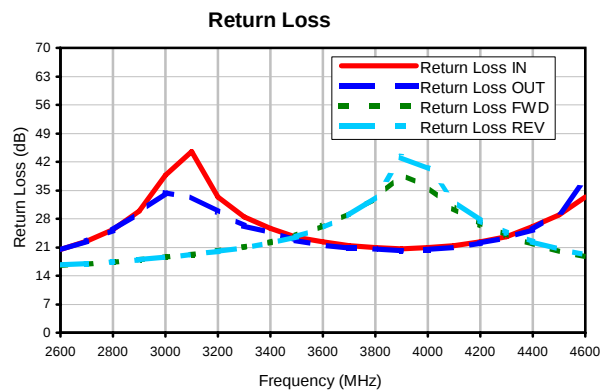
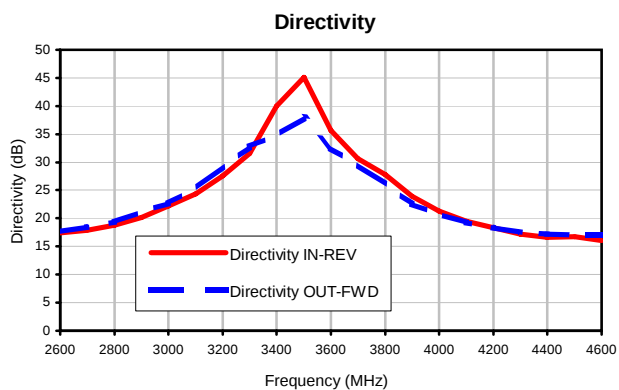
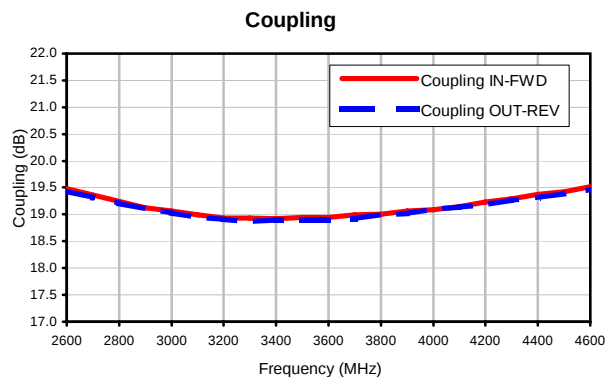
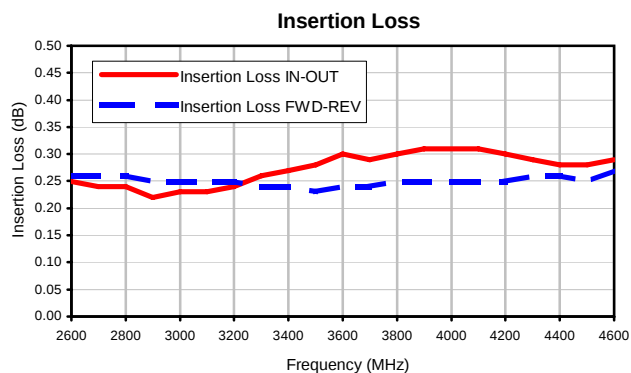
Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)		COUPLING (dB)		DIRECTIVITY (dB)		RETURN LOSS (dB)			
	IN-OUT	FWD-REV	IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
2600.0	0.25	0.26	19.48	19.43	17.38	17.70	20.48	20.32	16.57	16.66
2700.0	0.24	0.26	19.36	19.31	17.90	18.43	22.55	22.49	16.87	16.99
2800.0	0.24	0.26	19.24	19.21	18.83	19.31	25.39	25.24	17.34	17.46
2900.0	0.22	0.25	19.13	19.10	20.16	21.23	29.92	29.50	17.91	17.95
3000.0	0.23	0.25	19.06	19.03	22.18	22.71	38.65	34.44	18.51	18.50
3100.0	0.23	0.25	18.99	18.95	24.43	25.26	44.45	33.27	19.23	19.13
3200.0	0.24	0.25	18.93	18.91	27.60	29.28	33.38	29.75	20.06	19.97
3300.0	0.26	0.24	18.93	18.87	31.58	32.80	28.54	26.31	21.09	20.97
3400.0	0.27	0.24	18.92	18.90	40.03	34.75	25.62	24.73	22.25	22.06
3500.0	0.28	0.23	18.94	18.90	45.08	37.88	23.42	22.71	23.91	23.57
3600.0	0.30	0.24	18.94	18.90	35.61	32.61	22.34	21.58	26.21	25.84
3700.0	0.29	0.24	18.99	18.92	30.69	29.66	21.37	20.83	29.20	28.81
3800.0	0.30	0.25	19.01	18.99	27.76	26.13	20.93	20.59	33.06	33.55
3900.0	0.31	0.25	19.06	19.02	23.94	22.57	20.65	20.16	38.79	43.04
4000.0	0.31	0.25	19.09	19.10	21.28	20.76	20.88	20.46	36.04	40.31
4100.0	0.31	0.25	19.15	19.14	19.50	19.26	21.38	20.85	30.51	32.55
4200.0	0.30	0.25	19.23	19.18	18.29	18.35	22.37	22.10	26.56	27.56
4300.0	0.29	0.26	19.29	19.27	17.19	17.50	23.61	23.34	23.84	24.56
4400.0	0.28	0.26	19.38	19.31	16.60	17.16	26.13	25.28	21.74	22.30
4500.0	0.28	0.25	19.42	19.39	16.69	17.09	29.02	29.59	20.05	20.46
4600.0	0.29	0.27	19.52	19.47	16.11	17.13	33.27	37.32	18.77	19.22

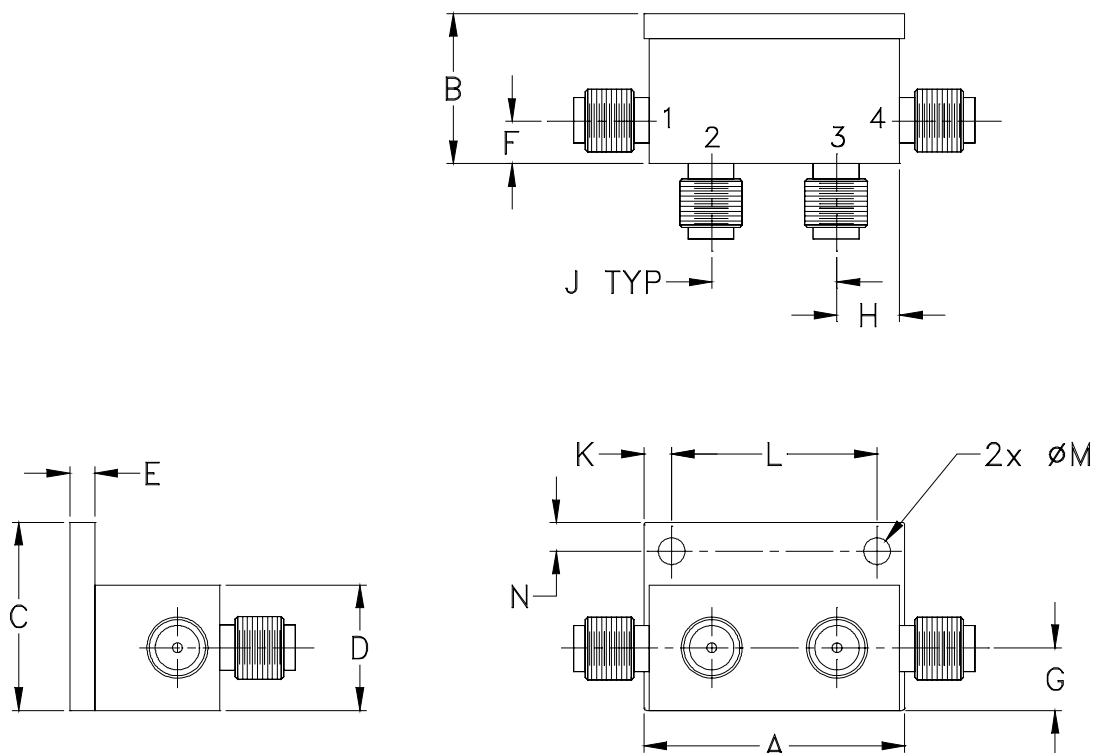
Bi-Directional Coupler

Typical Performance Curves

ZX30-20-462HP+



Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N	WT. GRAM
GW1052	1.04 (26.42)	.60 (15.24)	.75 (19.05)	.50 (12.70)	.10 (2.54)	.17 (4.32)	.25 (6.35)	.25 (6.35)	.50 (12.70)	.11 (2.79)	.820 (20.83)	.106 (2.69)	.12 (3.05)	21.0

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

Tolerance on hole size and interaxes dimensions to be $\pm .005$.

Notes:

1. Case material: Brass.
2. Case finish: Nickel plate.



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	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