

14 dB Directional Coupler

ZX30-14-972HP+

50Ω 8300 to 9700 MHz

The Big Deal

- High Power, 20 Watt
- Low insertion loss 0.6 dB typ.
- Miniature case size 1.0 x 0.8 inch
- Pass DC current



CASE STYLE: GW1052

Product Overview

The ZX30-14-972HP+ is a 14 dB high power directional coupler that can pass up to 50mA 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, 0.6 dB. Packaged in a miniature Unibody case allows for excellent grounding and heat transfer.

Key Features

Feature	Advantages
High Power Handling, 20W	Useful in applications for low power and high power requirements, including reliability destructive testing
Wide Frequency coverage, 8300 to 9700 MHz	Useful in many applications
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



Directional Coupler

50Ω, 14dB Coupling, 20W 8300 to 9700 MHz

Maximum Ratings

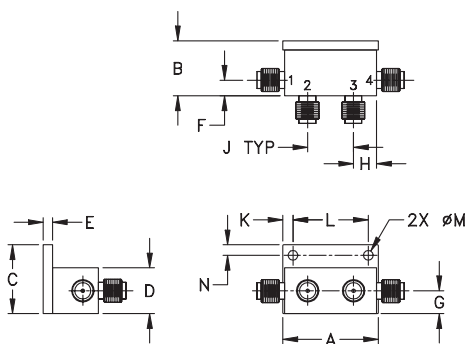
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
DC Current	500mA

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

Coaxial Connections

INPUT	1
OUTPUT	4
COUPLED (forward)	2
50Ω TERM EXTERNAL	3

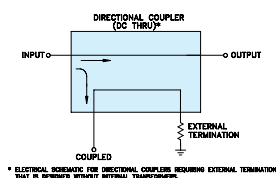
Outline Drawing



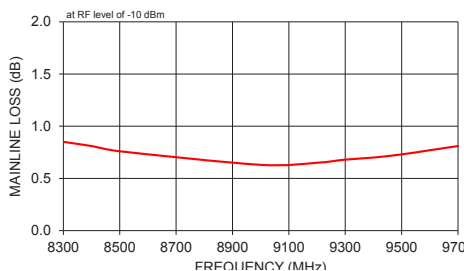
Outline Dimensions (inch/mm)

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

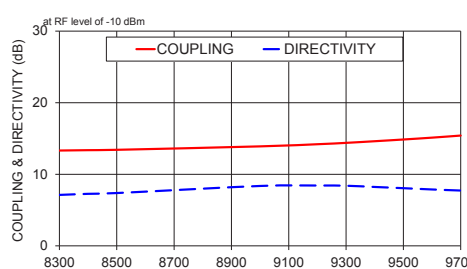
Electrical Schematic



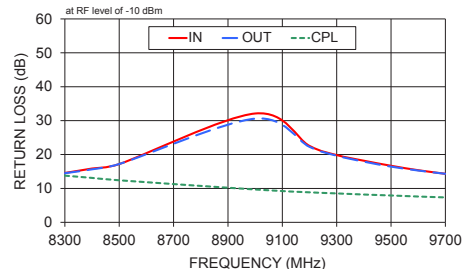
ZX30-14-972HP-S+
MAINLINE LOSS



ZX30-14-972HP-S+
COUPLING & DIRECTIVITY



ZX30-14-972HP-S+
RETURN LOSS



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ZX30-14-972HP+



Generic photo used for illustration purposes only

CASE STYLE: GW1052

Connectors Model
SMA ZX30-14-972HP+

+RoHS Compliant

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

Features

- wideband, usable from 8.3 to 9.7 GHz
- low mainline loss, 0.6 dB typ.
- high power, 20 watt.
- DC Current through input to output 500mA Max. at 10 Watt RF input power.
- protected by US patent, 6,790,049
- low cost

Applications

- radar
- defense communications
- satellite
- lab test

Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		8300	—	9700	MHz
Mainline Loss (above theoretical 0.18 dB)	8300-9300	—	0.67	0.9	dB
	9300-9700	—	0.84	1.2	dB
Coupling	8300-9300	—	14.0±1.0	—	dB
	9300-9700	—	14.8±1.0	—	dB
Coupling Flatness (±)	8300-9300	—	0.5	0.7	dB
	9300-9700	—	0.5	0.75	dB
Directivity	8300-9300	5	7	—	dB
	9300-9700	4	7	—	dB
Return Loss (Input)	8300-9300	11	14	—	dB
	9300-9700	8	11	—	dB
Return Loss (Output)	8300-9300	11	14	—	dB
	9300-9700	8	11	—	dB
Return Loss (Coupling)	8300-9300	—	9	—	dB
	9300-9700	—	7	—	dB
Input Power	8300-9700	—	—	20	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	Cpl
8300.00	0.85	13.32	7.12	14.56	14.49	13.77
8400.00	0.81	13.37	7.27	15.87	15.64	13.10
8500.00	0.76	13.42	7.38	17.19	17.20	12.40
9000.00	0.63	13.90	8.37	32.10	30.58	9.68
9200.00	0.65	14.20	8.43	22.54	22.26	8.85
9300.00	0.68	14.39	8.40	19.84	19.66	8.53
9400.00	0.70	14.62	8.23	18.17	17.90	8.20
9500.00	0.73	14.86	8.06	16.68	16.43	7.92
9600.00	0.77	15.12	7.88	15.37	15.28	7.61
9700.00	0.81	15.41	7.73	14.32	14.31	7.35

Directional Coupler

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Typical Performance Data

FREQUENCY	INSERTION LOSS	COUPLING	DIRECTIVITY	RETURN LOSS		
				(dB)		
(MHz)	(dB)	(dB)	(dB)	IN	OUT	CPL
8000.0	1.01	13.29	6.50	11.86	12.19	16.46
8100.0	0.97	13.28	6.73	12.50	12.80	15.33
8200.0	0.91	13.29	6.96	13.45	13.61	14.45
8300.0	0.85	13.32	7.12	14.56	14.49	13.77
8400.0	0.81	13.37	7.27	15.87	15.64	13.10
8500.0	0.76	13.42	7.38	17.19	17.20	12.40
8700.0	0.68	13.59	7.79	21.57	22.26	11.13
8900.0	0.64	13.79	8.21	30.32	32.22	10.12
9000.0	0.63	13.90	8.37	32.10	30.58	9.68
9050.0	0.63	13.97	8.39	28.90	28.33	9.43
9100.0	0.64	14.04	8.42	26.23	25.44	9.21
9150.0	0.64	14.12	8.45	24.37	23.66	9.03
9200.0	0.65	14.20	8.43	22.54	22.26	8.85
9250.0	0.66	14.29	8.43	21.07	20.76	8.70
9300.0	0.68	14.39	8.40	19.84	19.66	8.53
9325.0	0.68	14.44	8.34	19.39	19.26	8.45
9350.0	0.69	14.50	8.28	19.00	18.75	8.36
9375.0	0.69	14.56	8.25	18.58	18.28	8.28
9400.0	0.70	14.62	8.23	18.17	17.90	8.20
9425.0	0.70	14.68	8.20	17.83	17.66	8.12
9450.0	0.72	14.74	8.15	17.48	17.32	8.05
9475.0	0.72	14.80	8.11	17.10	16.83	7.98
9500.0	0.73	14.86	8.06	16.68	16.43	7.92
9525.0	0.74	14.92	8.01	16.31	16.17	7.85
9550.0	0.75	14.99	7.98	15.96	15.96	7.78
9575.0	0.76	15.06	7.94	15.64	15.66	7.70
9600.0	0.77	15.12	7.88	15.37	15.28	7.61
9625.0	0.78	15.19	7.85	15.13	14.91	7.53
9650.0	0.79	15.26	7.83	14.90	14.64	7.47
9675.0	0.80	15.34	7.77	14.64	14.50	7.41
9700.0	0.81	15.41	7.73	14.32	14.31	7.35
9750.0	0.83	15.55	7.63	13.88	13.73	7.25
9800.0	0.85	15.70	7.55	13.50	13.38	7.12
9850.0	0.88	15.85	7.41	13.05	12.96	7.01
9900.0	0.89	16.01	7.28	12.77	12.53	6.92
10000.0	0.92	16.37	6.99	12.15	11.90	6.75



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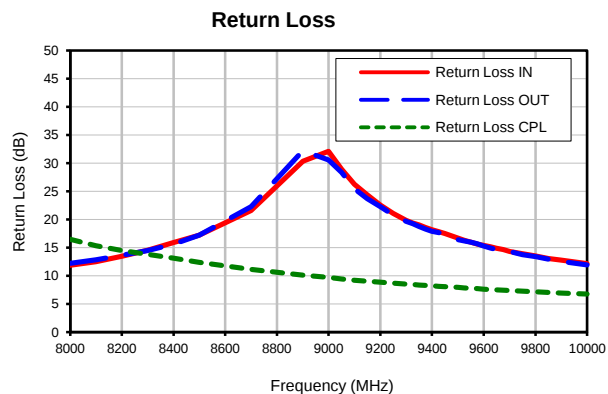
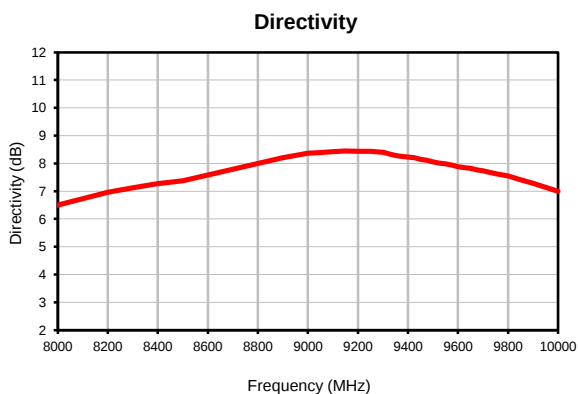
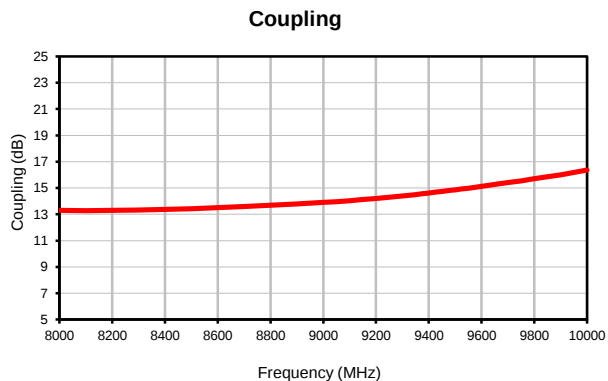
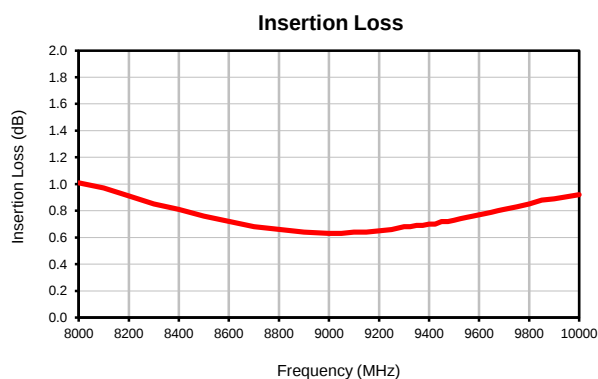
IF/RF MICROWAVE COMPONENTS

REV. OR
ZX30-14-972HP+
4/3/2013
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Typical Performance Curves



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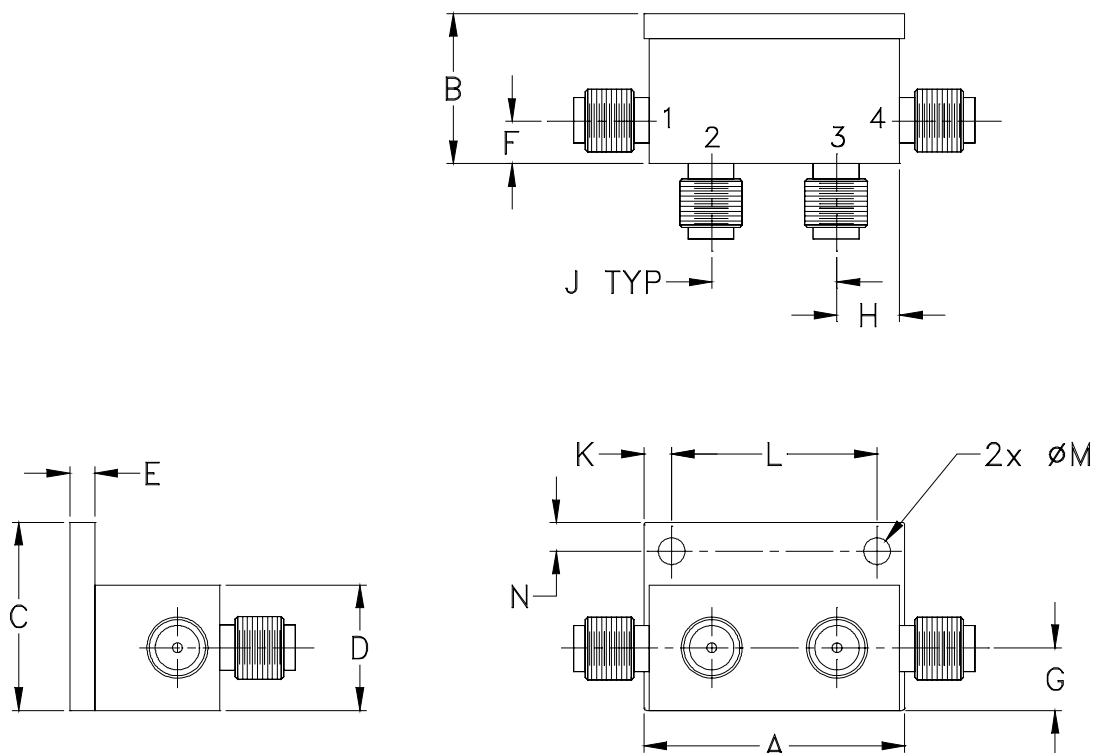


IF/RF MICROWAVE COMPONENTS



REV. OR
ZX30-14-972HP+
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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.



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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