

20dB DC Pass

# High Power Bi-Directional Coupler ZGBDC20-33HP+

50Ω

Up to 250W

300 to 3000 MHz



CASE STYLE: HT1761

## The Big Deal

- High Power Handling: 250W
- Low Insertion Loss: 0.15 dB\*
- Rugged IP67 Weatherproof case

## Product Overview

Mini-Circuits ZGBDC20-33HP+ broadband high power bi-directional coupler offers excellent performance across a wide range of popular frequency bands. Built using low loss suspended substrate construction, the ZGBDC20-33HP+ 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 , 0.15 dB Typ*     | With extremely low insertion loss, this coupler is ideal for critical high power applications.                                                                                                             |
| Ultra High Return Loss, 28 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                              | 300-3000 MHz coverage includes many popular cellular, WiMAX, LTE, ISM, satellite, P2P, aviation, maritime, defense, and radar bands                                                                        |
| Excellent Directivity and Coupling Flatness | Typical 23 dB directivity and $\pm 0.2$ 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 ZGBDC20-33HP+ 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.  
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# High Power Bi-Directional Coupler

ZGBDC20-33HP+

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## Maximum Ratings

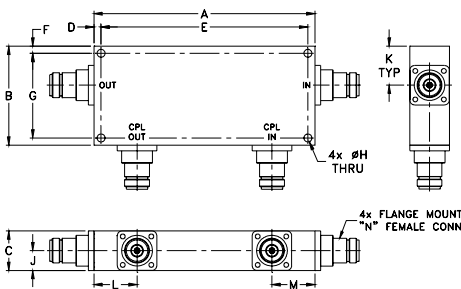
|                       |                |
|-----------------------|----------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature   | -55°C to 100°C |
| DC Current            | 3A             |

Permanent damage may occur if any of these limits are exceeded

## Coaxial Connections

|             |         |
|-------------|---------|
| INPUT       | IN      |
| OUTPUT      | OUT     |
| COUPLED IN  | CPL IN  |
| COUPLED OUT | CPL OUT |

## Outline Drawing



## Outline Dimensions (inch/mm)

|        |       |       |       |        |      |       |
|--------|-------|-------|-------|--------|------|-------|
| A      | B     | C     | D     | E      | F    | G     |
| 5.58   | 2.50  | 1.00  | .18   | 5.215  | .18  | 2.140 |
| 141.73 | 63.50 | 25.40 | 4.57  | 132.46 | 4.57 | 54.36 |
| H      | J     | K     | L     | M      |      | wt    |
| .200   | .50   | .99   | 1.09  | 1.09   |      | grams |
| 5.08   | 12.70 | 25.15 | 27.69 | 27.69  |      | 700.0 |

IP protection classification: IP67

## Features

- wide frequency range, 300-3000 MHz
- good coupling flatness,  $\pm 0.2$  dB typ. full band
- high directivity, 25 dB typ.
- good VSWR, 1.10:1 typ.
- high power, up to 250W
- DC current pass through input to output
- IP67 weather proof case

## Applications

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

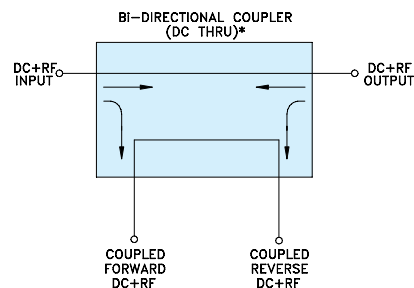
## Electrical Specifications at 25°C

| Parameter                  | Frequency (MHz) | Min. | Typ.           | Max.       | Units |
|----------------------------|-----------------|------|----------------|------------|-------|
| Operating Frequency        |                 | 300  |                | 3000       | MHz   |
| Coupling                   | 300-700         | —    | 22.9 $\pm$ 2.7 | —          | dB    |
|                            | 700-2700        | —    | 20.4 $\pm$ 0.6 | —          |       |
|                            | 2000-3000       | —    | 20.2 $\pm$ 0.4 | —          |       |
| Coupling Flatness          | 300-700         | —    | —              | $\pm 3.0$  | dB    |
|                            | 700-2700        | —    | —              | $\pm 0.75$ |       |
|                            | 2000-3000       | —    | —              | $\pm 0.5$  |       |
| Mainline Loss <sup>1</sup> | 300-700         | —    | 0.08           | 0.2        | dB    |
|                            | 700-2700        | —    | 0.15           | 0.3        |       |
|                            | 2000-3000       | —    | 0.2            | 0.35       |       |
| Directivity                | 300-700         | 20   | 28             | —          | dB    |
|                            | 700-2700        | 14   | 23             | —          |       |
|                            | 2000-3000       | 14   | 21             | —          |       |
| Return Loss                | 300-700         | —    | 32.2           | —          | dB    |
|                            | 700-2700        | —    | 30.7           | —          |       |
|                            | 2000-3000       | —    | 23.6           | —          |       |
| Input Power <sup>2</sup>   | 300-700         | —    | —              | 250        | W     |
|                            | 700-2700        | —    | —              | 250        |       |
|                            | 2000-3000       | —    | —              | 160        |       |

1. Does not include coupling loss.

2. At 25°C with no DC current. Derate linearly to 100W (380-2700 MHz) and to 64W (2700-3600 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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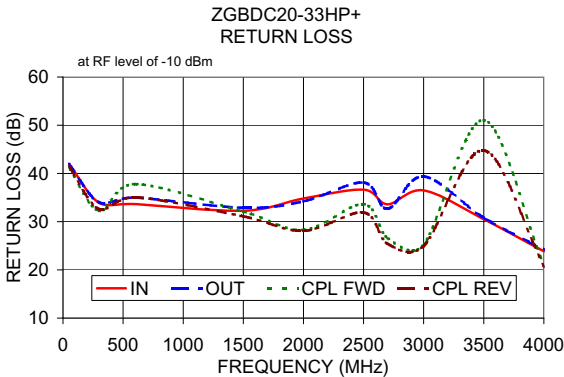
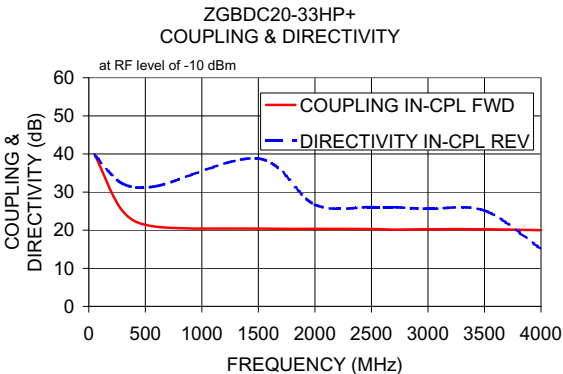
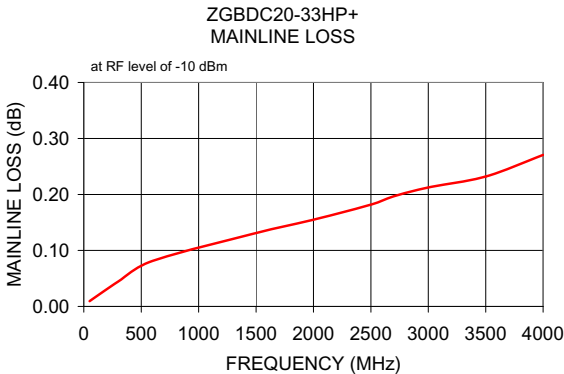
| Connectors | Model         | Price        | Qty.  |
|------------|---------------|--------------|-------|
| N-Type     | ZGBDC20-33HP+ | \$199.95 ea. | (1-9) |

## +RoHS Compliant

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

Typical Performance Data

| Frequency<br>(MHz) | Mainline Loss<br>(dB) | Coupling<br>(dB) |             | Directivity<br>(dB) |            |       | Return Loss<br>(dB) |         |         |  |
|--------------------|-----------------------|------------------|-------------|---------------------|------------|-------|---------------------|---------|---------|--|
|                    | In-Out                | In-Cpl Fwd       | Out-Cpl Rev | Out-Cpl Fwd         | In-Cpl Rev | In    | Out                 | Cpl Fwd | Cpl Rev |  |
| 50.00              | 0.01                  | 39.91            | 39.93       | 38.30               | 39.71      | 42.00 | 41.93               | 41.19   | 41.44   |  |
| 300.00             | 0.04                  | 25.02            | 25.04       | 28.93               | 32.19      | 33.92 | 34.01               | 32.25   | 32.61   |  |
| 600.00             | 0.08                  | 20.91            | 20.93       | 27.13               | 31.58      | 33.63 | 34.97               | 37.80   | 35.06   |  |
| 1500.00            | 0.13                  | 20.41            | 20.52       | 27.67               | 38.81      | 32.27 | 32.89               | 32.08   | 31.10   |  |
| 2000.00            | 0.15                  | 20.35            | 20.52       | 21.92               | 26.70      | 34.81 | 34.23               | 28.28   | 28.10   |  |
| 2500.00            | 0.18                  | 20.29            | 20.50       | 23.00               | 26.06      | 36.63 | 38.11               | 33.64   | 31.90   |  |
| 2700.00            | 0.20                  | 20.14            | 20.37       | 20.92               | 26.03      | 33.61 | 32.67               | 26.62   | 25.43   |  |
| 3000.00            | 0.21                  | 20.23            | 20.50       | 21.01               | 25.61      | 36.48 | 39.39               | 25.19   | 24.94   |  |
| 3500.00            | 0.23                  | 20.25            | 20.50       | 21.90               | 25.13      | 30.51 | 30.83               | 51.04   | 44.79   |  |
| 4000.00            | 0.27                  | 20.01            | 20.38       | 13.22               | 15.11      | 23.85 | 24.19               | 20.91   | 20.73   |  |



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