

# Coaxial Bi-Directional Coupler

50Ω Up to 25W 1 to 60 MHz

ZFBDC20-61HP+



SMA version shown  
CASE STYLE: JD1252

| Connectors | Model           |
|------------|-----------------|
| BNC        | ZFBDC20-61HP+   |
| SMA        | ZFBDC20-61HP-S+ |
| N-Type     | ZFBDC20-61HP-N+ |

#### +RoHS Compliant

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

## Maximum Ratings

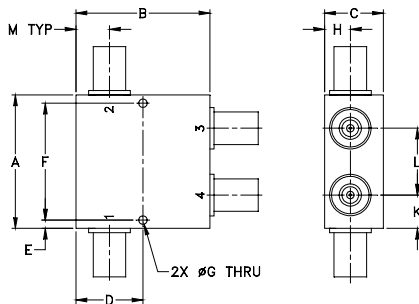
|                       |                |
|-----------------------|----------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature   | -55°C to 100°C |

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

## Coaxial Connections

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

## Outline Drawing



## Outline Dimensions (inch)

| A     | B     | C     | D     | E    | F     | G     |
|-------|-------|-------|-------|------|-------|-------|
| 2.00  | 2.00  | .88   | 1.000 | 0.13 | 1.750 | 0.125 |
| 50.80 | 50.80 | 22.35 | 25.40 | 3.30 | 44.45 | 3.18  |

| H    | J  | K     | L     | M     | wt    |
|------|----|-------|-------|-------|-------|
| 0.38 | -- | 0.50  | 1.00  | 0.50  | grams |
| 9.65 | -- | 12.70 | 25.40 | 12.70 | 250.0 |

## Features

- excellent mainline loss, 0.1 dB typ.
- excellent directivity, 30 dB typ.
- rugged shielded case

## Applications

- military mobile
- instrumentation
- communication receivers & transmitters

## Bi-Directional Coupler Electrical Specifications

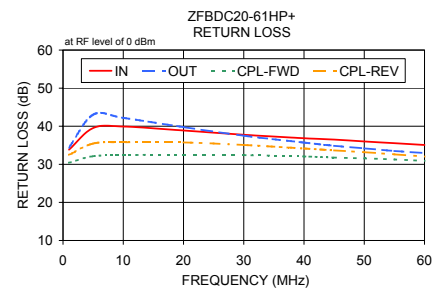
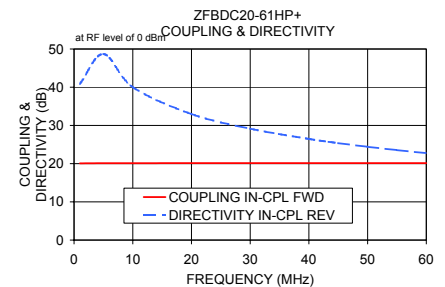
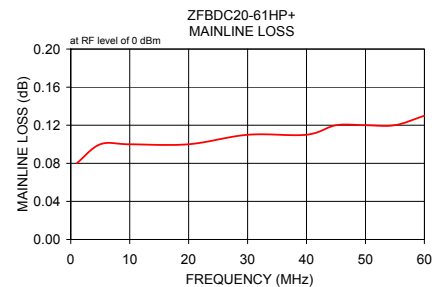
| FREQ.<br>(MHz) | COUPLING<br>(dB) |          | MAINLINE LOSS <sup>1</sup><br>(dB) |      | DIRECTIVITY<br>(dB) |      | VSWR<br>(:1) | POWER <sup>2</sup><br>INPUT<br>(W) |
|----------------|------------------|----------|------------------------------------|------|---------------------|------|--------------|------------------------------------|
|                | Nom.             | Flatness | Typ.                               | Max. | Typ.                | Min. |              |                                    |
| 1-60           | 20±0.6           | ±0.3     | 0.1                                | 0.25 | 30                  | 20   | 1.07         | 15                                 |
| 10-60          | 20±0.3           | ±0.3     | 0.1                                | 0.25 | 30                  | 20   | 1.07         | 25                                 |

<sup>1</sup> Mainline loss includes theoretical power loss at coupled port.

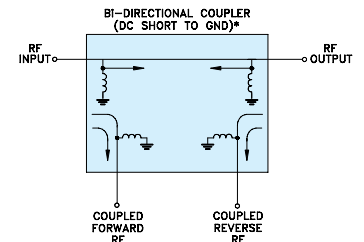
<sup>2</sup> Power rating is specified up to +55°C. Power Input Specifications at +100°C is 50% value at +55°C. For specifications limits between +55°C and +100°C, derate linearly.

## 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 |
| 1.00               | 0.08                  | 20.08            | 20.03       | 40.68               | 40.91      | 33.84               | 34.40 | 30.40   | 32.48   |
| 5.00               | 0.10                  | 20.11            | 20.03       | 47.05               | 48.68      | 39.54               | 43.04 | 32.12   | 35.46   |
| 10.00              | 0.10                  | 20.12            | 20.05       | 39.21               | 40.02      | 39.93               | 42.19 | 32.38   | 35.79   |
| 20.00              | 0.10                  | 20.13            | 20.06       | 32.28               | 32.98      | 38.88               | 39.77 | 32.57   | 35.75   |
| 30.00              | 0.11                  | 20.14            | 20.08       | 28.66               | 29.14      | 37.76               | 37.50 | 32.42   | 35.08   |
| 40.00              | 0.11                  | 20.14            | 20.09       | 26.16               | 26.48      | 36.85               | 35.71 | 32.07   | 34.15   |
| 45.00              | 0.12                  | 20.14            | 20.10       | 25.16               | 25.38      | 36.49               | 34.87 | 31.76   | 33.67   |
| 50.00              | 0.12                  | 20.14            | 20.11       | 24.21               | 24.42      | 36.01               | 34.20 | 31.56   | 33.18   |
| 55.00              | 0.12                  | 20.14            | 20.11       | 23.38               | 23.54      | 35.56               | 33.51 | 31.27   | 32.62   |
| 60.00              | 0.13                  | 20.13            | 20.12       | 22.58               | 22.74      | 35.07               | 32.95 | 30.90   | 32.05   |



## Electrical Schematic



\* ELECTRICAL SCHEMATIC IS FOR BI-DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) THAT ROUTES DC FROM RF PORTS TO GROUND.

## Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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](http://www.minicircuits.com/MCLStore/terms.jsp)



[www.minicircuits.com](http://www.minicircuits.com) P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 [sales@minicircuits.com](mailto:sales@minicircuits.com)

REV. C  
M151107  
ED-13225  
ZFBDC20-61HP+  
WP/CP/AM  
151007  
Page 1 of 1