

# Coaxial Directional Coupler

50Ω

1 to 750 MHz

ZFDC-10-22



BNC version shown

CASE STYLE: K18

| Connectors           | Model        |
|----------------------|--------------|
| BNC                  | ZFDC-10-22   |
| SMA                  | ZFDC-10-22-S |
| N-TYPE               | ZFDC-10-22-N |
| BRACKET (OPTION "B") |              |

## 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 | 3 |

## Features

- excellent directivity, 25 dB typ.
- excellent VSWR, 1.25:1 typ.
- rugged shielded case

## Applications

- VHF/UHF
- instrumentation
- communications receivers & transmitters

## Electrical Specifications

| FREQ.<br>RANGE<br>(MHz) | COUPLING<br>(dB) |          | MAINLINE LOSS <sup>1</sup><br>(dB) |      |      |      |      |      | DIRECTIVITY<br>(dB) |      |      |      |      |      | VSWR<br>(:1) | POWER<br>INPUT<br>(W) |      |
|-------------------------|------------------|----------|------------------------------------|------|------|------|------|------|---------------------|------|------|------|------|------|--------------|-----------------------|------|
|                         |                  |          |                                    |      |      |      |      |      |                     |      |      |      |      |      |              |                       |      |
|                         | Nom.             | Flatness | L                                  |      | M    |      | U    |      | L                   |      | M    |      | U    |      | Typ.         | L                     | MU   |
| $f_L$ - $f_U$           |                  |          | Typ.                               | Max. | Typ. | Max. | Typ. | Max. | Typ.                | Min. | Typ. | Min. | Typ. | Min. | Typ.         | Max.                  | Max. |
| 1-750                   | 11±0.5           | ±0.5     | 1.1                                | 1.9  | 1.2  | 1.7  | 1.4  | 1.9  | 35                  | 30   | 25   | 20   | 25   | 20   | 1.25         | 1.0                   | 2.0  |

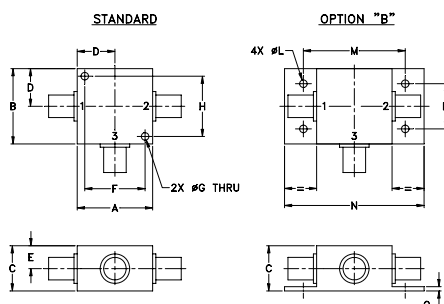
L = low range [ $f_L$  to  $10 f_L$ ] M = mid range [ $10 f_L$  to  $f_U/2$ ] U = upper range [ $f_U/2$  to  $f_U$ ]

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

## Typical Performance Data

| Frequency<br>(MHz) | Mainline Loss<br>(dB)<br>In-Out | Coupling<br>(dB)<br>In-Cpl | Directivity<br>(dB) | Return Loss<br>(dB) |       |       |
|--------------------|---------------------------------|----------------------------|---------------------|---------------------|-------|-------|
|                    |                                 |                            |                     | In                  | Out   | Cpl   |
| 5.00               | 1.17                            | 10.76                      | 56.00               | 26.72               | 17.45 | 17.54 |
| 10.00              | 1.13                            | 10.72                      | 55.00               | 31.54               | 18.12 | 18.32 |
| 20.00              | 1.21                            | 10.74                      | 54.00               | 34.28               | 18.19 | 18.42 |
| 50.00              | 1.26                            | 10.79                      | 52.00               | 30.97               | 17.69 | 17.87 |
| 100.00             | 1.20                            | 10.85                      | 45.27               | 29.52               | 17.58 | 17.66 |
| 200.00             | 1.24                            | 10.84                      | 36.71               | 29.28               | 17.84 | 17.74 |
| 366.22             | 1.34                            | 10.87                      | 31.90               | 29.98               | 19.03 | 18.34 |
| 500.00             | 1.22                            | 10.90                      | 30.51               | 29.97               | 20.33 | 18.48 |
| 727.43             | 1.28                            | 10.96                      | 30.19               | 27.90               | 23.20 | 16.88 |
| 750.00             | 1.27                            | 10.94                      | 29.66               | 27.62               | 23.46 | 16.58 |

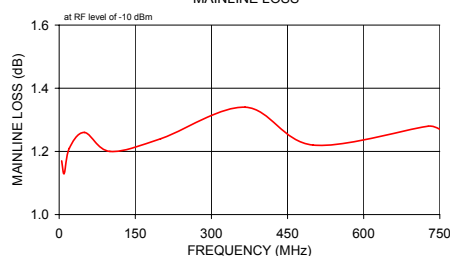
## Outline Drawing



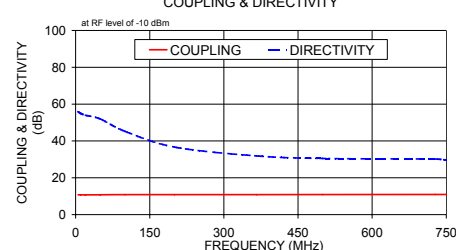
## Outline Dimensions (inch/mm)

| A     | B     | C     | D     | E    | F     | G    | H     | J  | K  | L    | M     | N     | P     | Q    | wt    |
|-------|-------|-------|-------|------|-------|------|-------|----|----|------|-------|-------|-------|------|-------|
| 1.25  | 1.25  | .75   | .63   | .38  | 1.00  | .125 | 1.000 | -- | -- | .125 | 1.688 | 2.18  | .75   | .07  | grams |
| 31.75 | 31.75 | 19.05 | 16.00 | 9.65 | 25.40 | 3.18 | 25.40 | -- | -- | 3.18 | 42.88 | 55.37 | 19.05 | 1.78 | 70.0  |

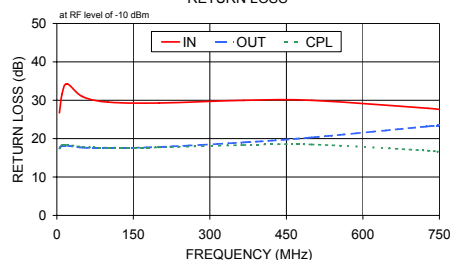
ZFDC-10-22  
MAINLINE LOSS



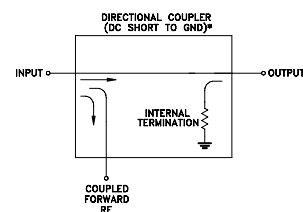
ZFDC-10-22  
COUPLING & DIRECTIVITY



ZFDC-10-22  
RETURN LOSS



## Electrical Schematic



\* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMERS 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. B  
M151107  
ZFDC-10-22  
WZ/TD/CP/AM  
151007