

Coaxial Directional Coupler

75Ω

10 to 250 MHz

ZFDC-20-3-75+



Generic photo used for illustration purposes only

CASE STYLE: K18

Connectors Model
BNC ZFDC-20-3-75+
BRACKET (OPTION "B")

+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 | 3 |

Features

- excellent directivity, 35 dB typ.
- excellent mainline loss, 0.3 dB typ.
- rugged shielded case

Applications

- catv
- VHF/UHF
- instrumentation
- amateur radio

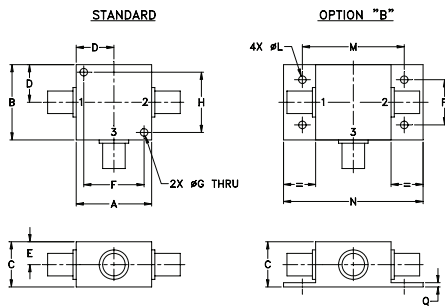
Electrical Specifications

| FREQ. RANGE (MHz) | COUPLING (dB) | | MAINLINE LOSS ¹ (dB) | | | | | | DIRECTIVITY (dB) | | | | | | VSWR (:1) | POWER INPUT (W) | | |
|-------------------|---------------|----------|---------------------------------|------|------|------|------|------|------------------|------|------|------|------|------|-----------|-----------------|-----|----|
| | Nom. | Flatness | L | | M | | U | | L | | M | | U | | | Typ. | L | MU |
| | | | Typ. | Max. | Typ. | Max. | Typ. | Max. | Typ. | Min. | Typ. | Min. | Typ. | Min. | | | | |
| 10-250 | 19.3±0.5 | ±0.3 | 0.25 | 0.4 | 0.3 | 0.5 | 0.4 | 0.6 | 29 | 25 | 29 | 25 | 28 | 24 | 1.2 | 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.

Outline Drawing



Outline Dimensions (inch/mm)

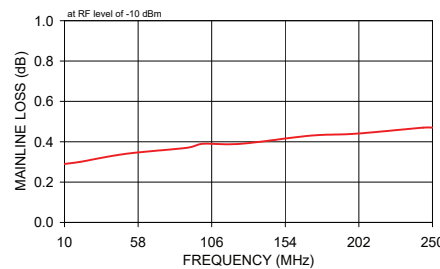
| A | B | C | D | E | F | G | H |
|-------|-------|-------|-------|------|-------|------|-------|
| 1.25 | 1.25 | .75 | .63 | .38 | 1.00 | .125 | 1.000 |
| 31.75 | 31.75 | 19.05 | 16.00 | 9.65 | 25.40 | 3.18 | 25.40 |

| J | K | L | M | N | P | Q | wt |
|----|----|------|-------|-------|-------|------|-------|
| -- | -- | .125 | 1.688 | 2.18 | .75 | .07 | grams |
| -- | -- | 3.18 | 42.88 | 55.37 | 19.05 | 1.78 | 70.0 |

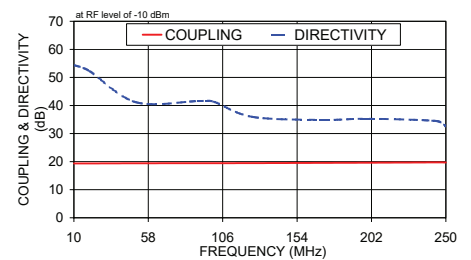
Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) | | Cpl |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
| | | | | In | Out | |
| 10.00 | 0.29 | 19.36 | 54.40 | 33.81 | 29.81 | 30.17 |
| 20.00 | 0.30 | 19.36 | 52.31 | 33.26 | 29.61 | 28.99 |
| 50.00 | 0.34 | 19.41 | 41.16 | 29.77 | 27.51 | 23.16 |
| 90.00 | 0.37 | 19.44 | 41.57 | 26.71 | 25.32 | 18.69 |
| 100.00 | 0.39 | 19.46 | 41.41 | 26.15 | 24.89 | 17.85 |
| 125.00 | 0.39 | 19.49 | 35.96 | 24.78 | 23.76 | 16.01 |
| 170.00 | 0.43 | 19.56 | 34.87 | 23.12 | 22.40 | 13.64 |
| 200.00 | 0.44 | 19.62 | 35.28 | 22.09 | 21.57 | 12.33 |
| 244.00 | 0.47 | 19.73 | 34.47 | 20.73 | 20.21 | 10.76 |
| 250.00 | 0.47 | 19.72 | 32.56 | 20.58 | 20.04 | 10.55 |

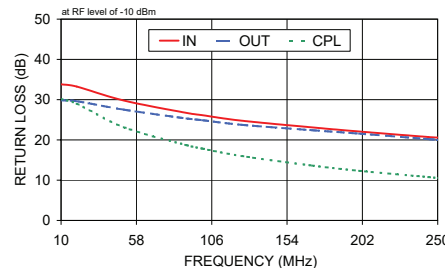
ZFDC-20-3-75+ MAINLINE LOSS



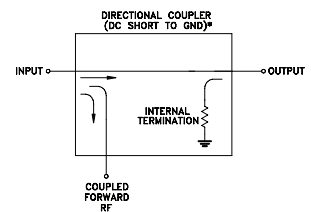
ZFDC-20-3-75+ COUPLING & DIRECTIVITY



ZFDC-20-3-75+ 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.
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Directional Coupler

ZFDC-20-3-75+

Typical Performance Data

| FREQUENCY (MHz) | INSERTION LOSS (dB) | COUPLING (dB) | DIRECTIVITY (dB) | RETURN LOSS | | |
|--------------------|---------------------------|------------------|---------------------|-------------|-------------|-------|
| | | | | IN | (dB) OUT | CPL |
| 10.0 | 0.29 | 19.36 | 54.40 | 33.81 | 29.81 | 30.17 |
| 20.0 | 0.30 | 19.36 | 52.31 | 33.26 | 29.61 | 28.99 |
| 50.0 | 0.34 | 19.41 | 41.16 | 29.77 | 27.51 | 23.16 |
| 90.0 | 0.37 | 19.44 | 41.57 | 26.71 | 25.32 | 18.69 |
| 100.0 | 0.39 | 19.46 | 41.41 | 26.15 | 24.89 | 17.85 |
| 125.0 | 0.39 | 19.49 | 35.96 | 24.78 | 23.76 | 16.01 |
| 170.0 | 0.43 | 19.56 | 34.87 | 23.12 | 22.40 | 13.64 |
| 200.0 | 0.44 | 19.62 | 35.28 | 22.09 | 21.57 | 12.33 |
| 244.0 | 0.47 | 19.73 | 34.47 | 20.73 | 20.21 | 10.76 |
| 250.0 | 0.47 | 19.72 | 32.56 | 20.58 | 20.04 | 10.55 |

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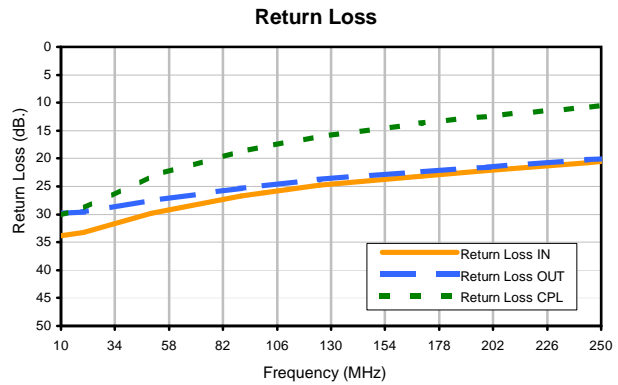
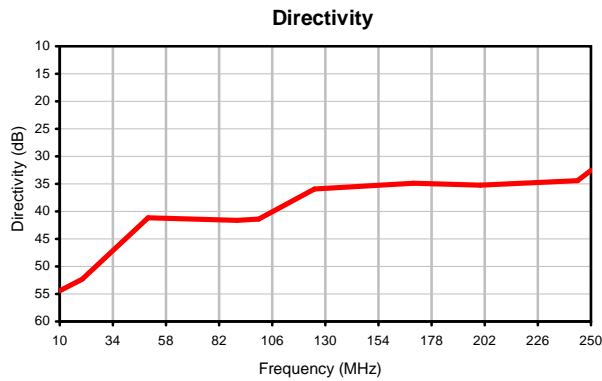
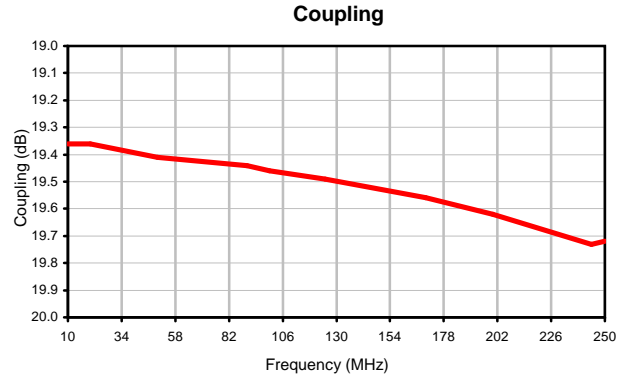
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Directional Coupler

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Typical Performance Curves



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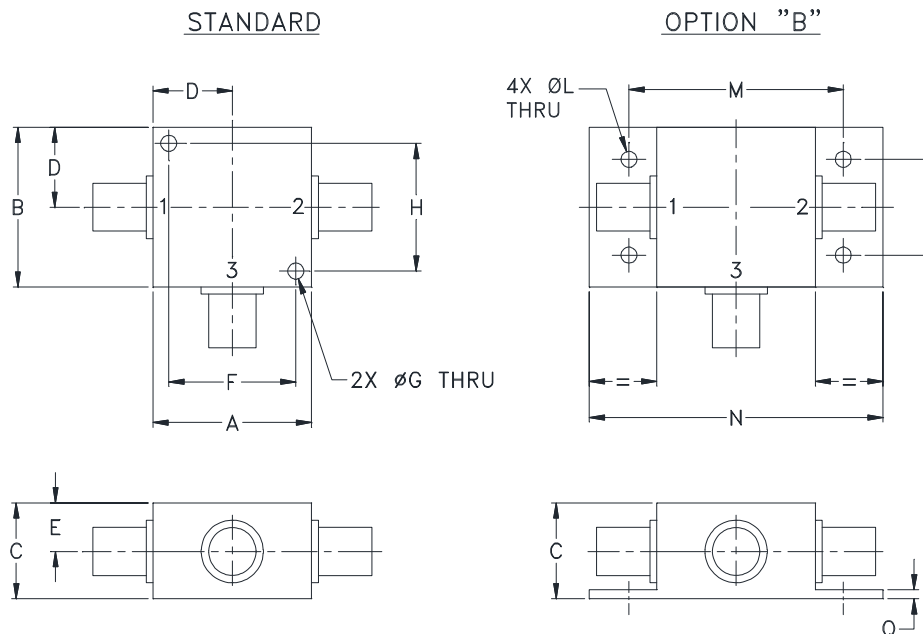


Case Style

K

K18

Outline Dimensions



| CASE# | A | B | C | D | E | F | G | H | J | K | L | M | N |
|-------|-----------------|-----------------|----------------|----------------|---------------|------------------|----------------|------------------|----|----|----------------|------------------|-----------------|
| K18 | 1.25 (31.75) | 1.25 (31.75) | .75 (19.05) | .63 (16.00) | .38 (9.65) | 1.000 (25.40) | .125 (3.18) | 1.000 (25.40) | -- | -- | .125 (3.18) | 1.688 (42.88) | 2.18 (55.37) |

| CASE# | P | Q | WT. GRAMS |
|-------|----------------|---------------|-----------|
| K18 | .75 (19.05) | .07 (1.78) | 70.0 |

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

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Mounting bracket available on request. Add suffix B to part number.
4. For port marking 1, 2, and 3 see specifications data sheet.
5. For bracket version, option B, dimension "C" changes from .75 to .94 inches when connectors are type N.
6. Refer to the individual model data sheet for the type of connectors available.



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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 | -55° to 100°C Ambient Environment | 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 |