

DC Pass

# Directional Coupler

NON-CATALOG

ZADC-20-50DC+

50Ω Up to 5W 800 to 1600 MHz

## Maximum Ratings

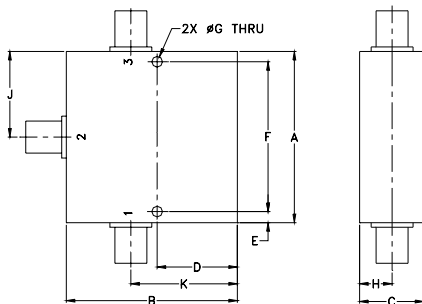
|                       |                |
|-----------------------|----------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature   | -55°C to 100°C |
| DC Current            | 2A             |

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

## Coaxial Connections

|         |   |
|---------|---|
| INPUT   | 1 |
| OUTPUT  | 3 |
| COUPLED | 2 |

## Outline Drawing



## Outline Dimensions (inch/mm)

| A     | B     | C     | D     | E    | F     |
|-------|-------|-------|-------|------|-------|
| 2.00  | 2.00  | .75   | .938  | .13  | 1.750 |
| 50.80 | 50.80 | 19.05 | 23.83 | 3.30 | 44.45 |

| G    | H    | J     | K     | wt    |
|------|------|-------|-------|-------|
| .125 | .38  | 1.00  | 1.25  | grams |
| 3.18 | 9.65 | 25.40 | 31.75 | 145.0 |

## Features

- wideband, 800 to 1600 MHz
- low insertion loss, 0.8 dB typ.
- good directivity, 20 dB typ.
- Mainline Loss at 5 to 100 MHz 0.1 dB typ.
- DC current through input to output 2A Max.

## Applications

- cellular
- PCS
- labs



SMA version shown

CASE STYLE: CC51-1

Connectors Model

SMA ZADC-20-50DC-S+

+RoHS Compliant

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

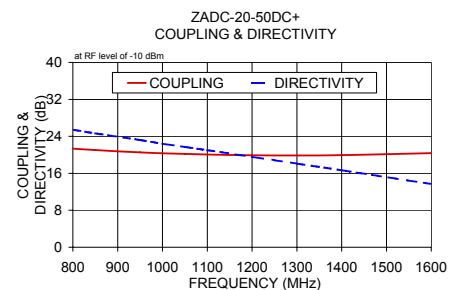
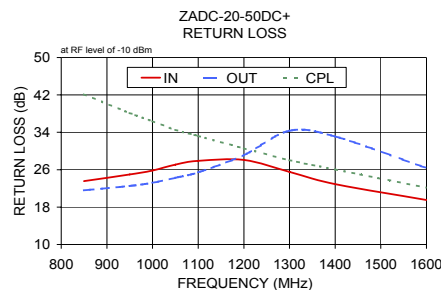
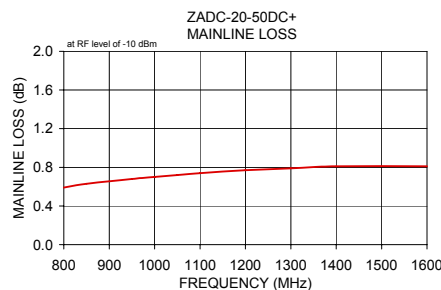
## Directional Coupler Electrical Specifications

| FREQ. RANGE (MHz) | COUPLING (dB) |          | MAINLINE LOSS <sup>1</sup> |      | DIRECTIVITY (dB) |      | VSWR (:1) | POWER INPUT (W) |
|-------------------|---------------|----------|----------------------------|------|------------------|------|-----------|-----------------|
|                   | Nom.          | Flatness | Typ.                       | Max. | Typ.             | Min. | Typ.      | Max.            |
| 800-1600          | 20±1          | ±1.1     | 0.8                        | 1.0  | 20               | 11   | 1.2       | 5               |
| 800-1000          | 20.5±1        | ±0.75    | 0.7                        | 0.9  | 24               | 18   | 1.2       | 5               |
| 1000-1600         | 20±1          | ±0.5     | 0.8                        | 1.0  | 18               | 11   | 1.2       | 5               |

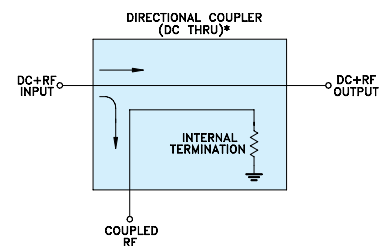
1. Mainline loss includes theoretical power loss at coupled port.

## Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) |       |       |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
|                 |                           |                      |                  | In               | Out   | Cpl   |
| 800.00          | 0.59                      | 21.32                | 25.44            | 23.23            | 21.47 | 44.11 |
| 850.00          | 0.63                      | 21.02                | 24.65            | 23.57            | 21.59 | 42.12 |
| 950.00          | 0.68                      | 20.53                | 23.21            | 24.98            | 22.52 | 38.12 |
| 1000.00         | 0.70                      | 20.34                | 22.41            | 25.81            | 23.22 | 36.36 |
| 1050.00         | 0.72                      | 20.19                | 21.69            | 27.08            | 24.26 | 34.54 |
| 1100.00         | 0.74                      | 20.07                | 21.00            | 27.91            | 25.45 | 33.19 |
| 1200.00         | 0.77                      | 19.91                | 19.55            | 28.08            | 29.13 | 30.57 |
| 1300.00         | 0.79                      | 19.86                | 18.11            | 25.54            | 34.35 | 28.04 |
| 1400.00         | 0.81                      | 19.92                | 16.65            | 22.92            | 33.12 | 26.05 |
| 1600.00         | 0.81                      | 20.36                | 13.68            | 19.53            | 26.37 | 22.15 |



## Electrical Schematic



\* ELECTRICAL SCHEMATIC FOR DIRECTIONAL COUPLER THAT IS DESIGNED WITHOUT INTERNAL TRANSFORMERS.

## 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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 REV. C  
 M160892  
 ED-12621/1  
 ZADC-20-50DC+  
 WZ12/QL/AM  
 180122  
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# Directional Coupler

# ZADC-20-50DC+

## Typical Performance Data

| FREQUENCY<br>(MHz) | INSERTION<br>LOSS<br>(dB) | COUPLING<br>(dB) | DIRECTIVITY<br>(dB) | RETURN LOSS<br>(dB) |       |       |
|--------------------|---------------------------|------------------|---------------------|---------------------|-------|-------|
|                    |                           |                  |                     | IN                  | OUT   | CPL   |
| 800.0              | 0.59                      | 21.32            | 25.44               | 23.23               | 21.47 | 44.11 |
| 850.0              | 0.63                      | 21.02            | 24.65               | 23.57               | 21.59 | 42.12 |
| 925.0              | 0.67                      | 20.64            | 23.55               | 24.51               | 22.19 | 39.16 |
| 950.0              | 0.68                      | 20.53            | 23.21               | 24.98               | 22.52 | 38.12 |
| 975.0              | 0.69                      | 20.43            | 22.83               | 25.44               | 22.94 | 37.07 |
| 1000.0             | 0.70                      | 20.34            | 22.41               | 25.81               | 23.22 | 36.36 |
| 1025.0             | 0.71                      | 20.26            | 22.03               | 26.34               | 23.63 | 35.48 |
| 1050.0             | 0.72                      | 20.19            | 21.69               | 27.08               | 24.26 | 34.54 |
| 1100.0             | 0.74                      | 20.07            | 21.00               | 27.91               | 25.45 | 33.19 |
| 1150.0             | 0.75                      | 19.97            | 20.24               | 28.13               | 27.01 | 31.86 |
| 1200.0             | 0.77                      | 19.91            | 19.55               | 28.08               | 29.13 | 30.57 |
| 1250.0             | 0.78                      | 19.87            | 18.78               | 26.75               | 31.51 | 29.32 |
| 1300.0             | 0.79                      | 19.86            | 18.11               | 25.54               | 34.35 | 28.04 |
| 1350.0             | 0.80                      | 19.88            | 17.38               | 23.99               | 34.57 | 27.08 |
| 1400.0             | 0.81                      | 19.92            | 16.65               | 22.92               | 33.12 | 26.05 |
| 1425.0             | 0.81                      | 19.96            | 16.26               | 22.28               | 31.90 | 25.65 |
| 1450.0             | 0.81                      | 19.99            | 15.91               | 21.76               | 30.89 | 25.11 |
| 1475.0             | 0.81                      | 20.04            | 15.58               | 21.33               | 29.97 | 24.54 |
| 1500.0             | 0.81                      | 20.09            | 15.19               | 20.85               | 29.12 | 24.08 |
| 1550.0             | 0.81                      | 20.21            | 14.46               | 20.17               | 27.55 | 23.04 |
| 1600.0             | 0.81                      | 20.36            | 13.68               | 19.53               | 26.37 | 22.15 |

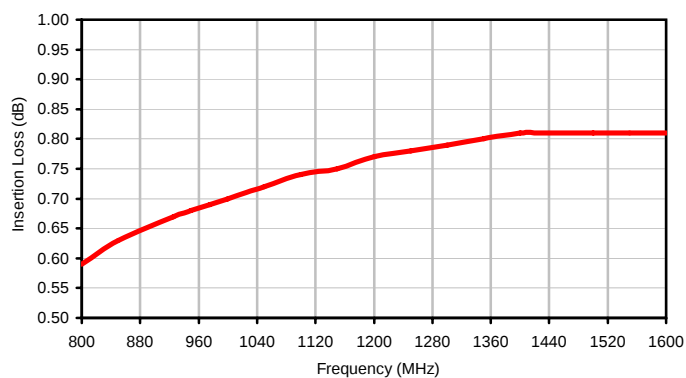


# Directional Coupler

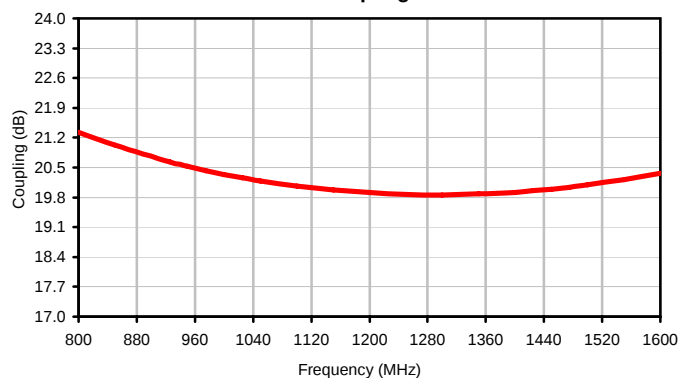
## ZADC-20-50DC+

### Typical Performance Curves

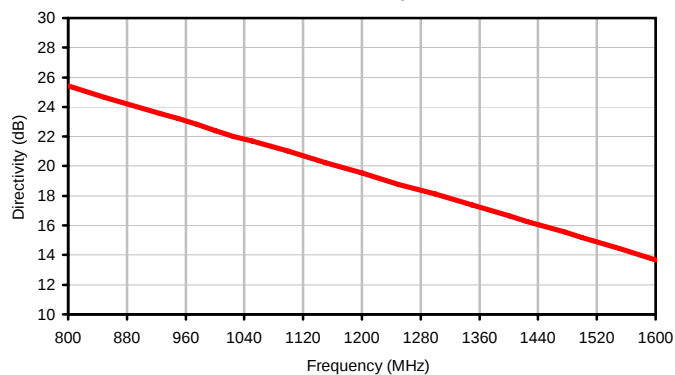
Insertion Loss



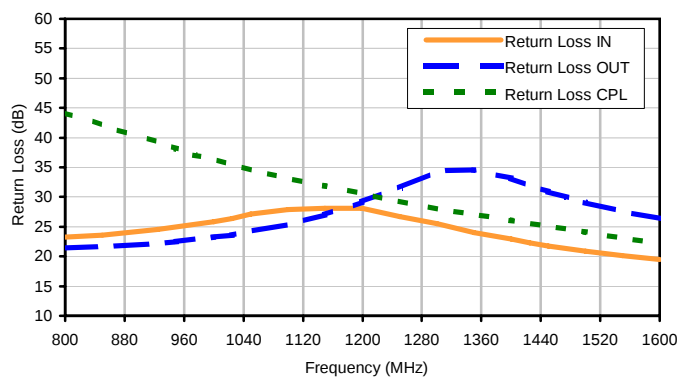
Coupling



Directivity

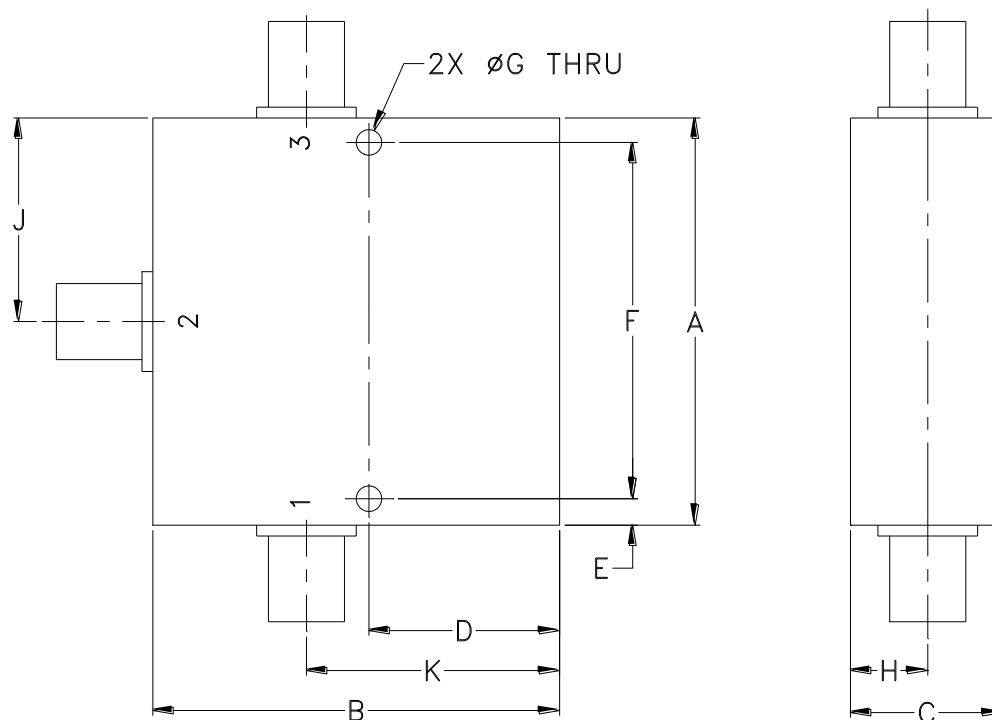


Return Loss



## Outline Dimensions

CC51-1



| CASE#  | A               | B               | C              | D               | E             | F                | G              | H             | J               | K               | WT. GRAMS |
|--------|-----------------|-----------------|----------------|-----------------|---------------|------------------|----------------|---------------|-----------------|-----------------|-----------|
| CC51-1 | 2.00<br>(50.80) | 2.00<br>(50.80) | .75<br>(19.05) | .938<br>(23.83) | .13<br>(3.30) | 1.750<br>(44.45) | .125<br>(3.17) | .38<br>(9.65) | 1.00<br>(25.40) | 1.25<br>(31.75) | 145       |

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

### Notes:

- Case material: Aluminum alloy.
- Case finish:  
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
- Refer to the individual model data sheet for the type of connectors available.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



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RF/IF MICROWAVE COMPONENTS



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<br>Ambient Environment                                                   | Individual Model Data Sheet          |
| Storage Temperature        | -55° to 100° C<br>Ambient Environment                                                  | Individual Model Data Sheet          |
| Barometric Pressure        | 100,000 Feet                                                                           | MIL-STD-202, Method 105, Condition D |
| Humidity                   | 90% RH, 65°C<br>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 |