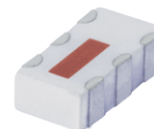


High Power

# Bi-Directional Coupler

50Ω 14 dB Coupling DC Pass 1700 to 3400 MHz

BDCN-14-342+



Generic photo used for illustration purposes only

CASE STYLE: FV1206-1

+RoHS Compliant

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



Available Tape and Reel at no extra cost

Reel Size Devices/Reel  
7" 20, 50, 100, 200, 500, 1000, 3000

## Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -55°C to 100°C |
| Storage Temperature                                             | -55°C to 100°C |
| DC Current                                                      | 0.5A           |
| Permanent damage may occur if any of these limits are exceeded. |                |

## Pin Connections

|                   |     |
|-------------------|-----|
| INPUT             | 1   |
| OUTPUT            | 4   |
| COUPLED (forward) | 6   |
| COUPLED (reverse) | 3   |
| GROUND            | 2,5 |

## Features

- four-port coupler
- wideband, 1700 to 3400 MHz
- excellent return loss, all ports
- ultra small size, hermetically sealed
- minimal variation with temperature variation
- protected by US Patent 7,049,905
- DC current through input to output 0.5A Max. at 1.0 watt RF input power

## Applications

- UMTS • CDMA
- PCS • ISM
- GPS • DCS
- TDMA

## Electrical Specifications at 25°C

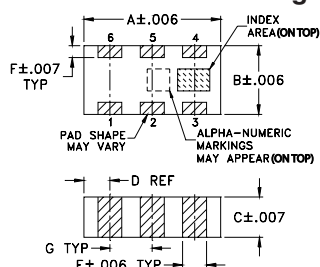
| Parameter                | Condition (MHz)                     | Min.        | Typ.               | Max.                | Unit |
|--------------------------|-------------------------------------|-------------|--------------------|---------------------|------|
| Frequency Range          |                                     | 1700        | —                  | 3400                | MHz  |
| Mainline Loss            | 1700-2100<br>2100-2700<br>2700-3400 | —<br>—<br>— | 0.4<br>0.45<br>0.4 | 0.55<br>0.6<br>0.55 | dB   |
| Nominal Coupling         | 1700-2100<br>2100-2700<br>2700-3400 | —<br>—<br>— | 14<br>13<br>15.5   | —<br>—<br>—         | dB   |
| Coupling Flatness(±)     | 1700-2100<br>2100-2700<br>2700-3400 | —<br>—<br>— | 0.4<br>0.4<br>2.1  | —<br>—<br>—         | dB   |
| Directivity              | 1700-2100<br>2100-2700<br>2700-3400 | 8<br>8<br>6 | 15<br>20<br>15     | —<br>—<br>—         | dB   |
| Return Loss (Input)      | 1700-3400                           | —           | 20                 | —                   | dB   |
| Return Loss (Output)     | 1700-3400                           | —           | 20                 | —                   | dB   |
| Return Loss (Coupling)   | 1700-3400                           | —           | 20                 | —                   | dB   |
| Input Power <sup>1</sup> | 1700-3400                           | —           | —                  | 16                  | W    |

1. Derate linearly 8W at 100°C

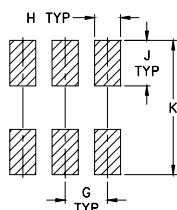
## Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) |            | Coupling (dB) |             | Directivity (dB) |      | Return Loss (dB) |         |         |
|-----------------|--------------------|------------|---------------|-------------|------------------|------|------------------|---------|---------|
|                 | In-Out             | In-Cpl Fwd | Out-Cpl Rev   | Out-Cpl Fwd | In-Cpl Rev       | In   | Out              | Cpl Fwd | Cpl Rev |
| 1700.0          | 0.38               | 14.0       | 14.0          | 31.7        | 31.6             | 26.5 | 26.8             | 33.6    | 31.9    |
| 1900.0          | 0.41               | 13.6       | 13.6          | 33.4        | 33.1             | 26.9 | 27.8             | 35.4    | 33.5    |
| 2100.0          | 0.42               | 13.4       | 13.4          | 36.0        | 35.1             | 27.8 | 29.3             | 39.0    | 37.0    |
| 2300.0          | 0.43               | 13.3       | 13.3          | 40.2        | 37.9             | 28.4 | 30.6             | 41.2    | 45.0    |
| 2500.0          | 0.43               | 13.4       | 13.4          | 48.1        | 41.7             | 28.3 | 31.1             | 37.1    | 47.7    |
| 2700.0          | 0.42               | 13.7       | 13.7          | 52.6        | 46.1             | 27.7 | 30.6             | 34.7    | 41.8    |
| 2900.0          | 0.41               | 14.2       | 14.2          | 41.1        | 43.3             | 26.5 | 29.4             | 35.6    | 42.5    |
| 3100.0          | 0.40               | 14.9       | 14.9          | 36.1        | 37.9             | 25.2 | 27.7             | 38.9    | 43.7    |
| 3300.0          | 0.39               | 15.9       | 15.9          | 32.5        | 33.8             | 23.7 | 25.7             | 41.1    | 37.9    |
| 3400.0          | 0.38               | 16.6       | 16.5          | 31.1        | 32.2             | 23.0 | 24.8             | 36.5    | 34.0    |

## Outline Drawing



### PCB Land Pattern

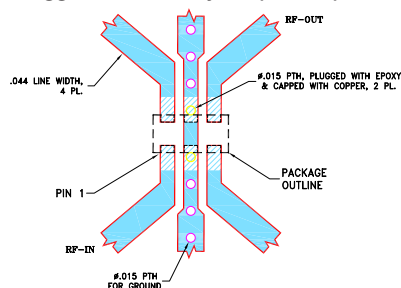


Suggested Layout,  
Tolerance to be within ±0.02

## Outline Dimensions (inch/mm)

| A    | B    | C    | D    | E     | F    |
|------|------|------|------|-------|------|
| .126 | .063 | .035 | .024 | .022  | .011 |
| 3.20 | 1.60 | 0.89 | 0.61 | 0.56  | 0.28 |
| G    | H    | J    | K    | wt    |      |
| .039 | .024 | .042 | .123 | grams |      |
| 0.99 | 0.61 | 1.07 | 3.12 | .020  |      |

## Demo Board MCL P/N: TB-1127+ Suggested PCB Layout (PL-669)



### NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020"±.0015". COPPER: 1/2 OZ, EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

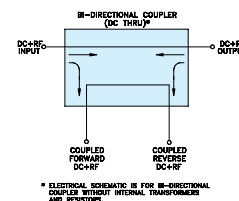
### Notes

- 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.  
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.  
C. 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 P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

## Electrical Schematic



REV. C  
ECO-002418  
BDCN-14-342+  
AD/CP/AM  
200421