

# Bi-Directional Coupler

# BDCH-15-33+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =+5 dBm @Temperature = -55°C, Configuration A

| FREQ.<br>(MHz) | INSERTION<br>LOSS <sup>1</sup><br>(dB)<br>In - Out | COUPLING<br>(dB) |           | DIRECTIVITY<br>(dB)<br>In - Fwd | RETURN LOSS<br>(dB) |       |       |       |
|----------------|----------------------------------------------------|------------------|-----------|---------------------------------|---------------------|-------|-------|-------|
|                |                                                    | In - Fwd         | Out - Rev |                                 | In                  | Out   | Fwd   | Rev   |
| 300            | 0.09                                               | 19.36            | 19.35     | 29.53                           | 25.32               | 25.02 | 27.13 | 27.21 |
| 350            | 0.09                                               | 18.27            | 18.26     | 28.66                           | 25.88               | 25.63 | 27.56 | 27.81 |
| 400            | 0.09                                               | 17.41            | 17.39     | 28.30                           | 26.56               | 26.33 | 27.38 | 27.53 |
| 450            | 0.10                                               | 16.70            | 16.68     | 28.13                           | 27.70               | 27.47 | 28.40 | 28.52 |
| 500            | 0.10                                               | 16.15            | 16.12     | 28.10                           | 28.74               | 28.64 | 30.18 | 30.48 |
| 550            | 0.10                                               | 15.71            | 15.68     | 28.06                           | 30.89               | 30.68 | 31.78 | 32.32 |
| 600            | 0.10                                               | 15.38            | 15.34     | 27.93                           | 33.26               | 33.09 | 32.87 | 33.53 |
| 650            | 0.11                                               | 15.14            | 15.09     | 27.93                           | 37.19               | 36.34 | 33.82 | 34.49 |
| 700            | 0.12                                               | 14.98            | 14.93     | 27.95                           | 41.75               | 39.03 | 36.02 | 36.61 |
| 750            | 0.12                                               | 14.89            | 14.83     | 28.01                           | 50.36               | 41.31 | 37.81 | 40.50 |
| 800            | 0.13                                               | 14.87            | 14.80     | 27.64                           | 49.36               | 41.74 | 39.99 | 46.51 |
| 850            | 0.13                                               | 14.90            | 14.82     | 27.81                           | 40.85               | 39.84 | 39.23 | 45.66 |
| 900            | 0.14                                               | 14.97            | 14.87     | 27.69                           | 36.77               | 36.20 | 37.31 | 39.72 |
| 950            | 0.15                                               | 15.06            | 14.97     | 27.95                           | 33.39               | 33.77 | 35.13 | 36.88 |
| 1000           | 0.16                                               | 15.19            | 15.07     | 28.07                           | 31.44               | 31.53 | 34.66 | 35.13 |
| 1050           | 0.17                                               | 15.32            | 15.19     | 28.53                           | 29.91               | 30.29 | 32.73 | 33.22 |
| 1150           | 0.18                                               | 15.55            | 15.39     | 29.83                           | 28.27               | 28.70 | 28.55 | 28.89 |
| 1200           | 0.19                                               | 15.63            | 15.46     | 30.76                           | 28.31               | 28.49 | 27.75 | 27.92 |
| 1250           | 0.20                                               | 15.67            | 15.49     | 31.10                           | 28.11               | 28.43 | 27.08 | 27.18 |
| 1300           | 0.20                                               | 15.67            | 15.47     | 31.03                           | 28.95               | 28.98 | 27.89 | 28.01 |
| 1350           | 0.20                                               | 15.63            | 15.44     | 30.35                           | 29.45               | 29.39 | 28.13 | 28.23 |
| 1450           | 0.21                                               | 15.45            | 15.25     | 28.04                           | 32.29               | 31.88 | 29.84 | 29.79 |
| 1500           | 0.22                                               | 15.34            | 15.13     | 26.84                           | 34.15               | 33.73 | 31.13 | 30.80 |
| 1550           | 0.22                                               | 15.24            | 15.01     | 26.42                           | 36.54               | 35.51 | 32.30 | 32.26 |
| 1600           | 0.22                                               | 15.13            | 14.91     | 25.86                           | 39.20               | 37.91 | 33.94 | 34.14 |
| 1650           | 0.22                                               | 15.04            | 14.81     | 25.80                           | 41.08               | 41.58 | 35.41 | 37.78 |
| 1750           | 0.22                                               | 14.93            | 14.70     | 25.53                           | 39.95               | 45.70 | 37.96 | 45.36 |
| 1800           | 0.23                                               | 14.90            | 14.67     | 25.84                           | 37.68               | 44.03 | 39.35 | 44.54 |
| 1850           | 0.23                                               | 14.91            | 14.67     | 25.67                           | 36.74               | 41.64 | 42.42 | 42.12 |
| 1900           | 0.23                                               | 14.95            | 14.70     | 26.12                           | 35.50               | 40.65 | 43.50 | 39.80 |
| 1950           | 0.23                                               | 15.01            | 14.75     | 25.89                           | 35.61               | 40.60 | 41.37 | 38.39 |
| 2050           | 0.24                                               | 15.20            | 14.90     | 25.95                           | 35.61               | 41.27 | 36.94 | 37.92 |
| 2100           | 0.24                                               | 15.28            | 14.99     | 25.97                           | 35.90               | 42.43 | 35.90 | 38.47 |
| 2150           | 0.24                                               | 15.37            | 15.06     | 26.04                           | 37.02               | 42.34 | 36.81 | 39.04 |
| 2200           | 0.24                                               | 15.44            | 15.13     | 25.84                           | 37.92               | 42.05 | 36.64 | 38.03 |
| 2250           | 0.26                                               | 15.50            | 15.17     | 26.11                           | 39.24               | 41.75 | 37.16 | 37.25 |
| 2350           | 0.28                                               | 15.54            | 15.14     | 26.09                           | 40.94               | 41.26 | 35.80 | 35.95 |
| 2400           | 0.27                                               | 15.45            | 15.10     | 26.00                           | 39.01               | 39.69 | 33.27 | 33.88 |
| 2450           | 0.28                                               | 15.38            | 15.01     | 26.25                           | 38.89               | 39.70 | 34.13 | 34.51 |
| 2500           | 0.29                                               | 15.33            | 14.90     | 26.31                           | 37.11               | 38.44 | 32.64 | 32.71 |
| 2550           | 0.30                                               | 15.17            | 14.83     | 26.50                           | 36.99               | 37.98 | 33.51 | 33.87 |
| 2600           | 0.32                                               | 15.13            | 14.69     | 26.56                           | 35.94               | 37.46 | 32.64 | 33.27 |
| 2650           | 0.31                                               | 14.98            | 14.66     | 26.40                           | 34.46               | 35.67 | 32.87 | 34.08 |
| 2700           | 0.32                                               | 14.90            | 14.60     | 26.55                           | 33.23               | 34.91 | 31.36 | 33.24 |
| 2750           | 0.32                                               | 14.83            | 14.59     | 26.48                           | 32.12               | 33.37 | 31.17 | 33.08 |
| 2800           | 0.34                                               | 14.90            | 14.56     | 27.27                           | 31.53               | 32.29 | 30.07 | 31.94 |
| 2850           | 0.34                                               | 14.91            | 14.68     | 26.95                           | 30.68               | 31.30 | 29.73 | 31.43 |
| 2900           | 0.35                                               | 15.08            | 14.81     | 26.73                           | 29.70               | 30.17 | 30.48 | 31.91 |
| 2950           | 0.35                                               | 15.26            | 14.97     | 26.58                           | 29.72               | 30.02 | 31.29 | 32.36 |
| 3000           | 0.35                                               | 15.47            | 15.29     | 25.70                           | 29.69               | 30.06 | 34.01 | 34.95 |
| 3050           | 0.34                                               | 15.89            | 15.70     | 25.42                           | 30.23               | 30.53 | 35.70 | 35.12 |
| 3100           | 0.35                                               | 16.38            | 16.14     | 24.67                           | 30.73               | 30.80 | 40.17 | 39.54 |
| 3200           | 0.36                                               | 17.66            | 17.49     | 22.93                           | 33.14               | 31.25 | 46.23 | 57.93 |
| 3300           | 0.35                                               | 19.63            | 19.49     | 20.95                           | 34.81               | 30.28 | 35.50 | 39.46 |

(Note 1) Does not include theoretical loss. Nominal theoretical loss is 0.12 dB.

### 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 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/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/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. OR  
BDCH-15-33+  
190328  
Page 1 of 12

# Bi-Directional Coupler

# BDCH-15-33+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =+5 dBm @Temperature = -55°C, Configuration B

| FREQ.<br>(MHz) | INSERTION<br>LOSS <sup>1</sup><br>(dB)<br>In - Out | COUPLING<br>(dB) |           | DIRECTIVITY<br>(dB)<br>In - Fwd | RETURN LOSS<br>(dB) |       |       |       |
|----------------|----------------------------------------------------|------------------|-----------|---------------------------------|---------------------|-------|-------|-------|
|                |                                                    | In - Fwd         | Out - Rev |                                 | In                  | Out   | Fwd   | Rev   |
| 300            | 0.09                                               | 19.35            | 19.36     | 29.36                           | 25.02               | 25.32 | 27.21 | 27.13 |
| 350            | 0.09                                               | 18.26            | 18.27     | 28.34                           | 25.63               | 25.88 | 27.81 | 27.56 |
| 400            | 0.09                                               | 17.39            | 17.41     | 27.97                           | 26.33               | 26.56 | 27.53 | 27.38 |
| 450            | 0.10                                               | 16.68            | 16.70     | 27.68                           | 27.47               | 27.70 | 28.52 | 28.40 |
| 500            | 0.10                                               | 16.12            | 16.15     | 27.17                           | 28.64               | 28.74 | 30.48 | 30.18 |
| 550            | 0.10                                               | 15.68            | 15.71     | 27.09                           | 30.68               | 30.89 | 32.32 | 31.78 |
| 600            | 0.10                                               | 15.34            | 15.38     | 26.94                           | 33.09               | 33.26 | 33.53 | 32.87 |
| 650            | 0.11                                               | 15.09            | 15.14     | 27.07                           | 36.34               | 37.19 | 34.49 | 33.82 |
| 700            | 0.11                                               | 14.93            | 14.98     | 26.96                           | 39.03               | 41.75 | 36.61 | 36.02 |
| 750            | 0.12                                               | 14.83            | 14.89     | 27.17                           | 41.31               | 50.36 | 40.50 | 37.81 |
| 800            | 0.13                                               | 14.80            | 14.87     | 27.61                           | 41.74               | 49.36 | 46.51 | 39.99 |
| 850            | 0.13                                               | 14.82            | 14.90     | 27.84                           | 39.84               | 40.85 | 45.66 | 39.23 |
| 900            | 0.14                                               | 14.87            | 14.97     | 28.25                           | 36.20               | 36.77 | 39.72 | 37.31 |
| 950            | 0.15                                               | 14.97            | 15.06     | 28.93                           | 33.77               | 33.39 | 36.88 | 35.13 |
| 1000           | 0.15                                               | 15.07            | 15.19     | 29.98                           | 31.53               | 31.44 | 35.13 | 34.66 |
| 1050           | 0.16                                               | 15.19            | 15.32     | 30.86                           | 30.29               | 29.91 | 33.22 | 32.73 |
| 1150           | 0.18                                               | 15.39            | 15.55     | 32.98                           | 28.70               | 28.27 | 28.89 | 28.55 |
| 1200           | 0.19                                               | 15.46            | 15.63     | 33.81                           | 28.49               | 28.31 | 27.92 | 27.75 |
| 1250           | 0.19                                               | 15.49            | 15.67     | 33.50                           | 28.43               | 28.11 | 27.18 | 27.08 |
| 1300           | 0.20                                               | 15.47            | 15.67     | 32.68                           | 28.98               | 28.95 | 28.01 | 27.89 |
| 1350           | 0.20                                               | 15.44            | 15.63     | 31.58                           | 29.39               | 29.45 | 28.23 | 28.13 |
| 1450           | 0.21                                               | 15.25            | 15.45     | 29.32                           | 31.88               | 32.29 | 29.79 | 29.84 |
| 1500           | 0.22                                               | 15.13            | 15.34     | 28.06                           | 33.73               | 34.15 | 30.80 | 31.13 |
| 1550           | 0.21                                               | 15.01            | 15.24     | 27.76                           | 35.51               | 36.54 | 32.26 | 32.30 |
| 1600           | 0.21                                               | 14.91            | 15.13     | 26.94                           | 37.91               | 39.20 | 34.14 | 33.94 |
| 1650           | 0.21                                               | 14.81            | 15.04     | 26.89                           | 41.58               | 41.08 | 37.78 | 35.41 |
| 1750           | 0.21                                               | 14.70            | 14.93     | 26.17                           | 45.70               | 39.95 | 45.36 | 37.96 |
| 1800           | 0.22                                               | 14.67            | 14.90     | 26.48                           | 44.03               | 37.68 | 44.54 | 39.35 |
| 1850           | 0.21                                               | 14.67            | 14.91     | 26.20                           | 41.64               | 36.74 | 42.12 | 42.42 |
| 1900           | 0.22                                               | 14.70            | 14.95     | 26.62                           | 40.65               | 35.50 | 39.80 | 43.50 |
| 1950           | 0.22                                               | 14.75            | 15.01     | 26.58                           | 40.60               | 35.61 | 38.39 | 41.37 |
| 2050           | 0.22                                               | 14.90            | 15.20     | 27.31                           | 41.27               | 35.61 | 37.92 | 36.94 |
| 2100           | 0.22                                               | 14.99            | 15.28     | 27.50                           | 42.43               | 35.90 | 38.47 | 35.90 |
| 2150           | 0.23                                               | 15.06            | 15.37     | 28.10                           | 42.34               | 37.02 | 39.04 | 36.81 |
| 2200           | 0.23                                               | 15.13            | 15.44     | 28.26                           | 42.05               | 37.92 | 38.03 | 36.64 |
| 2250           | 0.24                                               | 15.17            | 15.50     | 28.86                           | 41.75               | 39.24 | 37.25 | 37.16 |
| 2350           | 0.26                                               | 15.14            | 15.54     | 29.31                           | 41.26               | 40.94 | 35.95 | 35.80 |
| 2400           | 0.26                                               | 15.10            | 15.45     | 29.57                           | 39.69               | 39.01 | 33.88 | 33.27 |
| 2450           | 0.27                                               | 15.01            | 15.38     | 29.78                           | 39.70               | 38.89 | 34.51 | 34.13 |
| 2500           | 0.28                                               | 14.90            | 15.33     | 29.99                           | 38.44               | 37.11 | 32.71 | 32.64 |
| 2550           | 0.29                                               | 14.83            | 15.17     | 30.66                           | 37.98               | 36.99 | 33.87 | 33.51 |
| 2600           | 0.30                                               | 14.69            | 15.13     | 31.36                           | 37.46               | 35.94 | 33.27 | 32.64 |
| 2650           | 0.30                                               | 14.66            | 14.98     | 31.19                           | 35.67               | 34.46 | 34.08 | 32.87 |
| 2700           | 0.31                                               | 14.60            | 14.90     | 32.19                           | 34.91               | 33.23 | 33.24 | 31.36 |
| 2750           | 0.31                                               | 14.59            | 14.83     | 31.42                           | 33.37               | 32.12 | 33.08 | 31.17 |
| 2800           | 0.33                                               | 14.56            | 14.90     | 33.27                           | 32.29               | 31.53 | 31.94 | 30.07 |
| 2850           | 0.32                                               | 14.68            | 14.91     | 33.94                           | 31.30               | 30.68 | 31.43 | 29.73 |
| 2900           | 0.34                                               | 14.81            | 15.08     | 34.90                           | 30.17               | 29.70 | 31.91 | 30.48 |
| 2950           | 0.33                                               | 14.97            | 15.26     | 35.35                           | 30.02               | 29.72 | 32.36 | 31.29 |
| 3000           | 0.34                                               | 15.29            | 15.47     | 34.55                           | 30.06               | 29.69 | 34.95 | 34.01 |
| 3050           | 0.34                                               | 15.70            | 15.89     | 33.76                           | 30.53               | 30.23 | 35.12 | 35.70 |
| 3100           | 0.34                                               | 16.14            | 16.38     | 33.03                           | 30.80               | 30.73 | 39.54 | 40.17 |
| 3200           | 0.35                                               | 17.49            | 17.66     | 30.11                           | 31.25               | 33.14 | 57.93 | 46.23 |
| 3300           | 0.35                                               | 19.49            | 19.63     | 27.23                           | 30.28               | 34.81 | 39.46 | 35.50 |

(Note 1) Does not include theoretical loss. Nominal theoretical loss is 0.12 dB.

### 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/MCULStore/terms.jsp](http://www.minicircuits.com/MCULStore/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. OR  
 BDCH-15-33+  
 190328  
 Page 2 of 12

# Bi-Directional Coupler

# BDCH-15-33+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =+5 dBm @Temperature = -55°C, Configuration C

| FREQ.<br>(MHz) | INSERTION<br>LOSS <sup>1</sup><br>(dB)<br>In - Out | COUPLING<br>(dB) |           | DIRECTIVITY<br>(dB)<br>In - Fwd | RETURN LOSS<br>(dB) |       |       |       |
|----------------|----------------------------------------------------|------------------|-----------|---------------------------------|---------------------|-------|-------|-------|
|                |                                                    | In - Fwd         | Out - Rev |                                 | In                  | Out   | Fwd   | Rev   |
| 300            | 0.08                                               | 19.36            | 19.36     | 29.22                           | 27.21               | 27.13 | 25.02 | 25.32 |
| 350            | 0.09                                               | 18.26            | 18.27     | 28.19                           | 27.81               | 27.56 | 25.63 | 25.88 |
| 400            | 0.09                                               | 17.39            | 17.41     | 27.58                           | 27.53               | 27.38 | 26.33 | 26.56 |
| 450            | 0.10                                               | 16.68            | 16.70     | 27.20                           | 28.52               | 28.40 | 27.47 | 27.70 |
| 500            | 0.10                                               | 16.12            | 16.15     | 26.89                           | 30.48               | 30.18 | 28.64 | 28.74 |
| 550            | 0.10                                               | 15.68            | 15.71     | 26.69                           | 32.32               | 31.78 | 30.68 | 30.89 |
| 600            | 0.11                                               | 15.34            | 15.38     | 26.41                           | 33.53               | 32.87 | 33.09 | 33.26 |
| 650            | 0.11                                               | 15.09            | 15.14     | 26.41                           | 34.49               | 33.82 | 36.34 | 37.19 |
| 700            | 0.12                                               | 14.93            | 14.98     | 26.40                           | 36.61               | 36.02 | 39.03 | 41.75 |
| 750            | 0.12                                               | 14.83            | 14.89     | 26.54                           | 40.50               | 37.81 | 41.31 | 50.36 |
| 800            | 0.13                                               | 14.80            | 14.87     | 26.52                           | 46.51               | 39.99 | 41.74 | 49.36 |
| 850            | 0.13                                               | 14.81            | 14.90     | 27.01                           | 45.66               | 39.23 | 39.84 | 40.85 |
| 900            | 0.14                                               | 14.87            | 14.96     | 27.30                           | 39.72               | 37.31 | 36.20 | 36.77 |
| 950            | 0.15                                               | 14.97            | 15.06     | 27.99                           | 36.88               | 35.13 | 33.77 | 33.39 |
| 1000           | 0.15                                               | 15.07            | 15.19     | 28.60                           | 35.13               | 34.66 | 31.53 | 31.44 |
| 1050           | 0.16                                               | 15.18            | 15.32     | 29.36                           | 33.22               | 32.73 | 30.29 | 29.91 |
| 1150           | 0.18                                               | 15.39            | 15.55     | 30.80                           | 28.89               | 28.55 | 28.70 | 28.27 |
| 1200           | 0.19                                               | 15.46            | 15.63     | 31.60                           | 27.92               | 27.75 | 28.49 | 28.31 |
| 1250           | 0.20                                               | 15.48            | 15.66     | 31.35                           | 27.18               | 27.08 | 28.43 | 28.11 |
| 1300           | 0.21                                               | 15.47            | 15.67     | 31.07                           | 28.01               | 27.89 | 28.98 | 28.95 |
| 1350           | 0.21                                               | 15.44            | 15.62     | 30.13                           | 28.23               | 28.13 | 29.39 | 29.45 |
| 1450           | 0.21                                               | 15.25            | 15.45     | 28.16                           | 29.79               | 29.84 | 31.88 | 32.29 |
| 1500           | 0.22                                               | 15.13            | 15.34     | 27.19                           | 30.80               | 31.13 | 33.73 | 34.15 |
| 1550           | 0.21                                               | 15.02            | 15.24     | 26.79                           | 32.26               | 32.30 | 35.51 | 36.54 |
| 1600           | 0.22                                               | 14.91            | 15.13     | 26.26                           | 34.14               | 33.94 | 37.91 | 39.20 |
| 1650           | 0.22                                               | 14.82            | 15.03     | 26.17                           | 37.78               | 35.41 | 41.58 | 41.08 |
| 1750           | 0.22                                               | 14.71            | 14.93     | 25.76                           | 45.36               | 37.96 | 45.70 | 39.95 |
| 1800           | 0.22                                               | 14.67            | 14.90     | 26.07                           | 44.54               | 39.35 | 44.03 | 37.68 |
| 1850           | 0.21                                               | 14.67            | 14.91     | 25.99                           | 42.12               | 42.42 | 41.64 | 36.74 |
| 1900           | 0.21                                               | 14.70            | 14.95     | 26.56                           | 39.80               | 43.50 | 40.65 | 35.50 |
| 1950           | 0.21                                               | 14.76            | 15.01     | 26.63                           | 38.39               | 41.37 | 40.60 | 35.61 |
| 2050           | 0.22                                               | 14.91            | 15.19     | 27.51                           | 37.92               | 36.94 | 41.27 | 35.61 |
| 2100           | 0.22                                               | 15.00            | 15.28     | 28.17                           | 38.47               | 35.90 | 42.43 | 35.90 |
| 2150           | 0.23                                               | 15.07            | 15.37     | 29.02                           | 39.04               | 36.81 | 42.34 | 37.02 |
| 2200           | 0.23                                               | 15.13            | 15.44     | 29.57                           | 38.03               | 36.64 | 42.05 | 37.92 |
| 2250           | 0.25                                               | 15.18            | 15.50     | 30.67                           | 37.25               | 37.16 | 41.75 | 39.24 |
| 2350           | 0.27                                               | 15.15            | 15.54     | 31.64                           | 35.95               | 35.80 | 41.26 | 40.94 |
| 2400           | 0.27                                               | 15.10            | 15.45     | 31.84                           | 33.88               | 33.27 | 39.69 | 39.01 |
| 2450           | 0.28                                               | 15.02            | 15.38     | 32.13                           | 34.51               | 34.13 | 39.70 | 38.89 |
| 2500           | 0.29                                               | 14.90            | 15.32     | 32.33                           | 32.71               | 32.64 | 38.44 | 37.11 |
| 2550           | 0.29                                               | 14.83            | 15.16     | 32.24                           | 33.87               | 33.51 | 37.98 | 36.99 |
| 2600           | 0.30                                               | 14.70            | 15.13     | 31.80                           | 33.27               | 32.64 | 37.46 | 35.94 |
| 2650           | 0.31                                               | 14.66            | 14.98     | 30.98                           | 34.08               | 32.87 | 35.67 | 34.46 |
| 2700           | 0.31                                               | 14.61            | 14.90     | 30.98                           | 33.24               | 31.36 | 34.91 | 33.23 |
| 2750           | 0.31                                               | 14.59            | 14.83     | 30.32                           | 33.08               | 31.17 | 33.37 | 32.12 |
| 2800           | 0.32                                               | 14.56            | 14.89     | 31.20                           | 31.94               | 30.07 | 32.29 | 31.53 |
| 2850           | 0.32                                               | 14.69            | 14.91     | 29.96                           | 31.43               | 29.73 | 31.30 | 30.68 |
| 2900           | 0.32                                               | 14.82            | 15.07     | 29.34                           | 31.91               | 30.48 | 30.17 | 29.70 |
| 2950           | 0.33                                               | 14.98            | 15.25     | 28.67                           | 32.36               | 31.29 | 30.02 | 29.72 |
| 3000           | 0.34                                               | 15.29            | 15.46     | 27.34                           | 34.95               | 34.01 | 30.06 | 29.69 |
| 3050           | 0.33                                               | 15.70            | 15.89     | 26.54                           | 35.12               | 35.70 | 30.53 | 30.23 |
| 3100           | 0.35                                               | 16.14            | 16.37     | 25.52                           | 39.54               | 40.17 | 30.80 | 30.73 |
| 3200           | 0.35                                               | 17.50            | 17.65     | 23.20                           | 57.93               | 46.23 | 31.25 | 33.14 |
| 3300           | 0.35                                               | 19.50            | 19.62     | 20.98                           | 39.46               | 35.50 | 30.28 | 34.81 |

(Note 1) Does not include theoretical loss. Nominal theoretical loss is 0.12 dB.

### 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 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/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/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. OR  
BDCH-15-33+  
190328  
Page 3 of 12

# Bi-Directional Coupler

# BDCH-15-33+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =+5 dBm @Temperature = -55°C, Configuration D

| FREQ.<br>(MHz) | INSERTION<br>LOSS <sup>1</sup><br>(dB)<br>In - Out | COUPLING<br>(dB) |           | DIRECTIVITY<br>(dB)<br>In - Fwd | RETURN LOSS<br>(dB) |       |       |       |
|----------------|----------------------------------------------------|------------------|-----------|---------------------------------|---------------------|-------|-------|-------|
|                |                                                    | In - Fwd         | Out - Rev |                                 | In                  | Out   | Fwd   | Rev   |
| 300            | 0.09                                               | 19.36            | 19.36     | 29.69                           | 27.13               | 27.21 | 25.32 | 25.02 |
| 350            | 0.09                                               | 18.27            | 18.26     | 28.97                           | 27.56               | 27.81 | 25.88 | 25.63 |
| 400            | 0.09                                               | 17.41            | 17.39     | 28.74                           | 27.38               | 27.53 | 26.56 | 26.33 |
| 450            | 0.10                                               | 16.70            | 16.68     | 28.65                           | 28.40               | 28.52 | 27.70 | 27.47 |
| 500            | 0.10                                               | 16.15            | 16.12     | 28.47                           | 30.18               | 30.48 | 28.74 | 28.64 |
| 550            | 0.10                                               | 15.71            | 15.68     | 28.51                           | 31.78               | 32.32 | 30.89 | 30.68 |
| 600            | 0.11                                               | 15.38            | 15.34     | 28.53                           | 32.87               | 33.53 | 33.26 | 33.09 |
| 650            | 0.12                                               | 15.14            | 15.09     | 28.51                           | 33.82               | 34.49 | 37.19 | 36.34 |
| 700            | 0.12                                               | 14.98            | 14.93     | 28.32                           | 36.02               | 36.61 | 41.75 | 39.03 |
| 750            | 0.12                                               | 14.89            | 14.83     | 28.30                           | 37.81               | 40.50 | 50.36 | 41.31 |
| 800            | 0.13                                               | 14.87            | 14.80     | 28.23                           | 39.99               | 46.51 | 49.36 | 41.74 |
| 850            | 0.13                                               | 14.90            | 14.81     | 27.98                           | 39.23               | 45.66 | 40.85 | 39.84 |
| 900            | 0.14                                               | 14.96            | 14.87     | 27.86                           | 37.31               | 39.72 | 36.77 | 36.20 |
| 950            | 0.15                                               | 15.06            | 14.97     | 27.98                           | 35.13               | 36.88 | 33.39 | 33.77 |
| 1000           | 0.16                                               | 15.19            | 15.07     | 28.50                           | 34.66               | 35.13 | 31.44 | 31.53 |
| 1050           | 0.16                                               | 15.32            | 15.18     | 28.84                           | 32.73               | 33.22 | 29.91 | 30.29 |
| 1150           | 0.19                                               | 15.55            | 15.39     | 30.78                           | 28.55               | 28.89 | 28.27 | 28.70 |
| 1200           | 0.20                                               | 15.63            | 15.46     | 32.06                           | 27.75               | 27.92 | 28.31 | 28.49 |
| 1250           | 0.20                                               | 15.66            | 15.48     | 32.83                           | 27.08               | 27.18 | 28.11 | 28.43 |
| 1300           | 0.21                                               | 15.67            | 15.47     | 32.63                           | 27.89               | 28.01 | 28.95 | 28.98 |
| 1350           | 0.21                                               | 15.62            | 15.44     | 31.83                           | 28.13               | 28.23 | 29.45 | 29.39 |
| 1450           | 0.21                                               | 15.45            | 15.25     | 29.16                           | 29.84               | 29.79 | 32.29 | 31.88 |
| 1500           | 0.22                                               | 15.34            | 15.13     | 27.70                           | 31.13               | 30.80 | 34.15 | 33.73 |
| 1550           | 0.22                                               | 15.24            | 15.02     | 27.35                           | 32.30               | 32.26 | 36.54 | 35.51 |
| 1600           | 0.23                                               | 15.13            | 14.91     | 26.57                           | 33.94               | 34.14 | 39.20 | 37.91 |
| 1650           | 0.22                                               | 15.03            | 14.82     | 26.59                           | 35.41               | 37.78 | 41.08 | 41.58 |
| 1750           | 0.23                                               | 14.93            | 14.71     | 26.04                           | 37.96               | 45.36 | 39.95 | 45.70 |
| 1800           | 0.23                                               | 14.90            | 14.67     | 26.25                           | 39.35               | 44.54 | 37.68 | 44.03 |
| 1850           | 0.22                                               | 14.91            | 14.67     | 25.94                           | 42.42               | 42.12 | 36.74 | 41.64 |
| 1900           | 0.22                                               | 14.95            | 14.70     | 26.03                           | 43.50               | 39.80 | 35.50 | 40.65 |
| 1950           | 0.23                                               | 15.01            | 14.76     | 25.74                           | 41.37               | 38.39 | 35.61 | 40.60 |
| 2050           | 0.23                                               | 15.19            | 14.91     | 25.39                           | 36.94               | 37.92 | 35.61 | 41.27 |
| 2100           | 0.24                                               | 15.28            | 15.00     | 25.02                           | 35.90               | 38.47 | 35.90 | 42.43 |
| 2150           | 0.24                                               | 15.37            | 15.07     | 24.90                           | 36.81               | 39.04 | 37.02 | 42.34 |
| 2200           | 0.25                                               | 15.44            | 15.13     | 24.63                           | 36.64               | 38.03 | 37.92 | 42.05 |
| 2250           | 0.26                                               | 15.50            | 15.18     | 24.52                           | 37.16               | 37.25 | 39.24 | 41.75 |
| 2350           | 0.28                                               | 15.54            | 15.15     | 24.37                           | 35.80               | 35.95 | 40.94 | 41.26 |
| 2400           | 0.28                                               | 15.45            | 15.10     | 24.02                           | 33.27               | 33.88 | 39.01 | 39.69 |
| 2450           | 0.29                                               | 15.38            | 15.02     | 24.35                           | 34.13               | 34.51 | 38.89 | 39.70 |
| 2500           | 0.30                                               | 15.32            | 14.90     | 24.51                           | 32.64               | 32.71 | 37.11 | 38.44 |
| 2550           | 0.30                                               | 15.16            | 14.83     | 24.93                           | 33.51               | 33.87 | 36.99 | 37.98 |
| 2600           | 0.32                                               | 15.13            | 14.70     | 25.66                           | 32.64               | 33.27 | 35.94 | 37.46 |
| 2650           | 0.32                                               | 14.98            | 14.66     | 26.05                           | 32.87               | 34.08 | 34.46 | 35.67 |
| 2700           | 0.32                                               | 14.90            | 14.61     | 26.81                           | 31.36               | 33.24 | 33.23 | 34.91 |
| 2750           | 0.32                                               | 14.83            | 14.59     | 27.34                           | 31.17               | 33.08 | 32.12 | 33.37 |
| 2800           | 0.33                                               | 14.89            | 14.56     | 28.93                           | 30.07               | 31.94 | 31.53 | 32.29 |
| 2850           | 0.33                                               | 14.91            | 14.69     | 30.22                           | 29.73               | 31.43 | 30.68 | 31.30 |
| 2900           | 0.33                                               | 15.07            | 14.82     | 31.29                           | 30.48               | 31.91 | 29.70 | 30.17 |
| 2950           | 0.34                                               | 15.25            | 14.98     | 32.32                           | 31.29               | 32.36 | 29.72 | 30.02 |
| 3000           | 0.34                                               | 15.46            | 15.29     | 32.25                           | 34.01               | 34.95 | 29.69 | 30.06 |
| 3050           | 0.34                                               | 15.89            | 15.70     | 32.38                           | 35.70               | 35.12 | 30.23 | 30.53 |
| 3100           | 0.35                                               | 16.37            | 16.14     | 32.07                           | 40.17               | 39.54 | 30.73 | 30.80 |
| 3200           | 0.35                                               | 17.65            | 17.50     | 30.00                           | 46.23               | 57.93 | 33.14 | 31.25 |
| 3300           | 0.36                                               | 19.62            | 19.50     | 27.37                           | 35.50               | 39.46 | 34.81 | 30.28 |

(Note 1) Does not include theoretical loss. Nominal theoretical loss is 0.12 dB.

### 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 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/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/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. OR  
BDCH-15-33+  
190328  
Page 4 of 12

# Bi-Directional Coupler

# BDCH-15-33+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =+5 dBm @Temperature = +25°C, Configuration A

| FREQ.<br>(MHz) | INSERTION<br>LOSS <sup>1</sup><br>(dB)<br>In - Out | COUPLING<br>(dB) |           | DIRECTIVITY<br>(dB)<br>In - Fwd | RETURN LOSS<br>(dB) |       |       |       |
|----------------|----------------------------------------------------|------------------|-----------|---------------------------------|---------------------|-------|-------|-------|
|                |                                                    | In - Fwd         | Out - Rev |                                 | In                  | Out   | Fwd   | Rev   |
| 300            | 0.09                                               | 19.34            | 19.32     | 29.53                           | 28.20               | 28.03 | 28.67 | 28.70 |
| 350            | 0.09                                               | 18.26            | 18.23     | 28.66                           | 27.46               | 27.34 | 27.98 | 28.05 |
| 400            | 0.09                                               | 17.39            | 17.36     | 28.30                           | 27.59               | 27.55 | 28.25 | 28.12 |
| 450            | 0.10                                               | 16.69            | 16.66     | 28.13                           | 27.78               | 27.69 | 28.27 | 28.28 |
| 500            | 0.10                                               | 16.14            | 16.10     | 28.10                           | 28.49               | 28.43 | 29.14 | 29.16 |
| 550            | 0.11                                               | 15.70            | 15.65     | 28.06                           | 29.19               | 29.14 | 29.54 | 29.76 |
| 600            | 0.11                                               | 15.37            | 15.32     | 27.93                           | 30.67               | 30.78 | 30.94 | 31.29 |
| 650            | 0.12                                               | 15.14            | 15.07     | 27.93                           | 32.46               | 32.42 | 32.49 | 32.76 |
| 700            | 0.12                                               | 14.98            | 14.91     | 27.95                           | 35.02               | 35.06 | 34.80 | 35.08 |
| 750            | 0.13                                               | 14.89            | 14.81     | 28.01                           | 39.00               | 38.91 | 37.83 | 38.86 |
| 800            | 0.13                                               | 14.87            | 14.79     | 27.64                           | 44.65               | 43.54 | 39.70 | 42.76 |
| 850            | 0.14                                               | 14.89            | 14.80     | 27.81                           | 42.04               | 42.07 | 40.83 | 43.14 |
| 900            | 0.15                                               | 14.96            | 14.86     | 27.69                           | 38.25               | 37.45 | 38.15 | 40.08 |
| 950            | 0.15                                               | 15.07            | 14.95     | 27.95                           | 33.96               | 34.02 | 34.65 | 35.27 |
| 1000           | 0.16                                               | 15.19            | 15.06     | 28.07                           | 32.08               | 31.86 | 32.95 | 33.56 |
| 1050           | 0.17                                               | 15.32            | 15.18     | 28.53                           | 30.07               | 30.13 | 30.66 | 31.05 |
| 1150           | 0.19                                               | 15.56            | 15.38     | 29.83                           | 28.29               | 28.43 | 28.56 | 29.05 |
| 1200           | 0.20                                               | 15.64            | 15.44     | 30.76                           | 28.13               | 28.14 | 28.19 | 28.52 |
| 1250           | 0.20                                               | 15.67            | 15.47     | 31.10                           | 27.77               | 27.97 | 27.64 | 27.97 |
| 1300           | 0.21                                               | 15.68            | 15.46     | 31.03                           | 28.05               | 27.96 | 27.47 | 27.84 |
| 1350           | 0.21                                               | 15.63            | 15.41     | 30.35                           | 28.46               | 28.57 | 27.62 | 28.04 |
| 1450           | 0.22                                               | 15.46            | 15.23     | 28.04                           | 30.31               | 30.28 | 28.80 | 28.93 |
| 1500           | 0.23                                               | 15.35            | 15.12     | 26.84                           | 30.79               | 30.46 | 29.19 | 29.24 |
| 1550           | 0.23                                               | 15.24            | 14.99     | 26.42                           | 33.47               | 32.86 | 30.81 | 30.85 |
| 1600           | 0.23                                               | 15.14            | 14.89     | 25.86                           | 34.27               | 33.55 | 31.79 | 31.49 |
| 1650           | 0.23                                               | 15.04            | 14.79     | 25.80                           | 38.13               | 37.07 | 34.50 | 34.12 |
| 1750           | 0.24                                               | 14.92            | 14.67     | 25.53                           | 41.72               | 41.14 | 40.38 | 38.42 |
| 1800           | 0.24                                               | 14.90            | 14.65     | 25.84                           | 40.17               | 43.12 | 41.52 | 39.53 |
| 1850           | 0.24                                               | 14.91            | 14.65     | 25.67                           | 38.38               | 38.64 | 38.79 | 38.00 |
| 1900           | 0.24                                               | 14.94            | 14.68     | 26.12                           | 36.75               | 38.85 | 36.61 | 36.68 |
| 1950           | 0.24                                               | 15.01            | 14.74     | 25.89                           | 35.59               | 35.88 | 34.31 | 34.37 |
| 2050           | 0.25                                               | 15.20            | 14.89     | 25.95                           | 34.35               | 34.80 | 32.01 | 32.42 |
| 2100           | 0.25                                               | 15.28            | 14.97     | 25.97                           | 33.77               | 34.77 | 30.79 | 31.50 |
| 2150           | 0.26                                               | 15.39            | 15.05     | 26.04                           | 34.00               | 34.51 | 30.85 | 31.56 |
| 2200           | 0.26                                               | 15.45            | 15.11     | 25.84                           | 33.49               | 34.33 | 30.35 | 30.96 |
| 2250           | 0.27                                               | 15.51            | 15.15     | 26.11                           | 34.25               | 35.27 | 30.87 | 31.84 |
| 2350           | 0.28                                               | 15.52            | 15.13     | 26.09                           | 34.84               | 36.30 | 32.01 | 32.85 |
| 2400           | 0.29                                               | 15.47            | 15.07     | 26.00                           | 34.01               | 35.85 | 32.00 | 33.04 |
| 2450           | 0.30                                               | 15.40            | 14.99     | 26.25                           | 35.02               | 36.65 | 33.51 | 34.50 |
| 2500           | 0.30                                               | 15.30            | 14.90     | 26.31                           | 34.36               | 36.61 | 34.04 | 35.08 |
| 2550           | 0.31                                               | 15.18            | 14.80     | 26.50                           | 34.59               | 35.88 | 35.33 | 36.25 |
| 2600           | 0.31                                               | 15.06            | 14.71     | 26.56                           | 34.01               | 36.22 | 36.43 | 37.94 |
| 2650           | 0.32                                               | 14.96            | 14.62     | 26.40                           | 34.18               | 35.13 | 37.84 | 38.91 |
| 2700           | 0.33                                               | 14.89            | 14.56     | 26.55                           | 33.71               | 35.14 | 37.73 | 40.53 |
| 2750           | 0.34                                               | 14.87            | 14.53     | 26.48                           | 33.46               | 33.67 | 38.38 | 40.28 |
| 2800           | 0.34                                               | 14.87            | 14.57     | 27.27                           | 32.98               | 33.21 | 36.95 | 40.36 |
| 2850           | 0.35                                               | 14.93            | 14.65     | 26.95                           | 32.64               | 32.19 | 36.61 | 39.53 |
| 2900           | 0.35                                               | 15.03            | 14.77     | 26.73                           | 32.54               | 32.03 | 36.36 | 40.03 |
| 2950           | 0.36                                               | 15.22            | 14.97     | 26.58                           | 32.47               | 31.48 | 35.57 | 39.06 |
| 3000           | 0.35                                               | 15.48            | 15.25     | 25.70                           | 32.67               | 31.87 | 35.89 | 39.63 |
| 3050           | 0.36                                               | 15.84            | 15.63     | 25.42                           | 33.48               | 31.81 | 36.36 | 40.14 |
| 3100           | 0.36                                               | 16.30            | 16.10     | 24.67                           | 34.67               | 31.77 | 36.16 | 42.15 |
| 3200           | 0.37                                               | 17.59            | 17.41     | 22.93                           | 37.63               | 31.49 | 37.44 | 47.00 |
| 3300           | 0.37                                               | 19.58            | 19.40     | 20.95                           | 38.86               | 30.63 | 36.50 | 51.40 |

(Note 1) Does not include theoretical loss. Nominal theoretical loss is 0.12 dB.

### 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/MC/StoreTerms.jsp](http://www.minicircuits.com/MC/StoreTerms.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. OR  
BDCH-15-33+  
190328  
Page 5 of 12

# Bi-Directional Coupler

# BDCH-15-33+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER = +5 dBm @Temperature = +25°C, Configuration B

| FREQ.<br>(MHz) | INSERTION<br>LOSS <sup>1</sup><br>(dB)<br>In - Out | COUPLING<br>(dB) |           | DIRECTIVITY<br>(dB)<br>In - Fwd | RETURN LOSS<br>(dB) |       |       |       |
|----------------|----------------------------------------------------|------------------|-----------|---------------------------------|---------------------|-------|-------|-------|
|                |                                                    | In - Fwd         | Out - Rev |                                 | In                  | Out   | Fwd   | Rev   |
| 300            | 0.08                                               | 19.32            | 19.34     | 29.36                           | 28.03               | 28.20 | 28.70 | 28.67 |
| 350            | 0.09                                               | 18.23            | 18.26     | 28.34                           | 27.34               | 27.46 | 28.05 | 27.98 |
| 400            | 0.09                                               | 17.36            | 17.39     | 27.97                           | 27.55               | 27.59 | 28.12 | 28.25 |
| 450            | 0.10                                               | 16.66            | 16.69     | 27.68                           | 27.69               | 27.78 | 28.28 | 28.27 |
| 500            | 0.10                                               | 16.10            | 16.14     | 27.17                           | 28.43               | 28.49 | 29.16 | 29.14 |
| 550            | 0.10                                               | 15.65            | 15.70     | 27.09                           | 29.14               | 29.19 | 29.76 | 29.54 |
| 600            | 0.10                                               | 15.32            | 15.37     | 26.94                           | 30.78               | 30.67 | 31.29 | 30.94 |
| 650            | 0.11                                               | 15.07            | 15.14     | 27.07                           | 32.42               | 32.46 | 32.76 | 32.49 |
| 700            | 0.12                                               | 14.91            | 14.98     | 26.96                           | 35.06               | 35.02 | 35.08 | 34.80 |
| 750            | 0.12                                               | 14.81            | 14.89     | 27.17                           | 38.91               | 39.00 | 38.86 | 37.83 |
| 800            | 0.13                                               | 14.79            | 14.87     | 27.61                           | 43.54               | 44.65 | 42.76 | 39.70 |
| 850            | 0.13                                               | 14.80            | 14.89     | 27.84                           | 42.07               | 42.04 | 43.14 | 40.83 |
| 900            | 0.14                                               | 14.86            | 14.96     | 28.25                           | 37.45               | 38.25 | 40.08 | 38.15 |
| 950            | 0.15                                               | 14.95            | 15.07     | 28.93                           | 34.02               | 33.96 | 35.27 | 34.65 |
| 1000           | 0.16                                               | 15.06            | 15.19     | 29.98                           | 31.86               | 32.08 | 33.56 | 32.95 |
| 1050           | 0.16                                               | 15.18            | 15.32     | 30.86                           | 30.13               | 30.07 | 31.05 | 30.66 |
| 1150           | 0.18                                               | 15.38            | 15.56     | 32.98                           | 28.43               | 28.29 | 29.05 | 28.56 |
| 1200           | 0.19                                               | 15.44            | 15.64     | 33.81                           | 28.14               | 28.13 | 28.52 | 28.19 |
| 1250           | 0.19                                               | 15.47            | 15.67     | 33.50                           | 27.97               | 27.77 | 27.97 | 27.64 |
| 1300           | 0.20                                               | 15.46            | 15.68     | 32.68                           | 27.96               | 28.05 | 27.84 | 27.47 |
| 1350           | 0.20                                               | 15.41            | 15.63     | 31.58                           | 28.57               | 28.46 | 28.04 | 27.62 |
| 1450           | 0.21                                               | 15.23            | 15.46     | 29.32                           | 30.28               | 30.31 | 28.93 | 28.80 |
| 1500           | 0.22                                               | 15.12            | 15.35     | 28.06                           | 30.46               | 30.79 | 29.24 | 29.19 |
| 1550           | 0.21                                               | 14.99            | 15.24     | 27.76                           | 32.86               | 33.47 | 30.85 | 30.81 |
| 1600           | 0.22                                               | 14.89            | 15.14     | 26.94                           | 33.55               | 34.27 | 31.49 | 31.79 |
| 1650           | 0.22                                               | 14.79            | 15.04     | 26.89                           | 37.07               | 38.13 | 34.12 | 34.50 |
| 1750           | 0.22                                               | 14.67            | 14.92     | 26.17                           | 41.14               | 41.72 | 38.42 | 40.38 |
| 1800           | 0.22                                               | 14.65            | 14.90     | 26.48                           | 43.12               | 40.17 | 39.53 | 41.52 |
| 1850           | 0.22                                               | 14.65            | 14.91     | 26.20                           | 38.64               | 38.38 | 38.00 | 38.79 |
| 1900           | 0.22                                               | 14.68            | 14.94     | 26.62                           | 38.85               | 36.75 | 36.68 | 36.61 |
| 1950           | 0.23                                               | 14.74            | 15.01     | 26.58                           | 35.88               | 35.59 | 34.37 | 34.31 |
| 2050           | 0.23                                               | 14.89            | 15.20     | 27.31                           | 34.80               | 34.35 | 32.42 | 32.01 |
| 2100           | 0.23                                               | 14.97            | 15.28     | 27.50                           | 34.77               | 33.77 | 31.50 | 30.79 |
| 2150           | 0.24                                               | 15.05            | 15.39     | 28.10                           | 34.51               | 34.00 | 31.56 | 30.85 |
| 2200           | 0.24                                               | 15.11            | 15.45     | 28.26                           | 34.33               | 33.49 | 30.96 | 30.35 |
| 2250           | 0.25                                               | 15.15            | 15.51     | 28.86                           | 35.27               | 34.25 | 31.84 | 30.87 |
| 2350           | 0.27                                               | 15.13            | 15.52     | 29.31                           | 36.30               | 34.84 | 32.85 | 32.01 |
| 2400           | 0.27                                               | 15.07            | 15.47     | 29.57                           | 35.85               | 34.01 | 33.04 | 32.00 |
| 2450           | 0.28                                               | 14.99            | 15.40     | 29.78                           | 36.65               | 35.02 | 34.50 | 33.51 |
| 2500           | 0.28                                               | 14.90            | 15.30     | 29.99                           | 36.61               | 34.36 | 35.08 | 34.04 |
| 2550           | 0.30                                               | 14.80            | 15.18     | 30.66                           | 35.88               | 34.59 | 36.25 | 35.33 |
| 2600           | 0.30                                               | 14.71            | 15.06     | 31.36                           | 36.22               | 34.01 | 37.94 | 36.43 |
| 2650           | 0.31                                               | 14.62            | 14.96     | 31.19                           | 35.13               | 34.18 | 38.91 | 37.84 |
| 2700           | 0.32                                               | 14.56            | 14.89     | 32.19                           | 35.14               | 33.71 | 40.53 | 37.73 |
| 2750           | 0.33                                               | 14.53            | 14.87     | 31.42                           | 33.67               | 33.46 | 40.28 | 38.38 |
| 2800           | 0.33                                               | 14.57            | 14.87     | 33.27                           | 33.21               | 32.98 | 40.36 | 36.95 |
| 2850           | 0.33                                               | 14.65            | 14.93     | 33.94                           | 32.19               | 32.64 | 39.53 | 36.61 |
| 2900           | 0.33                                               | 14.77            | 15.03     | 34.90                           | 32.03               | 32.54 | 40.03 | 36.36 |
| 2950           | 0.34                                               | 14.97            | 15.22     | 35.35                           | 31.48               | 32.47 | 39.06 | 35.57 |
| 3000           | 0.34                                               | 15.25            | 15.48     | 34.55                           | 31.87               | 32.67 | 39.63 | 35.89 |
| 3050           | 0.35                                               | 15.63            | 15.84     | 33.76                           | 31.81               | 33.48 | 40.14 | 36.36 |
| 3100           | 0.35                                               | 16.10            | 16.30     | 33.03                           | 31.77               | 34.67 | 42.15 | 36.16 |
| 3200           | 0.36                                               | 17.41            | 17.59     | 30.11                           | 31.49               | 37.63 | 47.00 | 37.44 |
| 3300           | 0.36                                               | 19.40            | 19.58     | 27.23                           | 30.63               | 38.86 | 51.40 | 36.50 |

(Note 1) Does not include theoretical loss. Nominal theoretical loss is 0.12 dB.

### 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 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/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/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. OR  
BDCH-15-33+  
190328  
Page 6 of 12



# Bi-Directional Coupler

# BDCH-15-33+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =+5 dBm @Temperature = +25°C, Configuration C

| FREQ.<br>(MHz) | INSERTION<br>LOSS <sup>1</sup><br>(dB)<br>In - Out | COUPLING<br>(dB) |           | DIRECTIVITY<br>(dB)<br>In - Fwd | RETURN LOSS<br>(dB) |       |       |       |
|----------------|----------------------------------------------------|------------------|-----------|---------------------------------|---------------------|-------|-------|-------|
|                |                                                    | In - Fwd         | Out - Rev |                                 | In                  | Out   | Fwd   | Rev   |
| 300            | 0.08                                               | 19.34            | 19.35     | 29.22                           | 28.70               | 28.67 | 28.03 | 28.20 |
| 350            | 0.08                                               | 18.24            | 18.27     | 28.19                           | 28.05               | 27.98 | 27.34 | 27.46 |
| 400            | 0.09                                               | 17.37            | 17.40     | 27.58                           | 28.12               | 28.25 | 27.55 | 27.59 |
| 450            | 0.09                                               | 16.66            | 16.70     | 27.20                           | 28.28               | 28.27 | 27.69 | 27.78 |
| 500            | 0.10                                               | 16.10            | 16.15     | 26.89                           | 29.16               | 29.14 | 28.43 | 28.49 |
| 550            | 0.10                                               | 15.66            | 15.71     | 26.69                           | 29.76               | 29.54 | 29.14 | 29.19 |
| 600            | 0.10                                               | 15.33            | 15.38     | 26.41                           | 31.29               | 30.94 | 30.78 | 30.67 |
| 650            | 0.11                                               | 15.08            | 15.14     | 26.41                           | 32.76               | 32.49 | 32.42 | 32.46 |
| 700            | 0.11                                               | 14.92            | 14.98     | 26.40                           | 35.08               | 34.80 | 35.06 | 35.02 |
| 750            | 0.12                                               | 14.82            | 14.90     | 26.54                           | 38.86               | 37.83 | 38.91 | 39.00 |
| 800            | 0.12                                               | 14.79            | 14.87     | 26.52                           | 42.76               | 39.70 | 43.54 | 44.65 |
| 850            | 0.13                                               | 14.80            | 14.90     | 27.01                           | 43.14               | 40.83 | 42.07 | 42.04 |
| 900            | 0.14                                               | 14.86            | 14.96     | 27.30                           | 40.08               | 38.15 | 37.45 | 38.25 |
| 950            | 0.14                                               | 14.95            | 15.07     | 27.99                           | 35.27               | 34.65 | 34.02 | 33.96 |
| 1000           | 0.15                                               | 15.06            | 15.19     | 28.60                           | 33.56               | 32.95 | 31.86 | 32.08 |
| 1050           | 0.16                                               | 15.18            | 15.32     | 29.36                           | 31.05               | 30.66 | 30.13 | 30.07 |
| 1150           | 0.17                                               | 15.38            | 15.56     | 30.80                           | 29.05               | 28.56 | 28.43 | 28.29 |
| 1200           | 0.18                                               | 15.44            | 15.64     | 31.60                           | 28.52               | 28.19 | 28.14 | 28.13 |
| 1250           | 0.18                                               | 15.47            | 15.68     | 31.35                           | 27.97               | 27.64 | 27.97 | 27.77 |
| 1300           | 0.20                                               | 15.46            | 15.68     | 31.07                           | 27.84               | 27.47 | 27.96 | 28.05 |
| 1350           | 0.19                                               | 15.41            | 15.64     | 30.13                           | 28.04               | 27.62 | 28.57 | 28.46 |
| 1450           | 0.20                                               | 15.23            | 15.47     | 28.16                           | 28.93               | 28.80 | 30.28 | 30.31 |
| 1500           | 0.21                                               | 15.12            | 15.36     | 27.19                           | 29.24               | 29.19 | 30.46 | 30.79 |
| 1550           | 0.20                                               | 15.00            | 15.24     | 26.79                           | 30.85               | 30.81 | 32.86 | 33.47 |
| 1600           | 0.21                                               | 14.89            | 15.14     | 26.26                           | 31.49               | 31.79 | 33.55 | 34.27 |
| 1650           | 0.21                                               | 14.81            | 15.05     | 26.17                           | 34.12               | 34.50 | 37.07 | 38.13 |
| 1750           | 0.21                                               | 14.68            | 14.93     | 25.76                           | 38.42               | 40.38 | 41.14 | 41.72 |
| 1800           | 0.21                                               | 14.66            | 14.91     | 26.07                           | 39.53               | 41.52 | 43.12 | 40.17 |
| 1850           | 0.21                                               | 14.66            | 14.92     | 25.99                           | 38.00               | 38.79 | 38.64 | 38.38 |
| 1900           | 0.21                                               | 14.69            | 14.96     | 26.56                           | 36.68               | 36.61 | 38.85 | 36.75 |
| 1950           | 0.21                                               | 14.75            | 15.02     | 26.63                           | 34.37               | 34.31 | 35.88 | 35.59 |
| 2050           | 0.22                                               | 14.91            | 15.20     | 27.51                           | 32.42               | 32.01 | 34.80 | 34.35 |
| 2100           | 0.22                                               | 14.99            | 15.29     | 28.17                           | 31.50               | 30.79 | 34.77 | 33.77 |
| 2150           | 0.23                                               | 15.06            | 15.40     | 29.02                           | 31.56               | 30.85 | 34.51 | 34.00 |
| 2200           | 0.23                                               | 15.11            | 15.47     | 29.57                           | 30.96               | 30.35 | 34.33 | 33.49 |
| 2250           | 0.24                                               | 15.15            | 15.53     | 30.67                           | 31.84               | 30.87 | 35.27 | 34.25 |
| 2350           | 0.25                                               | 15.14            | 15.53     | 31.64                           | 32.85               | 32.01 | 36.30 | 34.84 |
| 2400           | 0.25                                               | 15.08            | 15.48     | 31.84                           | 33.04               | 32.00 | 35.85 | 34.01 |
| 2450           | 0.26                                               | 15.00            | 15.41     | 32.13                           | 34.50               | 33.51 | 36.65 | 35.02 |
| 2500           | 0.27                                               | 14.91            | 15.31     | 32.33                           | 35.08               | 34.04 | 36.61 | 34.36 |
| 2550           | 0.28                                               | 14.81            | 15.19     | 32.24                           | 36.25               | 35.33 | 35.88 | 34.59 |
| 2600           | 0.28                                               | 14.72            | 15.07     | 31.80                           | 37.94               | 36.43 | 36.22 | 34.01 |
| 2650           | 0.29                                               | 14.63            | 14.97     | 30.98                           | 38.91               | 37.84 | 35.13 | 34.18 |
| 2700           | 0.30                                               | 14.57            | 14.91     | 30.98                           | 40.53               | 37.73 | 35.14 | 33.71 |
| 2750           | 0.31                                               | 14.54            | 14.89     | 30.32                           | 40.28               | 38.38 | 33.67 | 33.46 |
| 2800           | 0.31                                               | 14.58            | 14.88     | 31.20                           | 40.36               | 36.95 | 33.21 | 32.98 |
| 2850           | 0.31                                               | 14.66            | 14.93     | 29.96                           | 39.53               | 36.61 | 32.19 | 32.64 |
| 2900           | 0.31                                               | 14.78            | 15.04     | 29.34                           | 40.03               | 36.36 | 32.03 | 32.54 |
| 2950           | 0.32                                               | 14.98            | 15.22     | 28.67                           | 39.06               | 35.57 | 31.48 | 32.47 |
| 3000           | 0.32                                               | 15.26            | 15.49     | 27.34                           | 39.63               | 35.89 | 31.87 | 32.67 |
| 3050           | 0.32                                               | 15.64            | 15.85     | 26.54                           | 40.14               | 36.36 | 31.81 | 33.48 |
| 3100           | 0.33                                               | 16.11            | 16.30     | 25.52                           | 42.15               | 36.16 | 31.77 | 34.67 |
| 3200           | 0.34                                               | 17.42            | 17.60     | 23.20                           | 47.00               | 37.44 | 31.49 | 37.63 |
| 3300           | 0.34                                               | 19.41            | 19.58     | 20.98                           | 51.40               | 36.50 | 30.63 | 38.86 |

(Note 1) Does not include theoretical loss. Nominal theoretical loss is 0.12 dB.

### 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/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/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. OR  
BDCH-15-33+  
190328  
Page 7 of 12

# Bi-Directional Coupler

# BDCH-15-33+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER = +5 dBm @Temperature = +25°C, Configuration D

| FREQ.<br>(MHz) | INSERTION<br>LOSS <sup>1</sup><br>(dB)<br>In - Out | COUPLING<br>(dB) |           | DIRECTIVITY<br>(dB)<br>In - Fwd | RETURN LOSS<br>(dB) |       |       |       |
|----------------|----------------------------------------------------|------------------|-----------|---------------------------------|---------------------|-------|-------|-------|
|                |                                                    | In - Fwd         | Out - Rev |                                 | In                  | Out   | Fwd   | Rev   |
| 300            | 0.08                                               | 19.35            | 19.34     | 29.69                           | 28.67               | 28.70 | 28.20 | 28.03 |
| 350            | 0.09                                               | 18.27            | 18.24     | 28.97                           | 27.98               | 28.05 | 27.46 | 27.34 |
| 400            | 0.09                                               | 17.40            | 17.37     | 28.74                           | 28.25               | 28.12 | 27.59 | 27.55 |
| 450            | 0.10                                               | 16.70            | 16.66     | 28.65                           | 28.27               | 28.28 | 27.78 | 27.69 |
| 500            | 0.10                                               | 16.15            | 16.10     | 28.47                           | 29.14               | 29.16 | 28.49 | 28.43 |
| 550            | 0.10                                               | 15.71            | 15.66     | 28.51                           | 29.54               | 29.76 | 29.19 | 29.14 |
| 600            | 0.11                                               | 15.38            | 15.33     | 28.53                           | 30.94               | 31.29 | 30.67 | 30.78 |
| 650            | 0.11                                               | 15.14            | 15.08     | 28.51                           | 32.49               | 32.76 | 32.46 | 32.42 |
| 700            | 0.12                                               | 14.98            | 14.92     | 28.32                           | 34.80               | 35.08 | 35.02 | 35.06 |
| 750            | 0.12                                               | 14.90            | 14.82     | 28.30                           | 37.83               | 38.86 | 39.00 | 38.91 |
| 800            | 0.13                                               | 14.87            | 14.79     | 28.23                           | 39.70               | 42.76 | 44.65 | 43.54 |
| 850            | 0.13                                               | 14.90            | 14.80     | 27.98                           | 40.83               | 43.14 | 42.04 | 42.07 |
| 900            | 0.14                                               | 14.96            | 14.86     | 27.86                           | 38.15               | 40.08 | 38.25 | 37.45 |
| 950            | 0.15                                               | 15.07            | 14.95     | 27.98                           | 34.65               | 35.27 | 33.96 | 34.02 |
| 1000           | 0.16                                               | 15.19            | 15.06     | 28.50                           | 32.95               | 33.56 | 32.08 | 31.86 |
| 1050           | 0.17                                               | 15.32            | 15.18     | 28.84                           | 30.66               | 31.05 | 30.07 | 30.13 |
| 1150           | 0.18                                               | 15.56            | 15.38     | 30.78                           | 28.56               | 29.05 | 28.29 | 28.43 |
| 1200           | 0.19                                               | 15.64            | 15.44     | 32.06                           | 28.19               | 28.52 | 28.13 | 28.14 |
| 1250           | 0.19                                               | 15.68            | 15.47     | 32.83                           | 27.64               | 27.97 | 27.77 | 27.97 |
| 1300           | 0.20                                               | 15.68            | 15.46     | 32.63                           | 27.47               | 27.84 | 28.05 | 27.96 |
| 1350           | 0.20                                               | 15.64            | 15.41     | 31.83                           | 27.62               | 28.04 | 28.46 | 28.57 |
| 1450           | 0.21                                               | 15.47            | 15.23     | 29.16                           | 28.80               | 28.93 | 30.31 | 30.28 |
| 1500           | 0.22                                               | 15.36            | 15.12     | 27.70                           | 29.19               | 29.24 | 30.79 | 30.46 |
| 1550           | 0.21                                               | 15.24            | 15.00     | 27.35                           | 30.81               | 30.85 | 33.47 | 32.86 |
| 1600           | 0.22                                               | 15.14            | 14.89     | 26.57                           | 31.79               | 31.49 | 34.27 | 33.55 |
| 1650           | 0.22                                               | 15.05            | 14.81     | 26.59                           | 34.50               | 34.12 | 38.13 | 37.07 |
| 1750           | 0.22                                               | 14.93            | 14.68     | 26.04                           | 40.38               | 38.42 | 41.72 | 41.14 |
| 1800           | 0.22                                               | 14.91            | 14.66     | 26.25                           | 41.52               | 39.53 | 40.17 | 43.12 |
| 1850           | 0.23                                               | 14.92            | 14.66     | 25.94                           | 38.79               | 38.00 | 38.38 | 38.64 |
| 1900           | 0.23                                               | 14.96            | 14.69     | 26.03                           | 36.61               | 36.68 | 36.75 | 38.85 |
| 1950           | 0.23                                               | 15.02            | 14.75     | 25.74                           | 34.31               | 34.37 | 35.59 | 35.88 |
| 2050           | 0.24                                               | 15.20            | 14.91     | 25.39                           | 32.01               | 32.42 | 34.35 | 34.80 |
| 2100           | 0.24                                               | 15.29            | 14.99     | 25.02                           | 30.79               | 31.50 | 33.77 | 34.77 |
| 2150           | 0.25                                               | 15.40            | 15.06     | 24.90                           | 30.85               | 31.56 | 34.00 | 34.51 |
| 2200           | 0.25                                               | 15.47            | 15.11     | 24.63                           | 30.35               | 30.96 | 33.49 | 34.33 |
| 2250           | 0.26                                               | 15.53            | 15.15     | 24.52                           | 30.87               | 31.84 | 34.25 | 35.27 |
| 2350           | 0.27                                               | 15.53            | 15.14     | 24.37                           | 32.01               | 32.85 | 34.84 | 36.30 |
| 2400           | 0.27                                               | 15.48            | 15.08     | 24.02                           | 32.00               | 33.04 | 34.01 | 35.85 |
| 2450           | 0.28                                               | 15.41            | 15.00     | 24.35                           | 33.51               | 34.50 | 35.02 | 36.65 |
| 2500           | 0.28                                               | 15.31            | 14.91     | 24.51                           | 34.04               | 35.08 | 34.36 | 36.61 |
| 2550           | 0.29                                               | 15.19            | 14.81     | 24.93                           | 35.33               | 36.25 | 34.59 | 35.88 |
| 2600           | 0.30                                               | 15.07            | 14.72     | 25.66                           | 36.43               | 37.94 | 34.01 | 36.22 |
| 2650           | 0.31                                               | 14.97            | 14.63     | 26.05                           | 37.84               | 38.91 | 34.18 | 35.13 |
| 2700           | 0.31                                               | 14.91            | 14.57     | 26.81                           | 37.73               | 40.53 | 33.71 | 35.14 |
| 2750           | 0.33                                               | 14.89            | 14.54     | 27.34                           | 38.38               | 40.28 | 33.46 | 33.67 |
| 2800           | 0.32                                               | 14.88            | 14.58     | 28.93                           | 36.95               | 40.36 | 32.98 | 33.21 |
| 2850           | 0.33                                               | 14.93            | 14.66     | 30.22                           | 36.61               | 39.53 | 32.64 | 32.19 |
| 2900           | 0.33                                               | 15.04            | 14.78     | 31.29                           | 36.36               | 40.03 | 32.54 | 32.03 |
| 2950           | 0.33                                               | 15.22            | 14.98     | 32.32                           | 35.57               | 39.06 | 32.47 | 31.48 |
| 3000           | 0.33                                               | 15.49            | 15.26     | 32.25                           | 35.89               | 39.63 | 32.67 | 31.87 |
| 3050           | 0.33                                               | 15.85            | 15.64     | 32.38                           | 36.36               | 40.14 | 33.48 | 31.81 |
| 3100           | 0.34                                               | 16.30            | 16.11     | 32.07                           | 36.16               | 42.15 | 34.67 | 31.77 |
| 3200           | 0.35                                               | 17.60            | 17.42     | 30.00                           | 37.44               | 47.00 | 37.63 | 31.49 |
| 3300           | 0.35                                               | 19.58            | 19.41     | 27.37                           | 36.50               | 51.40 | 38.86 | 30.63 |

(Note 1) Does not include theoretical loss. Nominal theoretical loss is 0.12 dB.

### 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 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/MCULStoreTerms.jsp](http://www.minicircuits.com/MCULStoreTerms.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. OR  
BDCH-15-33+  
190328  
Page 8 of 12



# Bi-Directional Coupler

# BDCH-15-33+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER = +5 dBm @Temperature = +105°C, Configuration A

| FREQ.<br>(MHz) | INSERTION<br>LOSS <sup>1</sup><br>(dB)<br>In - Out | COUPLING<br>(dB) |           | DIRECTIVITY<br>(dB)<br>In - Fwd | RETURN LOSS<br>(dB) |       |       |       |
|----------------|----------------------------------------------------|------------------|-----------|---------------------------------|---------------------|-------|-------|-------|
|                |                                                    | In - Fwd         | Out - Rev |                                 | In                  | Out   | Fwd   | Rev   |
| 300            | 0.09                                               | 19.35            | 19.31     | 32.25                           | 31.97               | 32.35 | 31.46 | 31.28 |
| 350            | 0.09                                               | 18.26            | 18.23     | 30.41                           | 30.50               | 30.65 | 28.39 | 28.28 |
| 400            | 0.10                                               | 17.40            | 17.36     | 29.65                           | 29.94               | 29.86 | 27.70 | 27.57 |
| 450            | 0.10                                               | 16.70            | 16.66     | 29.55                           | 29.37               | 29.22 | 27.43 | 27.51 |
| 500            | 0.11                                               | 16.15            | 16.10     | 29.16                           | 29.33               | 29.20 | 28.23 | 28.23 |
| 550            | 0.11                                               | 15.72            | 15.66     | 29.45                           | 29.18               | 29.19 | 28.97 | 29.17 |
| 600            | 0.12                                               | 15.39            | 15.32     | 29.24                           | 29.80               | 29.86 | 29.94 | 30.10 |
| 650            | 0.13                                               | 15.15            | 15.08     | 29.01                           | 30.91               | 30.85 | 30.51 | 30.83 |
| 700            | 0.13                                               | 15.00            | 14.92     | 28.47                           | 32.59               | 32.30 | 31.46 | 31.65 |
| 750            | 0.14                                               | 14.91            | 14.81     | 28.18                           | 35.00               | 34.95 | 33.75 | 33.96 |
| 800            | 0.14                                               | 14.88            | 14.79     | 28.16                           | 36.90               | 37.31 | 36.60 | 36.97 |
| 850            | 0.15                                               | 14.91            | 14.80     | 27.95                           | 40.80               | 41.18 | 42.83 | 41.49 |
| 900            | 0.16                                               | 14.98            | 14.87     | 27.60                           | 42.29               | 41.43 | 44.38 | 42.02 |
| 950            | 0.16                                               | 15.09            | 14.96     | 27.63                           | 38.52               | 38.38 | 37.97 | 37.70 |
| 1000           | 0.17                                               | 15.21            | 15.07     | 27.90                           | 35.56               | 35.22 | 34.89 | 35.14 |
| 1050           | 0.18                                               | 15.35            | 15.18     | 28.09                           | 32.60               | 32.60 | 32.24 | 32.40 |
| 1150           | 0.20                                               | 15.58            | 15.39     | 29.95                           | 29.18               | 29.41 | 28.33 | 28.59 |
| 1200           | 0.21                                               | 15.67            | 15.45     | 31.60                           | 28.36               | 28.36 | 27.40 | 27.73 |
| 1250           | 0.21                                               | 15.70            | 15.48     | 32.94                           | 27.64               | 27.77 | 26.47 | 26.84 |
| 1300           | 0.22                                               | 15.72            | 15.48     | 33.39                           | 27.28               | 27.37 | 26.09 | 26.44 |
| 1350           | 0.22                                               | 15.67            | 15.43     | 32.45                           | 27.21               | 27.44 | 25.92 | 26.26 |
| 1450           | 0.24                                               | 15.51            | 15.25     | 28.47                           | 28.18               | 28.01 | 26.08 | 26.60 |
| 1500           | 0.24                                               | 15.40            | 15.13     | 26.72                           | 28.42               | 28.14 | 26.31 | 26.81 |
| 1550           | 0.24                                               | 15.28            | 15.01     | 25.99                           | 29.87               | 29.62 | 27.56 | 27.93 |
| 1600           | 0.25                                               | 15.17            | 14.90     | 25.01                           | 30.71               | 30.25 | 28.76 | 29.08 |
| 1650           | 0.25                                               | 15.08            | 14.81     | 24.87                           | 33.07               | 32.39 | 31.11 | 31.39 |
| 1750           | 0.25                                               | 14.96            | 14.69     | 24.29                           | 38.04               | 36.33 | 37.00 | 39.00 |
| 1800           | 0.25                                               | 14.94            | 14.67     | 24.44                           | 39.86               | 38.98 | 38.29 | 43.67 |
| 1850           | 0.25                                               | 14.95            | 14.68     | 24.37                           | 40.16               | 37.87 | 35.60 | 39.62 |
| 1900           | 0.25                                               | 14.98            | 14.71     | 24.62                           | 38.82               | 37.44 | 33.73 | 36.43 |
| 1950           | 0.26                                               | 15.06            | 14.77     | 24.61                           | 36.27               | 34.79 | 31.62 | 33.43 |
| 2050           | 0.26                                               | 15.24            | 14.93     | 24.89                           | 34.32               | 33.24 | 29.96 | 30.86 |
| 2100           | 0.27                                               | 15.34            | 15.01     | 25.00                           | 33.21               | 32.88 | 29.42 | 30.03 |
| 2150           | 0.28                                               | 15.44            | 15.08     | 25.19                           | 32.97               | 32.59 | 29.27 | 29.80 |
| 2200           | 0.28                                               | 15.52            | 15.14     | 25.29                           | 32.65               | 32.59 | 28.88 | 29.37 |
| 2250           | 0.29                                               | 15.59            | 15.17     | 25.37                           | 32.77               | 33.17 | 29.23 | 30.09 |
| 2350           | 0.30                                               | 15.59            | 15.15     | 25.69                           | 33.15               | 34.05 | 30.07 | 31.63 |
| 2400           | 0.31                                               | 15.55            | 15.09     | 25.12                           | 32.54               | 33.77 | 30.58 | 32.17 |
| 2450           | 0.32                                               | 15.49            | 15.00     | 25.29                           | 33.26               | 34.52 | 32.02 | 33.72 |
| 2500           | 0.33                                               | 15.39            | 14.91     | 25.30                           | 32.71               | 33.99 | 32.64 | 35.12 |
| 2550           | 0.34                                               | 15.28            | 14.81     | 25.40                           | 33.18               | 34.20 | 34.16 | 36.38 |
| 2600           | 0.35                                               | 15.18            | 14.73     | 25.85                           | 32.62               | 33.68 | 34.05 | 37.36 |
| 2650           | 0.35                                               | 15.05            | 14.67     | 26.00                           | 32.90               | 33.87 | 35.64 | 38.15 |
| 2700           | 0.35                                               | 14.97            | 14.61     | 26.21                           | 32.58               | 33.58 | 37.18 | 40.02 |
| 2750           | 0.37                                               | 14.92            | 14.59     | 26.21                           | 32.63               | 32.91 | 39.98 | 41.15 |
| 2800           | 0.36                                               | 14.91            | 14.61     | 26.21                           | 32.39               | 32.58 | 40.56 | 43.63 |
| 2850           | 0.38                                               | 14.98            | 14.68     | 26.51                           | 32.47               | 32.01 | 37.89 | 43.21 |
| 2900           | 0.37                                               | 15.09            | 14.81     | 26.59                           | 32.53               | 31.76 | 36.26 | 45.09 |
| 2950           | 0.39                                               | 15.29            | 15.01     | 26.72                           | 32.40               | 31.62 | 34.13 | 43.73 |
| 3000           | 0.38                                               | 15.55            | 15.29     | 26.31                           | 33.16               | 31.96 | 33.83 | 42.74 |
| 3050           | 0.39                                               | 15.93            | 15.66     | 26.14                           | 33.94               | 32.46 | 33.76 | 41.77 |
| 3100           | 0.38                                               | 16.38            | 16.14     | 25.90                           | 35.81               | 33.04 | 33.42 | 40.37 |
| 3200           | 0.39                                               | 17.66            | 17.47     | 23.95                           | 42.89               | 33.19 | 34.72 | 40.96 |
| 3300           | 0.39                                               | 19.63            | 19.44     | 21.79                           | 42.65               | 32.49 | 35.35 | 47.12 |

(Note 1) Does not include theoretical loss. Nominal theoretical loss is 0.12 dB.

### 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 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/MCULStore/terms.jsp](http://www.minicircuits.com/MCULStore/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. OR  
BDCH-15-33+  
190328  
Page 9 of 12

# Bi-Directional Coupler

# BDCH-15-33+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =+5 dBm @Temperature = +105°C, Configuration B

| FREQ.<br>(MHz) | INSERTION<br>LOSS <sup>1</sup><br>(dB)<br>In - Out | COUPLING<br>(dB) |           | DIRECTIVITY<br>(dB)<br>In - Fwd | RETURN LOSS<br>(dB) |       |       |       |
|----------------|----------------------------------------------------|------------------|-----------|---------------------------------|---------------------|-------|-------|-------|
|                |                                                    | In - Fwd         | Out - Rev |                                 | In                  | Out   | Fwd   | Rev   |
| 300            | 0.08                                               | 19.31            | 19.35     | 35.01                           | 32.35               | 31.97 | 31.28 | 31.46 |
| 350            | 0.09                                               | 18.23            | 18.26     | 31.88                           | 30.65               | 30.50 | 28.28 | 28.39 |
| 400            | 0.10                                               | 17.36            | 17.40     | 30.16                           | 29.86               | 29.94 | 27.57 | 27.70 |
| 450            | 0.10                                               | 16.66            | 16.70     | 29.24                           | 29.22               | 29.37 | 27.51 | 27.43 |
| 500            | 0.11                                               | 16.10            | 16.15     | 28.45                           | 29.20               | 29.33 | 28.23 | 28.23 |
| 550            | 0.11                                               | 15.66            | 15.72     | 28.23                           | 29.19               | 29.18 | 29.17 | 28.97 |
| 600            | 0.11                                               | 15.32            | 15.39     | 27.83                           | 29.86               | 29.80 | 30.10 | 29.94 |
| 650            | 0.12                                               | 15.08            | 15.15     | 27.90                           | 30.85               | 30.91 | 30.83 | 30.51 |
| 700            | 0.13                                               | 14.92            | 15.00     | 27.70                           | 32.30               | 32.59 | 31.65 | 31.46 |
| 750            | 0.13                                               | 14.81            | 14.91     | 27.69                           | 34.95               | 35.00 | 33.96 | 33.75 |
| 800            | 0.14                                               | 14.79            | 14.88     | 27.51                           | 37.31               | 36.90 | 36.97 | 36.60 |
| 850            | 0.14                                               | 14.80            | 14.91     | 27.70                           | 41.18               | 40.80 | 41.49 | 42.83 |
| 900            | 0.15                                               | 14.87            | 14.98     | 27.75                           | 41.43               | 42.29 | 42.02 | 44.38 |
| 950            | 0.16                                               | 14.96            | 15.09     | 28.28                           | 38.38               | 38.52 | 37.70 | 37.97 |
| 1000           | 0.17                                               | 15.07            | 15.21     | 29.08                           | 35.22               | 35.56 | 35.14 | 34.89 |
| 1050           | 0.18                                               | 15.18            | 15.35     | 29.95                           | 32.60               | 32.60 | 32.40 | 32.24 |
| 1150           | 0.19                                               | 15.39            | 15.58     | 31.22                           | 29.41               | 29.18 | 28.59 | 28.33 |
| 1200           | 0.20                                               | 15.45            | 15.67     | 32.68                           | 28.36               | 28.36 | 27.73 | 27.40 |
| 1250           | 0.21                                               | 15.48            | 15.70     | 32.87                           | 27.77               | 27.64 | 26.84 | 26.47 |
| 1300           | 0.22                                               | 15.48            | 15.72     | 33.33                           | 27.37               | 27.28 | 26.44 | 26.09 |
| 1350           | 0.22                                               | 15.43            | 15.67     | 32.58                           | 27.44               | 27.21 | 26.26 | 25.92 |
| 1450           | 0.23                                               | 15.25            | 15.51     | 29.87                           | 28.01               | 28.18 | 26.60 | 26.08 |
| 1500           | 0.24                                               | 15.13            | 15.40     | 28.41                           | 28.14               | 28.42 | 26.81 | 26.31 |
| 1550           | 0.23                                               | 15.01            | 15.28     | 27.81                           | 29.62               | 29.87 | 27.93 | 27.56 |
| 1600           | 0.24                                               | 14.90            | 15.17     | 26.81                           | 30.25               | 30.71 | 29.08 | 28.76 |
| 1650           | 0.24                                               | 14.81            | 15.08     | 26.63                           | 32.39               | 33.07 | 31.39 | 31.11 |
| 1750           | 0.24                                               | 14.69            | 14.96     | 26.03                           | 36.33               | 38.04 | 39.00 | 37.00 |
| 1800           | 0.24                                               | 14.67            | 14.94     | 26.00                           | 38.98               | 39.86 | 43.67 | 38.29 |
| 1850           | 0.24                                               | 14.68            | 14.95     | 26.01                           | 37.87               | 40.16 | 39.62 | 35.60 |
| 1900           | 0.24                                               | 14.71            | 14.98     | 26.33                           | 37.44               | 38.82 | 36.43 | 33.73 |
| 1950           | 0.24                                               | 14.77            | 15.06     | 26.37                           | 34.79               | 36.27 | 33.43 | 31.62 |
| 2050           | 0.25                                               | 14.93            | 15.24     | 27.01                           | 33.24               | 34.32 | 30.86 | 29.96 |
| 2100           | 0.25                                               | 15.01            | 15.34     | 27.37                           | 32.88               | 33.21 | 30.03 | 29.42 |
| 2150           | 0.26                                               | 15.08            | 15.44     | 27.92                           | 32.59               | 32.97 | 29.80 | 29.27 |
| 2200           | 0.26                                               | 15.14            | 15.52     | 28.00                           | 32.59               | 32.65 | 29.37 | 28.88 |
| 2250           | 0.27                                               | 15.17            | 15.59     | 28.19                           | 33.17               | 32.77 | 30.09 | 29.23 |
| 2350           | 0.29                                               | 15.15            | 15.59     | 28.32                           | 34.05               | 33.15 | 31.63 | 30.07 |
| 2400           | 0.30                                               | 15.09            | 15.55     | 28.35                           | 33.77               | 32.54 | 32.17 | 30.58 |
| 2450           | 0.31                                               | 15.00            | 15.49     | 28.12                           | 34.52               | 33.26 | 33.72 | 32.02 |
| 2500           | 0.31                                               | 14.91            | 15.39     | 28.62                           | 33.99               | 32.71 | 35.12 | 32.64 |
| 2550           | 0.33                                               | 14.81            | 15.28     | 28.58                           | 34.20               | 33.18 | 36.38 | 34.16 |
| 2600           | 0.33                                               | 14.73            | 15.18     | 29.11                           | 33.68               | 32.62 | 37.36 | 34.05 |
| 2650           | 0.34                                               | 14.67            | 15.05     | 29.14                           | 33.87               | 32.90 | 38.15 | 35.64 |
| 2700           | 0.34                                               | 14.61            | 14.97     | 29.56                           | 33.58               | 32.58 | 40.02 | 37.18 |
| 2750           | 0.35                                               | 14.59            | 14.92     | 29.85                           | 32.91               | 32.63 | 41.15 | 39.98 |
| 2800           | 0.35                                               | 14.61            | 14.91     | 30.05                           | 32.58               | 32.39 | 43.63 | 40.56 |
| 2850           | 0.36                                               | 14.68            | 14.98     | 30.93                           | 32.01               | 32.47 | 43.21 | 37.89 |
| 2900           | 0.36                                               | 14.81            | 15.09     | 31.82                           | 31.76               | 32.53 | 45.09 | 36.26 |
| 2950           | 0.37                                               | 15.01            | 15.29     | 32.42                           | 31.62               | 32.40 | 43.73 | 34.13 |
| 3000           | 0.37                                               | 15.29            | 15.55     | 33.97                           | 31.96               | 33.16 | 42.74 | 33.83 |
| 3050           | 0.37                                               | 15.66            | 15.93     | 33.90                           | 32.46               | 33.94 | 41.77 | 33.76 |
| 3100           | 0.38                                               | 16.14            | 16.38     | 33.60                           | 33.04               | 35.81 | 40.37 | 33.42 |
| 3200           | 0.39                                               | 17.47            | 17.66     | 30.38                           | 33.19               | 42.89 | 40.96 | 34.72 |
| 3300           | 0.39                                               | 19.44            | 19.63     | 26.88                           | 32.49               | 42.65 | 47.12 | 35.35 |

(Note 1) Does not include theoretical loss. Nominal theoretical loss is 0.12 dB.

### 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/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/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. OR  
BDCH-15-33+  
190328  
Page 10 of 12

# Bi-Directional Coupler

# BDCH-15-33+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER = +5 dBm @Temperature = +105°C, Configuration C

| FREQ.<br>(MHz) | INSERTION<br>LOSS <sup>1</sup><br>(dB)<br>In - Out | COUPLING<br>(dB) |           | DIRECTIVITY<br>(dB)<br>In - Fwd | RETURN LOSS<br>(dB) |       |       |       |
|----------------|----------------------------------------------------|------------------|-----------|---------------------------------|---------------------|-------|-------|-------|
|                |                                                    | In - Fwd         | Out - Rev |                                 | In                  | Out   | Fwd   | Rev   |
| 300            | 0.08                                               | 19.31            | 19.35     | 32.02                           | 31.28               | 31.46 | 32.35 | 31.97 |
| 350            | 0.09                                               | 18.23            | 18.27     | 30.01                           | 28.28               | 28.39 | 30.65 | 30.50 |
| 400            | 0.10                                               | 17.36            | 17.41     | 29.07                           | 27.57               | 27.70 | 29.86 | 29.94 |
| 450            | 0.10                                               | 16.66            | 16.71     | 28.73                           | 27.51               | 27.43 | 29.22 | 29.37 |
| 500            | 0.10                                               | 16.10            | 16.16     | 27.93                           | 28.23               | 28.23 | 29.20 | 29.33 |
| 550            | 0.11                                               | 15.66            | 15.73     | 28.08                           | 29.17               | 28.97 | 29.19 | 29.18 |
| 600            | 0.11                                               | 15.33            | 15.40     | 27.70                           | 30.10               | 29.94 | 29.86 | 29.80 |
| 650            | 0.12                                               | 15.08            | 15.17     | 27.50                           | 30.83               | 30.51 | 30.85 | 30.91 |
| 700            | 0.13                                               | 14.92            | 15.01     | 27.03                           | 31.65               | 31.46 | 32.30 | 32.59 |
| 750            | 0.13                                               | 14.82            | 14.92     | 27.02                           | 33.96               | 33.75 | 34.95 | 35.00 |
| 800            | 0.14                                               | 14.80            | 14.90     | 27.36                           | 36.97               | 36.60 | 37.31 | 36.90 |
| 850            | 0.15                                               | 14.81            | 14.92     | 27.63                           | 41.49               | 42.83 | 41.18 | 40.80 |
| 900            | 0.16                                               | 14.88            | 14.99     | 27.80                           | 42.02               | 44.38 | 41.43 | 42.29 |
| 950            | 0.17                                               | 14.97            | 15.10     | 28.39                           | 37.70               | 37.97 | 38.38 | 38.52 |
| 1000           | 0.18                                               | 15.08            | 15.22     | 29.12                           | 35.14               | 34.89 | 35.22 | 35.56 |
| 1050           | 0.18                                               | 15.19            | 15.36     | 29.82                           | 32.40               | 32.24 | 32.60 | 32.60 |
| 1150           | 0.20                                               | 15.40            | 15.60     | 32.28                           | 28.59               | 28.33 | 29.41 | 29.18 |
| 1200           | 0.21                                               | 15.46            | 15.68     | 33.82                           | 27.73               | 27.40 | 28.36 | 28.36 |
| 1250           | 0.22                                               | 15.49            | 15.72     | 34.03                           | 26.84               | 26.47 | 27.77 | 27.64 |
| 1300           | 0.23                                               | 15.48            | 15.73     | 33.14                           | 26.44               | 26.09 | 27.37 | 27.28 |
| 1350           | 0.23                                               | 15.44            | 15.68     | 31.96                           | 26.26               | 25.92 | 27.44 | 27.21 |
| 1450           | 0.24                                               | 15.26            | 15.52     | 28.52                           | 26.60               | 26.08 | 28.01 | 28.18 |
| 1500           | 0.25                                               | 15.14            | 15.41     | 27.08                           | 26.81               | 26.31 | 28.14 | 28.42 |
| 1550           | 0.25                                               | 15.02            | 15.29     | 26.44                           | 27.93               | 27.56 | 29.62 | 29.87 |
| 1600           | 0.25                                               | 14.91            | 15.18     | 25.51                           | 29.08               | 28.76 | 30.25 | 30.71 |
| 1650           | 0.26                                               | 14.81            | 15.09     | 25.13                           | 31.39               | 31.11 | 32.39 | 33.07 |
| 1750           | 0.26                                               | 14.69            | 14.96     | 24.50                           | 39.00               | 37.00 | 36.33 | 38.04 |
| 1800           | 0.26                                               | 14.67            | 14.95     | 24.66                           | 43.67               | 38.29 | 38.98 | 39.86 |
| 1850           | 0.26                                               | 14.68            | 14.96     | 24.53                           | 39.62               | 35.60 | 37.87 | 40.16 |
| 1900           | 0.26                                               | 14.71            | 14.99     | 24.84                           | 36.43               | 33.73 | 37.44 | 38.82 |
| 1950           | 0.27                                               | 14.77            | 15.06     | 25.11                           | 33.43               | 31.62 | 34.79 | 36.27 |
| 2050           | 0.28                                               | 14.93            | 15.25     | 26.22                           | 30.86               | 29.96 | 33.24 | 34.32 |
| 2100           | 0.28                                               | 15.01            | 15.34     | 27.07                           | 30.03               | 29.42 | 32.88 | 33.21 |
| 2150           | 0.28                                               | 15.08            | 15.44     | 28.13                           | 29.80               | 29.27 | 32.59 | 32.97 |
| 2200           | 0.29                                               | 15.14            | 15.52     | 29.02                           | 29.37               | 28.88 | 32.59 | 32.65 |
| 2250           | 0.30                                               | 15.16            | 15.59     | 29.88                           | 30.09               | 29.23 | 33.17 | 32.77 |
| 2350           | 0.31                                               | 15.15            | 15.59     | 31.86                           | 31.63               | 30.07 | 34.05 | 33.15 |
| 2400           | 0.32                                               | 15.09            | 15.55     | 31.42                           | 32.17               | 30.58 | 33.77 | 32.54 |
| 2450           | 0.33                                               | 15.00            | 15.49     | 31.88                           | 33.72               | 32.02 | 34.52 | 33.26 |
| 2500           | 0.33                                               | 14.92            | 15.39     | 31.84                           | 35.12               | 32.64 | 33.99 | 32.71 |
| 2550           | 0.35                                               | 14.81            | 15.28     | 31.29                           | 36.38               | 34.16 | 34.20 | 33.18 |
| 2600           | 0.35                                               | 14.73            | 15.18     | 32.16                           | 37.36               | 34.05 | 33.68 | 32.62 |
| 2650           | 0.37                                               | 14.67            | 15.06     | 31.42                           | 38.15               | 35.64 | 33.87 | 32.90 |
| 2700           | 0.37                                               | 14.62            | 14.98     | 31.64                           | 40.02               | 37.18 | 33.58 | 32.58 |
| 2750           | 0.38                                               | 14.60            | 14.93     | 30.33                           | 41.15               | 39.98 | 32.91 | 32.63 |
| 2800           | 0.39                                               | 14.62            | 14.92     | 29.83                           | 43.63               | 40.56 | 32.58 | 32.39 |
| 2850           | 0.40                                               | 14.69            | 14.99     | 29.23                           | 43.21               | 37.89 | 32.01 | 32.47 |
| 2900           | 0.40                                               | 14.82            | 15.09     | 28.85                           | 45.09               | 36.26 | 31.76 | 32.53 |
| 2950           | 0.41                                               | 15.02            | 15.30     | 28.36                           | 43.73               | 34.13 | 31.62 | 32.40 |
| 3000           | 0.41                                               | 15.29            | 15.56     | 27.55                           | 42.74               | 33.83 | 31.96 | 33.16 |
| 3050           | 0.42                                               | 15.67            | 15.93     | 26.82                           | 41.77               | 33.76 | 32.46 | 33.94 |
| 3100           | 0.42                                               | 16.14            | 16.38     | 26.14                           | 40.37               | 33.42 | 33.04 | 35.81 |
| 3200           | 0.42                                               | 17.47            | 17.67     | 23.80                           | 40.96               | 34.72 | 33.19 | 42.89 |
| 3300           | 0.41                                               | 19.45            | 19.64     | 21.59                           | 47.12               | 35.35 | 32.49 | 42.65 |

(Note 1) Does not include theoretical loss. Nominal theoretical loss is 0.12 dB.

### 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/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/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. OR  
BDCH-15-33+  
190328  
Page 11 of 12

# Bi-Directional Coupler

# BDCH-15-33+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =+5 dBm @Temperature = +105°C, Configuration D

| FREQ.<br>(MHz) | INSERTION<br>LOSS <sup>1</sup><br>(dB)<br>In - Out | COUPLING<br>(dB) |           | DIRECTIVITY<br>(dB)<br>In - Fwd | RETURN LOSS<br>(dB) |       |       |       |
|----------------|----------------------------------------------------|------------------|-----------|---------------------------------|---------------------|-------|-------|-------|
|                |                                                    | In - Fwd         | Out - Rev |                                 | In                  | Out   | Fwd   | Rev   |
| 300            | 0.09                                               | 19.35            | 19.31     | 29.69                           | 31.46               | 31.28 | 31.97 | 32.35 |
| 350            | 0.09                                               | 18.27            | 18.23     | 28.97                           | 28.39               | 28.28 | 30.50 | 30.65 |
| 400            | 0.10                                               | 17.41            | 17.36     | 28.74                           | 27.70               | 27.57 | 29.94 | 29.86 |
| 450            | 0.11                                               | 16.71            | 16.66     | 28.65                           | 27.43               | 27.51 | 29.37 | 29.22 |
| 500            | 0.11                                               | 16.16            | 16.10     | 28.47                           | 28.23               | 28.23 | 29.33 | 29.20 |
| 550            | 0.12                                               | 15.73            | 15.66     | 28.51                           | 28.97               | 29.17 | 29.18 | 29.19 |
| 600            | 0.12                                               | 15.40            | 15.33     | 28.53                           | 29.94               | 30.10 | 29.80 | 29.86 |
| 650            | 0.13                                               | 15.17            | 15.08     | 28.51                           | 30.51               | 30.83 | 30.91 | 30.85 |
| 700            | 0.14                                               | 15.01            | 14.92     | 28.32                           | 31.46               | 31.65 | 32.59 | 32.30 |
| 750            | 0.14                                               | 14.92            | 14.82     | 28.30                           | 33.75               | 33.96 | 35.00 | 34.95 |
| 800            | 0.15                                               | 14.90            | 14.80     | 28.23                           | 36.60               | 36.97 | 36.90 | 37.31 |
| 850            | 0.16                                               | 14.92            | 14.81     | 27.98                           | 42.83               | 41.49 | 40.80 | 41.18 |
| 900            | 0.17                                               | 14.99            | 14.88     | 27.86                           | 44.38               | 42.02 | 42.29 | 41.43 |
| 950            | 0.18                                               | 15.10            | 14.97     | 27.98                           | 37.97               | 37.70 | 38.52 | 38.38 |
| 1000           | 0.19                                               | 15.22            | 15.08     | 28.50                           | 34.89               | 35.14 | 35.56 | 35.22 |
| 1050           | 0.20                                               | 15.36            | 15.19     | 28.84                           | 32.24               | 32.40 | 32.60 | 32.60 |
| 1150           | 0.21                                               | 15.60            | 15.40     | 30.78                           | 28.33               | 28.59 | 29.18 | 29.41 |
| 1200           | 0.23                                               | 15.68            | 15.46     | 32.06                           | 27.40               | 27.73 | 28.36 | 28.36 |
| 1250           | 0.23                                               | 15.72            | 15.49     | 32.83                           | 26.47               | 26.84 | 27.64 | 27.77 |
| 1300           | 0.24                                               | 15.73            | 15.48     | 32.63                           | 26.09               | 26.44 | 27.28 | 27.37 |
| 1350           | 0.24                                               | 15.68            | 15.44     | 31.83                           | 25.92               | 26.26 | 27.21 | 27.44 |
| 1450           | 0.25                                               | 15.52            | 15.26     | 29.16                           | 26.08               | 26.60 | 28.18 | 28.01 |
| 1500           | 0.27                                               | 15.41            | 15.14     | 27.70                           | 26.31               | 26.81 | 28.42 | 28.14 |
| 1550           | 0.26                                               | 15.29            | 15.02     | 27.35                           | 27.56               | 27.93 | 29.87 | 29.62 |
| 1600           | 0.27                                               | 15.18            | 14.91     | 26.57                           | 28.76               | 29.08 | 30.71 | 30.25 |
| 1650           | 0.27                                               | 15.09            | 14.81     | 26.59                           | 31.11               | 31.39 | 33.07 | 32.39 |
| 1750           | 0.27                                               | 14.96            | 14.69     | 26.04                           | 37.00               | 39.00 | 38.04 | 36.33 |
| 1800           | 0.27                                               | 14.95            | 14.67     | 26.25                           | 38.29               | 43.67 | 39.86 | 38.98 |
| 1850           | 0.28                                               | 14.96            | 14.68     | 25.94                           | 35.60               | 39.62 | 40.16 | 37.87 |
| 1900           | 0.28                                               | 14.99            | 14.71     | 26.03                           | 33.73               | 36.43 | 38.82 | 37.44 |
| 1950           | 0.29                                               | 15.06            | 14.77     | 25.74                           | 31.62               | 33.43 | 36.27 | 34.79 |
| 2050           | 0.30                                               | 15.25            | 14.93     | 25.39                           | 29.96               | 30.86 | 34.32 | 33.24 |
| 2100           | 0.30                                               | 15.34            | 15.01     | 25.02                           | 29.42               | 30.03 | 33.21 | 32.88 |
| 2150           | 0.31                                               | 15.44            | 15.08     | 24.90                           | 29.27               | 29.80 | 32.97 | 32.59 |
| 2200           | 0.31                                               | 15.52            | 15.14     | 24.63                           | 28.88               | 29.37 | 32.65 | 32.59 |
| 2250           | 0.32                                               | 15.59            | 15.16     | 24.52                           | 29.23               | 30.09 | 32.77 | 33.17 |
| 2350           | 0.33                                               | 15.59            | 15.15     | 24.37                           | 30.07               | 31.63 | 33.15 | 34.05 |
| 2400           | 0.34                                               | 15.55            | 15.09     | 24.02                           | 30.58               | 32.17 | 32.54 | 33.77 |
| 2450           | 0.35                                               | 15.49            | 15.00     | 24.35                           | 32.02               | 33.72 | 33.26 | 34.52 |
| 2500           | 0.36                                               | 15.39            | 14.92     | 24.51                           | 32.64               | 35.12 | 32.71 | 33.99 |
| 2550           | 0.37                                               | 15.28            | 14.81     | 24.93                           | 34.16               | 36.38 | 33.18 | 34.20 |
| 2600           | 0.38                                               | 15.18            | 14.73     | 25.66                           | 34.05               | 37.36 | 32.62 | 33.68 |
| 2650           | 0.39                                               | 15.06            | 14.67     | 26.05                           | 35.64               | 38.15 | 32.90 | 33.87 |
| 2700           | 0.39                                               | 14.98            | 14.62     | 26.81                           | 37.18               | 40.02 | 32.58 | 33.58 |
| 2750           | 0.40                                               | 14.93            | 14.60     | 27.34                           | 39.98               | 41.15 | 32.63 | 32.91 |
| 2800           | 0.40                                               | 14.92            | 14.62     | 28.93                           | 40.56               | 43.63 | 32.39 | 32.58 |
| 2850           | 0.41                                               | 14.99            | 14.69     | 30.22                           | 37.89               | 43.21 | 32.47 | 32.01 |
| 2900           | 0.41                                               | 15.09            | 14.82     | 31.29                           | 36.26               | 45.09 | 32.53 | 31.76 |
| 2950           | 0.42                                               | 15.30            | 15.02     | 32.32                           | 34.13               | 43.73 | 32.40 | 31.62 |
| 3000           | 0.42                                               | 15.56            | 15.29     | 32.25                           | 33.83               | 42.74 | 33.16 | 31.96 |
| 3050           | 0.42                                               | 15.93            | 15.67     | 32.38                           | 33.76               | 41.77 | 33.94 | 32.46 |
| 3100           | 0.42                                               | 16.38            | 16.14     | 32.07                           | 33.42               | 40.37 | 35.81 | 33.04 |
| 3200           | 0.43                                               | 17.67            | 17.47     | 30.00                           | 34.72               | 40.96 | 42.89 | 33.19 |
| 3300           | 0.42                                               | 19.64            | 19.45     | 27.37                           | 35.35               | 47.12 | 42.65 | 32.49 |

(Note 1) Does not include theoretical loss. Nominal theoretical loss is 0.12 dB.

### 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 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/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/terms.jsp)

