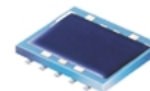


High Power Bi-Directional Coupler

BDCA-6-16+

50Ω 6dB Coupling DC Pass 800 to 1600 MHz



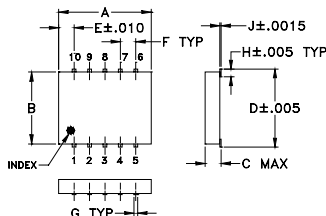
Maximum Ratings

| | |
|-----------------------|----------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature | -55°C to 100°C |
| DC Current | 0.25A |

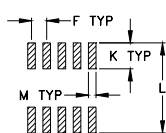
Pin Connections

| | |
|-------------------|-------------|
| INPUT | 1 |
| OUTPUT | 6 |
| COUPLED (forward) | 10 |
| COUPLED (reverse) | 5 |
| GROUND | 2,3,4,7,8,9 |

Outline Drawing



PCB Land Pattern

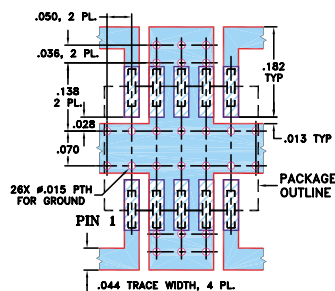


Suggested Layout, Tolerance to be within ±.002

Outline Dimensions (inch/mm)

| A | B | C | D | E | F | G | |
|------|------|------|------|------|------|------|-------|
| .30 | .250 | .052 | .266 | .050 | .050 | .012 | |
| 7.62 | 6.35 | 1.32 | 6.76 | 1.27 | 1.27 | 0.30 | |
| H | J | K | L | M | | | wt |
| .029 | .004 | .085 | .296 | .030 | | | grams |
| 0.74 | 0.10 | 2.16 | 7.52 | 0.76 | | | 0.25 |

Demo Board MCL P/N: TB-115+ Suggested PCB Layout (PL-004)



NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020 ± .0015; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Features

- four-port coupler
- wideband, 800 to 1600 MHz
- excellent VSWR 1.05:1 typ. all ports
- good flatness, ±0.5 dB typ.
- excellent power handling capability, 65W (960 MHz)
- hermetically sealed
- minimal variation with temperature
- low profile, 0.052" height
- protected by US Patent 7,049,905
- DC current through input to output 0.25A Max. at 1.1 watt RF input power.

Applications

- cellular, PCS, PCN, UMTS
- ISM
- GPS

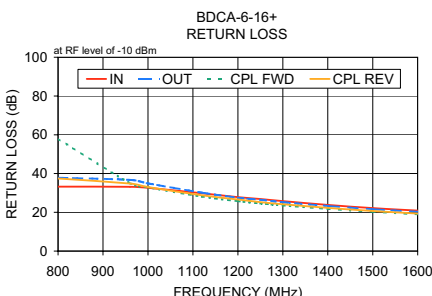
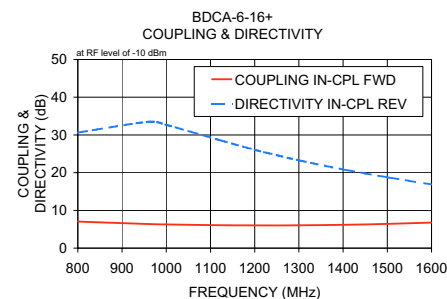
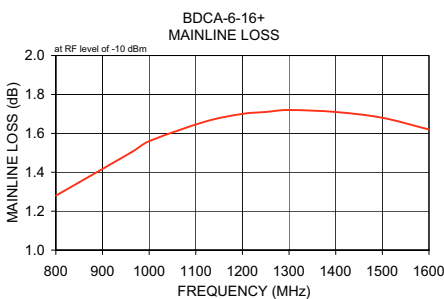
Bi-Directional Coupler Electrical Specifications

| FREQUENCY (MHz) | COUPLING (dB) | | MAINLINE LOSS ¹ (dB) | | DIRECTIVITY (dB) | | VSWR (:1) | POWER INPUT ² (W) |
|-----------------|---------------|---------------|---------------------------------|------|------------------|------|-----------|------------------------------|
| | Nom. | Max. Flatness | Typ. | Max. | Typ. | Min. | | |
| 800-1600 | | | | | | | | |
| 800-960 | 6.7±0.5 | ±0.6 | 1.4 | 1.8 | 24 | 20 | 1.05 | 65 |
| 960-1250 | 6.3±0.5 | ±0.4 | 1.6 | 2.0 | 23 | 19 | 1.05 | 55 |
| 1250-1600 | 6.6±0.7 | ±0.9 | 1.6 | 2.0 | 21 | 14 | 1.05 | 45 |

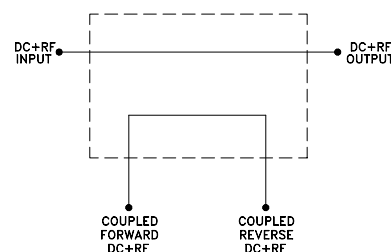
1. Includes theoretical power loss of 1.0 dB at 7 dB coupling.
2. Derate linearly 1/3 at 100°C

Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) | | Coupling (dB) | | Directivity (dB) | | Return Loss (dB) | | |
|-----------------|--------------------|------------|---------------|-------------|------------------|-------|------------------|---------|---------|
| | In-Out | In-Cpl Fwd | Out-Cpl Rev | Out-Cpl Fwd | In-Cpl Rev | In | Out | Cpl Fwd | Cpl Rev |
| 800.00 | 1.28 | 7.04 | 7.03 | 30.72 | 30.63 | 33.22 | 37.87 | 57.85 | 37.44 |
| 960.00 | 1.50 | 6.39 | 6.38 | 39.47 | 33.49 | 33.14 | 36.74 | 35.04 | 34.84 |
| 1000.00 | 1.56 | 6.28 | 6.28 | 40.65 | 32.68 | 32.62 | 34.93 | 32.90 | 33.03 |
| 1120.00 | 1.66 | 6.07 | 6.06 | 34.97 | 28.66 | 29.84 | 30.17 | 28.10 | 28.80 |
| 1200.00 | 1.70 | 6.03 | 6.02 | 30.21 | 26.07 | 27.84 | 27.53 | 25.75 | 26.61 |
| 1250.00 | 1.71 | 6.02 | 6.02 | 28.33 | 24.64 | 26.88 | 26.47 | 24.58 | 25.26 |
| 1300.00 | 1.72 | 6.05 | 6.04 | 26.51 | 23.28 | 25.78 | 25.22 | 23.52 | 24.19 |
| 1400.00 | 1.71 | 6.19 | 6.18 | 23.45 | 20.86 | 23.83 | 23.30 | 21.76 | 22.28 |
| 1500.00 | 1.68 | 6.43 | 6.43 | 21.17 | 18.79 | 22.19 | 21.60 | 20.28 | 20.69 |
| 1600.00 | 1.62 | 6.78 | 6.78 | 19.05 | 16.88 | 20.90 | 20.29 | 18.95 | 19.36 |



electrical schematic



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