STRIPLINE SURFACE MOUNT

Bi-Directional Coupler BDCH-20-63A+

50Ω 2000 to 6000 MHz 20 dB 140W

KEY FEATURES

- High power handling, up to 140W
- Ultra wideband, 2000 to 6000 MHz
- Low insertion loss, 0.15 dB

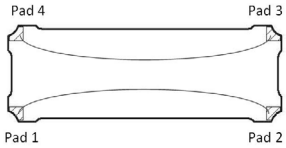


Generic photo used for illustration purposes only

APPLICATIONS

- Power amplifiers
- Antenna feeds
- Mobile satellite communication
- Digital communication applications

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' BDCH-20-63A+ is a high-power bi-directional coupler providing high power handling up to 140W and mainline loss of 0.15 dB. Covering frequencies from 2000 to 6000 MHz, the model supports a wide variety of applications from power amplifiers and antenna feeds to various digital communications and more. High directivity of 29 dB provides accurate sampling from the coupled port, and 26 dB return loss provides excellent matching over full frequency range. The coupler is designed into an open printed laminate (1.00" x 0.35" x 0.067") with wrap-around terminations for good solderability and easy visual inspection.

ELECTRICAL SPECIFICATIONS[1,2] AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		2000		6000	MHz
Insertion Loss[3]	2000 - 6000	-	0.15	0.3	dB
Coupling Nominal	2000 - 6000	-	18±1	-	dB
Coupling Flatness (±)	2000 - 6000	-	±0.5	-	dB
Directivity	2000 - 6000	22	29	-	dB
Return Loss (Input/Output)	2000 - 6000	16	26	-	dB
Return Loss (Coupled Forward/Reverse)	2000 - 6000	16	26	-	dB
Thermal Resistance[4]	2000 - 6000	-	0.3	-	°C/W

1. Tested on Evaluation Board TB-1036+. De-embedded to the device reference plane.
2. Model is symmetrical and all ports are interchangeable, see Port Function Description/Configuration table for details and S-Parameters for actual performance.
3. Does not include theoretical loss due to coupling. Nominal theoretical loss is 0.07 dB.
4. Thermal Resistance is defined as, example (Θjc= (Hot Spot Temperature on DUT - Base Plate Temperature)/Input Power)

ABSOLUTE MAXIMUM RATINGS[5]

Operating Case Temperature[6]		-55 °C to +105 °C
Storage Temperature		-55 °C to +105 °C
Power Input	+85 °C case	140 W
	+95 °C case	110 W
	+105 °C case	80 W
DC Current		2 A

5. Permanent damage may occur if any of these limits are exceeded.
6. Case temperature is defined as temperature on base plate.

REV. A
ECO-021380
RDF-2157
BDCH-20-63A+
MCIL
240403

Bi-Directional Coupler BDCH-20-63A+

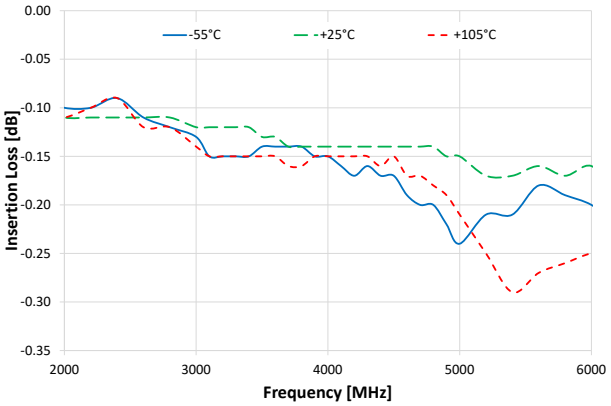
50Ω 2000 to 6000 MHz 20 dB 140W

TYPICAL PERFORMANCE GRAPHS

Note : Data corresponds to Configuration A at +25°C unless specified otherwise.

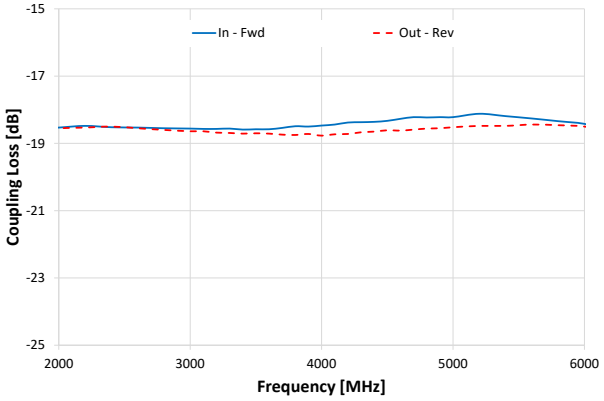
BDCH-20-63A+

Insertion Loss vs. Frequency



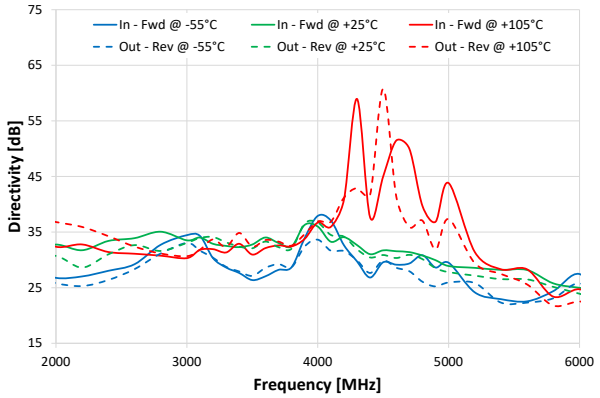
BDCH-20-63A+

Coupling Loss vs. Frequency



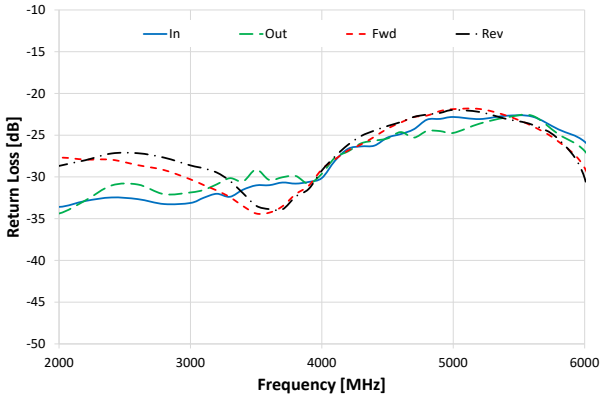
BDCH-20-63A+

Directivity vs. Frequency



BDCH-20-63A+

Return Loss vs. Frequency



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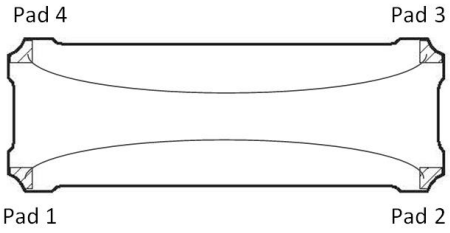


Figure 1. BDCH-20-63+ Functional Diagram

PAD DESCRIPTION/CONFIGURATION[7]

Function	Pad Number	Description
Input	1	Connects to RF Input Port
Output	2	Connects to RF Output Port
Coupled Forward	4	Connects to Coupled Forward Port
Coupled Reverse	3	Connects to Coupled Reverse Port
Ground	5	Connects to Ground

Configuration	Input	Output	Coupled Forward	Coupled Reverse
A	1	2	4	3
B	2	1	3	4
C	3	4	2	1
D	4	3	1	2

7. Model is symmetrical and all ports are interchangeable, see Port Function Description/Configuration table for details and S-Parameters for actual performance.

SUGGESTED PCB LAYOUT (PL-578)

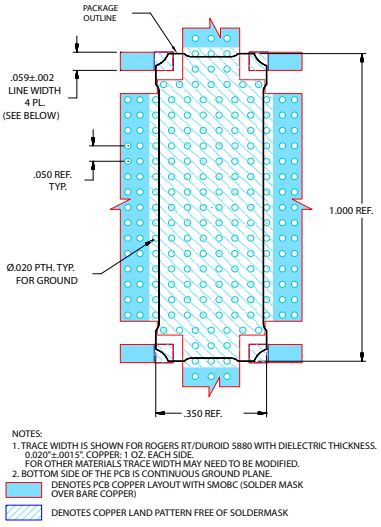
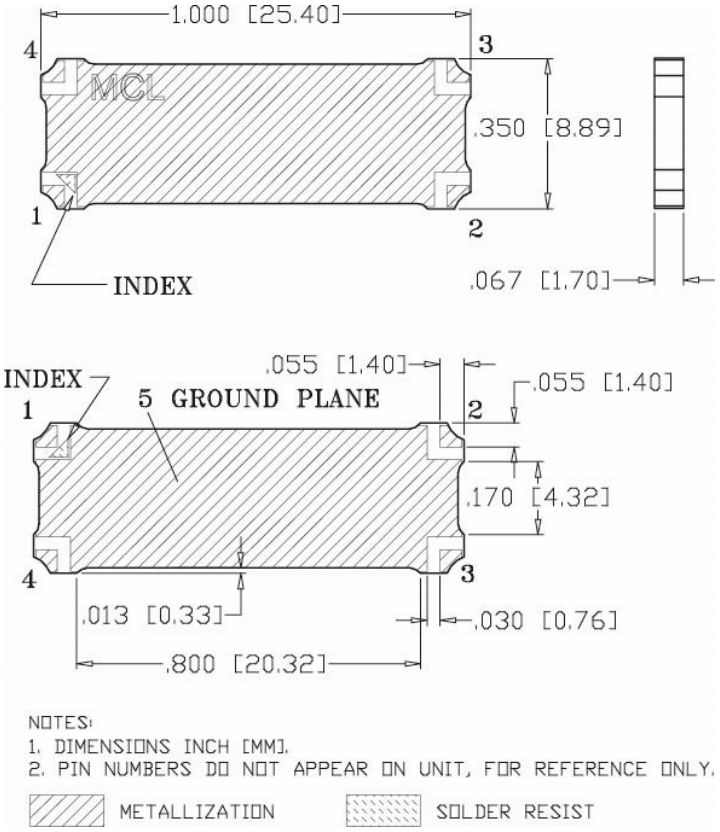


Figure 2. Suggested PCB Layout PL-578

CASE STYLE DRAWING (PQ2584)



PRODUCT MARKING*: BDCH-20-63A+

*Marking may contain other features or characters for internal lot control.

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50Ω 2000 to 6000 MHz 20 dB 140W

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD. CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S4P Files) Data Set (.zip file) De-embedded to device pads
Case Style	PQ2584 Lead Finish: 2-5 inch (0.05-0.13 microns) Immersion Gold.
RoHS Status	Compliant
Tape and Reel	F118
Suggested Layout for PCB Design	PL-578
Evaluation Board	TB-1036+
	Gerber File
Environmental Rating	ENV02T8

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/terms/viewterm.html