



Mini-Circuits

STRIPLINE SURFACE MOUNT

Bi-Directional Coupler

BDCH-25-33+

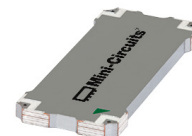
50Ω 800 to 3000 MHz 25 dB 150W

KEY FEATURES

- High power handling, up to 150W
- Ultra wideband, 800 to 3000 MHz
- Low insertion loss, 0.2 dB

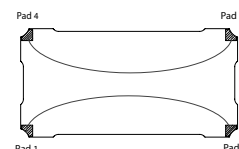
APPLICATIONS

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



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' BDCH-25-33+ is a high-power bi-directional coupler providing high power handling up to 150 W and insertion loss of 0.2 dB. High directivity of 28 dB provides accurate sampling from the coupled port, and 31 dB return loss provides excellent matching over full frequency range. Covering frequencies from 800 to 3000 MHz, the model supports a wide variety of applications from power amplifiers and antenna feeds to various digital communications and more. The coupler is designed into an open printed laminate (1.00" x 0.50" x 0.051") 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		800		3000	MHz
Insertion Loss ³	800-3000	-	0.2	0.3	dB
Coupling Nominal	800-3000	-	25±1	-	dB
Coupling Flatness (±)	800-3000	-	±0.6	-	dB
Directivity	800-3000	21	28	-	dB
Return Loss (Input/Output)	800-3000	22	31	-	dB
Return Loss (Coupled Forward/Reverse)	800-3000	22	31	-	dB
Thermal Resistance ⁴	800-3000	-	0.3	-	°C/W

1. Tested on Evaluation Board TB-863-1+. 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 0.01 dB.

4. Thermal Resistance is defined as, example (°C)= (Hot Spot Temperature on DUT - Base Plate Temperature)/Input Power)

ABSOLUTE MAXIMUM RATINGS⁵

Operating Case Temperature ⁶		-55 °C to +105 °C
Storage Temperature		-55 °C to +105 °C
Power Input	+85 °C case	150 W
	+95 °C case	120 W
	+105 °C case	90 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.





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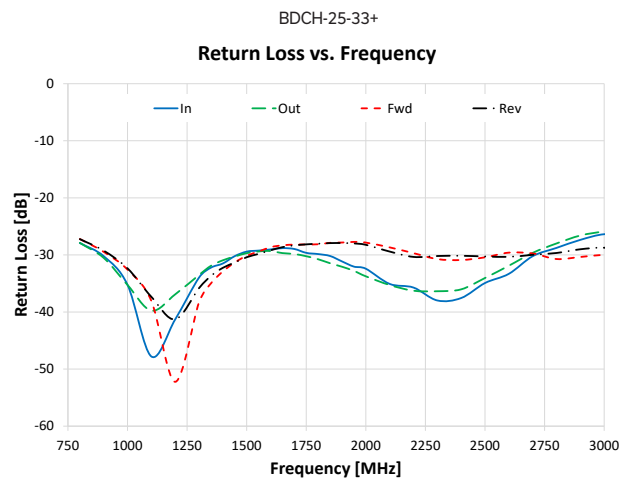
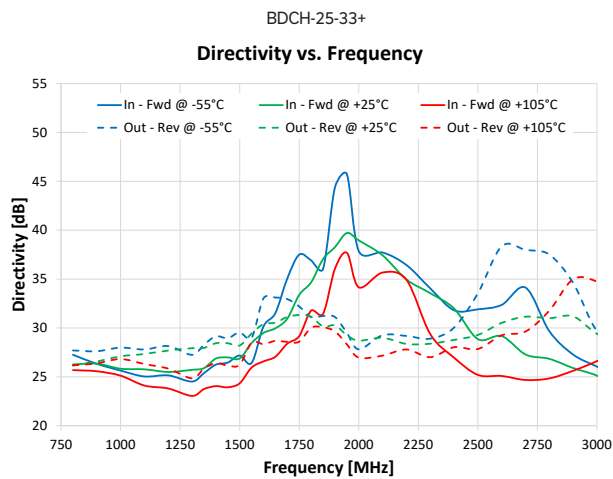
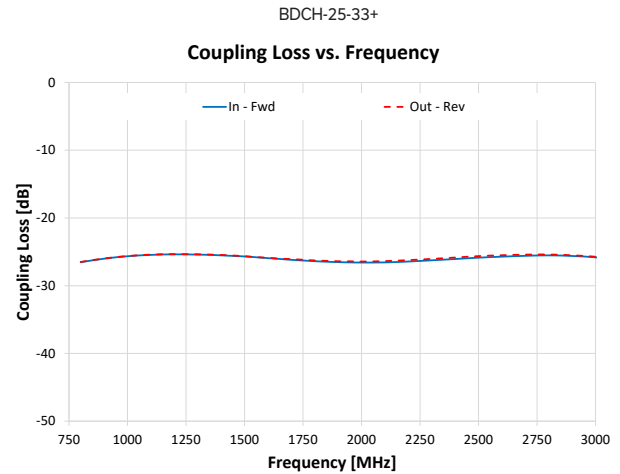
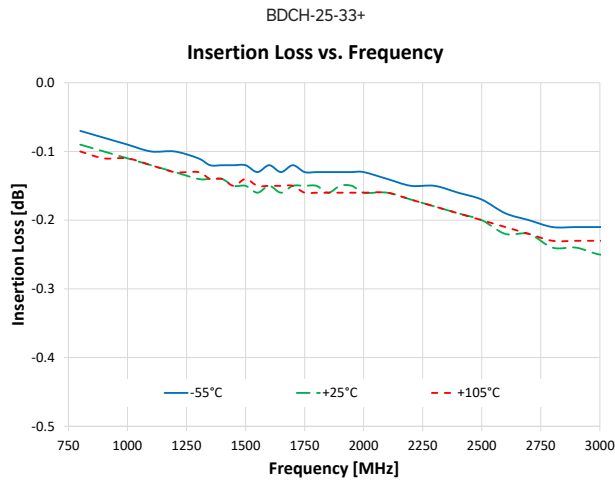
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TYPICAL PERFORMANCE GRAPHS

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





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FUNCTIONAL DIAGRAM

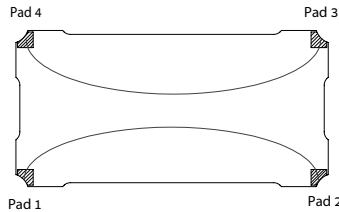


Figure 1. BDCH-25-33+ Functional Diagram

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-538)

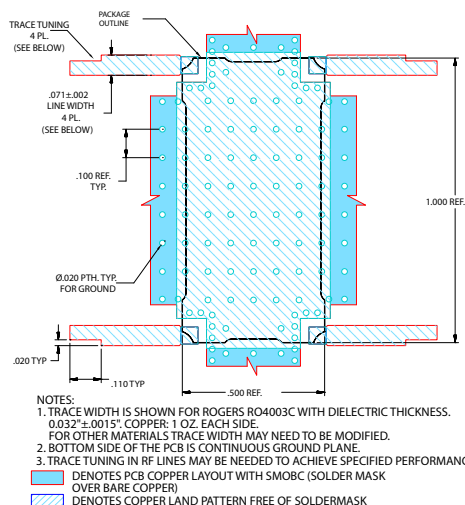
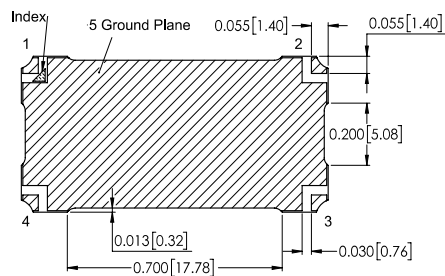
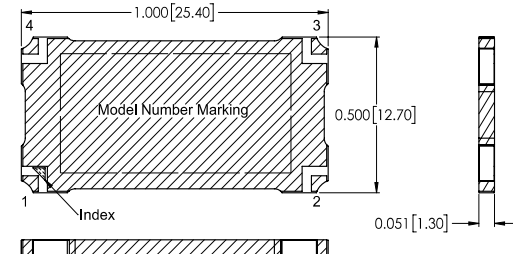
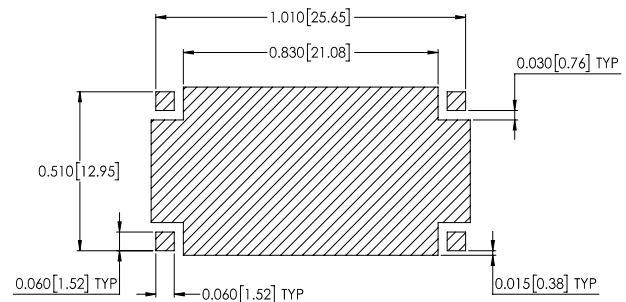


Figure 2. Suggested PCB Layout PL-538

CASE STYLE DRAWING (PQ2098)



Suggested PCB Land Pattern



NOTES:

1. Base material: Printed wiring laminate.
2. Termination finish: 2-5 μinch (.05-.13 microns) Immersion Gold.
3. Weight: 2.0 grams
4. Marking may contain other features or characters for internal lot control.



Metallization



Solder Resist

PRODUCT MARKING*: BDCH-25-33+

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



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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	PQ2098 Lead Finish: 2-5 μ inch (0.05-0.13 microns) Immersion Gold.
RoHS Status	Compliant
Tape and Reel	F118
Suggested Layout for PCB Design	PL-538
Evaluation Board	TB-863-1+
	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

