SURFACE MOUNT

Bi-Directional Coupler

RBDC9-182-75+

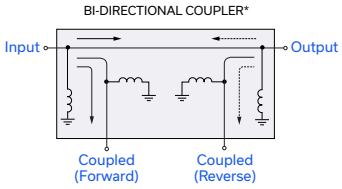
75Ω 5 to 1800 MHz 9 dB 1 Watt

KEY FEATURES

- Low Mainline Loss, 1.7 dB typ at 1800 MHz
- Good Return Loss, 20 dB typ at Input.
- Excellent Isolation between In-CPLR 40 dB typ in the range 100-700 MHz.
- Supports DOCSIS® 4.0 Systems

Generic photo used for illustration purposes only

ELECTRICAL SCHEMATIC



*Electrical schematic is for Bi-Directional coupler with internal transformer(s) that routes DC from all ports to ground

APPLICATIONS

- DOCSIS® 4.0
- CABLE TV

PRODUCT OVERVIEW

Mini-Circuits' RBDC9-182-75+ surface-mount bi-directional coupler provides 9 dB coupling with low mainline loss, high isolation between In-CPLR ports, and good return loss for 75 ohms applications from 5 to 1800 MHz, supporting a variety of broadband applications including DOCSIS® 4.0 systems and equipment. This model features core and wire construction is good for solderability and easy visual inspection.

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range	-	5	-	1800	MHz
Mainline Loss[1]	5 684 1218 1800	- - - -	1.3 1.3 1.5 1.7	1.5 1.6 1.8 2.2	dB
Coupling Nominal (In – CPLF) Coupling Nominal (Out – CPLR)	5 – 1800 5 - 1800	- -	10±0.5 9 ±0.5	- -	dB
Coupling Flatness (±) (In – CPLF) Coupling Flatness (±) (Out – CPLR)	5 – 1800 5 - 1800	- -	0.5 0.8	0.9 1.3	dB
Isolation (In – CPLR)	5 – 100 100 – 700 700 - 1800	35 30 17	40 35 22		dB
Return Loss (Input)	5 – 1218 1218 - 1800	- -	22 20		dB
Return Loss (Output)	5 - 1800	-	18		dB
Return Loss (Coupled)	5 - 1800	-	14		dB

1. Mainline Loss includes coupling loss.

ABSOLUTE MAXIMUM RATINGS[2]

Operating Case Temperature	-40 °C to +85 °C
Storage Temperature	-55 °C to +100 °C
Input Power	1 W

2. Permanent damage may occur if any of these limits are exceeded.

REV. OR
NPO-004674
RBDC9-182-75+
MCL NY
240917

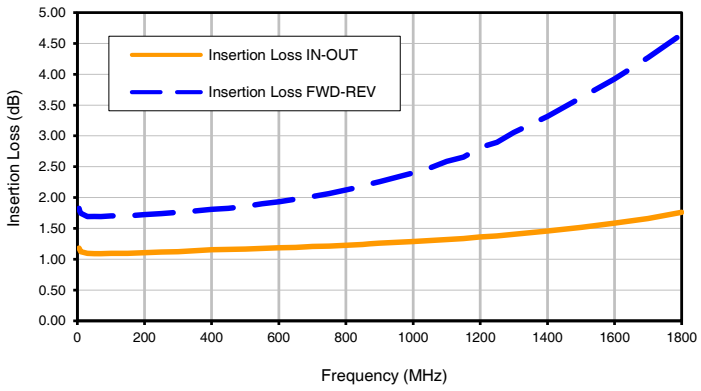
SURFACE MOUNT

Bi-Directional Coupler RBDC9-182-75+

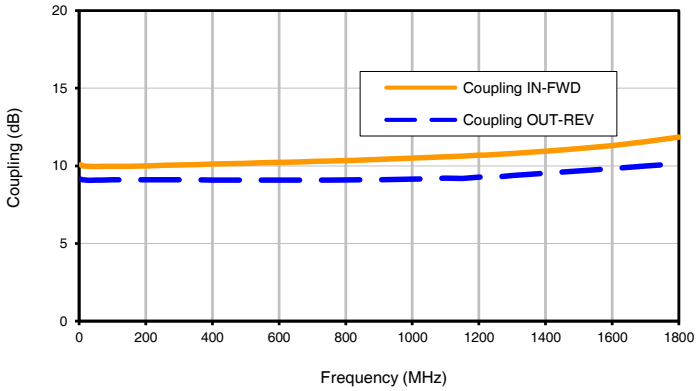
75Ω 5 to 1800 MHz 9 dB 1 Watt

TYPICAL PERFORMANCE GRAPHS

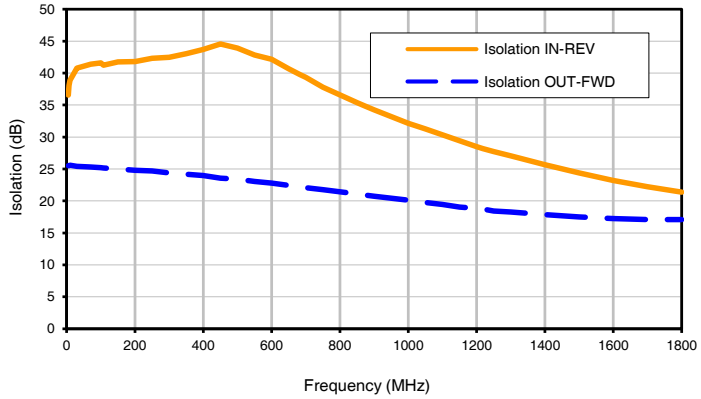
Insertion Loss



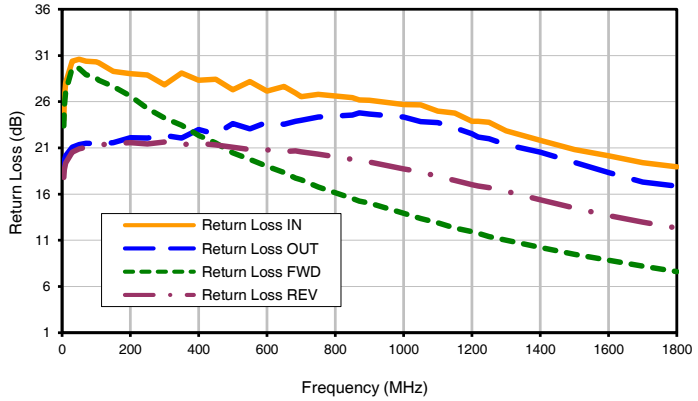
Coupling



Isolation



Return Loss



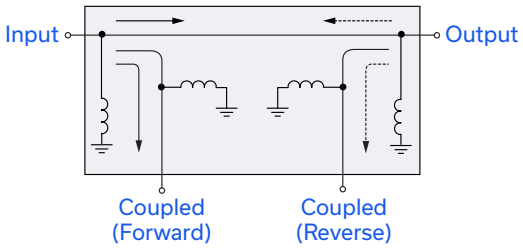
SURFACE MOUNT

Bi-Directional Coupler RBDC9-182-75+

75Ω 5 to 1800 MHz 9 dB 1 Watt

ELECTRICAL SCHEMATIC

BI-DIRECTIONAL COUPLER*



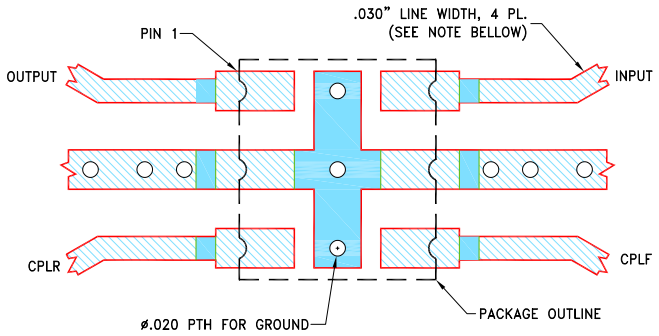
*Electrical schematic is for Bi-Directional coupler with internal transformer(s) that routes DC from all ports to ground

Figure 1. RBDC9-182-75+ Electrical Schematic

PAD DESCRIPTION/CONFIGURATION

Function	Pad Number	Description
Input	6	Connects to RF Input Port
Output	1	Connects to RF Output Port
CPL F	4	Connects to Coupled Ports
CPL R	3	
Ground	2;5	Connects to Ground

SUGGESTED PCB LAYOUT (PL-795)



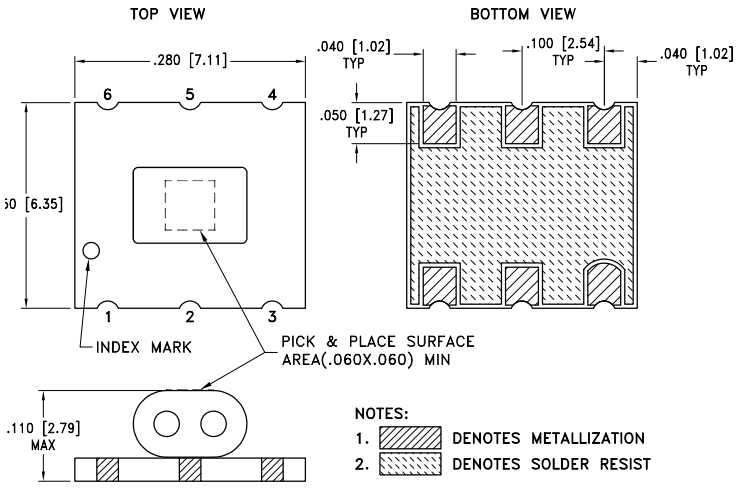
NOTES:
1. LINE WIDTH IS SHOWN FOR ROGERS RO4350B, DIELECTRIC THICKNESS: .030±.002"; COPPER: 1/2 Oz EACH SIDE. FOR OTHER MATERIALS LINE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

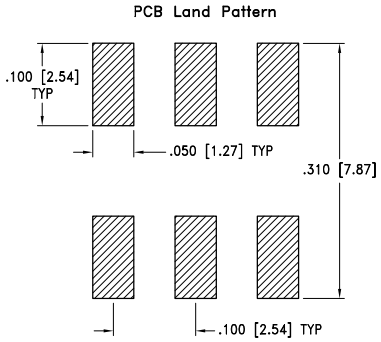
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

Figure 2. Suggested PCB Layout PL-795

CASE STYLE DRAWING





SUGGESTED LAYOUT FOR PC PATTERN
TOLERANCE TO BE WITHIN ±.002

Weight: .361 grams
Dimensions are in inches [mm]. Tolerances: 2 Pl.±.01; 3 Pl. ±.005 Inch

PRODUCT MARKING*: N/A

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

SURFACE MOUNT

Bi-Directional Coupler RBDC9-182-75+

75Ω 5 to 1800 MHz 9 dB 1 Watt

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD. CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S4P Files) Data Set (.zip file) De-embedded to device pads
Case Style	TT1491-8
RoHS Status	Compliant
Tape and Reel	F2
Suggested Layout for PCB Design	PL-795
Evaluation Board	TB-RBDC918275+ Gerber File
Environmental Rating	ENV02T1

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-Circuit's 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