



Mini-Circuits

SURFACE MOUNT

Bi-Directional Coupler

RBDC9-182-75R+

75Ω 5 to 1800 MHz 9 dB Coupling

KEY FEATURES

- Low Mainline Loss, 1.8 dB Typ. at 1800 MHz
- Good Return Loss, 23 dB Typ. at Input
- Excellent Isolation between In-CPLR 38 dB Typ. in the Range 50 - 684 MHz
- Supports DOCSIS® 4.0 Systems

APPLICATIONS

- DOCSIS® 4.0
- Cable TV

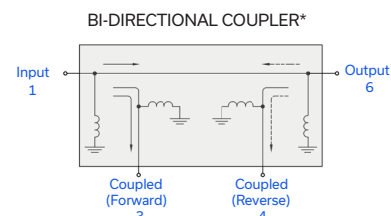
PRODUCT OVERVIEW

Mini-Circuits' RBDC9-182-75R+ 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.



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



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

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		5		1800	MHz
Insertion Loss (Input-Output)	5 - 50	—	1.5	1.9	dB
	50 - 684	—	1.35	1.7	
	684 - 1218	—	1.6	1.9	
	1218 - 1800	—	1.8	2.3	
Insertion Loss (CPLF-CPLR)	5 - 684	—	2.0	2.7	dB
	684 - 1218	—	2.9	—	
	1218 - 1800	—	4.5	—	
Coupling, Nominal	5 - 684	—	9.5±0.8	—	dB
	684 - 1800	—	9.5±1.0	—	
Coupling Flatness (±)	5 - 684	—	0.15	0.7	dB
	684 - 1800	—	0.8	1.5	
Isolation (Input-CPLR)	5 - 50	32	40	—	dB
	50 - 684	30	38	—	
	684 - 1800	16	25	—	
Isolation (Output-CPLF)	5 - 684	18	23	—	dB
Return Loss (Input)	5 - 684	17	23	—	dB
	684 - 1218	16	20	—	
	1218 - 1800	16.5	22	—	
Return Loss (Output)	5 - 50	14	18	—	dB
	50 - 1218	16.5	22	—	
	1218 - 1800	16	21	—	
Return Loss (Coupling)	5 - 684	—	18	—	dB
	684 - 1800	—	10	—	

ABSOLUTE MAXIMUM RATINGS¹

Operating Case Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power ²	2 W

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

2. Derate linearly to 0.1W at 85°C ambient.

Mini-Circuits

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REV. OR
ECO-030214
RBDC9-182-75R+
EDU5335
MCINU
260624

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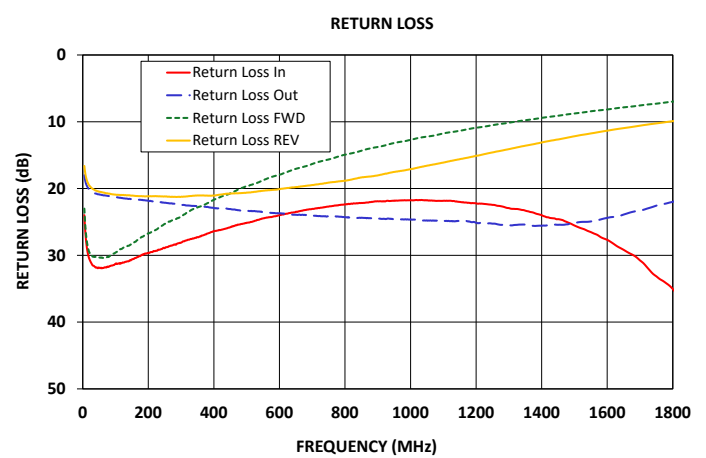
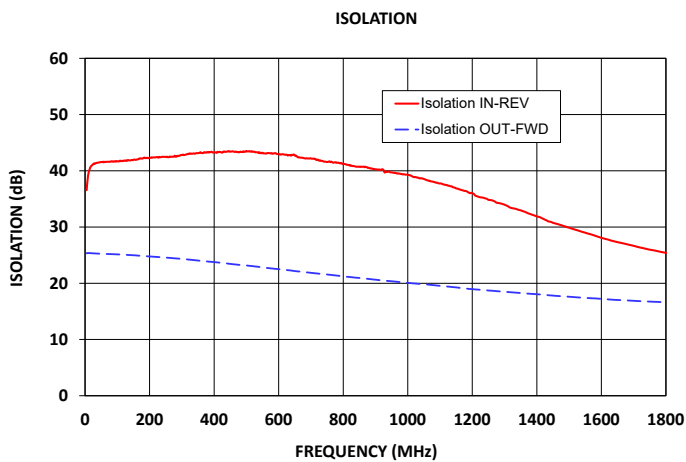
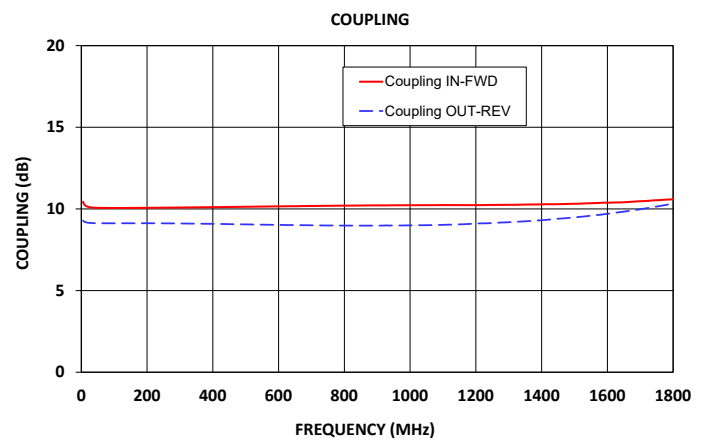
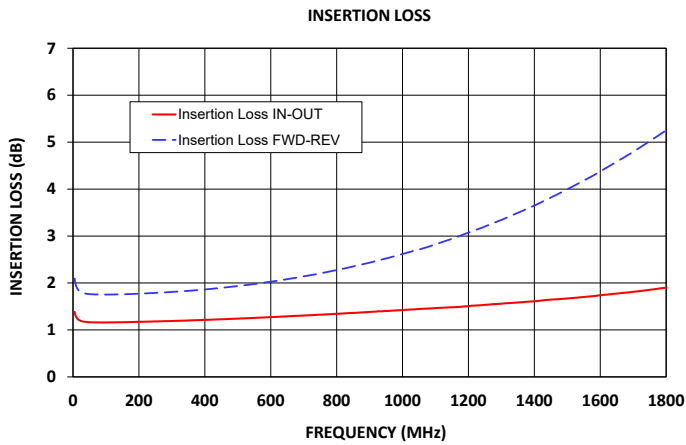
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TYPICAL PERFORMANCE GRAPHS AT +25°C





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FUNCTIONAL DIAGRAM

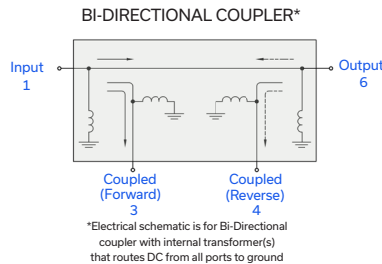
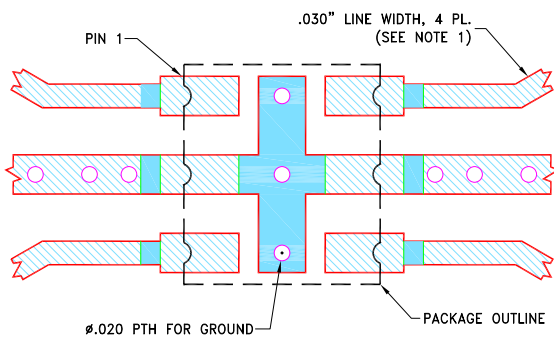


Figure 1. RBDC9-182-75R+ Functional Diagram

PAD DESCRIPTION/CONFIGURATION

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

SUGGESTED PCB LAYOUT (PL-795)



NOTES:

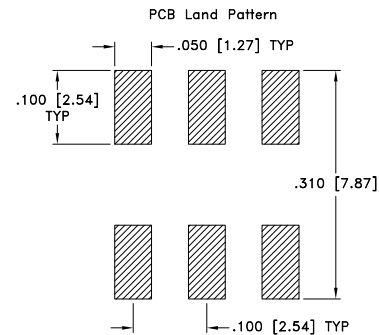
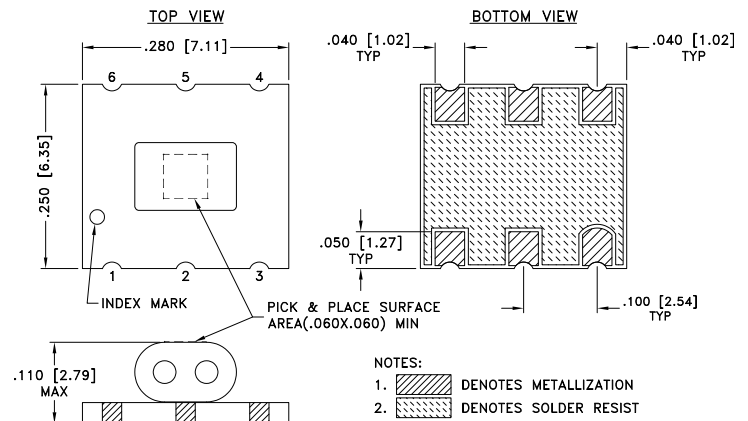
1. LINE WIDTH IS SHOWN FOR ROGERS R04350B, DIELECTRIC THICKNESS: .030±.002"; COPPER: 1/2 Oz EACH SIDE. FOR OTHER MATERIALS LINE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

■ 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]. Tolerance: 2Pl.±.01; 3Pl.±.005 Inch

PRODUCT MARKING*: N/A

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



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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 Lead Finish: Gold over Nickel Plate
RoHS Status	Compliant
Tape and Reel	F34
Suggested Layout for PCB Design	PL-795
Evaluation Board	TB-RBDC918275R+
	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-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

