



Mini-Circuits

SURFACE MOUNT

## Directional Coupler

**RDC14-182-75+**

75Ω 5 to 1800 MHz 14 dB Coupling High Isolation

## KEY FEATURES

- Low Mainline Loss 0.9 dB typ.
- High Isolation, above 39 dB up to 850 MHz
- Great Coupling Flatness,  $\pm 0.6$  dB typ.

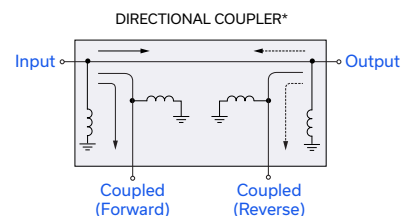


Generic photo used for illustration purposes only

## APPLICATIONS

- DOCSIS® 4.0
- CATV /Broadband

## FUNCTIONAL DIAGRAM



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

## PRODUCT OVERVIEW

Mini-Circuits' RDC14-182-75+ surface mount directional coupler provides 14 dB coupling with great flatness, low mainline loss, high isolation for 75Ω applications from 5 to 1800 MHz. This model features core and wire construction and good solderability and easy visual inspection.

## ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		5		1800	MHz
Mainline Loss <sup>1</sup> (In-Out)	5 - 1800		0.9	1.3	dB
Coupling Nominal (In-CPLF)	5 - 850		14.5 $\pm$ 0.7		dB
	5 - 1800		15.5 $\pm$ 1.2		
Coupling Flatness ( $\pm$ ) (In-CPLF)	5 - 850		$\pm 0.3$	$\pm 0.5$	dB
	5 - 1800		$\pm 0.8$	$\pm 1.6$	
Isolation (Out-CPLF)	5 - 850	39	41		dB
	850 - 1800	26	32		
Return Loss (Input)	5 - 50	16	18		dB
	50 - 850	18	22		
	850 - 1800	13	18		
Return Loss (Output)	5 - 50	18	20		dB
	50 - 850	19	25		
	850 - 1800	13	18		
Return Loss (CPLF)	5 - 50	17	20		dB
	50 - 850	15	20		
	850 - 1800	13	18		

1. Mainline Loss includes coupling loss.

ABSOLUTE MAXIMUM RATINGS<sup>2</sup>

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

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

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REV. OR  
ECO-024767  
RDC14-182-75+  
MCL NY  
250320

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SURFACE MOUNT

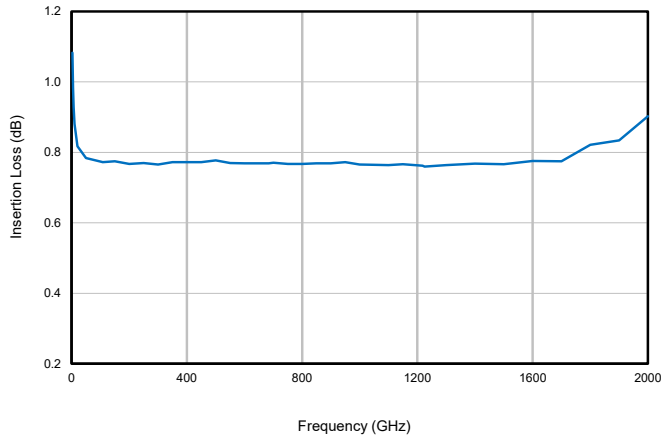
# Directional Coupler

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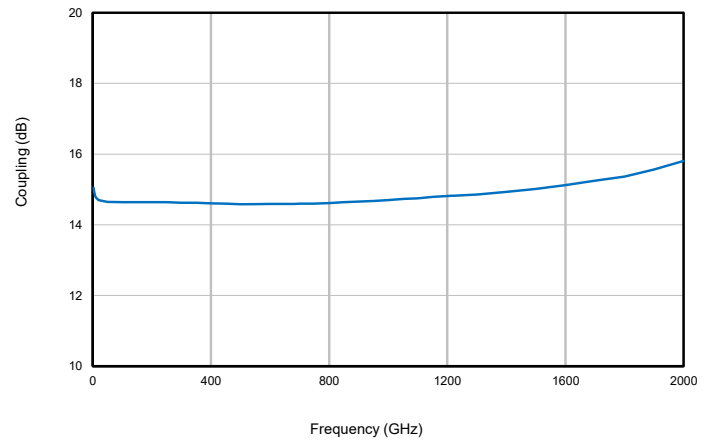
75 $\Omega$  5 to 1800 MHz 14 dB Coupling High Isolation

## TYPICAL PERFORMANCE GRAPHS

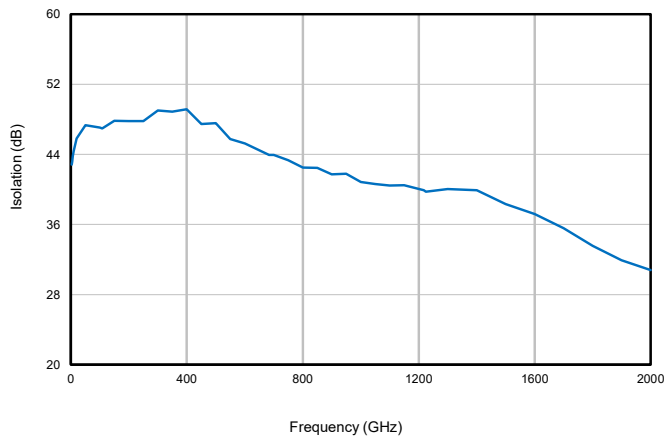
INSERTION LOSS



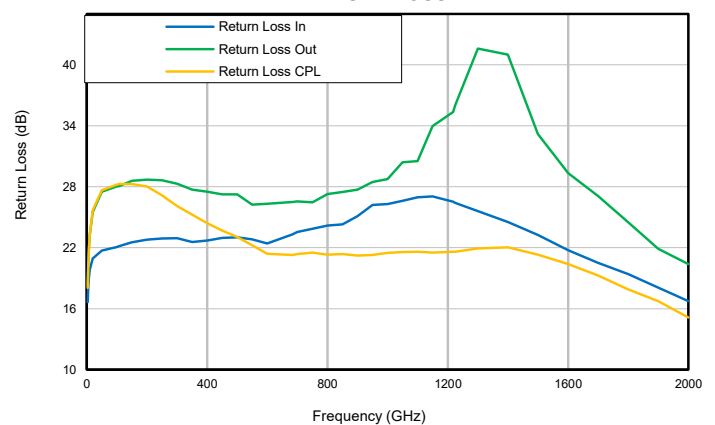
COUPLING



ISOLATION



RETURN LOSS





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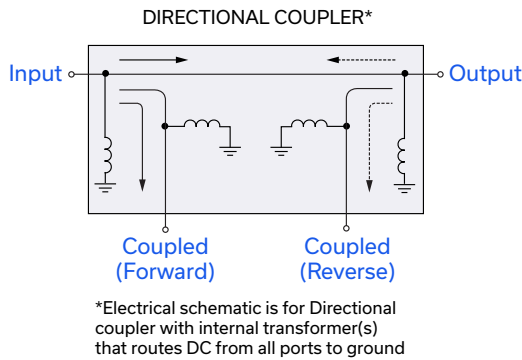
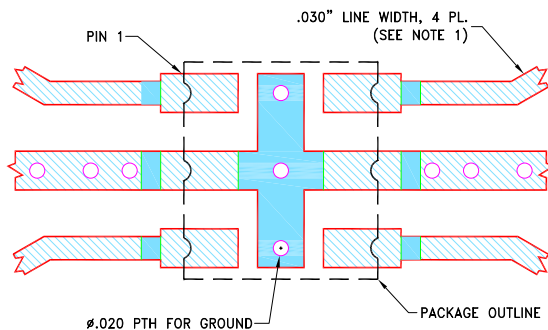


Figure 1. RDC14-182-75+ Electrical Schematic

## PAD DESCRIPTION/CONFIGURATION

Function	Pad Number	Description
Input	1	Connects to Input Port
Output	6	Connects to RF Output Port
CPL F	3	Connect to CPLF Port
Ground	2,5	Connects to Ground
CPL R	4	75 Ohm External Termination

## SUGGESTED PCB LAYOUT (PL-795)



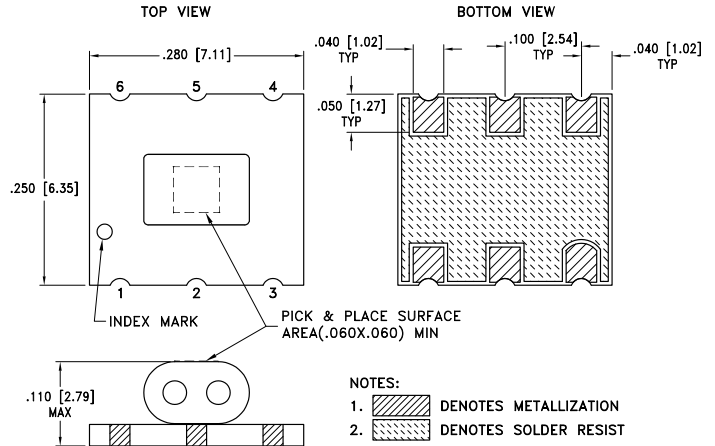
### NOTES:

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.

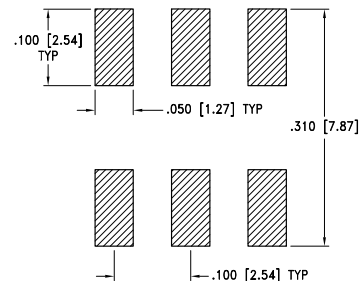
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

Figure 2. Suggested PCB Layout PL-795

## CASE STYLE DRAWING



### PCB Land Pattern



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.



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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
RoHS Status	Compliant
Tape and Reel	F34
Suggested Layout for PCB Design	PL-795
Evaluation Board	TB-RDC14-18275+ 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.
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