



Mini-Circuits

SURFACE MOUNT

# Directional Coupler **RDC14.5-182M75+**

**75Ω 5 to 1800 MHz 14.5 dB Coupling Great Flatness**

## KEY FEATURES

- Low Mainline Loss 0.9 dB Typ.
- Good Return Loss 20 dB Typical up to 1800 MHz
- Great Coupling Flatness,  $\pm 0.2$  dB Typ.

## APPLICATIONS

- CATV /Broadband
- DOCSIS 4.0

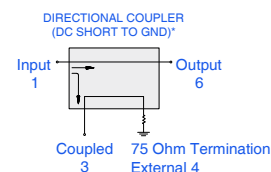
## PRODUCT OVERVIEW

Mini-Circuits' RDC14.5-182M75+ surface mount directional coupler provides 14.5 dB coupling with low mainline loss and excellent coupling flatness for 75Ω applications from 5 to 1800 MHz. This model features a core and wire design with an all welded construction.



Generic photo used for illustration purposes only

## FUNCTIONAL DIAGRAM



\*Electrical schematic is for Directional coupler with transformer(s) and external termination

## 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 - 1225	—	0.9	1.4	dB
	1225 - 1800	—	1.2	1.7	
Coupling, Nominal	5 - 1800	—	14.5 $\pm$ 0.6	—	dB
Coupling Flatness	5 - 1225	—	$\pm$ 0.2	$\pm$ 0.6	dB
	1225 - 1800	—	$\pm$ 0.3	$\pm$ 0.6	
Isolation (Out-CPLF)	5 - 1225	25	30	—	dB
	1225 - 1800	22	27	—	
Return Loss (Input)	5 - 1225	16	20	—	dB
	1225 - 1800	16.5	21	—	
Return Loss (Output)	5 - 1225	18.5	23	—	dB
	1225 - 1800	17	20	—	
Return Loss (Coupled)	5 - 1225	16.5	21	—	dB
	1225 - 1800	17	20	—	

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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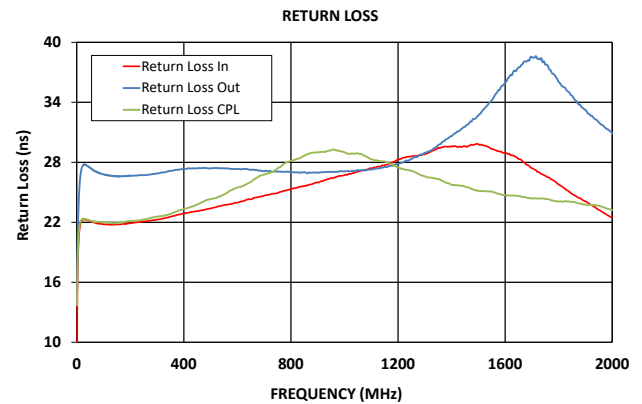
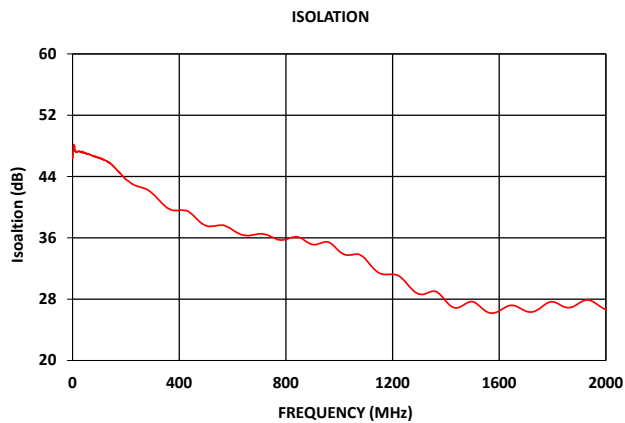
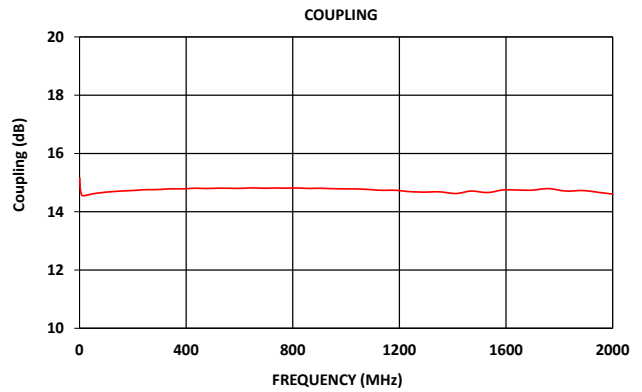
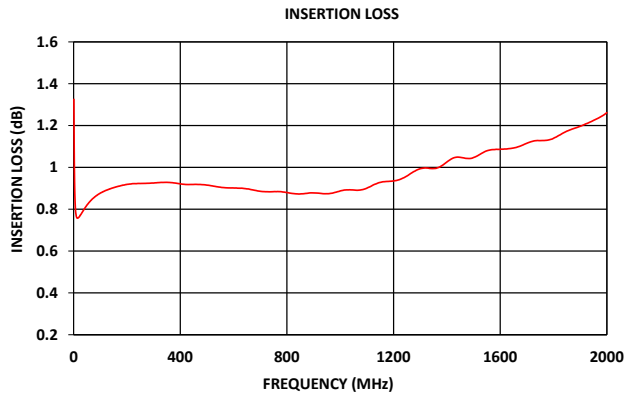
# Directional Coupler

**RDC14.5-182M75+**

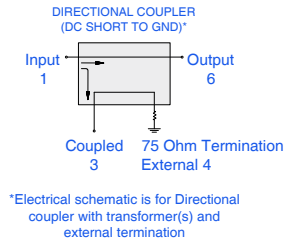
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## TYPICAL PERFORMANCE GRAPHS



## FUNCTIONAL DIAGRAM



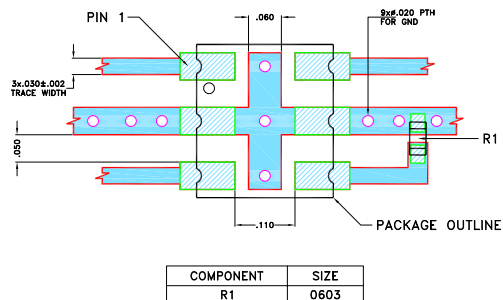
**Figure 1. RDC14.5-182M75+ Functional Diagram**

## PAD DESCRIPTION/CONFIGURATION

Function	Pad Number	Description
Input	1	Connects to RF Input Port
Output	6	Connects to RF Output Port
Coupled	3	Connects to Coupled Port
Ground	2,5	Connects to Ground
75 Ohm Termination External	4	Connects to External 75 Ohm


## SUGGESTED PCB LAYOUT (PL-831)

SUGGESTED MOUNTING CONFIGURATION  
FOR TT2315-3 CASE STYLE



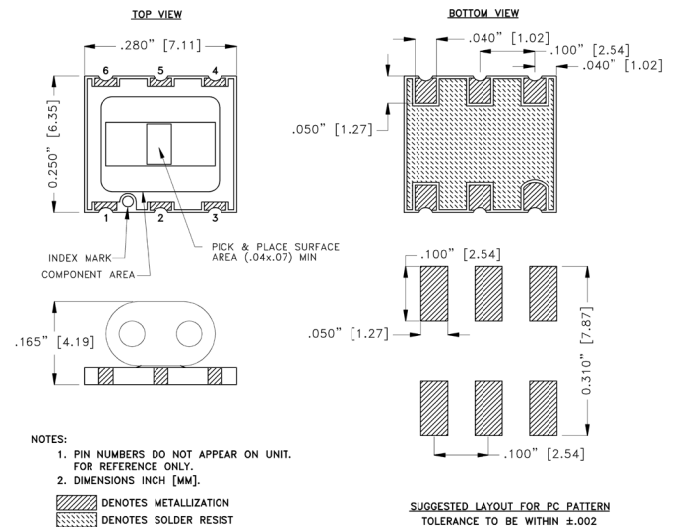
NOTES:

- NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS (R04350B) WITH DIELECTRIC THICKNESS  $\pm 0.030 \pm .002$ ; COPPER: 1/2 Oz ON EACH SIDE.  
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
  2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
  3. CHIP COMPONENT FOOT PRINT SHOWN FOR REFERENCE.  
FOR COMPONENT VALUE REFER TO INDIVIDUAL MODEL EVALUATION BOARD.

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

**Figure 2. Suggested PCB Layout PL-831**

## CASE STYLE DRAWING



**Weight: 0.15 gram**

Dimensions are in inches (mm). Tolerances: 2Pl.  $\pm .01$  [.25]; 3Pl.  $\pm .005$  [.127]

**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	TT2315-3 Lead Finish: Gold over Nickel Plate
RoHS Status	Compliant
Tape and Reel	F34
Suggested Layout for PCB Design	PL-831
Evaluation Board	TBRDC145182M75+
	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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