



Mini-Circuits

SURFACE MOUNT

Directional Coupler

RDC17.5-182M75+

75Ω 5 to 1800 MHz 17.5 dB Coupling Great Flatness

KEY FEATURES

- Low Mainline Loss 0.8 dB Typ.
- Good Return Loss 20 dB Typical up to 1800 MHz
- Great Coupling Flatness, ± 0.3 dB Typ.

APPLICATIONS

- CATV /Broadband
- DOCSIS 4.0

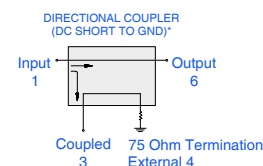
PRODUCT OVERVIEW

Mini-Circuits' RDC17.5-182M75+ surface mount directional coupler provides 17.5 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 ¹ (In-Out)	5 - 1225	—	0.8	1.3	dB
	1225 - 1800	—	1	1.6	
Coupling, Nominal	5 - 1225	—	17.5 \pm 0.5	—	dB
	1225 - 1800	—	17.5 \pm 0.9	—	
Coupling Flatness	5 - 1225	—	± 0.5	± 0.8	dB
	1225 - 1800	—	± 0.3	± 0.6	
Isolation (Out-CPLF)	5 - 1225	26	32	—	dB
	1225 - 1800	22	26	—	
Return Loss (Input)	5 - 50	16	20	—	dB
	50 - 1225	21	25	—	
	1225 - 1800	16.5	20	—	
Return Loss (Output)	5 - 50	18	23	—	dB
	50 - 1225	22	25	—	
	1225 - 1800	16	20	—	
Return Loss (Coupled)	5 - 50	16	22	—	dB
	50 - 1225	20	25	—	
	1225 - 1800	19	22	—	

1. Mainline Loss includes coupling loss.

ABSOLUTE MAXIMUM RATINGS²

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-026978
RDC17.5-182M75+
EDU5114
URJ
250916

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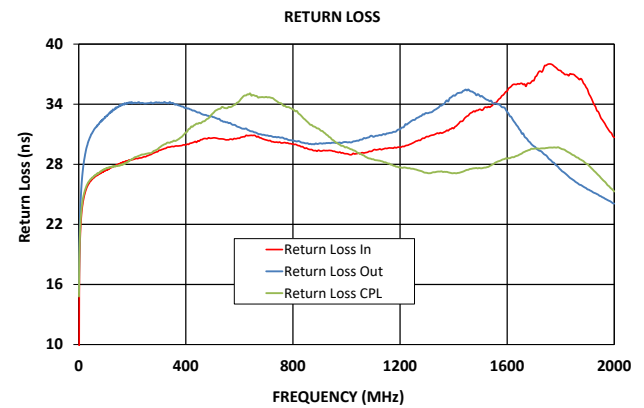
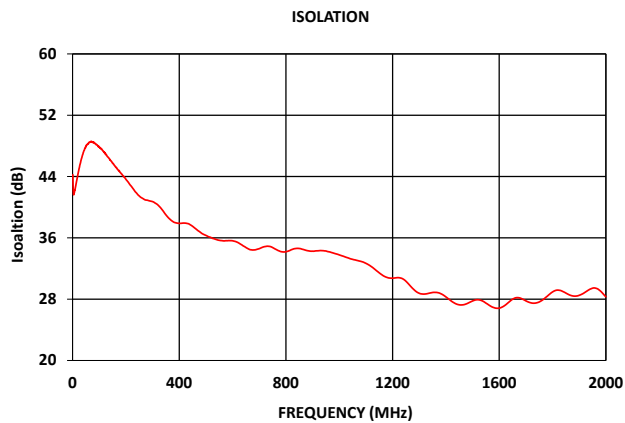
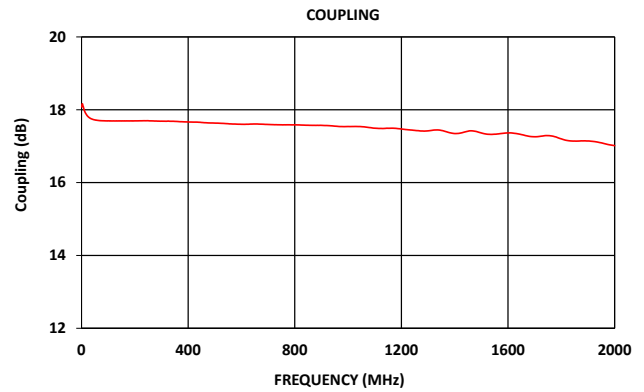
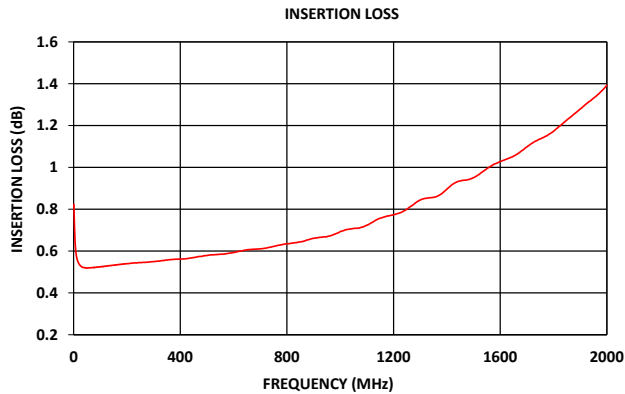
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TYPICAL PERFORMANCE GRAPHS



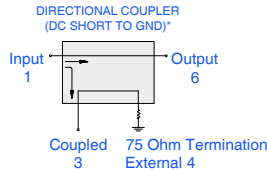


SURFACE MOUNT

Directional Coupler **RDC17.5-182M75+**

75Ω 5 to 1800 MHz 17.5 dB Coupling Great Flatness

FUNCTIONAL DIAGRAM



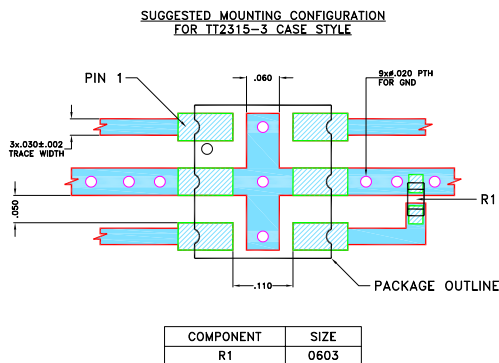
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Figure 1. RDC17.5-182M75+ Functional Diagram

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)



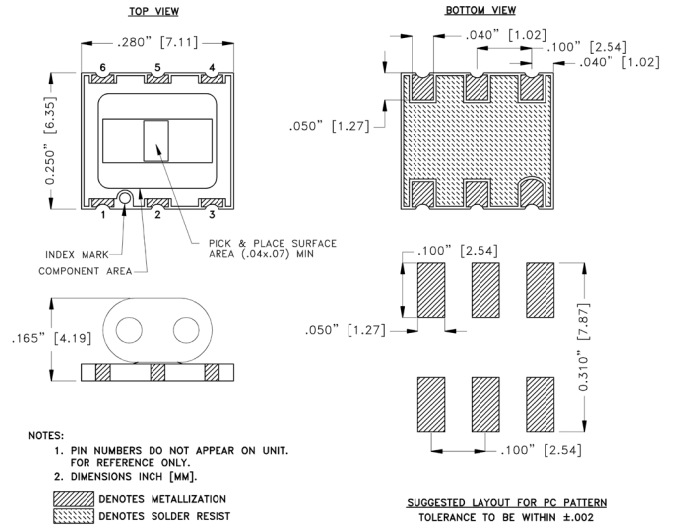
NOTES:

- TRACE WIDTH IS SHOWN FOR ROGERS (R04350B) WITH DIELECTRIC THICKNESS 0.030 ± 0.002 ; COPPER: 1/2 Oz ON EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- 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	TBRDC175182M75+
	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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