



SURFACE MOUNT

Directional Coupler

RDC14-182-75R+

75Ω 5 to 1800 MHz 14 dB Coupling Great Flatness

KEY FEATURES

- Low Mainline Loss, 0.9 dB Typ.
- Good Return Loss 20 dB Typ. up to 1800 MHz
- Great Coupling Flatness, ±0.5 dB Typ.

APPLICATIONS

- CATV / Broadband
- DOCSIS 4.0

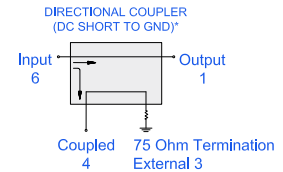
PRODUCT OVERVIEW

Mini-Circuits' RDC14-182-75R+ surface mount directional coupler provides 14 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 - 684	—	1.3	1.9	dB
	684 - 1225	—	0.9	1.5	
	1225 - 1800	—	1.0	1.6	
Coupling, Nominal	5 - 1225	—	14.5±0.9	—	dB
	1225 - 1800	—	14.5±0.5	—	
Coupling Flatness	5 - 1225	—	±0.8	±1.3	dB
	1225 - 1800	—	±0.5	±0.8	
Isolation (Out-CPL)	5 - 684	31	35	—	dB
	684 - 1225	26	32	—	
	1225 - 1800	24	28	—	
Return Loss (Input)	5 - 1225	—	18	—	dB
	1225 - 1800	—	20	—	
Return Loss (Output)	5 - 1225	—	19	—	dB
	1225 - 1800	—	20	—	
Return Loss (Coupled)	5 - 1225	—	18	—	dB
	1225 - 1800	—	20	—	

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 ³	2 W Max. at +25°C

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

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





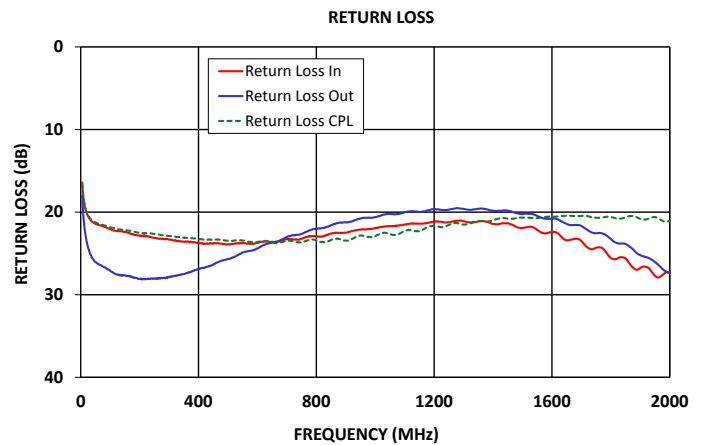
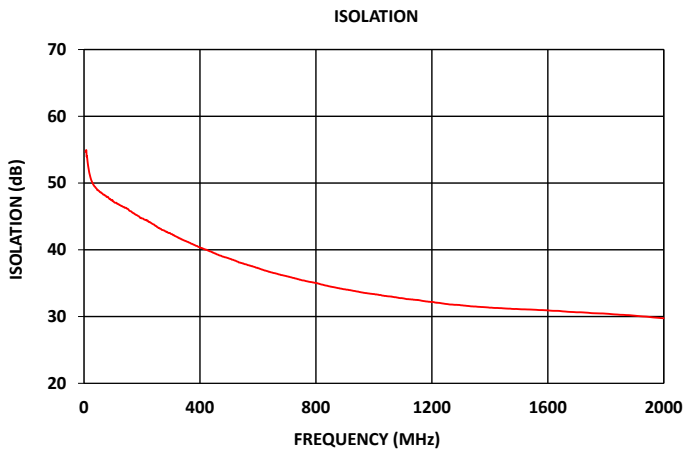
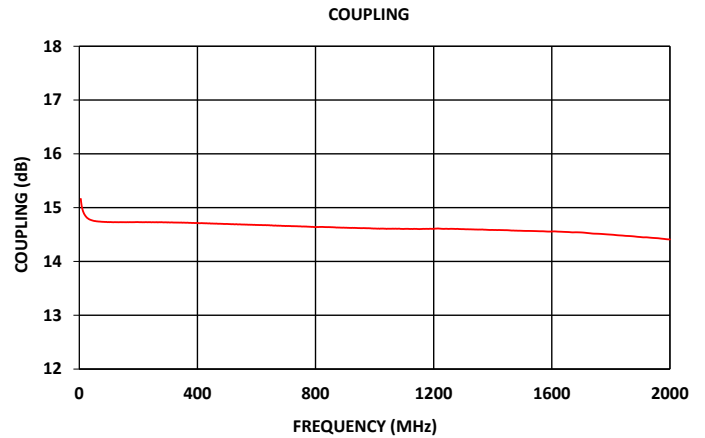
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TYPICAL PERFORMANCE GRAPHS AT +25°C





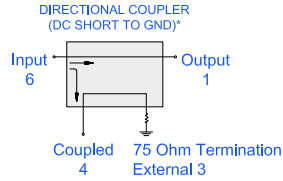
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FUNCTIONAL DIAGRAM



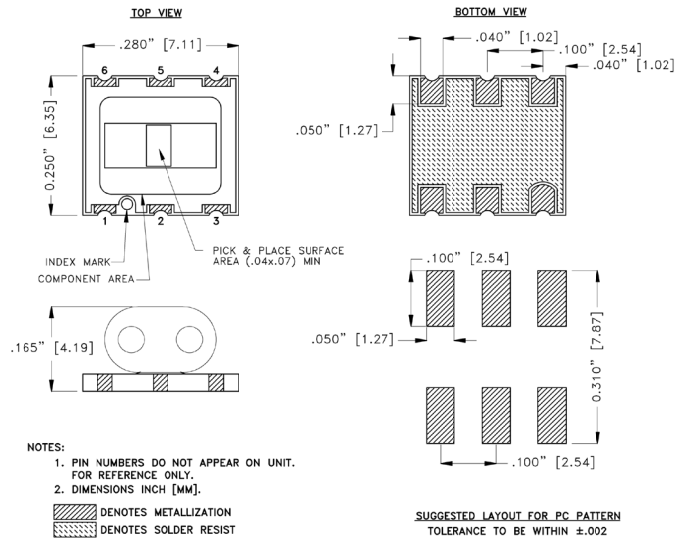
*Electrical schematic is for Directional coupler with transformer(s) and external termination

Figure 1. RDC14-182-75R+ Functional Diagram

PAD DESCRIPTION/CONFIGURATION

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

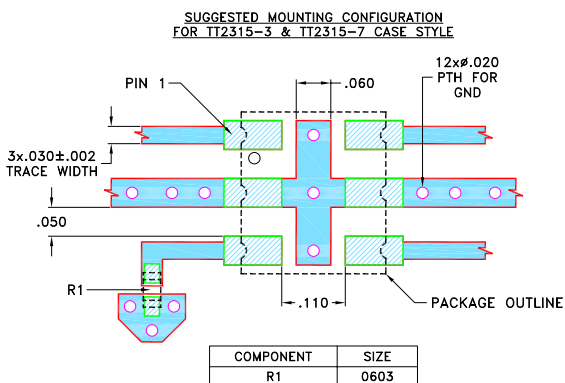
CASE STYLE DRAWING



Weight: 0.2 gram

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

SUGGESTED PCB LAYOUT (PL-852)



NOTES:

- TRACE WIDTH IS SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS $\pm .030 \pm .002$; 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-852

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 (S3P 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-852
Evaluation Board	TB-RDC1418275R+
	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

