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LUMPED LC SURFACE MOUNT

# Diplexer

**RDP-6500+**

50Ω DC to 6500 MHz (DC-100, 1400-6500 MHz)

## KEY FEATURES

- Low Insertion Loss, 1.5 dB Typ.
- Good Stopband Rejection, 40 dB Typ.
- Miniature Shielded Package

## APPLICATIONS

- Military Radio Communication
- Transmitter and Receiver
- Wireless Communication Systems

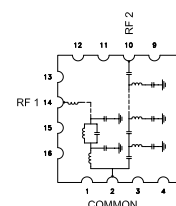
## PRODUCT OVERVIEW

RDP-6500+ is a lowpass + highpass diplexer. Lowpass port is designed for DC to 100 MHz and highpass port is designed for 1400 to 6500 MHz. The low pass channel offers a very good rejection and the high pass channel works for a broad frequency band until 6500 MHz offering low insertion loss. This diplexer can be used in military radio communication systems.



Generic photo used for illustration purposes only

## FUNCTIONAL DIAGRAM



## ELECTRICAL SPECIFICATIONS<sup>1,2</sup> AT +25°C

Parameter		Function (Port)	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	Low Pass (RF COM-RF1)	DC - 100	—	0.5	1	dB
		High Pass (RF COM-RF2)	1400 - 3500	—	0.3	1	
			3500 - 4400	—	0.5	1.2	
			4400 - 6500	—	1.5	3	
	Return Loss	Low Pass (RF1)	DC - 100	14	21	—	dB
		High Pass (RF2)	1400-3000	14	20	—	
			3000-4400	10	17	—	
			4400-6500	—	8	—	
		Common (COM)	DC-100	14	21	—	
			1400 - 3000	14	20	—	
			3000 - 4400	10	17	—	
			4400 - 6500	—	8	—	
Stop Band Rejection	Low Pass (RF COM-RF1)		1400 - 2500	50	60	—	dB
			2500 - 4400	30	43	—	
			4400 - 6500	20	28	—	
	High Pass (RF COM-RF2)		DC-100	60	75	—	

1. Tested in Evaluation Board P/N TB-RDP-6500+.

2. Bi-Directional. See S-Parameters for actual performance.

## ABSOLUTE MAXIMUM RATINGS<sup>3</sup>

Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power (RF COM)	1.5 W
Input Power (RF1)	1.5 W
Input Power (RF2)	1.5 W

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

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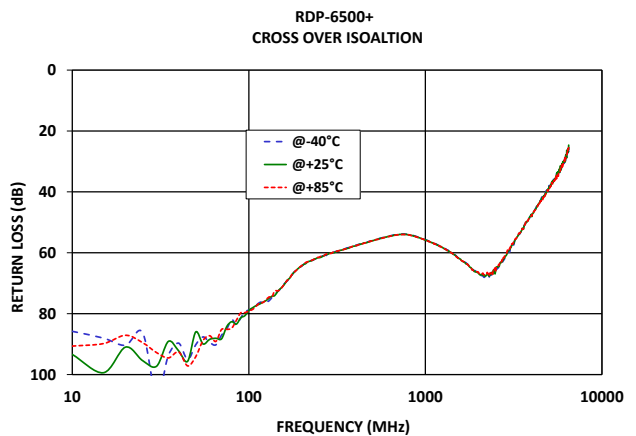
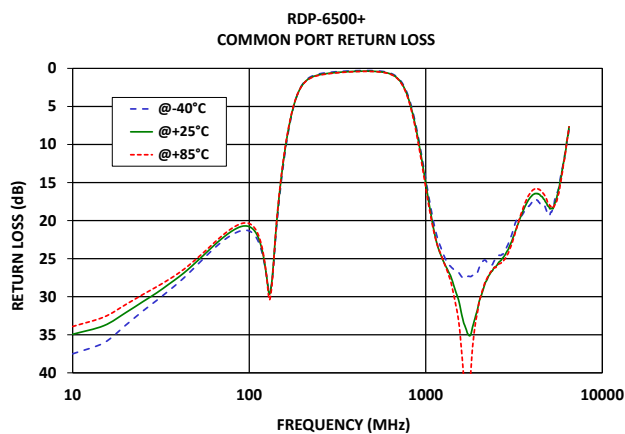
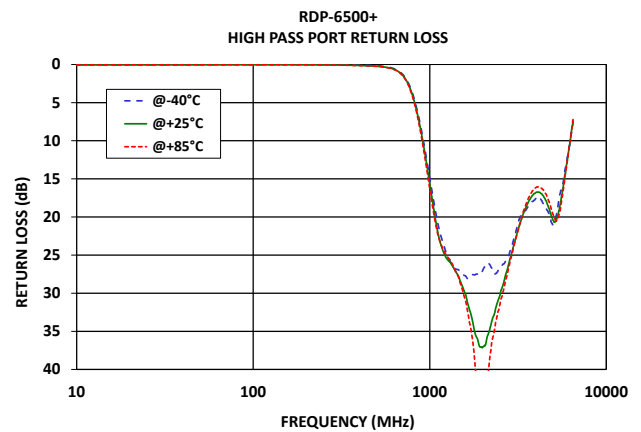
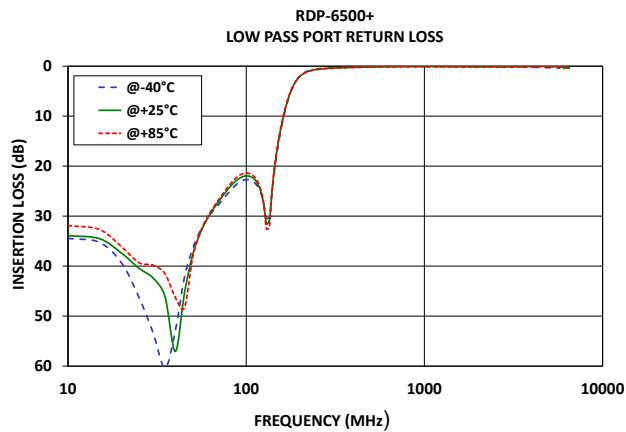
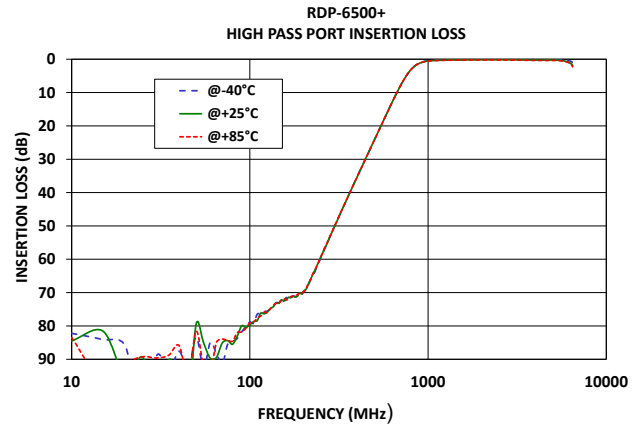
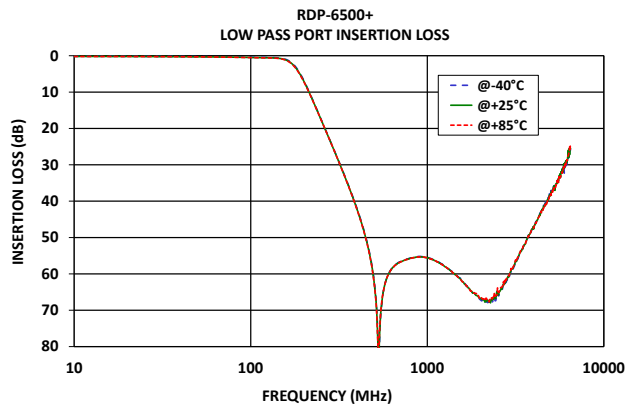
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PAGE 1 OF 4



## TYPICAL PERFORMANCE GRAPHS





## FUNCTIONAL DIAGRAM

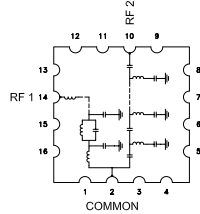
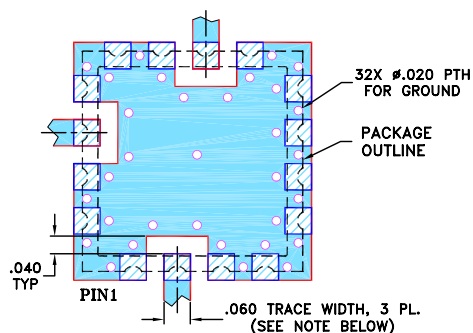


Figure 1. RDP-6500+ Functional Diagram

## PAD DESCRIPTION

Port	Pad Number	Description
COMMON	2	Connects to Common Port
RF1 <sup>2</sup>	14	Connects to Low Pass Port
RF2 <sup>2</sup>	10	Connects to High Pass Port
GROUND	1,3-9,11-13,15,16	Connects to Ground on PCB, (See drawing PL-012)
NC	—	No connection, not used internally. See drawing PL-012 for connection to PCB

## SUGGESTED PCB LAYOUT (PL-012)

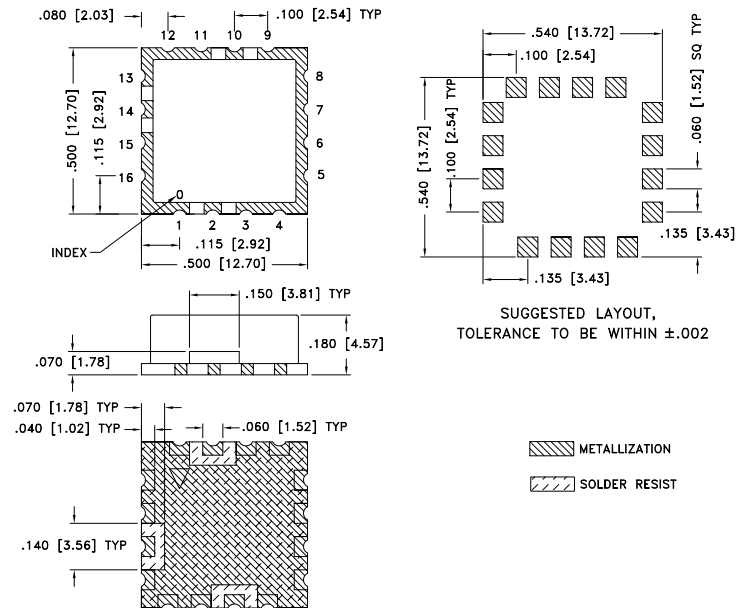


- NOTES: 1. TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- 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-012

## CASE STYLE DRAWING



Weight: 1.2 gram

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015

## PRODUCT MARKING\*: RDP-6500

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



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ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD.

[CLICK HERE](#)

Performance Data & Graphs	Data Graphs S-Parameter (S3P Files) Data Set (.zip file) De-embedded to device pads
Case Style	CK605 Lead Finish: Gold over Nickel Plate
RoHS Status	Compliant
Tape and Reel	TR-F37
Suggested Layout for PCB Design	PL-012
Evaluation Board	TB-RDP-6500+ Gerber File
Environmental Rating	ENV02T1

## NOTES

- 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.
- 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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