

# Surface Mount Diplexer

## RDP-6500+

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



CASE STYLE: CK605

### The Big Deal

- Low insertion loss, 1.5 dB typical
- Good stopband rejection, 40 dB typical
- Miniature shielded package

### 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.

### Key Features

Feature	Advantages
Low passband insertion loss	Suitable for high performance application.
Good stopband rejection	Spurious rejection and avoids using additional filters.
Miniature shielded package.	Reduced interference with the surrounding components.

#### 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-Circuit's 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/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)

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### Maximum Ratings

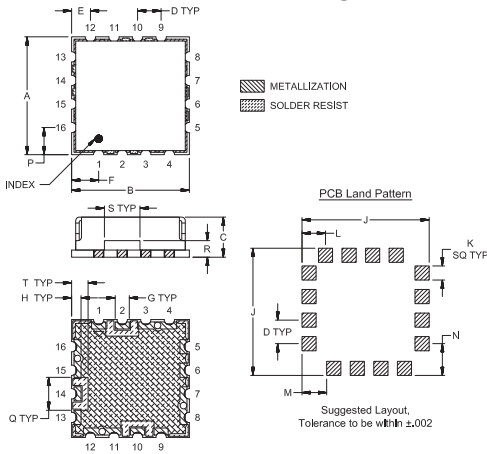
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Max. RF Power Input	1.5 W

- Exceeding any one or combination of these limits may cause permanent damage.
- Sustained operation near these survivability limits is not recommended.

### Pin Connections

HIGH PASS PORT	10
LOW PASS PORT	14
COMMON PORT	2
GROUND	1,3-9,11-13,15,16

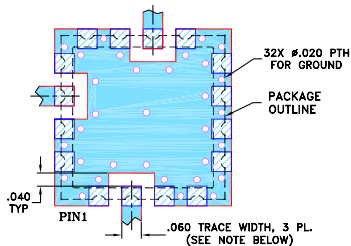
### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K	Wt.
.500	.500	.180	.100	.080	.115	.060	.040	.540	.060	grams
12.7	12.7	4.572	2.54	2.032	2.921	1.524	1.016	13.72	1.524	
L	M	N	P	Q	R	S	T			
.100	.135	.135	.115	.140	.070	.150	.070			
2.54	3.429	3.429	2.921	3.556	1.778	3.81	1.778			1.0

### Demo Board MCL P/N: TB-10 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.

- Blue shaded area denotes PCB copper layout with SMOBC (SOLDER MASK OVER BARE COPPER)
- White shaded area denotes copper land pattern free of solder mask

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### Features

- Low insertion loss
- 50Ω Impedance
- Combination of Low pass and High pass filters
- Miniature shielded package

### Applications

- Military radio communication
- Transmitter and receiver
- Wireless communication systems



CASE STYLE: CK605

### +RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

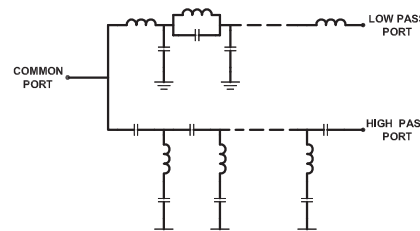
### Electrical Specifications at 25°C

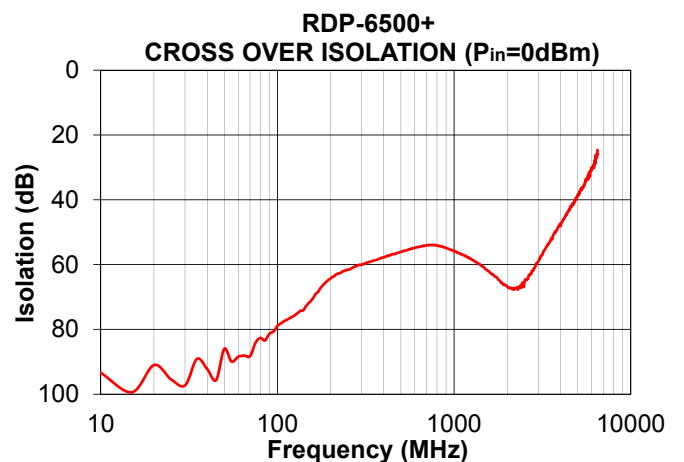
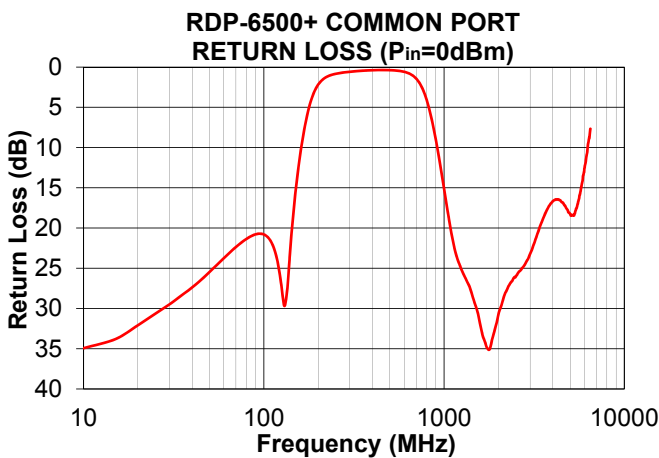
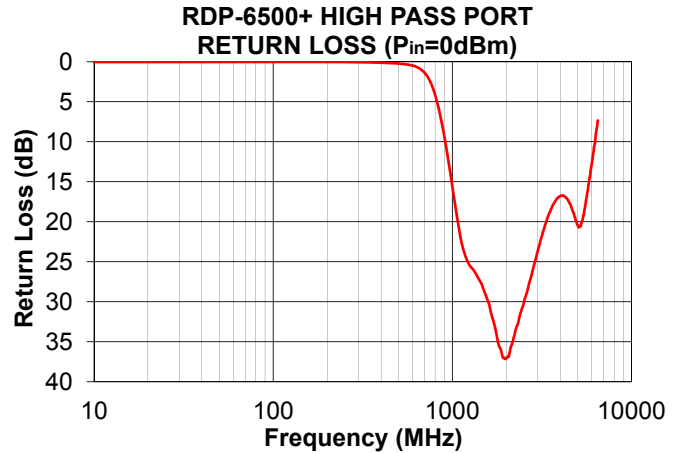
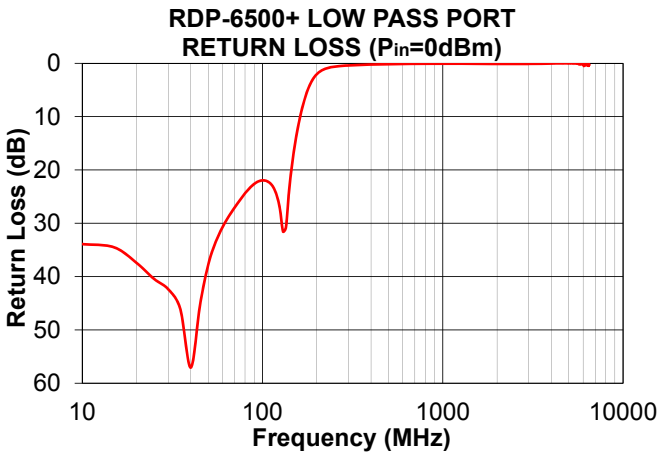
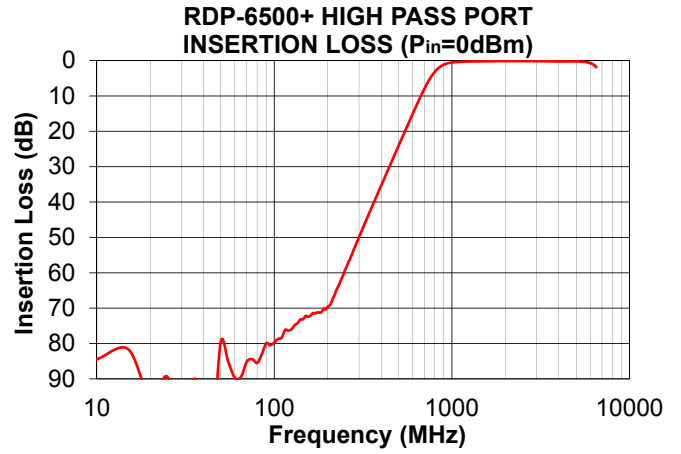
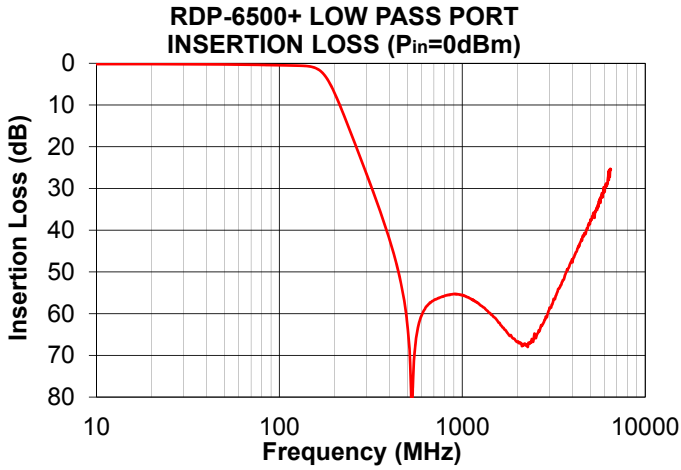
Parameter	Port	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Insertion Loss	Low Pass	DC-100	-	0.5	1.0	dB
		High Pass	1400-3500	-	0.3	1.0	
			3500-4400	-	0.5	1.2	
	Return Loss	Low Pass	4400-6500	-	1.5	3.0	dB
			DC-100	14	21	-	
		Common	1400-3000	14	20	-	
Stop Band Isolation	Low Pass	High Pass	3000-4400	10	17	-	dB
			4400-6500	-	8	-	
		DC-100	14	21	-		
	High Pass	Low Pass	1400-3000	14	20	-	dB
			3000-4400	10	17	-	
		4400-6500	-	8	-		

### Typical Performance Data at 25°C

FREQUENCY (MHz)	INSERTION LOSS (dB)			RETURN LOSS (dB)	
	Low Pass Port	High Pass Port	Common Port	Low Pass Port	High Pass Port
10	0.19	84.48	34.93	33.90	0.04
50	0.29	79.37	25.45	37.78	0.03
100	0.48	79.70	20.79	21.95	0.02
160	1.27	72.09	10.49	10.76	0.03
180	3.34	71.30	4.64	4.62	0.03
220	11.31	65.89	1.29	1.11	0.04
265	20.39	56.45	0.73	0.53	0.05
325	30.69	45.80	0.51	0.34	0.08
400	42.21	35.29	0.39	0.24	0.13
440	48.65	30.53	0.37	0.20	0.16
540	74.34	20.37	0.43	0.14	0.30
600	60.31	15.18	0.58	0.12	0.48
1000	55.58	0.54	15.15	0.07	15.62
1400	59.78	0.23	27.63	0.08	27.15
2500	65.31	0.16	26.02	0.12	30.24
3000	58.56	0.17	23.21	0.11	23.58
3500	52.50	0.22	19.13	0.08	18.81
4000	47.70	0.26	16.68	0.04	16.78
4400	43.12	0.26	16.55	0.02	17.24
5000	38.05	0.24	18.27	0.00	20.41
6000	30.82	0.68	12.61	0.08	12.67
6500	24.57	1.90	7.48	0.26	7.09

### Functional Schematic





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