

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

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Maximum Ratings

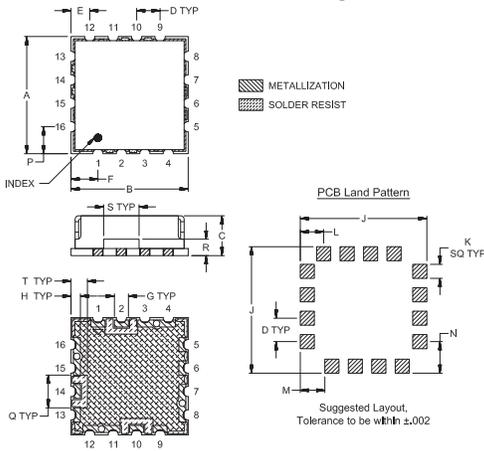
| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| Max. RF Power Input | 1.5 W |

- 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 |

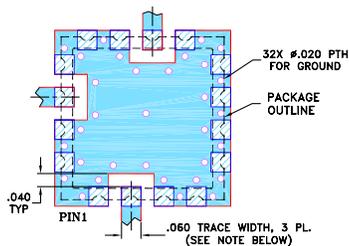
Outline Drawing



Outline Dimensions (inch/mm)

| | | | | | | | | | | |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| A | B | C | D | E | F | G | H | J | K | |
| .500 | .500 | .180 | .100 | .080 | .115 | .060 | .040 | .540 | .060 | |
| 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 | | | Wt. |
| .100 | .135 | .135 | .115 | .140 | .070 | .150 | .070 | | | grams |
| 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

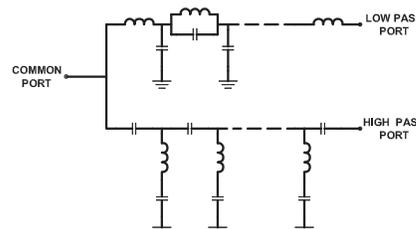
Electrical Specifications at 25°C

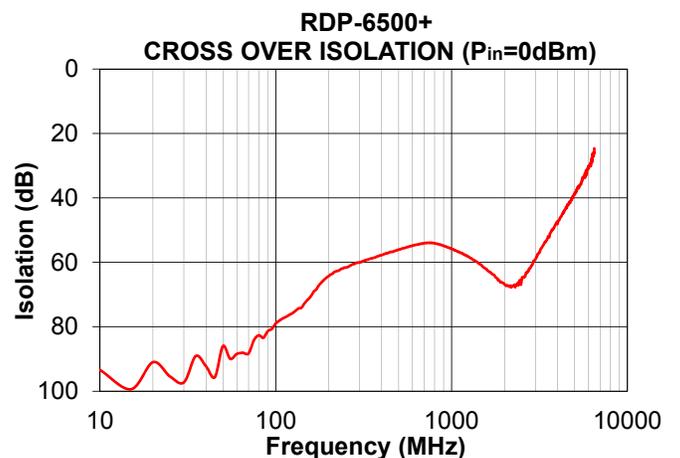
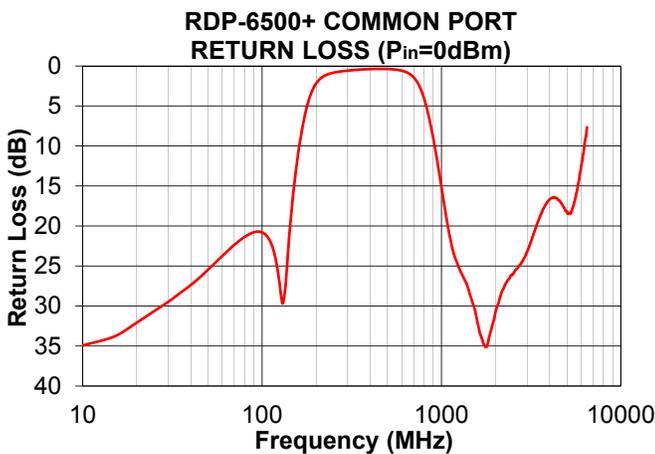
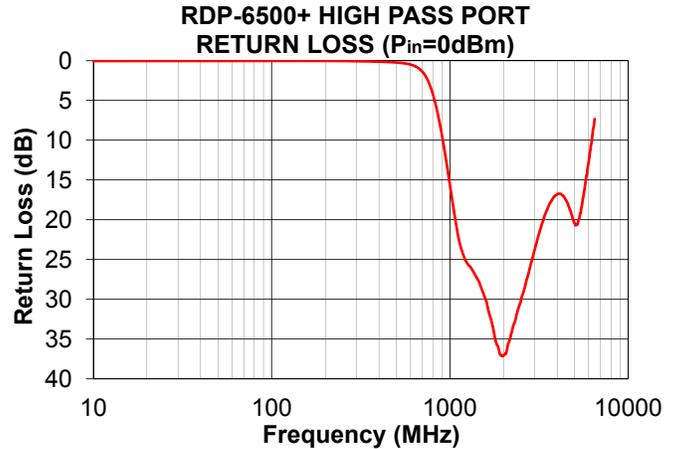
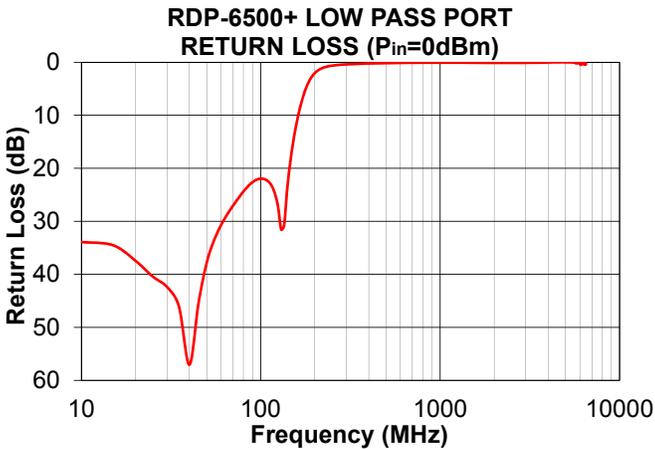
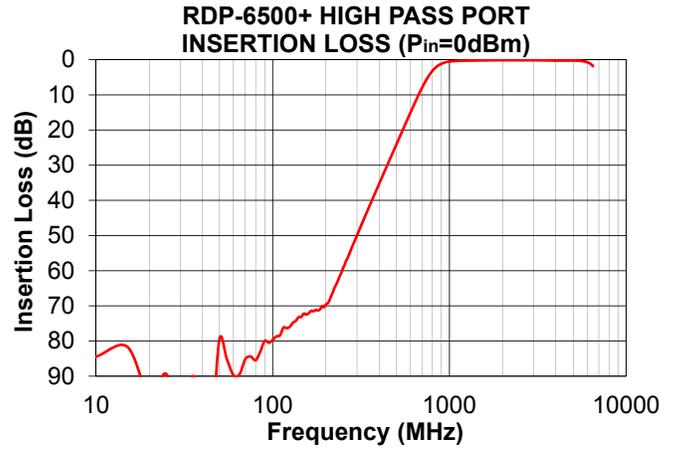
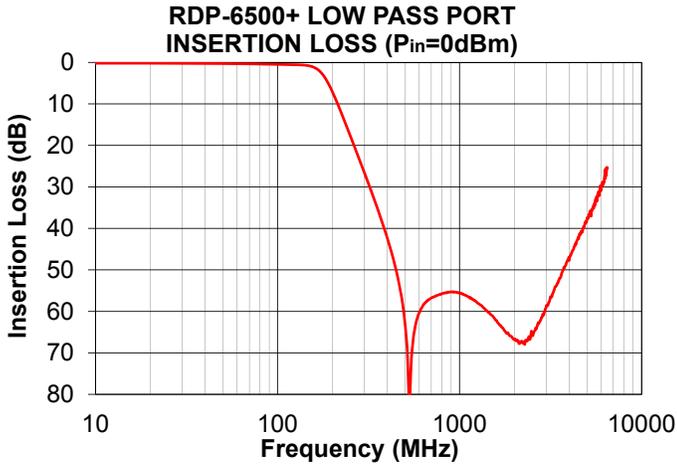
| Parameter | Port | Frequency (MHz) | Min. | Typ. | Max. | Unit | |
|---------------------|----------------|-----------------|-----------|------|------|------|----|
| Pass Band | Insertion Loss | Low Pass | DC-100 | - | 0.5 | 1.0 | dB |
| | | High Pass | 1400-3500 | - | 0.3 | 1.0 | |
| | | | 3500-4400 | - | 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 | 3000-4400 | 10 | 17 | - | dB | |
| | | 4400-6500 | - | 8 | - | | |
| | High Pass | DC-100 | 14 | 21 | - | | |
| | | 1400-2500 | 14 | 20 | - | | |
| High Pass | 3000-4400 | 10 | 17 | - | dB | | |
| | 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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