

S-Band Diplexer

Diplexer Technical Data Sheet

HBPF2.072.25-259

Features • Operating Frequency Range : S-Band • Compact size (Type III compatible) • 30W power handling capability • Low Insertion Loss • High Tx to Rx Isolation • RoHS compliant Applications • Satellite Communications • Radar Systems • Full-Duplex Radio Links	
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Overview

The **HBPF2.072.25-259** is a compact S-Band diplexer that separates TX (2200–2300 MHz) and RX (2020–2120 MHz) signal paths within a system. It provides low insertion loss (<0.95 dB), high Tx-to-Rx isolation (>80 dB), and return loss better than -17 dB across all ports. The product is housed in an aluminum enclosure with SMA connectors and it handles up to 30 W peak power over a wide temperature range, making it ideal for satellite or radar based communication applications.

Configuration

Frequency Band	S-Band
No. Of Ports	3 Ports
RF Connector	SMA Connector
Impedance	50 Ohms Fully Matched
Body Geometry	75 x 75 x 25 (in mm), 320 grams (Approx.)

Technical Specifications

Notes: Values at +25 °C

Parameter	Specification	Remarks
Frequency of Operation – Tx	2200–2300 MHz	
Frequency of Operation – Rx	2020–2120 MHz	
Insertion Loss (Tx)		
2200–2215 MHz	<0.95 dB	Over temperature
2240–2285 MHz	<0.78 dB	
2285–2300 MHz	<0.95 dB	
Insertion Loss (Rx)		
2020–2035 MHz	<0.8 dB	Over temperature
2031–2080 MHz	<0.7 dB	
2081–2120 MHz	<0.8 dB	
Return Loss (Passband)	<–17 dB	All ports
Tx to Rx Isolation	>80 dB	Over entire band
Power Handling	30 W	Peak
Temperature Stability	5 ppm/°C	100 KHz swing across Bandwidth (max)
Dimensions	75 × 75 × 25 (in mm)	Maximum size
Operating temperature	–40 to +85°C	Industrial Standard
Weight	320 g	Approx.

Absolute Maximum Ratings

Power	30 W
Operating Case Temperature	–40 °C to +85 °C
Storage Temperature	–55 °C to +100 °C

Performance Data

Notes: Measured values at their respective temperatures

The plots shown below were measured at different temperature conditions for both the Low and High Channel.

Test Condition : +25°C (Low Channel)

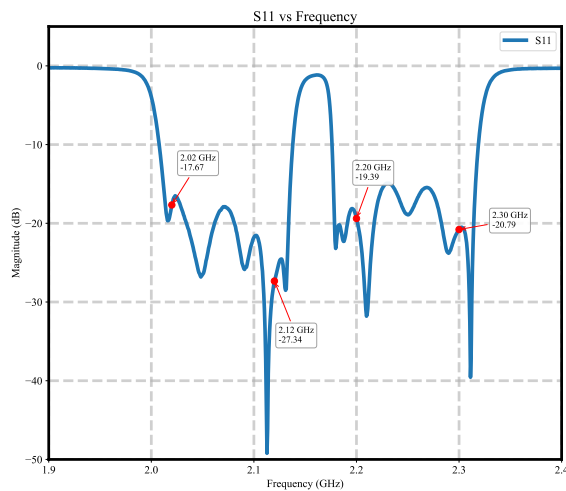


Figure 1: Common Channel Return Loss

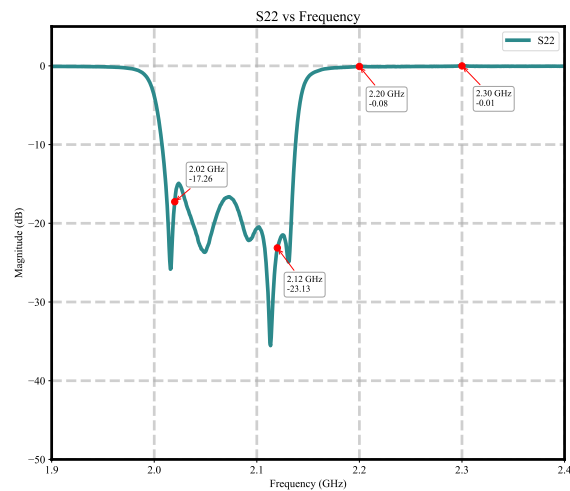


Figure 2: Rx- Low Channel Return Loss

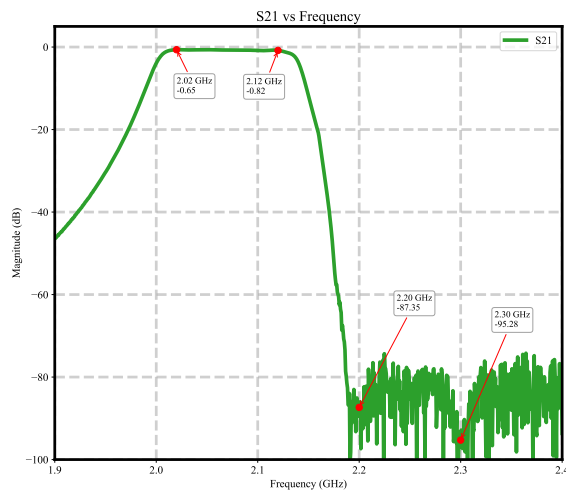


Figure 3: Low Channel Isolation Loss

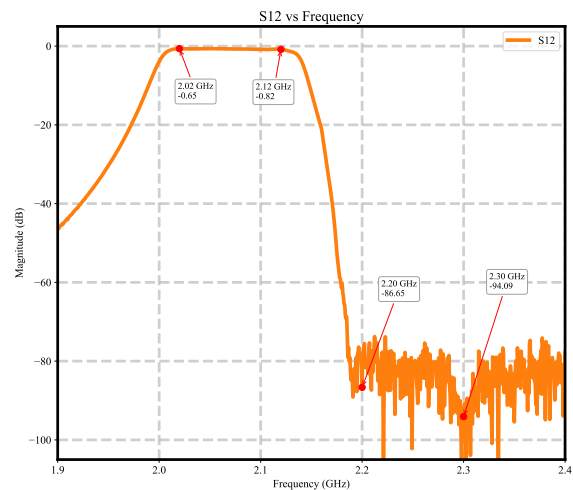


Figure 4: Low Channel Isolation

Test Condition : +25°C (High Channel)

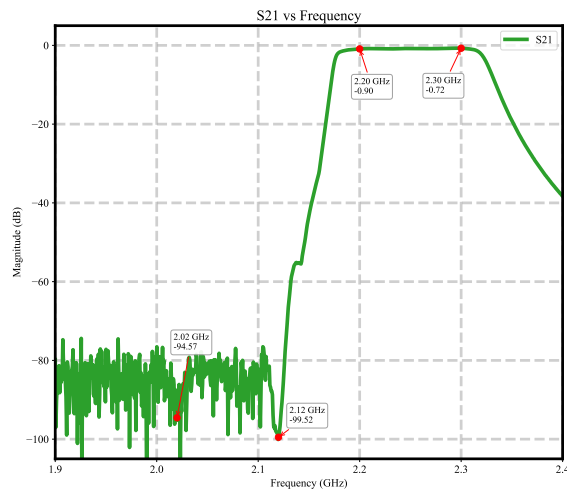


Figure 5: Tx - High Channel Isolation Loss

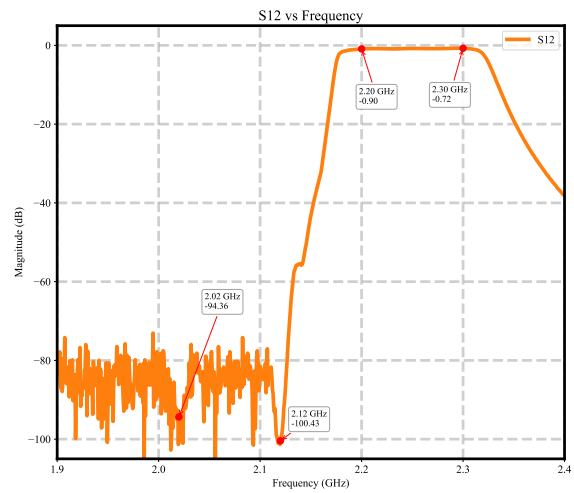


Figure 6: High Channel Insertion Loss

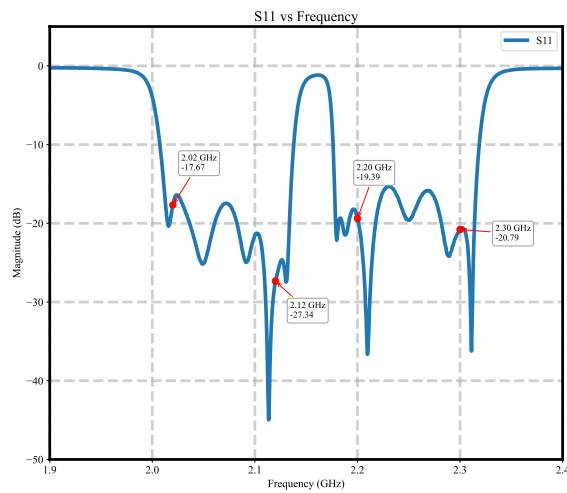


Figure 7: Common Channel Return Loss

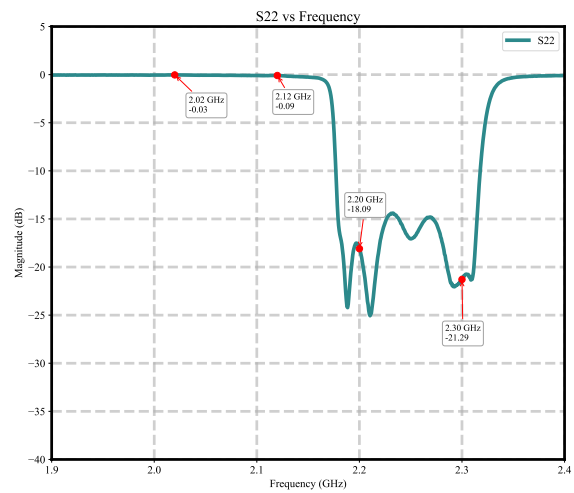


Figure 8: High Channel Return Loss

Test Condition : -25°C (Low Channel)

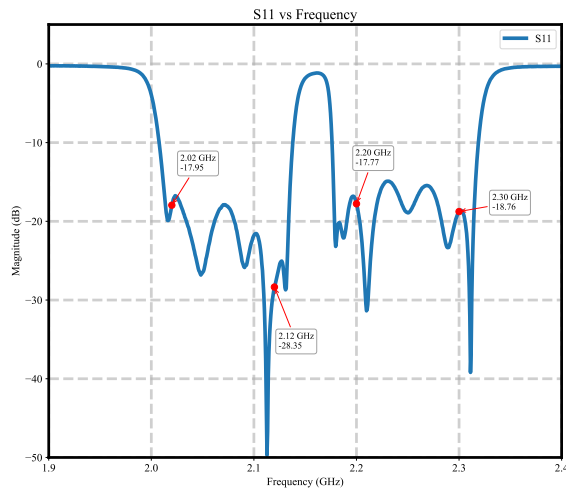


Figure 9: Common Channel Return Loss

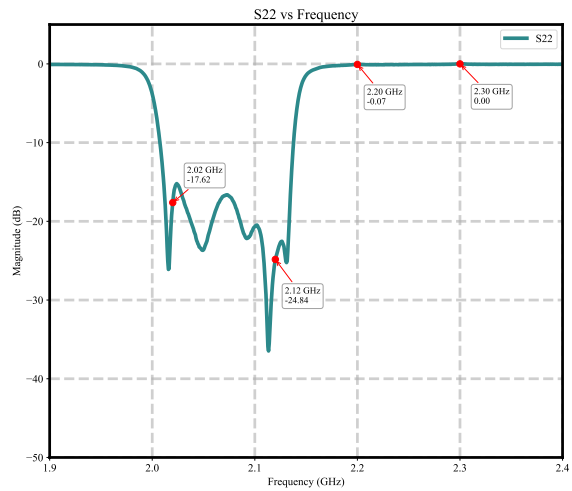


Figure 10: Rx- Low Channel Return Loss

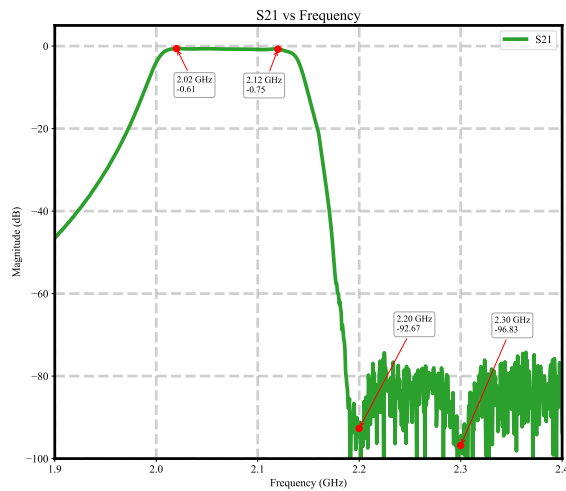


Figure 11: Low Channel Isolation Loss

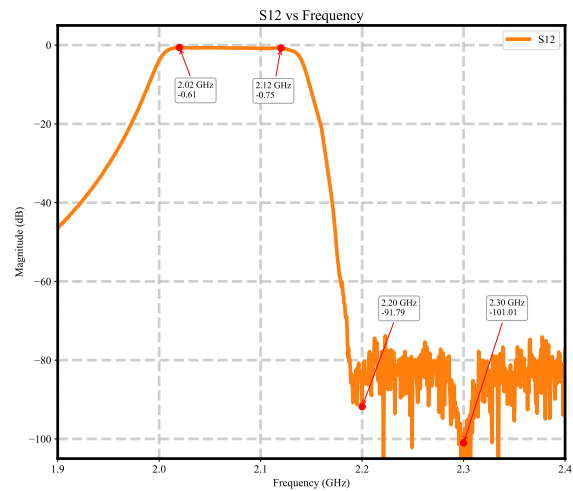


Figure 12: Low Channel Isolation

Test Condition : -25°C (High Channel)

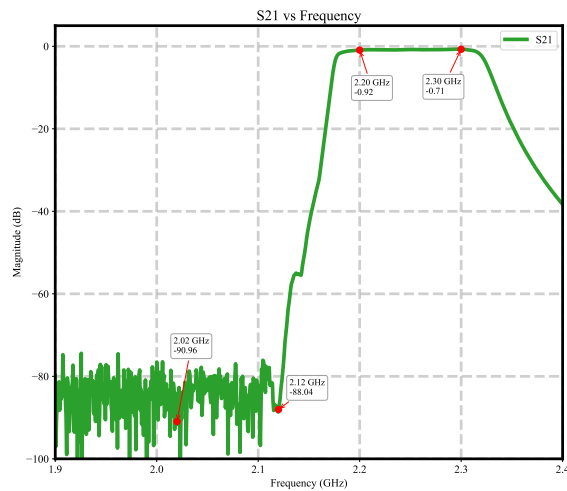


Figure 13: Tx - High Channel Isolation Loss

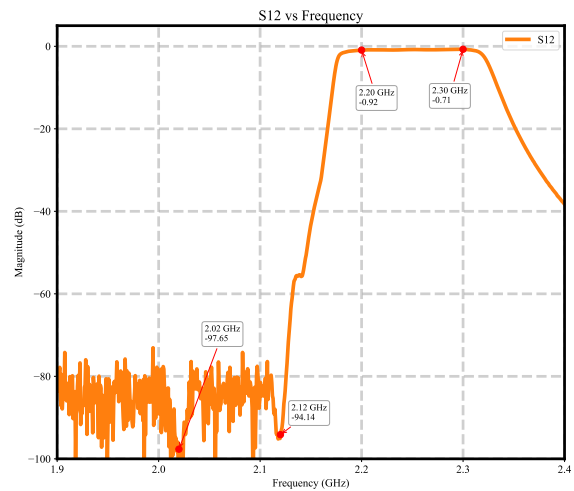


Figure 14: High Channel Insertion Loss

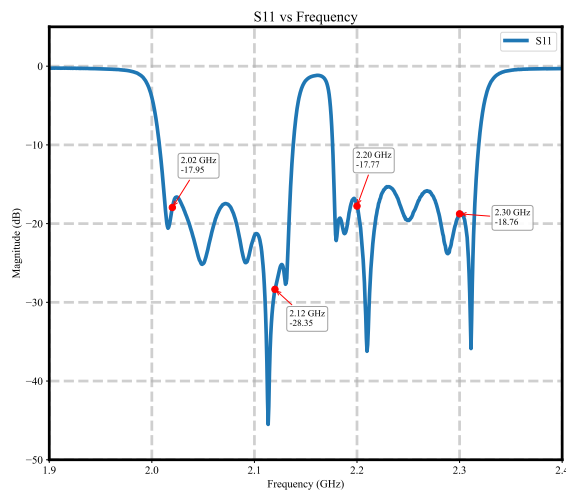


Figure 15: Common Channel Return Loss

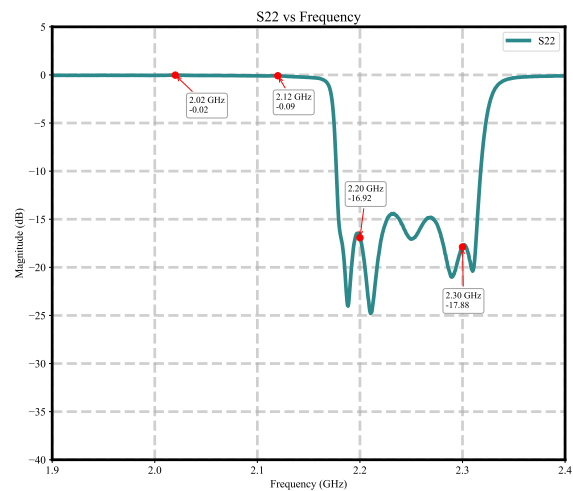


Figure 16: High Channel Return Loss

Test Condition : +80°C (Low Channel)

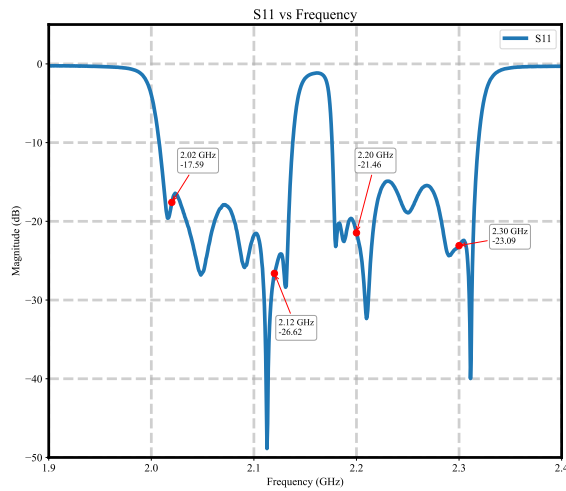


Figure 17: Common Channel Return Loss

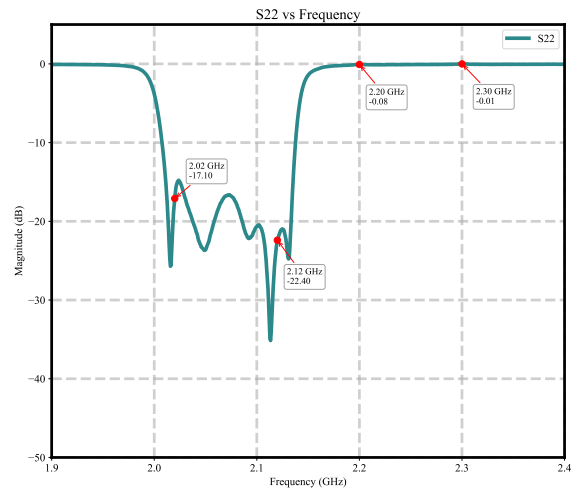


Figure 18: Rx- Low Channel Return Loss

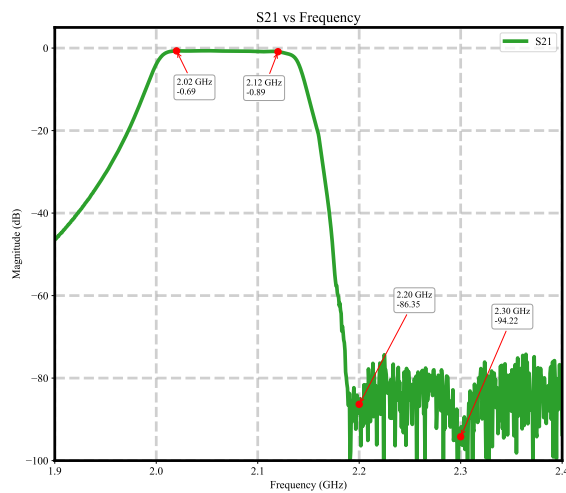


Figure 19: Low Channel Isolation Loss

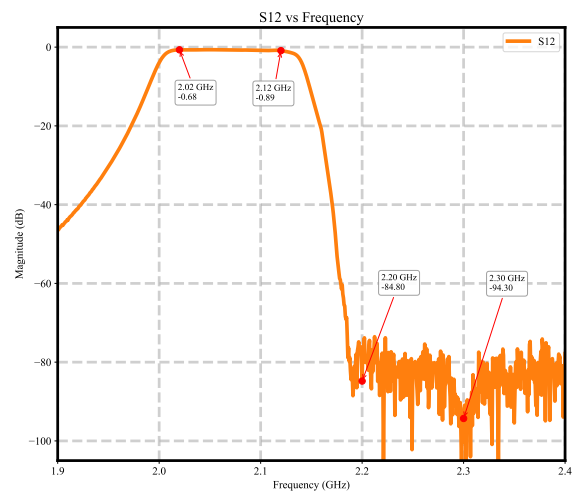


Figure 20: Low Channel Isolation

Test Condition : +80°C (High Channel)

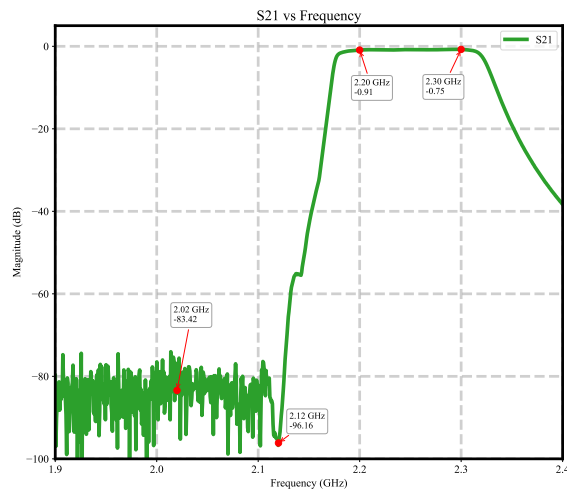


Figure 21: Tx - High Channel Isolation Loss

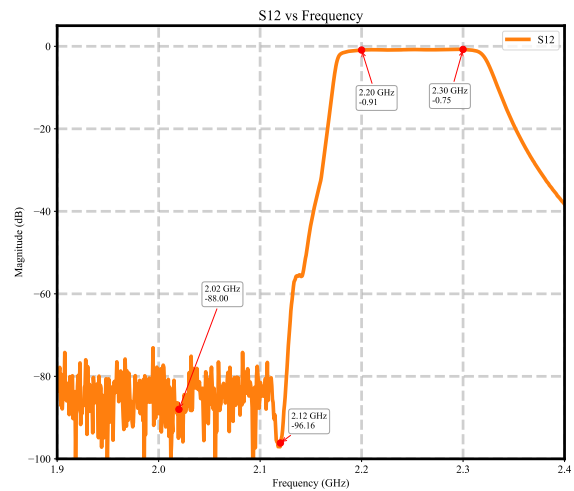


Figure 22: High Channel Insertion Loss

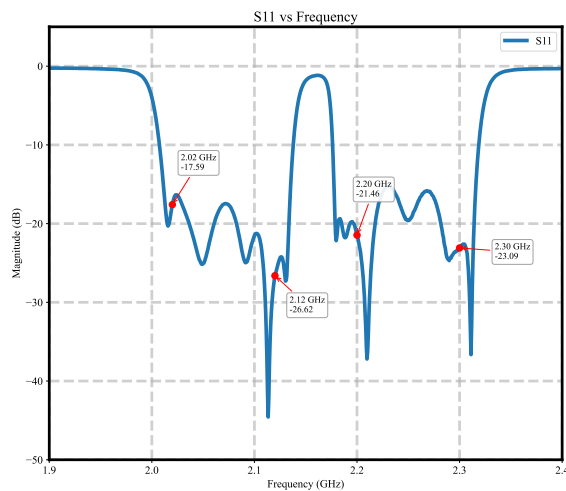


Figure 23: Common Channel Return Loss

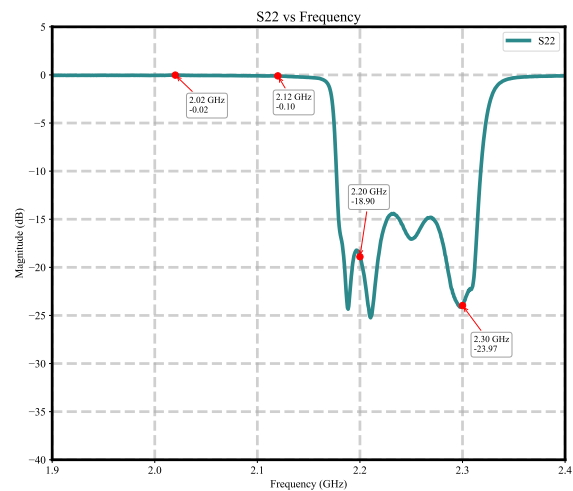
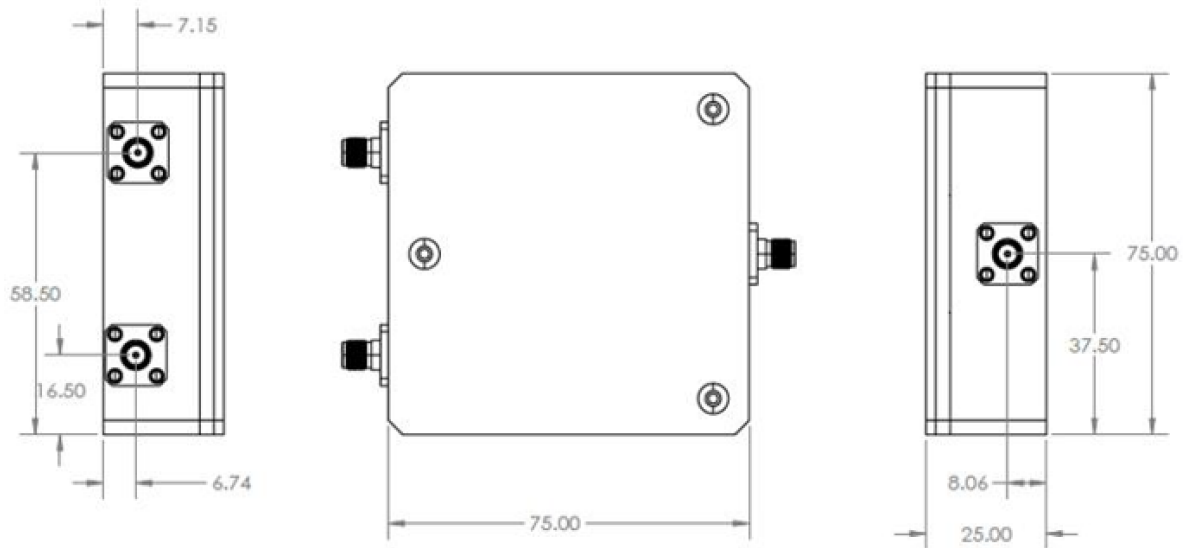


Figure 24: High Channel Return Loss

HBPF2.072.25-259 CAD Drawing



All dimensions are in mm

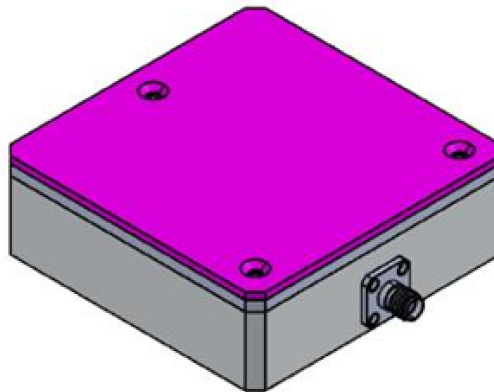


Figure 25: HBPF2.072.25-259 mechanical drawing (All units are in mm)