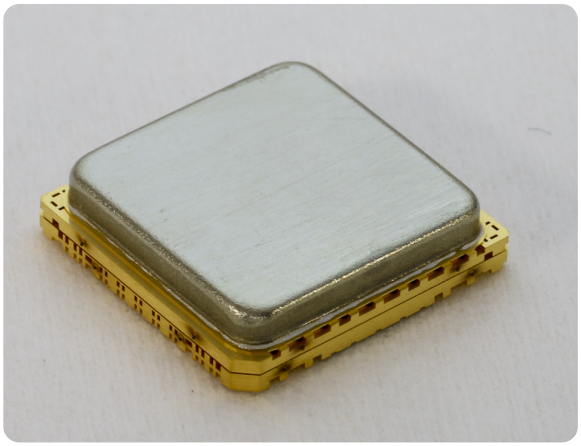
PSB1030148 Datasheet
4-Channel Switched-Filter Bank

General Description

The PSB1030148 is an 18-40GHz, 4 State, Switched Filter bank deploying low-loss, highly selective filters which are hot-switchable up to 24dBm of power input while switching at speeds <200 nsec. The 4 channels (17.5-24, 23-29.5, 28.5-35 and 34-40GHz) is configured with 1GHz of band overlap at insertion loss per channel in the <7.5dB while providing high rejection of up to 75dB. This superior performance is contained within a small footprint of 15.8 x16.3 x 4mm which is easy to integrate. It utilizes SMT launches on the bottom side of the assembly which supports industry standard solder reflow or epoxy PCB attach techniques.



Features	
Frequency Range	18–40 GHz, 4-state switched filter bank
Channel Configuration	17.5–24, 23–29.5, 28.5–35, 34–40 GHz with 1 GHz overlap
Insertion Loss	<7.5 dB per channel with high selectivity
Rejection	Up to 75 dB out-of-band
Switching Performance	Hot-switchable to 24 dBm, <20 ns switching speed
Package	15.8 x 16.3 x 4 mm, bottom-side SMT launches for reflow or epoxy attach

Applications

- Satellite Communications
- Defense
- Test & Measurement
- Telecommunications

Benefits

- Enables wideband system coverage with a single, compact filter bank, reducing the need for multiple discrete filters.
- Improves system performance and signal integrity through low insertion loss and high out-of-band rejection.
- Supports fast, dynamic frequency switching without power-down, ideal for agile EW applications.
- Handles high input power levels, simplifying system design and improving robustness.
- Reduces SWaP-C with a small, low-profile package that integrates easily into dense RF assemblies.
- Simplifies manufacturing and integration using industry-standard SMT reflow or epoxy PCB attach methods.

Performance Specifications

Table 1: RF Performance

Parameter	Freq. Range (GHz)	Min.	Typ.	Max.	Unit
Return Loss	18–40	12	15	–	dB
Ripple	18–40	–	0.24	0.25	dB
Gain Flatness	18–40	–	0.6	1.5	dB
P1dB	18–40	25	26.5	–	dBm
IP3	18–40	40	47	–	dBm

Table 2: Electrical Performance

Parameter	Min.	Typ.	Max.	Unit
Switching Time	–	60	200	ns
Digital Control Voltages:				
Low	0	0	0.8	V
High	1.2	3.3	3.45	V
Supply Voltages:				
VDD	3.15	3.3	3.45	V
VSS	-3.45	-3.3	-3.15	V

Table 3: Absolute Maximum Ratings

CW Power	25 dBm
Operating Temp.	-40°C to 105°C
Solder Reflow	260°C max. for 10 seconds, 3 cycles
Epoxy Attach	150°C max. for 90 minutes

Table 4: Channel 1 Characteristics

Parameter	Freq. Range (GHz)	Min.	Typ.	Max.	Unit
Insertion Loss	18–24	–	6	8	dB
Lower Rejection	DC–15.5	40	58	–	dB
Upper Rejection	26.6–60	65	75	–	dB

Table 5: Channel 2 Characteristics

Parameter	Freq. Range (GHz)	Min.	Typ.	Max.	Unit
Insertion Loss	23–29.5	–	6	8	dB
Lower Rejection	DC–20.5	40	58	–	dB
Upper Rejection	32–60	65	75	–	dB

Table 6: Channel 3 Characteristics

Parameter	Freq. Range (GHz)	Min.	Typ.	Max.	Unit
Insertion Loss	28.5–35	–	6.5	8.5	dB
Lower Rejection	DC–26	40	59	–	dB
Upper Rejection	37.5–60	65	75	–	dB

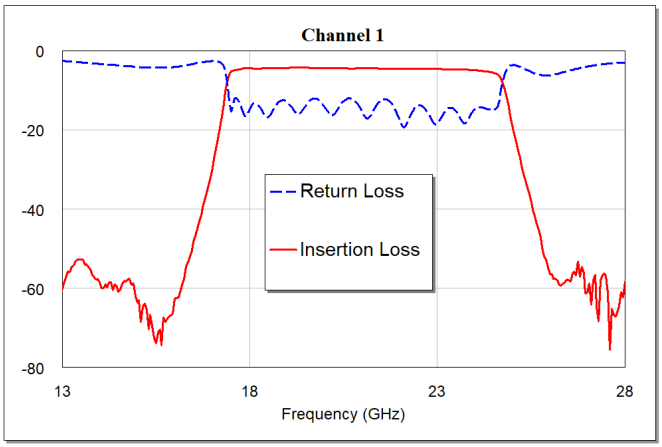
Table 7: Channel 4 Characteristics

Parameter	Freq. Range (GHz)	Min.	Typ.	Max.	Unit
Insertion Loss	34–40	–	6.5	8.5	dB
Lower Rejection	DC–31.5	40	60	–	dB
Upper Rejection	42.5–60	65	75	–	dB

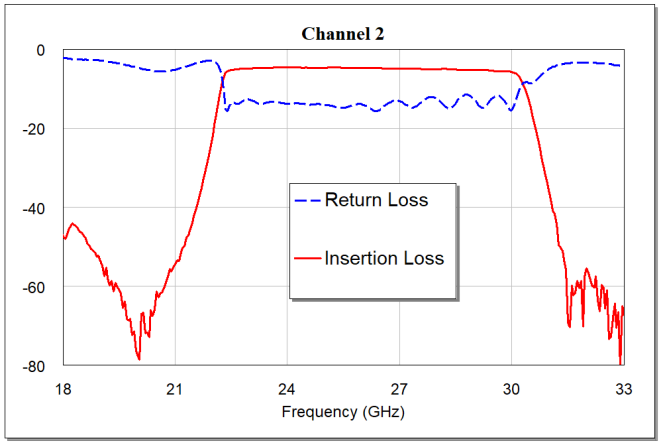
Typical Performance

Figure 1: RF performance

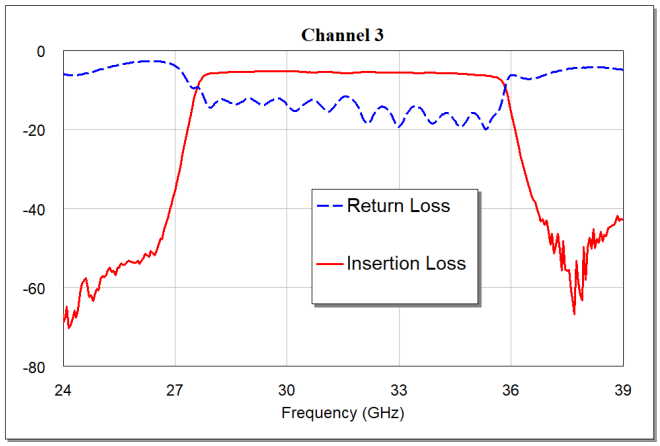
(a) Channel 1



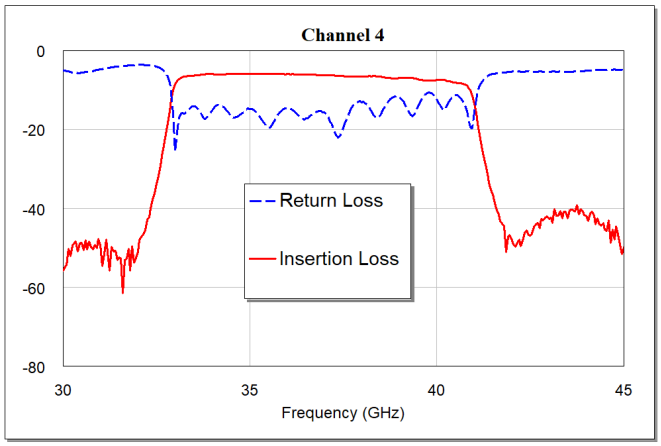
(b) Channel 2



(c) Channel 3



(d) Channel 4



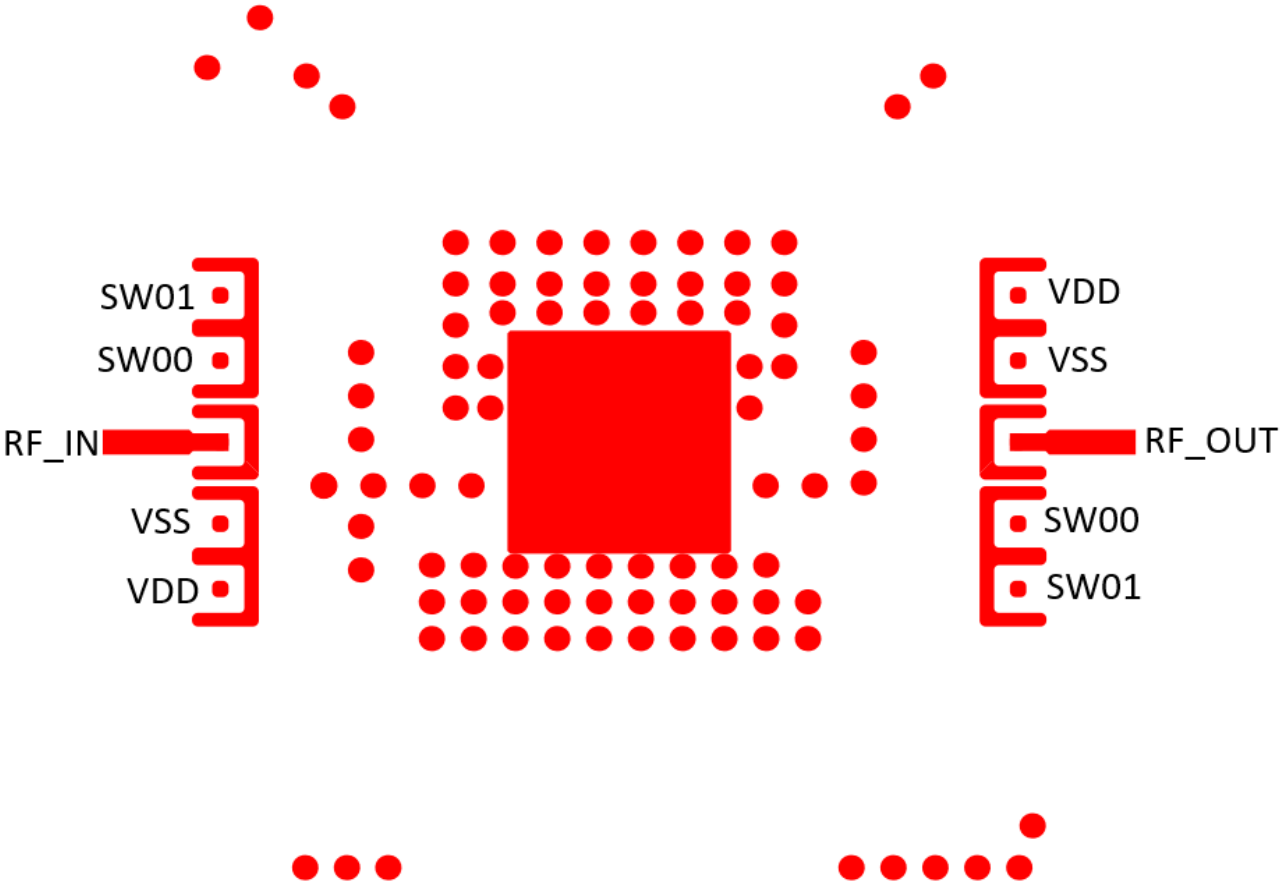
Plots above are measured, on PCB performance.

Channel Selection

Table 8: Truth Table

Channel Select	SW01	SW02
Channel 1	0	0
Channel 2	0	1
Channel 3	1	0
Channel 4	1	1

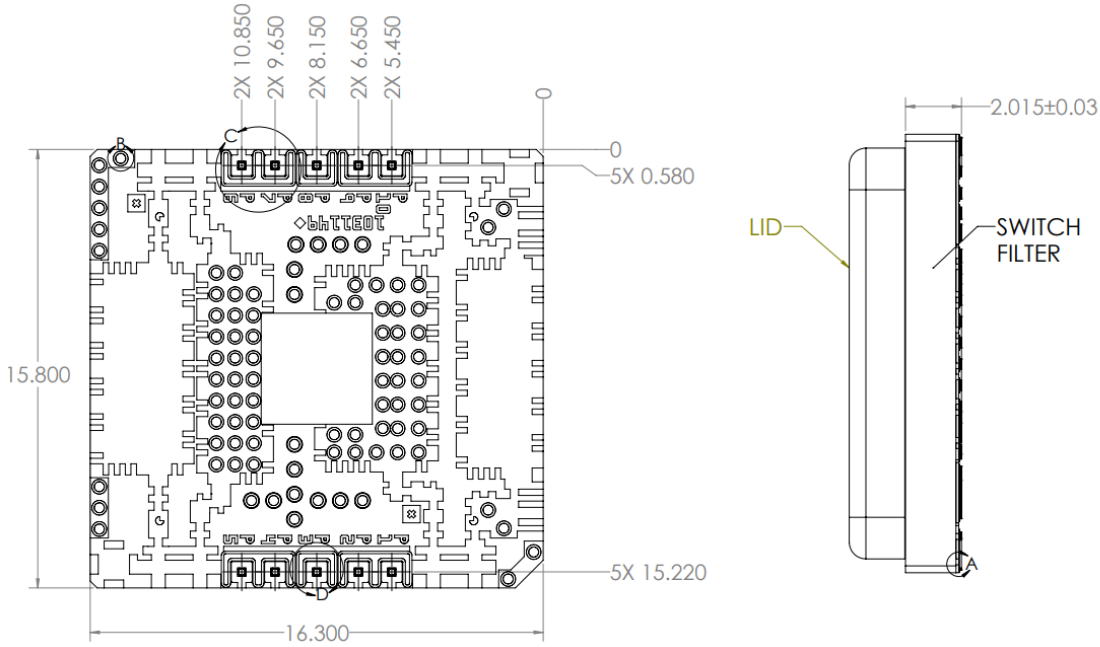
Figure 2: PSB1030148 – Top View



Mechanical Information

Figure 3: 2D Mechanical Drawing

Dimensions in mm



Additional Information

Table 9: Handling and Ordering Information

Storage	IAW IPC-4553A
ESD Sensitivity	JEDEC JS-001 Class 1C
Ordering Information	PSB1030148
Standard Packaging	Gel Pack
Alternative Packaging	Tape & Reel
Component Termination Finish	Immersion Gold

- Footprint DXF is available on request.
- Application notes on PCB integration are available at: https://www.nuvotronics.com/resources/