

## Feature

Pass Bands: 3.0GHz ~ 5.0GHz, 5.0GHz ~ 8.0GHz, 8.0GHz ~ 13.0GHz, 13GHz ~ 20GHz;

Insertion Loss in pass bands:  $\leq 10$ dB

Isolation between pass bands:  $\geq 30$ dB

Size: 4x3x0.15mm

## Description

This device is a FET switch filter bank MMIC based on GaAs processing. Adopt +5V/0V logic control, switching time is less than 30ns typ. It has low loss, excellent isolation, and high integration.

The metallization processing of thru-holes on the plate ensures good grounding. Extra grounding measures aren't required, which is easy for application. The back metallization is suitable for eutectic sintering or conductive adhesive sticking processes.

## Absolute Rating

Control Voltage	-1V~+5V
Input Power	27dBm
Storage Temperature	-65~+150°C
Operating Temperature	-55~+125°C

## Electrical Specifications 1 ( $T_A = +25^\circ\text{C}$ )

Spec.	Pass band 1	Pass band 2	Unit
Freq. Range	3.0~5.0	5.0~8.0	GHz
Insertion Loss	$\leq 10$	$\leq 9$	dB
Rejection	$\geq 20@1.8\text{GHz}\&5.9\text{GHz}$	$\geq 20@3\text{GHz}\&9.5\text{GHz}$	dBc
	$\geq 30@1.3\text{GHz}\&6.1\text{GHz}$	$\geq 30@2.5\text{GHz}\&9.8\text{GHz}$	dBc
VSWR	$\leq 2$		—

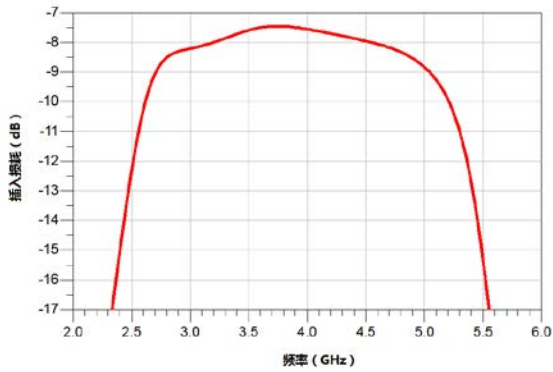
## Electrical Specifications 2 ( $T_A = +25^\circ\text{C}$ )

Spec.	Pass band 3	Pass band 4	Unit
Freq. Range	8.0~13.0	13~20	GHz
Insertion Loss	$\leq 10$	$\leq 10$	dB
Rejection	$\geq 20@6.6\text{GHz}\&15.2\text{GHz}$	$\geq 20@9.4\text{GHz}\&24.4\text{GHz}$	dBc
	$\geq 30@6.3\text{GHz}\&15.5\text{GHz}$	$\geq 30@8.4\text{GHz}\&24.9\text{GHz}$	dBc
VSWR	$\leq 2$		—

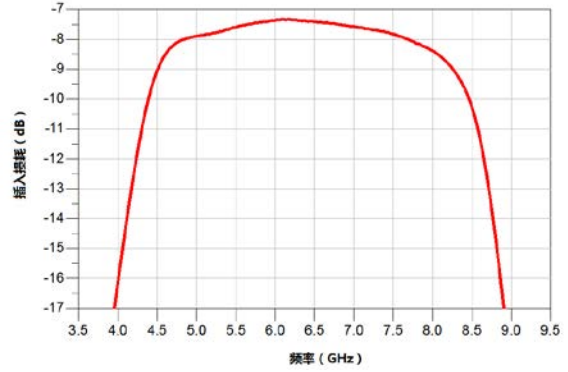
S2P file name: PDSBF-3\_20-4.s2p

## Typical Test Curves

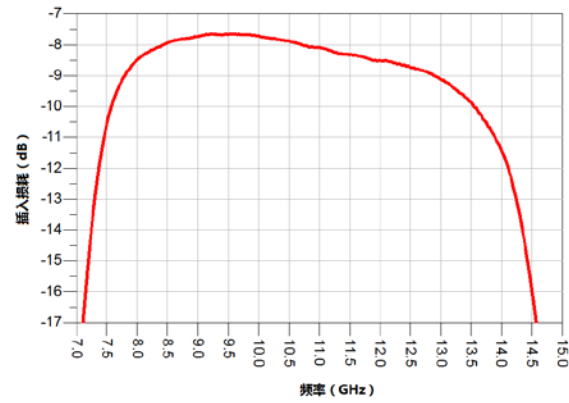
Pass band 1 Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



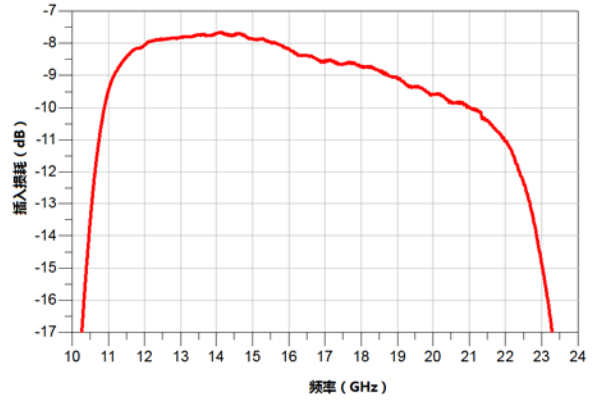
Pass band 2 Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



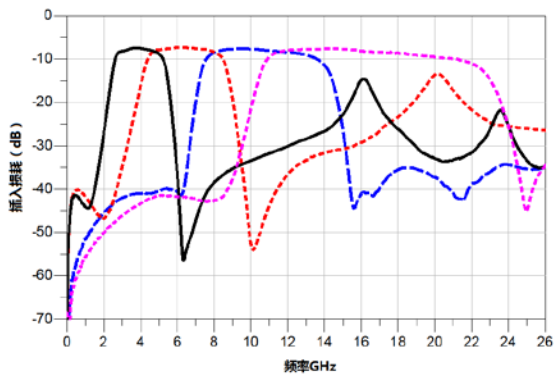
Pass band 3 Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



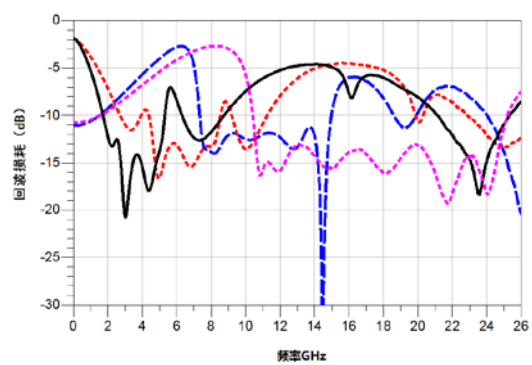
Pass band 4 Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



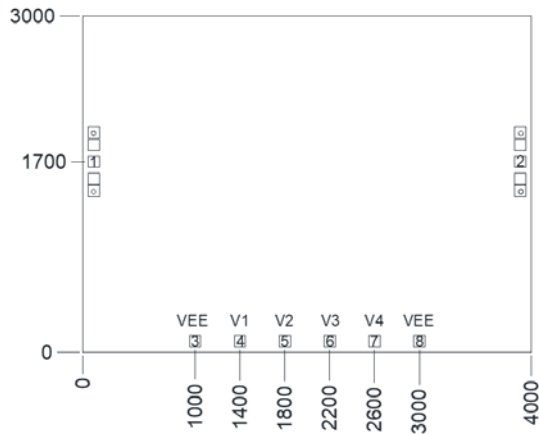
Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



Return Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



## Mechanical Specification



## Truth Table

Control Voltage (VEE=-5V)				Pass bands
V1	V2	V3	V4	
0	1	1	0	3.0GHz~5.0GHz
1	0	1	0	5.0GHz~8.0GHz
0	1	0	1	8.0GHz~13.0GHz
1	0	0	1	13GHz~20GHz

Status: Low (0) 0V; High (1) +5V

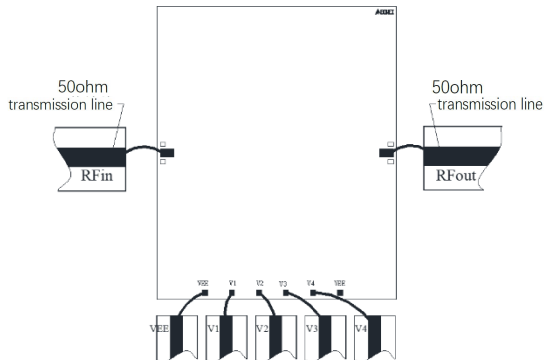
## PINS Definitions

Pin No.	Symbol	Description
1, 2	RFin, RFout	RF Input, RF Output
4, 5, 6, 7	V1, V2, V3, V4	Control ports

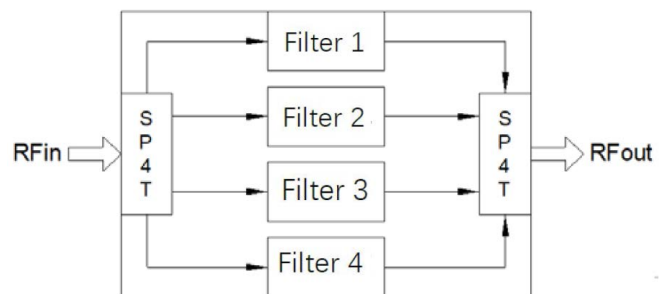
Notes:

1. Dimensions are μm. Tolerance: ±0.05mm
2. Die thickness is 0.1mm
3. Typical bond pad is 100μm \*100μm, which is 50μm away from chip edge.
4. The bottom of the device is gold plated, should be grounded.

## Recommended Assembly Diagrams



## Functional Diagram



## Application Notes:

1. The chip is back-metallized and can be die-mounted with AuSn eutectic preforms or with electrically conductive epoxy.
2. The die should be assembled on carriers like Kovar or Mu-Cu which have same Coefficient of thermal expansion. (5.8×10-6/ ) with GaAs.
3. Recommend using Φ25μm Au wire for bonding, whose length is around 200μm.
4. Sinter by AuSn (80/20), which doesn't exceed 300°C within 30 seconds max.
4. Handle the chips in a clean environment. DO NOT attempt to clean the chip using liquid cleaning systems.
5. Handle the chip along the edges with a vacuum collet or with a sharp pair of bent tweezers.
6. The device is sensitive to ESD. ESD protection is required during storage and usage.
7. If you have any questions, please contact us.