

## Feature

Pass Bands: 16GHz ~ 17GHz, 18GHz ~ 19GHz, 20GHz ~ 21GHz;

Insertion Loss in pass bands:  $\leq 11$ dB

Isolation between pass bands:  $\geq 30$ dB

Size: 4.6x4.1x0.15mm

## 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	-1.5V~+6V
Input Power	30dBm
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	16~17	18~19	GHz
Insertion Loss	$\leq 11$	$\leq 11$	dB
Rejection	$\geq 30@7\text{GHz}-14\text{GHz}$	$\geq 30@7\text{GHz}-14\text{GHz}$	dBc
	$\geq 25@18\text{GHz}-30\text{GHz}$	$\geq 25@18\text{GHz}-30\text{GHz}$	dBc
VSWR	$\leq 1.8$		—

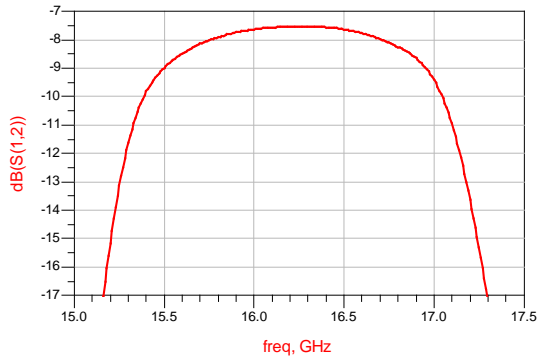
## Electrical Specifications 2 ( $T_A = +25^\circ\text{C}$ )

Spec.	Pass band 3	Unit
Freq. Range	20~21	GHz
Insertion Loss	$\leq 11$	dB
Rejection	$\geq 30@7\text{GHz}-18\text{GHz}$	dBc
	$\geq 25@22\text{GHz}-30\text{GHz}$	dBc
VSWR	$\leq 1.8$	—

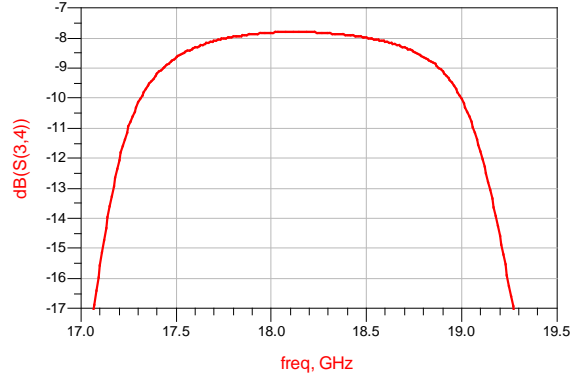
S2P file name: BWSBF-16\_21-3.s2p

## Typical Test Curves

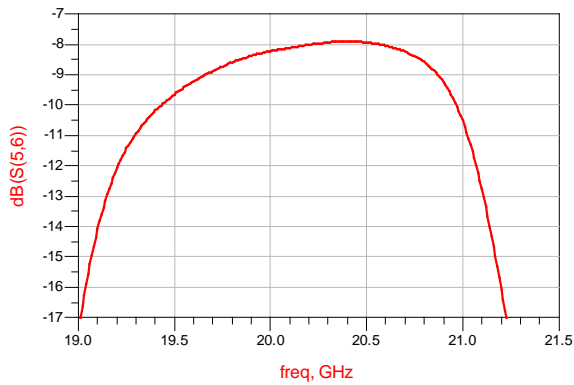
Pass band 1 Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



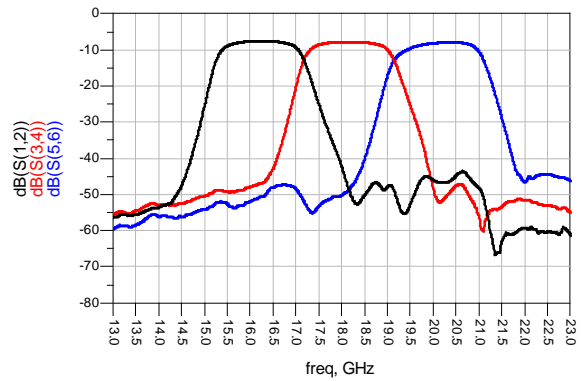
Pass band 2 Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



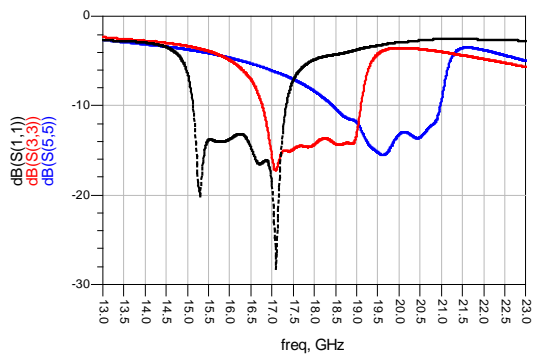
Pass band 3 Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



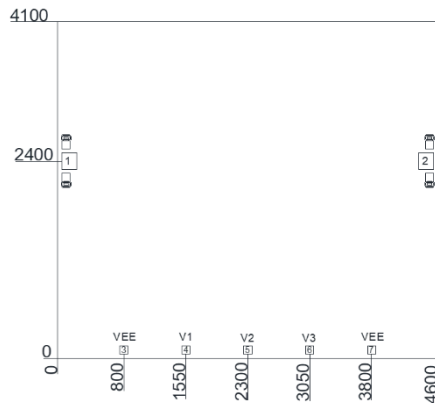
Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



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



## Mechanical Specification



## Truth Table

Control Voltage(V <sub>EE</sub> = -5V)			Pass bands
V1	V2	V3	
0V	5V	5V	16~17GHz
5V	0V	5V	18~19GHz
5V	5V	0V	20~21GHz

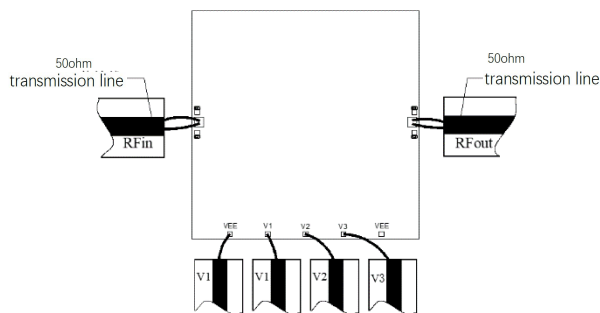
## PINS Definitions

Symbol	Description
RF1, RF2	RF Input, RF Output
V1, V2, V3	Control ports
VEE	Power Supply ports

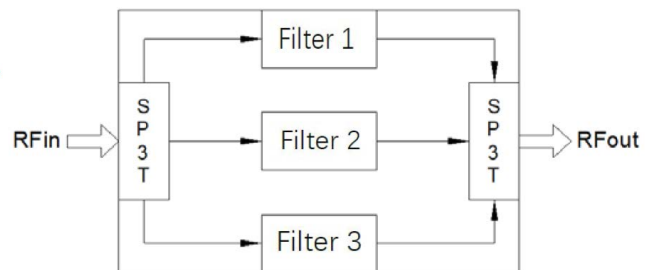
Notes:

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. ( $5.8 \times 10^{-6}/$ ) with GaAs.
3. Recommend using  $\Phi 25\mu\text{m}$  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.