

## Feature

Pass Bands: 24GHz ~ 28GHz, 28GHz ~ 32GHz, 32GHz ~ 36GHz, 36GHz ~ 40GHz;

Insertion Loss in pass bands:  $\leq 12$ dB

Isolation between pass bands:  $\geq 30$ dB

Size: 4.4x5.4x0.1mm

## 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	24~28	28~32	GHz
Insertion Loss	$\leq 9.3$	$\leq 9.5$	dB
Rejection	$\geq 20@21.57\text{GHz}\&30.2\text{GHz}$	$\geq 20@25.2\text{GHz}\&34.2\text{GHz}$	dBc
	$\geq 30@21\text{GHz}\&30.6\text{GHz}$	$\geq 30@24.4\text{GHz}\&34.6\text{GHz}$	dBc
VSWR	$\leq 2$		—

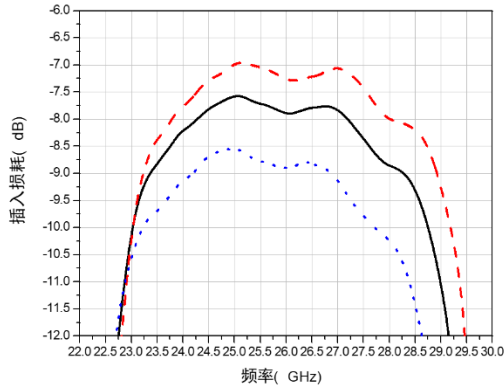
## Electrical Specifications 2 ( $T_A = +25^\circ\text{C}$ )

Spec.	Pass band 3	Pass band 4	Unit
Freq. Range	32~36	36~40	GHz
Insertion Loss	$\leq 12$	$\leq 10.5$	dB
Rejection	$\geq 20@30\text{GHz}\&38.4\text{GHz}$	$\geq 20@33\text{GHz}\&42.5\text{GHz}$	dBc
	$\geq 30@29\text{GHz}\&39\text{GHz}$	$\geq 30@32.5\text{GHz}\&43.1\text{GHz}$	dBc
VSWR	$\leq 2$		—

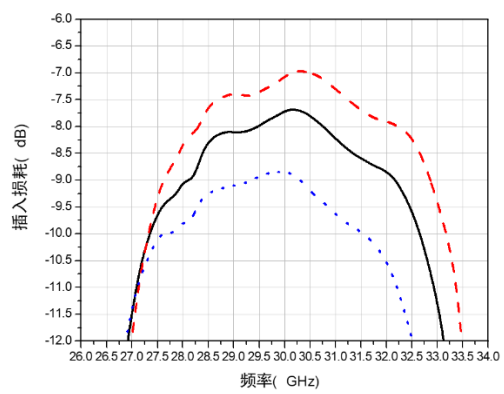
S2P file name: BWSBF-24\_40-4.s2p

## Typical Test Curves

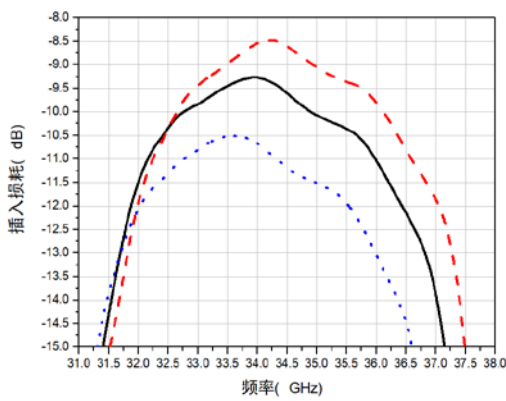
Pass band 1 Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



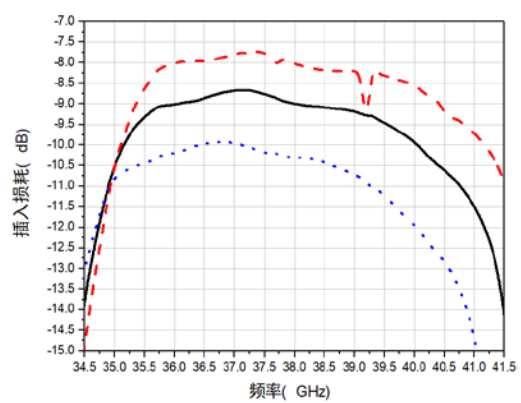
Pass band 2 Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



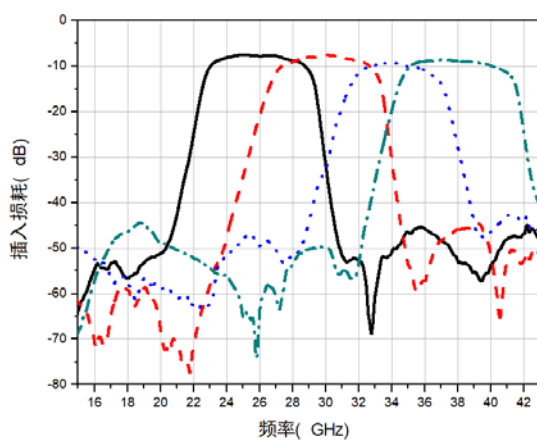
Pass band 3 Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



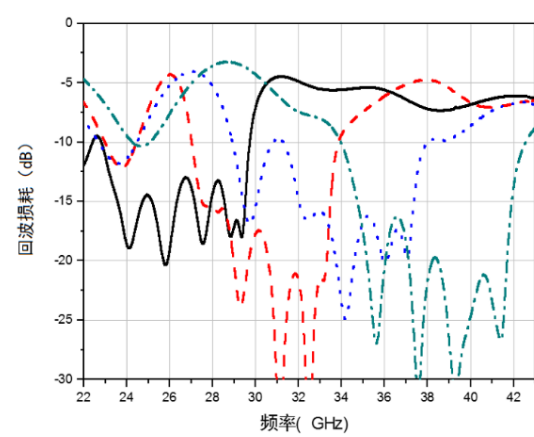
Pass band 4 Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



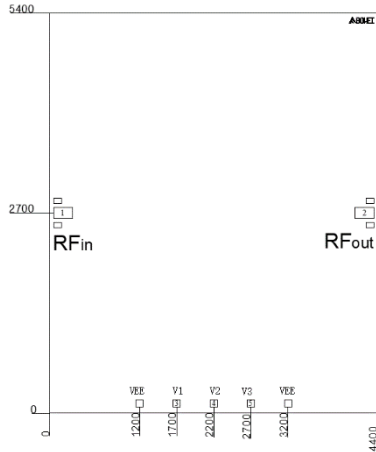
Insertion Loss VS Frequency ( $T_A=25^\circ\text{C}$ )



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



### Mechanical Specification



### Truth Table

Control Voltage (VEE=-5V)			Pass bands
V1	V2	V3	
0	0	0	24GHz~28GHz
1	0	1	28GHz~32GHz
0	0	1	32GHz~36GHz
1	1	1	36GHz~40GHz
Status: Low (0) 0V; High (1) +5V			

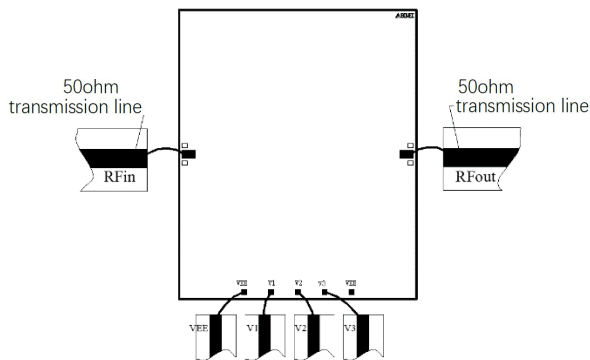
### PINS Definitions

Pin No.	Symbol	Description
1, 2	RFin, RFout	RF Input, RF Output
3, 4, 5	V1, V2, V3	Control ports

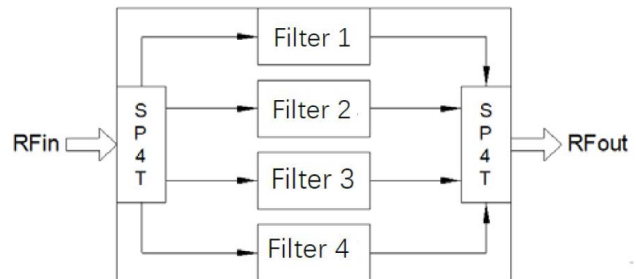
Notes:

1. Dimensions are um. Tolerance:  $\pm 0.05\text{mm}$
2. Die thickness is 0.1mm
3. Typical bond pad is 100um \*100um, which is 50um 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. ( $5.8 \times 10^{-6}/^\circ\text{C}$ ) with GaAs.
3. Recommend using  $\Phi 25\text{um}$  Au wire for bonding, whose length is around 200um.
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.