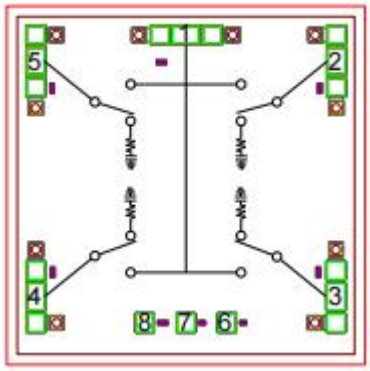
★1.Product Features

- Frequency range: DC~12 GHz
- Insertion loss: 2.5 dB
- Isolation: 45 dB
- Control voltage: 0/-5 V
- Switching time: 20 ns
- Chip size: 2.06 mm × 2.06 mm × 0.1 mm
- Replacement for: HMC344

Functional Block Diagram



★2.Product Introduction

The TFSW447-H is an absorptive single-pole, four-throw (SP4T) switch, supplied as a bare die measuring 2.06 mm × 2.06 mm. It operates across a frequency range of DC to 12 GHz, with a typical insertion loss of 2.5 dB and an isolation greater than 45 dB. The device features an integrated 2-to-4 decoder circuit and utilizes control voltage levels of 0 V and -5 V. This chip serves as a functional replacement for the HMC344 (an overseas-manufactured model).

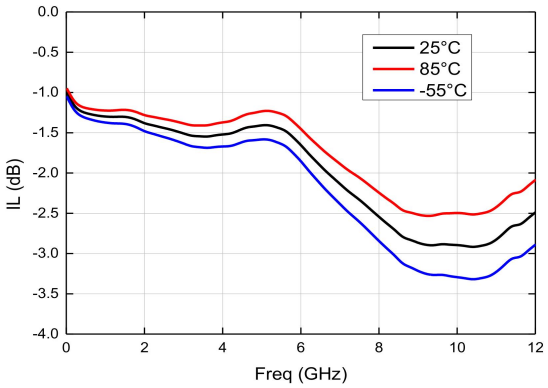
The center pad on the backside of the die serves as the ground reference and must be well-grounded during operation.

★3.Electrical Characteristics (TA = +25°C, 50Ω system, 0/-5V control)

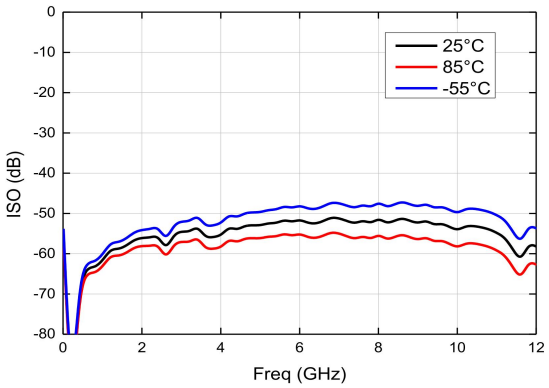
Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	Freq	DC*	—	12	GHz
Insertion Loss	IL	—	2.5	—	dB
Isolation	ISO	45	47	—	dB
Input Return Loss	RL_in	—	-15	—	dB
On-state Output Return Loss RF1~RF4	RL_out	—	-15	—	dB
Off-state Output Return Loss RF1~RF4	RL_out	—	-15	—	dB
Switching Time 10%RF to 90%RF	Ts	—	20	—	ns
* The DC blocking capacitors in the typical test curves are 330 pF.					

★4.Typical Test Curve

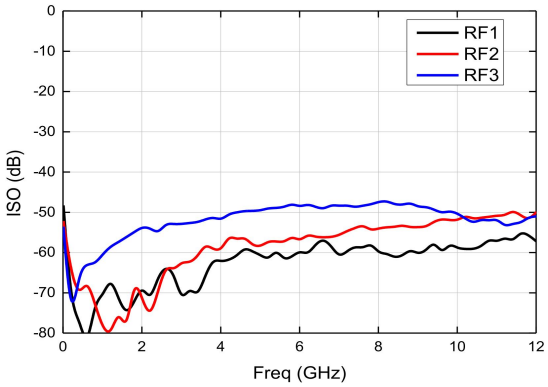
Insertion Loss vs. Frequency



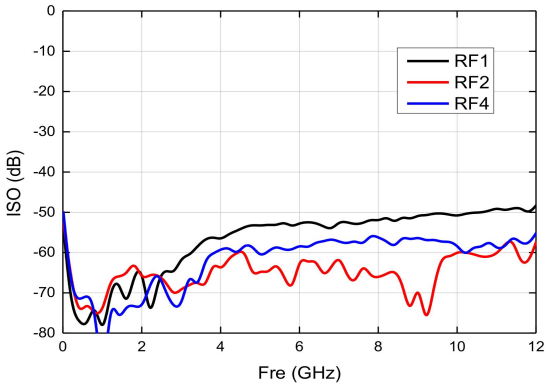
RF1 Isolation vs. Frequency



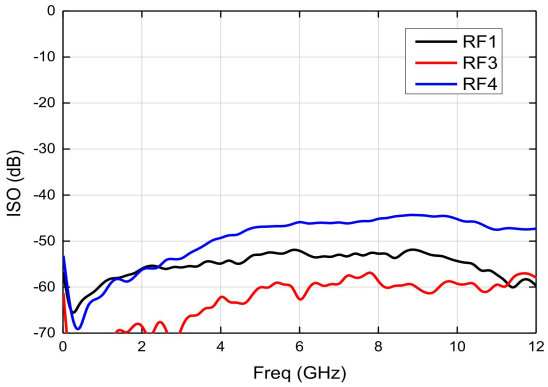
00-state Isolation vs. Frequency



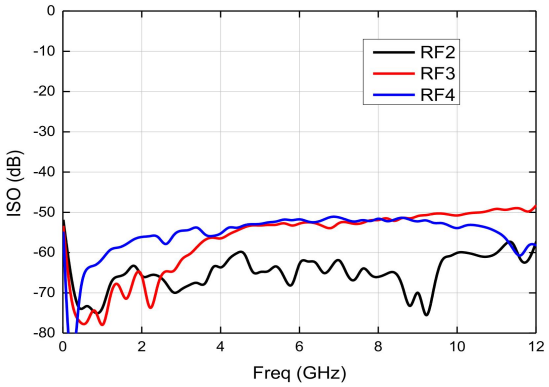
01-state Isolation vs. Frequency



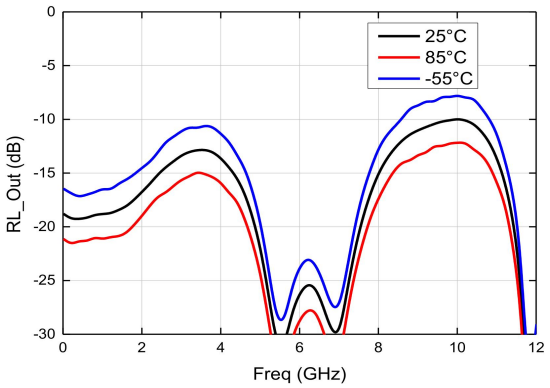
10-state Isolation vs. Frequency



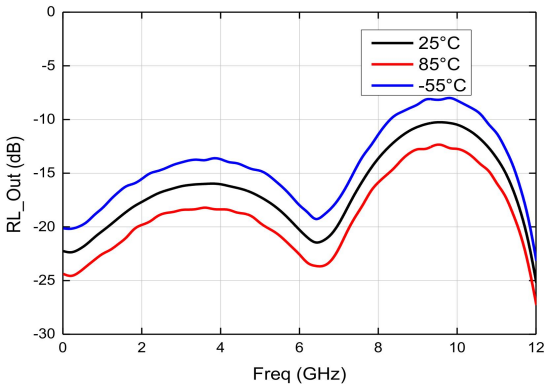
11-state Isolation vs. Frequency



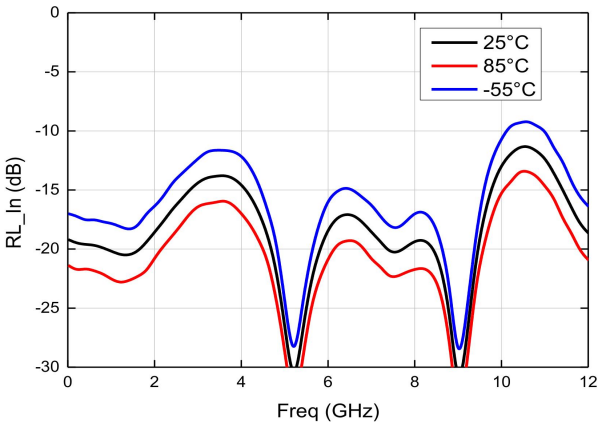
On-state Output Return Loss vs. Frequency



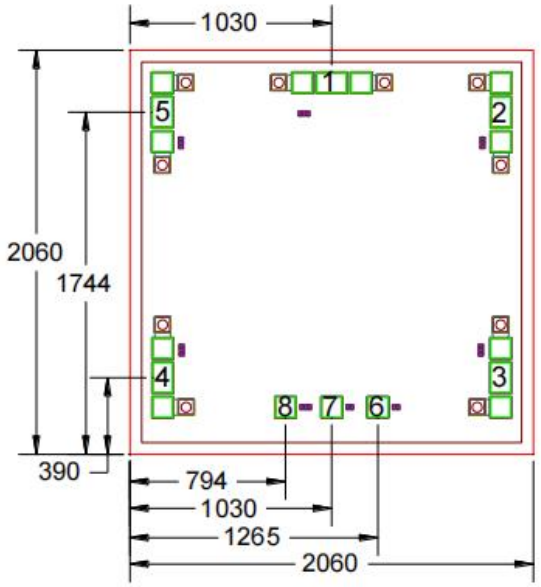
Off-state Output Return Loss vs. Frequency



Input Return Loss vs. Frequency



★5.Outline Dimensions



Notes:

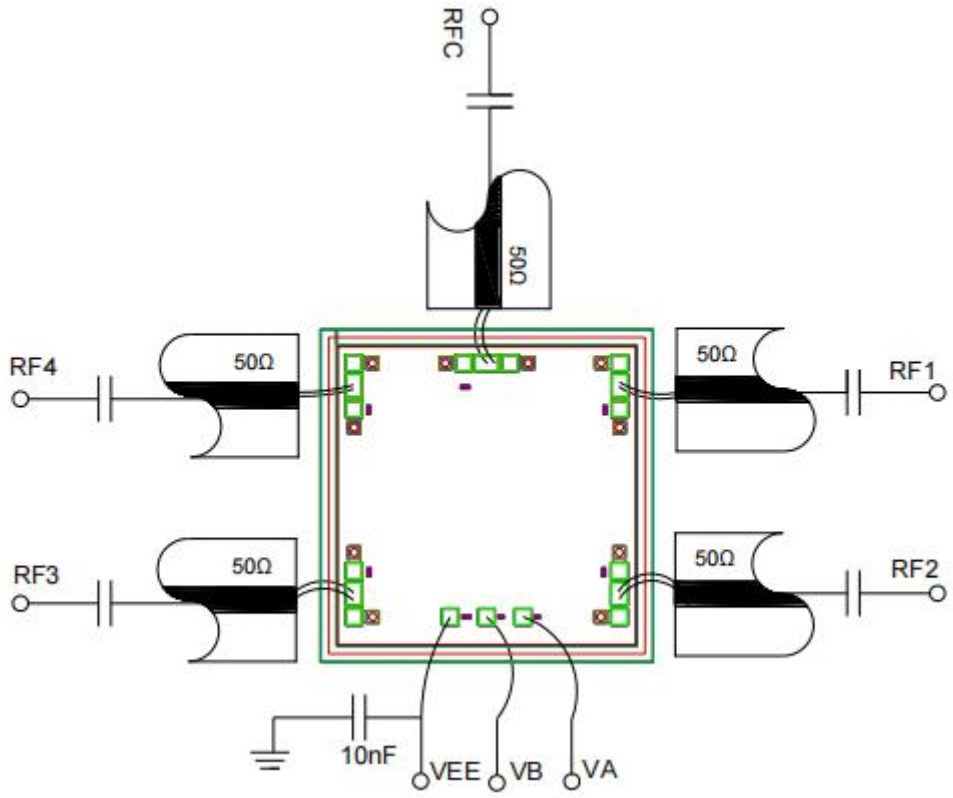
1. Unit: μm
2. Chip backside is gold-plated for grounding.
3. RF1~RF4/RFC pad size: 150 μm × 100 μm.
4. VA/VB/VEE pad size: 100 μm × 100 μm.

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★6.Bonding Pressure Point Definition

Pressure Point Number	Function Definition	Function Description
1	RFC	RF signal input port, external DC blocking capacitor required.
2	RF1	RF output port 1, external DC blocking capacitor required.
3	RF2	RF output port 2, external DC blocking capacitor required.
4	RF3	RF output port 3, external DC blocking capacitor required.
5	RF4	RF output port 4, external DC blocking capacitor required.
6	VA	Control input port A.
7	VB	Control input port B.
8	VEE	DC supply port (-5 V).

★7.Suggested Assembly Drawing



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Operating Voltage

VEE	IEE Typ.	IEE Max.
-5 V	5 mA	7 mA

Control Level

State	Level Range
Low	0 V
High	-5 V

Truth Table

Supply Voltage	Control Input		Switching State			
VEE	VB	VA	RF1	RF2	RF3	RF4
-5 V	Low	Low	OFF	OFF	OFF	ON
-5 V	Low	High	OFF	OFF	ON	OFF
-5 V	High	Low	OFF	ON	OFF	OFF
-5 V	High	High	ON	OFF	OFF	OFF

★8.Precautions

Parameter	Limit Value
Input Power (Pin, 50Ω)	+30 dBm
Supply Voltage (VEE)	-5.5 V
Storage Temperature	-65℃~+150℃
Operating Temperature	-55℃~+85℃
Sintering Temperature (30s, N_2 Protection)	300℃
Exceeding any of the above conditions may cause permanent damage to the chip.	



This product is sensitive to static electricity.

Please take precautions against static electricity during use.