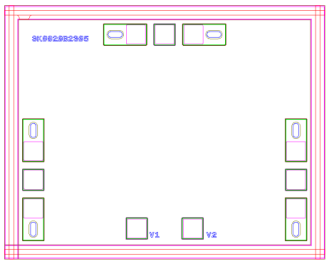
**AMT2301**
**0.1 – 2GHz SPDT Switch Chip**



**Key Features :**

- Frequency range : 0.1 – 2GHz
- Insertion loss : 0.3dB
- Isolation : 45dB
- Input/output standing wave : 1.2
- Input P-0.3 : 46dBm
- Switching time : 20ns
- Control method : 0/-40V
- Chip dimensions : 1.6mm x 1.25mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

**Description :**

AMT2301 chip is a reflection SPDT switch chip (MMIC), the design is based on Gallium Nitrate (GaN) HEMT process, with ground through metal via on the back technology. All chip products are 100% RF tested. The chip uses 0V, -40V level control, typical insertion loss 0.3dB, isolation 45dB, Input/Output VSWR 1.2, and switching time is 20ns.

**Absolute Maximum Ratings**

| Symbol | Parameter | Value | Remark |
|---|---|---|---|
| V1, V2 | Control Voltage | 0.6V/-50V | |
| Pin | Input Power | 48dBm | |
| Tm | Sintering Temperature | 310 °C | 30s, $N_2$ protection |
| Tstg | Storage Temperature | -65 ~ +150 °C | |

[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

**Electrical Characteristics (Ta = 25°C)**

| Symbol | Parameter | Value | | | Unit |
|---|---|---|---|---|---|
| | | Min | Typical | Max | |
| VSWRin | Input Standing Wave | - | 1.2 | - | |
| VSWRout | Output Standing Wave | - | 1.2 | - | |
| IL | Insertion Loss | - | 0.3 | - | dB |
| ISO | Isolation | - | 45 | - | dB |

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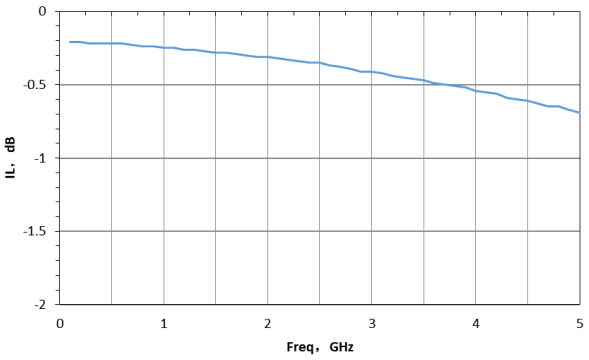
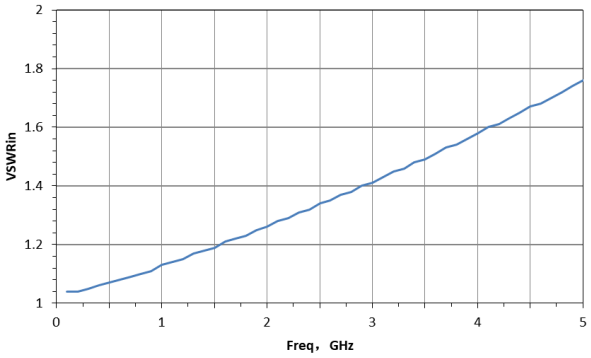
## Typical Performance

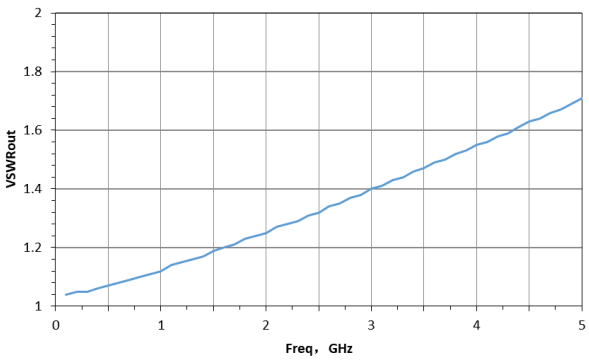
Insertion Loss Curve



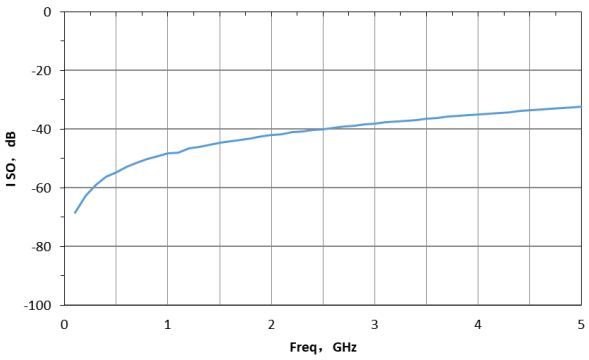

Input Standing Wave Curve




Output Standing Wave Curve




Isolation Curve



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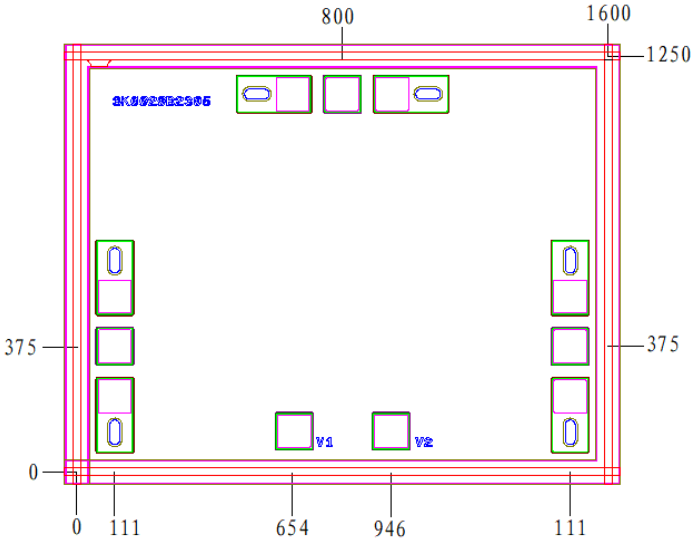
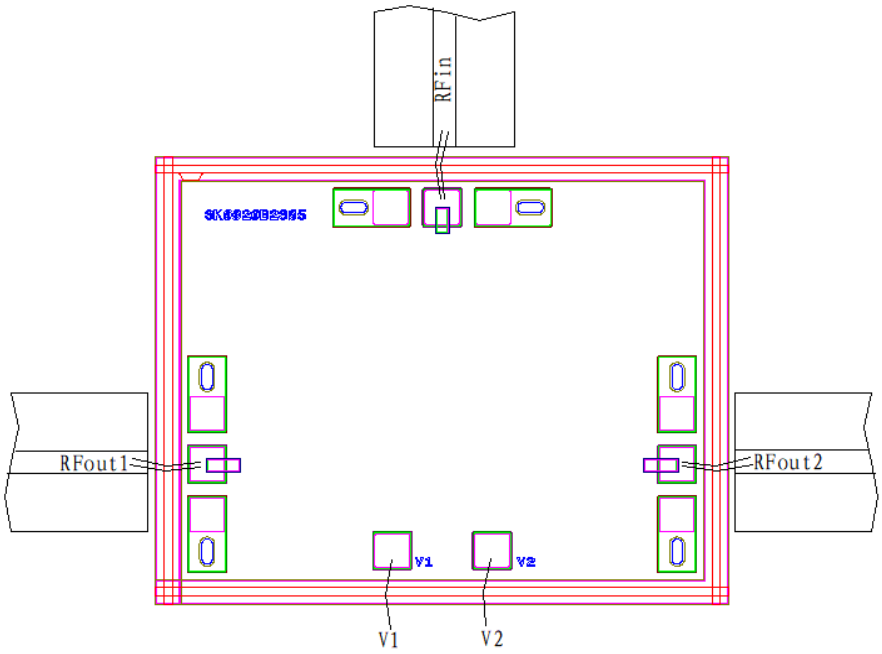
## Chip Dimension (Unit : μm)




## Chip Layout Diagram

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## Pad Definition

| Pad No. | Symbol | Function | Dimension |
|---|---|---|---|
| 1 | RF_in | RF signal input port, connecting to external 50Ω system, no need to add DC blocking capacitor. | 100*100μm² |
| 2 | RF_out1 | RF signal output port 1, connecting to external 50Ω system, no need to add DC blocking capacitor. | 100*100μm² |
| 3 | RF_out2 | RF signal output port 2, connecting to external 50Ω system, no need to add DC blocking capacitor. | 100*100μm² |
| 4 | V1 | Supply control port, refer to the Truth Table for its control logic. | 100*100μm² |
| 5 | V2 | Supply control port, refer to the Truth Table for its control logic. | 100*100μm² |

## Truth Table

| | V1 | V2 |
|---|---|---|
| RF_in – RF_out1 | -40V | 0V |
| RF_in – RF_out2 | 0V | -40V |

Please see Appendix A for details.