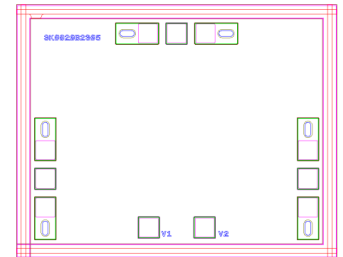


AMT2302
0.1 – 6GHz SPDT Switch Chip

Key Features :

- Frequency range : 0.1 – 6GHz
- Insertion loss : 0.5dB
- Isolation : 40dB
- Input/output standing wave : 1.5/1.5
- Input P-0.3 : 45dBm
- Switching time : 20ns
- Control method : 0/-40V
- Chip dimensions : 1.35mm x 1.20mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.



Description :

AMSW0021S 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 0.5dB, isolation 40dB, Input/Output VSWR 1.5.

Absolute Maximum Ratings

| Symbol | Parameter | Value | Remark |
|--------|-----------------------|---------------|--------------------------------|
| V1, V2 | Control Voltage | 0.6V/-50V | |
| Pin | Input Power | 46dBm | |
| Tm | Sintering Temperature | 310 °C | 30s, N ₂ protection |
| Tstg | Storage Temperature | -65 ~ +150 °C | |

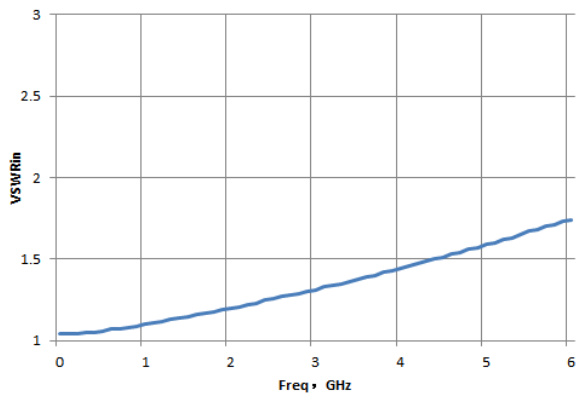
[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

Electrical Characteristics (Ta = 25°C)

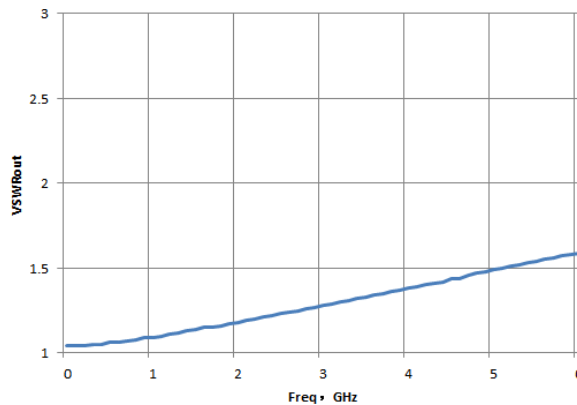
| Symbol | Parameter | Test Condition | Value | | | Unit |
|---------|----------------------|----------------|-------|---------|-----|------|
| | | | Min | Typical | Max | |
| VSWRin | Input Standing Wave | F : 0.1 – 6GHz | - | 1.5 | 1.8 | |
| VSWRout | Output Standing Wave | | - | 1.5 | 1.6 | |
| IL | Insertion Loss | | - | 0.5 | 0.8 | dB |
| ISO | Isolation | | 31 | 40 | - | dB |

Typical Performance

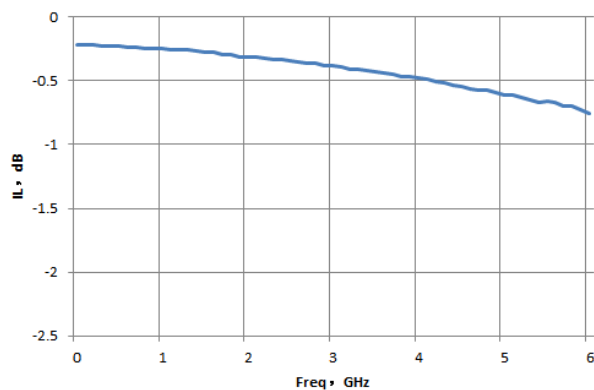
Input Standing Wave Curve



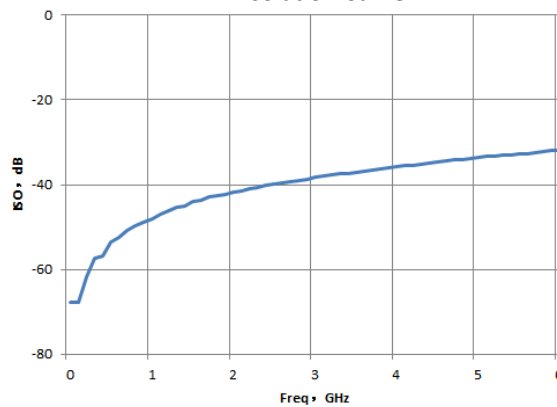
Output Standing Wave Curve



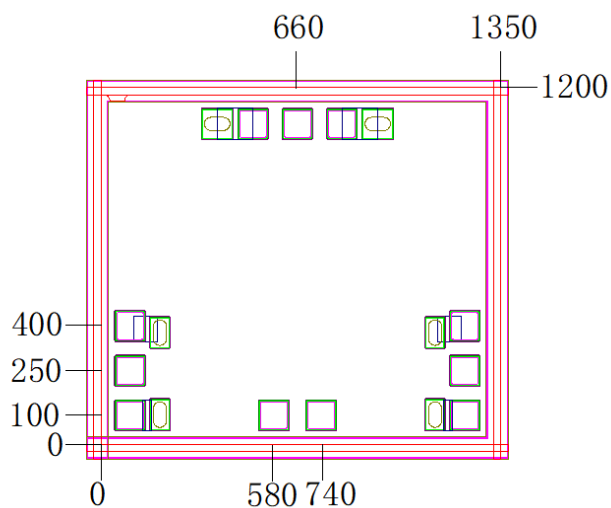
Insertion Loss Curve



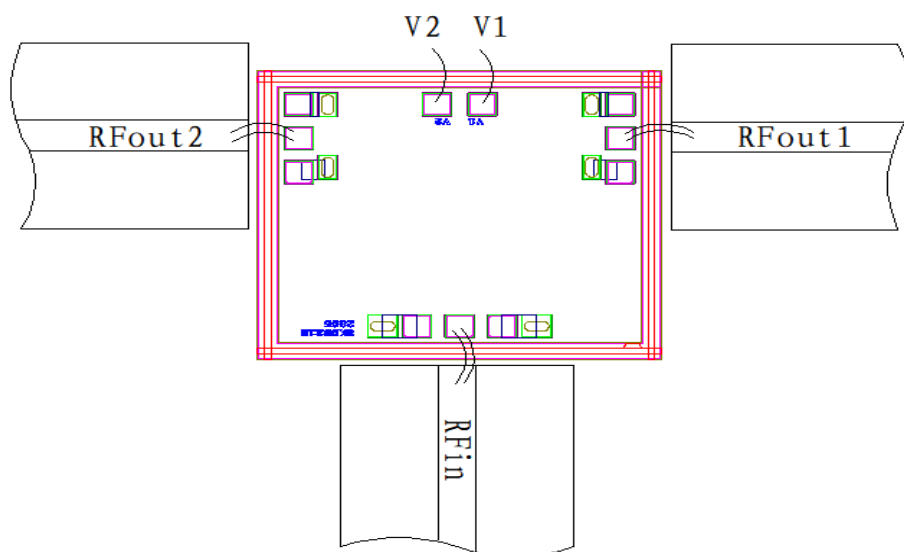
Isolation Curve



Chip Dimension (Unit : μm)



Chip Layout Diagram



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*100μm ² |
| 2 | RF_out1 | RF signal output port 1, connecting to external 50Ω system, no need to add DC blocking capacitor. | 100*100μm ² |
| 3 | RF_out2 | RF signal output port 2, connecting to external 50Ω system, no need to add DC blocking capacitor. | 100*100μm ² |
| 4 | V1 | Supply control port, refer to the Truth Table for its control logic. | 100*100μm ² |
| 5 | V2 | Supply control port, refer to the Truth Table for its control logic. | 100*100μm ² |

Truth Table

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

Please see Appendix A for details.