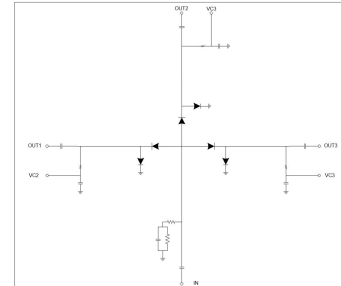


GaAs PIN Reflective SP3T Switch Chip, 2-26GHz

Performance characteristics

- Frequency range: 2-26GHz
- Insertion loss : 1.4dB typ.
- Isolation: 48 dB typ.
- P-1dB: See the table below
- 50Ohm input / output
- 100% on-wafer testing
- Chip size: 1.82 x 1.82 x 0.1mm
- Silicon nitride passivation, scratch protection

Functional Block Diagram



Product Introduction

GSW310A is a GaAs PIN reflective single-pole triple-throw switch chip with 50Ω matching at the input/output ends, a frequency range of 2 to 26GHz , and -5V/+5V control. It has a built-in bias network and DC blocking capacitors , making it easy to use.

Use restriction parameter ¹

| | |
|-----------------------|--------------|
| Maximum input voltage | 2.5V |
| Maximum input power | +37dBm CW |
| Operating temperature | -55 ~ +85°C |
| storage temperature | -65 ~ +150°C |

【1】 Exceeding any of these maximum limits may cause permanent damage.

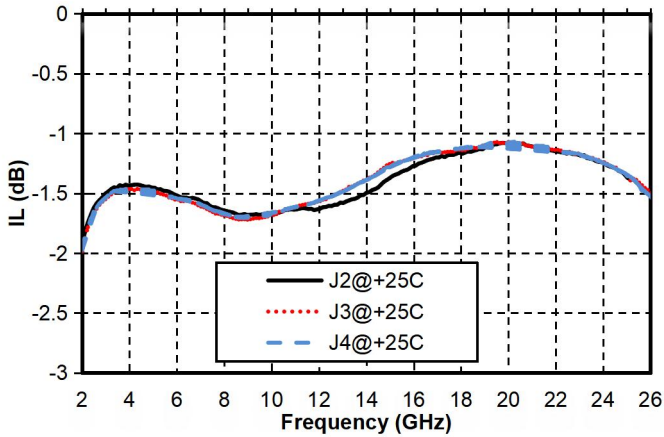
Electrical performance parameters (TA = +25°C)

| index | Minimum | Typical Value | Maximum | unit |
|--------------------|---------|---------------|---------|------|
| Frequency Range | 2-26 | | | GHz |
| Insertion loss | - | 1.4 | - | dB |
| Isolation | - | 48 | - | dB |
| Input return loss | - | 23 | - | dB |
| Output return loss | - | 25 | - | dB |
| P-1dB | - | 27.5@2GHz | - | dBm |
| | - | 28.5@4GHz | - | dBm |
| | - | 30.0@8GHz | - | dBm |
| | - | 30.5@12GHz | - | dBm |
| | - | 30.0@16GHz | - | dBm |
| | - | 28.0@20GHz | - | dBm |
| Switching speed | - | 20 | - | ns |

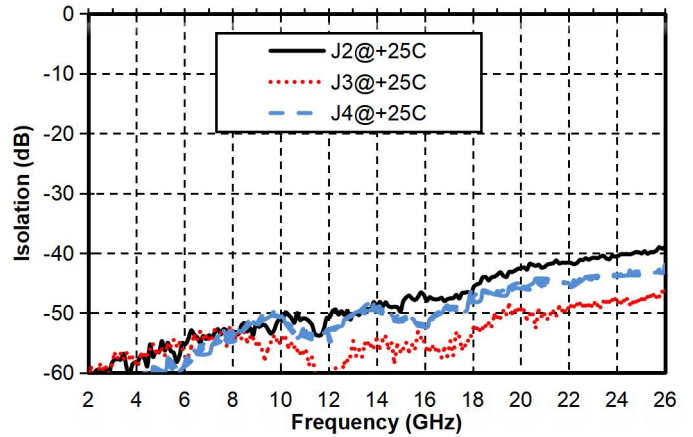
GaAs PIN Reflective SP3T Switch Chip, 2-26GHz

Main index test curve

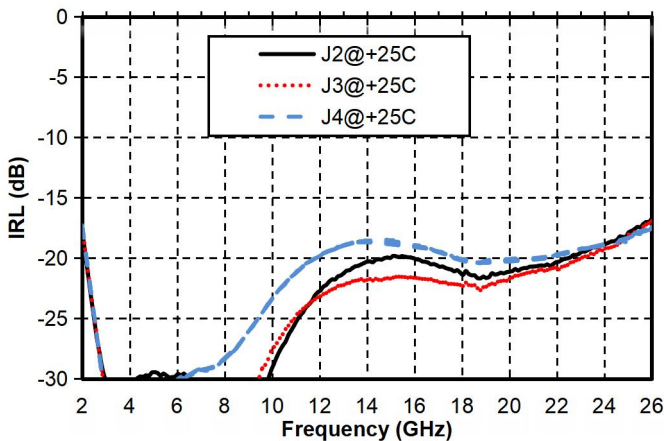
Insertion Loss vs. Operating Frequency



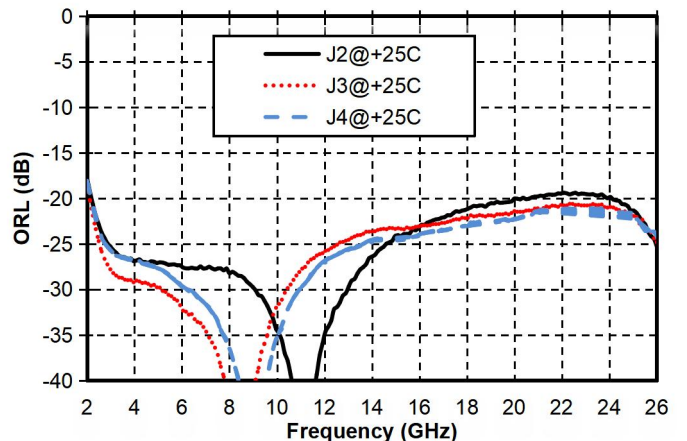
Isolation vs. Operating Frequency



Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



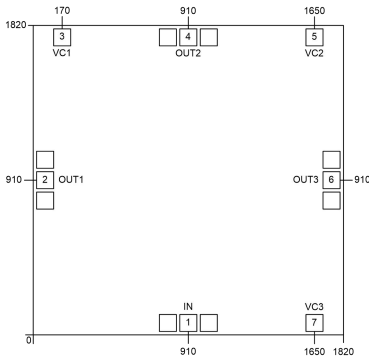
Typical Driver Connections

| CONTROL LEVEL (DC CURRENT) | | | RF OUTPUT STATE | | |
|----------------------------|---------|-------|-----------------|-----------------|-----------------|
| VC1 | VC2 | VC3 | OUT1(J2)-IN(J1) | OUT2(J3)-IN(J1) | OUT3(J4)-IN(J1) |
| -10mA | + 15 mA | +15mA | Low Loss | Isolation | Isolation |
| +15mA | -10mA | +15mA | Isolation | Low Loss | Isolation |
| +15mA | +15mA | -10mA | Isolation | Isolation | Low Loss |

Note: $V \approx +2.6\text{ V}$, $I \approx +15\text{ mA}$; $V \approx -3.3\text{ V}$, $I \approx -10\text{ mA}$ (including J1 on-chip resistor $R_{IN} = 50\text{ ohm}$ voltage divider)

GaAs PIN Reflective SP3T Switch Chip, 2-26GHz

Appearance structure

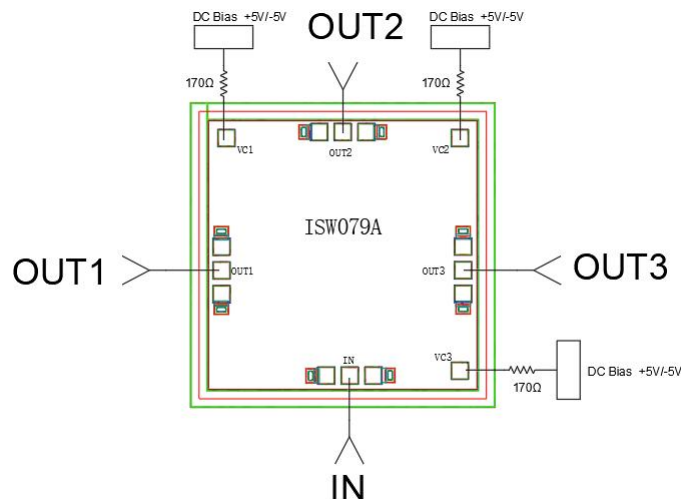


All units in the figure are micrometers

Bonding point definition

| Bonding point number | Function Symbol | Functional Description |
|----------------------|------------------------------|---|
| 1 | IN(J1) | RF input signal terminal |
| 2, 4, 6 | OUT1(J2), OUT2(J3), OUT3(J4) | RF output signal terminal |
| 3, 5, 7 | VC1, VC2, VC3 | Signal control port |
| Chip bottom | GND | The bottom of the chip needs to be well grounded to RF and DC |

Recommended circuit diagram



+5V is connected in series with R= 170 ohm resistor , $V \approx +2.6 \text{ V}$, $I \approx +15 \text{ mA}$; -5V is connected in series with R= 170 ohm resistor , $V \approx -3.3 \text{ V}$, $I \approx -10\text{mA}$.