



## DATA SHEET

# AS200-313: PHEMT GaAs IC 2 W High Linearity 5–6 GHz T/R Switch

## Applications

- T/R switch in WLAN 802.11a systems

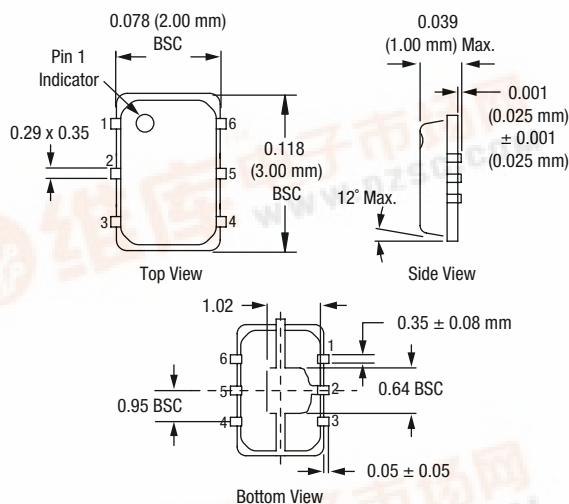
## Features

- Operating frequency 5–6 GHz
- High linearity 50 dBm IIP3
- High power P-1 dB > 33 dBm
- Low positive control voltage 3 V
- Low cost ultra small QFN package

## Description

The AS200-313 is a 5–6 GHz PHEMT GaAs switch. Designed for transmit-receive applications, this device is capable of switching 2 W microwave signals with 3 V control while maintaining high linearity performance. The switch covers the entire 802.11a frequency ranges of 5.15–5.825 GHz. The low loss, high isolation, high linearity and low cost features make it ideal for wireless LAN systems in the 802.11a frequency band.

## QFN-6



## Electrical Specifications at 25 °C (0, +3 V)

| Parameter <sup>(1)</sup>      | Frequency   | Min. | Typ. | Max. | Unit |
|-------------------------------|-------------|------|------|------|------|
| Insertion loss <sup>(2)</sup> | 5.0–6.0 GHz |      | 1.3  | 1.5  | dB   |
|                               | 5.0–5.4 GHz |      | 1.3  | 1.5  | dB   |
|                               | 5.5–6.0 GHz |      | 1.3  | 1.5  | dB   |
| Isolation                     | 5.0–6.0 GHz | 26   | 30   |      | dB   |
|                               | 5.0–5.4 GHz | 26   | 30   |      | dB   |
|                               | 5.5–6.0 GHz | 26   | 30   |      | dB   |
| Return loss <sup>(3)</sup>    | 5.0–5.4 GHz | 10   | 15   |      | dB   |
|                               | 5.5–6.0 GHz | 10   | 15   |      | dB   |

## Operating Characteristics at 25 °C (0, +3 V)

| Parameter                                 | Condition                                                                                                    | Frequency | Min. | Typ. | Max. | Unit |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------|-----------|------|------|------|------|
| Switching characteristics <sup>(4)</sup>  | Rise, fall (10/90% or 90/10% RF)                                                                             |           |      | 20   |      | ns   |
|                                           | On, off (50% CTL to 90/10% RF)                                                                               |           |      | 50   |      | ns   |
|                                           | Video feedthru                                                                                               |           |      | 50   |      | mV   |
| Input power for -0.1 dB compression       | 0/+3 V                                                                                                       | 5.2 GHz   |      | +33  |      | dBm  |
| Harmonics H <sub>2</sub> , H <sub>3</sub> | P <sub>IN</sub> = 30 dBm                                                                                     | 5.2 GHz   |      | +65  |      | dBc  |
| Control voltages                          | V <sub>LOW</sub> = 0 to 0.2 V @ 20 μA max.<br>V <sub>HIGH</sub> = +2.5 V @ 100 μA max. to +5 V @ 200 μA max. |           |      |      |      |      |

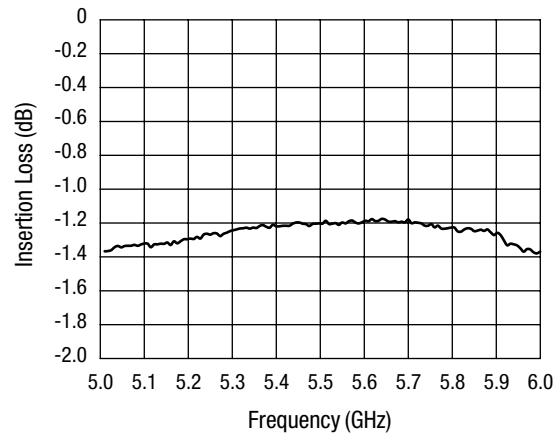
1. All measurements made in a 50 Ω system, unless otherwise specified.

2. Insertion loss changes by 0.003 dB/°C.

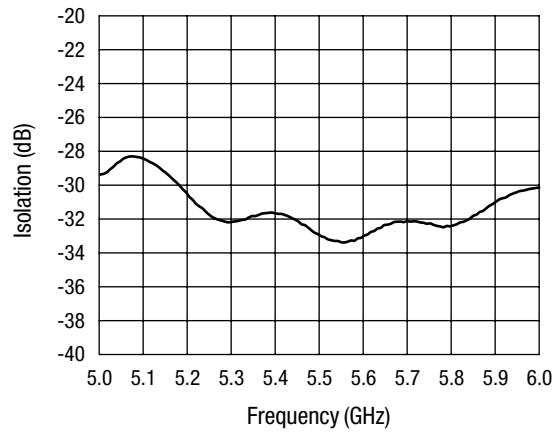
3. Insertion loss state.

4. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

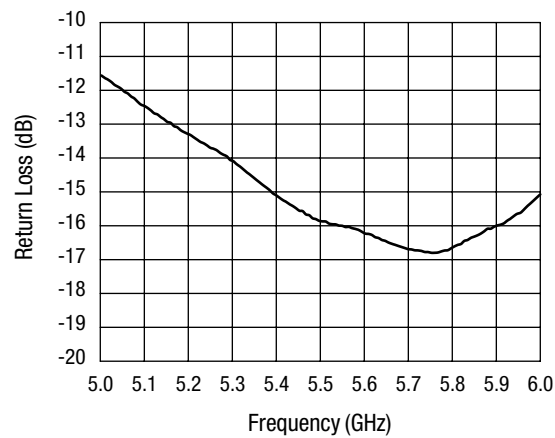
Typical Performance Data (0, +3 V)



Insertion Loss vs. Frequency

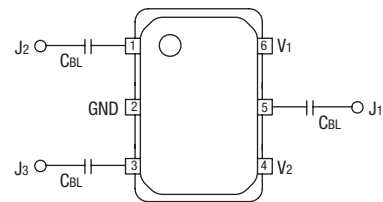


Isolation vs. Frequency



Return Loss vs. Frequency

Pin Out (Top View)



DC blocking capacitors (CBL) must be supplied externally.  
CBL = 15 pF.

Absolute Maximum Ratings

| Characteristic        | Value                                |
|-----------------------|--------------------------------------|
| RF input power        | 6 W max. > 900 MHz<br>0/+7 V control |
| Control voltage       | -0.2 V, +7 V                         |
| Operating temperature | -40 °C to +85 °C                     |
| Storage temperature   | -65 °C to +150 °C                    |
| Θ <sub>JC</sub>       | 25 °C/W                              |

Truth Table

| V <sub>1</sub>    | V <sub>2</sub>    | J <sub>1</sub> -J <sub>2</sub> | J <sub>1</sub> -J <sub>3</sub> |
|-------------------|-------------------|--------------------------------|--------------------------------|
| 0                 | V <sub>HIGH</sub> | Isolation                      | Insertion loss                 |
| V <sub>HIGH</sub> | 0                 | Insertion loss                 | Isolation                      |

V<sub>HIGH</sub> = +2.5 to +5 V.