

# GaAs IC SP4T Non-Reflective Switch DC–2 GHz



AS115-61

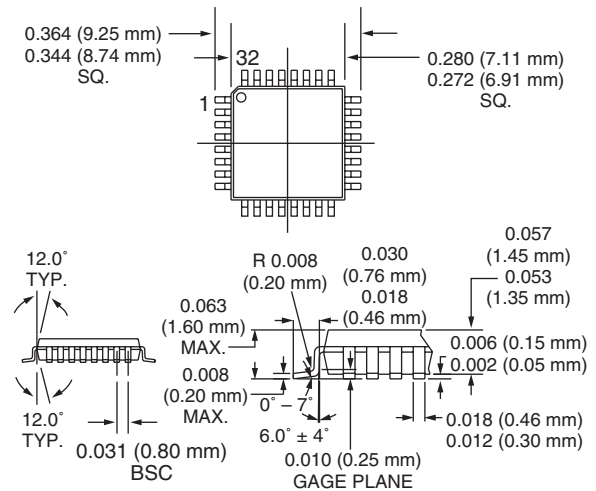
## Features

- -3 V to -5 V Operation
- High Isolation (50 dB @ 0.9 GHz)
- Low Insertion Loss (0.7 dB @ 0.9 GHz)
- LQFP-32 Plastic Package
- Non-Reflective All Ports

## Description

The AS115-61 is a high isolation SP4T FET IC non-reflective switch. The switch operates with 0 and -3 V or -5 V over the frequency range of DC–2 GHz. The insertion loss is 0.7 dB and isolation is 50 dB at 0.9 GHz. The switch is ideal for cellular base station switch matrices.

## LQFP-32



## Electrical Specifications at 25°C (0, -5 V)

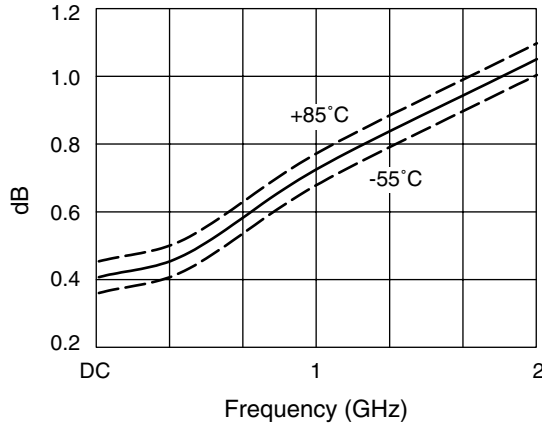
| Parameter <sup>1</sup>      | Frequency <sup>2</sup> | Min. | Typ.   | Max.  | Unit |
|-----------------------------|------------------------|------|--------|-------|------|
| Insertion Loss <sup>3</sup> | DC–0.5 GHz             |      | 0.5    | 0.7   | dB   |
|                             | DC–1.0 GHz             |      | 0.7    | 0.9   | dB   |
|                             | DC–2.0 GHz             |      | 1.1    | 1.3   | dB   |
| Isolation                   | DC–0.5 GHz             | 50   | 58     |       | dB   |
|                             | DC–1.0 GHz             | 45   | 51     |       | dB   |
|                             | DC–2.0 GHz             | 35   | 39     |       | dB   |
| VSWR <sup>4</sup>           | DC–1.0 GHz             |      | 1.55:1 | 1.6:1 |      |
|                             | DC–2.0 GHz             |      | 1.65:1 | 1.8:1 |      |

## Operating Characteristics at 25°C (0, -5 V)

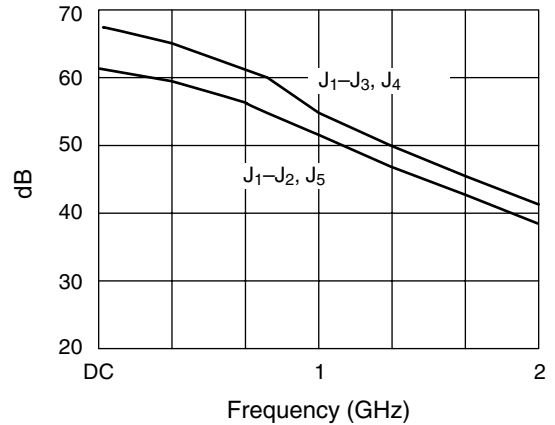
| Parameter <sup>1</sup>                 | Condition   | Frequency                | Min. | Typ.       | Max. | Unit       |
|--|---|--------------------------|------|------------|------|------------|
| Switching Characteristics <sup>5</sup> | Rise, Fall (10/90% or 90/10% RF)  |                          |      | 15         |      | ns         |
|  | On, Off (50% CTL to 90/10% RF)  |                          |      | 30         |      | ns         |
|  | Video Feedthru  |                          |      | 30         |      | mV         |
| Input Power for 1 dB Compression       | 0/-3 V  | 0.50–2.0 GHz             |      | +24        |      | dBm        |
|  | 0/-5 V  | 0.50–2.0 GHz             |      | +30        |      | dBm        |
| Intermodulation Intercept Point (IP3)  | For Two-tone Input Power +13 dBm  | 0.50–2.0 GHz<br>0.05 GHz |      | +40<br>+29 |      | dBm<br>dBm |
| Control Voltages                       | $V_{Low} = 0$ to $-0.2$ V @ 20 $\mu$ A Max.<br>$V_{High} = -3$ V @ 100 $\mu$ A to $-5$ V @ 500 $\mu$ A Max. |                          |      |            |      |            |

1. All measurements made in a 50  $\Omega$  system, unless otherwise specified.
2. DC = 300 kHz.
3. Insertion loss changes by 0.003 dB/°C.
4. Input/output.
5. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

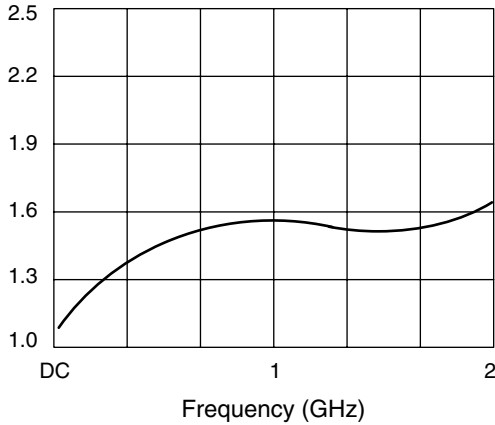
**Typical Performance Data (0, -5 V)**



**Insertion Loss vs. Frequency**



**Isolation vs. Frequency**



**VSWR vs. Frequency**

**Absolute Maximum Ratings**

| Characteristic        | Value   |
|-----------------------|---|
| RF Input Power        | 2 W > 500 MHz 0/-7 V<br>0.5 W @ 50 MHz 0/-7 V |
| Control Voltage       | +0.2 V, -10 V                                 |
| Operating Temperature | -40°C to +85°C                                |
| Storage Temperature   | -65°C to +150°C                               |
| $\Theta_{JC}$         | 25°C/W  |

**Truth Table**

| Insertion Loss Path J <sub>1</sub> to: | J <sub>3</sub> |                | J <sub>2</sub> |                | J <sub>5</sub> |                | J <sub>4</sub> |                |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|  | V <sub>1</sub> | V <sub>2</sub> | V <sub>3</sub> | V <sub>4</sub> | V <sub>5</sub> | V <sub>6</sub> | V <sub>7</sub> | V <sub>8</sub> |
| J <sub>2</sub>                         | 0              | -5             | -5             | 0              | -5             | 0              | -5             | 0              |
| J <sub>3</sub>                         | -5             | 0              | 0              | -5             | -5             | 0              | -5             | 0              |
| J <sub>4</sub>                         | 0              | -5             | 0              | -5             | -5             | 0              | 0              | -5             |
| J <sub>5</sub>                         | 0              | -5             | 0              | -5             | 0              | -5             | -5             | 0              |

**Pin Out**

