

# GaAs IC SPDT Low Loss Switch Reflective DC–4 GHz



AS004L2-11

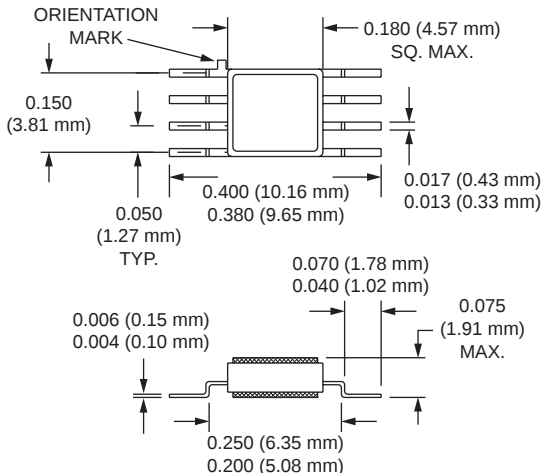
## Features

- Low DC Power Consumption
- Low Loss, Reflective, Short
- 8 Lead Hermetic Surface Mount Package
- Capable of Meeting MIL-STD Requirements<sup>6</sup>

## Description

The AS004L2-11 SPDT low loss reflective switch operates from DC–4 GHz. The chip has a single series FET in each arm for low loss performance. This switch should be used when requirements call for low insertion loss and medium isolation.

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## Electrical Specifications at 25°C

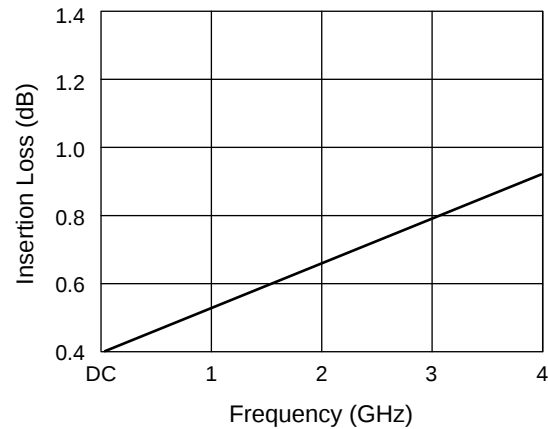
| Parameter <sup>1</sup>      | Frequency <sup>5</sup> | Min. | Typ.  | Max.  | Unit |
|-----------------------------|------------------------|------|-------|-------|------|
| Insertion Loss <sup>2</sup> | DC–1.0 GHz             |      | 0.5   | 0.7   | dB   |
|                             | DC–2.0 GHz             |      | 0.7   | 0.9   | dB   |
|                             | DC–4.0 GHz             |      | 0.9   | 1.2   | dB   |
| Isolation                   | DC–1.0 GHz             | 40   | 45    |       | dB   |
|                             | DC–2.0 GHz             | 34   | 38    |       | dB   |
|                             | DC–4.0 GHz             | 26   | 28    |       | dB   |
| VSWR <sup>3</sup>           | DC–1.0 GHz             |      | 1.3:1 | 1.4:1 |      |
|                             | DC–4.0 GHz             |      | 1.5:1 | 1.6:1 |      |

## Operating Characteristics at 25°C

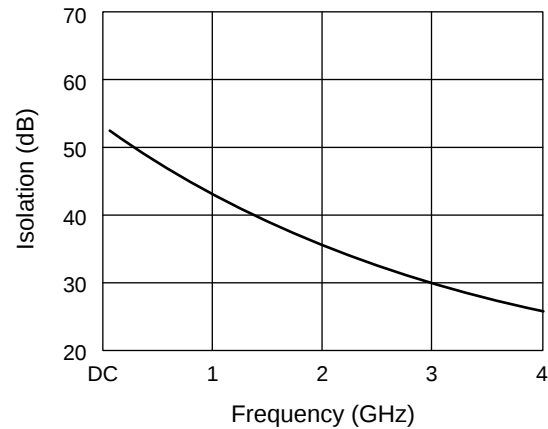
| Parameter                             | Condition                                                                                                                                               | Frequency | Min. | Typ.    | Max. | Unit |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|---------|------|------|
| Switching Characteristics             | Rise, Fall (10/90% or 90/10% RF)                                                                                                                        |           |      | 3       | 6    | ns   |
|                                       | On, Off (50% CTL to 90/10% RF)                                                                                                                          |           |      | 6       | 10   | ns   |
|                                       | Video Feedthru <sup>4</sup>                                                                                                                             |           |      | 20      | 30   | mV   |
| Input Power for 1 dB Compression      | 0/-5 V (0/-8 V)                                                                                                                                         | 0.5–4 GHz | 21   | 24 (30) |      | dBm  |
|                                       |                                                                                                                                                         | 0.001 GHz | 12   | 16 (20) |      | dBm  |
| Intermodulation Intercept Point (IP3) | For Two-tone Input Power 13 dBm                                                                                                                         | 0.5–4 GHz | 42   | 46      |      | dBm  |
|                                       |                                                                                                                                                         | 0.001 GHz | 32   | 35      |      | dBm  |
| Control Voltages                      | $V_{Low} = 0 \text{ to } -0.2 \text{ V @ } 20 \mu\text{A Max.}$<br>$V_{High} = -5 \text{ V @ } 50 \mu\text{A to } -9 \text{ V @ } 200 \mu\text{A Max.}$ |           |      |         |      |      |

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

Typical Performance Data



Insertion Loss vs. Frequency



Isolation vs. Frequency

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              | -5             | Isolation                      | Insertion Loss                 |
| -5             | 0              | Insertion Loss                 | Isolation                      |

Absolute Maximum Ratings

| Characteristic                           | Value                                         |
|------------------------------------------|-----------------------------------------------|
| RF Input Power (RF In)                   | 2 W > 500 MHz 0/-8 V<br>0.5 W @ 50 MHz 0/-8 V |
| Control Voltage (V <sub>C</sub> )        | +0.2 V, -10 V                                 |
| Operating Temperature (T <sub>OP</sub> ) | -55°C to +125°C                               |
| Storage Temperature (T <sub>ST</sub> )   | -65°C to +150°C                               |
| Thermal Resistance (Θ <sub>JC</sub> )    | 25°C/W                                        |

Pin Out

