

# GaAs IC SPDT 10 W T/R Switch DC–2.5 GHz



AW002R2-11

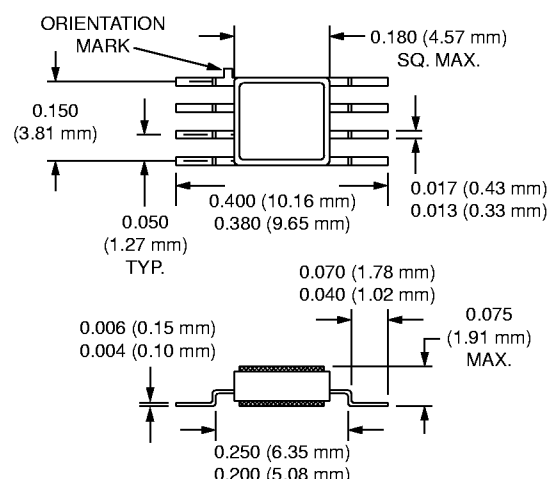
## Features

- High Intercept Point (IP3 63 dBm @ 0.9 GHz)
- High Power, T/R Switch
- 8 Lead Hermetic Surface Mount Package
- Capable of Meeting MIL-STD Requirements<sup>6</sup>

## Description

The AW002R2-11 is a high power IC FET SPDT switch. This switch has been designed for use where extremely high linearity is required. Some standard implementations include antenna changeover, T/R and diversity switching. This switch can be used in many analog and digital wireless communication systems.

-11



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

| Parameter <sup>1</sup>      | Frequency <sup>5</sup> | Min. | Typ.  | Max.  | Unit |
|-----------------------------|------------------------|------|-------|-------|------|
| Insertion Loss <sup>2</sup> | DC–0.5 GHz             |      | 0.7   | 0.8   | dB   |
|                             | DC–1.0 GHz             |      | 0.8   | 0.9   | dB   |
|                             | DC–2.5 GHz             |      | 1.0   | 1.1   | dB   |
| Isolation                   | DC–0.5 GHz             | 33   | 37    |       | dB   |
|                             | DC–1.0 GHz             | 28   | 30    |       | dB   |
|                             | DC–2.5 GHz             | 20   | 22    |       | dB   |
| VSWR <sup>3</sup>           | DC–1.0 GHz             |      | 1.2:1 | 1.4:1 | dB   |
|                             | DC–2.5 GHz             |      | 1.5:1 | 1.7:1 | dB   |

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

| Parameter                        | Condition                                                                                                                                                                                                                                                       | Frequency | Min. | Typ. | Max. | Unit |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|------|------|------|
| Switching Characteristics        | Rise, Fall (10/90% or 90/10% RF)                                                                                                                                                                                                                                |           |      | 6    |      | ns   |
|                                  | On, Off (50% CTL to 90/10% RF)                                                                                                                                                                                                                                  |           |      | 12   |      | ns   |
|                                  | Video Feedthru <sup>4</sup>                                                                                                                                                                                                                                     |           |      | 30   |      | mV   |
| Input Power for 1 dB Compression | 5 V                                                                                                                                                                                                                                                             | 0.9 GHz   |      | 35   |      | dBm  |
|                                  | 10 V                                                                                                                                                                                                                                                            | 0.9 GHz   |      | 40   |      | dBm  |
| Intermodulation Intercept Point  | For Two-tone Input Power 13 dBm                                                                                                                                                                                                                                 |           |      |      |      |      |
|                                  | IP2                                                                                                                                                                                                                                                             | 0.9 GHz   |      | 75   |      | dBm  |
|                                  | IP3                                                                                                                                                                                                                                                             | 0.9 GHz   |      | 63   |      | dBm  |
| Control Voltages                 | $V_{Low} = -12.0\text{ V} \leq V_{Low} \leq 0\text{ V}, 500\text{ }\mu\text{A Max.}$<br>$V_{High} = 0\text{ V} \leq V_{High} \leq 12.0\text{ V}, 500\text{ }\mu\text{A Max.}$<br>$\text{Differential} = 5.0\text{ V} \leq (V_{High} - V_{Low}) < 12.0\text{ V}$ |           |      |      |      |      |

1. All measurements made in a 50  $\Omega$  system, unless otherwise specified.

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

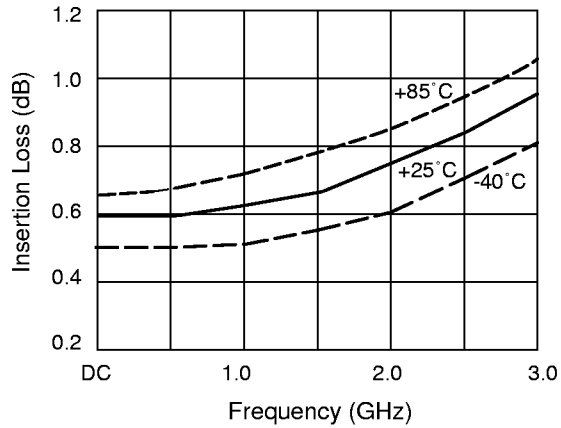
3. Insertion loss state.

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

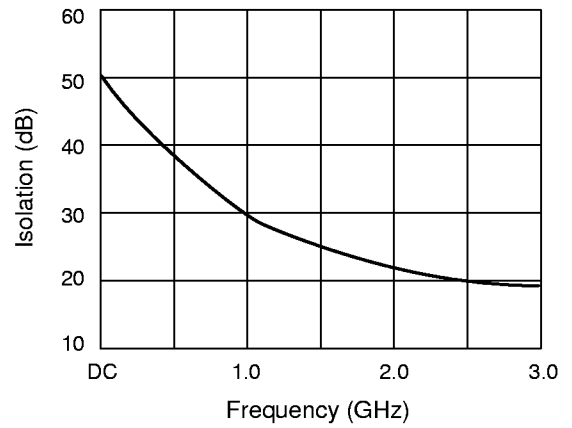
5. DC = 300 kHz.

6. See Quality/Reliability section.

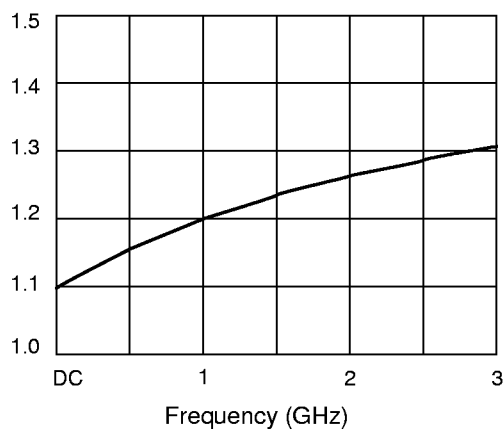
## Typical Performance Data (0, -5 V)



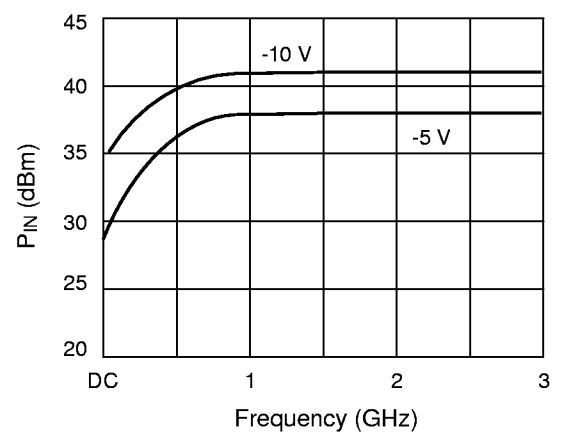
Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency



$P_{IN}$  at 1 dB Compression vs. Frequency and Control Voltage

## Absolute Maximum Ratings

| Characteristic                       | Value                       |
|--------------------------------------|-----------------------------|
| RF Input Power (RF In)               | 11 W > 0.9 GHz,<br>0, -12 V |
| Control Voltage ( $V_C$ )            | <12 V                       |
| Operating Temperature ( $T_{OP}$ )   | -40°C to +85°C              |
| Storage Temperature ( $T_{ST}$ )     | -65°C to +150°C             |
| Thermal Resistance ( $\Theta_{JC}$ ) | 85°C/W                      |

## Truth Table

| $V_1$      | $V_2$      | $J_1-J_2$      | $J_1-J_3$      |
|------------|------------|----------------|----------------|
| $V_{Low}$  | $V_{High}$ | Insertion Loss | Isolation      |
| $V_{High}$ | $V_{Low}$  | Isolation      | Insertion Loss |

## Pin Out

