

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



AW002R2-11

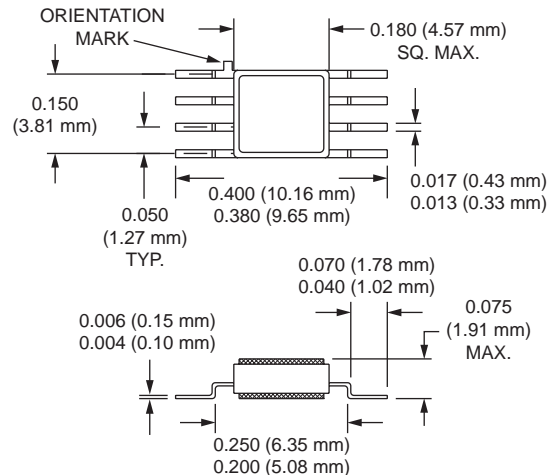
Features

- 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 Requirements⁶

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.

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

| Parameter ¹ | Frequency ⁵ | Min. | Typ. | Max. | Unit |
|-----------------------------|------------------------|------|-------|-------|------|
| Insertion Loss ² | 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 ³ | 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 ⁴ | | | 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 | $V_{Low} = -12.0 V \leq V_{Low} \leq 0 V, 500 \mu A \text{ Max.}$ $V_{High} = 0 V \leq V_{High} \leq 12.0 V, 500 \mu A \text{ Max.}$ Differential = $5.0 V \leq (V_{High} - V_{Low}) < 12.0 V$ | | | | | |

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

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

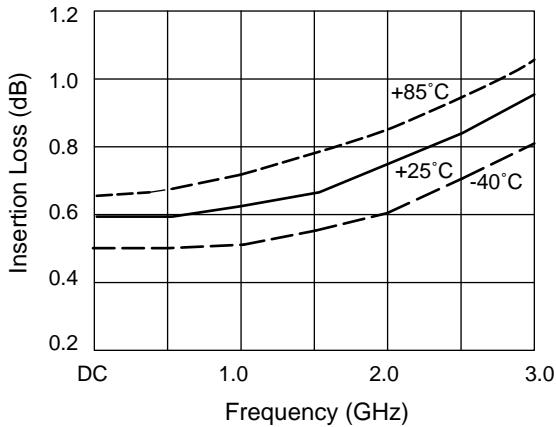
3. Insertion loss state.

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

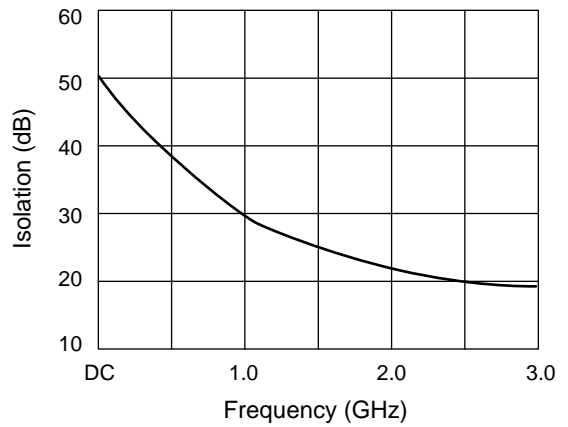
5. DC = 300 kHz.

6. See Quality/Reliability section.

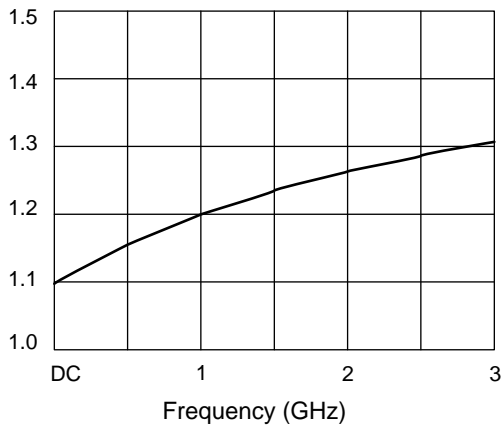
Typical Performance Data (0, -5 V)



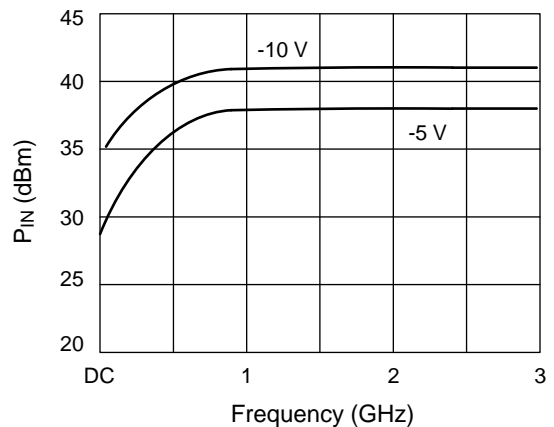
Insertion Loss vs. Frequency



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, 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 (Θ _{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

