

# Matched GaAs SPST Switch

## DC - 3 GHz with TTL/CMOS Control Input SW05-0311

V2.00

### Features

- Integral Driver
- Low DC Power Consumption
- TTL and CMOS Input Compatible
- Surface Mount Package
- Low Cost/High Performance

### Guaranteed Specifications<sup>1,2</sup> (From -40°C to +85°C)

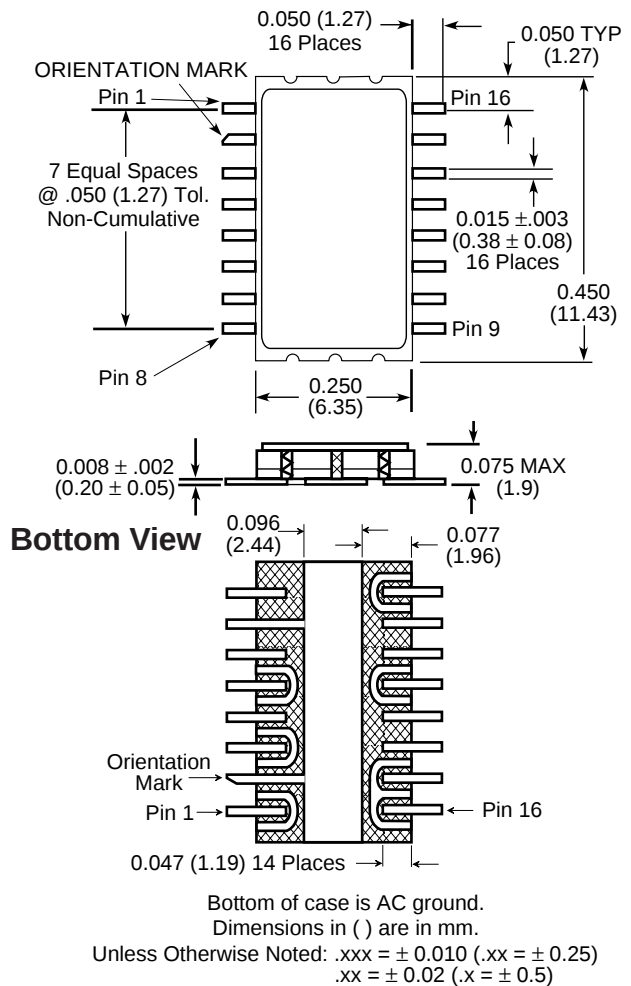
| Frequency Range |             | DC-3000 MHz |            |
|-----------------|-------------|-------------|------------|
| Insertion Loss  | DC-3000 MHz | 1.0 Typ.    | 1.3 dB Max |
|                 | DC-2000 MHz | 0.8 Typ.    | 1.2 dB Max |
|                 | DC-1000 MHz | 0.7 Typ.    | 1.0 dB Max |
|                 | DC- 500 MHz | 0.6 Typ.    | 0.8 dB Max |
| VSWR            | DC-3000 MHz | 1.4 Typ.    | 1.5:1 Max  |
|                 | DC-2000 MHz | 1.3 Typ.    | 1.4:1 Max  |
|                 | DC-1000 MHz | 1.2 Typ.    | 1.3:1 Max  |
|                 | DC- 500 MHz | 1.1 Typ.    | 1.2:1 Max. |
| Isolation       | DC-3000 MHz | 29 Typ.     | 25 dB Min  |
|                 | DC-2000 MHz | 40 Typ.     | 35 dB Min  |
|                 | DC-1000 MHz | 60 Typ.     | 35 dB Min  |
|                 | DC- 500 MHz | 70 Typ.     | 65 dB Min  |

### Operating Characteristics

|                                                                         |     |                            |         |
|-------------------------------------------------------------------------|-----|----------------------------|---------|
| Impedance                                                               |     | 50 Ohms Nominal            |         |
| Switching Characteristics                                               |     |                            |         |
| Trise, Tfall (10% to 90%)                                               |     | 50 ns Typ                  |         |
| Ton, Toff (1.3V CTL to 90%/10%)                                         |     | 150 ns Typ                 |         |
| Transients (in-Band)                                                    |     | 50 mV Typ                  |         |
| Input Power for 1 dB Compression                                        |     |                            |         |
| 0.05 GHz                                                                |     | +21 dBm Typ                |         |
| 0.5 GHz to 3 GHz                                                        |     | +27 dBm Typ                |         |
| Intermodulation Intercept point (for two-tone input power up to +5 dBm) |     |                            |         |
| Intercept Points                                                        | IP2 | IP3                        |         |
| 0.05 GHz                                                                | +62 | +40                        | dBm Typ |
| 0.5 GHz to 3 GHz                                                        | +68 | +46                        | dBm Typ |
| Supply Voltage Ranges                                                   |     |                            |         |
| V <sub>CC</sub>                                                         |     | +5.0V ±10% @ 1 mA max.     |         |
| V <sub>EE</sub>                                                         |     | -5.0V to -8.0V @ 1 mA max. |         |
| Control Voltages Range                                                  |     |                            |         |
| Vin Low                                                                 |     | 0V to 0.8V @ 1 µA Max      |         |
| Vin Hi                                                                  |     | 2.0V to 5.0V @ 1 µA Max    |         |

1. All specifications apply when operated with a 50 ohm impedance at both RF ports.
2. There should be a DC return on the RFC port. The DC return can be either a 10K ohm resistor or an RF choke.

### CR-9



### Ordering Information

**Model No.**  
SW05-0311

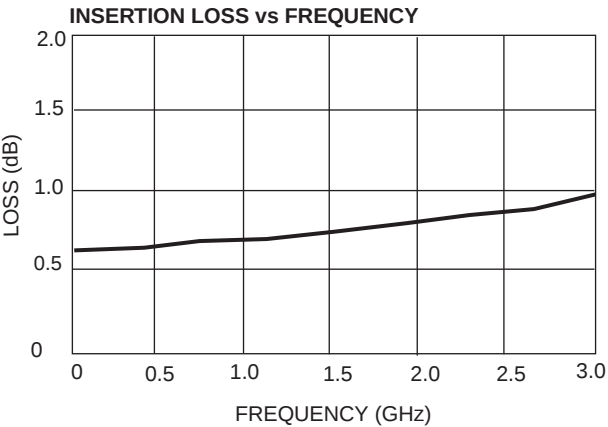
**Package**  
Ceramic

Absolute Maximum Ratings<sup>1</sup>

| Parameter             | Absolute Maximum                |
|-----------------------|---------------------------------|
| Max. Input Power      |                                 |
| 50 MHz                | +27 dBm                         |
| 500-2000 MHz          | +34 dBm                         |
| Supply Voltages       |                                 |
| V <sub>CC</sub>       | +5.5V                           |
| V <sub>EE</sub>       | -8.5V                           |
| Control Voltage       | -0.5V, to V <sub>CC</sub> +0.5V |
| Operating Temperature | -40°C to 125°C                  |
| Storage Temperature   | -65°C to 150°C                  |

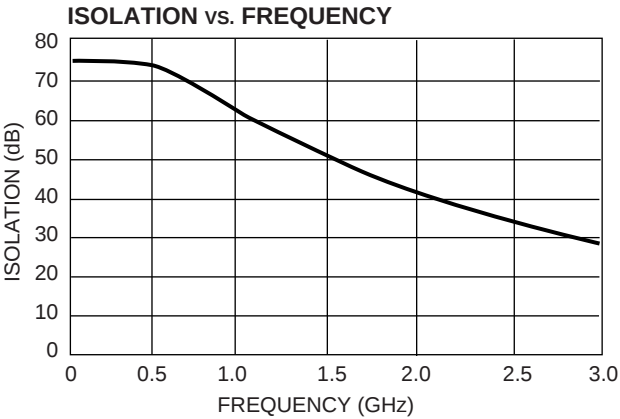
1. Operation of this device above any one of these parameters may cause permanent damage.

Typical Performance @ 25°C



Pin Configuration

| Pin No. | Description     | Pin No. | Description     |
|---------|-----------------|---------|-----------------|
| 1       | V <sub>EE</sub> | 9       | GND             |
| 2       | GND             | 10      | GND             |
| 3       | GND             | 11      | GND             |
| 4       | GND             | 12      | RF2             |
| 5       | RF1             | 13      | GND             |
| 6       | GND             | 14      | GND             |
| 7       | GND             | 15      | V <sub>CC</sub> |
| 8       | GND             | 16      | C1              |



Truth Table

| Control Input | Condition of Switch |
|---------------|---------------------|
| C1            | RF1 to RF2          |
| LO            | ON                  |
| HI            | OFF                 |

Pin Configuration (Top View)

