

Matched GaAs SPST Switch

DC - 3 GHz

SW-209

V 2.00

Features

- Fast Switching Speed, 6 ns Typical
- Ultra Low DC Power Consumption
- Small Package Size, 0.180" (4.6mm) Sq.

Guaranteed Specifications¹ (-55°C to +85°C)

| Frequency Range | DC – 3.0 GHz | |
|-----------------|--------------|------------|
| Insertion Loss | DC – 3.0 GHz | 1.5 dB Max |
| | DC – 2.0 GHz | 1.2 dB Max |
| | DC – 1.0 GHz | 1.1 dB Max |
| | DC – 0.5 GHz | 0.9 dB Max |
| VSWR | DC – 3.0 GHz | 1.6:1 Max |
| | DC – 2.0 GHz | 1.5:1 Max |
| | DC – 1.0 GHz | 1.2:1 Max |
| | DC – 0.5 GHz | 1.2:1 Max |
| Isolation | DC – 3.0 GHz | 27 dB Min |
| | DC – 2.0 GHz | 32 dB Min |
| | DC – 1.0 GHz | 40 dB Min |
| | DC – 0.5 GHz | 45 dB Min |

Operating Characteristics

Impedance 50 Ohms Nominal

Switching Characteristics

| | |
|---|-----------|
| T_{rise}, T_{fall} | 3 ns Typ |
| T_{on}, T_{off} (50% CTL to 90%/10% RF) | 6 ns Typ |
| Transients (In-Band) | 30 mV Typ |

Input Power for 1 dB Compression

| Control Voltages (Vdc) | 0/-5 | 0/-8 | |
|------------------------|------|------|---------|
| 0.5 – 3.0 GHz | +27 | +33 | dBm Typ |
| 0.05 GHz | +21 | +26 | dBm Typ |

Intermodulation Intercept Point

(for two-tone input power up to +13 dBm)

| Intercept Points | IP ₂ | IP ₃ | |
|------------------|-----------------|-----------------|---------|
| 0.5 – 3.0 GHz | +62 | +40 | dBm Typ |
| 0.05 GHz | +68 | +46 | dBm Typ |

Control Voltages (Complementary Logic)

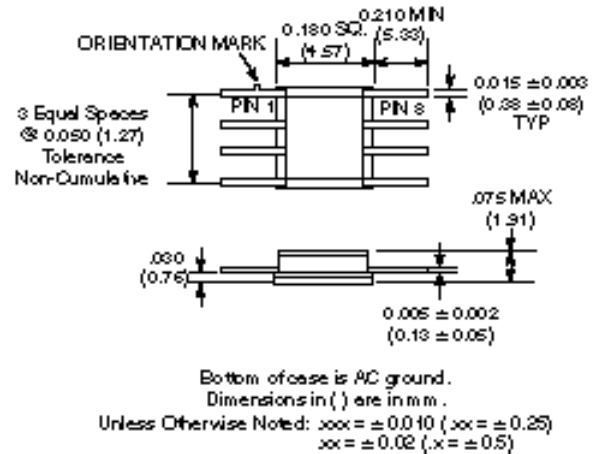
| | |
|----------|-------------------------------------|
| Vin Low | 0 to -0.2V @ 20 µA Max |
| Vin High | -5V @ 50 µA Typ to -8V @ 300 µA Max |

1. All specifications apply with 50 ohm impedance connected to all RF ports with 0 and -5 Vdc control voltages.

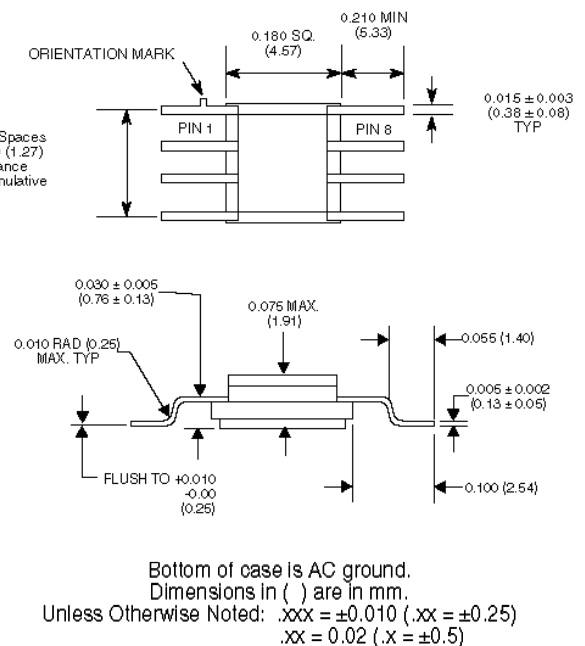
Ordering Information

| Model No. | Package |
|-------------|--|
| SW-209 PIN | Ceramic (CR-3) |
| SW-209B PIN | Screened To MIL-STD-883C, Method 5008.4, Table VII, Class B Hybrid |
| SW-209G PIN | Ceramic Gull Winged (CR-10) |

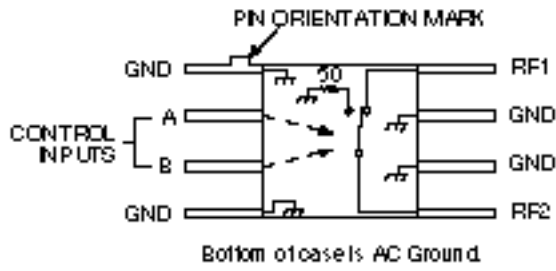
CR-3



CR-10



Functional Schematic



Absolute Maximum Ratings

| Parameter | Absolute Maximum ¹ |
|-----------------------|-------------------------------|
| Max. Input Power | |
| 0.05 GHz | +27 dBm |
| 0.5–2.0 GHz | +34 dBm |
| Control Voltage | +5V, –8.5V |
| Operating Temperature | –55°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.

Truth Table

| Control Input | | Condition of Switch |
|---------------|------|---------------------|
| A | B | RF1 to RF2 |
| High | Low | ON |
| Low | High | OFF |

Typical Performance

