

# High Power GaAs SPDT Switch

## DC - 3 GHz

## SW-106, SW-276

V 2.00

### Features

- +39 dBm Typ. 1 dB Compression Point, -8V Control
- +65 dBm Typ. 3rd Order Intercept, -8V Control
- Insertion Loss of 0.4 dB Typical
- Low Power Consumption
- Fast Switching Speed

### Guaranteed Specifications<sup>1</sup>

Frequency Range	(-55°C to +85°C)		
	DC - 3.0 GHz	SW-106	SW-276
Insertion Loss	DC - 0.5 GHz	0.5 dB	0.4 dB Max
	DC - 1.0 GHz	0.6 dB	0.5 dB Max
	DC - 2.0 GHz	0.8 dB	0.7 dB Max
	DC - 3.0 GHz	1.2 dB	1.0 dB Max
Isolation	DC - 0.5 GHz	34 dB	37 dB Min
	DC - 1.0 GHz	32 dB	31 dB Min
	DC - 2.0 GHz	20 dB	24 dB Min
	DC - 3.0 GHz	15 dB	19 dB Min
VSWR	DC - 0.5 GHz	1.3:1	1.3:1 Max
	DC - 1.0 GHz	1.5:1	1.5:1 Max
	DC - 2.0 GHz	1.5:1	1.5:1 Max
	DC - 3.0 GHz	1.6:1	1.6:1 Max

### Operating Characteristics<sup>2</sup>

**Impedance** 50 Ohms Nominal

#### Switching Characteristics

Trise, Tfall (10% to 90%) 30 ns Typ  
 Ton, Toff (50% CTL to 90%/10% RF) 35 ns Typ  
 Transients (In-Band) 12 mV Typ

**Input Power for Compression**

	0.1 dB	1.0 dB	
0.9 GHz (-5V Control)	+32.5 dBm	+35.5 dBm	Typ
0.9 GHz (-8V Control)	+35.5 dBm	+39.5 dBm	Typ

#### Third Order Intercept Point (with two +10 dBm Input Tones)

0.9 GHz (-5V Control)	+61 dBm Typ
0.9 GHz (-8V Control)	+65 dBm Typ

#### Control Voltages

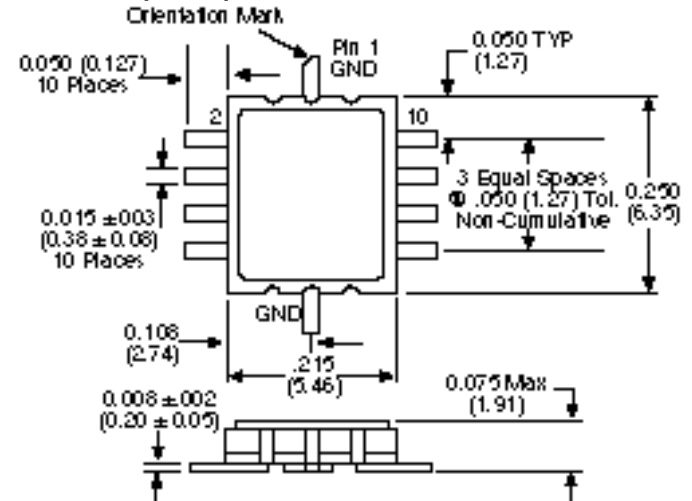
Vin Low 0 to -0.2V @ 20 μA Max  
 Vin High -5V @ 50 μA Typ to -10V @ 800 μA Max

1. All specifications apply when operated with bias voltages of 0V for Vin Low and -5 to -10V for Vin High, and 50 ohm impedance at all RFports, unless otherwise specified.
2. High power (greater than 1W) handling specifications apply to cold switching only. For input powers under 1W hot switching can be used.
3. Contact the factory for standard or custom screening requirements.

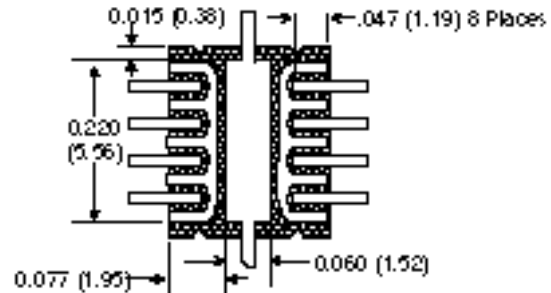
### Ordering Information

Part Number	Package
SW-106 PIN	Surface Mount
SW-276 PIN	Ceramic

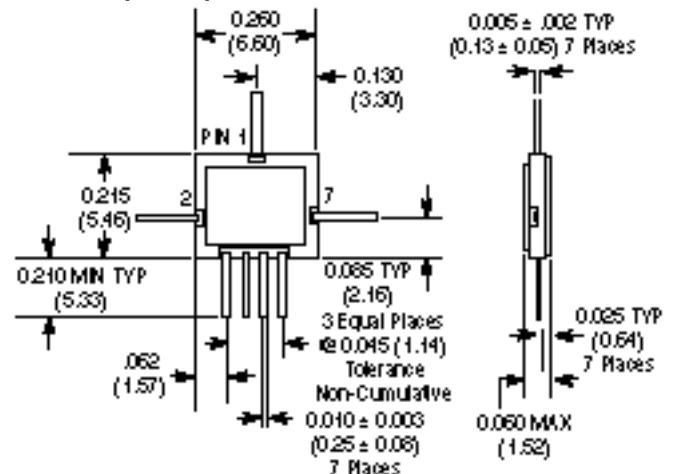
### SW-106 (CR-5)



### Bottom View



### SW-276 (CR-2)



For both switches: Bottom of Case is AC Ground  
 Dimension in ( ) are in mm.  
 Unless Otherwise Noted: .xxx = ± 0.010 (.xx = ± 0.25)  
 .xx = ± 0.02 (.x = ± 0.5)

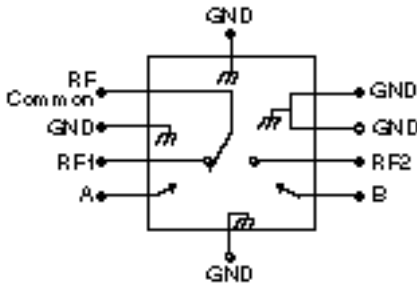
### Absolute Maximum Ratings

Parameter	Absolute Maximum <sup>1</sup>
Max. Input Power 0.05 GHz 0.5 - 2.0 GHz	+35 dBm
-5V Control	+36 dBm
-8V Control	+39 dBm
-10V Control	+40 dBm
Power Dissipation <sup>2,3</sup>	2.0 W
Control Voltage	-12V, +1V
Operating Temperature	-55°C to +125°C
Storage Temperature	-65°C to +150°C
Maximum Junction Temperature	+175°C
Thermal Resistance <sup>2</sup> : j <sub>c</sub>	+50°C/W

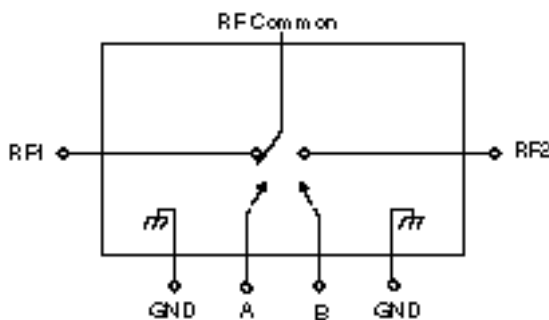
- Operation of this device above any one of these parameters may cause permanent damage.
- T<sub>case</sub> = 25°C, where T<sub>case</sub> is the temperature at the bottom of the case.
- Special consideration must be given to the mounting of the switch to minimize the thermal resistance. The bottom of the case should be thermally attached to the mounting surface to maintain the junction temperature under the absolute maximum rating.

### Functional Schematics (Top View)

SW-106



SW-276



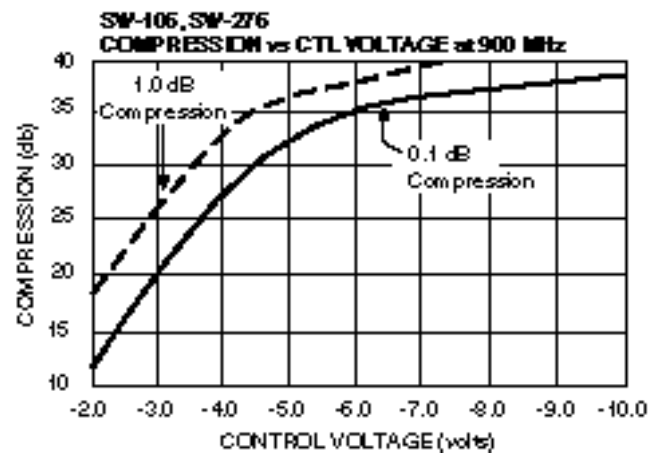
### Two Tone IP<sub>3</sub> Measurements

Bias Voltage	Input Power for each tone (dBm)	3rd Order Intermodulation Products (dBc)	IP <sub>3</sub> (dBm)	Second Harmonic (dBc)
0, -5V	+27	-34	+44	-61
0, -6V	+27	-49	+51	-61
0, -7V	+27	-64	+59	-63
0, -8V	+27	-65	+59	-63
0, -5V	+28	-30	+43	-58
0, -6V	+28	-41	+48	-58
0, -7V	+28	-52	+54	-57
0, -8V	+28	-60	+58	-57
0, -5V	+29	-28	+43	-54
0, -6V	+29	-34	+46	-54
0, -7V	+29	-44	+51	-54
0, -8V	+29	-52	+55	-54
0, -5V	+30	-26	+43	-52
0, -6V	+30	-32	+46	-51
0, -7V	+30	-38	+49	-51
0, -8V	+30	-44	+52	-51

### Truth Table

Control		Condition of Switch	
A	B	RF1	RF2
High	Low	On	Off
Low	High	Off	On

### Typical Performance



### Typical Performances (cont'd.)

