

# GaAs IC High Power SPDT Switch Positive Control DC–2 GHz



AS277-12

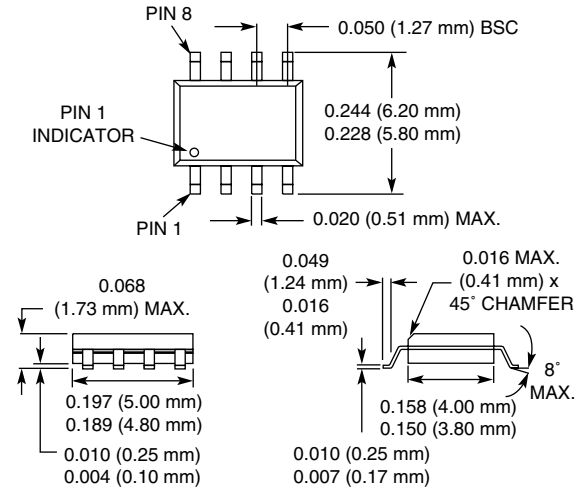
## Features

- High Linearity (55 dBm IP3 @ 0.9 GHz)
- Low Insertion Loss (0.4 dB @ 0.9 GHz)
- High Isolation (35 dB @ 0.9 GHz)
- Low DC Power Consumption
- Positive 3 V to 5 V Control Voltages

## Description

The AS277-12 is an IC FET SPDT switch in an SOIC-8 plastic package. It is a reflective switch designed for use where extremely high linearity and low insertion loss are required. It is controlled with positive voltage eliminating the need for negative voltage. Some standard implementations include antenna changeover, T/R and diversity switching over 2 W. The AS277-12 switch can be used in many analog and digital wireless communication systems including cellular, GSM and DECT applications.

## SOIC-8



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

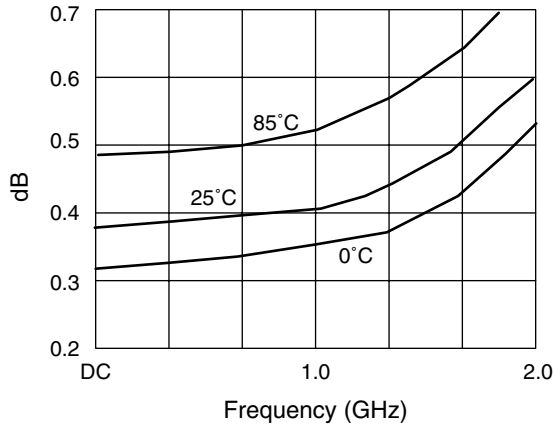
Parameter <sup>1</sup>	Frequency <sup>2</sup>	Min.	Typ.	Max.	Unit
Insertion Loss <sup>3</sup>	DC–1.0 GHz		0.4	0.50	dB
	DC–2.0 GHz		0.6	0.75	dB
Isolation	DC–1.0 GHz	30	33		dB
	DC–2.0 GHz	16	18		dB
VSWR <sup>4</sup>	DC–1.0 GHz		1.1:1	1.2:1	
	DC–2.0 GHz		1.3:1	1.4:1	

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

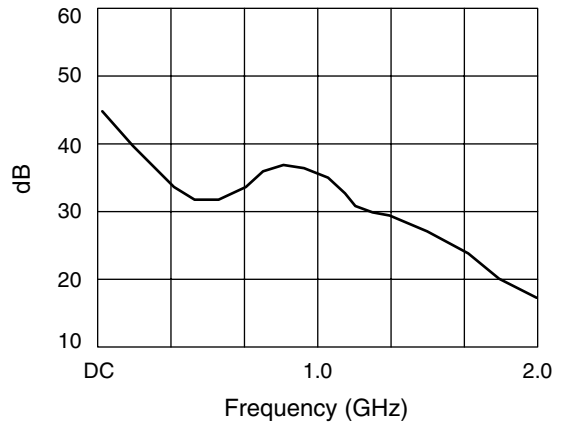
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics <sup>5</sup>	Rise, Fall (10/90% or 90/10% RF)			60		ns
	On, Off (50% CTL to 90/10% RF)			100		ns
	Video Feedthru			50		mV
Input Power for 1 dB Compression		0.9 GHz		+35		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +10 dBm	0.9 GHz		+55		dBm
Control Voltages	$V_{Low} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A Max.}$ $V_{High} = +3 \text{ V @ } 100 \mu\text{A Max. to } +5 \text{ V @ } 200 \mu\text{A Max.}$ $V_S = V_{High} \pm 0.2 \text{ V}$					

1. All measurements made in a 50 Ω system, unless otherwise specified.
2. DC = 300 kHz.
3. Insertion loss changes by 0.003 dB/°C.
4. Insertion loss state.
5. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

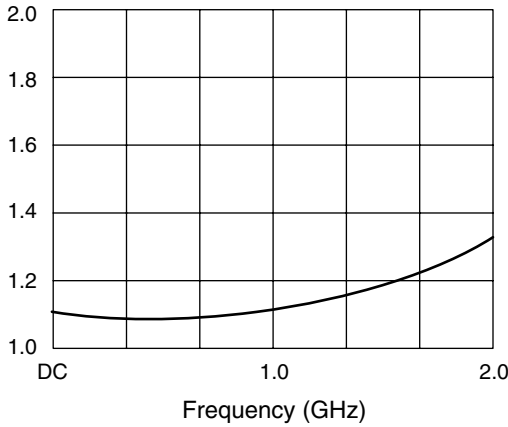
**Typical Performance Data (0, +5 V)**



**Insertion Loss vs. Frequency**



**Isolation vs. Frequency**



**VSWR vs. Frequency**

**Truth Table**

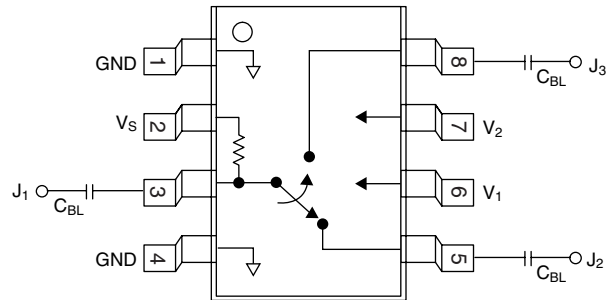
V <sub>1</sub>	V <sub>2</sub>	J <sub>1</sub> -J <sub>2</sub>	J <sub>1</sub> -J <sub>3</sub>
V <sub>High</sub>	0	Isolation	Insertion Loss
0	V <sub>High</sub>	Insertion Loss	Isolation

V<sub>High</sub> = +3 to +5 V (V<sub>S</sub> = V<sub>High</sub> ± 0.2 V).

**Absolute Maximum Ratings**

Characteristic	Value
RF Input Power	6 W Max. > 0.9 GHz, 0/+5 V Control
Supply Voltage	+8 V
Control Voltage	-0.2 V, +8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
θ <sub>JC</sub>	85°C/W

**Pin Out**



DC blocking capacitors, C<sub>BL</sub> must be supplied externally.  
C<sub>BL</sub> = 100 pF for operation >500 MHz.