

# GaAs IC High Isolation Positive Control SPDT Switch DC–2.5 GHz



AS164-80

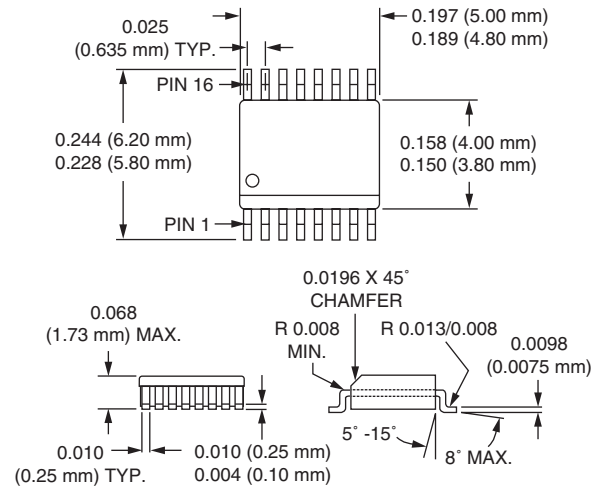
## Features

- Positive Voltage Control
- High Isolation (50 dB @ 1.9 GHz)
- Low DC Power Consumption
- Base Station Synthesizer Switch

## Description

The AS164-80 is a GaAs FET IC SPDT switch packaged in an SSOP-16 plastic package for low cost commercial applications. Ideal building block for base station dual band applications where synthesizer isolation is critical. Use in conjunction with the AS165-59 SPST switch to meet GSM synthesizer isolation requirements.

## SSOP-16



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

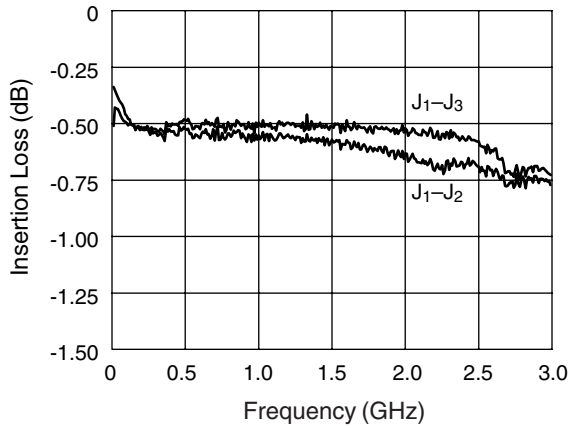
Parameter <sup>1</sup>	Frequency <sup>2</sup>	Min.	Typ.	Max.	Unit
Insertion Loss <sup>3</sup>	DC–1.0 GHz		0.6	0.8	dB
	1.0–2.0 GHz		0.8	1.0	dB
	2.0–2.5 GHz		1.0	1.2	dB
Isolation	DC–2.0 GHz	44	50		dB
	2.0–2.5 GHz	32	42		dB
VSWR <sup>4</sup>	DC–2.0 GHz		1.3:1	1.5:1	
	DC–2.5 GHz		1.5:1	1.8:1	

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

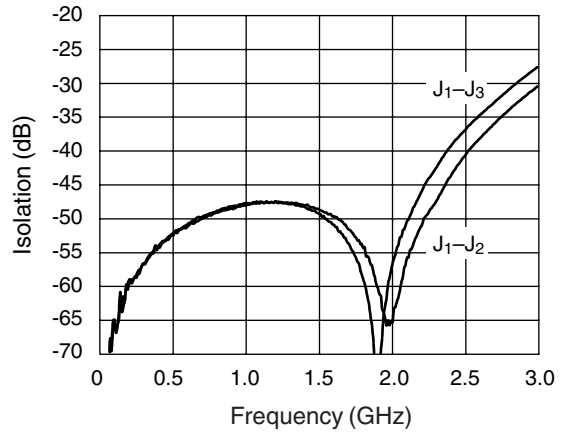
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics <sup>5</sup>	Rise, Fall (10/90% or 90/10% RF)			60		ns
	On, Off (50% CTL to 90/10% RF)			100		ns
	Video Feedthru			50		mV
Intermodulation Intercept Point (IP3)	Two-tone Input Power +10 dBm	0.5–2.5 GHz		+41		dBm
Control Voltages	$V_{Low} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A Max.}$ $V_{High} = +3 \text{ V @ } 100 \mu\text{A Max. to } +5 \text{ V @ } 200 \mu\text{A Max.}$ $V_S = V_{High} \pm 0.2 \text{ V}$					

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.

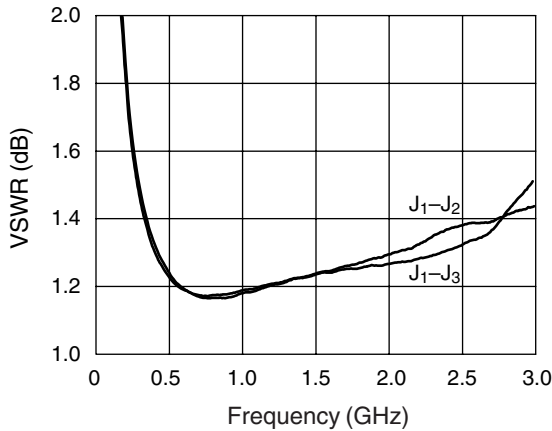
### Typical Performance Data (0, +5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

### Absolute Maximum Ratings

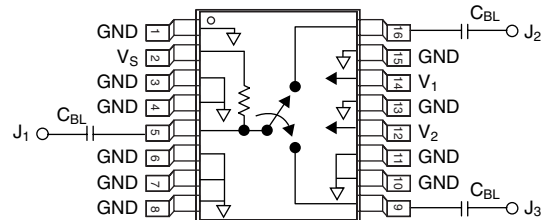
Characteristic	Value
RF Input Power	2 W Max. > 500 MHz 0/+8 V Control
Supply Voltage	+8 V
Control Voltage	-0.2 V, +8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
$\theta_{JC}$	25°C/W

### Truth Table

$V_1$	$V_2$	J <sub>1</sub> -J <sub>2</sub>	J <sub>1</sub> -J <sub>3</sub>
$V_{High}$	0	Isolation	Insertion Loss
0	$V_{High}$	Insertion Loss	Isolation

$V_{High} = +3$  to  $+5$  V ( $V_S = V_{High} \pm 0.2$  V).

### Pin Out



DC blocking capacitors ( $C_{BL}$ ) must be supplied externally.  
 $C_{BL} = 47$  pF for operation >500 MHz.