

# GaAs IC SP4T Non-Reflective Switch With Driver DC–3.5 GHz



AS204-80

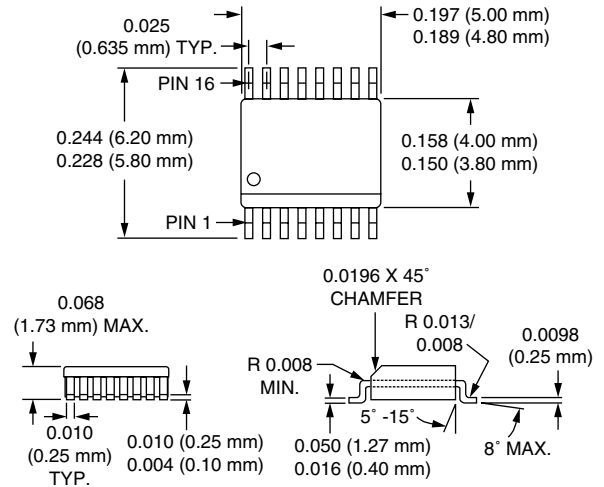
## Features

- Integrated Driver +5 V Supply Voltage
- High Isolation (45 dB @ 0.9 GHz)
- Low Insertion Loss (0.5 dB @ 0.9 GHz)
- SSOP-16 Plastic Package
- Non-Reflective All Ports

## Description

The AS204-80 is a high isolation SP4T FET IC non-reflective switch with driver. The insertion loss is 0.5 dB and isolation is 45 dB at 0.9 GHz. The switch is ideal for cellular base station switch matrices.

## SSOP-16 (-80)



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

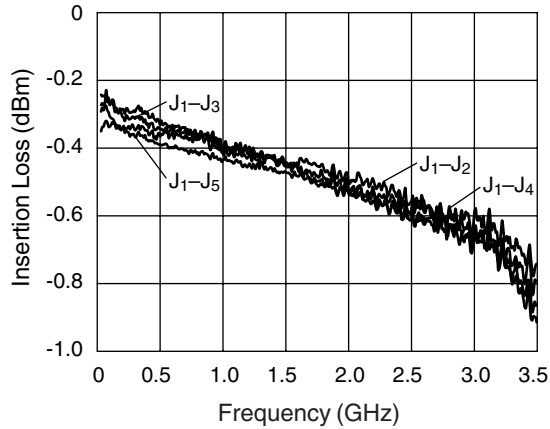
Parameter <sup>1</sup>	Frequency <sup>2</sup>	Min.	Typ.	Max.	Unit
Insertion Loss <sup>3</sup>	DC–1.0 GHz		0.4	0.6	dB
	DC–2.0 GHz		0.6	0.8	dB
	DC–2.5 GHz		0.7	0.9	dB
	DC–3.5 GHz		0.9	1.2	dB
Isolation	DC–1.0 GHz	40	45		dB
	DC–2.0 GHz	30	38		dB
	DC–2.5 GHz	28	32		dB
	DC–3.5 GHz	22	25		dB
VSWR <sup>4</sup> On State	DC–3.5 GHz		1.3:1		
VSWR <sup>4</sup> Off State	0.5–3.5 GHz		1.5:1		

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

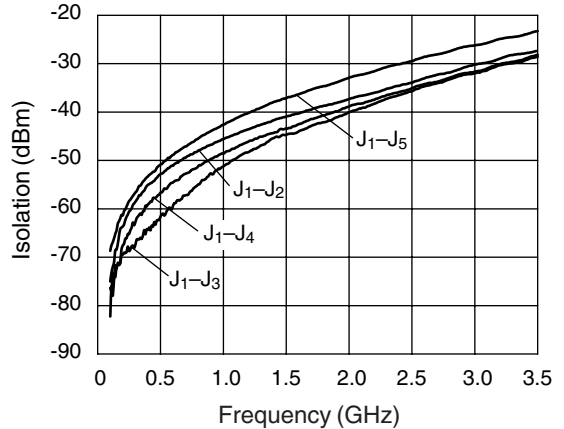
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics <sup>5</sup>	Rise, Fall (10/90% or 90/10% RF)			75		ns
	On, Off (50% CTL to 90/10% RF)			125		ns
	Video Feedthru			50		mV
Input Power for 1 dB Compression		0.50–2.0 GHz		+26		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +13 dBm	0.50–2.0 GHz 0.05 GHz		+40 +29		dBm dBm
Control Voltages <sup>6</sup>	CTL1, 2 Low	$V_{CC} = 5 \pm 0.2$ V	0.0		0.5	V
	CTL1, 2 High		2.4		5.0	V
Supply Voltage, $V_{CC}$ <sup>6</sup>	+5 V $\pm$ 0.20 V @ 500 $\mu$ A Typ.					

1. All measurements made in a 50  $\Omega$  system, unless otherwise specified.
2. DC = 300 kHz.
3. Insertion loss changes by 0.003 dB/°C.
4. Input/Output.
5. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.
6.  $V_{CC}$  must be powered on by a minimum of 10 ns prior to  $V_{CTL}$ .

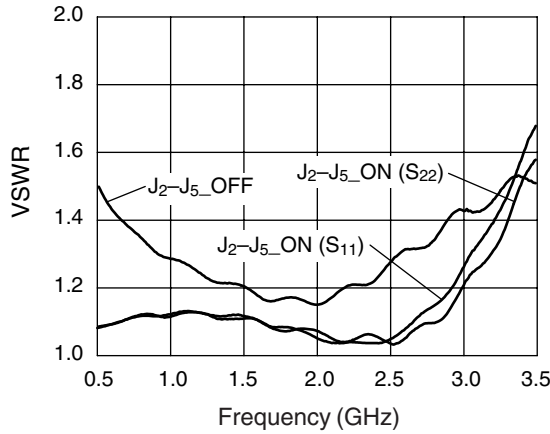
### Typical Performance Data



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

### Absolute Maximum Ratings

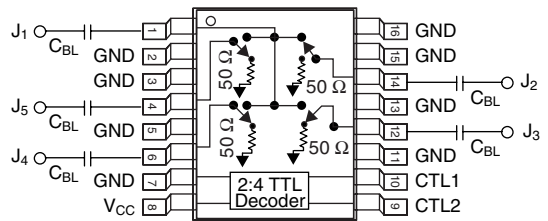
Characteristic	Value
RF Input Power	0.8 W > 500 MHz 0.2 W @ 50 MHz
Supply Voltage	6 V
Control Voltage	-0.2 V, +6 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
$\theta_{JC}$	30°C/W

### Truth Table

Insertion Loss Path J <sub>1</sub> to:	Control Input	
	CTL1	CTL2
J <sub>2</sub>	0	0
J <sub>3</sub>	1	0
J <sub>4</sub>	0	1
J <sub>5</sub>	1	1

"0" = 0 to 0.5 V.  
"1" = 2.4 to 5 V.

### Pin Out



DC blocking capacitors ( $C_{BL}$ ) required for positive voltage operation.  
 $C_{BL} = 47$  pF for operation frequency >500 MHz.