

# GaAs SPDT Non-Reflective Switch DC–2.5 GHz



AS131-59

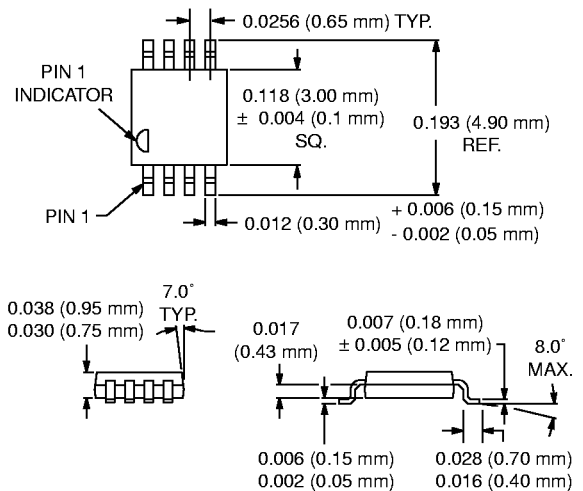
## Features

- Low DC Power Consumption
- High Isolation (45 dB @ 0.9 GHz)
- Non-Reflective

## Description

The AS131-59 is a high isolation IC FET SPDT non-reflective switch in a plastic MSOP-8 package for commercial applications. The switch operates with -5, 0 V or 0, +5 V when floated as shown on the following page. This general purpose SPDT switch is used in various telecommunications applications.

## MSOP-8



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

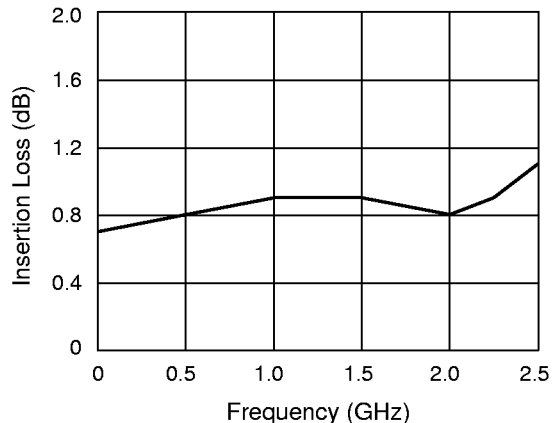
Parameter <sup>1</sup>	Frequency <sup>2</sup>	Min.	Typ.	Max.	Unit
Insertion Loss <sup>3</sup>	DC–0.5 GHz		0.8	1.0	dB
	DC–1.0 GHz		0.9	1.1	dB
	DC–2.0 GHz		1.0	1.2	dB
	DC–2.5 GHz		1.1	1.4	dB
Isolation	DC–0.5 GHz	45	55		dB
	DC–1.0 GHz	40	48		dB
	DC–2.0 GHz	30	35		dB
	DC–2.5 GHz	25	32		dB
VSWR <sup>4</sup>	DC–2.5 GHz		1.6:1	1.8:1	

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

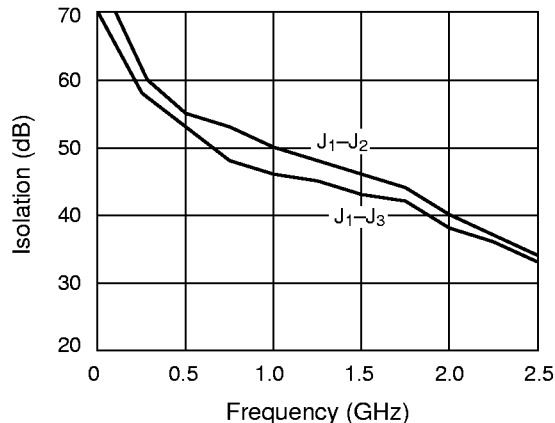
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics <sup>5</sup>	Rise, Fall (10/90% or 90/10% RF)			25		ns
	On, Off (50% CTL to 90/10% RF)			30		ns
	Video Feedthru			15		mV
Input Power for 1 dB Compression		0.5–2.5 GHz		+26		dBm
Intermodulation Intercept Point	For Two-tone Input Power +10 dBm	0.9 GHz		+44		dBm
Control Voltages	$V_{Low} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A Max.}$ $V_{High} = -5 \text{ V @ } 50 \mu\text{A to } -8 \text{ V @ } 200 \mu\text{A Max.}$					

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

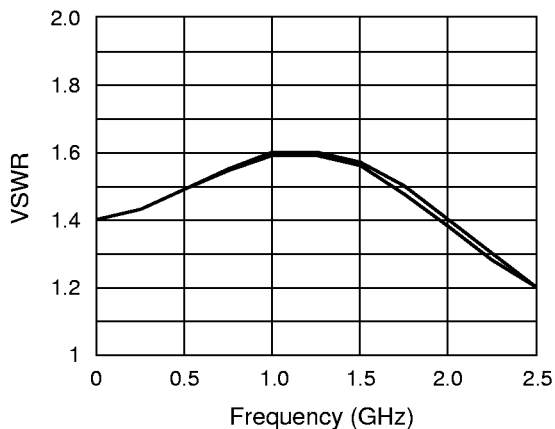
### Typical Performance Data (0, -5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

### Truth Table

#### Negative Operation

V <sub>1</sub>	V <sub>2</sub>	J <sub>1</sub> -J <sub>2</sub>	J <sub>1</sub> -J <sub>3</sub>
0	-5	Insertion Loss	Isolation
-5	0	Isolation	Insertion Loss

#### Positive Operation

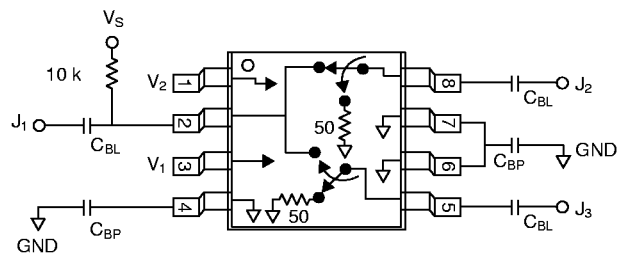
V <sub>1</sub>	V <sub>2</sub>	J <sub>1</sub> -J <sub>2</sub>	J <sub>1</sub> -J <sub>3</sub>
V <sub>High</sub>	0	Insertion Loss	Isolation
0	V <sub>High</sub>	Isolation	Insertion Loss

V<sub>High</sub> = +5 to +8 V (V<sub>S</sub> = V<sub>High</sub> ± 0.2 V).

### Absolute Maximum Ratings

Characteristic	Value
RF Input Power	2 W Max. > 0.5 GHz 0/-8 V Control
Control Voltage	+0.2 V, -8 V
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-65 °C to +150 °C
JC	25 °C/W

### Pin Out



External components shown are for positive voltage operation only. C<sub>BL</sub> = 100 pF, C<sub>BP</sub> = 1000 pF. Capacitance values chosen for operation >500 MHz.