

GaAs IC SPDT Switch Non-Reflective DC–10 GHz



AS018M2-01, AS018M2-10

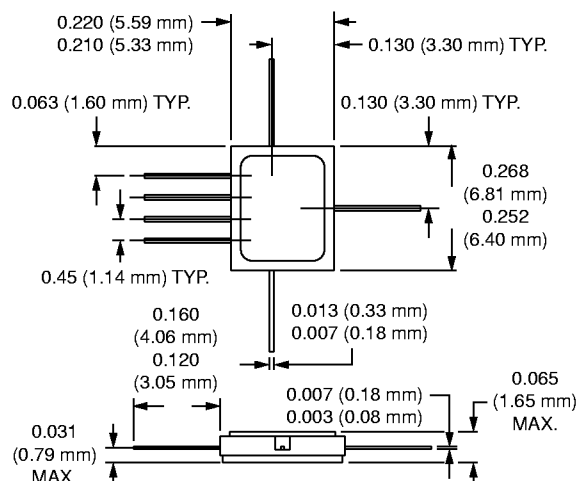
Features

- Broadband DC–10 GHz
- High Isolation, Non-Reflective
- 7 Lead Hermetic Package
- Capable of Meeting MIL-STD Requirements⁵

Description

The AS018M2-01 is a GaAs IC FET SPDT non-reflective switch. This device is ideal for microstrip applications and has optimum performance at higher frequencies (4–10 GHz), since all leads are RF isolated. This product is useful as a modulator and switch in high reliability and commercial applications. The AS018M2-10 is the gullwing version of this device for surface mount applications.

-01



Electrical Specifications at 25 °C

Parameter ¹	Frequency ⁴	Min.	Typ.	Max.	Unit
Insertion Loss ²	DC–2.0 GHz		1.3	1.5	dB
	DC–4.0 GHz		1.6	1.8	dB
	DC–8.0 GHz		2.5	2.8	dB
	DC–10.0 GHz		3.2	3.5	dB
Isolation	DC–2.0 GHz	55	60		dB
	DC–4.0 GHz	50	55		dB
	DC–8.0 GHz	40	45		dB
	DC–10.0 GHz	30	35		dB
VSWR (I/O)	DC–2.0 GHz		1.2:1	1.4:1	
	DC–4.0 GHz		1.3:1	1.5:1	
	DC–8.0 GHz		1.6:1	1.8:1	
	DC–10.0 GHz		1.8:1	2.0:1	

Operating Characteristics at 25 °C

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics	Rise, Fall (10/90% or 90/10% RF)			3		ns
	On, Off (50% CTL to 90/10% RF)			6		ns
	Video Feedthru ³			20		mV
Input Power for 1 dB Compression	0/-5 V	0.5–10 GHz		24		dBm
		0.001 GHz		16		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power 13 dBm	0.5–10 GHz		46		dBm
		0.001 GHz		35		dBm
Control Voltages	$V_{Low} = 0 \text{ to } -0.2 \text{ V @ } 20 \mu\text{A Max.}$ $V_{High} = -3 \text{ V to } -6 \text{ V @ } 200 \mu\text{A Max.}$					

1. All measurements made in a 50 Ω system, unless otherwise specified.

2. Insertion loss changes by 0.003 dB/°C.

3. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

4. DC = 300 kHz.

5. See Quality/Reliability section.

A line graph showing the insertion loss of the 100-GHz bandpass filter as a function of frequency. The x-axis is labeled 'Frequency (GHz)' and ranges from DC to 10 GHz with major ticks every 2 GHz. The y-axis is labeled 'Insertion Loss (dB)' and ranges from 0 to 3.0 with major ticks every 0.5 dB. A single black line represents the data, starting at 1.0 dB at DC and increasing linearly to approximately 2.9 dB at 10 GHz.

Frequency (GHz)	Insertion Loss (dB)
DC	1.0
2	1.4
4	1.8
6	2.2
8	2.6
10	2.9

Frequency (GHz)	Isolation (dB)
DC	67
2	60
4	55
6	50
8	44
10	36

V_1	V_2	V_3	V_4	J_1-J_2	J_1-J_3
0	-5	0	-5	Insertion Loss	Isolation
-5	0	-5	0	Isolation	Insertion Loss

Characteristic	Value
RF Input Power (RF In)	1 W
Control Voltage (V _C)	+0.2 V, -7.0 V
Operating Temperature (T _{OP})	-55 °C to +125 °C
Storage Temperature (T _{ST})	-65 °C to +150 °C
Thermal Resistance (θ _{JC})	83 °C/W

The diagram shows a central square region with rounded corners, representing a device. Inside this region, there are two resistors, each labeled $50\ \Omega$. The resistors are connected in a bridge-like configuration. Four ports are labeled around the device: J_1 at the top, J_2 on the left, J_3 on the right, and J_4 at the bottom. Arrows indicate the direction of signal flow: from J_1 into the top of the device, from J_2 into the left side, from J_3 into the right side, and from J_4 into the bottom. The internal connections show a central node where the two resistors meet, and other nodes connected to the ports.