

GaAs IC SPDT Switch Non-Reflective DC–2.5 GHz



ASC02M2-12

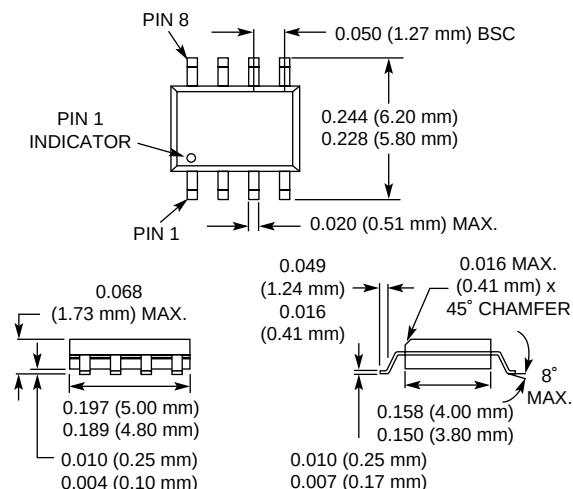
Features

- High Isolation (35 dB @ 0.9 GHz)
- Low DC Power Consumption
- Non-Reflective

Description

The ASC02M2-12 is a low cost IC FET SPDT non-reflective switch in a plastic SOIC-8 package. 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.

SOIC-8



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

Parameter ¹	Frequency ²	Min.	Typ.	Max.	Unit
Insertion Loss ³	DC–0.5 GHz		0.7	0.8	dB
	DC–1.0 GHz		0.8	1.0	dB
	DC–2.0 GHz		1.1	1.2	dB
	DC–2.5 GHz		1.2	1.4	dB
Isolation	DC–0.5 GHz	37	40		dB
	DC–1.0 GHz	32	35		dB
	DC–2.0 GHz	24	26		dB
	DC–2.5 GHz	18	22		dB
VSWR ⁴	DC–0.5 GHz		1.3:1	1.4:1	
	DC–2.0 GHz		1.5:1	1.6:1	
	DC–2.5 GHz		1.7:1	1.8:1	

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

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics ⁵	Rise, Fall (10/90% or 90/10% RF)			3		ns
	On, Off (50% CTL to 90/10% RF)			6		ns
	Video Feedthru			15		mV
Input Power for 1 dB Compression		0.5–2.0 GHz		+23		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +13 dBm	0.5–2.0 GHz		+40		dBm
Control Voltages	V _{Low} = 0 to -0.2 V @ 20 µA Max. V _{High} = -5 V @ 50 µA to -8 V @ 200 µA Max.					

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

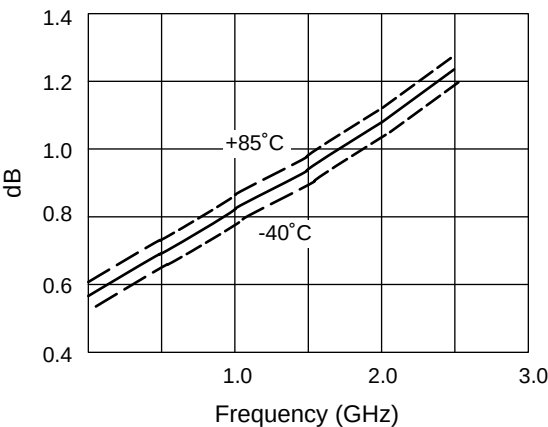
2. DC = 300 kHz.

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

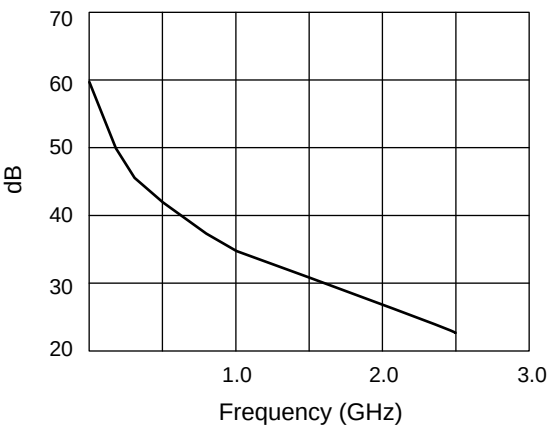
4. Insertion loss state.

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

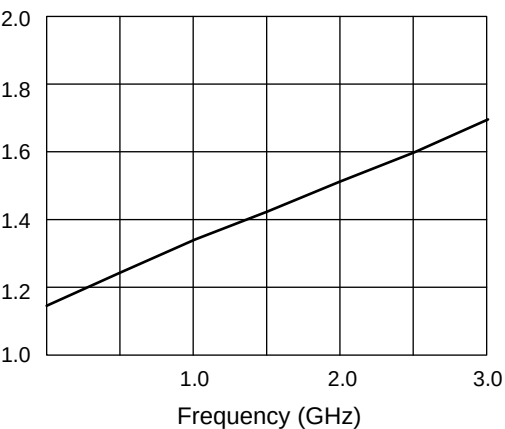
Typical Performance Data (0, -5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Truth Table

Negative Operation

V ₁	V ₂	J ₁ -J ₂	J ₁ -J ₃
-5	0	Insertion Loss	Isolation
0	-5	Isolation	Insertion Loss

Positive Operation

V ₁	V ₂	J ₁ -J ₂	J ₁ -J ₃
0	V _{High}	Insertion Loss	Isolation
V _{High}	0	Isolation	Insertion Loss

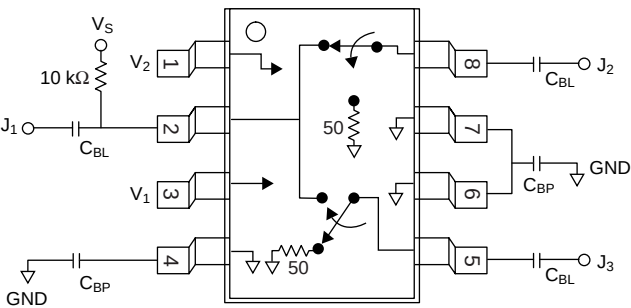
V_{High} = +5 to +8 V (V_S = V_{High} ± 0.2 V).

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	2 W > 500 MHz 0/-8 V 0.5 W @ 50 MHz 0/-8 V
Control Voltage	+0.2 V, -8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Θ _{JC}	25°C/W

Note: Exceeding these parameters may cause irreversible damage.

Pin Out



External components shown are for positive voltage operation only.
C_{BL} = 100 pF, C_{BP} = 1000 pF for operation >500 MHz.