

GaAs IC High Isolation SPST Switch Non-Reflective Positive Control 0.7–2.0 GHz



AS121-12

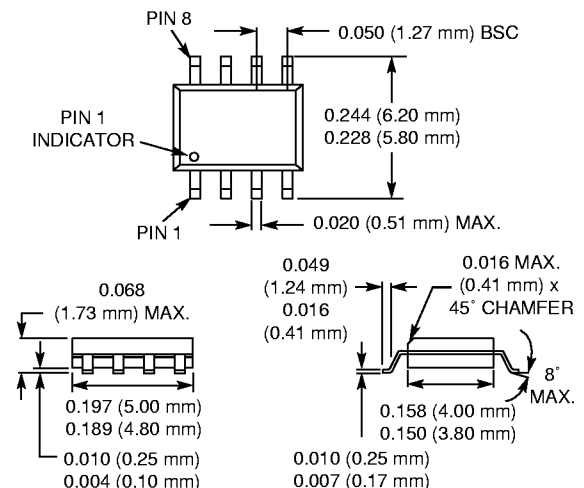
Features

- Complementary Positive Control Voltages
- 5 V Operation
- Input and Output Non-Reflective
- High Isolation (46 dB @ 0.9 GHz)

Description

The AS121-12 SPST IC FET switch is non-reflective on both input and output. This device has been designed for high isolation switching applications and is mounted in the SOIC-8 package. For positive operation, the switch requires DC blocking capacitors on RF lines, a positive supply and two complementary positive controls. Ideal building block for base station switching applications.

SOIC-8



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

Parameter ¹	Frequency	Min.	Typ.	Max.	Unit
Insertion Loss ²	0.7–1.0 GHz		0.8	1.0	dB
	1.0–1.8 GHz		1.0	1.2	dB
	1.8–2.0 GHz		1.1	1.3	dB
Isolation	0.7–1.0 GHz	41	46		dB
	1.0–1.8 GHz	43	47		dB
	1.8–2.0 GHz	36	40		dB
VSWR ³	0.7–1.0 GHz		1.6:1	1.8:1	
	1.0–2.0 GHz		1.4:1	1.6:1	

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

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics ⁴	Rise, Fall (10/90% or 90/10% RF)			50		ns
	On, Off (50% CTL to 90/10% RF)			100		ns
	Video Feedthru			50		mV
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +13 dBm +5 V	0.5–2.0 GHz		+43		dBm
Input Power for 1 dB Compression	+5 V	0.9 GHz		+28		dBm
Control Voltage	$V_{Low} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A}$ $V_{High} = +5 \text{ V @ } 100 \mu\text{A to } +7 \text{ V @ } 200 \mu\text{A Max.}$ $V_S = V_{High} \pm 0.2 \text{ V}$					

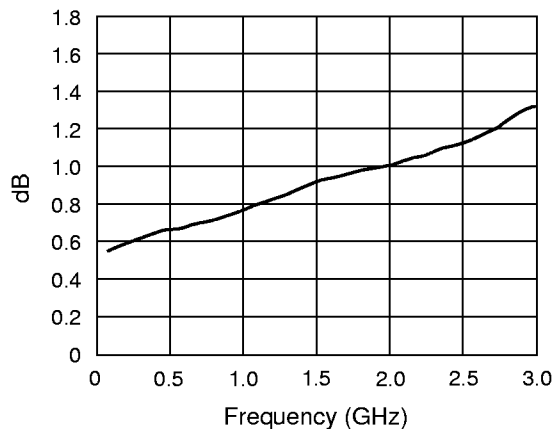
1. All measurements made in a 50 ohm system, unless otherwise specified.

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

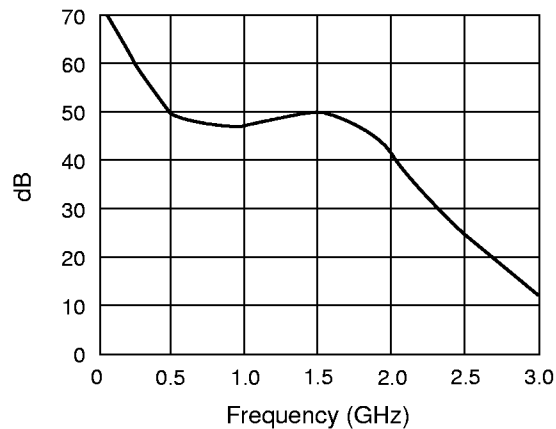
3. Input/output.

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

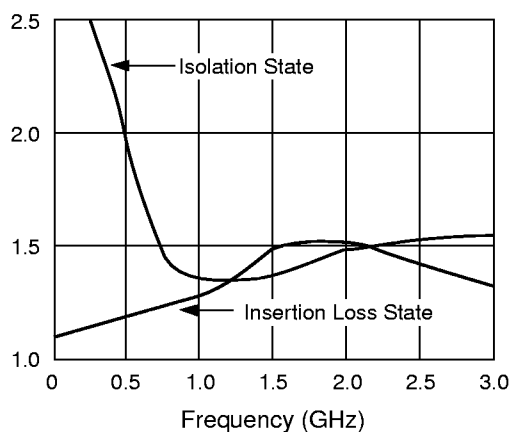
Typical Performance Data (0, +5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



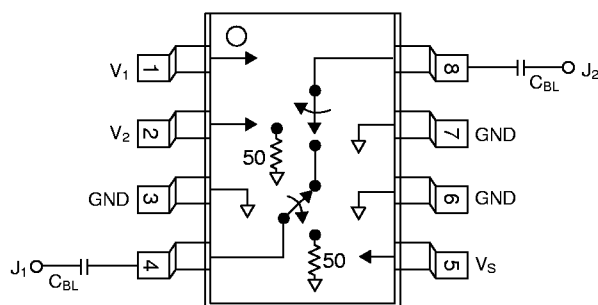
VSWR vs. Frequency

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	2 W Max. > 500 MHz, 0/+8 V
Control Voltage	-0.2, +8 V
Supply Voltage	+8 V
Operating Temperature	-40°C to +125°C
Storage Temperature	-65°C to +150°C
Θ_{JC}	25°C/W

Note: Exceeding these parameters may cause irreversible damage.

Pin Out



DC blocking capacitors (C_{BL}) must be supplied externally.
 $C_{BL} = 100$ pF for operation >500 MHz.

Truth Table

Positive Operation

V_1	V_2	J_1-J_3
0	V_{High}	Insertion Loss
V_{High}	0	Isolation

$V_{High} = +5$ V to $+7$ V ($V_S = V_{High} \pm 0.2$ V)