

GaAs IC SP4T Non-Reflective Switch DC–2.5 GHz



AS124-61

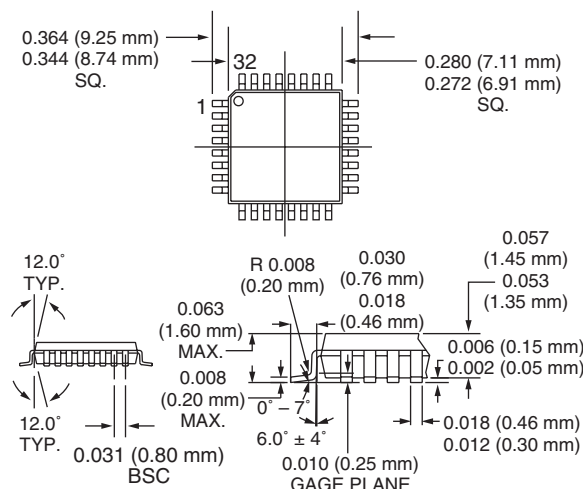
Features

- -3 V to -5 V Operation
- High Isolation (38 dB @ 1.9 GHz)
- Low Insertion Loss (0.7 dB @ 1.9 GHz)
- LQFP-32 Plastic Package
- Non-Reflective All Ports

Description

The AS124-61 is a high isolation SP4T FET IC non-reflective switch. The switch operates with 0 and -3 V or -5 V over the frequency range of DC–2.5 GHz. The insertion loss is 0.7 dB and isolation is 38 dB at 1.9 GHz. The switch is ideal for base station switch matrices. It can also be used as a high isolation SPDT switch.

LQFP-32



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

Parameter ¹	Frequency ²	Min.	Typ.	Max.	Unit
Insertion Loss ³	DC–0.5 GHz		0.5	0.7	dB
	DC–1.0 GHz		0.6	0.8	dB
	DC–2.0 GHz		0.7	1.0	dB
	DC–2.5 GHz		1.0	1.3	dB
Isolation	DC–0.5 GHz	50	55		dB
	DC–1.0 GHz	45	50		dB
	DC–2.0 GHz	32	37		dB
	DC–2.5 GHz	28	32		dB
VSWR ⁴	DC–1.0 GHz		1.45:1	1.6:1	
	DC–2.5 GHz		1.6:1	1.8:1	

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

Parameter ¹	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics ⁵	Rise, Fall (10/90% or 90/10% RF)			15		ns
	On, Off (50% CTL to 90/10% RF)			30		ns
	Video Feedthru			30		mV
Input Power for 1 dB Compression	0/-3 V	0.50–2.0 GHz		+24		dBm
	0/-5 V	0.50–2.0 GHz		+30		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +13 dBm	0.50–2.0 GHz		+40		dBm
		0.05 GHz		+29		dBm
Control Voltages	$V_{Low} = 0$ to -0.2 V @ 20 μ A Max.					
	$V_{High} = -3$ V @ 100 μ A to -5 V @ 500 μ A Max.					

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

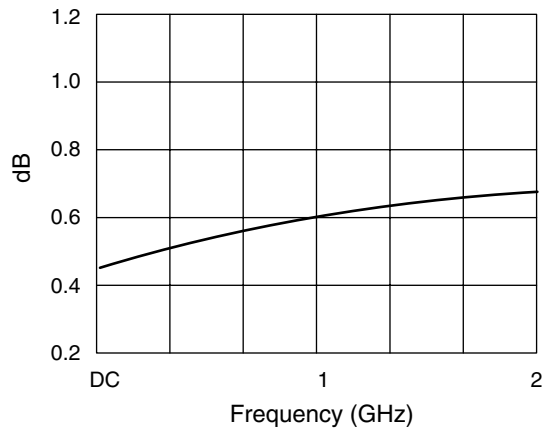
2. DC = 300 kHz.

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

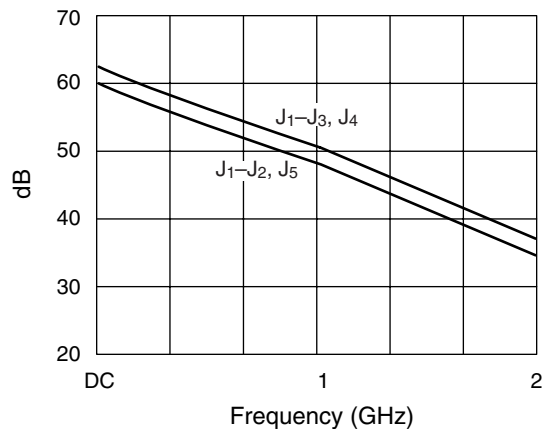
4. Input/output.

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

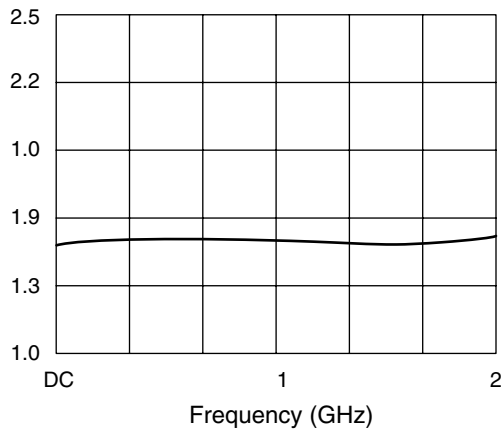
Typical Performance Data (0, -5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency

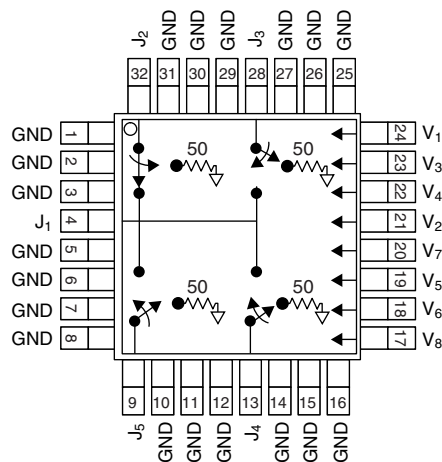


VSWR vs. Frequency

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	2 W > 500 MHz 0/-7 V 0.5 W @ 50 MHz 0/-7 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

Pin Out



Truth Table

Insertion Loss Path J ₁ to:	J ₃		J ₂		J ₅		J ₄	
	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈
J ₂	0	-5	-5	0	-5	0	-5	0
J ₃	-5	0	0	-5	-5	0	-5	0
J ₄	0	-5	0	-5	-5	0	0	-5
J ₅	0	-5	0	-5	0	-5	-5	0