GaAs IC SP4T Non-Reflective Switch DC–2.5 GHz

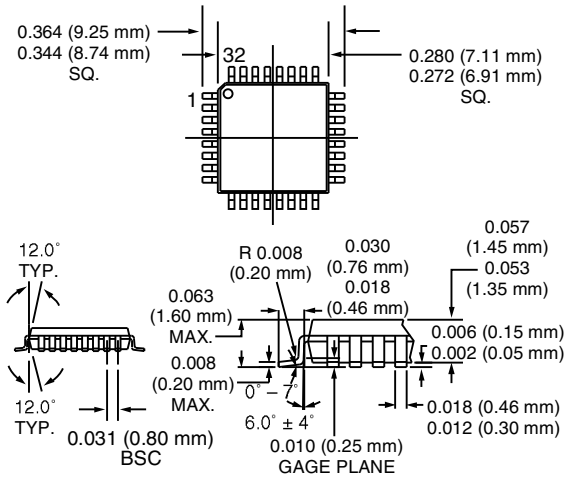
SKYWORKS

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

LQFP-32



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.

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

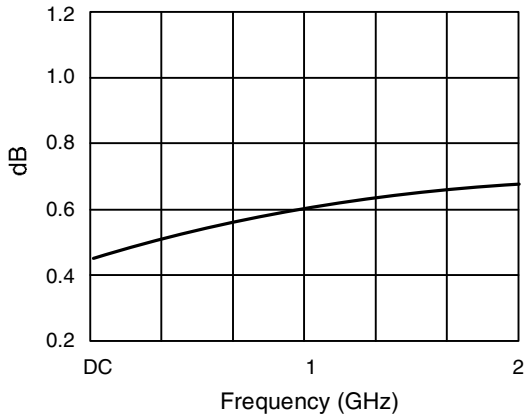
Parameter[1]	Frequency[2]	Min.	Typ.	Max.	Unit
Insertion Loss[3]	DC–0.5 GHz DC–1.0 GHz DC–2.0 GHz DC–2.5 GHz		0.5 0.6 0.7 1.0	0.7 0.8 1.0 1.3	dB dB dB dB
Isolation	DC–0.5 GHz DC–1.0 GHz DC–2.0 GHz DC–2.5 GHz	50 45 32 28	55 50 37 32		dB dB dB dB
VSWR[4]	DC–1.0 GHz DC–2.5 GHz		1.45:1 1.6:1	1.6:1 1.8:1	

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

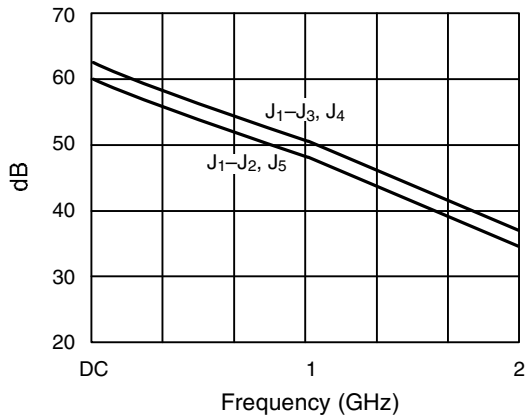
Parameter[1]	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics[5]	Rise, Fall (10/90% or 90/10% RF) On, Off (50% CTL to 90/10% RF) Video Feedthru			15 30 30		ns ns mV
Input Power for 1 dB Compression	0/-3 V 0/-5 V	0.50–2.0 GHz 0.50–2.0 GHz		+24 +30		dBm dBm
Intermodulation Intercept Point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

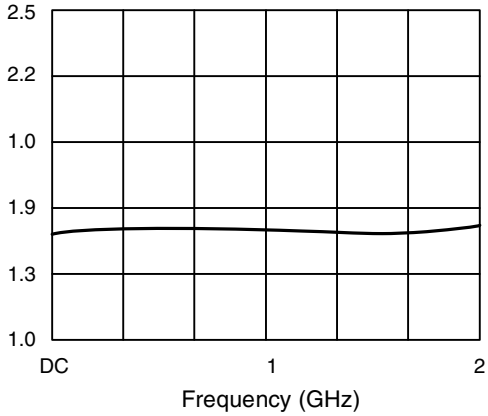
Typical Performance Data (0, -5 V)



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

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

Pin Out