GaAs IC High Isolation Positive Control SPDT Switch DC–2.5 GHz

AS148-24

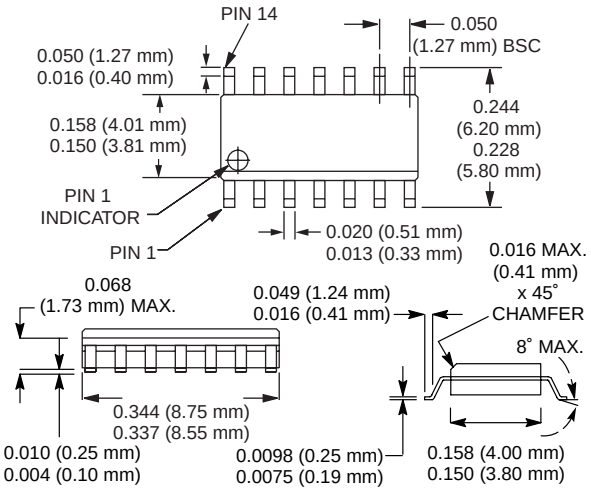
Features

- Positive Voltage Control
- High Isolation (50 dB @ 0.9 GHz and 1.9 GHz)
- Low DC Power Consumption
- Base Station Synthesizer Switch

Description

GaAs FET IC SPDT switch packaged in an SOIC-14 plastic package for low cost commercial applications. Ideal building block for base station dual band applications where synthesizer isolation is critical. Use in conjunction with the AS123-12 SPST switch to meet GSM synthesizer isolation requirement.

SOIC-14



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

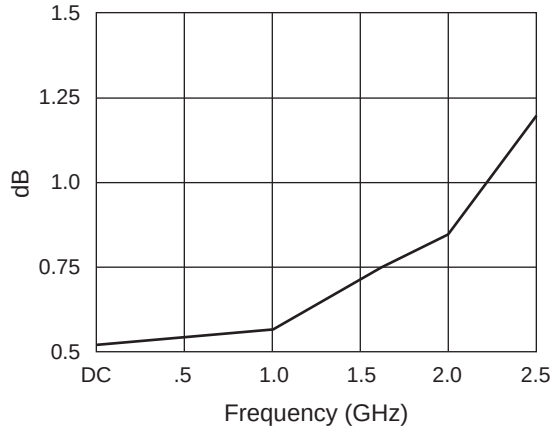
Parameter[1]	Frequency[2]	Min.	Typ.	Max.	Unit
Insertion Loss[3]	DC–1.0 GHz DC–2.0 GHz DC–2.5 GHz		0.6 0.8 1.2	0.9 1.1 1.4	dB dB dB
Isolation	DC–1.0 GHz DC–2.0 GHz DC–2.5 GHz	44 45 32	50 50 42		dB dB dB
VSWR[4]	DC–2.0 GHz DC–2.5 GHz		1.3:1 1.5:1	1.5:1 1.8:1	

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

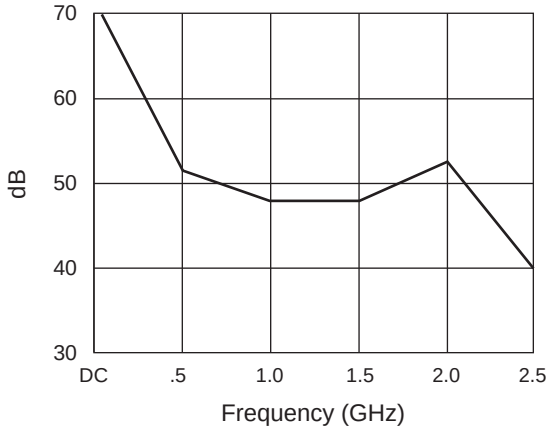
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics[5]	Rise, Fall (10/90% or 90/10% RF) On, Off (50% CTL to 90/10% RF) Video Feedthru			60 100 50		ns ns mV
Intermodulation Intercept Point (IP3)	Two-tone Input Power +10 dBm	0.5–2.0 GHz		+41		dBm
Control Voltages	V_{Low} = 0 to 0.2 V @ 20 µA Max. V_{High} = +5 V @ 200 µA Max. to +7 V @ 500 µA Max. $V_S = V_{High} \pm 0.2$ V					

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.

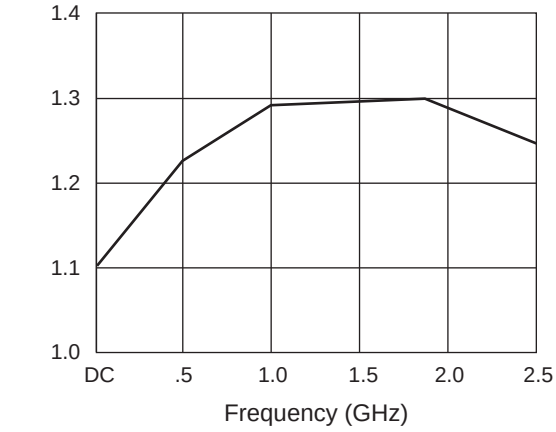
Typical Performance Data (0, +5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Absolute Maximum Ratings

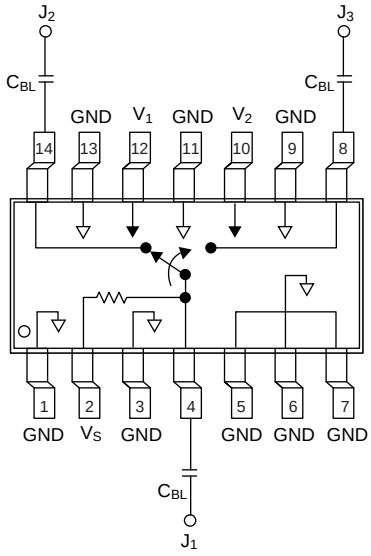
Characteristic	Value
RF Input Power	1 W Max. > 500 MHz 0/+8 V Control
Supply Voltage	+8 V
Control Voltage	-0.2 V, +8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Θ_{JC}	25°C/W

Truth Table

V_1	V_2	J_1–J_2	J_1–J_3
V_{High}	0	Isolation	Insertion Loss
0	V_{High}	Insertion Loss	Isolation

V_{High} = +5 to +7 V (V_S = V_{High} ± 0.2 V).

Pin Out



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