

GaAs IC High Power SPDT Switch DC–2 GHz



AS144-12

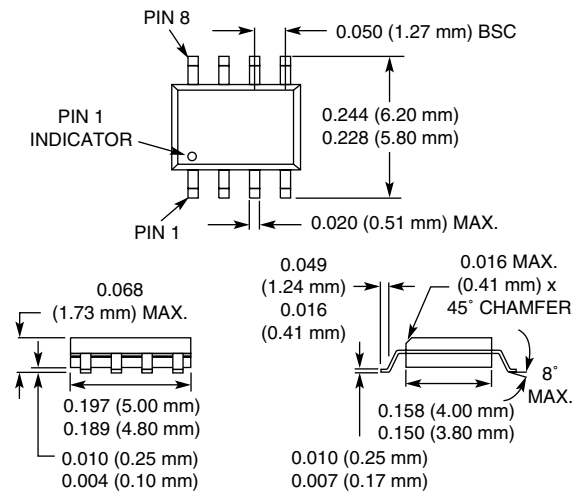
Features

- High Linearity (+61 dBm IP3 @ 0.9 GHz)
- Low Insertion Loss (0.4 dB @ 0.9 GHz)
- Low DC Power Consumption

Description

The AS144-12 is a GaAs IC FET SPDT switch in a SOIC-8 plastic package. This switch has been designed for use where extremely high linearity and low insertion loss are required. Some standard implementations include antenna changeover, T/R and diversity switching over 2 watts. The AS144-12 switch can be used in many analog and digital wireless communications systems including cellular, GSM and DECT applications.

SOIC-8



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

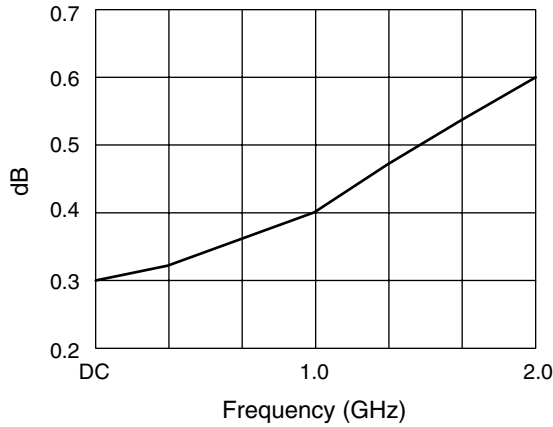
Parameter ¹	Frequency ²	Min.	Typ.	Max.	Unit
Insertion Loss ³	DC–0.5 GHz		0.35	0.5	dB
	DC–1.0 GHz		0.40	0.6	dB
	DC–2.0 GHz		0.60	0.8	dB
Isolation	DC–0.5 GHz	33	40		dB
	DC–1.0 GHz	25	30		dB
	DC–2.0 GHz	17	22		dB
VSWR ⁴	DC–2.0 GHz		1.3:1	1.4:1	

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

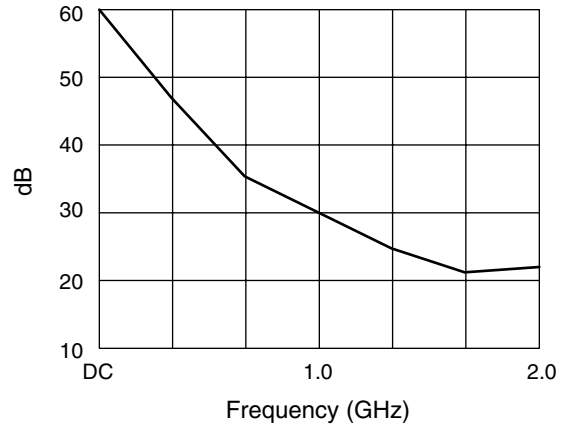
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics ⁵	Rise, Fall (10/90% or 90/10% RF)			30		ns
	On, Off (50% CTL to 90/10% RF)			35		ns
	Video Feedthru			12		mV
Input Power for 1 dB Compression		0.9 GHz		+33		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +10 dBm	0.9 GHz		+61		dBm
Control Voltages	$V_{Low} = 0$ to -0.2 @ 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.

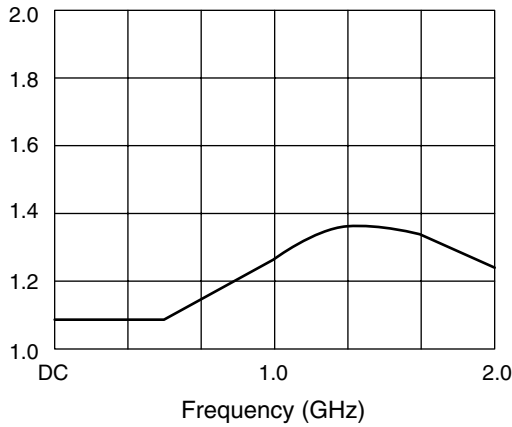
Typical Performance Data (0, -5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	5 W Max. > 0.9 GHz, 0/-5 V Control
Control Voltage	+0.2 V, -8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
θ_{JC}	85°C/W

Truth Table

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

Pin Out

