

GaAs IC SPDT Single Positive Control Switch 0.8–2.5 GHz



AS107-12

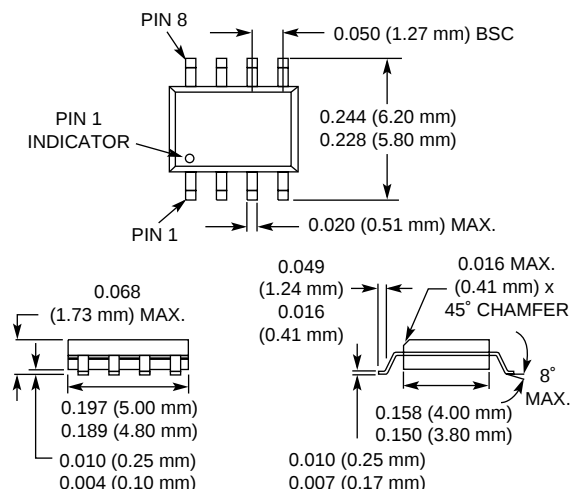
Features

- Low DC Power Consumption
- Supply Voltage (+3 V to +5 V)
- Single Positive Control Voltage (+3 V to +5 V)
- Low Cost SOIC-8 Plastic Package

Description

The AS107-12 is a GaAs IC FET SPDT reflective switch in a SOIC-8 plastic package. This single positive control switch is for low power commercial applications such as cellular and ISM band systems. The part requires a fixed positive voltage and DC blocks on RF ports.

SOIC-8



Electrical Specifications at 25°C (0, +3 V)

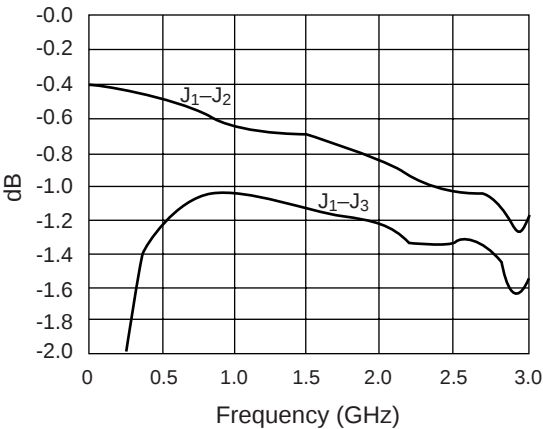
Parameter ¹	Frequency ²	Min.	Typ.	Max.	Unit
Insertion Loss ³	0.8–1.0 GHz		1.1	1.2	dB
	1.0–2.0 GHz		1.2	1.3	dB
	2.0–2.5 GHz		1.3	1.5	dB
Isolation	0.8–1.0 GHz	20	22		dB
	1.0–2.0 GHz	13	15		dB
	2.0–2.5 GHz	11	12		dB
VSWR ⁴	0.8–1.0 GHz		1.5:1		
	1.0–2.0 GHz		1.7:1		
	2.0–2.5 GHz		1.9:1		

Operating Characteristics at 25°C (0, +3 V)

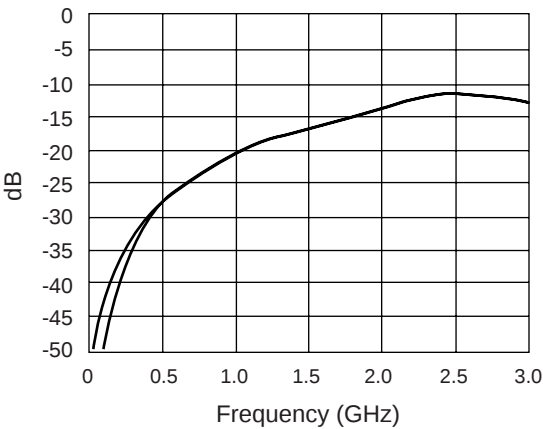
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics ⁵	Rise, Fall (10/90% or 90/10% RF)			100		ns
	On, Off (50% CTL to 90/10% RF)			500		ns
	Video Feedthru			25		mV
Input Power for 1 dB Compression	@ +3 V	0.8–2.0 GHz		+27		dBm
	@ +5 V	0.8–2.0 GHz		+32		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +5 dBm					
	@ +3 V	0.8–2.0 GHz		+38		dBm
	@ +5 V	0.8–2.0 GHz		+42		dBm
Control Voltages	$V_{Low} = 0 \text{ to } +0.2 \text{ V @ } 20 \mu\text{A Typ.}$ $V_{High} = +3 \text{ V @ } 100 \mu\text{A Typ. to } +5 \text{ V @ } 200 \mu\text{A Typ.}$ $V_S = V_{High} \pm 0.2 \text{ V}$					

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, +3 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency

Absolute Maximum Ratings

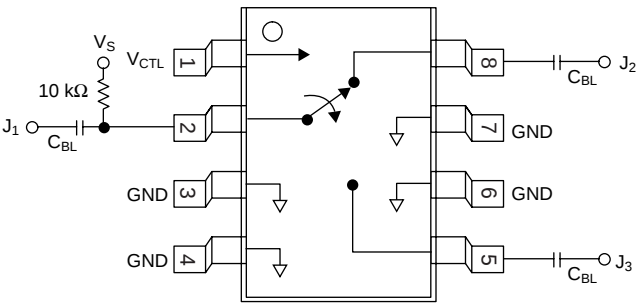
Characteristic	Value
RF Input Power	2 W > 0.8 GHz 0/+8 V Control
Supply Voltage	+8 V
Control Voltage	-0.2 V, +8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Θ _{JC}	25°C/W

Truth Table

V _{CTL}	J ₁ -J ₂	J ₁ -J ₃
0	Isolation	Insertion Loss
V _{High}	Insertion Loss	Isolation

V_{High} = +3 to +5 V (V_S = V_{High} ± 0.2 V).

Pin Out



DC blocking (C_{BL}) and biasing resistor must be supplied externally.
C_{BL} = 50 pF for operation >0.8 GHz.