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

Alpha

AS118-12

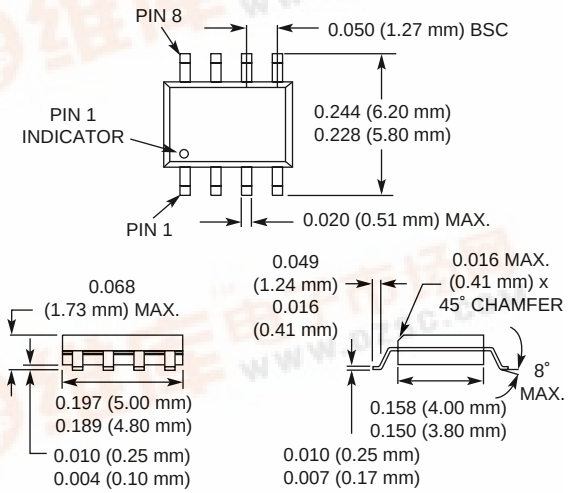
Features

- Positive Control
- High Isolation (45 dB @ 0.9 GHz)
- Low Insertion Loss (0.5 dB @ 0.9 GHz)

Description

The AS118-12 is a reflective SPDT FET IC switch. The switch requires external DC blocking capacitors, positive supply and two positive controls. The device is mounted in a plastic SOIC-8 package for surface mounting and is ideal for use in high isolation switching applications, such as base station synthesizer switching.

SOIC-8



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

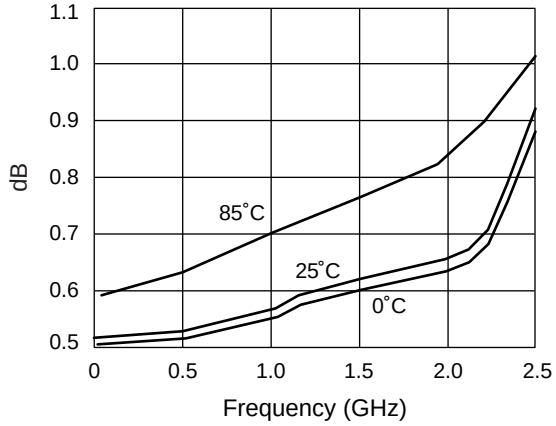
Parameter[1]	Frequency[2]	Min.	Typ.	Max.	Unit
Insertion Loss[3]	DC–0.5 GHz		0.55	0.65	dB
	DC–1.0 GHz		0.6	0.7	dB
	DC–2.0 GHz		0.7	0.8	dB
	DC–2.5 GHz		0.9	1.1	dB
Isolation	DC–0.5 GHz	46	50		dB
	DC–1.0 GHz	43	46		dB
	DC–2.0 GHz	24	27		dB
	DC–2.5 GHz	15	18		dB
VSWR[4]	DC–1.0 GHz		1.2:1	1.4:1	
	DC–2.0 GHz		1.4:1	1.7:1	
	DC–2.5 GHz		1.6:1	2.1:1	

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

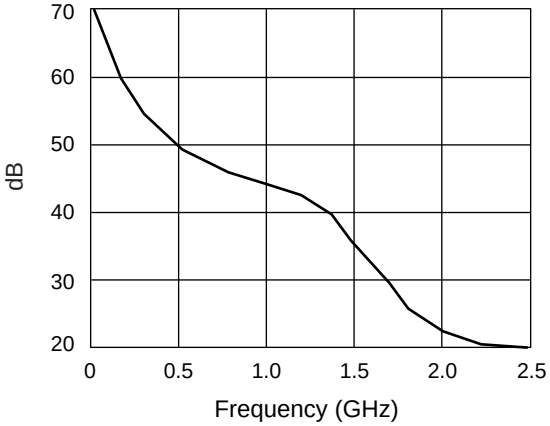
Parameter[1]	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics[5]	Rise, Fall (10/90% or 90/10% RF)			60		ns
	On, Off (50% CTL to 90/10% RF)			100		ns
	Video Feedthru			50		mV
Input Power for 1 dB Compression		0.9 GHz		+26		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +10 dBm	0.9 GHz		+41		dBm
Control Voltages	V_{Low} = 0 to 0.2 V @ 20 µA Max. V_{High} = +3 V @ 100 µA Max. to +5 V @ 200 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.

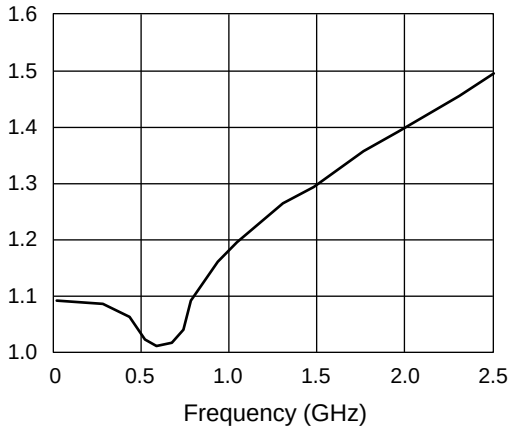
Typical Performance Data (0, +5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Absolute Maximum Ratings

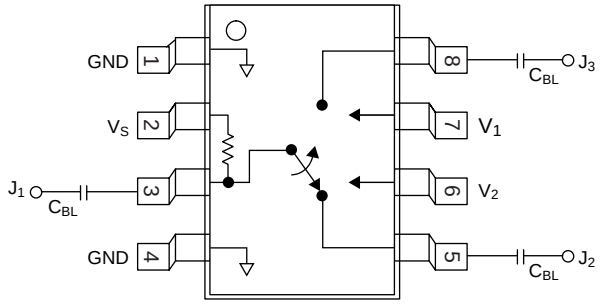
Characteristic	Value
RF Input Power	1 W Max. > 0.9 GHz 0/+5 V Control
Supply Voltage	+8 V
Control Voltage	-0.2 V, +8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Θ_{JC}	85°C/W

Truth Table

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

V_{High} = +3 to +5 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.