

GaAs IC SPDT Switch Non-Reflective DC–2.5 GHz



AS338-12

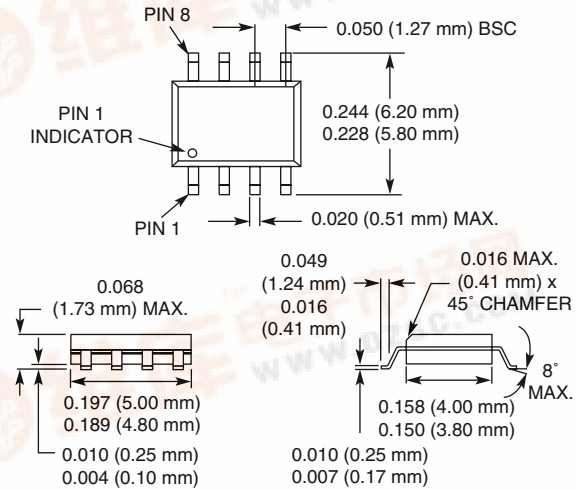
Features

- Low DC Power Consumption
- High Isolation (40 dB @ 0.9 GHz)
- Non-Reflective

Description

The AS338-12 is a low cost IC FET SPDT non-reflective switch in a plastic SOIC-8 package for commercial applications. The switch operates with -5, 0 V or 0, +5 V when “floated” as shown on the following page. This general purpose SPDT switch is used in various tele-communications 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		0.5	0.7	dB
	DC–1.0 GHz		0.6	0.8	dB
	DC–2.0 GHz		0.7	0.9	dB
	DC–2.5 GHz		1.2	1.4	dB
Isolation	DC–0.5 GHz	43	46		dB
	DC–1.0 GHz	36	39		dB
	DC–2.0 GHz	27	30		dB
	DC–2.5 GHz	23	26		dB
VSWR ⁴	DC–0.5 GHz		1.2:1	1.3:1	
	DC–1.0 GHz		1.2:1	1.4:1	
	DC–2.5 GHz		1.3:1	1.5:1	

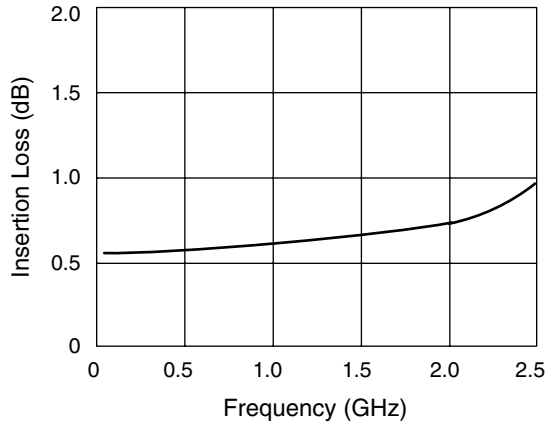
Operating Characteristics at 25°C (0, -5 V)

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			8		ns
				30		ns
				25		mV
Input Power For 1 dB Compression		0.50–2.5 GHz		+28		dBm
		0.05 GHz		+23		dBm
Intermodulation Intercept Point	For Two-tone Input Power +5 dBm	0.50–2.5 GHz 0.05 GHz		+46 +40		dBm dBm
Control Voltages	$V_{Low} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A Max.}$ $V_{High} = -5 \text{ V @ } 50 \mu\text{A to } -8 \text{ V @ } 200 \mu\text{A Max.}$					

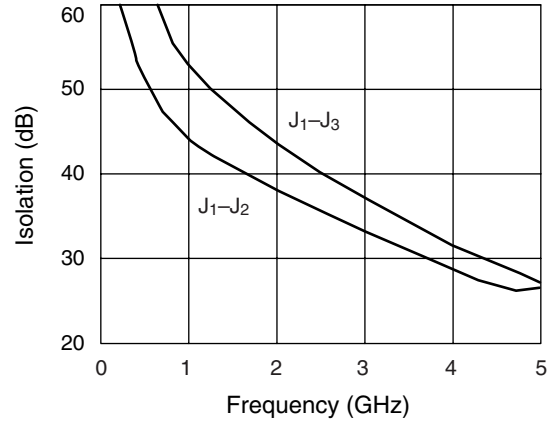
1. All measurements made in a 50 Ω system, unless otherwise specified.
2. DC = 300 kHz.
3. Insertion loss changes by 0.003 dB/°C.
4. Input/output.
5. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.



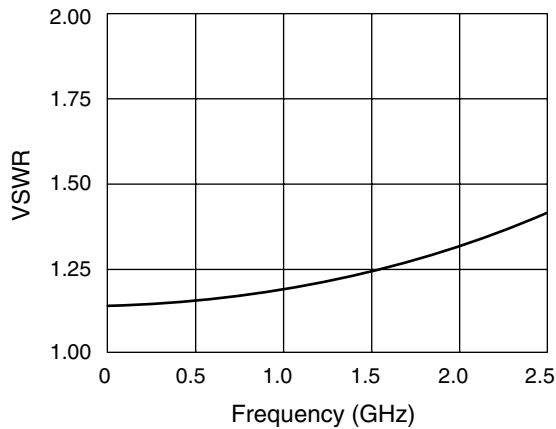
Typical Performance Data (0, -5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Truth Table

Negative Operation

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

Positive Operation¹

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} = +5 to +8 V (V_S = V_{High} ± 0.2 V).

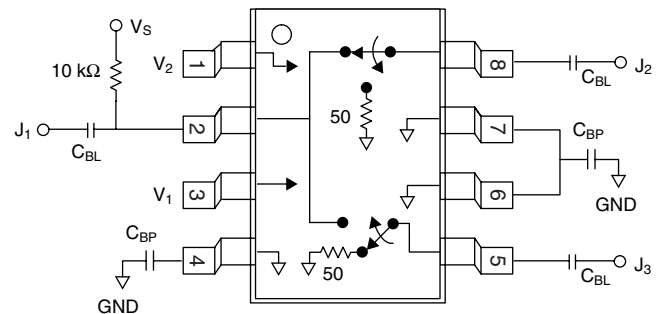
1. Refer to Application Notes for further information.

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	2 W > 500 MHz 0/-8 V 0.5 W @ 50 MHz 0/-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

Note: Exceeding these parameters may cause irreversible damage.

Pin Out



External components shown are for positive voltage operation only.
C_{BL} = 100 pF, C_{BP} = 1000 pF for operation >500 MHz.