

GaAs IC SPST Positive Control Switch

Non-Reflective 0.5–2.5 GHz



AS153-12

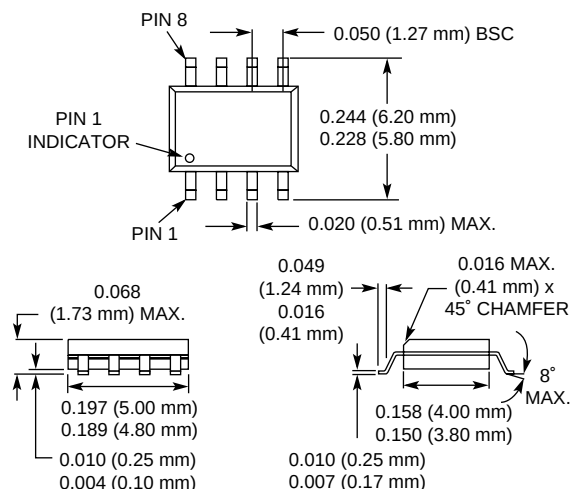
Features

- Single Positive Control Voltage
- +3 V to +5 V Operation
- Input and Output Non-Reflective
- High Isolation (45 dB @ 0.9 GHz)

Description

The AS153-12 is an FET IC SPST switch, non-reflective on both input and output. This switch requires external DC blocking capacitors, positive supply and single positive control. The device is mounted in the SOIC-8 package for surface mounting in commercial switching applications.

SOIC-8



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

Parameter ¹	Frequency	Min.	Typ.	Max.	Unit
Insertion Loss ²	0.5–1.0 GHz		0.65	0.7	dB
	1.0–2.0 GHz		0.9	1.2	dB
	2.0–2.5 GHz		1.2	1.5	dB
Isolation	0.5–1.0 GHz	40	45		dB
	1.0–2.0 GHz	20	24		dB
	2.0–2.5 GHz	10	13		dB
VSWR ³	0.5–1.0 GHz		1.4:1	2.2:1	
	1.0–2.5 GHz		1.4:1	2.2:1	

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

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics ⁴	Rise, Fall (10/90% or 90/10% RF)			300		ns
	On, Off (50% CTL to 90/10% RF)			300		ns
	Video Feedthru			10		mV
Input Power for 1 dB Compression	0/+3 V	0.9 GHz		+20		dBm
	0/+5 V	0.9 GHz		+30		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +13 dBm	0.5–2.5 GHz		+45		dBm
Control Voltages	$V_{Low} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A Max.}$ $V_{High} = +3 \text{ V @ } 100 \mu\text{A Max. to } +5 \text{ V @ } 200 \mu\text{A Max.}$ $V_S = V_{High} \pm 0.2 \text{ V}$					

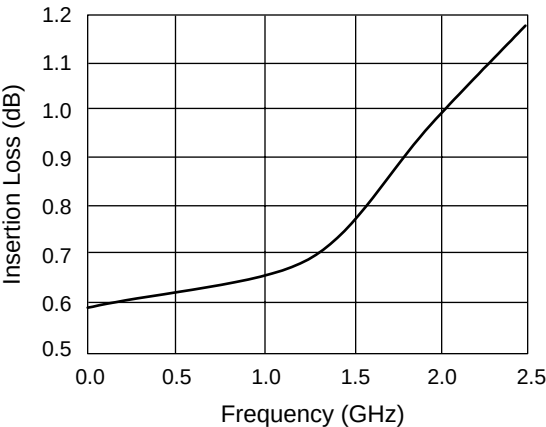
1. All measurements made in a 50 Ω system, unless otherwise specified.

2. Insertion loss changes by 0.003 dB/°C.

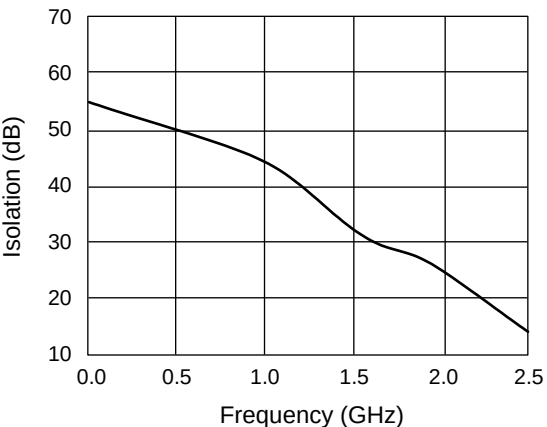
3. Input/output.

4. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

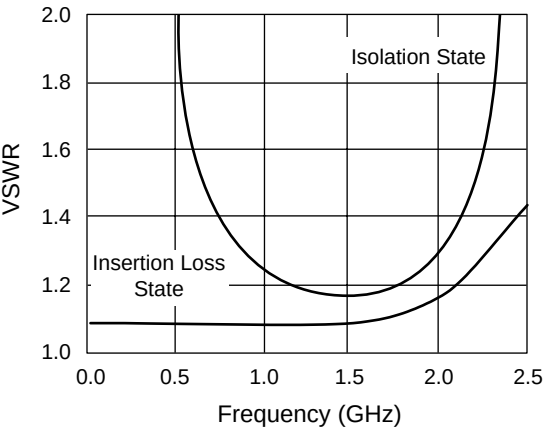
Typical Performance Data (0, +5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Truth Table

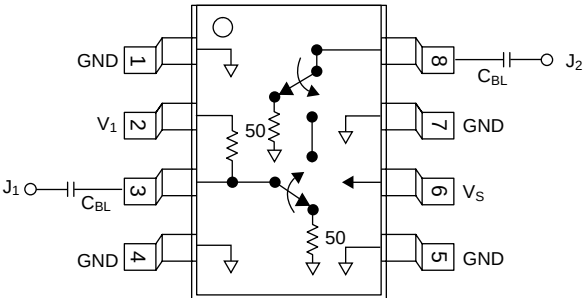
V ₁	J ₁ –J ₂
0	Insertion Loss
V _{High}	Isolation

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

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	2.5 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

Pin Out



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