

GaAs IC SPST Switch

Single Positive Control 0.5–2.5 GHz



AS156-73

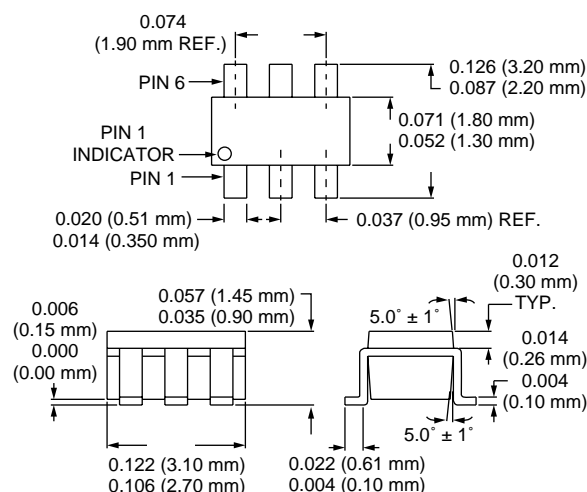
Features

- Single Positive Control Voltage
- +3 V to +5 V Operation
- Isolation Can be Tuned to Desired Frequency
- High Isolation (45 dB at 0.9 GHz with 100 pF Bypass Capacitor)
- Designed for Use as a LNA Bypass Switch

Description

The AS156-73 is an SPST FET IC switch. The switch requires external DC blocking capacitors and one bypass capacitor. Isolation is optimized at 0.9 GHz utilizing 100 pF bypass capacitor and optimized at 1.9 GHz utilizing a 2.7 pF bypass capacitor. This switch requires a positive supply and single positive control. The device is mounted in the SOT-6 package for surface mounting in commercial switching applications, specifically as a LNA bypass switch.

SOT-6



Electrical Specifications at 25°C (0, +3 V) C_{BYPASS} = 100 pF

Parameter ¹	Frequency ²	Min.	Typ.	Max.	Unit
Insertion Loss ³	0.5–1.4 GHz		0.65	0.75	dB
	1.4–2.0 GHz		0.70	0.80	dB
	2.0–2.5 GHz		0.75	0.90	dB
Isolation	0.5–1.4 GHz	40	45		dB
	1.4–2.0 GHz	23	28		dB
	2.0–2.5 GHz	10	15		dB
VSWR	0.5–2.5 GHz		1.3:1		

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

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics ⁴	Rise, Fall (10/90% or 90/10% RF)			1		μs
	On, Off (50% CTL to 90/10% RF)			1		μs
	Video Feedthru			10		mV
Input Power for 1 dB Compression	0/+3 V	0.9 GHz		18		dBm
	0/+5 V	0.9 GHz		27		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +13 dBm 0/+5 V	0.5–2.0 GHz		43		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} ± 0.2 V					

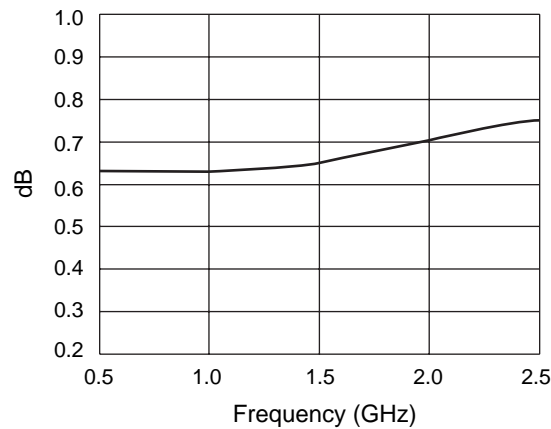
1. All measurements made in a 50 Ω system, unless otherwise specified.

2. DC = 300 kHz.

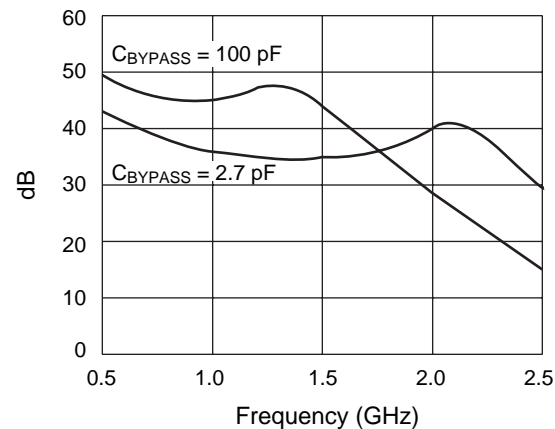
3. Insertion loss changes by 0.003 dB/°C.

4. 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

C_{BYPASS} value and exact location determines frequency response of isolation (see isolation vs. frequency curve as example).

Truth Table

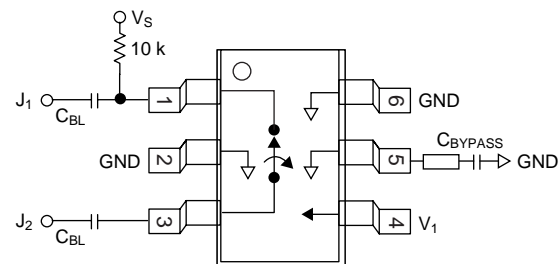
V ₁	J ₁ –J ₂
V _{High}	Insertion Loss
0	Isolation

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, V _S	+8 V
Control Voltage, V ₁	-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.