

SKYWORKS®

## DATA SHEET

# AS156-73, AS156-73LF: GaAs IC SPST Switch Single Positive Control 0.5–2.5 GHz

**Features**

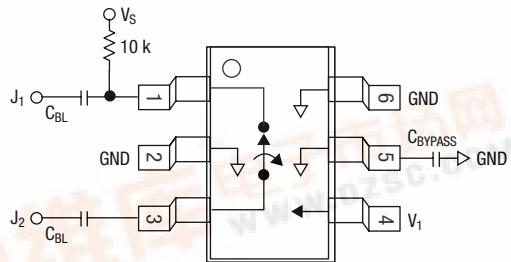
- Single positive control voltage
- 3 V to 5 V operation
- Isolation can be tuned to desired frequency
- High isolation (45 dB at 0.9 GHz with 100 pF bypass capacitor)
- Designed for use as an LNA bypass switch
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

**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 a 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 an LNA bypass switch.

**NEW**

Skyworks offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.

**Pin Out**

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

**Electrical Specifications at 25 °C (0, 3 V)  $C_{BYPASS} = 100 \text{ pF}$** 

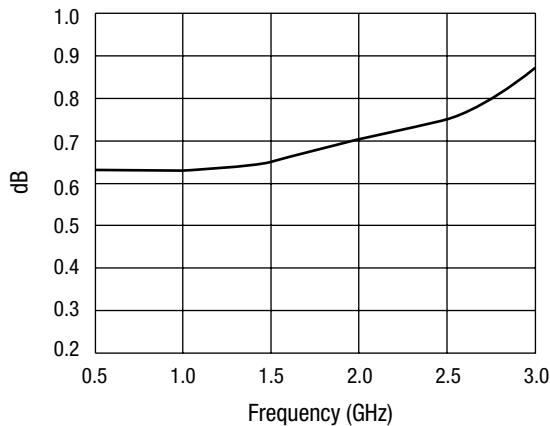
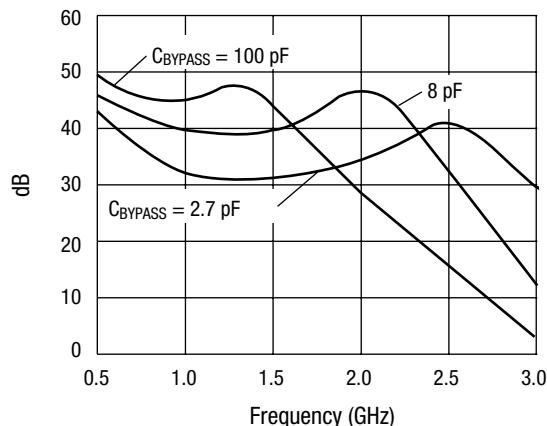
Parameter <sup>(1)</sup>	Frequency	Min.	Typ.	Max.	Unit
Insertion loss <sup>(2)</sup>	0.5–1.4 GHz 1.4–2.0 GHz 2.0–2.5 GHz	0.65 0.70 0.75	0.75 0.80 0.90		dB
Isolation	0.5–1.4 GHz 1.4–2.0 GHz 2.0–2.5 GHz	40 23 10	45 28 15		dB
VSWR	0.5–2.5 GHz		1.3:1		

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

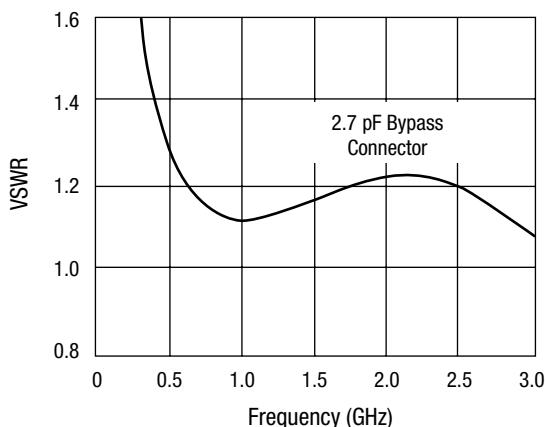
2. Insertion loss changes by 0.003 dB/°C.

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

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics						
Rise, fall	10/90% or 90/10% RF		1			μs
On, off	50% CTL to 90/10% RF		1			μs
Video feedthru	$T_{RISE} = 1$ ns, BW = 500 MHz		10			mV
Input power for 1 dB compression	$V_{CTL} = 0/3$ V $V_{CTL} = 0/5$ V	0.9 GHz 0.9 GHz		18 27		dBm dBm
Intermodulation intercept point (IP3)	For two-tone input power 13 dBm $V_{CTL} = 0/5$ V	0.5–2 GHz		43		dBm
Thermal resistance				25		°C/W
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					

**Typical Performance Data (0, 3 V)****Insertion Loss vs. Frequency****Isolation vs. Frequency**

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

**VSWR vs. Frequency**

## Absolute Maximum Ratings

Characteristic	Value
RF input power	2.5 W max. > 500 MHz, 0/8 V control
Supply voltage, Vs	8 V
Control voltage, V <sub>1</sub>	-0.2 V, +8 V
Operating temperature	-40 °C to +85 °C
Storage temperature	-65 °C to +150 °C

Performance is guaranteed only under the conditions listed in the specifications table and is not guaranteed under the full range(s) described by the Absolute Maximum specifications. Exceeding any of the absolute maximum/minimum specifications may result in permanent damage to the device and will void the warranty.

**CAUTION:** Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions must be employed at all times.

## Recommended Solder Reflow Profiles

Refer to the ["Recommended Solder Reflow Profile"](#) Application Note.

## Tape and Reel Information

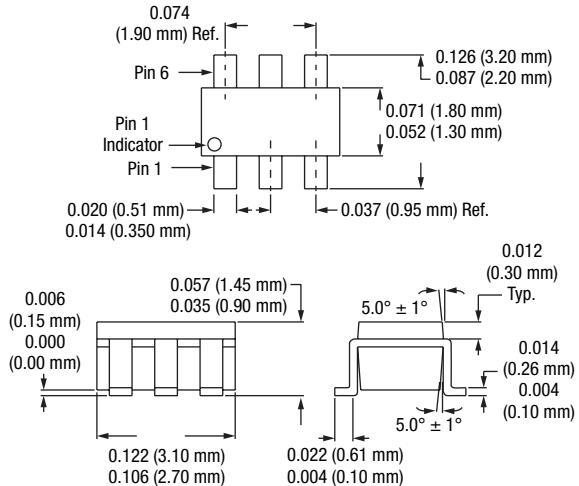
Refer to the ["Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation"](#) Application Note.

## Truth Table

V <sub>1</sub>	J <sub>1</sub> -J <sub>2</sub>
V <sub>HIGH</sub>	Insertion loss
0	Isolation

V<sub>HIGH</sub> = 3 to 5 V (V<sub>S</sub> = V<sub>HIGH</sub> ± 0.2 V).

## SOT-6



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