# GaAs IC Positive Control Non-Reflective SPDT Switch 0.5–2 GHz

Alpha

## AS171-73

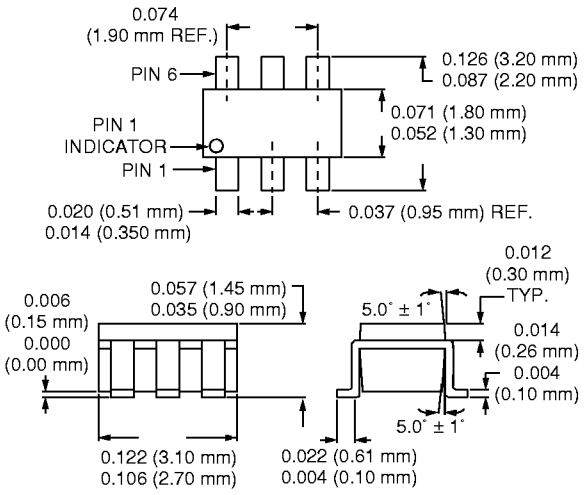
## Features

- Positive Control Voltage
- Non-Reflective
- Low DC Power Consumption
- Small Low Cost SOT-6 Plastic Package

## Description

The AS171-73 is an IC FET non-reflective SPDT switch in a low cost SOT-6 plastic package. The AS171-73 features low insertion loss and positive voltage operation with very low DC power consumption. This general purpose switch can be used in a variety of telecommunications applications.

## SOT-6




## Electrical Specifications at 25°C (0, +3 V)

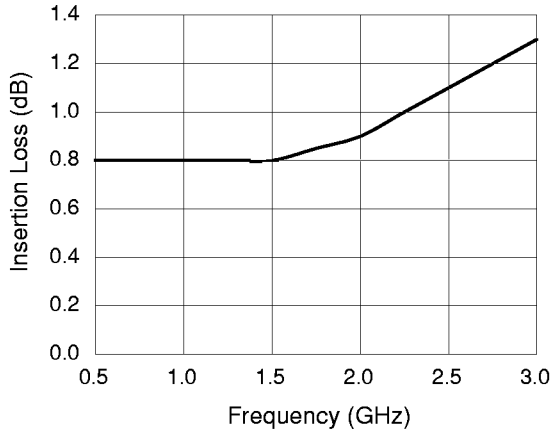
| Parameter[1] | Frequency | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Insertion Loss[2] | 0.5-1.0 GHz<br>0.5-2.0 GHz | | 0.8<br>0.9 | 1.0<br>1.1 | dB<br>dB |
| Isolation | 0.5-1.0 GHz<br>0.5-2.0 GHz | 32<br>30 | 35<br>33 | | dB<br>dB |
| VSWR[3] | 0.5-2.0 GHz | | 1.4:1 | 1.8:1 | |

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

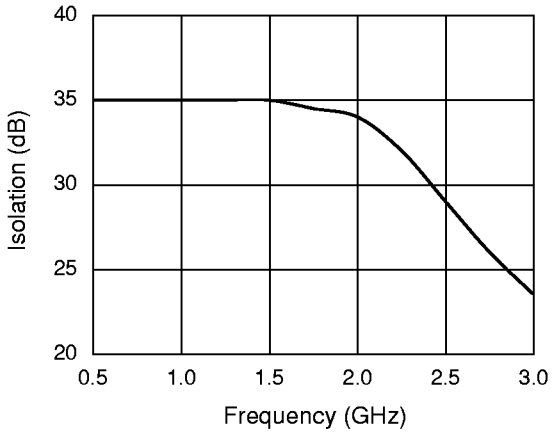
| Parameter | Condition | Frequency | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Switching Characteristics | Rise, Fall (10/90% or 90/10% RF)<br>On, Off (50% CTL to 90/10% RF)<br>Video Feedthru[4] | | | 10<br>20<br>25 | | ns<br>ns<br>mV |
| Input Power for 1 dB Compression | 0/+3 V<br>0/+5 V | 0.5–2.0 GHz<br>0.5–2.0 GHz | | +21<br>+26 | | dBm<br>dBm |
| Intermodulation Intercept Point (IP3) | For Two-tone Input Power +13 dBm | 0.5–2.0 GHz | | +45 | | dBm |
| Control Voltages | $V_{Low}$ = 0 to 0.2 V @ 20 µA Max.<br>$V_{High}$ = +3 V @ 100 µA Max. to +5 V @ 200 µA Max.<br>$V_S = V_{High} \pm 0.2$ 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.

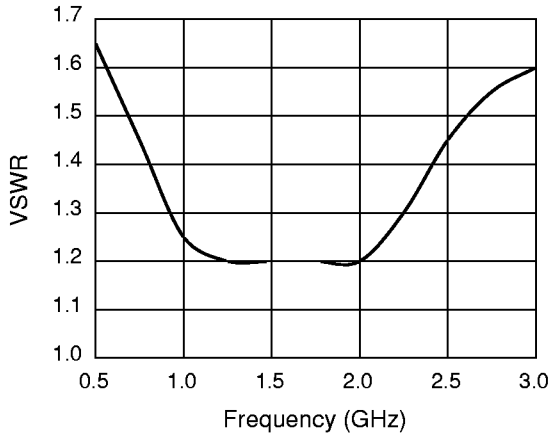
## Typical Performance Data (0, +3 V)




**Insertion Loss vs. Frequency**




**Isolation vs. Frequency**




**VSWR vs. Frequency**

## Absolute Maximum Ratings

| Characteristic | Value |
|---|---|
| RF Input Power | 2 W > 500 MHz<br>0/+7 V Control |
| Control Voltage | -0.2 V, +8 V |
| Operating Temperature | -40°C to +85°C |
| Storage Temperature | -50°C to +150°C |
| $\Theta_{JC}$ | 25°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