

GaAs IC SPST Switch Non-Reflective DC–2.5 GHz



AS159-12

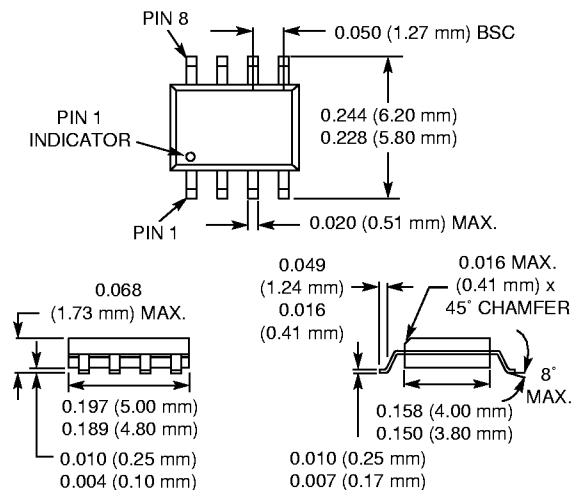
Features

- High Isolation (45 dB @ 0.9 GHz)
- Reflective Open, J₁ Port
- Non-Reflective, J₂ Port
- Low Cost SOIC-8 Plastic Package

Description

The AS159-12 is a non-reflective SPST switch designed for low cost, low power commercial applications. Ideal for use as building blocks for high isolation multi-throw switches.

SOIC-8



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

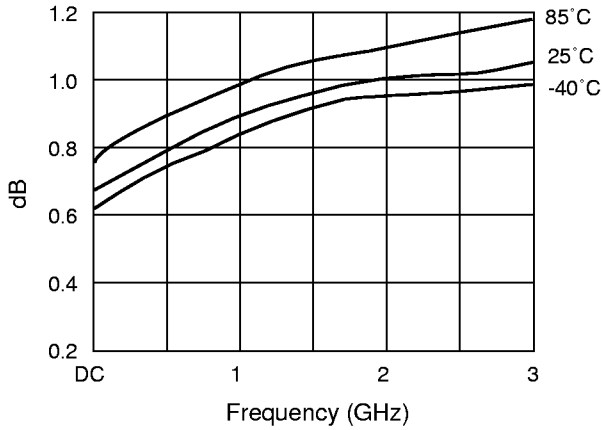
| Parameter ¹ | Frequency ² | Min. | Typ. | Max. | Unit |
|-----------------------------|------------------------|------|-------|-------|------|
| Insertion Loss ³ | DC–0.5 GHz | | 0.8 | 1.0 | dB |
| | DC–1.0 GHz | | 0.9 | 1.2 | dB |
| | DC–2.5 GHz | | 1.0 | 1.4 | dB |
| Isolation | DC–0.5 GHz | 50 | 55 | | dB |
| | DC–1.0 GHz | 45 | 47 | | dB |
| | DC–2.5 GHz | 30 | 34 | | dB |
| VSWR ⁴ | DC–1.0 GHz | | 1.3:1 | 1.5:1 | |
| | DC–2.0 GHz | | 1.5:1 | 1.7:1 | |
| | DC–2.5 GHz | | 1.8:1 | 2.0:1 | |

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

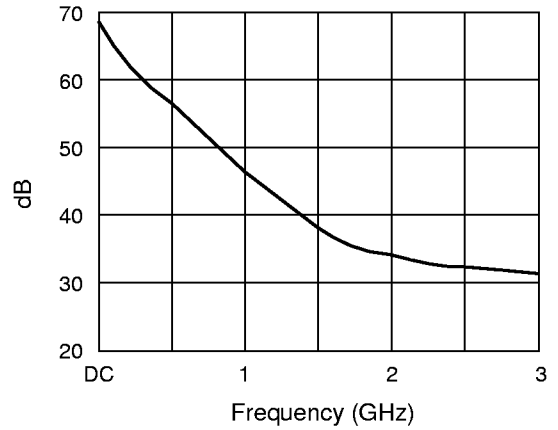
| Parameter | Condition | Frequency | Min. | Typ. | Max. | Unit |
|--|---|-------------|------|------|------|------|
| Switching Characteristics ⁵ | Rise, Fall (10/90% or 90/10% RF) | | | 3 | | ns |
| | On, Off (50% CTL to 90/10% RF) | | | 6 | | ns |
| | Video Feedthru | | | 20 | | mV |
| Input Power for 1 dB Compression | | 0.5–2.0 GHz | | +24 | | dBm |
| Intermodulation Intercept Point (IP3) | For Two-tone Input Power +13 dBm | 0.5–2.0 GHz | | +43 | | dBm |
| Control Voltages | V _{Low} = 0 to -0.2 V @ 20 μA Max. V _{High} = -5 V @ 20 μA to -9 V @ 200 μA Max. | | | | | |

1. All measurements made in a 50 ohm system, unless otherwise specified.
2. DC = 300 kHz.
3. Insertion loss changes by 0.003 dB/°C.
4. Insertion loss state and J₂ port.
5. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

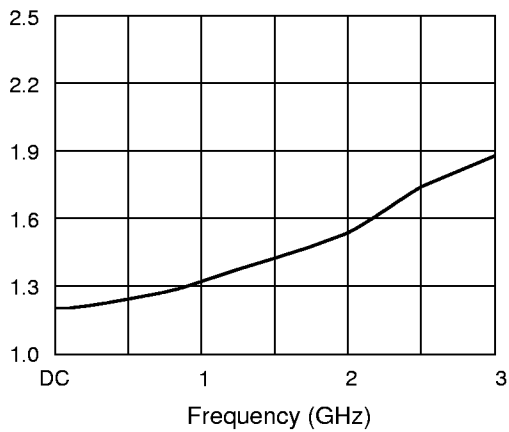
Typical Performance Data (0, -5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Truth Table

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

Absolute Maximum Ratings

| Characteristic | Value |
|-----------------------|---|
| RF Input Power | 2.5 W > 500 MHz 0/-8 V, 0.5 W @ 50 MHz 0/8 V |
| Control Voltage | +0.2 V, -10 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

