

PHEMT GaAs IC High Power SP4T Switch 0.1–2.5 GHz



AS192-300

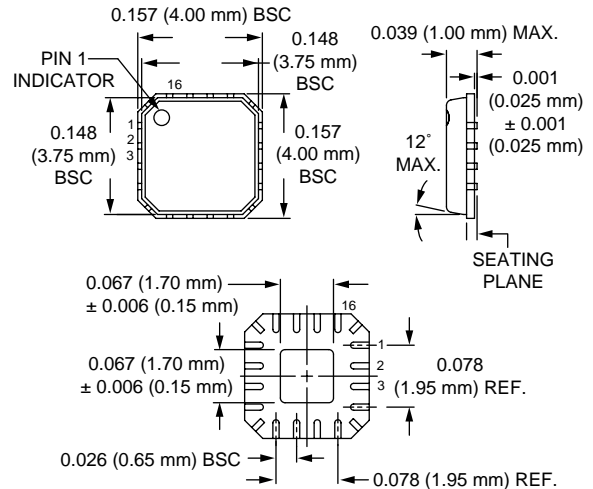
Features

- 4 Symmetric RF Paths
- Positive Voltage Control
- High IP3
- Excellent Harmonic Performance
- Handles GSM Power Levels
- Available in MLF-16 (4 x 4 mm) Package

Description

The AS192-300 is a reflective SP4T switch. It is an ideal switch for higher power applications. It can be used for GSM dual band handset applications where both low loss, low current and small size are critical parameters.

MLF-16 (4 x 4 mm)



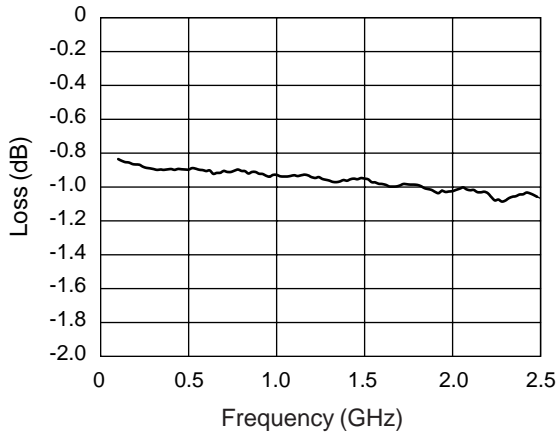
Electrical Specifications at 25°C (0, +4.5 V)

| Parameter | Frequency | Min. | Typ. | Max. | Unit |
|----------------|-------------|------|-------|------|------|
| Insertion Loss | 0.1–0.5 GHz | | 0.90 | 1.1 | dB |
| | 0.5–1.0 GHz | | 0.95 | 1.1 | dB |
| | 1.0–2.0 GHz | | 1.00 | 1.2 | dB |
| | 2.0–2.5 GHz | | 1.10 | 1.3 | dB |
| Isolation | 0.1–0.5 GHz | 30 | 34 | | dB |
| | 0.5–1.0 GHz | 25 | 29 | | dB |
| | 1.0–2.0 GHz | 19 | 23 | | dB |
| | 2.0–2.5 GHz | 18 | 21 | | dB |
| VSWR | 0.1–1.0 GHz | | 1.3:1 | | |
| | 1.0–2.5 GHz | | 1.4:1 | | |

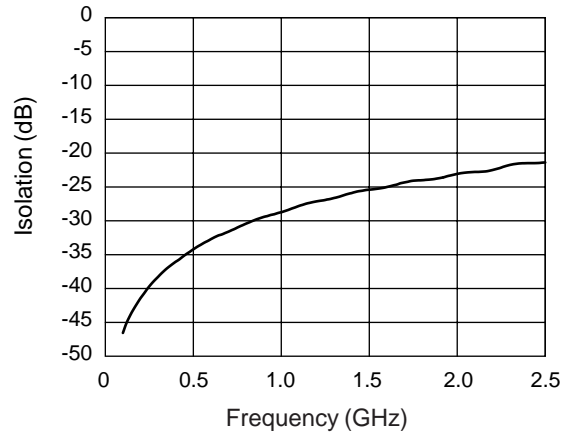
Operating Characteristics at 25°C (0, +4.5 V)

| Parameter | Condition | Frequency | Min. | Typ. | Max. | Unit |
|---------------------------|--|-----------|------|------|------|------|
| Switching Characteristics | Rise, Fall (10/90% or 90/10% RF) | | | 50 | | ns |
| | On, Off (50% CTL to 90/10% RF) | | | 100 | | ns |
| | Video Feedthru | | | 50 | | mV |
| IP3 | 13 dBm/Tone | | | +55 | | dBm |
| 2nd and 3rd Harmonics | 34 dBm Input 900 MHz | | | +65 | | dBc |
| Control Voltages | $V_{Low} = 0$ $V_{High} = +4.5 \text{ V @ } 200 \mu\text{A Max. for RF power } > 30 \text{ dBm}$ $V_{High} = +3.0 \text{ V @ } 200 \mu\text{A Max. for RF power } 20\text{--}30 \text{ dBm}$ $V_{High} = +2.7 \text{ V @ } 200 \mu\text{A Max. for RF power } < 20 \text{ dBm}$ | | | | | |

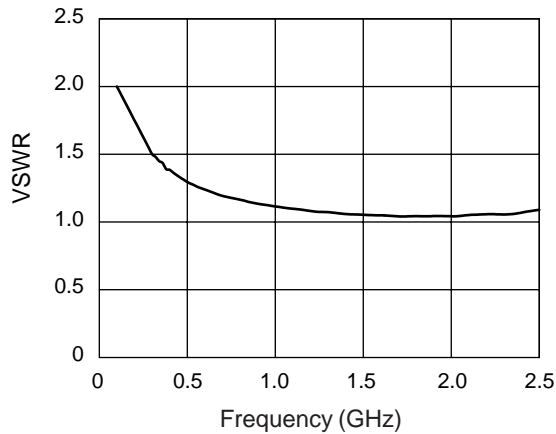
Typical Performance Data



Typical Insertion Loss vs. Frequency



Typical Isolation vs. Frequency

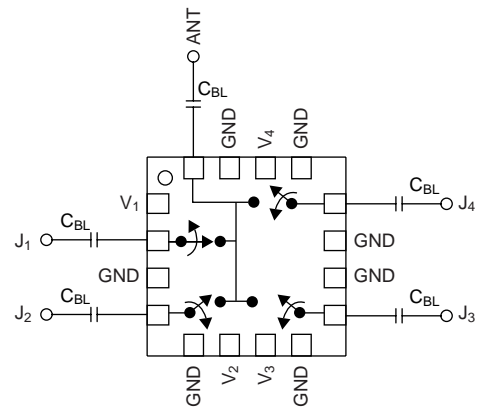


Typical VSWR

Absolute Maximum Ratings

| Characteristic | Value |
|-----------------------|---------------------------------|
| RF Input Power | 4 W > 0.5 GHz 0/+6 V Control |
| Control Voltage | +6 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.
 $C_{BL} = 47$ pF for operating frequency >500 MHz.

Truth Table

| V ₁ | V ₂ | V ₃ | V ₄ | Ant-J ₁ | Ant-J ₂ | Ant-J ₃ | Ant-J ₄ |
|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|
| V _{High} | V _{Low} | V _{Low} | V _{Low} | Ins. Loss | Isolation | Isolation | Isolation |
| V _{Low} | V _{High} | V _{Low} | V _{Low} | Isolation | Ins. Loss | Isolation | Isolation |
| V _{Low} | V _{Low} | V _{High} | V _{Low} | Isolation | Isolation | Ins. Loss | Isolation |
| V _{Low} | V _{Low} | V _{Low} | V _{High} | Isolation | Isolation | Isolation | Ins. Loss |

V_{Low} = 0.
 V_{High} = 4.5 to 5.0 V for RF power > 30 dBm.
 V_{High} = 3.0 to 5.0 V for RF power 20–30 dBm.
 V_{High} = 2.7 to 5.0 V for RF power < 20 dBm.