

Applications

- T/R Switch in WLANs, Bluetooth and Medium Power Telecommunication Applications

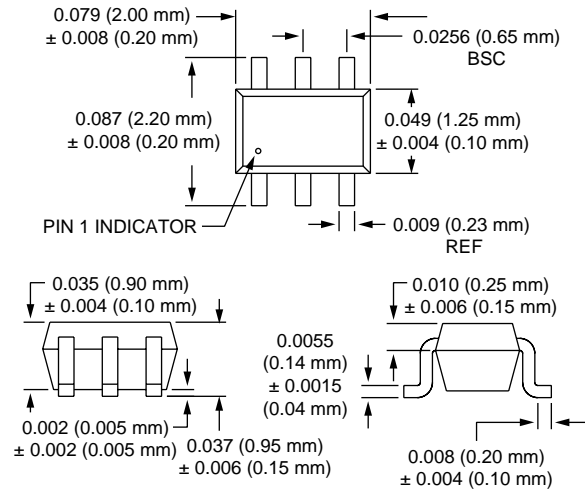
Features

- Low Insertion Loss (0.45 dB @ 2.4 GHz)
- Isolation 22 dB @ 2.4 GHz
- Low DC Power Consumption
- PHEMT Process
- Operates with 1.8 V Control Voltage

Description

The AS222-92 is a medium power IC FET SPDT switch in a low cost miniature SC-70 6 lead plastic package. The AS222-92 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.

SC-70 6 Lead



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

| Parameter ¹ | Frequency | Min. | Typ. | Max. | Unit |
|-----------------------------|-------------|------|------|------|------|
| Insertion Loss ² | 0.5–1.0 GHz | | 0.35 | 0.5 | dB |
| | 1.0–2.4 GHz | | 0.45 | 0.6 | dB |
| | 2.4–3.0 GHz | | 0.50 | 0.7 | dB |
| Isolation | 0.5–1.0 GHz | 24 | 27 | | dB |
| | 1.0–2.4 GHz | 19 | 22 | | dB |
| | 2.4–3.0 GHz | 16 | 18 | | dB |
| Return Loss ³ | 0.5–1.0 GHz | | 19 | | dB |
| | 1.0–2.4 GHz | | 21 | | dB |
| | 2.4–3.0 GHz | | 18 | | dB |

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

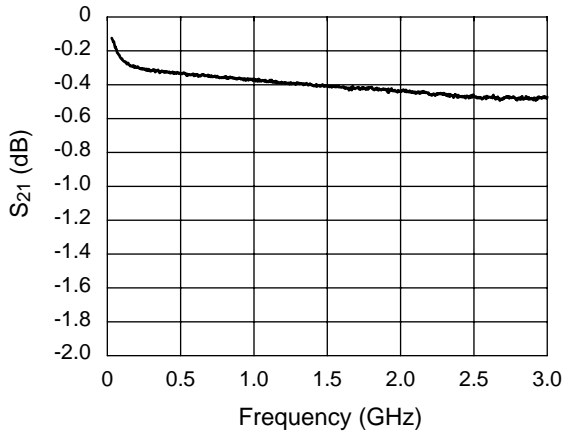
| Parameter | Condition | Frequency | Min. | Typ. | Max. | Unit |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------|------|------|------|------|
| Switching Characteristics ⁴ | Rise, Fall (10/90% or 90/10% RF) | | | 20 | | ns |
| | On, Off (50% CTL to 90/10% RF) | | | 20 | | ns |
| | Video Feedthru | | | 25 | | mV |
| Input Power for 1 dB Compression | 0/+1.8 V | 0.5–3.0 GHz | | +20 | | dBm |
| | 0/+3.0 V | 0.5–3.0 GHz | | +27 | | dBm |
| Intermodulation Intercept Point (IP3) | For Two-tone Input Power +5 dBm 0/+3.0 V | 0.5–3.0 GHz | | +44 | | dBm |
| Control Voltages | V _{Low} = 0 to 0.2 V @ 20 µA Max. V _{High} = +2.5 V @ 100 µA Max. to +5 V @ 200 µA Max. | | | | | |

1. All measurements made in a 50 Ω system, unless otherwise specified.
2. Insertion loss changes by 0.003 dB/°C.

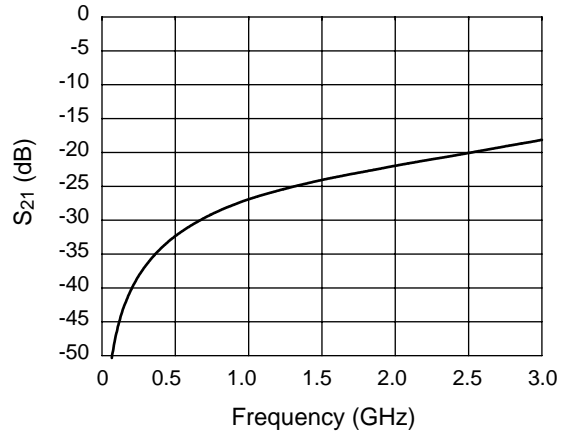
3. Insertion loss state.

4. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

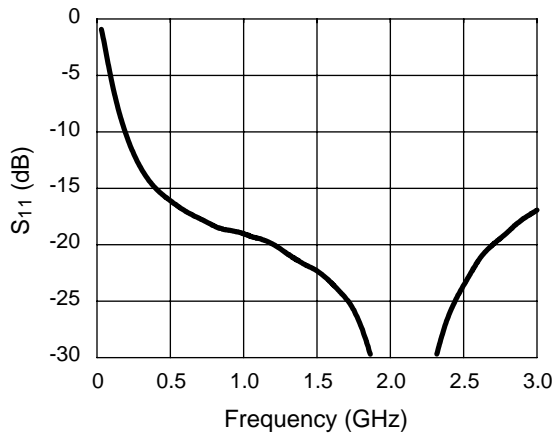
Simulated Performance Data (0, +3 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



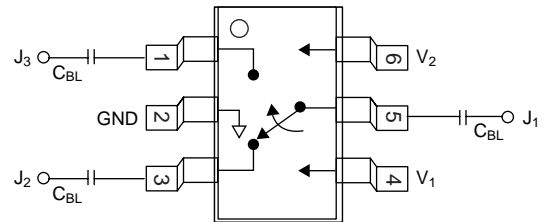
Return Loss vs. Frequency

Truth Table

| V ₁ | V ₂ | J ₁ -J ₂ | J ₁ -J ₃ |
|-------------------|-------------------|--------------------------------|--------------------------------|
| V _{High} | 0 | Isolation | Insertion Loss |
| 0 | V _{High} | Insertion Loss | Isolation |

V_{High} = +2.7 to +5 V.

Pin Out



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