

PHEMT GaAs IC SPDT Switch DC–2.5 GHz

AS183-92

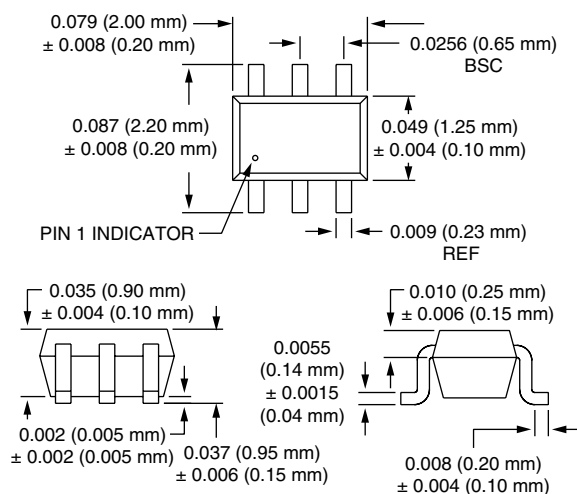
Features

- P_{1 dB} +30 dBm Typical @ +3 V
- IP3 43 dBm Typical @ +3 V
- Low Insertion Loss (0.3 dB @ 0.9 GHz)
- Low DC Power Consumption
- Miniature SC-70 6 Lead Plastic Package

Description

The AS183-92 is an IC FET SPDT switch in a very small SC-70 6 lead plastic package. The AS183-92 features low insertion loss and positive voltage operation with very low DC power consumption. This switch is suitable for handset applications.

SC-70 6 Lead



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

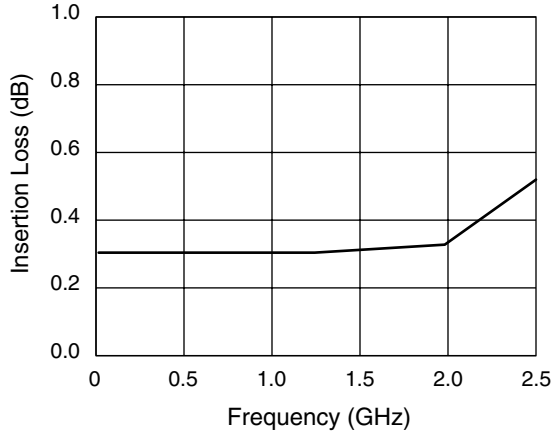
| Parameter ¹ | Frequency ² | Min. | Typ. | Max. | Unit |
|-----------------------------|------------------------|------|-------|-------|------|
| Insertion Loss ³ | DC–1.0 GHz | | 0.30 | 0.4 | dB |
| | DC–2.0 GHz | | 0.30 | 0.4 | dB |
| | DC–2.5 GHz | | 0.55 | 0.6 | dB |
| Isolation | DC–1.0 GHz | 18 | 20 | | dB |
| | DC–2.0 GHz | 12 | 14 | | dB |
| | DC–2.5 GHz | 11 | 13 | | dB |
| VSWR ⁴ | DC–2.5 GHz | | 1.2:1 | 1.6:1 | |

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

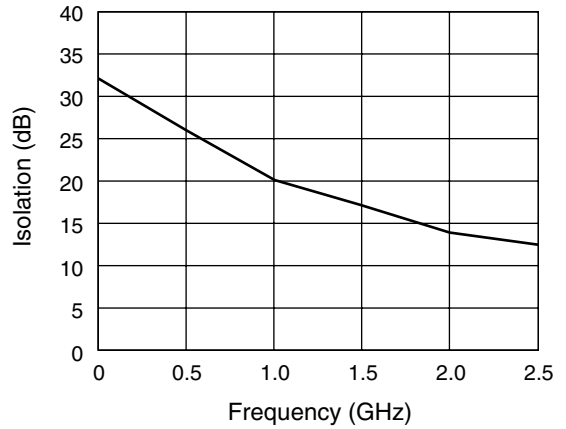
| Parameter | Condition | Frequency | Min. | Typ. | Max. | Unit |
|--|--|-------------|------|------|------|------|
| Switching Characteristics ⁵ | Rise, Fall (10/90% or 90/10% RF) | | | 10 | | ns |
| | On, Off (50% CTL to 90/10% RF) | | | 20 | | ns |
| | Video Feedthru | | | 25 | | mV |
| Input Power for 1 dB Compression | 0/+3 V | 0.5–2.5 GHz | | +30 | | dBm |
| | 0/+5 V | 0.5–2.5 GHz | | +34 | | dBm |
| Intermodulation Intercept Point (IP3) | For Two-tone Input Power +15 dBm | | | | | |
| | 0/+3 V | 0.5–2.5 GHz | | +43 | | dBm |
| | 0/+5 V | 0.5–2.5 GHz | | +50 | | dBm |
| 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. | | | | | |

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

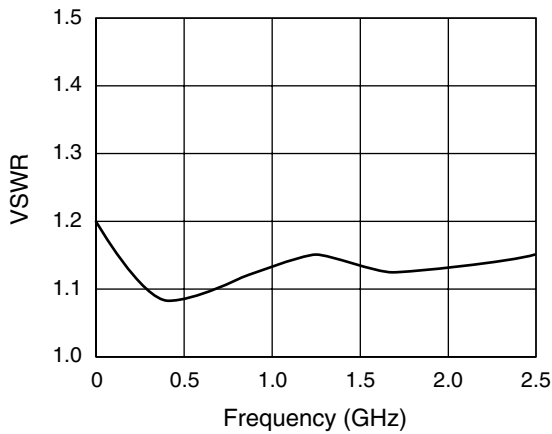
Typical Performance Data (0, +3 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Truth Table

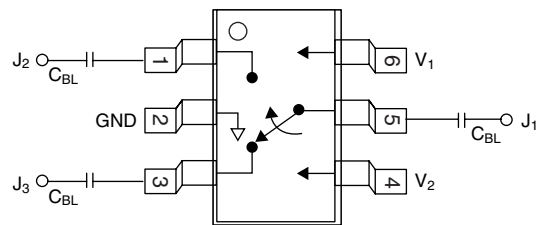
| V ₁ | V ₂ | J ₁ -J ₂ | J ₁ -J ₃ |
|-------------------|-------------------|--------------------------------|--------------------------------|
| 0 | V _{High} | Isolation | Insertion Loss |
| V _{High} | 0 | Insertion Loss | Isolation |

V_{High} = +3 to +5 V.

Absolute Maximum Ratings

| Characteristic | Value |
|-----------------------|---------------------------------|
| RF Input Power | 6 W > 500 MHz 0/+7 V Control |
| Control Voltage | -0.2 V, +8 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 for positive voltage operation.
C_{BL} = 100 pF for operation >500 MHz.



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