

DATA SHEET

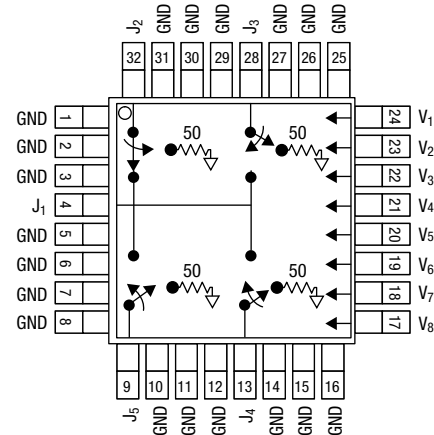
AS115-61: GaAs IC SP4T Nonreflective Switch

300 kHz–2 GHz

Features

- -3 V to -5 V operation
- High isolation (50 dB @ 0.9 GHz)
- Low insertion loss (0.7 dB @ 0.9 GHz)
- LQFP-32 plastic package
- Nonreflective all ports

Pin Out



Description

The AS115-61 is a high-isolation SP4T FET IC nonreflective switch. The switch operates with 0 and -3 V or -5 V over the frequency range of DC–2 GHz. The insertion loss is 0.7 dB and isolation is 50 dB at 0.9 GHz. The switch is ideal for cellular base station switch matrices.

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

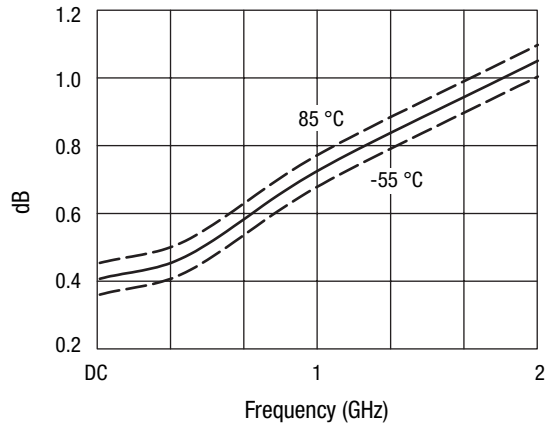
| Parameter ⁽¹⁾ | Frequency | Min. | Typ. | Max. | Unit |
|-------------------------------|-----------------|------|--------|-------|------|
| Insertion loss ⁽²⁾ | 300 kHz–0.5 GHz | | 0.5 | 0.7 | dB |
| | 300 kHz–1.0 GHz | | 0.7 | 0.9 | dB |
| | 300 kHz–2.0 GHz | | 1.1 | 1.3 | dB |
| Isolation | 300 kHz–0.5 GHz | 50 | 58 | | dB |
| | 300 kHz–1.0 GHz | 45 | 51 | | dB |
| | 300 kHz–2.0 GHz | 35 | 39 | | dB |
| VSWR ⁽³⁾ | 300 kHz–1.0 GHz | | 1.55:1 | 1.6:1 | |
| | 300 kHz–2.0 GHz | | 1.65:1 | 1.8:1 | |

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

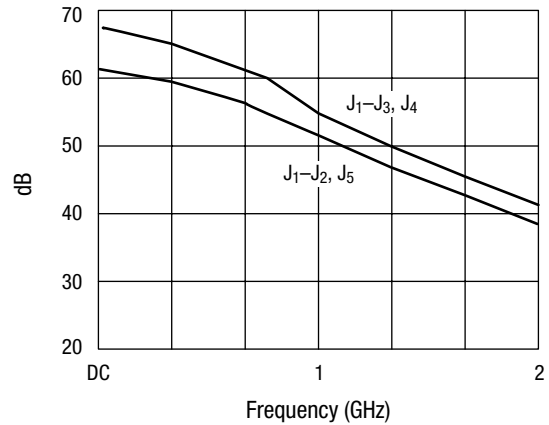
| Parameter ⁽¹⁾ | Condition | Frequency | Min. | Typ. | Max. | Unit |
|---------------------------------------|--|-----------|------|------|------|------|
| Switching characteristics | 10/90% or 90/10% RF 50% CTL to 90/10% RF T _{RISE} = 1 ns, BW = 500 MHz | | | 15 | | ns |
| | | | | 30 | | ns |
| | | | | 30 | | mV |
| Input power for 1 dB compression | V _{CTL} = 0/-3 V V _{CTL} = 0/-5 V | 0.5–2 GHz | | 24 | | dBm |
| | | 0.5–2 GHz | | 30 | | dBm |
| Intermodulation intercept point (IP3) | For two-tone input power 13 dBm | 0.5–2 GHz | | 40 | | dBm |
| | | 0.05 GHz | | 29 | | dBm |
| Thermal resistance | | | | 25 | | °C/W |
| Control voltages | V _{LOW} = 0 to -0.2 V @ 20 μA max. V _{HIGH} = -3 V @ 100 μA to -5 V @ 500 μA max. | | | | | |

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

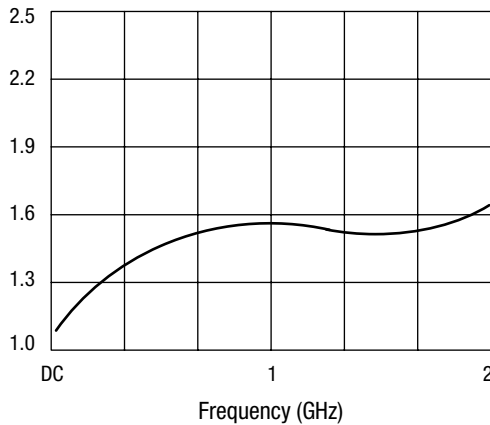
Typical Performance Data (0, -5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Truth Table

| Insertion Loss Path J ₁ to: | J ₃ | | J ₂ | | J ₅ | | J ₄ | |
|--|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | V ₁ | V ₂ | V ₃ | V ₄ | V ₅ | V ₆ | V ₇ | V ₈ |
| J ₂ | 0 | -5 | -5 | 0 | -5 | 0 | -5 | 0 |
| J ₃ | -5 | 0 | 0 | -5 | -5 | 0 | -5 | 0 |
| J ₄ | 0 | -5 | 0 | -5 | -5 | 0 | 0 | -5 |
| J ₅ | 0 | -5 | 0 | -5 | 0 | -5 | -5 | 0 |
| All other conditions | Not recommended | | | | | | | |

Absolute Maximum Ratings

| Characteristic | Value |
|-----------------------|---|
| RF input power | 2 W > 500 MHz 0/-7 V 0.5 W @ 50 MHz 0/-7 V |
| Control voltage | +0.2 V, -10 V |
| Operating temperature | -40 °C to +85 °C |
| Storage temperature | -65 °C to +150 °C |

Performance is guaranteed only under the conditions listed in the specifications table and is not guaranteed under the full range(s) described by the Absolute Maximum specifications. Exceeding any of the absolute maximum/minimum specifications may result in permanent damage to the device and will void the warranty.

CAUTION: Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions must be employed at all times.

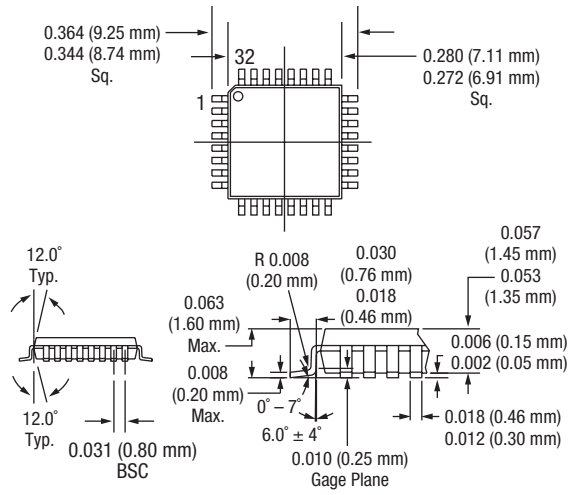
Recommended Solder Reflow Profiles

Refer to the [“Recommended Solder Reflow Profile”](#) Application Note.

Tape and Reel Information

Refer to the [“Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation”](#) Application Note.

LQFP-32



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