



DATA SHEET

AS115-61: GaAs IC SP4T Nonreflective Switch 300 kHz–2 GHz

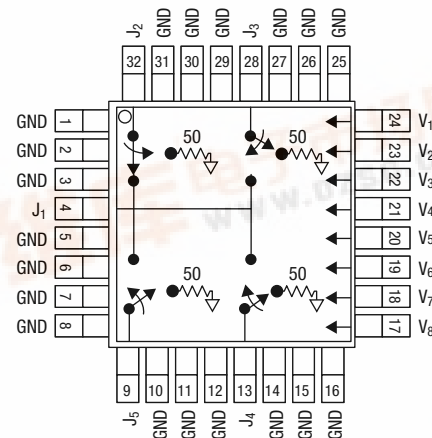
Features

- -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

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.

Pin Out



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)

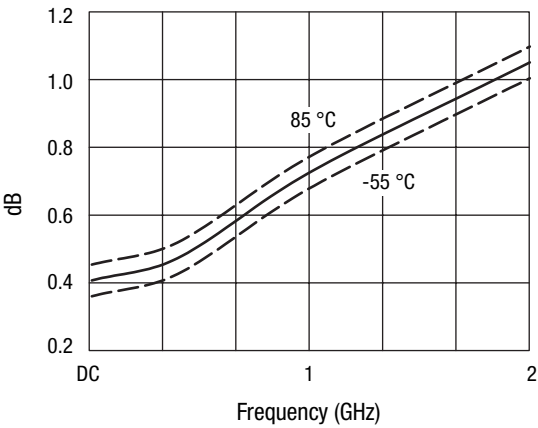
Parameter ⁽¹⁾	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics						
Rise, fall	10/90% or 90/10% RF			15		ns
On, off	50% CTL to 90/10% RF			30		ns
Video feedthru	T _{RISE} = 1 ns, BW = 500 MHz			30		mV
Input power for 1 dB compression	V _{CTL} = 0/-3 V	0.5–2 GHz		24		dBm
	V _{CTL} = 0/-5 V	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.

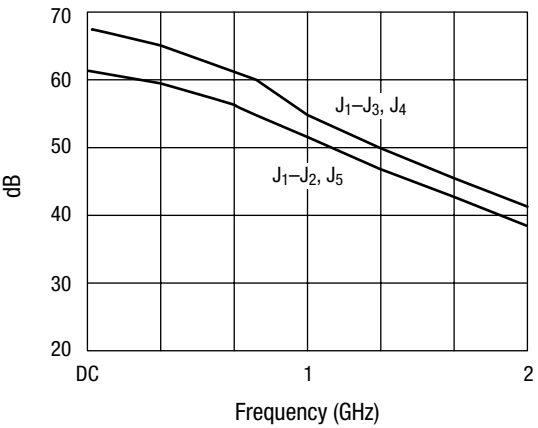
2. Insertion loss changes by 0.003 dB/°C.

3. Input/output.

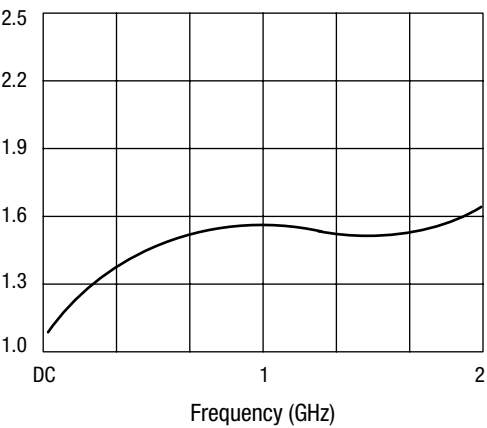
Typical Performance Data (0, -5 V)



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.

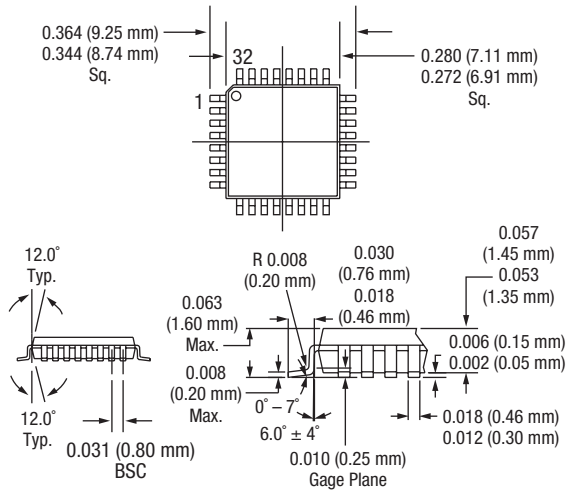
Recommended Solder Reflow Profiles

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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