

GaAs IC SP4T Non-Reflective Switch With Integral Driver DC–2 GHz



AK115-61

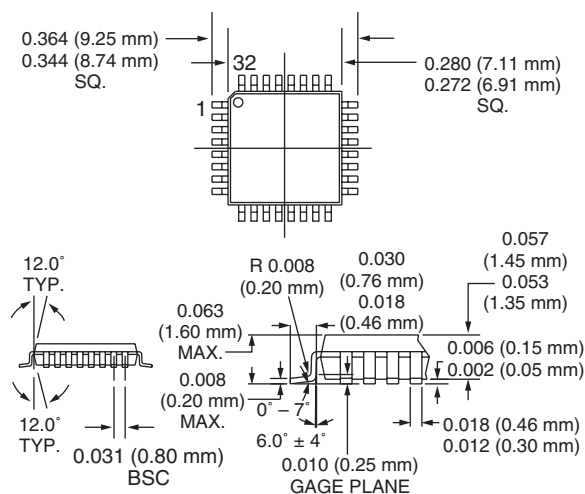
Features

- Integral Driver ± 5 V Supply Voltages
- High Isolation (50 dB @ 0.9 GHz)
- Low Insertion Loss (0.7 dB @ 0.9 GHz)
- LQFP-32 Plastic Package
- Non-Reflective All Ports

Description

The AK115-61 is a high isolation SP4T FET IC non-reflective switch with integral driver. 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.

LQFP-32



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

Parameter ¹	Frequency ²	Min.	Typ.	Max.	Unit
Insertion Loss ³	DC–0.5 GHz		0.5	0.7	dB
	DC–1.0 GHz		0.7	0.9	dB
	DC–2.0 GHz		1.1	1.3	dB
Isolation	DC–0.5 GHz	50	58		dB
	DC–1.0 GHz	45	51		dB
	DC–2.0 GHz	35	39		dB
VSWR ⁴	DC–1.0 GHz		1.55:1	1.6:1	
	DC–2.0 GHz		1.65:1	1.8:1	

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

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics ⁵	Rise, Fall (10/90% or 90/10% RF)			15		ns
	On, Off (50% CTL to 90/10% RF)			35		ns
	Video Feedthru			30		mV
Input Power for 1 dB Compression		0.50–2.0 GHz		+26		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +13 dBm	0.50–2.0 GHz		+40		dBm
		0.05 GHz		+29		dBm
Control Voltages	V _{Low}		0.0		0.2	V
	V _{High}		4.5		5.0	V
Supply Voltages	+5 V $\pm$ 0.20 V @ 3 mA Typ.					
	-5 V $\pm$ 0.20 V @ 16 mA Typ. ^{6,7}					

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.

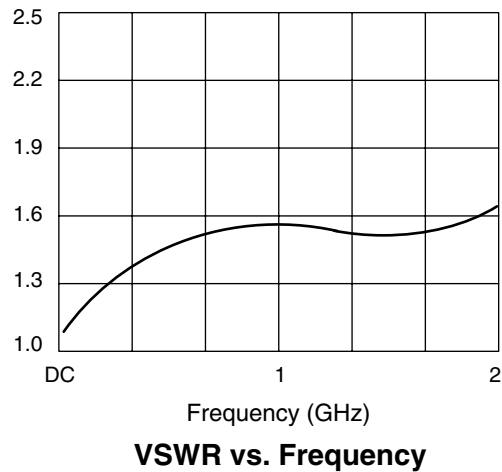
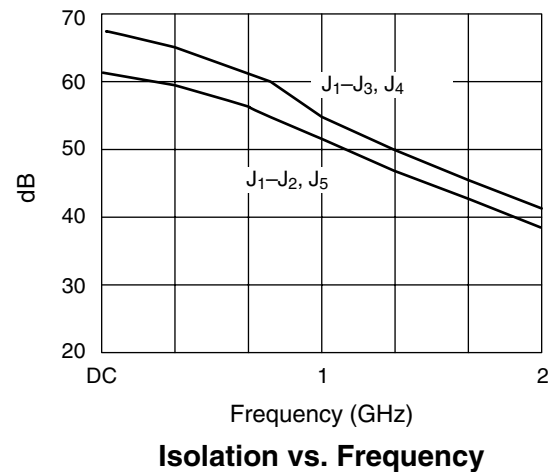
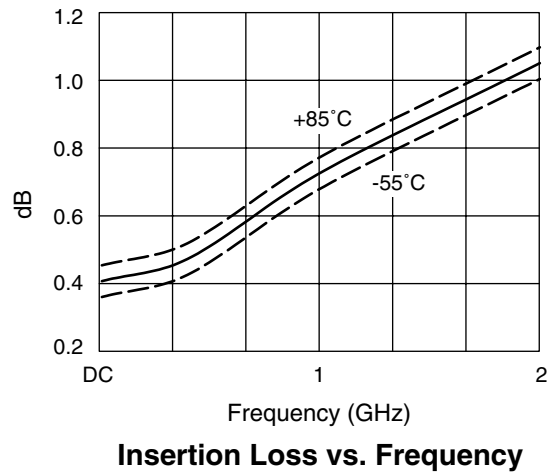
4. Input/Output.

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

6. Supply voltage and ground must be connected before control voltage is applied to avoid irreversible damage to the device.

7. Current increases from 16 mA to 20 mA @ +85°C.

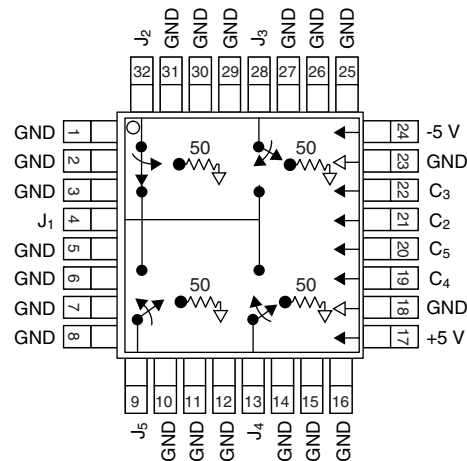
Typical Performance Data (+5, -5 V)



Absolute Maximum Ratings

Characteristic	Value
RF Input Power	0.8 W > 500 MHz 0.2 W @ 50 MHz
Supply Voltage	+7.0 V, -7.0 V
Control Voltage	-0.2 V, +7.0 V
Operating Temperature	0°C to +70°C
Storage Temperature	-65°C to +150°C
Θ _{JC}	30°C/W

Pin Out



Truth Table

Insertion Loss Path J ₁ to:	J ₂	J ₃	J ₄	J ₅
	C ₂	C ₃	C ₄	C ₅
J ₂	0	1	1	1
J ₃	1	0	1	1
J ₄	1	1	0	1
J ₅	1	1	1	0

“0” = 0.0 to 0.2 V, “1” = 4.5 to 5.0 V.