

GaAs IC High Isolation Positive Control SPDT Switch DC–2.5 GHz



AS164-80

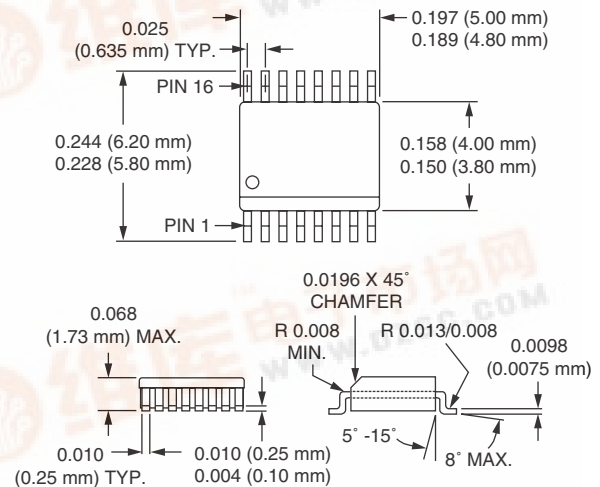
Features

- Positive Voltage Control
- High Isolation (50 dB @ 1.9 GHz)
- Low DC Power Consumption
- Base Station Synthesizer Switch

Description

The AS164-80 is a GaAs FET IC SPDT switch packaged in an SSOP-16 plastic package for low cost commercial applications. Ideal building block for base station dual band applications where synthesizer isolation is critical. Use in conjunction with the AS165-59 SPST switch to meet GSM synthesizer isolation requirements.

SSOP-16



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

Parameter ¹	Frequency ²	Min.	Typ.	Max.	Unit
Insertion Loss ³	DC–1.0 GHz		0.6	0.8	dB
	1.0–2.0 GHz		0.8	1.0	dB
	2.0–2.5 GHz		1.0	1.2	dB
Isolation	DC–2.0 GHz	44	50		dB
	2.0–2.5 GHz	32	42		dB
VSWR ⁴	DC–2.0 GHz		1.3:1	1.5:1	
	DC–2.5 GHz		1.5:1	1.8:1	

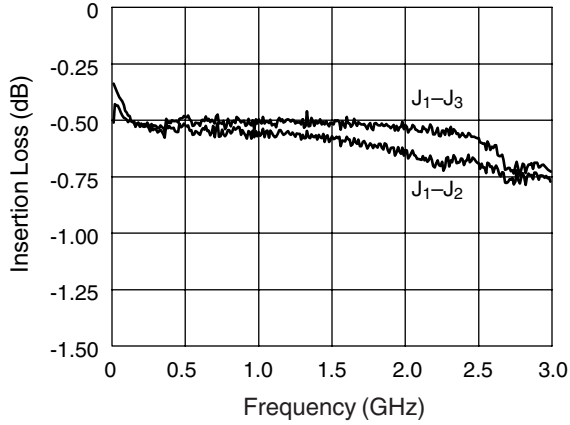
Operating Characteristics at 25°C (0, +5 V)

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics ⁵	Rise, Fall (10/90% or 90/10% RF)			60		ns
	On, Off (50% CTL to 90/10% RF)			100		ns
	Video Feedthru			50		mV
Intermodulation Intercept Point (IP3)	Two-tone Input Power +10 dBm	0.5–2.5 GHz		+41		dBm
Control Voltages	$V_{Low} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A Max.}$ $V_{High} = +3 \text{ V @ } 100 \mu\text{A Max. to } +5 \text{ V @ } 200 \mu\text{A Max.}$ $V_S = V_{High} \pm 0.2 \text{ V}$					

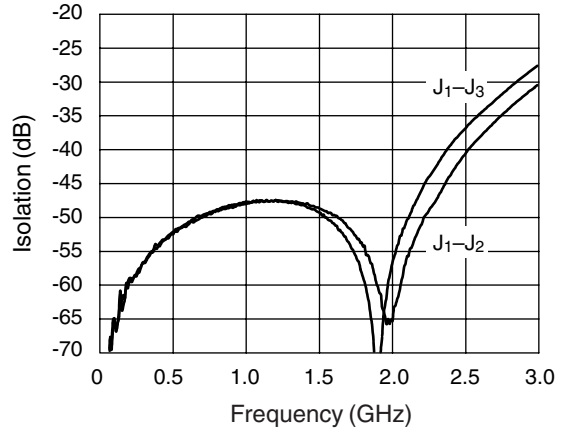
1. All measurements made in a 50 Ω system, unless otherwise specified.
2. DC = 300 kHz.
3. Insertion loss changes by 0.003 dB/°C.
4. Insertion loss state.
5. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.



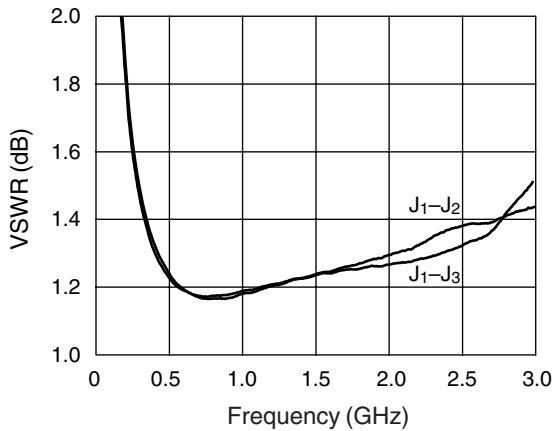
Typical Performance Data (0, +5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Absolute Maximum Ratings

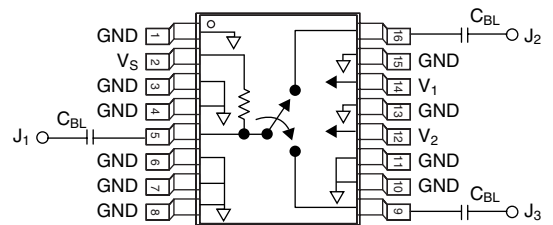
Characteristic	Value
RF Input Power	2 W Max. > 500 MHz 0/+8 V Control
Supply Voltage	+8 V
Control Voltage	-0.2 V, +8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
θ_{JC}	25°C/W

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

$V_{High} = +3$ to $+5$ V ($V_S = V_{High} \pm 0.2$ V).

Pin Out



DC blocking capacitors (C_{BL}) must be supplied externally.
 $C_{BL} = 47$ pF for operation >500 MHz.