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

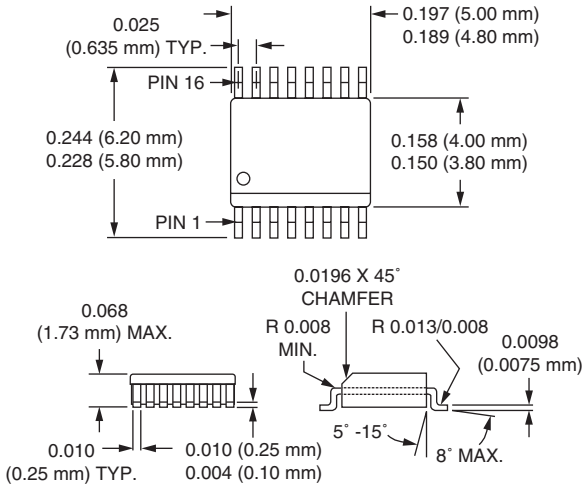
Alpha

AS164-80

Features

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

SSOP-16



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.

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

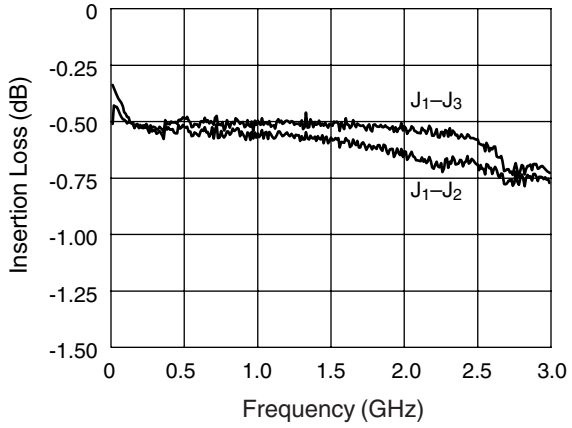
Parameter[1]	Frequency[2]	Min.	Typ.	Max.	Unit
Insertion Loss[3]	DC–1.0 GHz 1.0–2.0 GHz 2.0–2.5 GHz		0.6 0.8 1.0	0.8 1.0 1.2	dB dB dB
Isolation	DC–2.0 GHz 2.0–2.5 GHz	44 32	50 42		dB dB
VSWR[4]	DC–2.0 GHz DC–2.5 GHz		1.3:1 1.5:1	1.5:1 1.8:1	

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

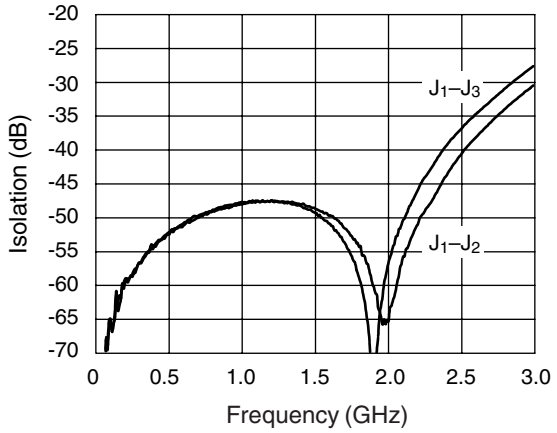
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics[5]	Rise, Fall (10/90% or 90/10% RF) On, Off (50% CTL to 90/10% RF) Video Feedthru			60 100 50		ns ns mV
Intermodulation Intercept Point (IP3)	Two-tone Input Power +10 dBm	0.5–2.5 GHz		+41		dBm
Control Voltages	V_{Low} = 0 to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

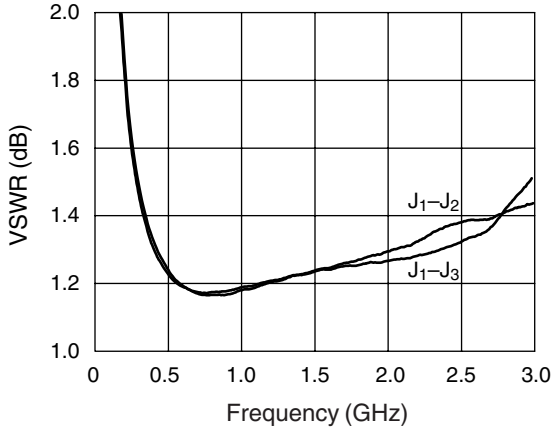
Typical Performance Data (0, +5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Absolute Maximum Ratings

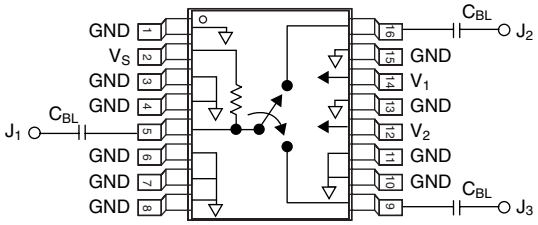
Characteristic	Value
RF Input Power	2 W Max. > 500 MHz 0/+8 V Control
Supply Voltage	+8 V
Control Voltage	-0.2 V, +8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Θ_{JC}	25°C/W

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} ± 0.2 V).

Pin Out



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

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