GaAs IC High Isolation Positive Control SPDT Switch DC–3.0 GHz

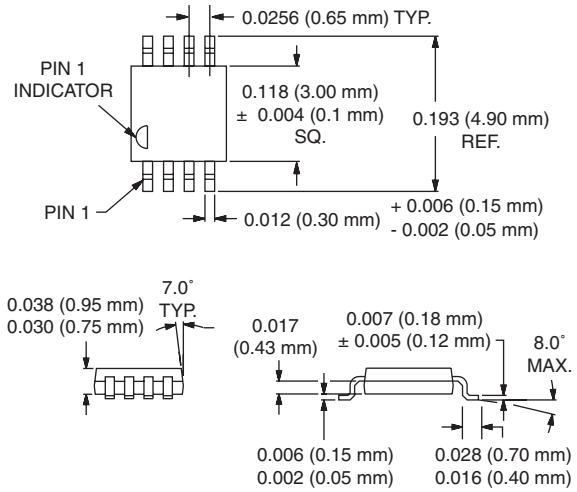
SKYWORKS

AS176-59

Features

- Positive Voltage Control (0/+3 to +5 V)
- High Isolation (50 dB @ 0.9, 1.9 GHz)[5]
- Low DC Power Consumption
- Ideal for Cellular, GSM, DCS,PCS, 3G and 2.4 GHz ISM Applications

MSOP-8



Description

The AS176-59 is a GaAs FET IC SPDT switch packaged in a MSOP-8 plastic package for low cost, high isolation 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, +3 V), (0, +5 V)

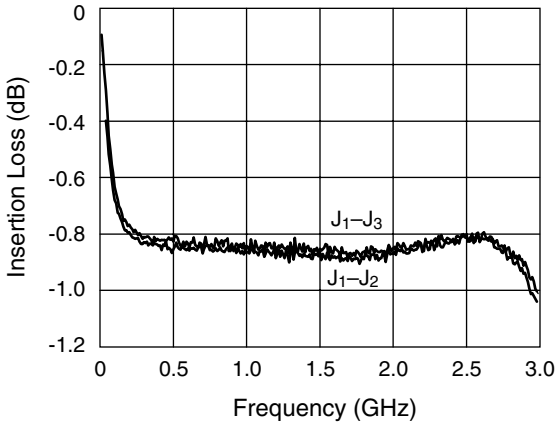
Parameter[1]	Condition	Frequency[2]	Min.	Typ.	Max.	Unit
Insertion Loss[3]		DC–1.0 GHz DC–2.0 GHz DC–2.5 GHz DC–3.0 GHz		0.7 0.8 0.8 0.9	0.9 1.0 1.1 1.2	dB dB dB dB
Isolation[4]	J_1–J_2/J_1–J_3 J_1–J_2/J_1–J_3	DC–1.0 GHz DC–2.0 GHz DC–2.5 GHz DC–3.0 GHz	45/50 41/38 29 22	50/55 45/42 34 27		dB dB dB dB
Isolation[5]	J_1–J_2/J_1–J_3	DC–1.0 GHz DC–2.0 GHz DC–2.5 GHz DC–3.0 GHz	45/50 47 36 30	50/55 52 40 35		dB dB dB dB
VSWR[6]		DC–2.0 GHz DC–3.0 GHz		1.3:1 1.5:1	1.5:1 1.8:1	

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

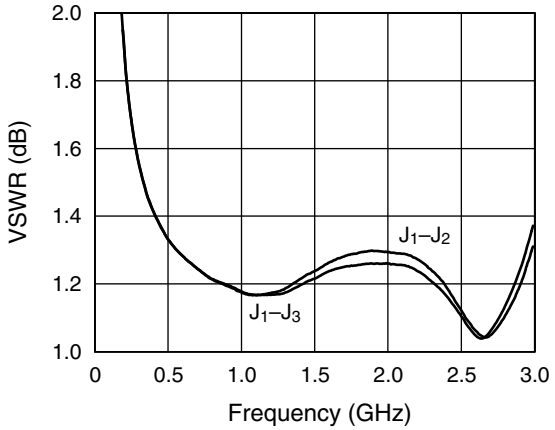
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics[7]	Rise, Fall (10/90% or 90/10% RF) On, Off (50% CTL to 90/10% RF) Video Feedthru			60 100 50		ns ns mV
Intermodulation Intercept Point (IP3)	Two-tone Input Power +5 dBm +3 V +5 V	 0.5–3.0 GHz 0.5–3.0 GHz		 +41 +45		 dBm dBm
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. Pin 4: N/C.
5. Pin 4: GND.
6. Insertion loss state.
7. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

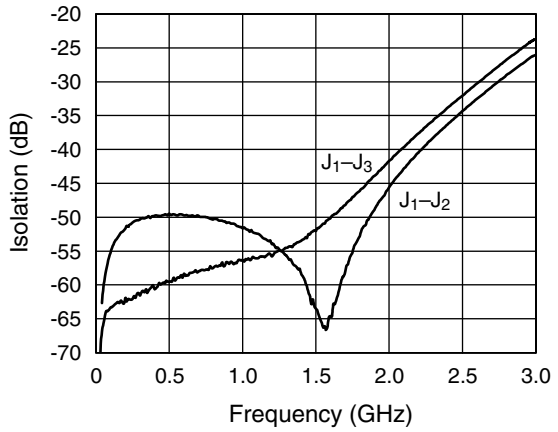
Typical Performance Data (0, +5 V)



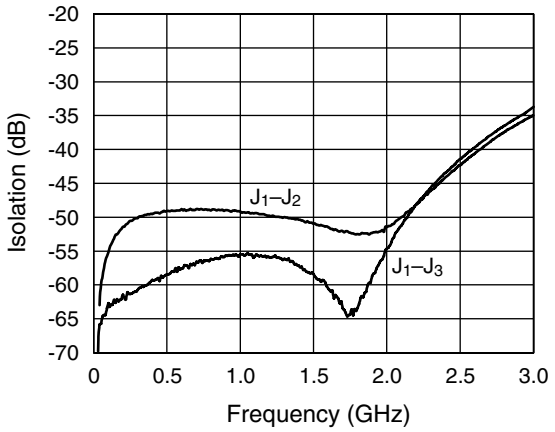
Insertion Loss vs. Frequency



VSWR vs. Frequency



Isolation vs. Frequency
Pin 4: N/C



Isolation vs. Frequency
Pin 4: GND

Truth Table

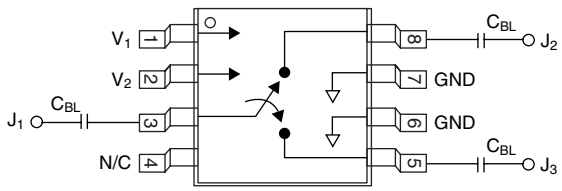
V_1	V_2	J_1–J_2	J_1–J_3
0	V_{High}	Isolation	Insertion Loss
V_{High}	0	Insertion Loss	Isolation

V_{High} = +3 V to +5 V.

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	1 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

Pin Out



C_{BL} = 47 pF.

Specifications subject to change without notice. 10/99A

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