

GaAs IC High Isolation SPST Switch Positive Control 0.7–2.5 GHz



AS165-59

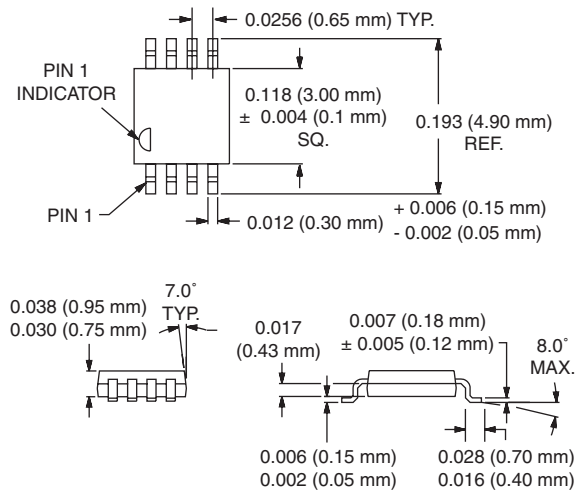
Features

- Single Positive Control Voltage (0, +5 V)
- Base Station Synthesizer Switch
- High Isolation (45 dB @ 0.9, 1.9 GHz)
- J₁ Port Non-Reflective
- Miniature Low Cost MSOP-8 Plastic Package

Description

The AS165-59 SPST IC FET switch is absorptive on the input. The switch features high isolation and low insertion loss. Ideal building block for base station applications where synthesizer isolation is critical. Use in conjunction with the AS164-80 SPDT switch to meet GSM synthesizer switch isolation requirements.

MSOP-8



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

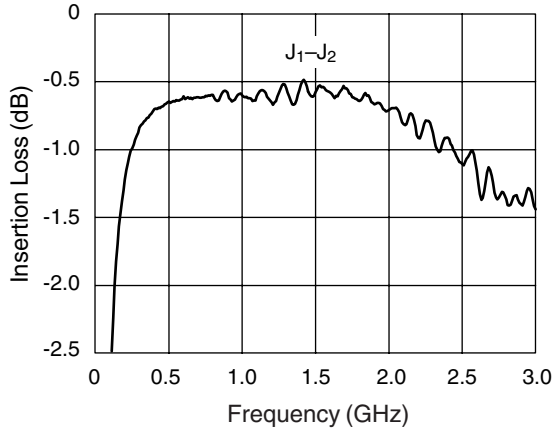
Parameter ¹	Frequency	Min.	Typ.	Max.	Unit
Insertion Loss ²	0.7–1.0 GHz		0.7	0.9	dB
	1.0–2.0 GHz		0.8	1.1	dB
	2.0–2.5 GHz		1.2	1.4	dB
Isolation	0.7–2.0 GHz	39	45		dB
	2.0–2.5 GHz	30	38		dB
VSWR ³	0.7–1.8 GHz		1.7:1	1.9:1	
	1.8–2.5 GHz		1.5:1	1.8:1	

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

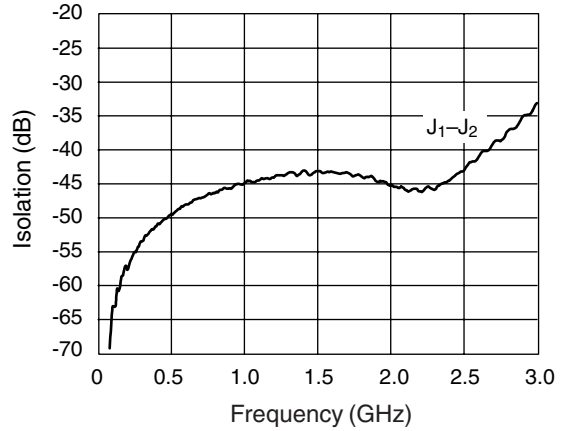
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics ⁴	Rise, Fall (10/90% or 90/10% RF)			25		ns
	On, Off (50% CTL to 90/10% RF)			150		ns
	Video Feedthru			50		mV
Input Power for 1 dB Compression		0.7–2.5 GHz		+28		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +5 dBm	0.7–2.5 GHz		+45		dBm
Control Voltages	$V_{Low} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A Max.}$ $V_{High} = +5 \text{ V @ } 50 \mu\text{A Max. to } +7 \text{ V @ } 200 \mu\text{A Max.}$ $V_S = V_{High} \pm 0.2 \text{ V}$					

1. All measurements made in a 50 Ω system, unless otherwise specified.
2. Insertion loss changes by 0.003 dB/°C.
3. Insertion loss state and J₁ port.
4. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

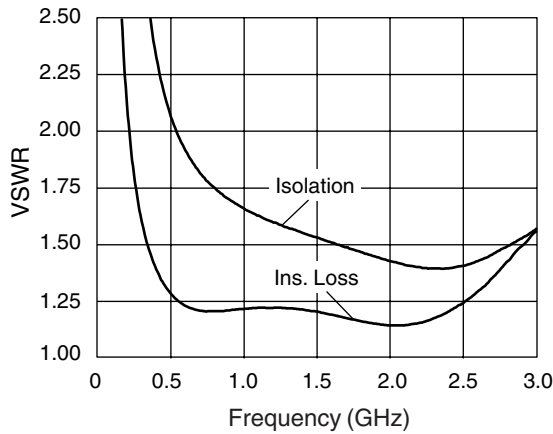
Typical Performance Data (0, +5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency

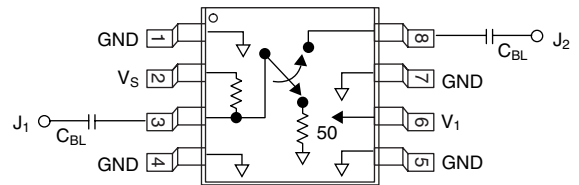


VSWR vs. Frequency

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

Pin Out



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

Truth Table

V_1	J_1-J_2
0	Insertion Loss
V_{High}	Isolation

$V_{High} = +5$ to $+7$ V ($V_S = V_{High} \pm 0.2$ V).