

GaAs IC 2 Watt High Linearity Positive Control SPDT Switch DC–2 GHz



AS358-62

Features

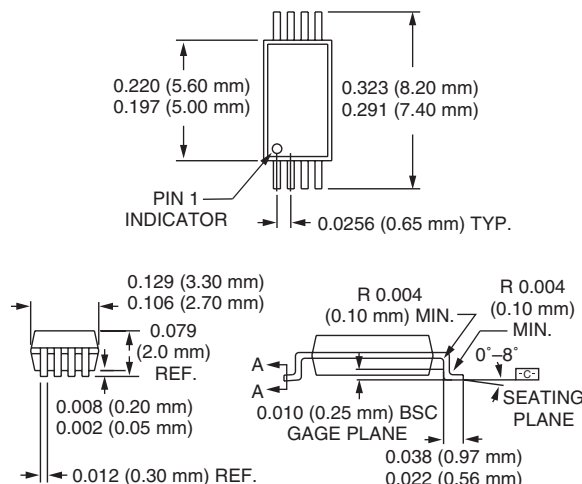
- High Linearity (55 dBm IP3 @ 0.9 GHz)
- Low Insertion Loss (0.35 dB @ 0.9 GHz)
- Antenna Changeover and T/R Cellular Switch
- Positive Control Voltage

Description

The AS358-62 is a GaAs FET IC high linearity SPDT switch in an SSOP-8 plastic package. This switch has been designed for use where extremely high linearity and low insertion loss are required. It can be controlled with positive, negative or a combination of both voltages. Some standard implementations include antenna changeover, T/R and diversity switching over 2 W.

The AS358 switch can be used in many analog and digital wireless communication systems including cellular, GSM and DECT applications.

SSOP-8



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

Parameter ¹	Frequency ²	Min.	Typ.	Max.	Unit
Insertion Loss ³	DC–0.5 GHz		0.3	0.4	dB
	DC–1.0 GHz		0.4	0.6	dB
	DC–2.0 GHz		1.0	1.2	dB
Isolation	DC–0.5 GHz	20	23		dB
	DC–1.0 GHz	15	17		dB
	DC–2.0 GHz	8	10		dB
VSWR ⁴	DC–0.5 GHz		1.3:1	1.4:1	
	DC–1.0 GHz		1.3:1	1.6:1	
	DC–2.0 GHz		1.2:1	1.4:1	

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
Input Power for 1 dB Compression		0.9 GHz		+35		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +10 dBm	0.9 GHz		+55		dBm
Reverse Intermodulation Products (RIM)	T _X Tone @ +30 dBm, 830 MHz Interference Tone @ +10 dBm, 785 MHz V _{High} 0/+5 V _{High} 0/+8.5			-55 -80		dBm dBm
Control Voltages	V _{Low} = 0 to 0.2 V @ 20 µA Max. V _{High} = +3 V @ 100 µA Max. to +9 V @ 200 µA Max. V _S = V _{High} ± 0.2 V					

1. All measurements made in a 50 Ω system, unless otherwise specified.

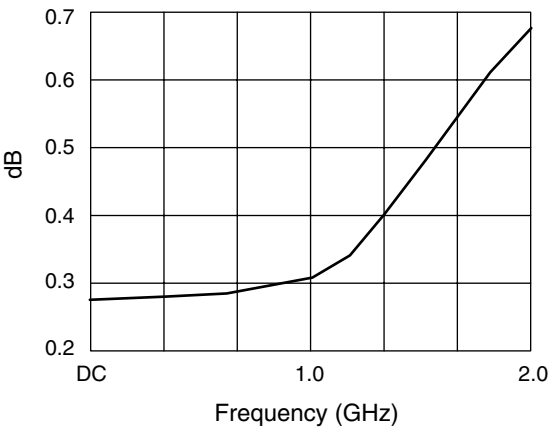
2. DC = 300 kHz.

3. Insertion loss changes by 0.003 dB/°C

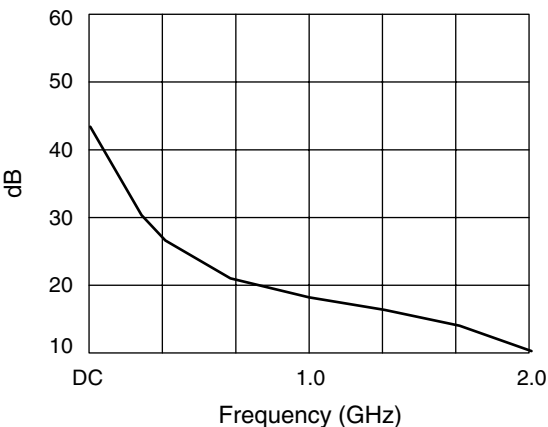
4. Insertion loss state.

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

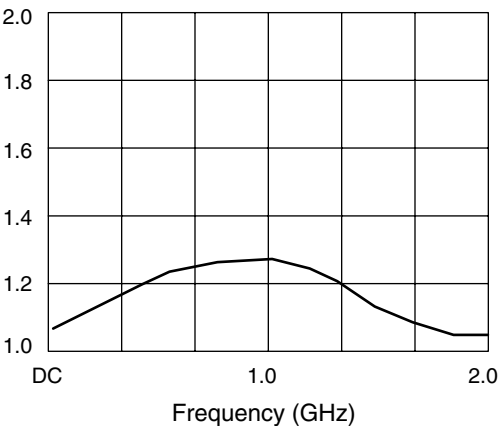
Typical Performance Data (0, +5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Absolute Maximum Ratings

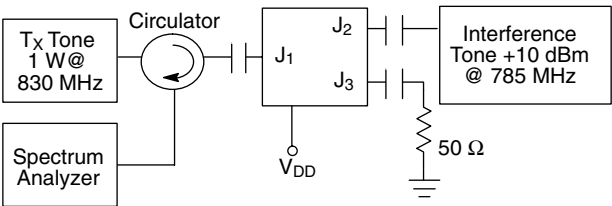
Characteristic	Value
RF Input Power	6 W Max. > 900 MHz, 0 V/+8 V Control
Supply Voltage	+10 V
Control Voltage	-0.2 V, +10 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Θ _{JC}	25°C/W

Truth Table

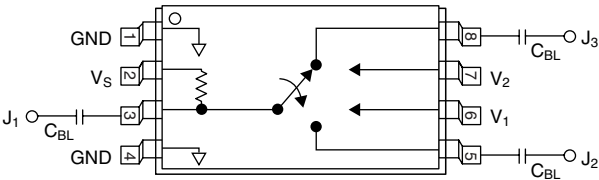
V ₁	V ₂	J ₁ –J ₂	J ₁ –J ₃
V _{High}	0	Isolation	Insertion Loss
0	V _{High}	Insertion Loss	Isolation

V_{High} = +3 to +9 V (V_S = V_{High} ± 0.2 V).

Reverse Intermodulation Products (RIM) Setup



Pin Out



DC blocking capacitors (C_{BL}) must be supplied externally.