AWS5513

GaAs IC SPDT Reflective Switch
Positive Control DC - 2.5 GHz

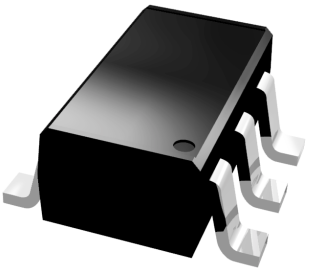
Advanced Product Information - Rev 1

FEATURES

- **Low Insertion Loss (0.5 dB @ 1 GHz)**
- **+2.7V ControlVoltage Supply**
- **Low DC Power Consumption**
- **Ultra Miniature 6 Lead SOT-363 Package**

APPLICATIONS

- **Filter Selection**
- **Amplifiers in Dual Mode & Dual Band Handsets**



S21
SOT-363
6 Pin Plastic Package

DESCRIPTION

The AWS5513 is a Single Pole Double Throw GaAs MMIC Switch assembled in a SOT-363 plastic package. The AWS5513 is designed for analog and digital application that require very low insertion loss, micro size, and low cost. The switch can be controlled with positive, negative, or a combination of both voltages.

ELECTRICAL SPECIFICATIONS AT 25 °C (0, +2.7V)

Parameter [1]	Frequency [2]	Min	Typ	Max	Unit
Insertion Loss [3]	DC - 1.0 GHz DC - 2.0 GHz DC - 2.5 GHz		0.5 - 0.6	- 0.65 -	dB dB dB
Isolation	DC - 2.5 GHz	26	28		dB
VSWR [3]	DC - 1.0 GHZ 1.0 - 2.5 GHZ		1.2:1 1.1:1	1.3:1 1.2:1	

OPERATING CHARACTERISTICS AT 25° C (0, +2.7V)

Parameter	Condition	Frequency	Min	Typ	Max	Unit
Switching Characteritics 4	Rise, Fall (10/90% or 90/10% RF) On, Off (50% CTL to 90%/10% RF) Video Feedthru			 250	100 200	ns ns mV
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +10 dBm	0.5 - 2.0 GHz	+45	+48	-	dBm
Control Voltage	VLOW = 0 to 0.2 V @ 20 uA Max VHIGH = 2.75 V @ 20 uA Max to +5 V @ 50uA Max VS = VHIGH + 0.2V					

1. *All measurements made in a 50 ohm system.*
2. *DC = 300 kHz.*
3. *For low loss path.*
4. *Video feedthru measured with 1 ns rise time pulse and 500 MHz bandwidth.*

ABSOLUTE MAXIMUM RATINGS

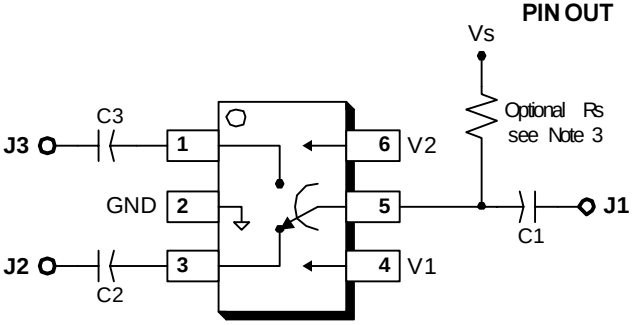
Characteristics	Value
RF Input Power	4 W > 500 MHz, 0/+5 V Control
Control Voltage	-0.2 V, +10 V
Operating Temperature	-40° C to 85°C
Storage Temperature	-50°C to +150°C
Θ_{JC}	25° C/W

TRUTH TABLE
Positive Operation

V_1	V_2	J_1 - J_2	J_1 - J_3
V_{High}	0	Isolation	Low Loss
0	V_{High}	Low Loss	Isolation

V_{High} = 2.75 to +5 V (V_S = V_{High} ± 0.2 V)

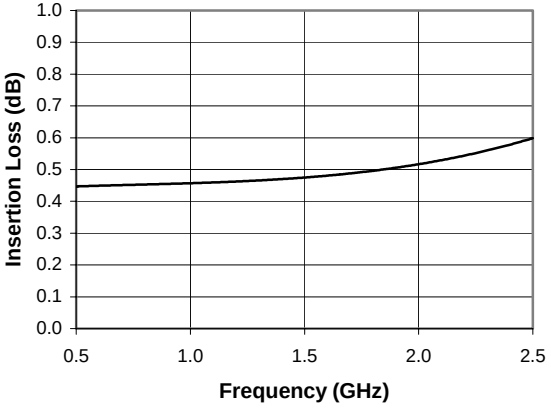
PIN OUT



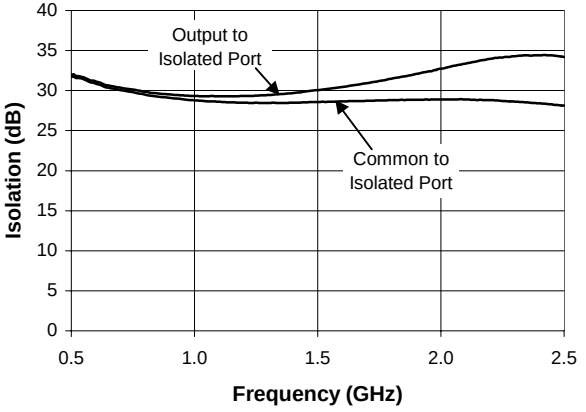
Pin	Function	Description
1	RFOUT2 (J3)	RF port (can be used as an input or as an output)
2	GND	Ground connection (keep as short as possible)
3	RFOUT 1 (J2)	RF port (can be used as an input or as an output)
4	V1	Control voltage 1 (low 0V , high 2.7 to 5V)
5	RFIN (J1)/Vs	RF common port and bias voltage for positive control (3V to 5V)
6	V2	Control voltage 2 (low 0V , high 2.7 to 5V)

1. *DC blocking capacitors C1,2,3 and optional resistor Rs must be supplied externally.*
2. *C1,2,3 = 100 pF for operation >500MHz.*
3. *The use of resistor Rs to the positive voltage supply is optional. It is only required if it is necessary to independently control the RF ports, such as selecting both ports to be OFF at the same time.*

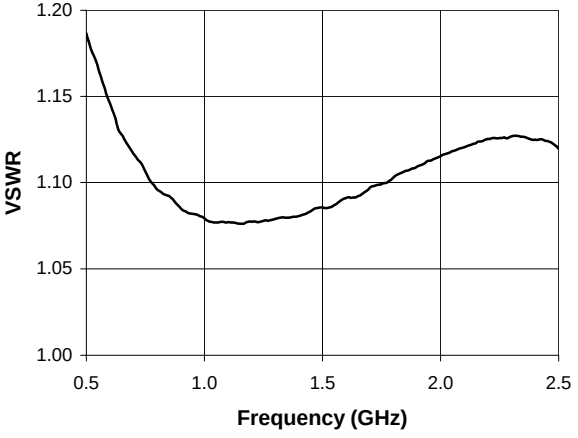
TYPICAL PERFORMANCE AT 25°C (0,+2.7V)



Insertion Loss vs. Frequency

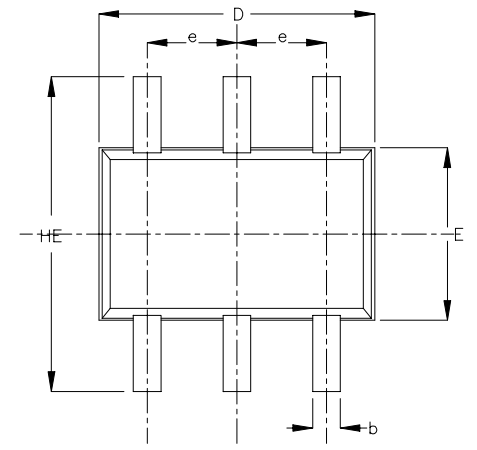


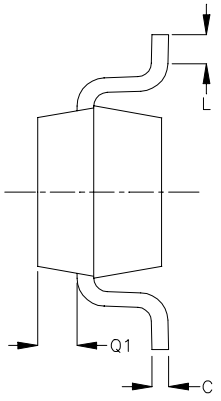
Isolation vs. Frequency

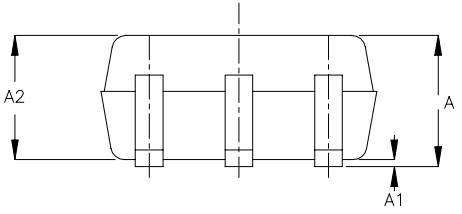


VSWR vs Frequency

PACKAGE OUTLINE DIAGRAM







SYMBOL	MIN	MAX
e	0.65	BSC
D	1.80	2.20
b	0.15	0.30
E	1.15	1.35
HE	1.80	2.40
Q1	0.10	0.40
A2	0.80	1.00
A1	0.00	0.10
A	0.80	1.10
c	0.10	0.18
L	0.10	0.30

NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETERS
2. DIMENSIONS ARE INCLUSIVE OF PLATING
3. DIMENSIONS ARE EXCLUSIVE OF MOLD FLASH & METAL BURR
4. ALL SPECIFICATIONS COMPLY TO EIA SOT−363

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