



AWS5504-S14

GaAs IC High Power Positive Control
SPDT Reflective Switch DC-2.0 GHz

Advanced Product Information
Rev. 1

FEATURES

- High Linearity (IP3 55 dBm @ 0.9 GHz)
- Low Insertion Loss (0.35 dB @ 0.9 GHz)
- +3 V to +5 V Operation
- Low DC Power Consumption
- Ultra Miniature SOT-6 Package

DESCRIPTION

The AWS5504 is a Single Pole Double Throw (SPDT) GaAs MMIC switch assembled in a SOT-6 plastic package. The AWS5504 is designed for analog and digital applications that require low insertion loss, high linearity, and small size. The switch can be controlled with positive, negative, or a combination of both voltages.

Typical applications include: transmit/receive switch, diversity switching, and antenna selection.



S14
SOT-6
6 Pin Plastic Package

ELECTRICAL SPECIFICATIONS AT 25 °C (0, +5V)

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	
	DC - 2.0 GHz		1.0	1.2	
Isolation	DC - 0.5 GHz	20	23		dB
	DC - 1.0 GHz	15	17	-	
	DC - 2.0 GHz	8	10		
VSWR ⁴	DC - 1.0 GHz	-	1.3:1	1.4:1	dB
	DC - 2.0 GHz		1.3:1	1.8:1	

OPERATING CHARACTERISTICS AT 25° C (0, +5V)

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
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +10 dBm	0.9 GHz	-	+55	-	dBm
Input Power for 1dB Compression		0.9 GHz	-	+38	-	dBm
Control Voltage	$V_{LOW} = 0 \text{ to } 0.2 \text{ V @ } 20 \text{ uA Max}$ $V_{HIGH} = +3 \text{ V @ } 100 \text{ uA Max to } +5 \text{ V @ } 200 \text{ uA Max}$ $V_S = V_{HIGH} \pm 0.2\text{V}$					

1. All measurements made in a 50 ohm system, unless other 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 rise time pulse and 500 MHz bandwidth.

ABSOLUTE MAXIMUM RATINGS

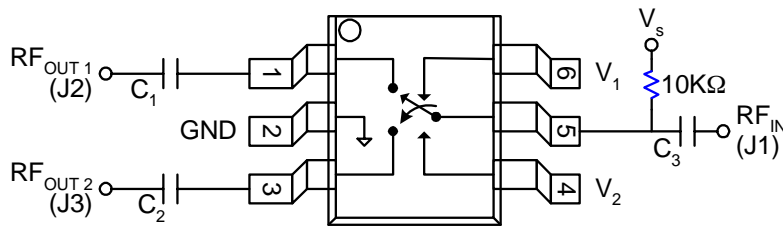
Characteristics	Value
RF Input Power	6 W Max > 900 MHz, 0/-5 V Control
Control Voltage	-0.2 V, +8 V
Operating Temperature	-40° C to +85°C
Storage Temperature	-65°C to +150°C
θ_{JC}	25° C/W

TRUTH TABLE

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

$V_{High} = +3$ to $+5$ V ($V_S = V_{High} \pm 0.2$ V)

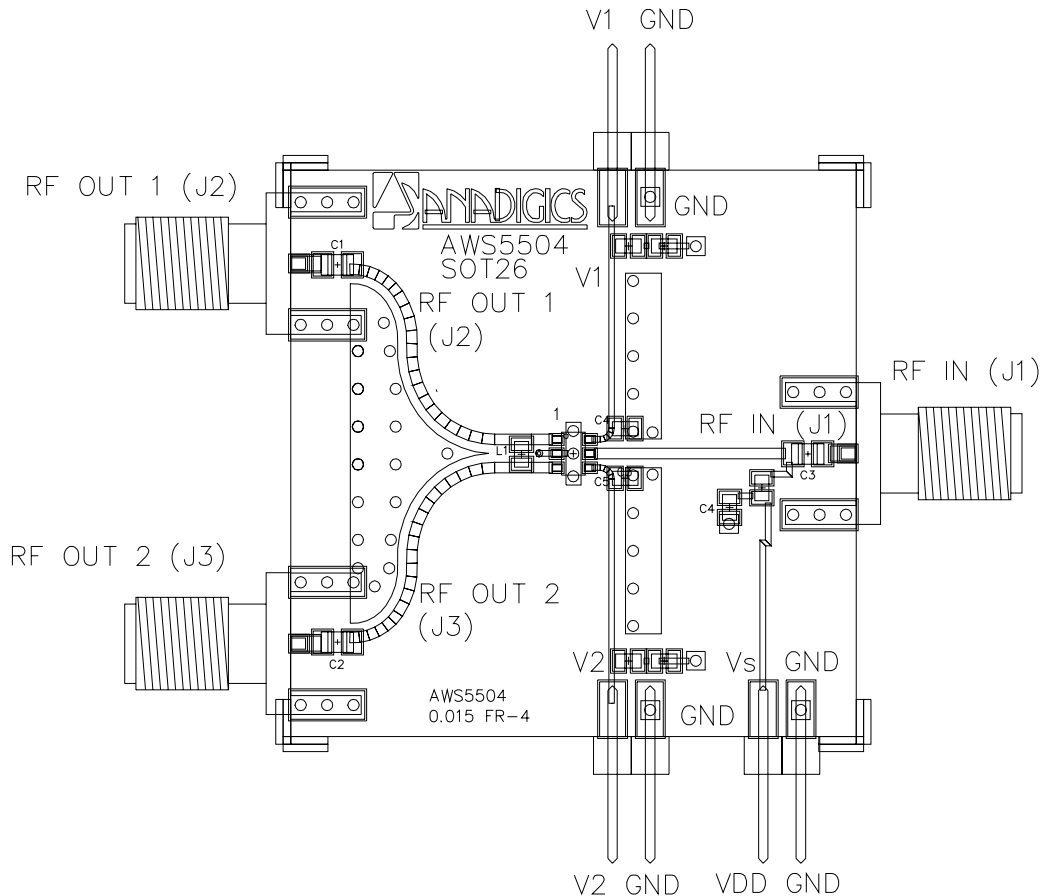
PIN OUT



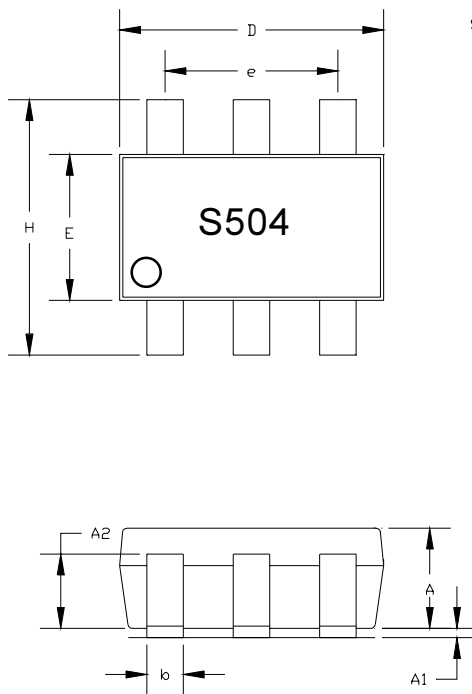
DC block capacitors $C_{1,2,3}$ must be supplied externally.
 $C_{1,2,3} = 100$ pF for operation >500 MHz

Pin	Function	Description
1	RF_OUT1 (J2)	RF port can be used as an input or as an output.
2	GND	Ground connection. Keep as short as possible.
3	RF_OUT2 (J3)	RF port can be used as an input or an output.
4	V2	Control Voltage 2, Low 0V, High 3V to 5V
5	RF_IN (J1)/V_S	RF common port and bias voltage for positive control (3V to 5V).
6	V1	Control Voltage 1, Low 0V, High 3V to 5V

TEST CIRCUIT LAYOUT



PACKAGE OUTLINE DRAWING



SCALE: 20:1

NOTES:

1. Package body sizes exclude mold flash and gate burrs.
2. Dimension L is measured in gage plane
3. Coplanarity: 0.1000 mm
4. Tolerance ± 0.1000 mm (4 mil) unless otherwise specified.

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.00	1.10	1.30	0.039	0.043	0.051
A1	0.00	—	0.10	0.00	—	0.004
A2	0.70	0.80	0.90	0.027	0.031	0.035
b	0.35	0.40	0.50	0.014	0.016	0.020
C	0.10	0.15	0.25	0.004	0.006	0.010
D	2.70	2.90	3.10	0.106	0.114	0.122
E	1.40	1.60	1.80	0.055	0.063	0.071
e	1.90(TYP)			0.075(TYP)		
H	2.60	2.80	3.00	0.102	0.110	0.118
L	0.37	—	—	0.015	—	—
$\theta 1$	1°	5°	9°	1°	5°	9°

ANADIGICS, Inc.

35 Technology Drive

Warren, New Jersey 07059

Tel: (908) 668-5000 / Fax: (908) 668-5132

Email: Mktg@anadigics.com

www.anadigics.com

IMPORTANT NOTICE

ANADIGICS, Inc. reserves the right to make changes to its products or discontinue any product at any time without notice. The Advanced Product data sheets and product specifications contained in this data sheet are subject to change prior to a products formal introduction. The information in this data sheet has been carefully checked and is assumed to be reliable. However, ANADIGICS assumes no responsibility for inaccuracies. ANADIGICS strongly urges customers to verify that the information they are using is current before placing orders.

WARNING

ANADIGICS products are not intended for use in life support appliances, device, or systems. Use of an ANADIGICS product in any such application without written consent is prohibited.