

## Evaluation Board for the **ADG901/ADG902** and **ADG918/ADG919** Wideband Absorptive/Reflective Switches

### FEATURES

Evaluation board for the **ADG901/ADG902** SPST and the **ADG918/ADG919** SPDT switches  
RF through for board calibration

### GENERAL DESCRIPTION

This user guide describes the evaluation board for the **ADG901/ADG902** and **ADG918/ADG919** switches.

The **ADG901/ADG902** (SPST) and the **ADG918/ADG919** (SPDT) are wideband switches using a CMOS process to provide high isolation and low insertion loss to 1 GHz.

Full data on the **ADG901/ADG902** and the **ADG918/ADG919** is available in their respective data sheets available from Analog Devices and should be consulted in conjunction with this user guide when using the evaluation board.

### TYPICAL SETUP

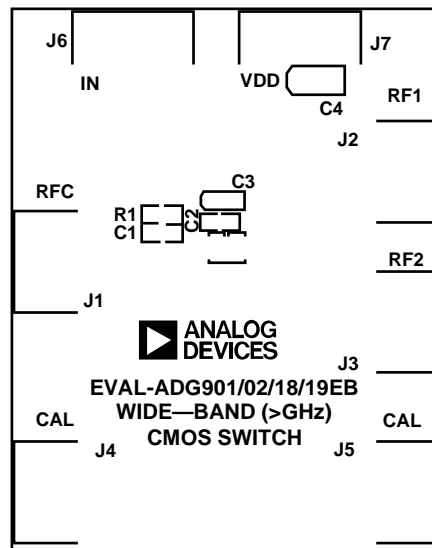


Figure 1. **ADG901/ADG902/ADG918/ADG919** Evaluation Board

## OPERATING THE ADG901/ADG902 AND THE ADG918/ADG919 EVALUATION BOARD

This evaluation board allows designers to evaluate the high-performance SPST and SPDT wideband switches with a minimum of effort.

To prove that these devices meet the user’s requirements, use a power supply and a network analyzer.

### POWER SUPPLIES

This evaluation board has two analog power supply inputs:  $V_{DD}$  and CTRL.  $V_{DD}$  can equal 1.65 V to 2.75 V.

The CTRL inputs are both CMOS and LVTTTL compatible. For operation of the ADG901/ADG902 evaluation board, see Table 1 for setup conditions. For operation of the ADG918/ADG919 evaluation board, see Table 2 for setup conditions.

Table 1. Truth Table ADG901/ADG902

CTRL	Signal Path
0	RF1 isolated from RF2
1	RF1 to RF2

Table 2. Truth Table ADG918/ADG919

CTRL	Signal Path
0	RF2 to RFC
1	RF1 to RFC

### ADG901/ADG902

The RF1 port, see Figure 2, is connected through a 50  $\Omega$  transmission line to the top left SMA connector, J1. RF2 is connected through 50  $\Omega$  transmission lines to the top SMA connector, J2. The port labeled RF2 is ground; connect to ground when evaluating ADG901/ADG902. A through transmission line connects J4 and J5 and this transmission line is used to estimate the loss of the PCB over the environmental conditions being evaluated.

### ADG918/ADG919

The RFC port, see Figure 3, is connected through a 50  $\Omega$  transmission line to the top left SMA connector, J1. RF1 and RF2 are connected through 50  $\Omega$  transmission lines to the top two SMA connectors, J2 and J3, respectively. A through transmission line connects J4 and J5 and this transmission line is used to estimate the loss of the PCB over the environmental conditions being evaluated.

The board is constructed of a four layer, FR4 material with a dielectric constant of approximately 4.3. The total board thickness is 0.062”. Two ground layers with grounded planes provide ground for the RF transmission lines. The transmission lines were designed using a coplanar waveguide with the ground plane model using a trace width of 0.052”, clearance to the ground plane of 0.030”, dielectric thickness of 0.029” and a metal thickness of 0.0014”.

A 10  $\mu\text{F}$  surface-mount tantalum decoupling capacitor is provided on the  $V_{DD}$  line and two 10 pF ceramic capacitors are placed close to the DUT on both the  $V_{DD}$  pin and the CTRL pin. Unpopulated component positions are available for the user to apply extra components to meet their design application.

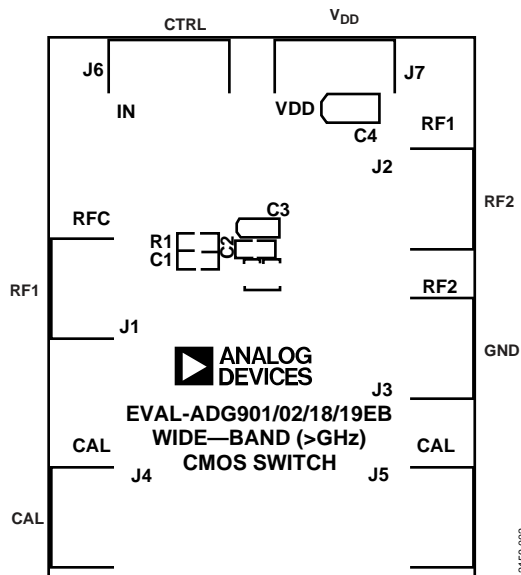


Figure 2. ADG901/ADG902 Top View

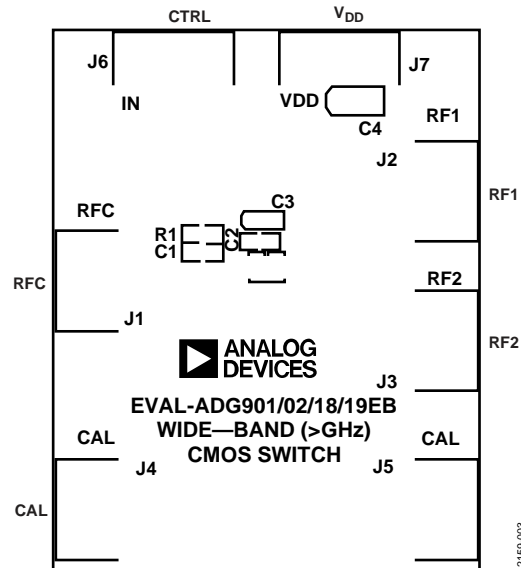


Figure 3. ADG918/ADG919 Top View

## EVALUATION BOARD SCHEMATICS AND ARTWORK

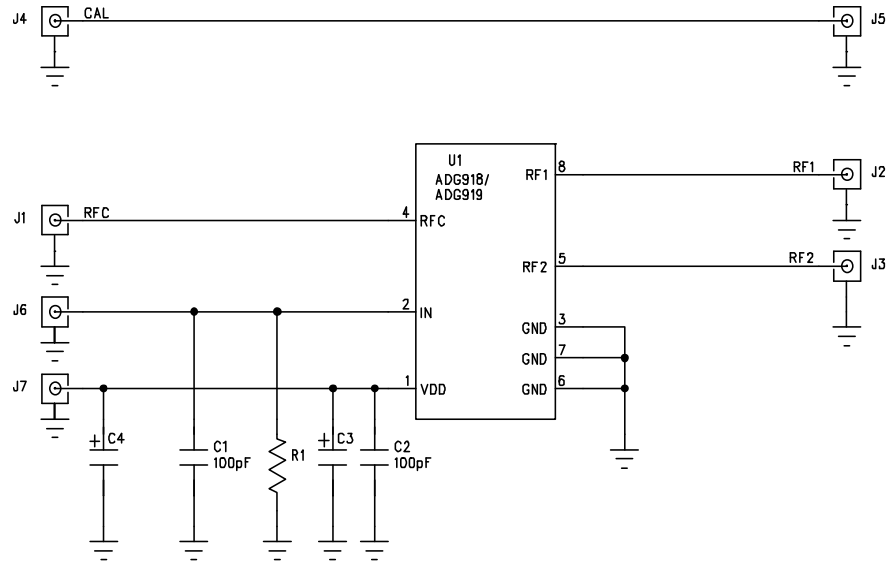


Figure 4. ADG918/ADG919 Schematic

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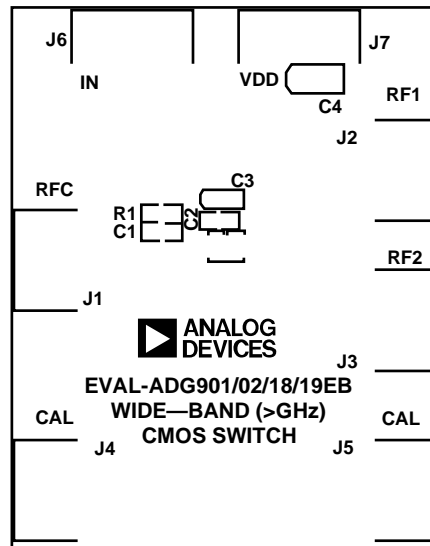


Figure 5. ADG901/ADG902/ADG918/ADG919 Silkscreen

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## ORDERING INFORMATION

### BILL OF MATERIALS

Table 3.

Item	Qty	Reference	Description	Supplier/No.
1	1	U1	ADG901/ADG902/ADG918/ADG919	Analog Devices, Inc.
2	7	J1 to J7	SMA end launch connectors 0.062"	J502-ND
3	2	C1, C2	10 pF ceramic capacitor	FEC 499-110
4	1	C4	10 $\mu$ F tantalum capacitor	FEC 643-683

## REVISION HISTORY

### 4/14—Rev. A to Rev. B

Updated Format ..... Universal  
 Changes to ADG918/ADG919 Section ..... 3

### 2003—Rev. A



#### ESD Caution

**ESD (electrostatic discharge) sensitive device.** Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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