ANALOG DEVICES

ADV3219-EVALZ/ADV3220-EVALZ User Guide

UG-843

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Evaluation Board for the ADV3219/ADV3220 800 MHz, 2:1 Analog Multiplexers

FEATURES

Full featured evaluation board for the ADV3219/ADV3220
Single board with both 50 Ω and 75 Ω termination
±5 V operation

EVALUATION KIT CONTENTS

ADV3219-EVALZ/ADV3220-EVALZ evaluation board
Instruction guide for user guide download

EQUIPMENT NEEDED

Signal source or video pattern generator and signal analyzer
Power supplies (2 V/100 mA and ±5 V/1 A)
BNC-to-SMA connector for inputs and output using the 50 Ω terminated board
BNC-to-BNC connector for inputs and output using the 75 Ω terminated board

GENERAL DESCRIPTION

The ADV3219 and ADV3220 are high speed, high slew rate, buffered, 2:1 analog multiplexers. They offer a −3 dB signal bandwidth greater than 800 MHz and channel switch times of less than 20 ns with 1% settling. With −60 dB of crosstalk and −82 dB isolation (at 100 MHz), the ADV3219 and ADV3220 are useful in many high speed applications. The differential gain of less than 0.02% and the differential phase of less than 0.02°, together with 0.1 dB flatness beyond 100 MHz while driving a 75 Ω back terminated load, make the ADV3219 and ADV3220 ideal for all types of signal switching.

The ADV3219/ADV3220 include an output buffer that can be placed into a high impedance state to allow multiple outputs to be connected together for cascading stages without the off channels loading the output bus. The ADV3219 has a gain of +1, and the ADV3220 has a gain of +2; both devices operate on ±5 V supplies while consuming less than 7.5 mA of idle current.

The ADV3219/ADV3220 are available in an 8-lead LFCSP package over the extended industrial temperature range of −40°C to +85°C.

This user guide provides all of the supporting documentation for working with the ADV3219-EVALZ/ADV3220-EVALZ evaluation board. Additional information is available in the ADV3219/ADV3220 data sheet, which should be consulted in conjunction with this user guide when working with the evaluation board.

EVALUATION BOARD PHOTOGRAPH AND BLOCK DIAGRAM

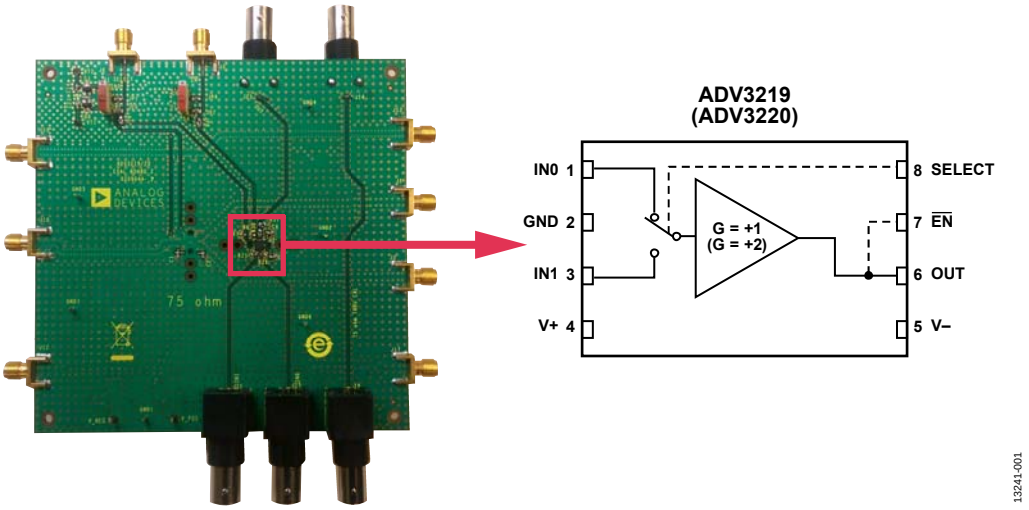

Figure 1.

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REVISION HISTORY

6/15—Revision 0: Initial Version

EVALUATION BOARD HARDWARE

INTRODUCTION

The ADV3219-EVALZ/ADV3220-EVALZ evaluation board allows the user to easily evaluate the ADV3219/ADV3220 in both the 50 Ω and 75 Ω terminations. Figure 2 shows the typical bench setup used to evaluate the 2:1 analog multiplexers.

POWER SUPPLY

This evaluation board requires a typical ±5 V power supply for the analog circuitry and a minimum of 2 V single supply for the digital circuitry. Connect the supplies as shown in Figure 2.

ANALOG INPUTS

Drive the inputs, IN0 and IN1, with a waveform generator for the 50 Ω terminated board or with a video pattern generator for the 75 Ω terminated board, or any signal source that can provide an input voltage of ±3 V for the ADV3219 and ±1.5 V for the ADV3220.

ANALOG OUTPUT

The output, OUT, of this evaluation board produces a voltage of ±3 V only for both the ADV3219 and ADV3220. The waveform signal from this output can be checked using a signal analyzer such as an oscilloscope or a display/monitor.

$\overline{\text{EN}}$ AND SELECT LOGIC INPUTS

Pin SELECT is a logic input used for selecting the desired source of the analog input. A switch, S1, is used to select IN0 and IN1.

Pin $\overline{\text{EN}}$, represented by S4, is a logic input used to enable or set OUT to high impedance.

Both the SELECT and $\overline{\text{EN}}$ pins require a minimum of 2 V to set in high mode, and a maximum of 0.8 V to set in low mode. Table 1 shows the truth table in setting the input.

QUICK START GUIDE

To get started, take the following steps:

1. Remove the ADV3219-EVALZ/ADV3220-EVALZ evaluation board from the box.
2. Connect +5 V to V_POS, connect −5 V to V_NEG, and connect GND to GND1.

For the 50 Ω terminated side:

1. Connect both VT1 and VT2 to GND. Set S1 to IN0. Set S4 to on.
2. Connect an input signal that is within the input voltage range of the device through the BNC-to-SMA connector between the signal generator and IN0.
3. Connect an oscilloscope or a display/monitor to OUT through the BNC-to-SMA connector. OUT produces the signal from IN0.
4. To set IN1 as the input, connect 2 V to VT2, connect GND to VT1, and set S1 to IN1. Then, apply an input signal to IN1.

For the 75 Ω terminated side:

1. Connect both VT1 and VT2 to GND. Set S1 to IN0. Set S4 to on.
2. Connect an input signal that is within the input voltage range of the device through the BNC-to-BNC connector between the signal generator or video pattern generator and IN1.
3. Connect an oscilloscope or a display/monitor to OUT through the BNC-to-BNC connector. OUT produces the signal from IN1.
4. To set IN0 as the input, connect 2 V to VT2, connect GND to VT1, and set S1 to IN1. Then, apply an input signal to IN0.

Table 1. Input Setting Truth Table

SELECT	$\overline{\text{EN}}$	OUT
0	0	IN0
1	0	IN1
0	1	High-Z
1	1	High-Z

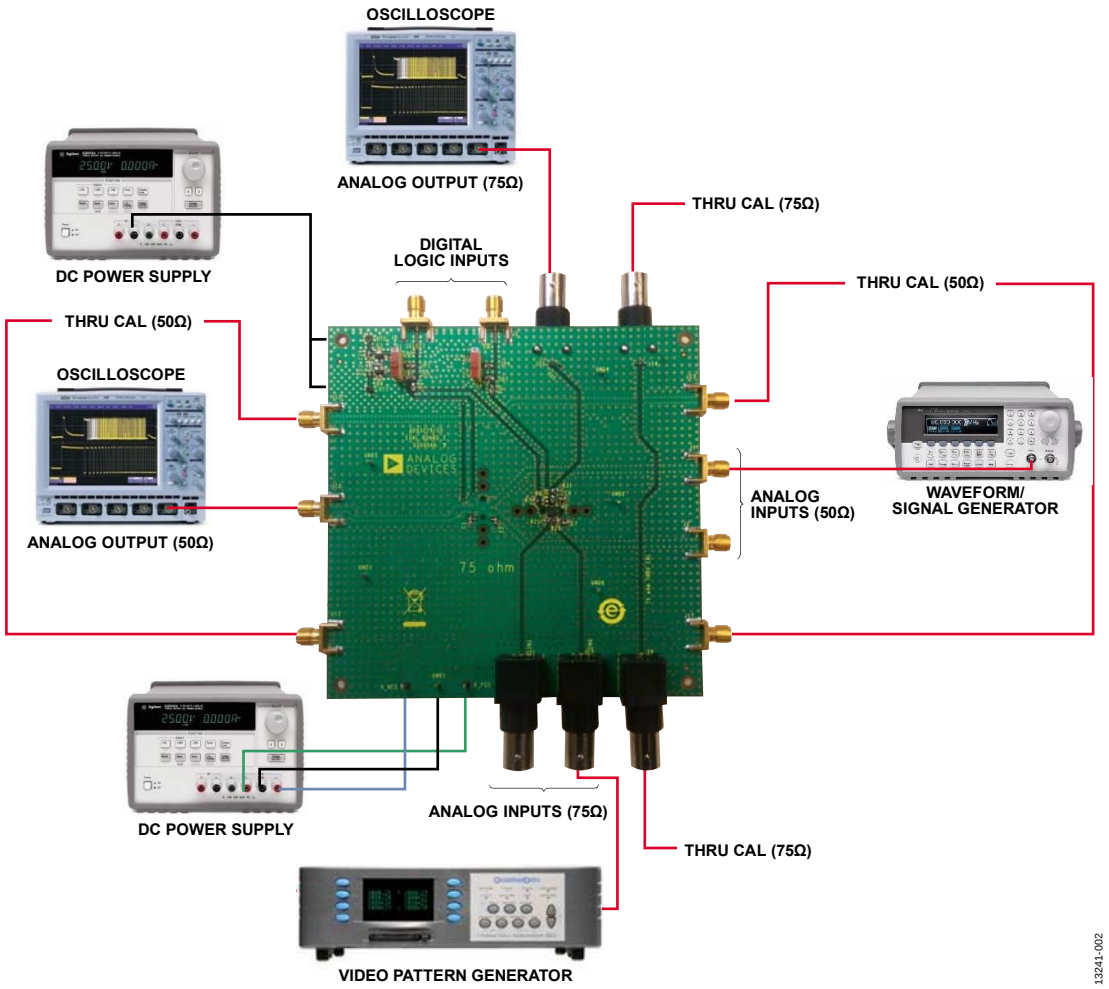

Figure 2. Typical Evaluation Setup

EVALUATION BOARD SCHEMATICS AND ARTWORK

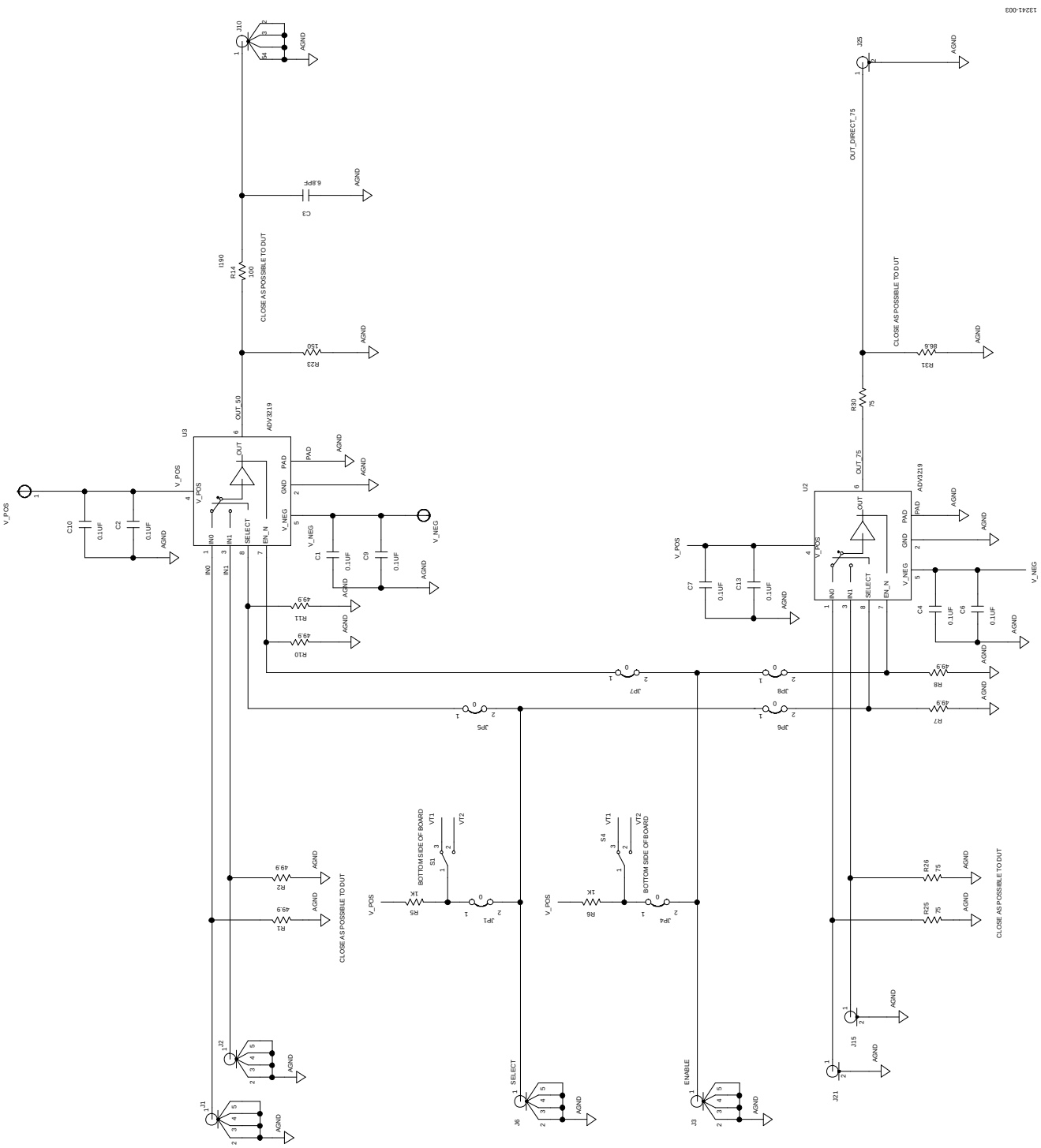

Figure 3. Evaluation Board Schematic—DUT Circuit for 50 Ω and 75 Ω Termination

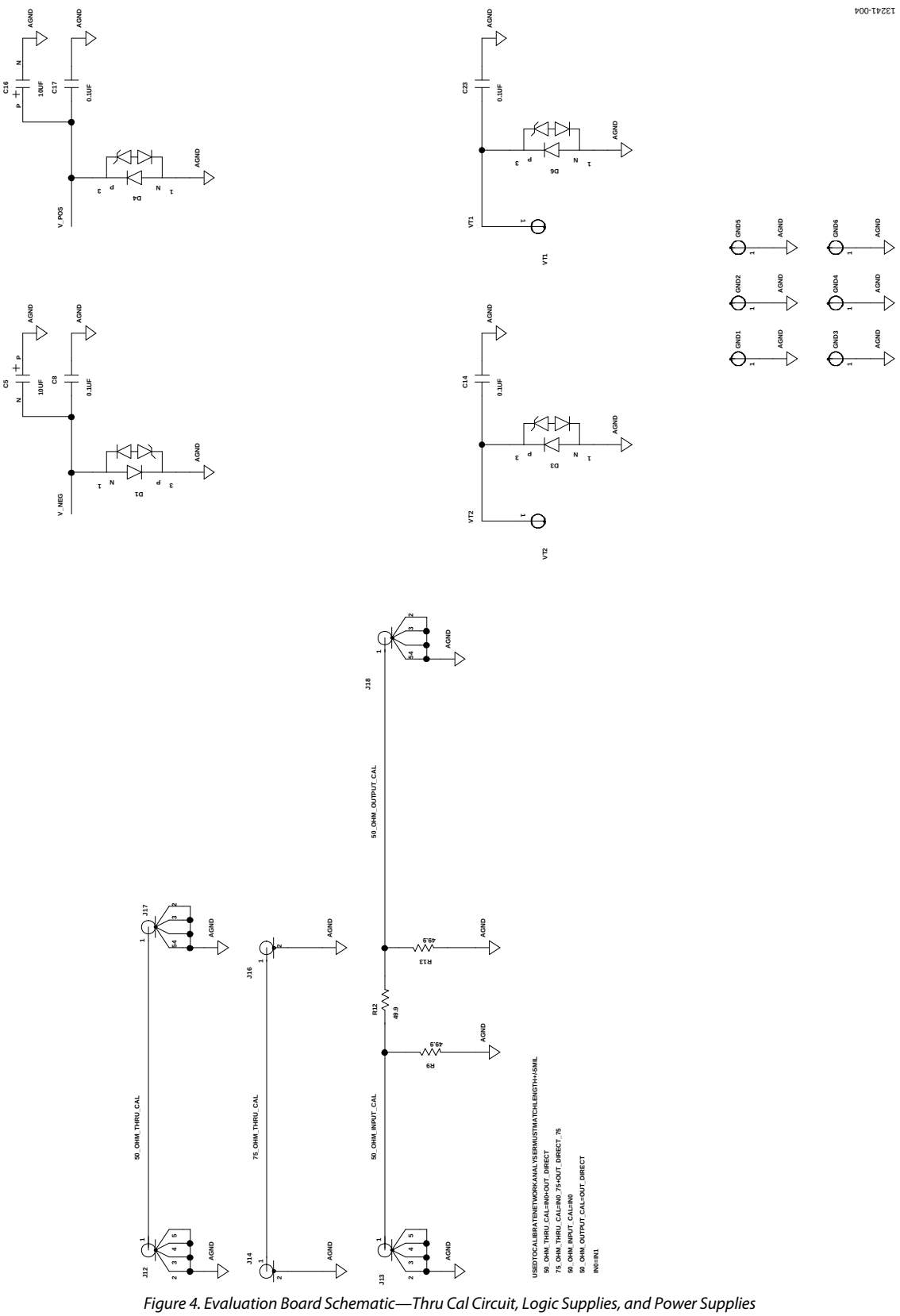

Figure 4. Evaluation Board Schematic—Thru Cal Circuit, Logic Supplies, and Power Supplies

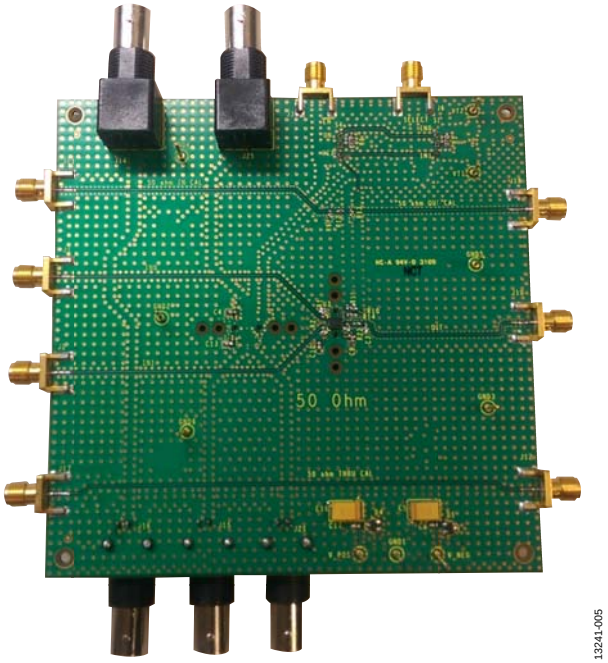

Figure 5. ADV3219-EVALZ/ADV3220-EVALZ Evaluation Board, 50 Ω Side

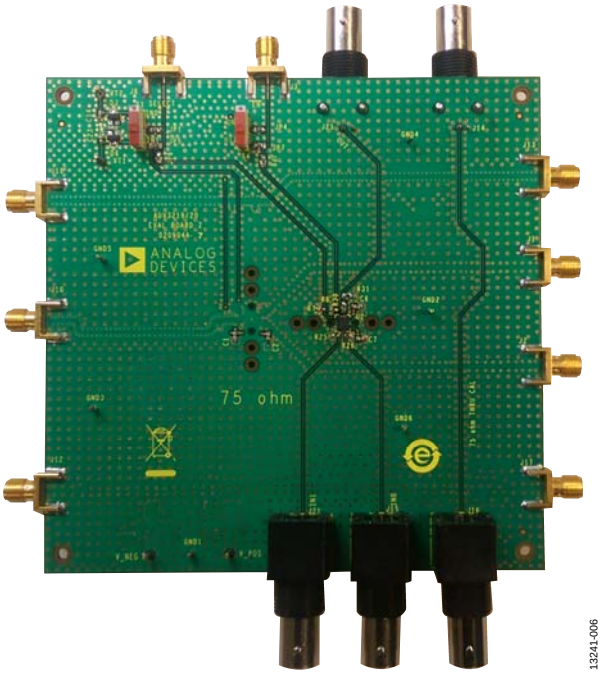

Figure 6. ADV3219-EVALZ/ADV3220-EVALZ Evaluation Board, 75 Ω Side

ORDERING INFORMATION

BILL OF MATERIALS

Table 2.

Item	Qty	Description	Manufacturer	Manufacturer Part No.	Reference Designator
1	12	Capacitor, ceramic, 0.1 µF	Panasonic	ECJ-1VB1C104K	C1, C2, C4, C6 to C10, C13, C14, C17, C23
2	2	Capacitor, standard, tantalum, 10 µF	AVX	TAJD106K050RNJ	C5, C16
3	1	Capacitor, ceramic, 6.8 pF	Samsung	CL05C6R8DBNC	C3
4	4	Unidirectional TVS	Diodes, Inc.	DLP05LC-7-F	D1, D3, D4, D6
5	10	Connector, PCB, pin vector	Vector	K24A	VT1, VT2, GND1 to GND6, V_NEG, V_POS
6	9	Connector, PCB, coaxial, SMA end launch	Johnson	142-0701-851	J1 to J3, J6 to J10, J12, J13, J17, J18
7	5	Connector, PCB, BNC, RA insulated, PCB socket, 75 Ω, BLK	Tyco Electronics	1-1634622-0	J14 to J16, J21, J25
8	6	Resistor, jumper, SMD, 0805 (short), 0 Ω	Panasonic	ERJ-6GEYJ0.0	JP1, JP4 to JP8
9	6	Resistor, ultra precision, ultra reliability, MF chip, 49.9 Ω	Susumu	RG1005P-49R9-B-T5	R1, R2, R7, R8, R10, R11
10	3	Resistor, precision, thick film chip, R0402, 49.9 Ω	Panasonic	ERJ-2RKF49R9X	R9, R12, R13
11	1	Resistor, film, SMD, 0402, 100 Ω	Venkel	CR0402-16W-1000 FPT	R14
12	1	Resistor, ultra precision, ultra reliability, MF chip, 150 Ω	Susumu	RG1005P-151-B-T5	R23
13	2	Resistor, precision, thick film chip, R0402, 75 Ω	Panasonic	ERJ-2RKF75R0X	R25, R26
14	1	Resistor, film, SMD, 0603, 75 Ω	Vishay	P0603E75R0BBT	R30
15	1	Resistor, thick film chip, 86.6 Ω	Panasonic	ERJ-3EKF86R6V	R31
16	2	Resistor, precision, thick film chip, R0805, 1 kΩ	Panasonic	ERJ-6ENF1001V	R5, R6
17	2	Switch, PCB mount slide	SECMA	09-03-201-02	S1, S4
18	2	IC, 800 MHz, 2:1 buffered analog multiplexer	Analog Devices, Inc.	ADV3219 or ADV3220	U2, U3

NOTES

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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