



# MAX4231 Evaluation Kit

## General Description

The MAX4231 evaluation kit (EV kit) is a fully assembled and tested PCB that evaluates the MAX4231 single, high-output-drive CMOS operational amplifier (op amp) in a 6-bump chip-scale package (UCSP™).

## Features

- ◆ Flexible Input and Output Configurations
- ◆ Single 2.7V to 5.5V Power Supply
- ◆ Fully Assembled and Tested

## Ordering Information

PART	TYPE
MAX4231EVKIT+	EV Kit

+Denotes lead(Pb)-free and RoHS compliant.

## Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2	2	33 $\mu$ F $\pm$ 20%, 10V bipolar electrolytic aluminum capacitors (D size) Panasonic EEE-1AA330NP
C3	0	Not installed, ceramic capacitor (2220)
C4	0	Not installed, ceramic capacitor (1210)
C5	1	10 $\mu$ F $\pm$ 10%, 10V tantalum capacitor (A size) AVX TAJA106K010R
C6, C7	2	0.1 $\mu$ F $\pm$ 10%, 16V X7R ceramic capacitors (0603) Murata GRM188R71C104K
C8	0	Not installed, ceramic capacitor (0603)

DESIGNATION	QTY	DESCRIPTION
D1	1	2V, 5mA zener diode (0603)
JU1, JU2, JU6	3	2-pin headers
JU3, JU4, JU5, JU7, JU8	5	3-pin headers
OUT, VIN1, VIN2	3	White multipurpose test points
R1–R4	4	1k $\Omega$ $\pm$ 5% resistors (0603)
R5	1	0 $\Omega$ $\pm$ 5% resistor (0603)
R6	0	Not installed, resistor (1210)
R7	1	150 $\Omega$ $\pm$ 5% resistor (0603)
U1	1	CMOS op amp (6 UCSP) Maxim MAX4231ART+
VDD	1	Red multipurpose test point
VSS1–VSS4	4	Black multipurpose test points
—	8	Shunts
—	1	PCB: MAX4231 EVALUATION KIT+

## Component Suppliers

SUPPLIER	PHONE	WEBSITE
AVX Corporation	843-946-0238	www.avxcorp.com
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
Panasonic Corp.	800-344-2112	www.panasonic.com

**Note:** Indicate that you are using the MAX4231 when contacting these component suppliers.

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**For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim's website at [www.maxim-ic.com](http://www.maxim-ic.com).**

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## Quick Start

### Required Equipment

- MAX4231 EV kit
- 5V, 1A power supply
- Waveform generator
- Oscilloscope

### Procedure

The MAX4231 EV kit is fully assembled and tested. Follow the steps below to verify board operation. VSS1–VSS4 connectors are connected to the ground on the EV board.

- 1) Verify that all jumpers are in their default positions, as shown in Table 1.
- 2) Set the power-supply output to 5V. Disable the output.
- 3) Set the waveform-generator output to 1kHz sine wave,  $V_{P-P} = 4V$ , offset = 2V. Disable the output.
- 4) Connect the power-supply output to the VDD connector.
- 5) Connect the power-supply ground to the VSS4 connector.
- 6) Connect the waveform-generator output to the VIN1 connector.
- 7) Connect the waveform-generator ground to the VSS1 connector.
- 8) Connect the positive input of the oscilloscope (channel 1) to the VIN1 connector.
- 9) Connect the negative input of the oscilloscope (channel 1) to the VSS1 connector.
- 10) Connect the positive input of the oscilloscope (channel 2) to the VOUT connector.
- 11) Connect the negative input of the oscilloscope (channel 2) to the VSS3 connector.
- 12) Enable the power-supply output.
- 13) Enable the waveform-generator output.
- 14) Verify that channel 1 and channel 2 have the identical waveform, both amplitude and phase.

## Detailed Description of Hardware

The MAX4231 EV kit provides a proven layout for the MAX4231 single, high-output-drive CMOS op amp. The MAX4231 features 200mA of peak output current, rail-to-rail input and output capability from a single 2.7V to 5.5V supply. The amplifier exhibits a high slew rate of 10V/ $\mu$ s and a gain-bandwidth product (GBWP) of 10MHz. The MAX4231 also offers a SHDN feature that drives the output low.

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**Table 1. MAX4231 EV Kit Jumper Descriptions (JU1–JU8)**

JUMPER	SHUNT POSITION	DESCRIPTION
JU1	1-2*	DC-blocking capacitor C1 bypassed
	Open	DC-blocking capacitor C1 applied
JU2	1-2*	DC-blocking capacitor C2 bypassed
	Open	DC-blocking capacitor C2 applied
JU3	1-2*	VIN1 applied to IN+ through R1
	2-3	GND applied to IN+ through R1
	Open	No signal applied to IN+ through R1
JU4	1-2*	VIN2 applied to IN- through R3
	2-3	GND applied to IN- through R3
	Open	No signal applied to IN- through R3
JU5	1-2	Zener voltage (2V nominal) applied to IN+ through R2
	2-3*	GND applied to IN+ through R2
	Open	No signal applied to IN+ through R2
JU6	1-2*	DC-blocking capacitor C3 bypassed
	Open	DC-blocking capacitor C3 applied
JU7	1-2*	MAX4231 in normal operation mode
	2-3	MAX4231 in shutdown mode
JU8	1-2*	VDD applied to the output through R6
	2-3	GND applied to the output through R6

\*Default position.

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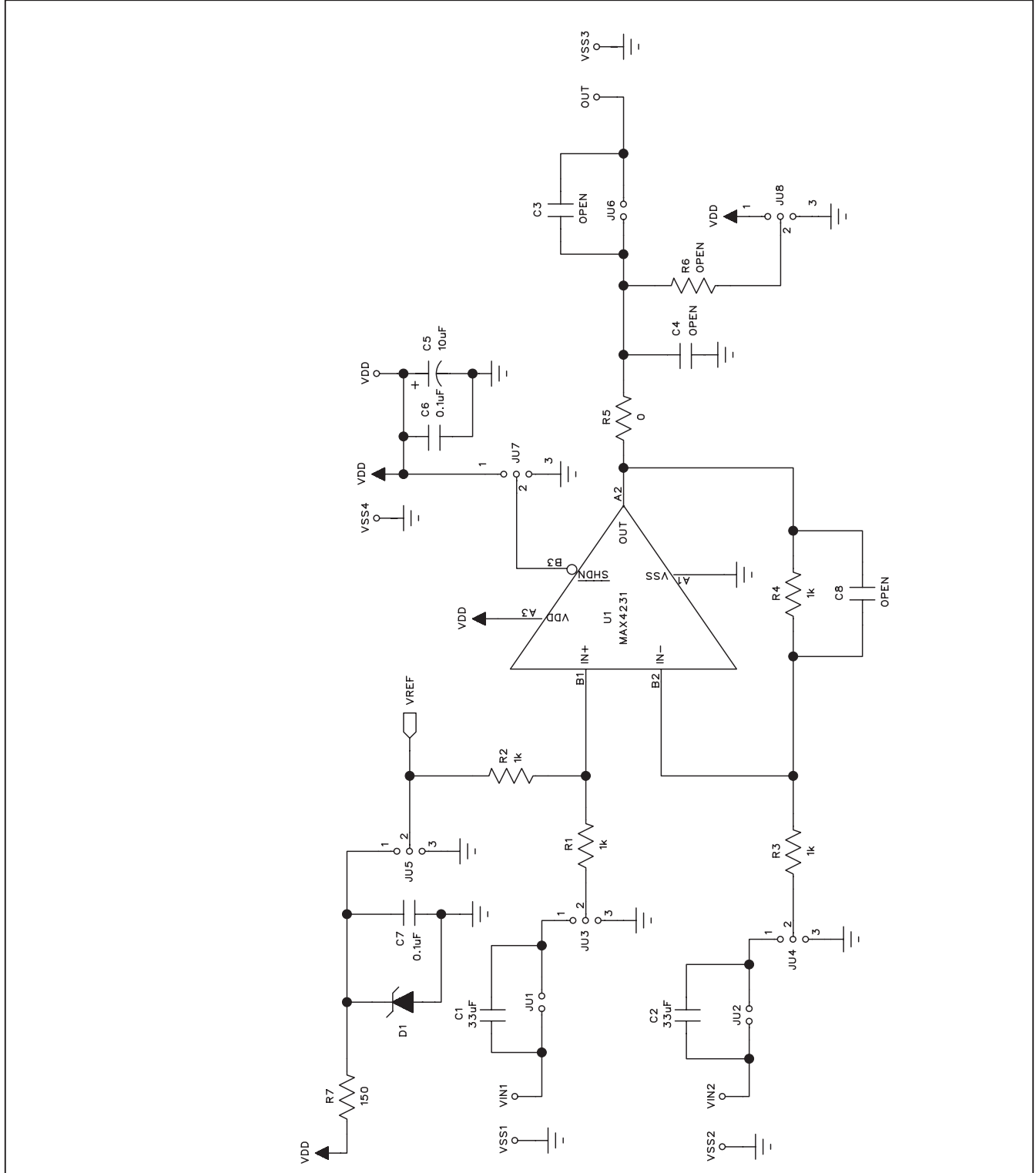


Figure 1. MAX4231 EV Kit Schematic

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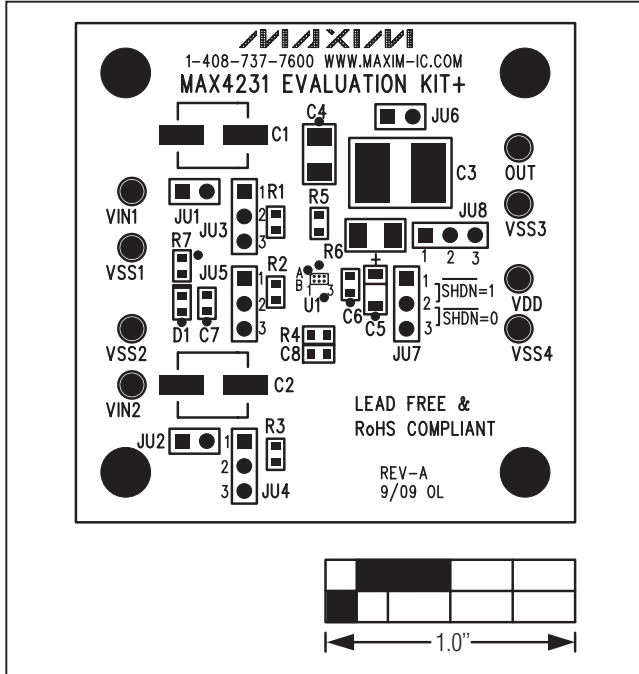


Figure 2. MAX4231 EV Kit Component Placement Guide—Component Side

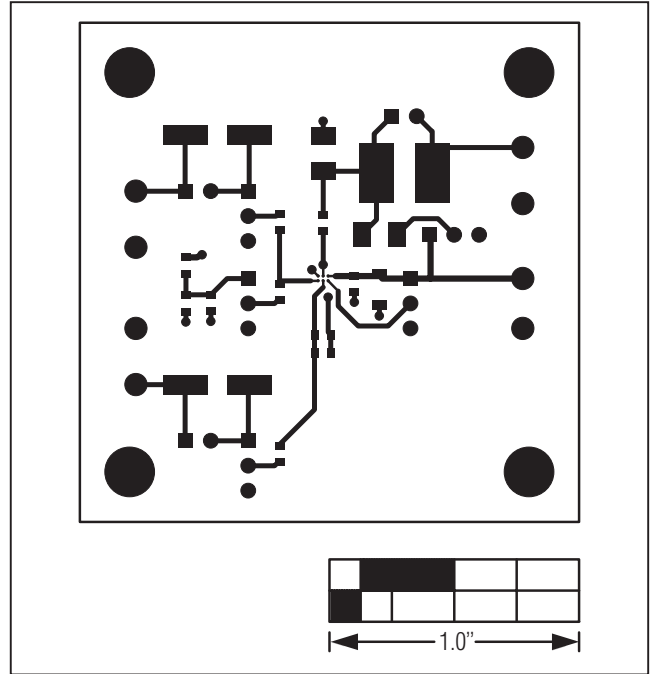


Figure 3. MAX4231 EV Kit PCB Layout—Component Side

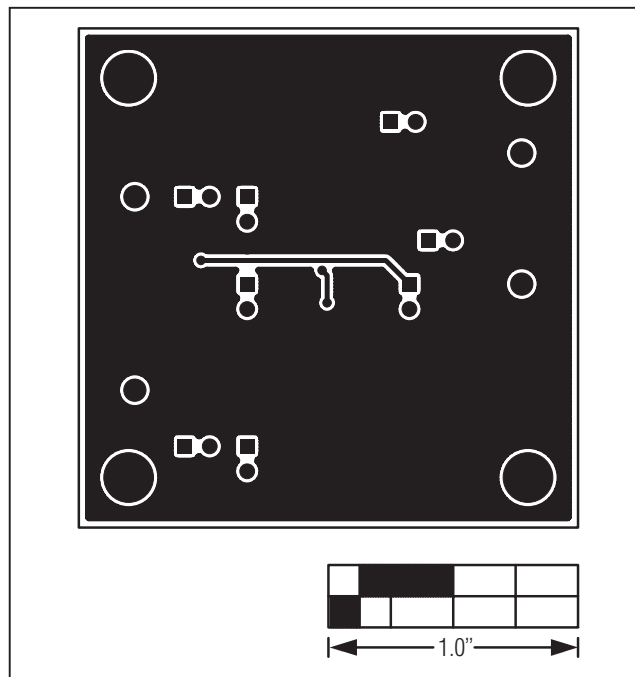


Figure 4. MAX4231 EV Kit PCB Layout—Solder Side

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