

# MAXIM

## MAX4447 Evaluation Kit

### General Description

The MAX4447 evaluation kit (EV kit) simplifies evaluation of the MAX4447 high-speed differential line driver. The EV kit includes the MAX4447, which has a fixed gain of +2V/V, but it can also be used to evaluate the adjustable-gain MAX4448 (stable with a minimum gain of +2V/V) or the MAX4449 (stable with a minimum gain of +5V/V). To evaluate the MAX4448 or MAX4449, order a free sample of the MAX4448ESE or MAX4449ESE along with the MAX4447 EV kit.

### Component List

DESIGNATION	QTY	DESCRIPTION
C1, C3	2	4.7 $\mu$ F $\pm$ 20%, 10V tantalum capacitors AVX TAJA475M010R
C2, C4	2	0.1 $\mu$ F ceramic capacitors
R1, R2, R3	3	49.9 $\Omega$ $\pm$ 1% resistors
RG	0	Not installed
JU1	1	2-pin header
None	1	Shunt (JU1)
IN, OUT-, OUT+	3	SMA connectors
U1	1	MAX4447ESE
None	1	MAX4447 EV kit PC board
None	1	MAX4447 EV kit data sheet
None	1	MAX4447/MAX4448/MAX4449 data sheet

### Component Suppliers

SUPPLIER	PHONE	FAX
AVX	803-946-0690	803-626-3123

**Note:** Please indicate that you are using the MAX4447, MAX4448, or MAX4449 when contacting the component supplier above.

### Features

- ◆ 430MHz Full-Power Bandwidth (MAX4447)
- ◆ 6500V/ $\mu$ s Slew Rate
- ◆ Proven PC Board Layout
- ◆ Fully Assembled and Tested Surface-Mount Board

### Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX4447EVKIT	0°C to +70°C	16 SO

### Quick Start

The MAX4447 EV kit is fully assembled and tested. Follow these steps to verify board operation. **Do not turn on the power supply until all connections are completed.**

- 1) Connect a +5V power supply to the VCC pin and a -5V power supply to the VEE pin. Connect power-supply ground to the GND pads.
- 2) Ensure that the shunt is removed from jumper JU1.
- 3) Apply a signal of up to +1.5V peak to the SMA connector marked IN.
- 4) Connect the output marked OUT+ to a 50 $\Omega$  terminated oscilloscope input, and connect the output marked OUT- to another 50 $\Omega$  terminated oscilloscope input.
- 5) Turn on the power supply and verify the output signals on the oscilloscope. The output amplitude at either of the two outputs (VOUT+, VOUT-) observed on the oscilloscope will be the same as that on the input. This is due to the multiplication of the +2 gain with the voltage divider formed by the 49.9 $\Omega$  back-terminating resistor (R3) and the oscilloscope input termination. Note that the differential output (defined as VOUT+ - VOUT-) will be twice the amplitude of the input.

Evaluates: MAX4447/MAX4448/MAX4449

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## Detailed Description

### Enable Control

The MAX4447 provides an enable pin (EN) to enable or disable the output. Table 1 lists the options available for the enable/disable control jumper, JU1. EN is a TTL/CMOS-logic level input.

### Layout Considerations

The MAX4447 EV kit layout has been optimized for high-speed signals with careful attention given to grounding, power-supply bypassing, and signal-path layout. The small, surface-mount, ceramic bypass capacitors (C2, C4) have been placed as close to the MAX4447 supply pins as possible. Signal traces have been kept as short as possible by using 0805-sized termination and gain-set resistors.

### Evaluating the MAX4448 or MAX4449

To evaluate the MAX4448 or MAX4449, turn off the power to the EV kit. Replace the MAX4447 with a MAX4448ESE or MAX4449ESE, and install a gain-setting resistor  $R_G$  (0805, 1%) according to the following formula:

$$R_G = \frac{300\Omega}{G / 2 - 1}$$

Note that the gain must be at least +2V/V for the MAX4448 and must be at least +5V/V for the MAX4449 for the amplifier to be stable.

**Table 1. Jumper JU1 Functions**

SHUNT	MAX4447 ENABLE PIN	MAX4447 OUTPUT
Installed	Connected to GND	MAX4447 in shutdown
Not installed	Floating (internally pulled up)	MAX4447 enabled

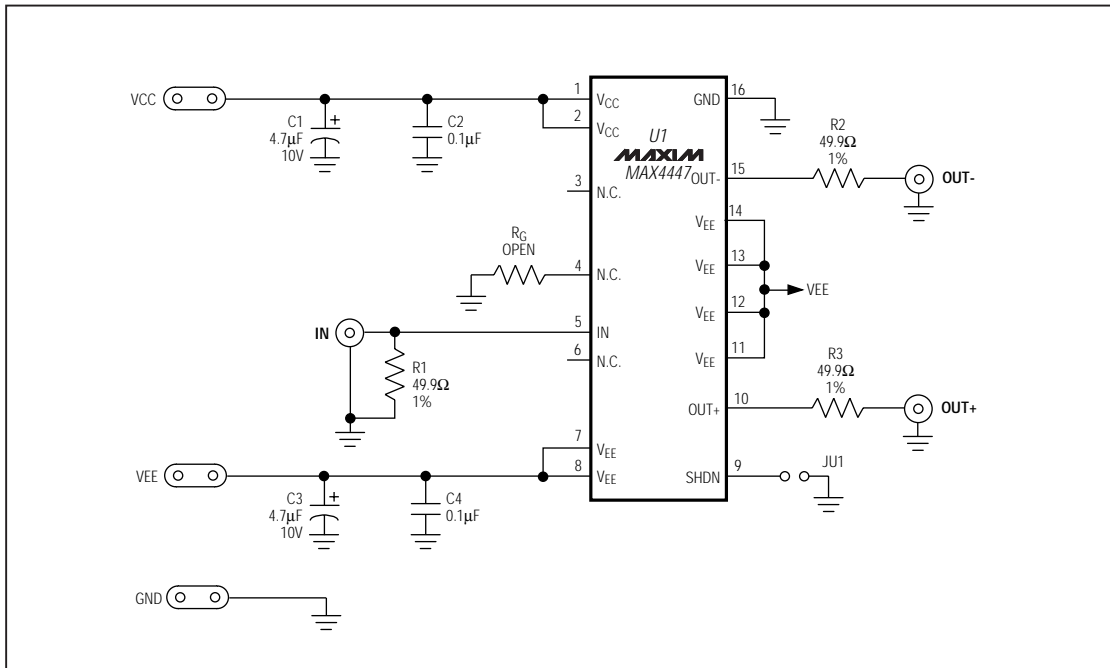


Figure 1. MAX4447 EV Kit Schematic

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Evaluates: MAX4447/MAX4448/MAX4449

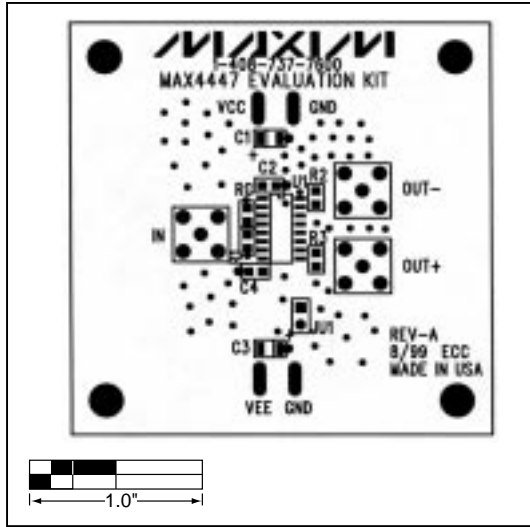


Figure 2. MAX4447 EV Kit Component Placement Guide—Component Side

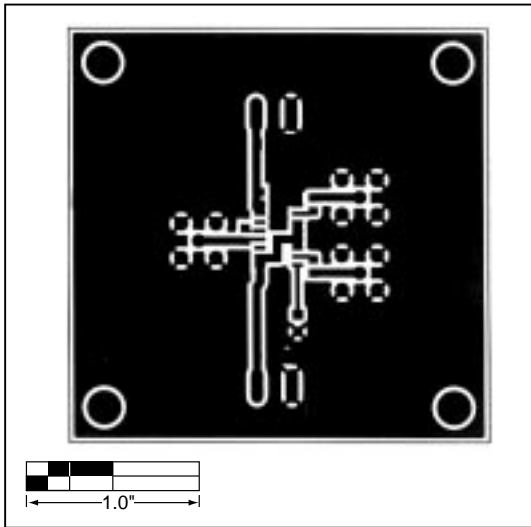


Figure 3. MAX4447 EV Kit PC Board Layout—Component Side

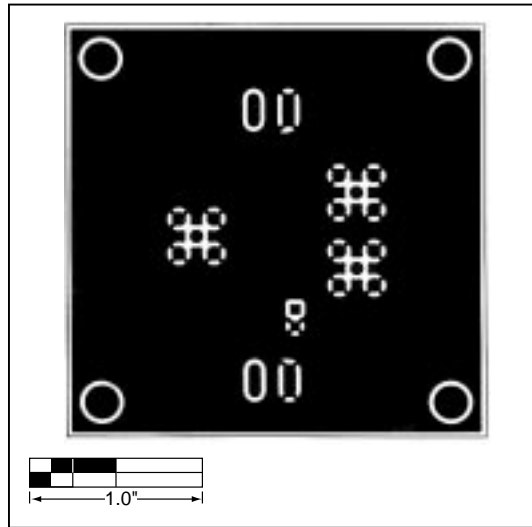


Figure 4. MAX4447 EV Kit PC Board Layout—Solder Side

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## NOTES

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