

# 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<br>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-,<br>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<br>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<br>ENABLE PIN              | MAX4447<br>OUTPUT      |
|---------------|------------------------------------|------------------------|
| Installed     | Connected to GND                   | MAX4447 in<br>shutdown |
| Not installed | Floating (internally<br>pulled up) | MAX4447 enabled        |

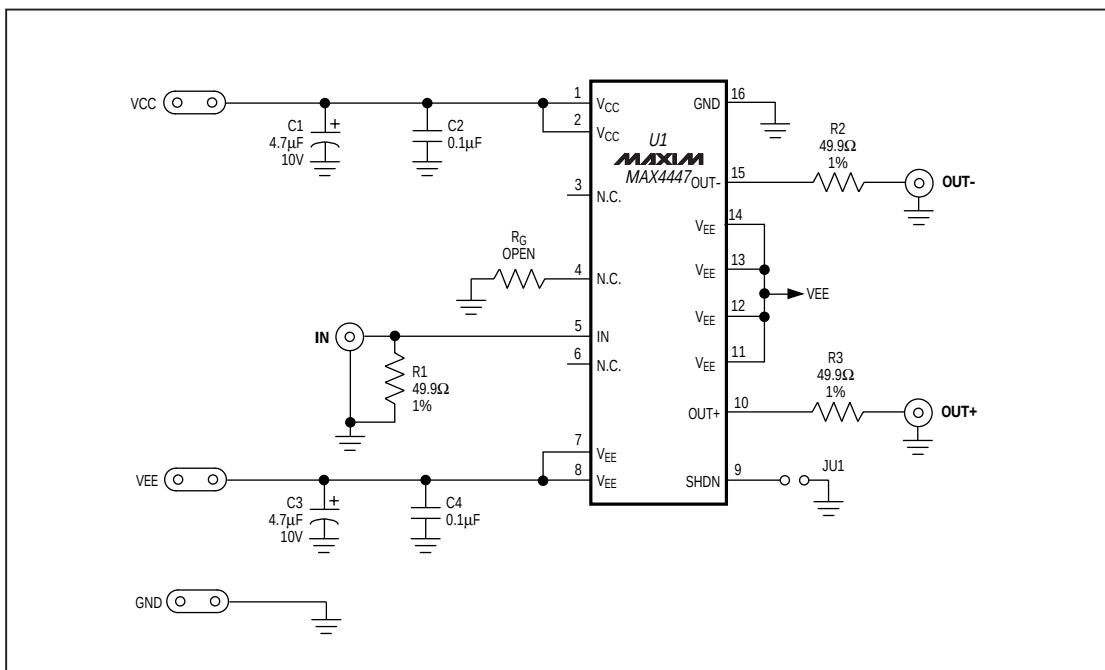


Figure 1. MAX4447 EV Kit Schematic

## MAX4447 Evaluation Kit

Evaluates: MAX4447/MAX4448/MAX4449

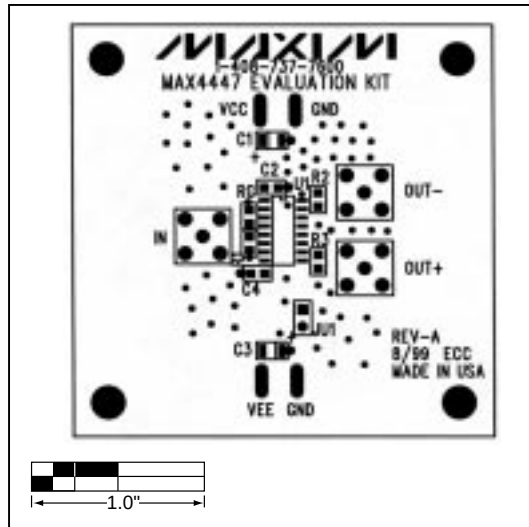


Figure 2. MAX4447 EV Kit Component Placement Guide—Component Side

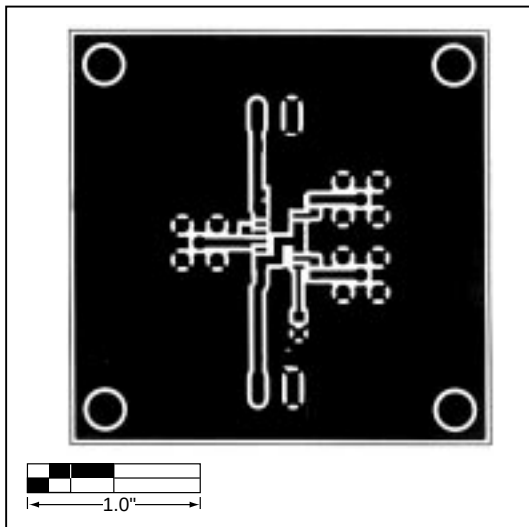


Figure 3. MAX4447 EV Kit PC Board Layout—Component Side

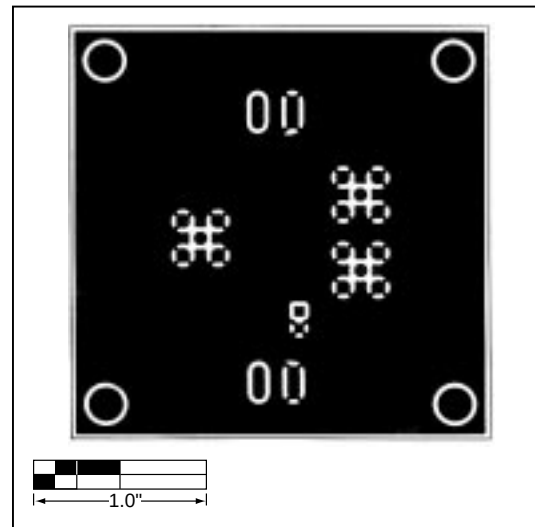


Figure 4. MAX4447 EV Kit PC Board Layout—Solder Side

**Evaluates: MAX4447/MAX4448/MAX4449**

## **MAX4447 Evaluation Kit**

NOTES

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