

MAXIM

MAX1910 Evaluation Kit

General Description

The MAX1910 evaluation (EV) kit is a fully assembled and tested circuit board containing a complete circuit driving four parallel white LEDs. The circuit operates from a 2.7V to 5.3V input supply. A MAX1910 comes installed on the board, but the EV kit can also be used to evaluate the MAX1912.

Component List

| DESIGNATION | QTY | DESCRIPTION |
|-------------|-----|--|
| C1, C2 | 2 | 0.47 μ F \pm 10%, 10V X5R ceramic capacitors (0603) Taiyo Yuden LMK107BJ474KA |
| C3, C4 | 2 | 2.2 μ F \pm 10%, 10V X5R ceramic capacitors (0805) Taiyo Yuden LMK212BJ225KG |
| R1–R4 | 4 | 15 Ω \pm 5% resistors (0805) |
| R5, R7 | 0 | Not installed (0805) PC board shorts |
| R6 | 0 | Not installed (0805) |
| R11 | 1 | 1 Ω \pm 5% resistor (0805) |
| R13 | 1 | 100k Ω \pm 5% resistor (0805) |
| D1–D4 | 4 | White LEDs (surface mount 3mm x 2mm) Kingbright AA3020PWC, Nichia: NSCW455, or Nichia: NSCW215T |
| JU1 | 1 | 3-pin header |
| U1 | 1 | MAX1910EUB (10-pin μ MAX) |
| None | 1 | Shunt |
| None | 1 | MAX1910 EV kit PC board |

Component Suppliers

| SUPPLIER | PHONE | WEBSITE |
|-------------|--------------|--------------------|
| Kamaya | 260-489-1533 | www.kamaya.com |
| Kingbright | 888-546-4533 | www.kingbright.com |
| Nichia | 248-352-6575 | www.nichia.com |
| Taiyo Yuden | 408-573-4150 | www.t-yuden.com |

Features

- ◆ Current-Regulated Charge Pump
- ◆ 60mA Output Current
- ◆ No Inductor Required
- ◆ 750kHz Operation Minimizes Input Ripple
- ◆ Uses Small Ceramic Capacitors
- ◆ Load Disconnected in Shutdown
- ◆ 1 μ A Shutdown Current
- ◆ Small 10-Pin μ MAX Package
- ◆ Fully Assembled and Tested

Ordering Information

| PART | TEMP RANGE | IC PACKAGE |
|--------------|----------------|--------------|
| MAX1910EVKIT | -40°C to +85°C | 10 μ MAX |

Quick Start

The MAX1910 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) Preset the power supply to between 2.7V and 4.2V.
- 2) Verify shunt JU1 is on pins 1 and 2 (enable).
- 3) Connect the positive (+) lead of the power supply to the IN1 pad.
- 4) Connect the negative (-) lead of the power supply to the GND pad.
- 5) Turn on the power supply.
- 6) Verify that the LEDs are lit.
- 7) Vary the power supply from 2.7V to 4.2V.
- 8) To verify shutdown mode, move shunt JU1 to pins 2 and 3. The LEDs turn off.
- 9) Move shunt JU1 back to pins 1 and 2. The LEDs turn back on.

Evaluates: MAX1910/MAX1912

MAX1910 Evaluation Kit

Detailed Description

Jumper Selection

Shutdown Mode

The MAX1910 features a shutdown mode that reduces input current to 0.1µA (typ). Place the shunt across pins 1 and 2 of JU1 for normal operation. Place the shunt across pins 2 and 3 of JU1 for shutdown mode (Table 1).

Table 1. Jumper JU1 Functions

| SHUNT LOCATION | SHDN PIN | OUTPUT |
|----------------|------------------|----------|
| 1 and 2 | Connected to IN | Enabled |
| 2 and 3 | Connected to GND | Shutdown |

Regulating the Total Current Through LEDs

In the default configuration, the current through LED D4 is set by the resistor R4. The current through the other LEDs tracks the current in the regulated LED. Refer to the MAX1910/MAX1912 data sheet for other LED matching and ballasting configurations.

The EV kit can also be configured to regulate the total current through the LEDs by following these steps:

- 1) Cut the PC board traces that short the pads for R5 and R7.
- 2) Short the pads of R6.
- 3) R5 remains open.
- 4) Install a resistor in R7. R7 sets the sum of all LED currents, and its value is found from:

$$R7 = \frac{0.2}{I_L}$$

Connecting an External Load

To use an external load in place of the four LEDs (such as an LED module), first follow the steps listed in the *Regulating the Total Current Through LEDs* section. Next, remove the four LEDs (D1–D4), or the four ballast resistors (R1–R4). An external load can now be connected from OUT1+ to OUT1-. The current through the external load is regulated to the current set by R7.

Evaluating the MAX1912

To evaluate the MAX1912, carefully remove U1 from the PC board and replace it with the MAX1912. Free samples of the MAX1912 can be obtained from Maxim.

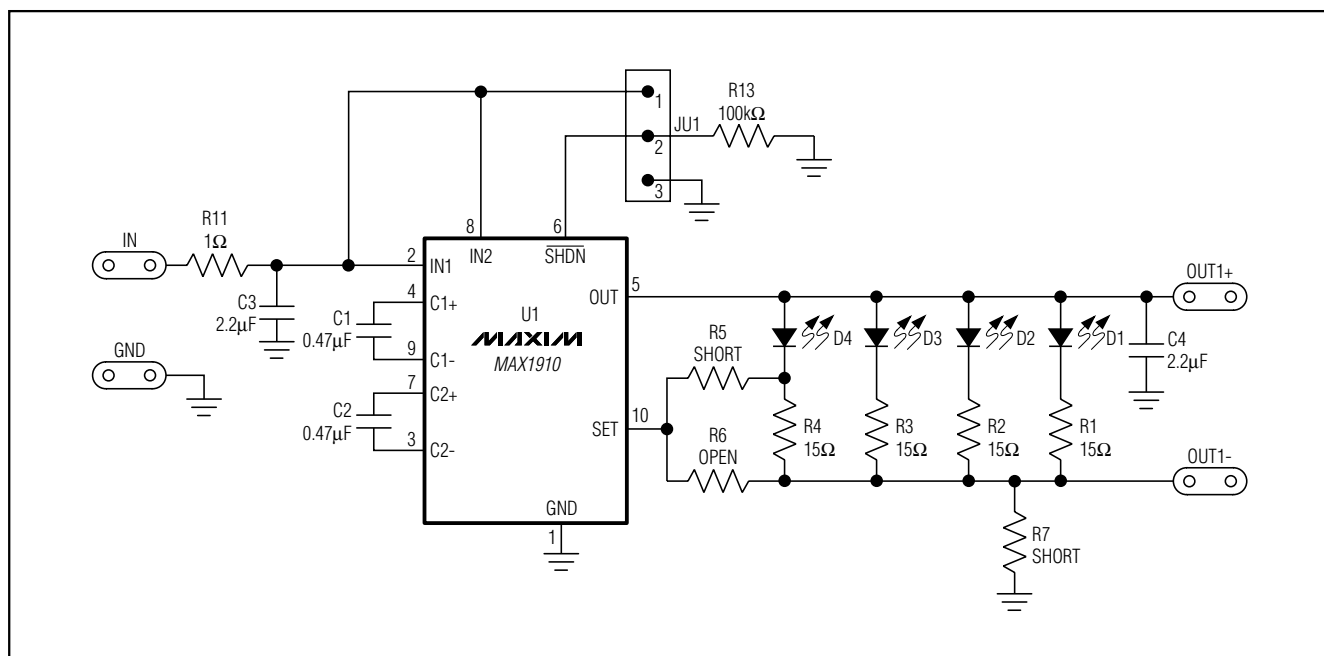


Figure 1. MAX1910 EV Kit Schematic

MAX1910 Evaluation Kit

Evaluates: MAX1910/MAX1912

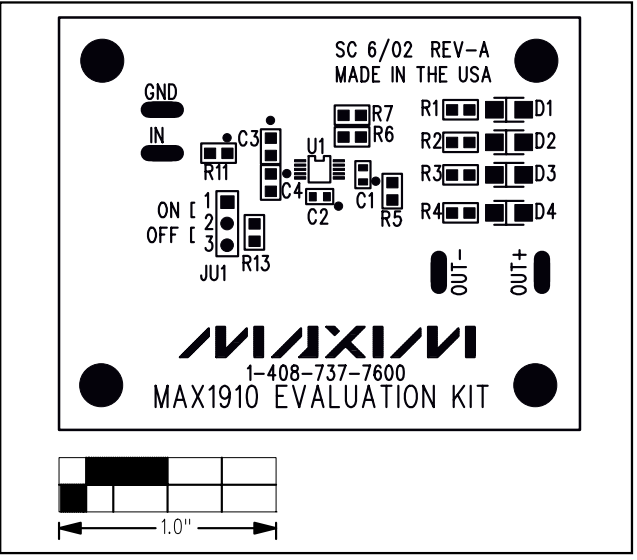


Figure 2. MAX1910 EV Kit Component Placement Guide—Component Side

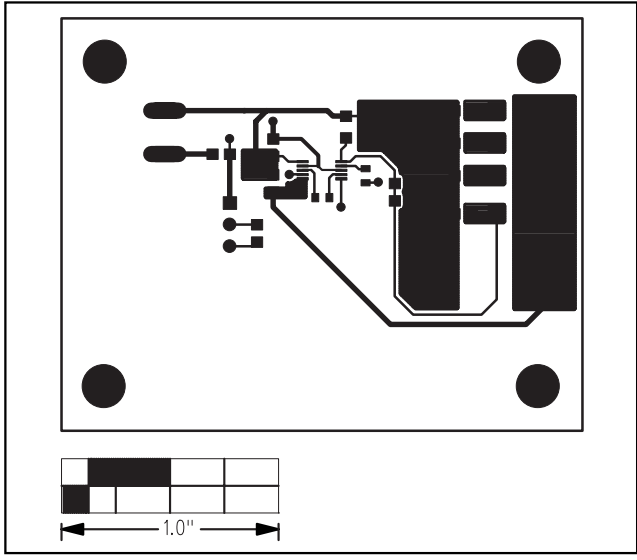


Figure 3. MAX1910 EV Kit PC Board Layout—Component Side

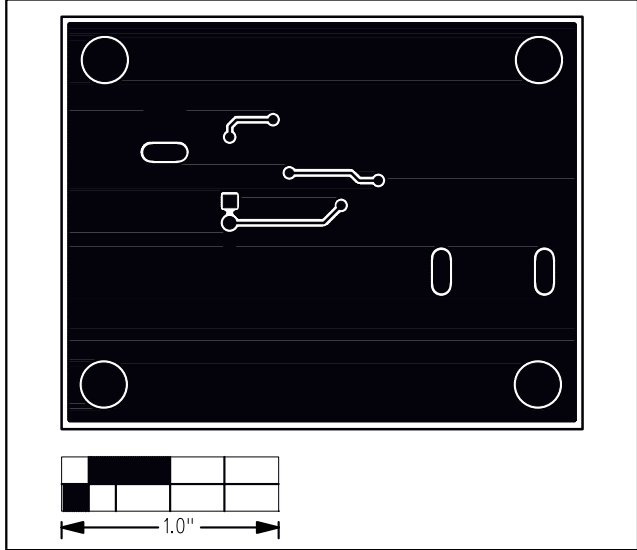


Figure 4. MAX1910 EV Kit PC Board Layout—Solder Side

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Maxim Integrated Products, 120 San Gabriel Drive, Sunnyvale, CA 94086 408-737-7600 _____ **3**