MAX16910C9 Evaluation Kit
Evaluates: MAX16910C

General Description

The MAX16910C9 evaluation kit (EV kit) is a fully assembled and tested PCB for evaluating the MAX16910C low-dropout (LDO) linear regulator. The EV kit circuit can be configured as either a fixed output voltage (3.3V or 5V) or an adjustable output voltage. The EV kit provides up 200mA current at the circuit output. The EV kit operates from a 3.5V to 30V supply.

The EV kit comes with the MAX16910CASA9 92.5% output-voltage reset-threshold IC installed. The EV kit can also evaluate the MAX16910CASA8 IC, which has an 87% output voltage reset threshold.

Features

♦ **3.5V to 30V Input Voltage Range**

♦ **Configurable for 3.3V or 5V Output Voltage**

♦ **Resistor PCB Pads for Adjusting the Output Voltage (1.5V to 11V)**

♦ **Provides Up to 200mA Output Current**

♦ **Low-Dropout Voltage of 280mV at 200mA**

♦ **RESET Power-Good Output**

♦ **Proven PCB Layout**

♦ **Fully Assembled and Tested**

Ordering Information **appears at end of data sheet.**

Component List

DESIGNATION	QTY	DESCRIPTION
C1	0	Not installed, electrolytic capacitor
C2	1	1µF ±10%, 50V X7R ceramic capacitor (0805) TDK C2012X7R1H105K
C3	1	4.7µF ±10%, 25V X7R ceramic capacitor (0805) TDK C2012X7R1E475K
C4	1	1000pF 10%, 50V X7R ceramic capacitor (0603) TDK C1608X7R1H102k

DESIGNATION	QTY	DESCRIPTION
JU1, JU2, JU3	3	3-pin headers
R1, R2	0	Not installed, resistors (0805)
R3	1	10kΩ ±5% resistor (0603)
U1	1	200mA automotive linear regulator (8 SO-EP*) Maxim MAX16910CASA9/V+
—	3	Shunts
—	1	PCB: MAX16910C9 EVALUATION KIT

EP = Exposed pad.

Component Supplier

SUPPLIER	PHONE	WEBSITE
TDK Corp.	847-699-2299	www.component.tdk.com

Note: *Indicate that you are using the MAX16910C9 when contacting this component supplier.*

Quick Start

Required Equipment

- MAX16910C9 EV kit
- 3.5V to 30V, 300mA power supply
- Electronic load capable of sinking 200mA
- Digital multimeter (DMM)

Procedure

The EV kit is fully assembled and tested. Follow the steps below to verify board operation:

1) Verify that shunts are installed across jumpers JU1 (1-2), JU2 (2-3), and JU3 (1-2).

2) Set the power supply to 14V and disable the output.

3) Connect the positive input of the DMM to the OUT PCB pad on the EV kit, and the negative input of the DMM to the GND PCB pad on the EV kit to measure the output voltage.

4) Connect the 200mA load between the OUT and GND PCB pads on the EV kit.

5) Enable the power-supply output.

6) Verify that the output voltage is 5V.

Detailed Description of Hardware

The MAX16910C9 EV kit is a fully assembled and tested PCB for evaluating the MAX16910CASA9 200mA LDO regulator. The EV kit operates from 3.5V to 30V and requires 300mA current.

The LDO regulator has a fixed 3.3V or 5V output, but can be configured between 1.5V and 11V. An open-drain RESET output changes from low to high whenever the OUT voltage rises to 92.5% of its regulated output. When OUT exceeds its rising threshold voltage, RESET remains low for the 1.25ms reset timeout period programmed by capacitor C4, and then goes high. A RESET PCB pad is available for monitoring the output.

Enable (JU1)

Jumper JU1 configures the EV kit's output for turn-on/off control. Install a shunt across pins 1-2 to enable the circuit output. Install a shunt across pins 2-3 to disable the output. The output can also be externally controlled by placing an independent voltage source at the ENABLE PCB pad when a shunt is not installed at JU1. See Table 1 for proper JU1 configuration.

Output-Voltage Selection

Jumpers JU2 and JU3 configure the EV kit circuit to operate in fixed output-voltage or adjustable output-voltage mode.

In fixed output-voltage mode, the output voltage is set to 3.3V or 5V using jumper JU3. To configure the EV kit circuit for fixed output mode, install a shunt across pins 2-3 on jumper JU2. Place a shunt across pins 1-2 on JU3 for the 5V preset output. Place a shunt across pins 2-3 for the 3.3V preset output.

In adjustable output-voltage mode, the output voltage is set using a resistor-divider network from the OUT to SETOV pins. To configure the circuit for adjustable output-voltage mode, install a shunt across pins 1-2 on jumper JU2 and remove the shunt at jumper JU3. The output voltage can be set between 1.5V to 11V using surface-mount 0805 resistor PCB pads R1 and R2.

To set the output voltage, select resistor R2 to be less than or equal to 100kΩ and use the following equation to compute R1:

$$R1 = R2 \times \left(\frac{V_{OUT}}{V_{SETOV}} - 1 \right)$$

where V_{OUT} is the desired output voltage, V_{SETOV} is 1.25V, and R1 is in kΩ.

See Table 2 for proper jumper configurations when operating the EV kit circuit in fixed or adjustable output-voltage mode.

RESET Output

The IC has an open-drain RESET output that goes high impedance after the output rises 92.5% (typ) above its regulated output. Pullup resistor R3 pulls the RESET PCB pad up to the OUT voltage.

Table 1. Enable Control (JU1)

SHUNT POSITION	ENABLE PIN	OUTPUT
1- 2	Connected to IN	Enabled
2-3	Connected to GND	Disabled

Table 2. Output-Voltage Configurations (JU2, JU3)

SHUNT POSITION		OUTPUT VOLTAGE
JU2	JU3	
1 -2	Not installed	Set by external feedback resistors R1 and R2
2 -3	1-2	5V
	2-3	3.3V
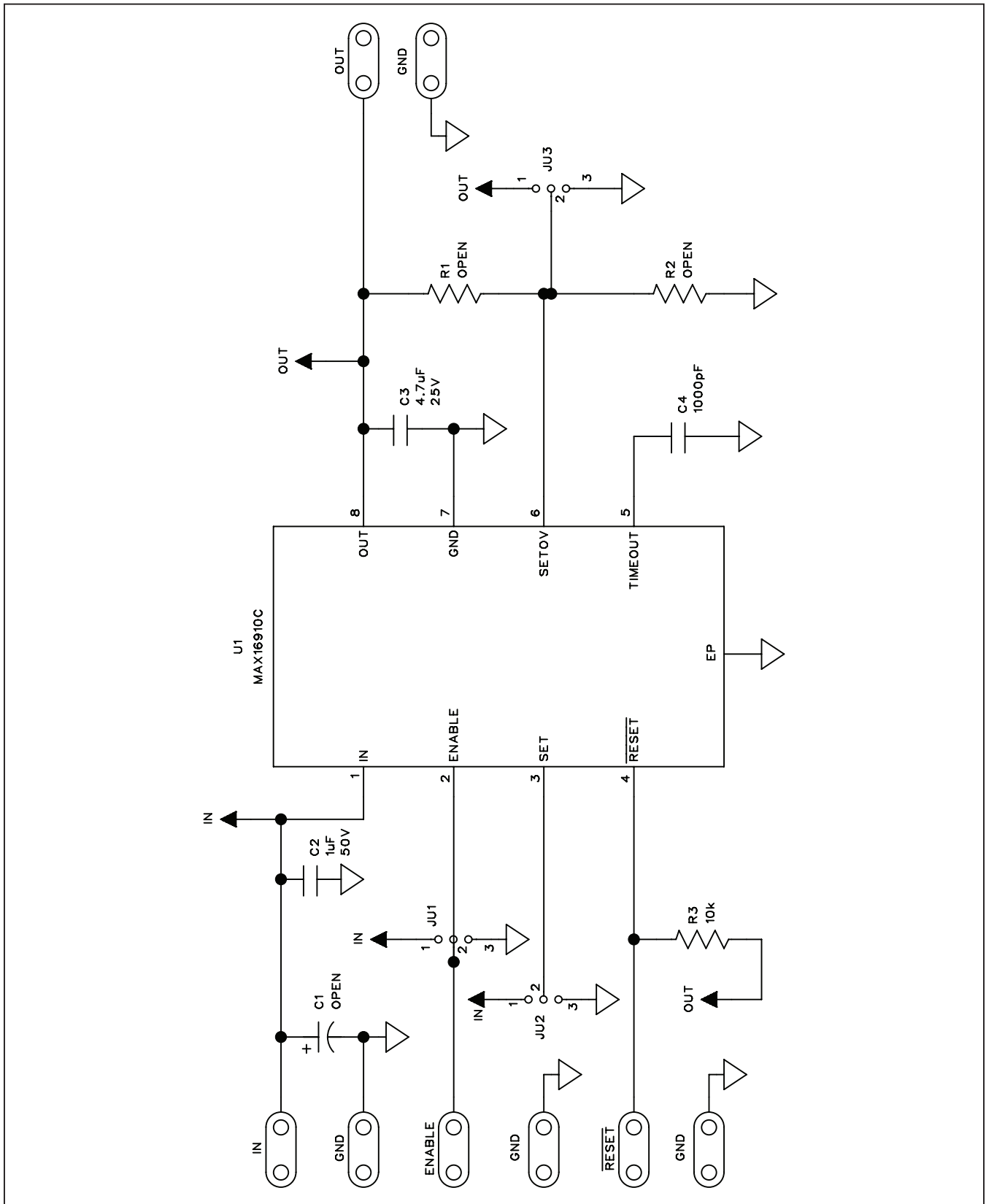
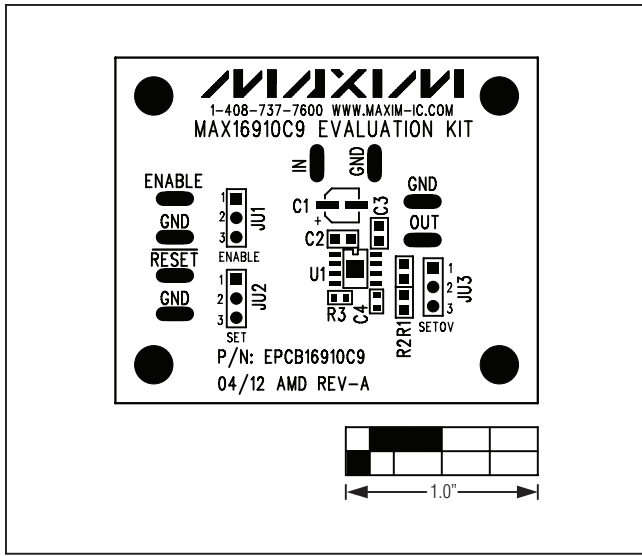*Figure 1. MAX16910C9 EV Kit Schematic*

Figure 2. MAX16910C9 EV Kit Component Placement Guide—Silkscreen
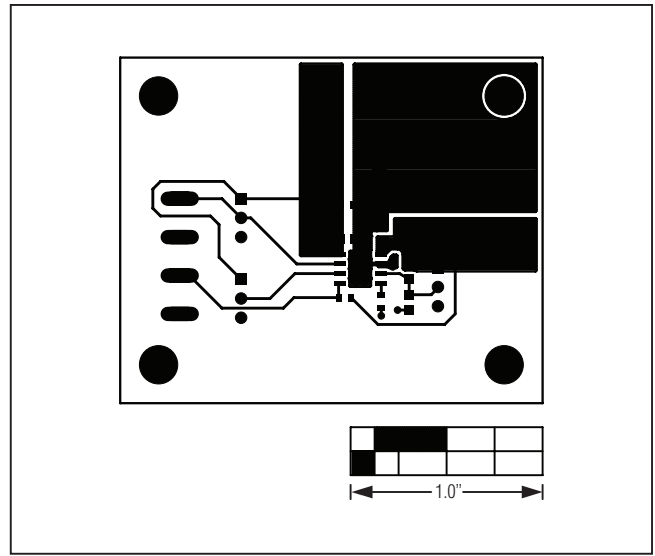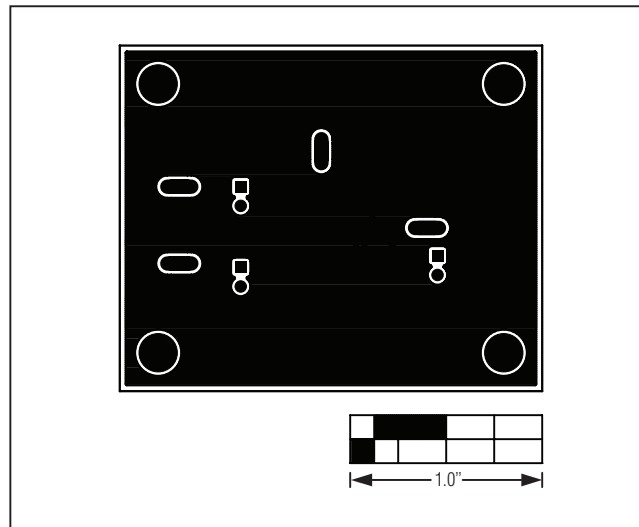

Figure 3. MAX16910C9 EV Kit PCB Layout—Component Side

Figure 4. MAX16910C9 EV Kit PCB Layout—Solder Side

Ordering Information

PART	EV Kit
MAX16910C9EVKIT#	EV Kit

#Denotes RoHS compliant.

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	4/12	Initial release	—

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