

MAXIM

MAX1833 Evaluation Kit

General Description

The MAX1833 evaluation kit (EV kit) evaluates the MAX1833 high-efficiency, step-up DC-DC converter for portable hand-held devices. The EV kit accepts a positive input voltage between 1.5V to V_{OUT} and converts it to a 3.3V output for currents up to 150mA. The EV kit provides ultra-low quiescent current and high efficiency for maximum battery life.

The MAX1833 EV kit is a fully assembled and tested surface-mount printed circuit board. It can also be used to evaluate the MAX1832/MAX1834/MAX1835 for other output voltages in the 2V to 5.5V range. Additional pads on the board accommodate the external feedback resistors for setting different output voltages.

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2	2	10 μ F, 6.3V X5R ceramic capacitors (1206) Taiyo Yuden JMK325BJ106MN or TDK C3225X5R1A106M
C3	1	0.01 μ F ceramic capacitor (0805)
JU1	1	3-pin header
L1	1	10 μ H power inductor Sumida CDRH5D18-100
R1	1	309k Ω $\pm$ 1% resistor (0805)
R2	0	Not installed (0805)
R3	1	1M Ω $\pm$ 5% resistor (0805)
R4	1	220k Ω $\pm$ 5% resistor (0805)
U1	1	MAX1833EUT (6-pin SOT23)
None	1	Shunt
None	1	MAX1833 PC board
None	1	MAX1832–MAX1835 data sheet
None	1	MAX1833EVKIT data sheet

Features

- ◆ Reverse-Battery Protection
- ◆ 1.5V to V_{OUT} Input Supply Voltage
- ◆ 3.3V Output Voltage (MAX1833/MAX1835)
- ◆ Adjustable Output Voltage (MAX1832/MAX1834, 2V to 5.5V)
- ◆ Up to 150mA Output Current
- ◆ No External Schottky Diode Required
- ◆ Synchronous Rectification for Improved Efficiency
- ◆ 1 μ A IC Shutdown Current
- ◆ $\overline{RST}$ Output (MAX1833/MAX1835)
- ◆ 6-Pin SOT23 Package
- ◆ Surface-Mount Construction
- ◆ Fully Assembled and Tested

Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX1833EVKIT	0°C to +70°C	6 SOT23

Note: To evaluate the MAX1832/MAX1834/MAX1835, request a MAX1832EUT-T/MAX1834EUT-T/MAX1835EUT-T free sample with the MAX1833EVKIT.

Selector Guide

PART	OUTPUT VOLTAGE	V_{OUT} IN SHUTDOWN
MAX1832EUT	Adjustable	VBATT
MAX1833EUT	Fixed 3.3V	VBATT
MAX1834EUT	Adjustable	VBATT - 0.7V
MAX1835EUT	Fixed 3.3V	VBATT - 0.7V

Component Suppliers

SUPPLIER	PHONE	FAX
Sumida	847-956-0666	847-956-0702
Taiyo Yuden	408-573-4150	408-573-4159
TDK	847-390-4373	847-390-4428

Note: Please indicate that you are using the MAX1832, MAX1833, MAX1834, or MAX1835 when contacting these component suppliers

Evaluates: MAX1832–MAX1835

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Quick Start

The MAX1833 EV kit is a fully assembled and tested surface-mount board. Follow the steps below to verify board operation. **Do not turn on the power supply until all connections are completed:**

- 1) Connect a voltmeter and load (if any) to the VOUT pad.
- 2) Verify that the shunt is across JU1 pins 1 and 2.
- 3) Connect the input supply (1.5V to 3.3V) to the pads marked VBATT and GND.
- 4) Turn on the power and verify that the output voltage is 3.3V.
- 5) Refer to the *Setting the Output Voltage* section in the MAX1832–MAX1835 data sheet to modify the board for a different output voltage.

Detailed Description

Shutdown Jumper Selection

The MAX1833 EV kit features a shutdown mode that reduces quiescent current to <1μA to preserve battery life. In shutdown, the MAX1833 (and MAX1832) output connects to the battery input voltage through the inductor and the internal synchronous rectifier PFET.

Table 1. Jumper JU1 Functions

SHUNT LOCATION	$\overline{\text{SHDN}}$ PIN	MAX1833 OUTPUT
1 and 2	Connected to VOUT	MAX1833 enabled, $V_{\text{OUT}} = 3.3\text{V}$
2 and 3	Connected to GND	Shutdown mode, $V_{\text{OUT}} = V_{\text{BATT}}$

Evaluating Other Output Voltages (MAX1832/MAX1834)

The MAX1833EVKIT output is set to +3.3V. However, the MAX1832/MAX1834 can be used to evaluate other output voltages in the +2V to +5.5V range. Replace the MAX1833 device with a MAX1832 or MAX1834, and select feedback resistors R1 and R2 values. Select feedback resistor R2 in the 100kΩ to 1MΩ range. R1 is then given by:

$$R1 = R2 ((V_{\text{OUT}} / V_{\text{FB}}) - 1)$$

where $V_{\text{FB}} = 1.228\text{V}$.

Care must be taken when installing the IC. Refer to the MAX1832–MAX1835 data sheet for soldering instructions and limitations.

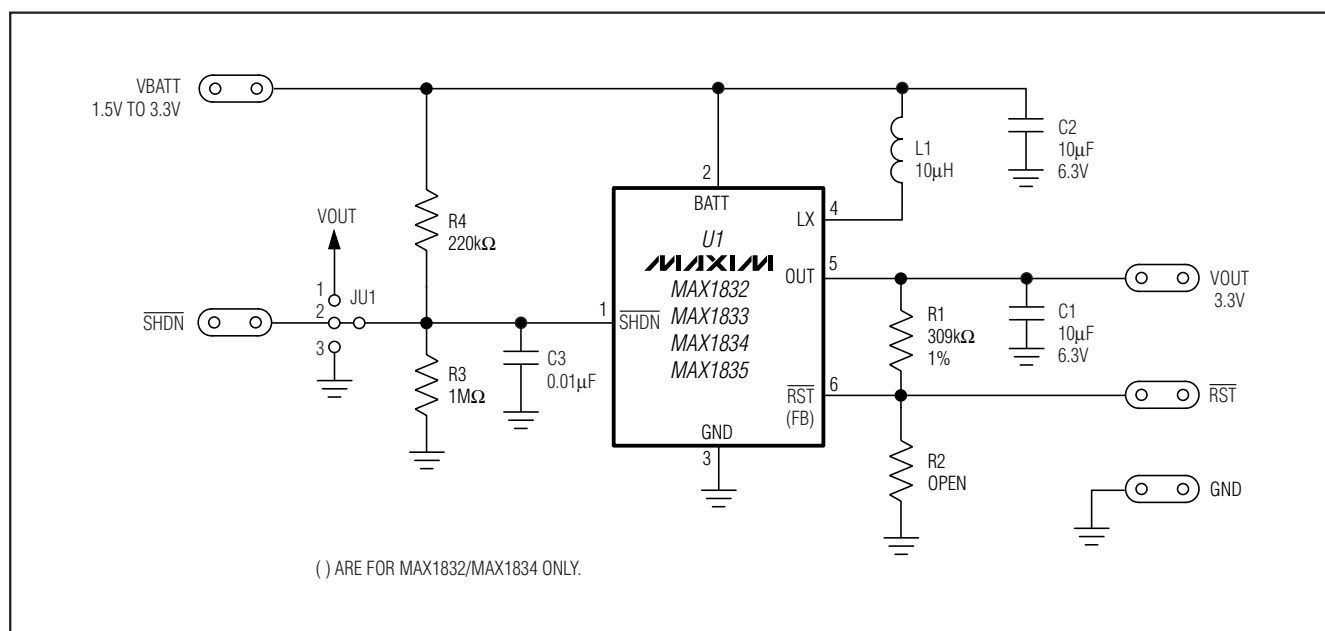


Figure 1. MAX1833 EV Kit Schematic

MAX1833 Evaluation Kit

Evaluates: MAX1832-MAX1835

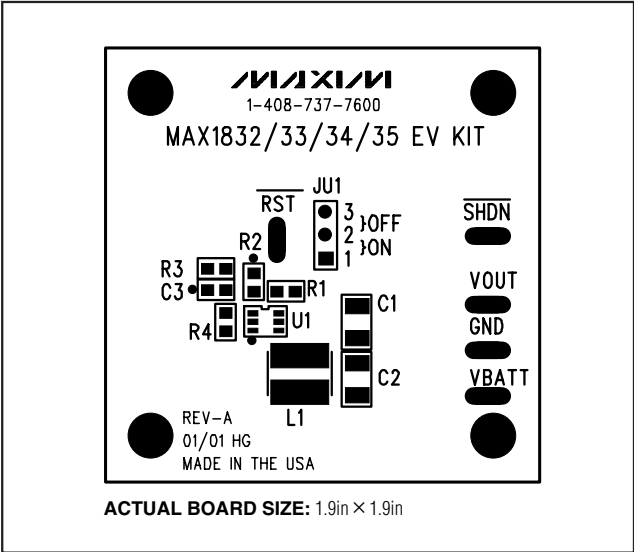


Figure 2. MAX1833 EV Kit Component Placement Guide—Component Side

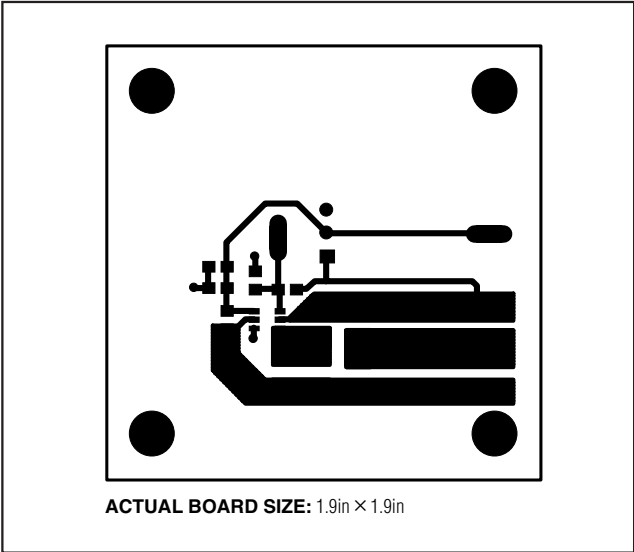


Figure 3. MAX1833 EV Kit PC Board Layout—Component Side

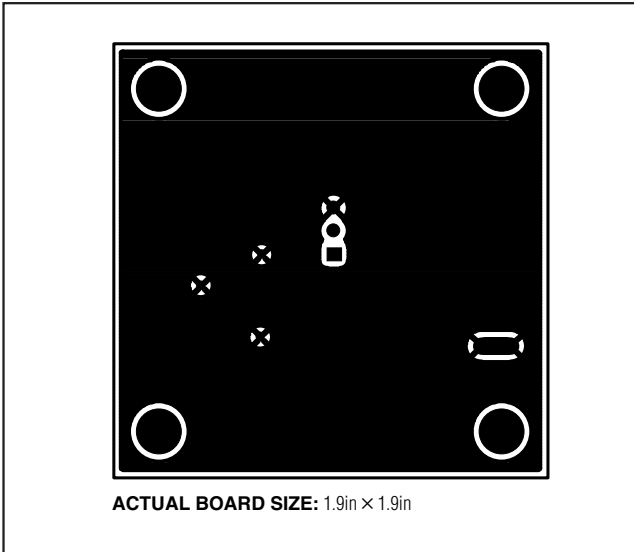


Figure 4. MAX1833 EV Kit PC Board Layout—Solder Side

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