

MAXIM

MAX1734 Evaluation Kit

Evaluates: MAX1733/MAX1734

General Description

The MAX1734 evaluation kit (EV kit) is a fully assembled and tested surface-mount PC board that contains a switching-regulator circuit configured for a +1.8V output. At up to 250mA, it accepts inputs from a +2.7VDC to +5.5VDC source or a 1-cell lithium-ion (Li+) or 2- to 3-cell battery.

The MAX1734 features an internal P-channel MOSFET switch, a synchronous rectifier, logic-controlled shutdown, and digital soft-start to limit startup current. The MAX1734 EV kit provides low quiescent current and efficiency up to 93%, providing maximum battery life. High-frequency operation up to 1.2MHz with a maximum duty cycle of 100% allows the use of tiny surface-mount components. The EV kit can also evaluate the MAX1733 after modifications.

Component List

| DESIGNATION | QTY | DESCRIPTION |
|-------------|-----|---|
| C1 | 1 | 2.2 μ F, 10V X5R ceramic capacitor Taiyo Yuden LMK325BJ106MN or Taiyo Yuden LMK212BJ225MG |
| C2 | 1 | 22 μ F, 6.3V tantalum capacitor AVX TAJA226M006R |
| JU1 | 1 | 3-pin header |
| L1 | 1 | 10 μ H inductor Sumida CR43-100MC |
| R1, R2 | 0 | Not installed |
| U1 | 1 | MAX1734EUK18 (5-pin SOT23, top mark ADKW) |
| None | 1 | Shunt |
| None | 1 | MAX1734 PC board |
| None | 1 | MAX1734 data sheet |
| None | 1 | MAX1734 EV kit manual |

Component Suppliers

| SUPPLIER | PHONE | FAX |
|-------------|--------------|--------------|
| AVX | 803-946-0690 | 803-626-3123 |
| Sumida USA | 847-956-0666 | 847-956-0702 |
| Taiyo Yuden | 408-573-4150 | 408-573-4159 |

Note: Please indicate that you are using the MAX1734 when contacting these component suppliers.

Features

- ◆ +2.7V to +5.5V Battery Input Voltage
- ◆ +1.8V Output Voltage
- ◆ 250mA Output Current
- ◆ Efficiency >85% from 2mA to 250mA
- ◆ Internal P-Channel Switch and Synchronous Rectifier
- ◆ 0.01 μ A (typ) IC Shutdown Current
- ◆ 50 μ A Quiescent Supply Current
- ◆ Up to 1.2MHz (max) Switching Frequency
- ◆ Surface-Mount Components
- ◆ Fully Assembled and Tested

Ordering Information

| PART | TEMP. RANGE | IC PACKAGE |
|--------------|--------------|------------|
| MAX1734EVKIT | 0°C to +70°C | 5 SOT23 |

Quick Start

The MAX1734 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 +2.7V (for guaranteed startup) to +5.5V supply to the VIN pad. Connect the supply ground to the GND pad.
- 2) Connect a voltmeter to the VOUT pad.
- 3) Verify that the shunt is across pins 1 and 2 on JU1, thus enabling the MAX1734.
- 4) Turn on the power supply and verify that the output is at +1.8V.

For instructions on selecting the feedback resistors for other output voltages, see *Evaluating Other Output Voltages*.

Detailed Description

The MAX1734 EV kit contains a highly efficient switching-regulator circuit. The circuit provides a +1.8V output at 250mA from a +2.7V to +5.5V input voltage range. Digital soft-start limits current during startup.

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Jumper Selection (Shutdown Mode)

The MAX1734 EV kit features a shutdown mode that reduces the MAX1734 quiescent current below 5 μ A (max), preserving battery life. The 3-pin header, JU1, selects the shutdown mode for the circuit. Table 1 lists the selectable jumper options.

Evaluating Other Output Voltages

The output is set to +1.8V by shorting the feedback pin (FB/OUT) to VOUT. This is the default setting for the MAX1734 EV kit. To generate output voltages other than +1.8V (+1.25V to +2.0V), the MAX1734EUK18 must be replaced with a different output MAX1734 or the MAX1733EUK. When using a MAX1733, cut the PC board trace to the mounting pads of R1, and select the external voltage-divider resistors (R1, R2). Refer to the *Setting the Output Voltage* section in the MAX1733 data sheet for instructions on selecting R1 and R2.

Table 1. Jumper JU1 Functions

| SHUNT LOCATION | $\overline{\text{SHDN}}$ PIN | MAX1734 OUTPUT |
|----------------|------------------------------|---|
| 1, 2 | Connected to VIN | MAX1734 enabled, V _{OUT} = +1.8V |
| 2, 3 | Connected to GND | Shutdown mode, V _{OUT} = 0 |

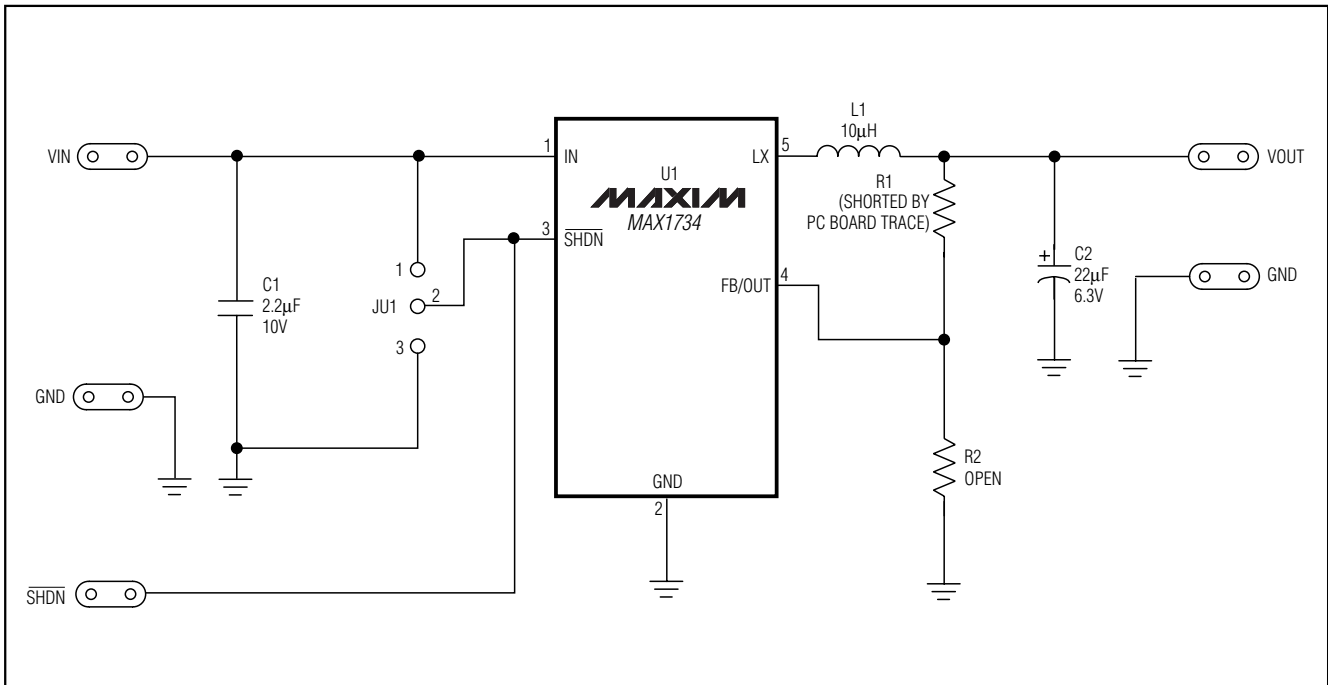


Figure 1. MAX1734 EV Kit Schematic

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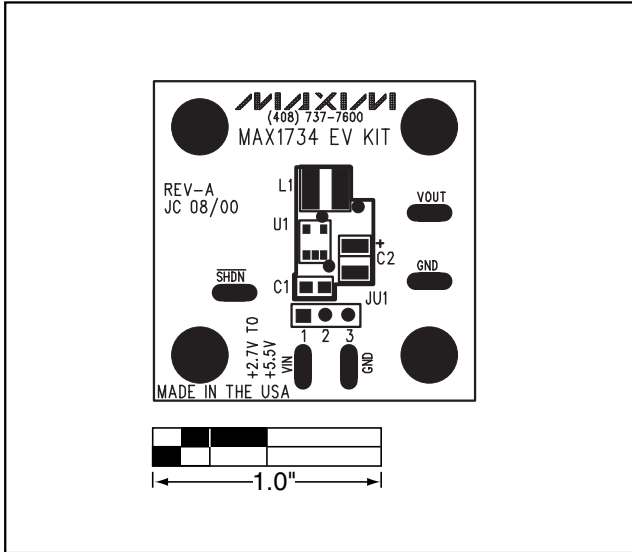


Figure 2. MAX1734 EV Kit Component Placement Guide—Component Side

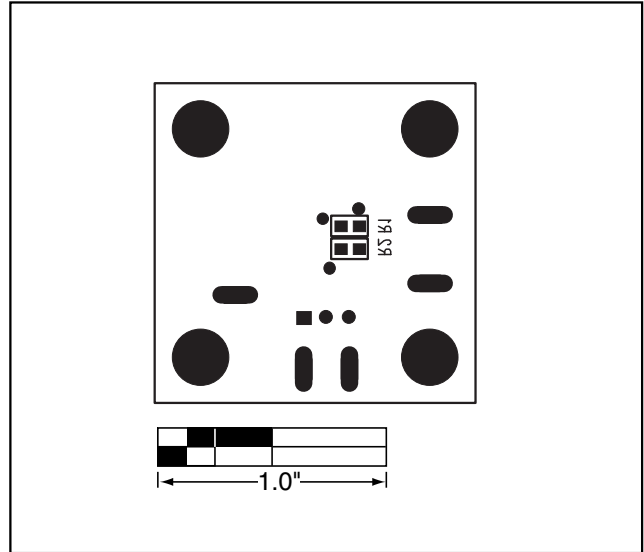


Figure 3. MAX1734 EV Kit Component Placement Guide—Solder Side

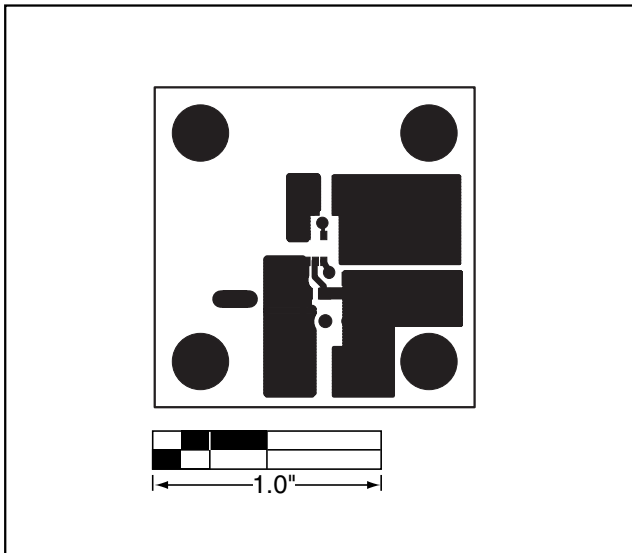


Figure 4. MAX1734 EV Kit PC Board Layout—Component Side

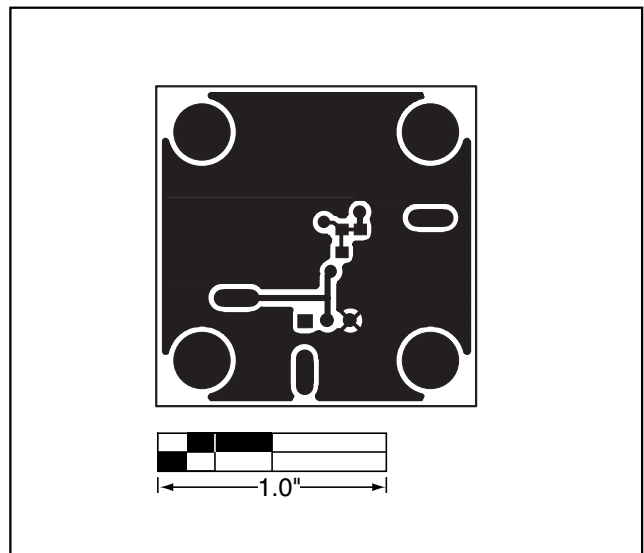


Figure 5. MAX1734 EV Kit PC Board Layout—Solder Side

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