

MAXIM

MAX1791 Evaluation Kit

General Description

The MAX1791 evaluation kit (EV kit) demonstrates a standard 2A application circuit. This DC-DC converter steps down high-voltage batteries and/or AC adapters, generating a precision, low-voltage rail for use as chipset, I/O, and other low-voltage supplies in notebook computers and PDAs.

The MAX1791 EV kit provides a 3.3V output voltage from a +5V to +20V battery input range. It delivers up to 2A output current with greater than 90% efficiency. The EV kit operates at 300kHz switching frequency and has superior line- and load-transient response.

This EV kit is a fully assembled and tested circuit board. It also allows the evaluation of other output voltages in the 1.25V to 5.5V range by changing feedback resistors R1 and R2. This EV kit can also be used to evaluate the MAX1762 (1.8V or 2.5V output voltage).

Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	10 μ F, 25V ceramic capacitor (1812) Taiyo Yuden TMK432BJ106KM or TDK C4532X5R1E106M
C2	1	220 μ F, 10V low-ESR 40m Ω capacitor Sanyo 10TPB220M
C3	1	0.1 μ F ceramic capacitor (1206)
C4	1	1 μ F, 16V ceramic capacitor (1206) Taiyo Yuden EMK316BJ105KL or TDK C3216X7R1C105M
C5	0	Not installed (1206)
L1	1	7 μ H power inductor Sumida CDRH104R-7R0NC
N1, P1	1	Dual N- and P-channel MOSFETs Fairchild FDS8958A
R1, R2, R3	0	Not installed (1206)
U1	1	MAX1791EUB (10-pin μ MAX)
JU1, JU2	2	3-pin headers
None	2	Shunts
None	1	MAX1791 PC board
None	1	MAX1791 data sheet
None	1	MAX1791EVKIT data sheet

Features

- ◆ No Current-Sense Resistor
- ◆ +5V to +20V Input Voltage Range
- ◆ 3.3V or 5V Preset Output Voltage (MAX1791)
- ◆ 1.8V or 2.5V Preset Output Voltage (MAX1762)
- ◆ Adjustable Output Voltage (1.25V to 5.5V, External Divider)
- ◆ 2A Output Current
- ◆ 300kHz Switching Frequency
- ◆ 5 μ A IC Shutdown Current
- ◆ 10-Pin μ MAX Package
- ◆ Low-Profile Components
- ◆ Surface-Mount Construction
- ◆ Fully Assembled and Tested

Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX1791EVKIT	0°C to +70°C	10 μ MAX

Note: To evaluate the MAX1762, request a MAX1762EUB free sample with the MAX1791 EV kit.

Component Suppliers

SUPPLIER	PHONE	FAX
Coilcraft	708-639-6400	708-639-1469
Coiltronics	561-241-7876	561-241-9339
Fairchild	408-721-2181	408-721-1635
International Rectifier	310-322-3331	310-322-3332
Sanyo	619-661-6835	619-661-1055
Sumida	708-956-0666	708-956-0702
Taiyo Yuden	408-573-4150	408-573-4159
TDK	847-390-4373	847-390-4428

Note: Please indicate that you are using the MAX1791/ MAX1762 when contacting these component suppliers.

Evaluates: MAX1791/MAX1762



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Quick Start

The MAX1791 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 shunts are across JU1 pins 1 and 2 and JU2 pins 2 and 3.
- 3) Connect a +5V to +20V supply to the pads marked VIN and GND.
- 4) Turn on the power and verify that the output voltage is 3.3V.
- 5) See the *Output Voltage Selection* section to modify the board for a different output voltage.

Detailed Description

Jumper Selections

The MAX1791 EV kit features a shutdown mode that reduces quiescent current to less than 5 μ A to preserve battery life.

Output Voltage Selection

The MAX1791 is initially set for a 3.3V output by connecting the FB pin to GND or 5V by connecting the FB pin to VL. However, by adding external resistors R1 and R2, the output can be adjustable from 1.25V to 5.5V. Remove the shunt from jumper JU2, and install output voltage-divider resistors R1 and R2. Refer to the *Setting the Output Voltage* section of the MAX1791 data sheet regarding how to extend the output voltage range from 0.5V to 5.5V and instructions on how to calculate the values for R1 and R2.

Table 1. Jumper JU1 Functions (Shutdown Mode)

SHUNT LOCATION	$\overline{\text{SHDN}}$ PIN	MAX1791 OUTPUT
1, 2	Connected to VIN	MAX1791 enabled, V _{OUT} = 3.3V
2, 3	Connected to GND	Shutdown mode, V _{OUT} = 0

Table 2. Jumper JU2 Functions (Output Voltage)

SHUNT LOCATION	FB PIN	OUTPUT VOLTAGE
1, 2	Connected to VL	V _{OUT} = 5.0V
2, 3	Connected to GND	V _{OUT} = 3.3V

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Evaluates: MAX1791/MAX1762

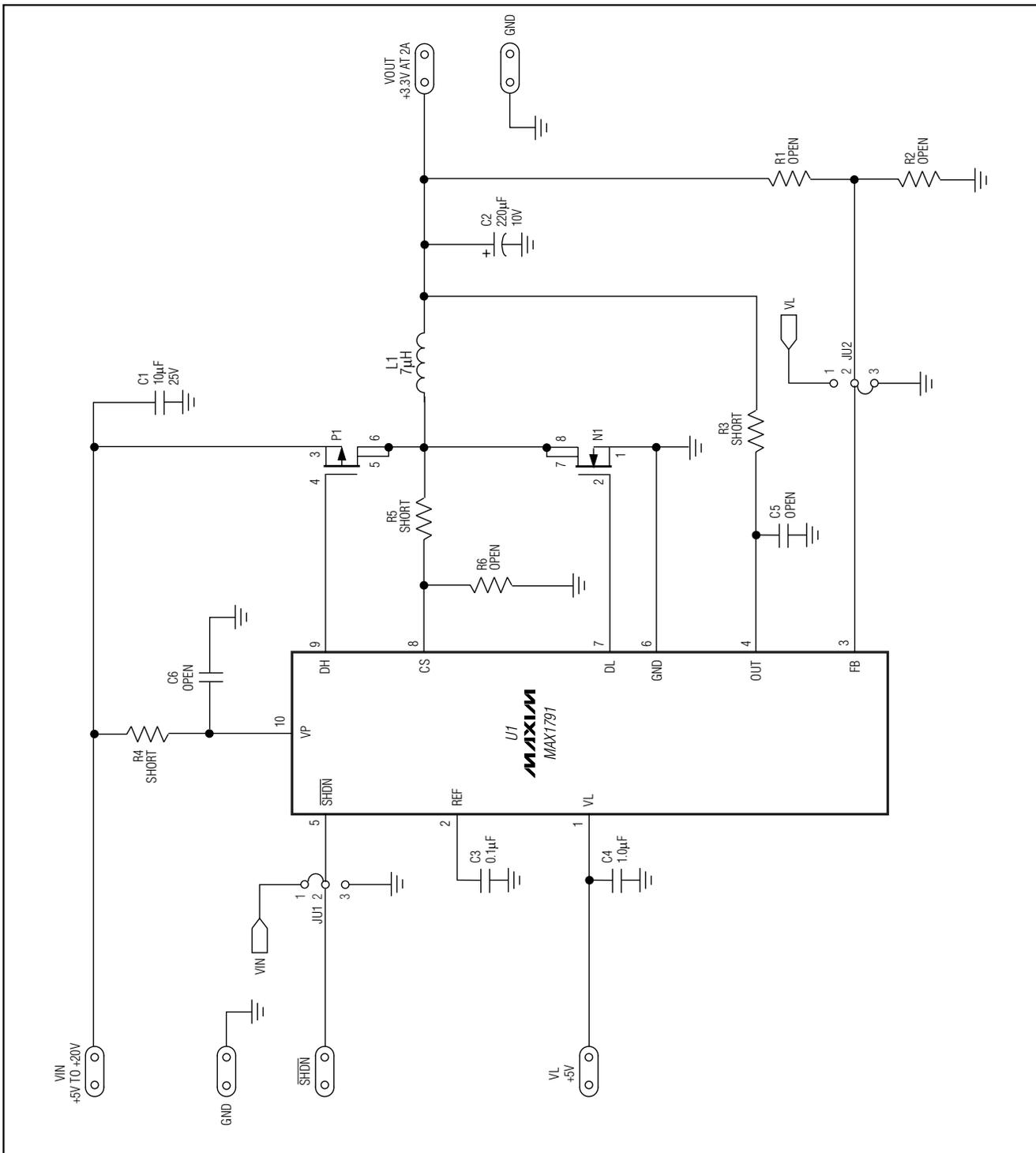


Figure 1. MAX1791 EV Kit Schematic

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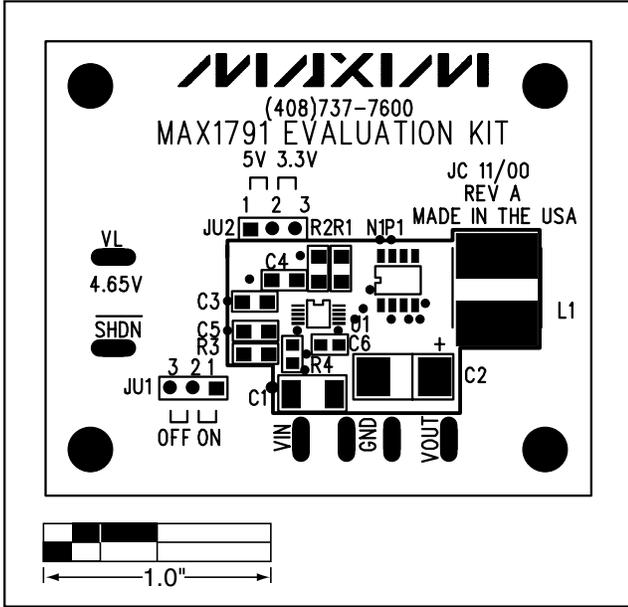


Figure 2. MAX1791 EV Kit Component Placement Guide—Component Side

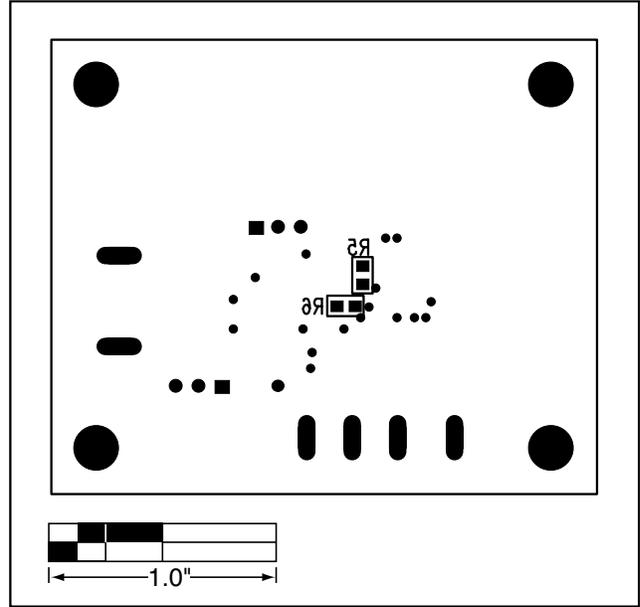


Figure 3. MAX1791 EV Kit Component Placement Guide—Solder Side

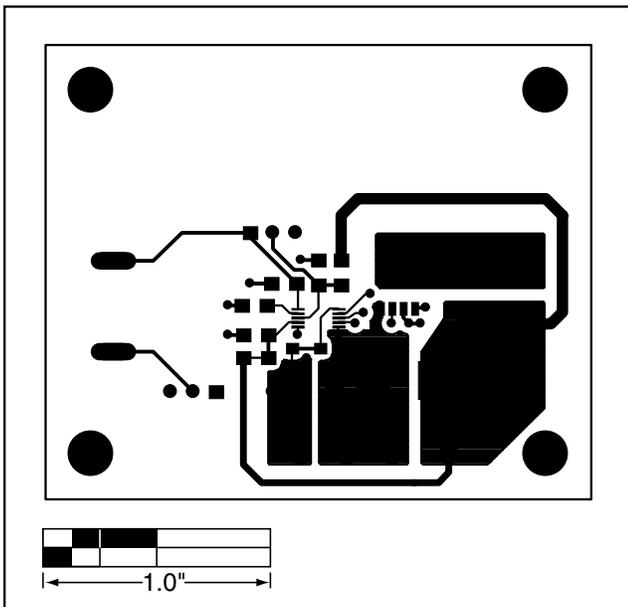


Figure 4. MAX1791 EV Kit PC Board Layout—Component Side

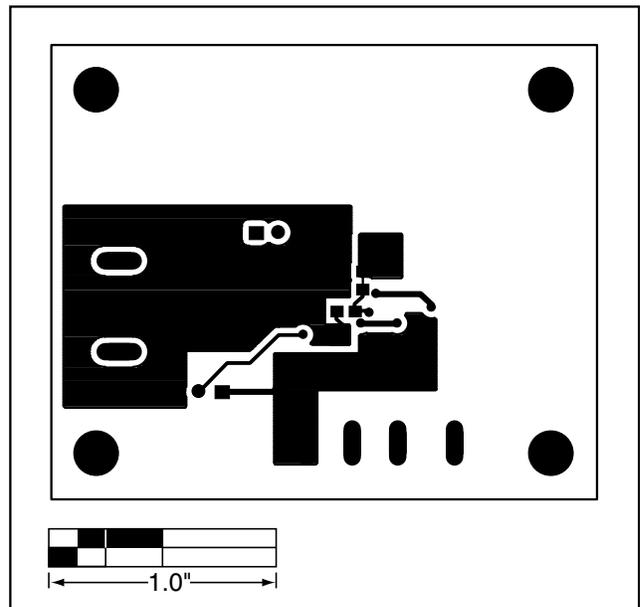


Figure 5. MAX1791 EV Kit PC Board Layout—Solder Side

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