MAX1771 Evaluation Kit

Evaluates: MAX1771

General Description

The MAX1771 evaluation kit (EV kit) provides a regulated 12V, or adjustable output voltage from an input source as low as 3V. It drives loads up to 0.5A with greater than 80% conversion efficiency.

This EV kit is a fully assembled and tested surface-mount circuit board. Additional pads on the bottom of the board accommodate the external feedback resistors for setting different output voltages.

Features

- **12V or Adjustable Output Voltage**
- **3V to V_{OUT} + 0.5V Input Range**
- **Up to 0.5A Output Current**
- **5µA Max Shutdown Current**
- **110µA Max Supply Current**
- **300kHz Switching Frequency**
- **8-Pin SO, Surface-Mount Construction**
- **Fully Assembled and Tested**

Ordering Information

PART	TEMP. RANGE	PIN-PACKAGE
MAX1771EVKIT-SO	0°C to +70°C	Surface Mount

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2, C3	3	68µF, 20V tantalum capacitors AVX TPSE686M020R0150
C4, C5	2	0.1µF ceramic capacitors
D1	1	3A, 30V Schottky diode Nihon NSQ03A03 or Motorola MBRU340T3
L1	1	22µH, 2.8A inductor Sumida CDRH125-220
N1	1	N-channel MOSFET (SO-8) Siliconix Si9410DY or Motorola MMSF5N03HD
R1	1	0.04Ω, 1% resistor (SMT) Dale WSL-2010-R040-F or IRC LR2010-01-R040-F
R2, R3	0	Open
C6	0	Open
U1	1	Maxim MAX1771CSA (SO-8)
JU1, JU2	2	3-pin headers
None	2	Shunt
None	1	Printed circuit board
None	1	MAX1771 data sheet

Component Suppliers

SUPPLIER	PHONE	FAX
AVX	(800) 282-4975	(207) 283-1941
Coilcraft	(708) 639-6400	(708) 639-1469
Dale	(402) 564-3131	(402) 563-6418
IRC	(512) 992-7900	(512) 992-3377
Motorola	(602) 244-3576	(602) 244-4015
Nihon	(805) 867-2555	(805) 867-2556
Siliconix	(408) 988-8000	(408) 970-3950
Sprague	(603) 224-1961	(603) 224-1430
Sumida	(708) 956-0666	(708) 956-0702

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim's website at www.maxim-ic.com.

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Quick Start

The MAX1771 EV kit is a fully assembled and tested surface-mount printed circuit board. Follow these steps to verify board operation. Do not turn on the power supply until all connections are completed.

1) Connect a 5V supply to the pad marked V_{IN}. The ground connects to the GND pad.
2) Connect a voltmeter and load (if any) to the V_{OUT} pad.
3) For normal operation, place one shunt across JU1 pins 1 and 2, and the other shunt across JU2 pins 2 and 3.
4) Turn on the power and verify that the output voltage is 12.0V.
5) Refer to the section *Evaluating Other Output Voltages* to modify the board for different output voltages.

Detailed Description

Jumper Selection

The 3-pin header JU1 selects shutdown mode. Table 1 lists the selectable jumper options.

The 3-pin header JU2 selects bootstrapped mode. Table 2 lists the selectable jumper options. Refer to the MAX1771 data sheet for more information.

Inductor Selection

The 22µH Sumida CDRH125-220 inductor that comes mounted on the EV kit board is a low-resistance, shielded, medium-current inductor. It provides excellent performance over the line and load ranges. Refer to the *Determining the Inductor* section in the corresponding data sheet for instructions on selecting the inductor value.

Table 1. Jumper JU1 Functions

SHUNT LOCATION	SHDN PIN	MAX1771 OUTPUT
2 & 3	Connected to V+	Shutdown mode, $V_{OUT} = V_{IN} - 0.4V$
1 & 2	Connected to GND	MAX1771 enabled, $V_{OUT} = 12.0V$

Table 2. Jumper JU2 Functions

SHUNT LOCATION	V+ PIN	MAX1771 MODE
2 & 3	Connected to VOUT	Bootstrapped mode
1 & 2	Connected to VIN	Non-bootstrapped mode

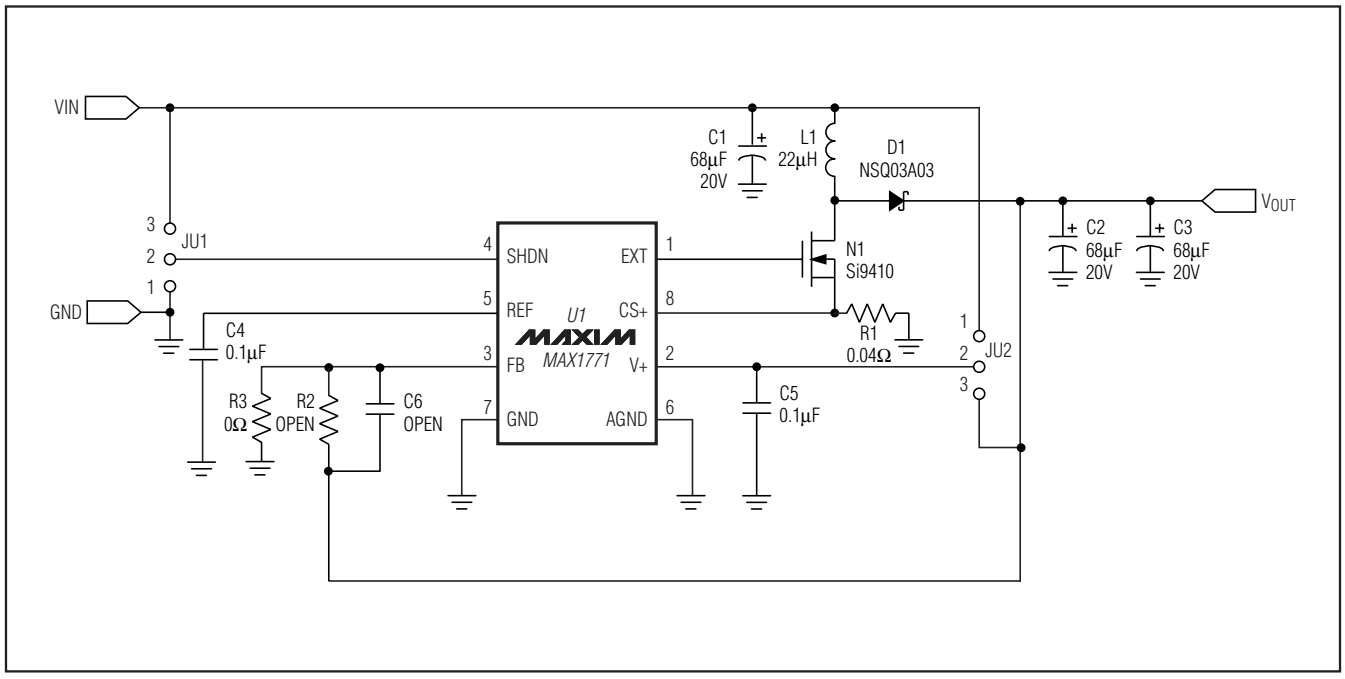


Figure 1. MAX1771 EV Kit Schematic Diagram

Other Output Voltages

The MAX1771 is preset for a 12V output voltage. However, its output may also be adjusted via an external voltage divider formed by R2 and R3 (located on the bottom of the board). The only other modification required is to cut the trace across R3. The *Setting the Output Voltage* section of the MAX1771 data sheet gives instructions for calculating R2 and R3 (as shown in Figure 1).

For output voltages greater than 15V, replace the 20V, C2 and C3 with higher voltage rating capacitors.

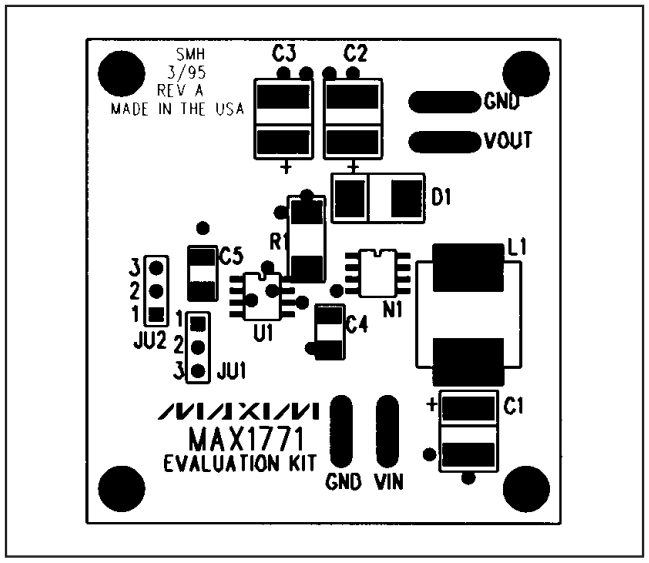


Figure 2. MAX1771 EV Kit Component Placement Guide—Component Side

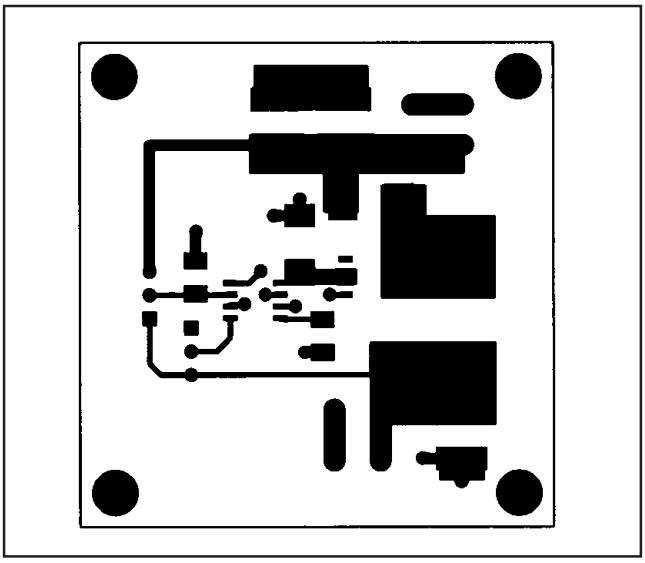


Figure 3. MAX1771 EV Kit Component Placement Guide—Solder Side

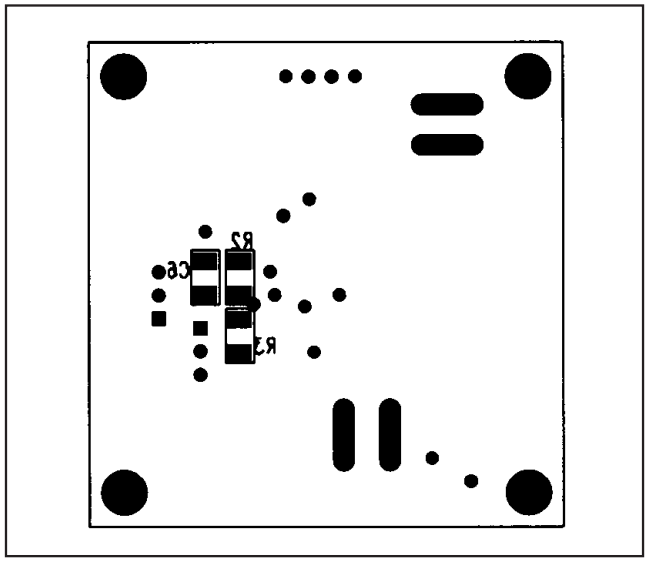


Figure 4. MAX1771 EV Kit PC Board Layout—Component Side

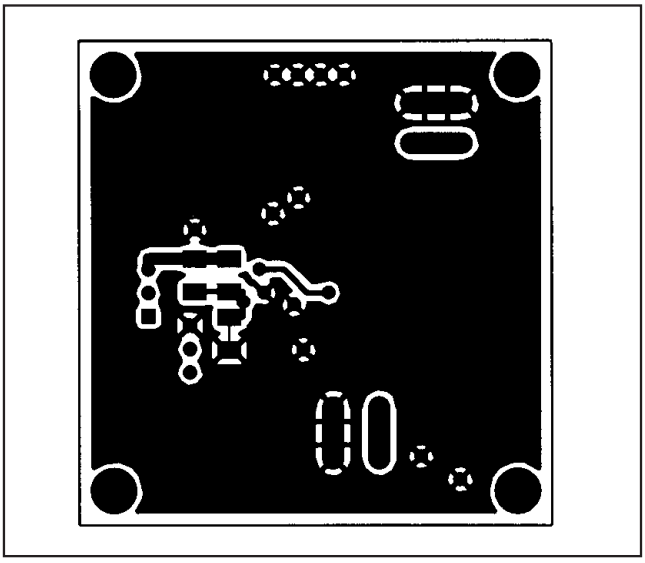


Figure 5. MAX1771 EV Kit PC Board Layout—Solder Side

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