19-0459; Rev 1; 1/99

MAXIM

MAX606 Evaluation Kit

Evaluates: MAX606/MAX607

General Description

The MAX606 evaluation kit (EV kit) provides a regulated +5V output voltage at up to 200mA while operating from a +3V to +5V input voltage. The MAX606 operates at frequencies up to 1MHz, allowing the use of small external components.

The MAX606 EV kit is a fully assembled and tested, surface-mount printed circuit board. It comes with the output voltage set to +5V, but can also be used to evaluate other output voltages between V_{IN} and +12.5V.

The MAX606 EV kit can also be used to evaluate the MAX607, which operates at 500kHz. Simply order a free sample of the MAX607EUA along with the MAX606 EV kit.

Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	2.2µF, 10V ceramic capacitor Taiyo Yuden LMK212BJ225MG-T
C2	1	4.7µF, 16V ceramic capacitor Taiyo Yuden EMK316BJ475ML-T
C4	1	0.01µF ceramic capacitor
C5	1	0.1µF ceramic capacitor
C6*	1	22µF, 16V tantalum capacitor
L1	1	5µH, 1A inductor Sumida CLS62B-5R0
D1	1	Schottky diode Zetex ZHCS1000
R1	1	1MΩ, 5% resistor
JU1	1	2-pin header
None	1	Shunt
U1	1	MAX606EUA (8-pin µMAX)
None	1	MAX606 PC board
C3, R2, R3	0	Not installed

**This capacitor is used to reduce ringing caused by lead inductance of the external power supplies. It is typically not needed in the production circuit (refer to the MAX606 data sheet for more information).*

Component Suppliers

SUPPLIER	PHONE	FAX
Sumida	847-956-0666	847-956-0702
Taiyo Yuden	408-573-4150	408-573-4159
Zetex	516-543-7100	516-864-7630

Note: *Please indicate that you are using the MAX606 when contacting the above component suppliers.*

Features

- ♦ **+5V, +12V, or Adjustable Voltage**
- ♦ **Tiny Surface-Mount Design**
- ♦ **200mA Output Current**
- ♦ **+3V to +5V Input Voltage Range**
- ♦ **1µA IC Shutdown Current**
- ♦ **Up to 1MHz Switching Frequency**
- ♦ **Fully Assembled and Tested Surface-Mount Board**

Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX606EVKIT	0°C to +70°C	8 µMAX

Quick Start

The MAX606 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 +3V to +5V power supply to the pad marked VIN. The ground connects to the GND pad.
2) Connect a voltmeter and load (if any) to the VOUT pad.
3) Make sure that JU1 is shunted.
4) Turn on the power and verify that the output voltage is +5V.
5) Refer to the *Other Output Voltages* section to modify the board for different output voltages.

Evaluating the MAX607

To evaluate the MAX607, turn off the power to the EV kit. Replace L1 with a 10µH inductor and replace the MAX606 with a MAX607EUA. No other hardware changes are necessary. A good candidate for a 10µH inductor is a Sumida CLS62-100, which fits the same footprint as the CLS62B-5R0. Note that the CLS62-100 has a maximum current rating of 700mA, rather than 1A for the CLS62B-5R0.

For free samples & the latest literature: http://www.maxim-ic.com, or phone 1-800-998-8800. For small orders, phone 1-800-835-8769.

Detailed Description

Jumper Selection

The 2-pin header JU1 selects the shutdown mode for the MAX606 and JU2 selects the output voltage. Table 1 lists jumper options.

Table 1. Jumper Functions

JUMPER	STATE	FUNCTION
JU1	Open	$\overline{SHDN}$ pin connected to GND through a 1MΩ resistor. MAX606 in shutdown mode, $V_{OUT} = V_{IN} - V_D$.
	Closed*	$\overline{SHDN}$ pin connected to VIN. MAX606 enabled, V_{OUT} = 5V.
JU2	1–2* (default trace)	FB pin connected to VIN. V_{OUT} = 5V.
	2–3	FB pin connected to GND. V_{OUT} = 12V.
	Open	FB pin connected to resistor-divider R2 and R3, for adjustable output voltage.

** Indicates default setting*

Other Output Voltages

The MAX606 output voltage is pin-programmable to 5V and 12V, and also adjustable to voltages between V_{IN} and 12.5V. The MAX606 EV kit comes with the output voltage set at 5V through a cuttable trace between JU2 pins 1 and 2. If a 12V output is desired from the MAX606 circuit, cut the trace between JU2 pins 1 and 2, install a jumper between JU2 pins 2 and 3, and change C2 to a 1µF ceramic capacitor.

If an adjustable output voltage is desired from the circuit, cut the trace between JU2 pins 1 and 2 and add the voltage-divider resistors R2 and R3 located on the board's solder side. Choose R2 and R3 as follows:

$$R2 = R3(V_{OUT} / V_{REF} - 1)$$

where V_{REF} = 2V. Since the input current at FB is 200nA (max), large values (up to 100kΩ) can be used for R3 with no significant loss of accuracy. C3, also provided on the solder side, is an optional feed-forward capacitor that can reduce output voltage ripple at light loads. If this feature is desired, choose a value of C3 in the 4.7pF to 10pF range.

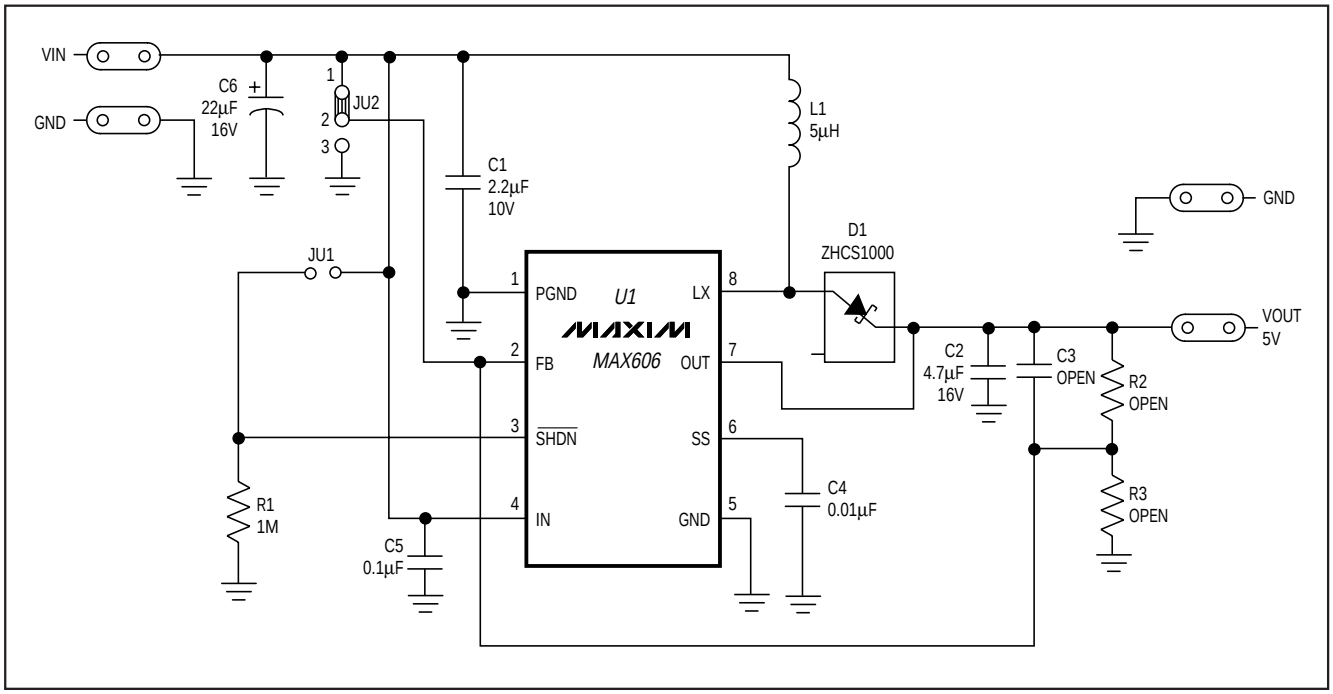


Figure 1. MAX606 EV Kit Schematic

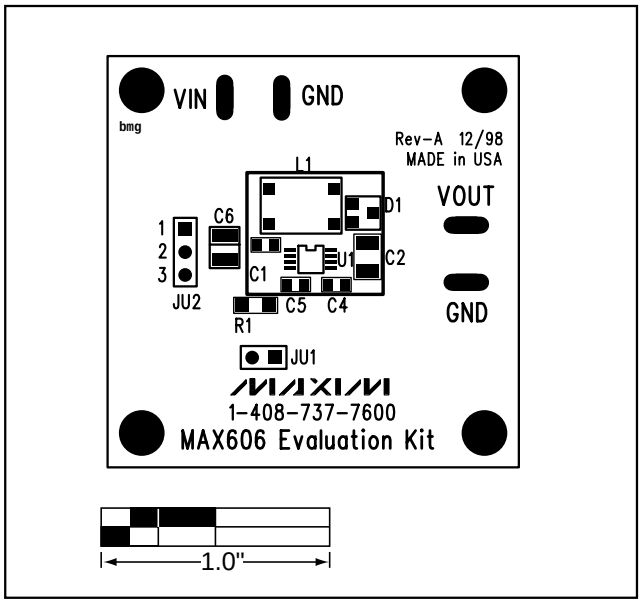


Figure 2. MAX606 EV Kit Component Placement Guide—Component Side

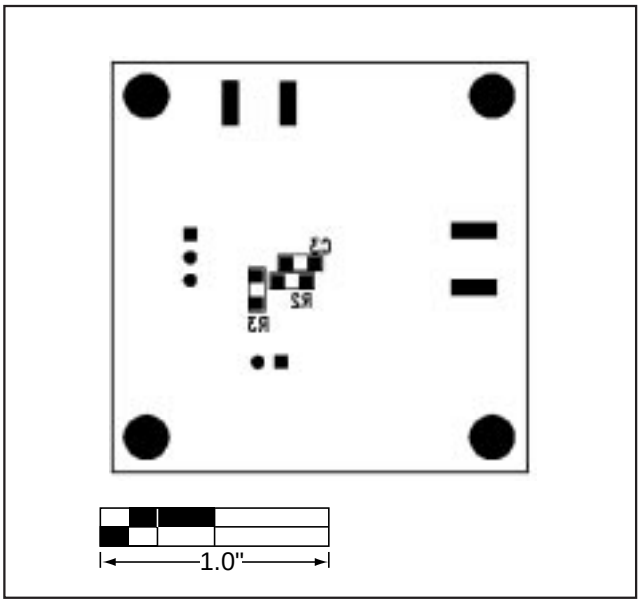


Figure 3. MAX606 EV Kit Component Placement Guide—Solder Side

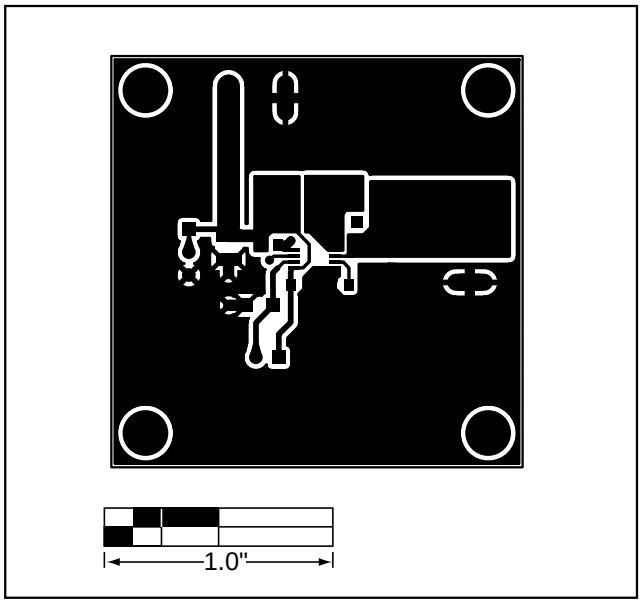


Figure 4. MAX606 EV Kit PC Board Layout—Component Side

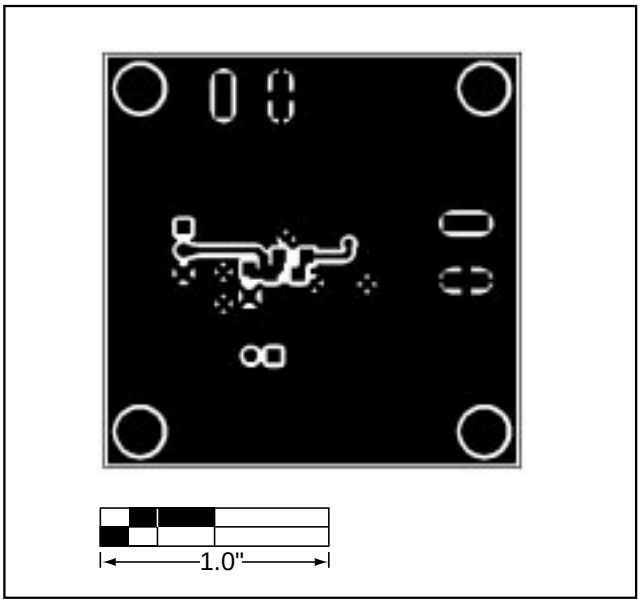


Figure 5. MAX606 EV Kit PC Board Layout—Solder Side

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