

MAXIM

MAX761 Evaluation Kit

MAX761 EV Kit

General Description

The MAX761 evaluation kit (EV kit) provides a 12V output for programming flash memories and powering other circuitry. From 5V inputs, it provides better than 85% efficiency for 4mA to 200mA loads. Quiescent supply current is only 300 μ A from a 5V input, and drops to 1 μ A in logic-controlled shutdown. The MAX761 comes in an 8-pin SO package and uses tiny external components; the entire circuit fits into less than 0.3in².

Component List

DESIGNATION	QTY	DESCRIPTION
U1	1	MAX761CSA
C1, C2	2	22 μ F, 16V, low-ESR tantalum capacitor Sprague 595D226X0016C2B
C3, C5	2	0.1 μ F ceramic capacitor
L1	1	18 μ H, 0.8A inductor (SMT) Sumida CD43-180
D1	1	1N5817 Schottky diode (SMT) Nihon EC10QS02L Motorola MBR5120LT3
R1, R2, R3, R4, R5, R6	0	Resistors (not supplied)
C4	0	Capacitor (not supplied)
JU3	1	3-pin header
None	1	Shunt
None	1	MAX761 data sheet

Component Suppliers

SUPPLIER	PHONE	FAX
Capacitors		
AVX	(207) 282-5111	(207) 283-1941
Matsuo	(714) 969-2491	(714) 960-6492
Murata Erie	(814) 237-1431 (800) 831-9172	(814) 238-0490
Sprague	(603) 224-1961	(603) 224-1430
Inductors		
Coilcraft	(708) 639-6400	(708) 639-1469
Coiltronics	(407) 241-7876	(407) 241-9339
Sumida	(708) 956-0666	(708) 956-0702
Diodes		
Central Semiconductor	(516) 435-1110	(516) 435-1824
Motorola	(602) 244-3576	(602) 244-4015
Nihon	(805) 867-2555	(805) 867-2556

Features

- ♦ 2V to 12V Input Range for 12V Output
- ♦ 85% Efficiency for 4mA to 200mA Loads
- ♦ 1 μ A Shutdown Supply Current
- ♦ Small External Components
- ♦ Low-Battery Detector
- ♦ Current-Limited PFM Control Scheme
- ♦ Fully Assembled and Tested

Ordering Information

PART	TEMP. RANGE	PIN-PACKAGE
MAX761EVKIT-SO	0°C to +70°C	Surface Mount

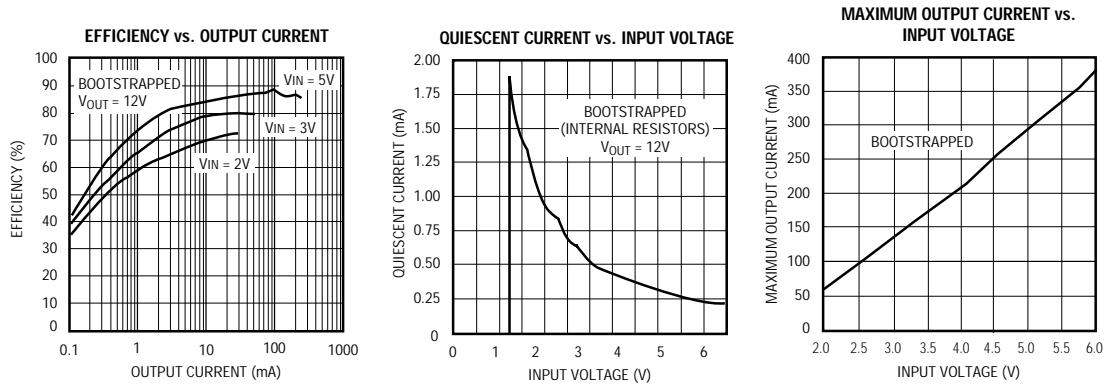
EV Kit



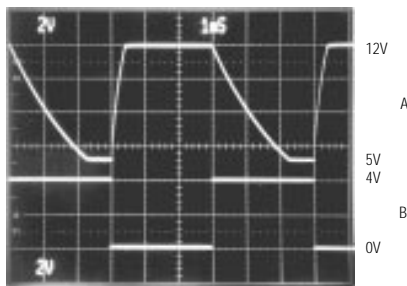
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Typical Operating Characteristics

(MAX761 EV kit, $T_A = +25^\circ\text{C}$, unless otherwise noted.)



SHDN RESPONSE TIME



$I_{LOAD} = 100\text{mA}$, $V_{IN} = 5\text{V}$
 A: V_{OUT} , 2V/div
 B: SHDN, 2V/div (0V to 4V)

Quick Start

The MAX761 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 5V power supply to the pad marked V_{IN} . Connect ground to the GND pad.
- 2) Connect a voltmeter and load (if any) to the V_{OUT} pad.
- 3) For normal operation, place the shunt across pins 1 and 2 on the JU3 jumper.
- 4) Turn on the power supply and verify that the output voltage is 12V.
- 5) Instructions for modifying the board for different output voltages are in the *Output Voltage Adjustment* section.

Detailed Description

Bootstrapped Mode

The MAX761 EV kit is configured for bootstrapped mode. In bootstrapped mode, the MAX761 is powered from the output voltage, which increases efficiency at lower input voltages and requires fewer components. Refer to the *Bootstrapped/Non-Bootstrapped Mode* section of the MAX761 data sheet for further details. For an adjustable output in bootstrapped mode, refer to the *Output Voltage Adjustment* section.

MAX761 Evaluation Kit

MAX761 EV Kit

Shutdown Control

The MAX761 provides a SHDN pin to disable the output. Table 1 lists the options available for the shutdown control jumper, JU3. To use an external control signal, remove the shunt on JU3 completely and connect the external signal to the pad labeled SHDN. SHDN is a TTL/CMOS-logic-level input.

Table 1. Jumper JU3 Functions

SHUNT LOCATION	SHDN PIN	MAX761 OUTPUT
1 & 2	Connected to GND	MAX761 Enabled $V_{OUT} = 12V$
2 & 3	Connected to V_{IN}	Shutdown Mode $V_{OUT} = V_{IN} - 0.3V$

Low-Battery Indicator

The MAX761 provides a low-battery comparator that compares the voltage on LBI to the 1.5V reference voltage. LBO, an open-drain output, goes low when the

LBI voltage falls below V_{REF} . Resistors R3 and R4 form a voltage divider between the LBI pad and the MAX761 LBI pin. Refer to the *Low-Battery Detector* section of the MAX761 data sheet for instructions on selecting values for R3 and R4. Note that the printed circuit board trace across R3 shorts the LBI pin to ground when this function is not used. Cut this trace before installing R3. Install a 100k Ω pull-up resistor between V_{IN} (R5) or V_{OUT} (R6) if LBO is used. LBO is disabled in shutdown mode.

Output Voltage Adjustment

To adjust the output voltage, add output voltage divider resistors R1 and R2 to either bootstrapped or non-bootstrapped configurations. Refer to the *Setting the Output Voltage* section of the MAX761 data sheet for instructions on selecting values for R1 and R2. When using output voltage divider resistors, disconnect the MAX761 feedback pin (FB) from ground by cutting the thin PC board trace between the pads of JU1. Some users may want to install a small (100pF to 200pF) capacitor (C4), to increase light-load efficiency.

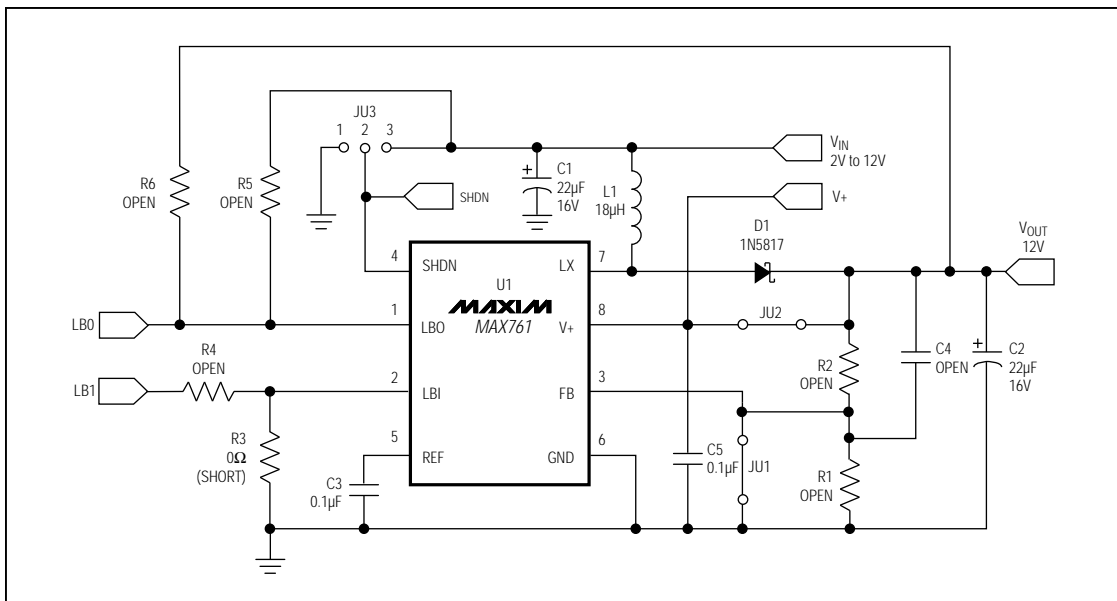


Figure 1. MAX761 EV Kit Schematic Diagram

MAX761 Evaluation Kit

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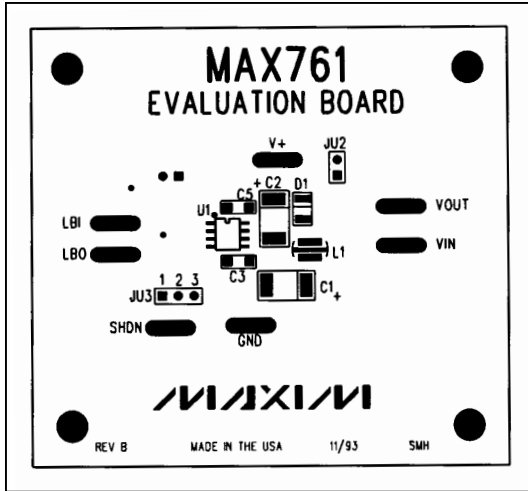


Figure 2. MAX761 EV Kit Component Placement Guide—Component Side

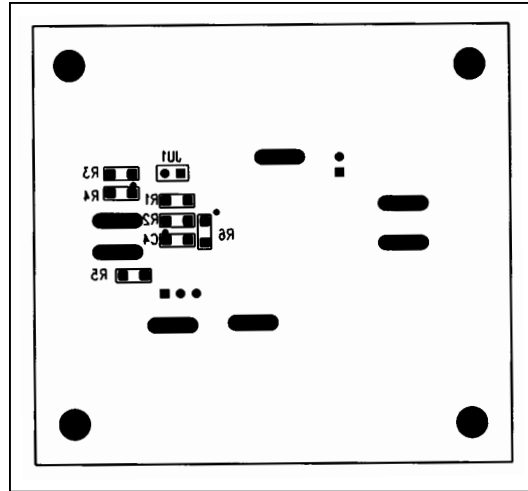


Figure 3. MAX761 EV Kit Component Placement Guide—Solder Side

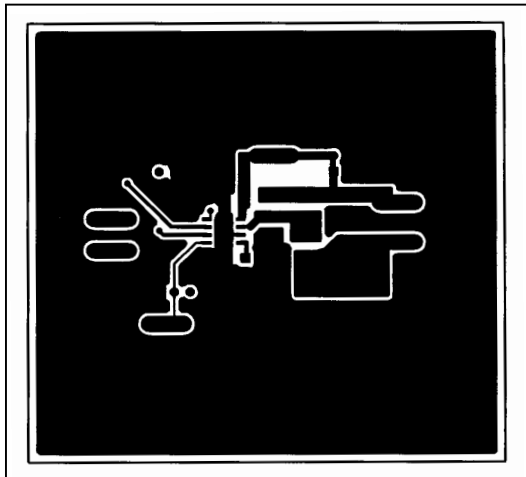


Figure 4. MAX761 EV Kit PC Board Layout—Component Side

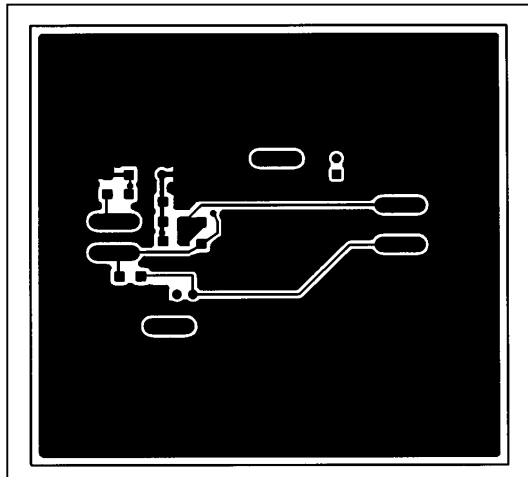


Figure 5. MAX761 EV Kit PC Board Layout—Solder Side

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