

MAXIM

MAX778 Evaluation Kit

MAX778 EV Kit

General Description

The MAX778 evaluation kit (EV kit) provides a regulated 3.0V or 3.3V output voltage while operating from input voltages as low as 1.0V. The board is ideally suited for the 1.0V to 3.3V range of a one-cell to two-cell NiCd battery. It drives loads up to 210mA with conversion efficiency greater than 80%.

The MAX778 EV kit is a fully assembled and tested surface-mount printed circuit board. A movable jumper selects either 3.0V or 3.3V output voltage. The MAX778 EV kit can also be used to evaluate the MAX777CSA (5V output) or MAX779CSA (adjustable output). Additional pads are provided on the bottom of the board to accommodate different size inductors or the external feedback resistors used with the MAX779.

Features

- ♦ 1.0V to 6.2V Input Supply Range
- ♦ 3.0V or 3.3V Output Voltage
- ♦ Up to 210mA Output Current
- ♦ Internal 1A Power Switch
- ♦ Internal Active Rectifier™
- ♦ Adjustable Current Limit Allows Low-Cost Inductors
- ♦ Surface-Mount Construction
- ♦ Fully Assembled and Tested

EV Kit



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Ordering Information

PART	TEMP. RANGE	BOARD TYPE
MAX778EVKIT-SO	0°C to +70°C	Surface Mount

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C3	2	100µF, 10V, low-ESR tantalum capacitor: Sprague 595D107X0010D7
C2, C4	0	Open
R1	1	10Ω resistor
R2, R3	0	Open
L1	1	22µH power inductor: Sumida CD54-220, Coilcraft DT3316-223, Coiltronix CTX-20
U1	1	MAX778CSA (8-pin SO)
None	1	3-pin header
None	1	2-pin header
None	2	Shunt
None	1	2.00" x 2.00" PC board
None	1	MAX778 data sheet
Additional optional components (supplied, but not mounted)		
U1	1	MAX777CSA (5V)
L2	1	22µH inductor (mounts on solder side): Sumida CDRH62-220
L1	1	22µH inductor: Murata-Erie LQH4N220K04M00
R1	1	300Ω resistor
R1	1	2000Ω resistor

MANUFACTURER	PHONE	FAX
Coilcraft	(708) 639-6400	(708) 639-1469
Coiltronix	(407) 241-7876	(407) 241-9339
Murata Erie	(404) 436-1300	(404) 684-1541
Sprague	(603) 224-1961	(603) 224-1430
Sumida	(708) 956-0666	(708) 956-0702

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Quick Start

The MAX778 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 2.5V 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) Place the shunt on JU1 across pins 2 and 3 for normal operation.
- 4) Place the shunt on JU2 for a 3.3V output voltage. If a 3.0V output is desired, remove the shunt.
- 5) Turn on the power and verify the output voltage.
- 6) Instruction for modifying the board for different output voltages appear in the section *Using the MAX777 and MAX779*.

Detailed Description

Jumper Selection

The 3-pin header JU1 selects the shutdown mode, and the 2-pin header JU2 selects the output voltage. Tables 1 and 2 list the jumper selection options.

Notes on R1 and Inductor Selection

The 22 μ H Sumida CD54-220 inductor that comes mounted with the EV kit has low resistance and a medium (1.1A) current rating. It provides excellent performance over the line and load ranges of the MAX777/MAX778/MAX779. A lower-profile 22 μ H Sumida inductor (CDRH62-220) with

a current-limit resistor ($R1 = 300\Omega$) can also be used in applications where height is more critical than efficiency. For ultra-small, low-current applications, the 22 μ H Murata-Erie LQH4N220K0M00 inductor is a good choice. Its dimensions are 3.2 x 4.5 x 3.6mm, and it can be used for outputs in the 30mA range with a 2000 Ω current-limit resistor. Refer to Figure 1 for typical efficiency data.

The CDRH62-220 and LQH4N220K0M00 22 μ H inductors with current-limit resistors are supplied with the EV kit as optional components.

On this EV kit, R1 of 10 Ω is included only as a place holder for other optional resistors included in the kit. For the default current limit of 1A, R1 would be a short connecting I_{LIM} to VIN. For additional information on current-limit resistor selection, refer to the MAX777/MAX778/MAX779 data sheet.

Using the MAX777 and MAX779

The MAX778 can be replaced with a MAX777 to generate a 5.0V output voltage. Besides replacing the IC, the only other modification required is to remove the shunt on JU2.

The MAX778 can be replaced with a MAX779 to generate output voltages in the 2.5V to 6.0V range using external resistors. Besides replacing the IC, the only other modifications required are to remove the shunt on JU2 and add the output-voltage-divider resistors R2 and R3 (located on the bottom of the board). The *Output Voltage Selection* section of the MAX777/MAX778/MAX779 data sheet gives instructions for calculating R2 and R3 values.

Table 1. Jumper JU1 Functions

SHUNT LOCATION	SHDN PIN	MAX778 OUTPUT
2 & 3	Connected to VIN	MAX778 Enabled, V_{OUT} = preset value
1 & 2	Connected to GND	Shutdown Mode, $V_{OUT} = 0V$

Table 2. Jumper JU2 Functions

SHUNT LOCATION	FB PIN	MAX778 OUTPUT*
On	Connected to GND	$V_{OUT} = 3.3V$
Off	Open	$V_{OUT} = 3.0V$

* Assuming that the MAX778 is not in shutdown mode.

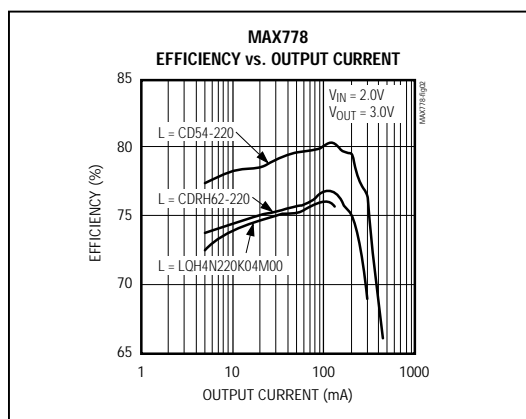


Figure 1. Typical Efficiencies for Different Inductor Choices

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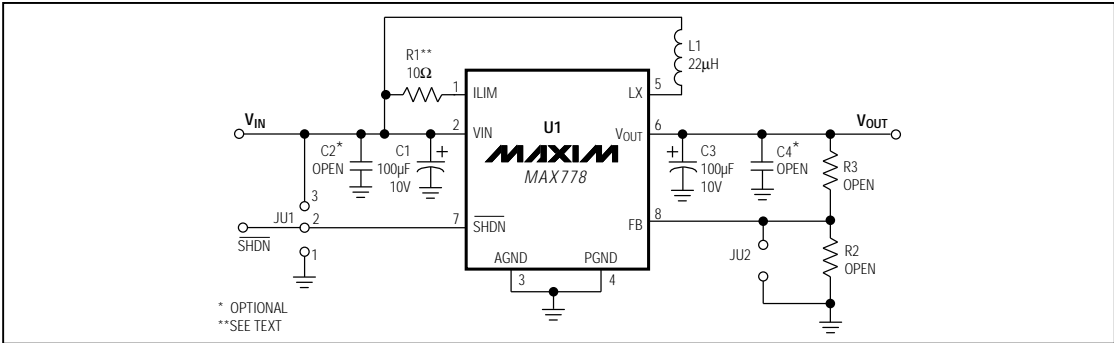


Figure 2. MAX778 EV Kit Schematic Diagram

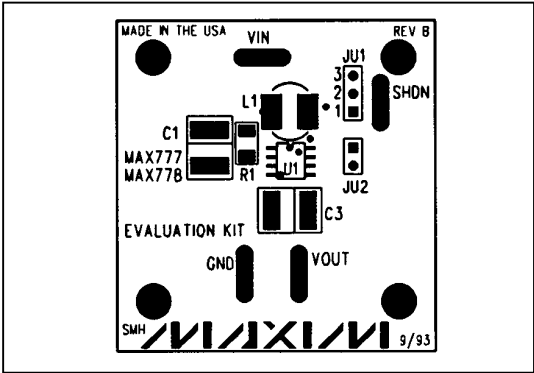


Figure 3. MAX778 EV Kit Component Placement Guide (Component Side)

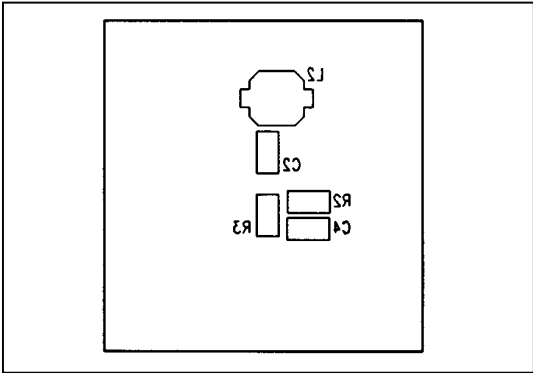


Figure 4. MAX778 EV Kit Component Placement Guide (Solder Side)

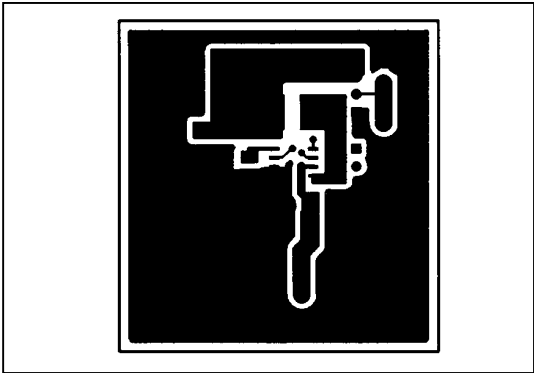


Figure 5. MAX778 EV Kit PC Layout (Component Side)

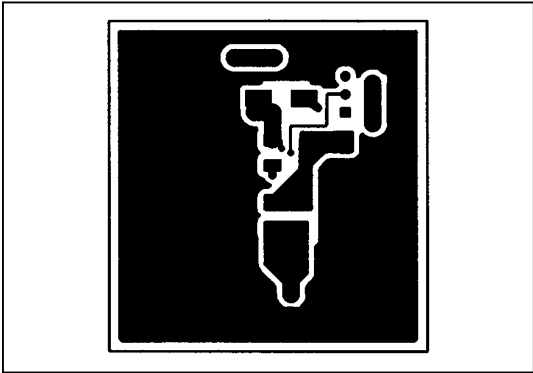


Figure 6. MAX778 EV Kit PC Layout (Solder Side)

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