



MAX1982 Evaluation Kit

General Description

The MAX1982 evaluation kit (EV kit) provides a regulated 1.2V output voltage while operating on input voltages from 1.25V to 5.5V. It delivers a 0.3A output current from a 1.25V to 2.5V input, with less than 300mV dropout. Operation with higher input voltages (up to 5.5V) is possible as long as the maximum power dissipation across the internal pass transistor is less than 727mW.

The MAX1982 EV kit is a fully assembled and tested surface-mount printed circuit (PC) board. The board is shipped with a fixed 1.2V output MAX1982 IC, and can also be used to evaluate the MAX1983 (adjustable output). Additional pads are provided on the board's component side to accommodate the external components used with the MAX1983.

Features

- ◆ 1.25V to 5.5V Input Supply Range
- ◆ 1.2V Fixed Output Voltage
- ◆ Up to 0.3A Output Current
- ◆ <5 μ A Shutdown Supply Current
- ◆ Power-Good (PGOOD) Open-Drain Output with 1ms Rising Edge Propagation Delay (MAX1982)
- ◆ Surface-Mount Construction
- ◆ Fully Assembled and Tested

Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX1982EVKIT	0°C to +70°C	6 SOT23

Note: To evaluate the MAX1983, request a MAX1983EUT free sample with the MAX1982EVKIT.

Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	0.1 μ F \pm 20%, X7R ceramic capacitor (1206) TDK C3216X7R2A104M
C2, C3	1	10 μ F \pm 20%, X5R ceramic capacitors (1210) TDK C3225X7R1C106M
C4	1	Not installed (0805)
JU1	1	3-pin header
JU2	1	2-pin header

DESIGNATION	QTY	DESCRIPTION
R1	1	100k Ω \pm 5% resistor (0805)
R2, R3	2	Not installed (0805)
U1	1	MAX1982EUT (6-pin SOT23) Top mark = ABEA
None	2	Shunts
None	1	MAX1982 PC board
None	1	MAX1982 data sheet
None	1	MAX1982 EV kit data sheet

Component Suppliers

SUPPLIER	PHONE	FAX	WEBSITE
TDK	847-803-6100	847-390-4405	www.component.tdk.com

Note: Please indicate that you are using the MAX1982 when contacting this component supplier.

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Quick Start

Recommended Equipment

- One variable DC power supply capable of supplying between 1.25V and 5.5V at 0.5A
- One fixed DC power supply capable of supplying 5V at 10mA
- Two voltmeters

Procedure

The MAX1982 EV kit is fully assembled and tested. Follow the steps below to verify board operation. **Do not turn on the power supply until all connections are completed:**

- 1) Set the variable DC power supply to 2.5V.
- 2) Ensure that the variable DC power supply is turned off.
- 3) Ensure that the fixed 5V DC power supply is turned off.
- 4) Connect the variable DC power supply to the pad marked VIN. Connect the ground return of the power supply to the GND pad located across from VIN.
- 5) Connect the fixed 5V DC power supply to the pad marked BIAS. Connect the ground return of the power supply to the GND pad located across from VIN.
- 6) Connect a voltmeter and load (if any) to the pad marked VOUT. Connect the ground return of the voltmeter and load to the GND pad located across from the VOUT pad.
- 7) Connect a voltmeter to the pad marked PGOOD. Connect the ground return of the voltmeter to the GND user pad located across from the VOUT pad.
- 8) Turn on the variable DC power supply.
- 9) Turn on the fixed 5V DC power supply.
- 10) Verify that the PGOOD voltage is 5V.
- 11) Verify that the output voltage is 1.2V.

Detailed Description

The MAX1982 EV kit is a 300mA low-dropout (LDO) regulator capable of supplying a fixed 1.2V output from a variable 1.25V to 5.5V input. The EV kit comes equipped with on-board shutdown control, as well as additional pads for evaluating the MAX1983 (adjustable) LDO.

Shutdown Control

The MAX1982 has an active-low shutdown control input to enable/disable its output. The 3-pin header JU1 selects the shutdown mode. Remove the shunt when driving shutdown with an external signal. Table 1 lists the jumper selectable options.

Evaluating the MAX1983

The MAX1982 can be replaced with a MAX1983 to generate an adjustable output voltage (0.8V to 2V) with an output current up to 0.3A. The modifications required are as follows:

- 1) Replace the IC (U1).
- 2) Remove R1.
- 3) Add R2 and R3 (located on the board's component side).
- 4) Insert a shunt across JU2

To set the output voltage, choose R2 as follows:

$$R2 = R3 \times \left(\frac{V_{OUT}}{V_{REF}} - 1 \right)$$

where:

V_{OUT} = desired output voltage

V_{REF} = 0.8V

$R3 \leq 40k\Omega$

Adjusting PGOOD timing

The MAX1982 EV kit allows the user to extend the PGOOD propagation delay by adding capacitor C4. To set the propagation delay use the following equation:

$$C4 = \frac{t_{PGprop} - t}{R1} \times \frac{1}{\ln \left(1 - \frac{V_{PGOOD}}{V_{BIAS}} \right)}$$

where:

t_{PGprop} = PGOOD propagation delay = 2ms (typ)

V_{BIAS} = 5V

V_{PGOOD} = 4.5V

$R1$ = 100k Ω

t = desired propagation delay

Note: t must be greater than t_{PGprop} .

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Evaluates: MAX1982/MAX1983

Table 1. Shutdown Selection

JUMPER	SHUNT POSITION	SHDN PIN	DESCRIPTION
JU1	1-2	Connected to BIAS	MAX1982 enabled, V _{OUT} = 1.2V
JU1	2-3	Connected to GND	Shutdown mode, V _{OUT} = 0V

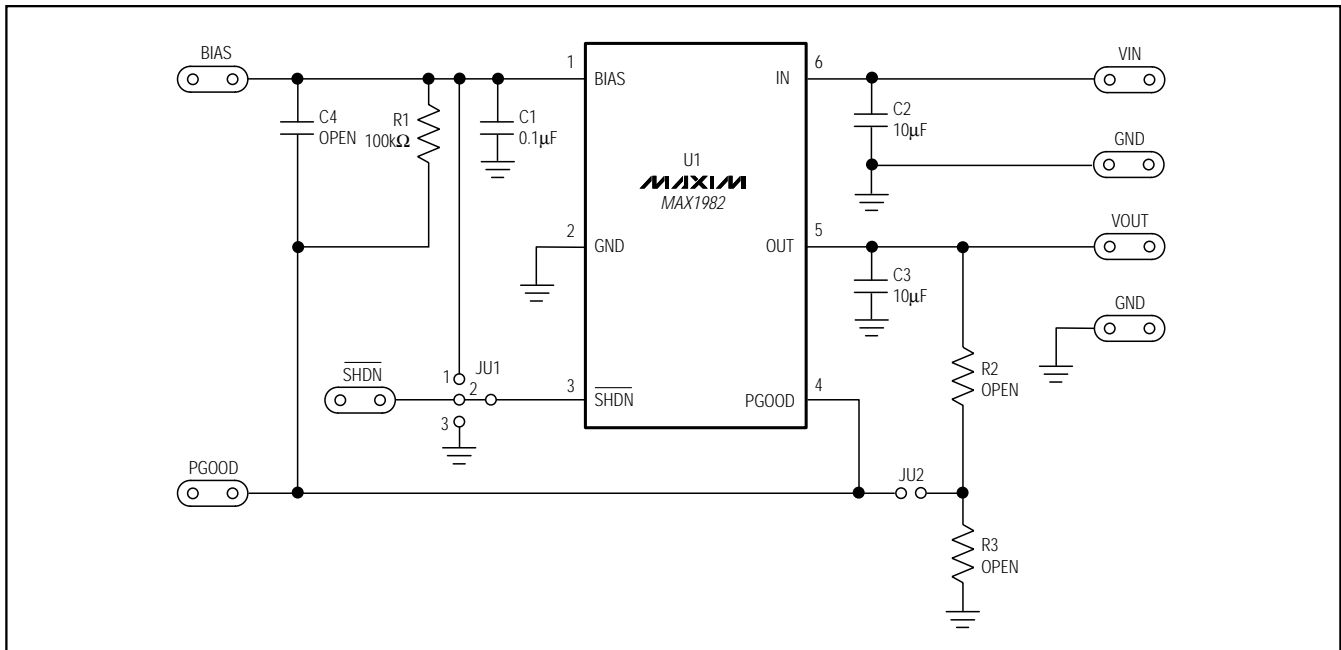


Figure 1. MAX1982 EV Kit Schematic

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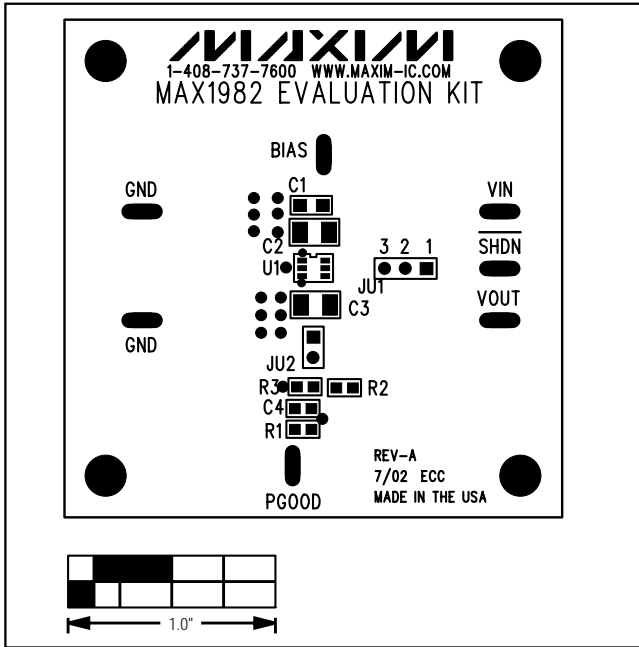


Figure 2. MAX1982 EV Kit Component Placement Guide—Component Side

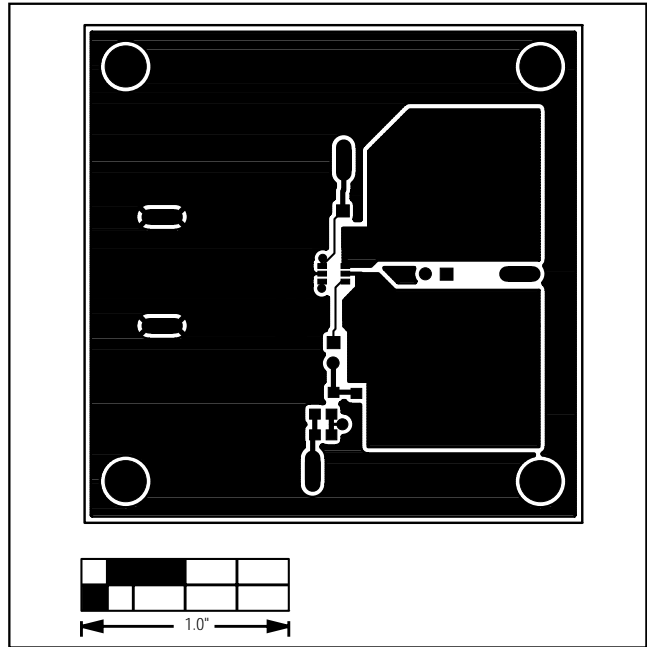


Figure 3. MAX1982 EV Kit PC Board Layout—Component Side

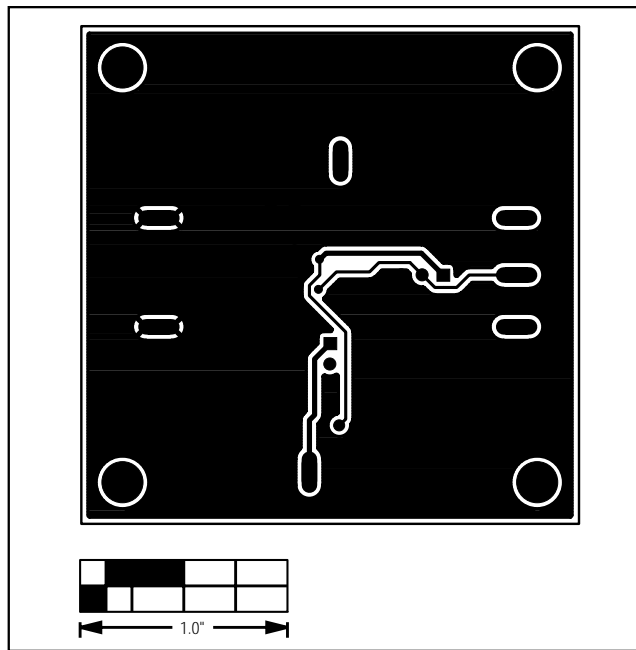


Figure 4. MAX1982 EV Kit PC Board Layout—Solder Side

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