MAX710 Evaluation Kit

Evaluates: MAX710/MAX711

General Description

The MAX710 evaluation kit (EV kit) is a step-up DC-DC converter with a linear-regulator output. The MAX710 accepts a +1.8V to +11V input and converts it to a 3.3V or 5V output for up to 250mA currents. The EV kit is optimized for battery applications where the input varies above and below the regulated output voltage. It can be set in two modes: one optimized for lowest noise, the other for highest efficiency.

The MAX710 EV kit is a fully assembled and tested surface-mount circuit board. It can also be used to evaluate the MAX711, which has an adjustable output voltage (2.7V to 5.5V). Additional pads on the board accommodate the external feedback resistors for setting different output voltages.

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2	2	100µF, 16V low-ESR tantalum capacitors AVX TPSE107M016R0100 or Sprague 593D107X0016E2W
C3	1	0.1µF ceramic capacitor
C4	1	4.7µF, 16V tantalum capacitor Sprague 595D475X0016A2T
C5	0	Open
D1	1	Schottky diode Motorola MBRS130LT3
L1	1	22µH inductor Sumida CD75-220, Coiltronics UP2-220, or Coilcraft DO3316P-223
R1, R2, R7, R8	0	Open
R3, R4, R5	3	100kΩ, 5% resistors
U1	1	MAX710ESE (SO-16)
JU1, JU6	2	3-pin headers
JU2, JU3, JU4	3	2-pin headers
JU5	1	4-pin header
None	3	Shunts
None	1	MAX710 PC board
None	1	MAX710 data sheet

Features

- **Step-Up/Down Voltage Conversion**
- **+1.8V to +11V Input Range**
- **3.3V or 5V Selectable Output Voltage (MAX710)**
- **2.7V to 5.5V Adjustable Output Voltage (MAX711)**
- **250mA Output Current**
- **No External FETs Required**
- **Output is Fully Off during Shutdown**
- **5µA Max Shutdown Current**
- **Low-Battery Comparator**
- **Low-Noise and High-Efficiency Modes**
- **Surface-Mount Components**
- **Fully Assembled and Tested**

Ordering Information

PART	TEMP. RANGE	BOARD TYPE
MAX710EVKIT	0°C to +70°C	Surface Mount

Note: To evaluate the MAX711, request a MAX711ESE free sample with the MAX710 EV kit.

Component Suppliers

SUPPLIER	PHONE	FAX
AVX	(803) 946-0690	(803) 626-3123
Coilcraft	(847) 639-6400	(847) 639-1469
Coiltronics	(561) 241-7876	(561) 241-9339
Dale-Vishay	(402) 564-3131	(402) 563-6418
Motorola	(602) 303-5454	(602) 994-6430
Sprague	(603) 224-1961	(603) 224-1430
Sumida	(847) 956-0666	(847) 956-0702
Vishay/Vitramon	(203) 268-6261	(203) 452-5670

Note: Please indicate that you are using the MAX710 when contacting these component suppliers.

For free samples & the latest literature: http://www.maxim-ic.com, or phone 1-800-998-8800.
For small orders, phone 408-737-7600 ext. 3468.

Quick Start

The MAX710 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 +1.8V to +11V supply to the VIN pad. Connect ground to the GND pad.
2) Connect a voltmeter to the VOUT pad.
3) Place the shunt on JU1 across pins 1 and 2.
4) Turn on the power supply and verify that the output voltage is 3.3V. For a 5V output, remove the shunt from JU1 pins 1 and 2, and place it across JU1 pins 2 and 3.

Detailed Description

The MAX710 EV kit is a step-up DC-DC converter with a linear-regulator output. It accepts a +1.8V to +11V input and converts it to a 3.3V or 5V output for up to 250mA currents. The EV kit is shipped configured for a 3.3V output.

Jumper Selection

The 3-pin header JU1 selects output voltage. Table 1 lists the selectable jumper options.

Table 1. Jumper JU1 Functions

SHUNT LOCATION	3/$\overline{5}$ PIN	OUTPUT
1 and 2	Connected to V+	V_{OUT} = 3.3V
2 and 3	Connected to GND	V_{OUT} = 5V

The 2-pin header JU2 selects shutdown mode. Table 2 lists the selectable jumper options.

Table 2. Jumper JU2 Functions

SHUNT LOCATION	$\overline{SHDN}$ PIN	OUTPUT
On	Connected to GND	Shutdown mode, V_{OUT} = 0V
Off	Connected to V+	MAX710 enabled, V_{OUT} = 3.3V or 5V

The 2-pin header JU3 selects standby mode. Table 3 lists the selectable jumper options.

Table 3. Jumper JU3 Functions

SHUNT LOCATION	$\overline{STDBY}$ PIN	OUTPUT
On	Connected to GND	Standby mode
Off	Connected to V+	Normal operation

The 2-pin header JU4 selects the current limit. Table 4 lists the selectable jumper options.

Table 4. Jumper JU4 Functions

SHUNT LOCATION	ILIM PIN	CURRENT LIMIT
On	Connected to V+	ILIM = 0.8A
Off	Connected to GND	ILIM = 1.5A

The 4-pin header JU5 selects low-noise or high-efficiency mode. Refer to the MAX710/MAX711 data sheet for information on operating configurations. Table 5 lists the selectable jumper options.

Table 5. Jumper JU5 Functions

SHUNT LOCATION	N/$\overline{E}$ PIN	OPERATING MODE
1 and 2	Connected to LBO	High-efficiency, $V_{IN(MAX)}$ = 11V (LBI- must be connected to V_{OUT} (JU6, 2 and 3))
1 and 3	Connected to GND	High-efficiency, $V_{IN(MAX)}$ = 7V
1 and 4	Connected to V+	Low-noise, $V_{IN(MAX)}$ = 11V

The 3-pin header JU6 connects LBI- to either the output voltage or the reference voltage. Table 6 lists the selectable jumper options.

Table 6. Jumper JU6 Functions

SHUNT LOCATION	LBI- PIN
1 and 2	Connected to REF
2 and 3	Connected to VOUT

Low-Battery Comparator Output

The MAX710 has an on-chip comparator for power-good detection that can be used to detect low-battery voltage. The comparator's LBI- input is connected to either V_{OUT} or reference, and its LBI+ input is connected to an external resistor divider, R7 or R8. Refer to the *Low-Battery Comparator* section of the MAX710/MAX711 data sheet for instructions on selecting R7 and R8 values.

Evaluating Other Output Voltages

To generate output voltages other than 3.3V or 5V, replace the MAX710 with the MAX711 (adjustable output), and select the external voltage resistor divider, R1 and R2. The only other modification required is removing the shunt from JU1. Refer to the *Output Voltage Selection* section in the MAX710/MAX711 data sheet for instructions on selecting R1 and R2 values. C5 is an optional space for a feed-forward capacitor.

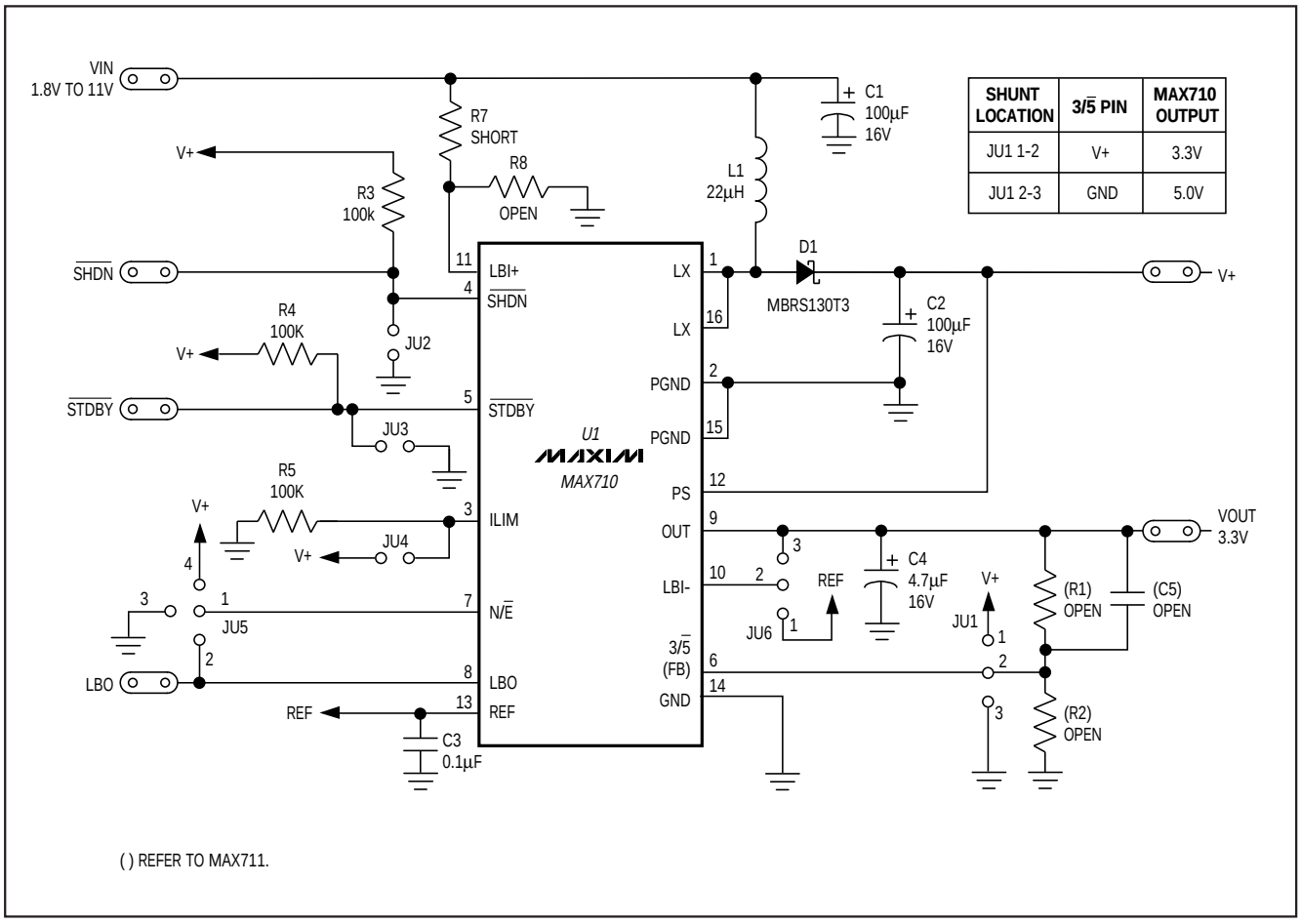


Figure 1. MAX710 EV Kit Schematic

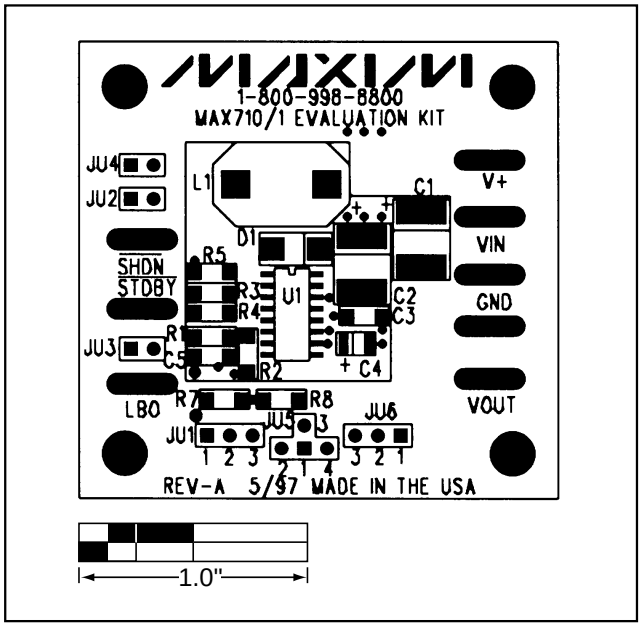


Figure 2. MAX710 EV Kit Component Placement Guide—Component Side

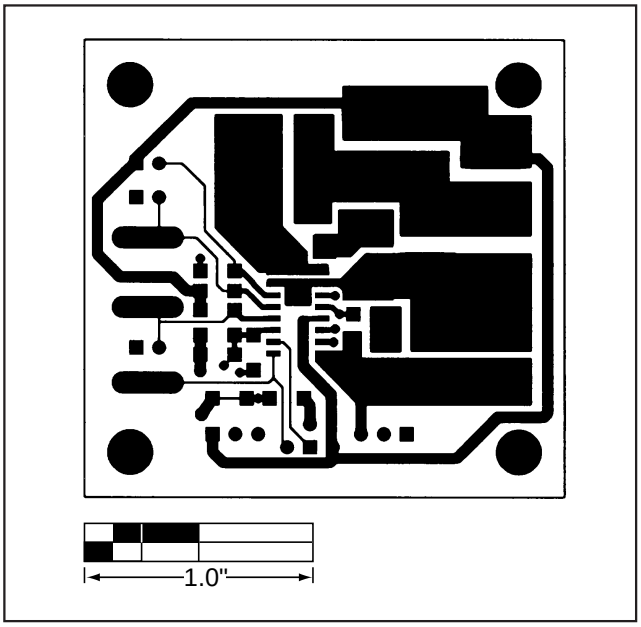


Figure 3. MAX710 EV Kit PC Board Layout—Component Side

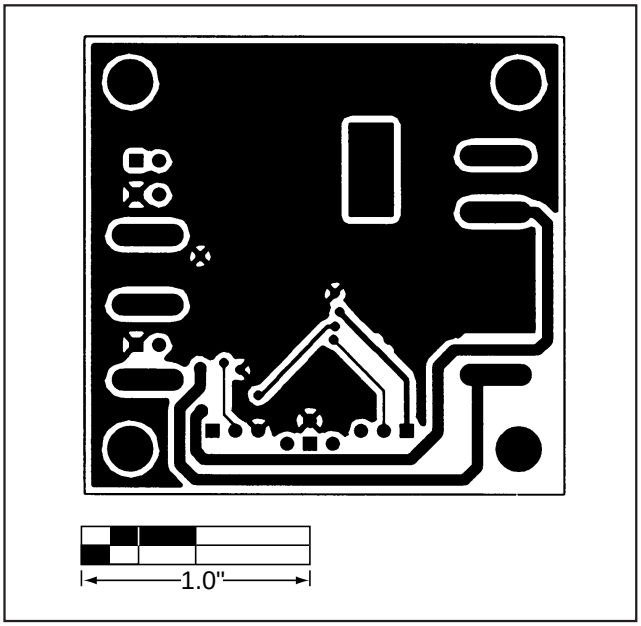


Figure 4. MAX710 EV Kit PC Board Layout—Solder Side

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