



## MAX840 Evaluation Kit

### Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2, C3	3	0.22 $\mu$ F ceramic capacitors Vitramon VJ1206Y224KXX Murata GRM42-6X7R224M025
C4	1	4.7 $\mu$ F, 16V low-ESR tantalum capacitor, Sprague 595D475X0016A Matsuo 267E 2002 475
R1, R2	0	Open
J1	1	3-pin header
J3	1	Scope probe connector, Specialty Connectors 33JR135-1
U1	1	Maxim MAX840ISA 8-pin SO
None	1	Shunt
None	1	Printed circuit board

### Component Suppliers

SUPPLIER	PHONE	FAX
Matsuo	(714) 969-2491	(714) 960-6492
Murata-Erie	(814) 237-1431	(814) 238-0490
Sprague	(603) 224-1961	(603) 224-1430
Vishay/Vitramon	(203) 268-6261	(203) 452-5670
Specialty Connectors	(317) 738-2800	(317) 738-2858

Evaluates: MAX840/MAX843/MAX844

### General Description

The MAX840/MAX843/MAX844 ICs are inverting, charge-pump DC-DC converters with low-noise, regulated outputs. Their low output ripple voltage makes these devices ideal for biasing the GaAsFETs commonly found in cellular telephone transmitters.

The MAX840 evaluation kit (EV kit) is a fully assembled and tested surface-mount board. The board is shipped with a MAX840 mounted, but it can be replaced by the MAX843 or MAX844. Provisions are made for mounting two additional resistors, which are required for output voltages other than -2V. A special scope-probe socket is also mounted on the board, so output noise can be observed on an oscilloscope.

### Features

- ◆ 1mVp-p Output Voltage Ripple
- ◆ 2.5V to 10V Input Range
- ◆ Uses 0.22 $\mu$ F Capacitors
- ◆ -2V Regulated Output (or Adjustable)
- ◆ 4mA Output Current
- ◆ Surface-Mount Technology

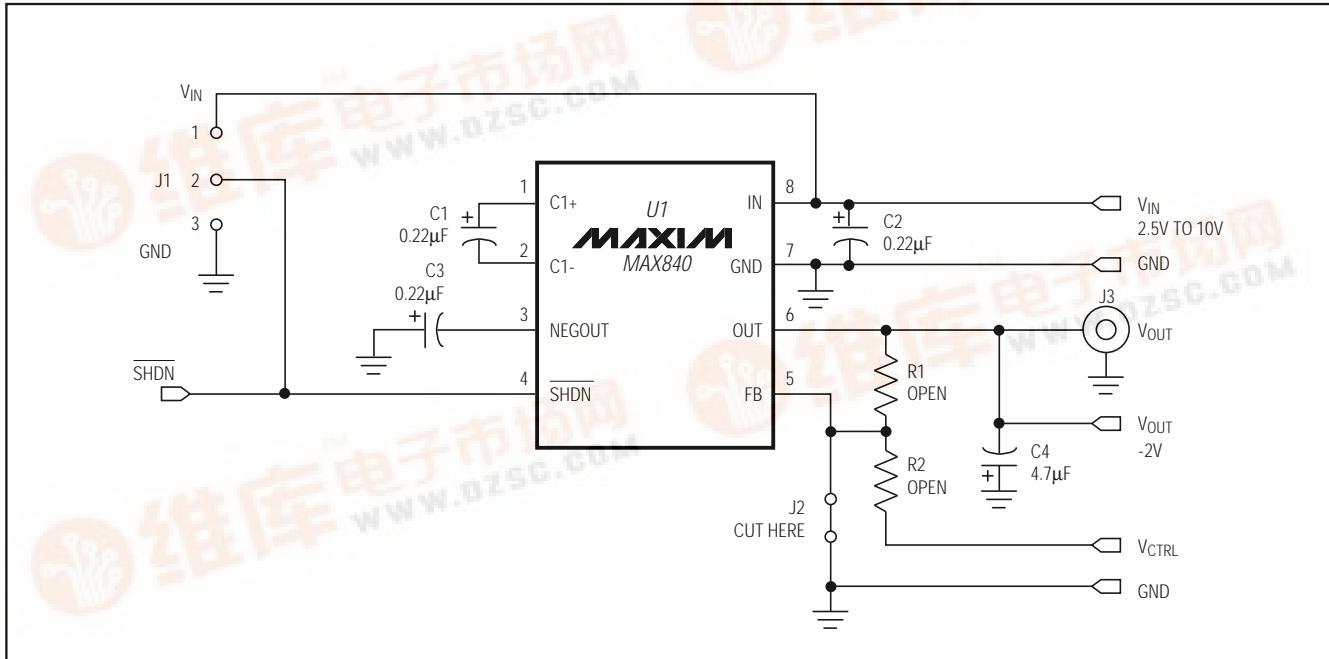


Figure 1. MAX840 EV Kit Schematic Diagram

# MAX840 Evaluation Kit

## Quick Start

The MAX840 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) Connect a 2.5V to 10.0V supply to the VIN pad at the top of the board. Connect the ground lead to the adjacent GND pad.
- 2) Connect a voltmeter and the load to the VOUT pad.
- 3) Place the shunt on J1 across pins 1 and 2. This connects the SHDN pin to VIN.
- 4) Turn on the power and verify that the output is -2V. You can insert a scope probe into J3 to observe the output noise. Be sure the scope ground makes contact with the outside of the connector.

## Detailed Description

The 3-pin header, J1, controls pin 4 (SHDN) on the IC. Table 1 outlines the shunt positions for J1.

### Output Voltage Adjustment

For output voltages other than -2V, cut the trace across J2 to disconnect the FB pin (pin 5) from GND, and

install two resistors (R1 and R2) for the output voltage divider. Mounting pads for the resistors are located on the board's solder side. See the MAX840/MAX843/MAX844 data sheet for instructions on calculating R1 and R2 values.

If using the MAX843 or MAX844 with the MAX840 EV kit, connect VCTRL to a positive voltage to control VOUT.

$$VOUT = -VCTRL (R2 / R1)$$

For example, if R1 = R2, then  $VOUT = -VCTRL$ . The maximum  $|VOUT|$  will be at least 0.6V below VIN.

**Table 1. J1 Shunt Positions**

SHUNT POSITION	PIN 4 CONNECTION	MAX840 FUNCTION
1 & 2	VIN	SHDN high, device enabled
2 & 3	GND	SHDN low, device disabled
Open	Connected to pad	Pin 4 is driven by user signal connected to SHDN pad

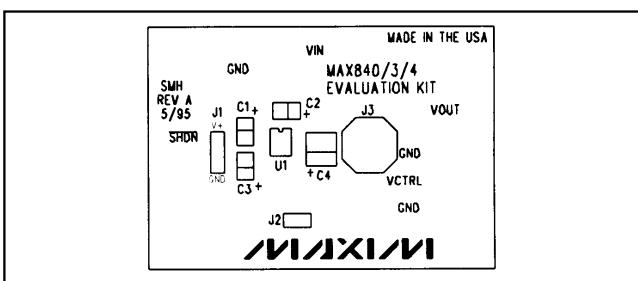


Figure 2. MAX840 EV Kit Component Placement Guide—Component Side (not shown to scale)

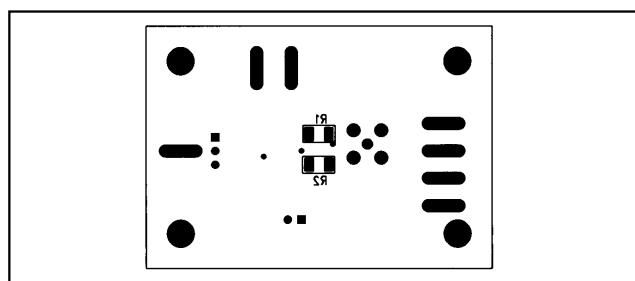


Figure 3. MAX840 EV Kit Component Placement Guide—Solder Side (not shown to scale)

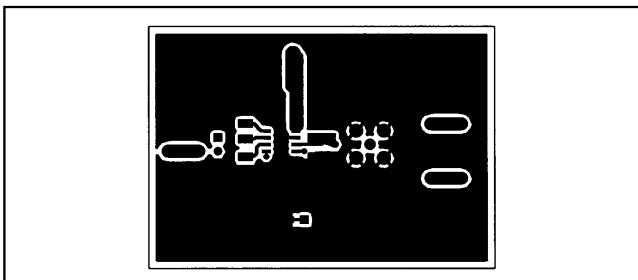


Figure 4. MAX840 EV Kit PC Board Layout—Component Side (not shown to scale)

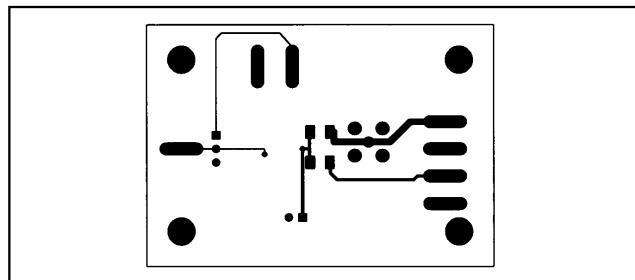


Figure 5. MAX840 EV Kit PC Board Layout—Solder Side (not shown to scale)

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