

MAXIM

MAX1644 Evaluation Kit

General Description

The MAX1644 evaluation kit (EV kit) provides a 1.5V output voltage from a +3V to +5.5V input source. It delivers up to 2A output current with 92% (max) efficiency. The MAX1644 is a step-down switching regulator with an internal synchronous rectifier to reduce the number of external components. It features a resistor-programmable fixed off-time as well as current-mode operation for superior load- and line-transient response.

The MAX1644 EV kit can also be used to evaluate other output voltages by changing the feedback resistors (R1 and R2) or by using the preset +3.3V or +2.5V settings.

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C8, C9	3	10 μ F, 6.3V, X5R ceramic capacitors Taiyo Yuden JMK316BJ106ML or Murata GRM42-6X5R106K6.3
C2	1	100 μ F, 6.3V, low-ESR capacitor Sanyo 6TPC100M (POSCAP), AVX TPSD107M010R0080 (tantalum), Sprague 594D107X0010C2T (tantalum)
C3	1	2.2 μ F, 10V, X5R ceramic capacitor Taiyo Yuden LMK212BJ225MG
C4	1	0.01 μ F, 50V, X7R ceramic capacitor
C5	1	470pF, 50V, X7R ceramic capacitor
C6	1	1 μ F, 10V, X7R ceramic capacitor Taiyo Yuden LMK212B105KG or Murata GRM40X7R105K010
C7	0	Not installed
D1	0	Not installed
JU1	1	2-pin header
L1	1	6.0 μ H, 2.25A inductor Sumida CDRH6D28-6R0NC
R1	1	49.9k Ω \pm 1% resistor
R2	1	18.2k Ω \pm 1% resistor
R3	1	10 Ω \pm 5% resistor
R4	1	1M Ω \pm 5% resistor
R5	1	270k Ω \pm 5% resistor
U1	1	Maxim MAX1644EAE
None	1	Shunt

Features

- ◆ +3V to +5.5V Input Voltage Range
- ◆ Output Voltage Preset to 1.5V
2.5V or 3.3V Selectable
1.1V to V_{IN} Adjustable
- ◆ 2A Output Current
- ◆ 92% Efficiency
- ◆ 300kHz Switching Frequency
- ◆ Synchronous Rectification for Improved Efficiency
- ◆ No External Schottky Diode Required
- ◆ Less than 1 μ A typical IC Shutdown Current
- ◆ Surface-Mount Construction
- ◆ Fully Assembled and Tested

Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX1644EVKIT	0°C to +70°C	16 SSOP

Component Suppliers

SUPPLIER	PHONE	FAX
AVX	803-946-0690	803-626-3123
Murata	814-237-1431	814-238-0490
Sanyo	619-661-6835	619-661-1055
Sprague	603-224-1961	603-224-1430
Sumida	847-956-0666	847-956-0702
Taiyo Yuden	408-573-4150	408-573-4159

Quick Start

The MAX1644 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 +3V to +5.5V supply to the pads marked V_{IN} and GND.
- 2) Connect a voltmeter and load (if any) to V_{OUT} and GND.
- 3) Verify that the shunt is on JU1.
- 4) Turn on the power and verify that the output voltage is +1.5V.
- 5) Refer to *Output Voltage Selection* to modify the board for a different output voltage.

Evaluates: MAX1644



MAX1644 Evaluation Kit

Detailed Description

The MAX1644 EV kit provides a 1.5V output voltage from a +3V to +5.5V input voltage. It delivers up to 2A of output current.

Jumper Selection

The 2-pin header JU1 selects the MAX1644's shutdown mode. Table 1 lists the jumper options.

Table 1. Jumper JU1 Functions

SHUNT LOCATION	$\overline{\text{SHDN}}$ PIN	MAX1644 OUTPUT
Open	Connected to GND through 1M Ω (R4)	Shutdown mode, V _{OUT} = 0
Closed (Default)	Connected to VIN	MAX1644 enabled V _{OUT} = +1.5V

Output Voltage Selection

The MAX1644 EV kit is programmed for a 1.5V output voltage. However, the output voltage may also be adjusted by changing the resistor divider formed by R1 and R2 or by using the preset +2.5V or +3.3V settings. For selecting the resistor values, refer to *Setting the Output Voltage* in the MAX1644 data sheet.

To use the preset +2.5V or +3.3V settings, place a short across JU3 and cut the trace between pins 1 and 4 of JU2. See Table 2 for further instructions.

Thermal Resistance

The MAX1644's junction-to-ambient thermal resistance is 60°C/W, based on the MAX1644 EV kit printed circuit board.

Table 2. Output Voltage Configurations

OUTPUT VOLTAGE	JU3	JU2	R2
1.1	Closed	Short 1-4 (default trace)	Shorted by JU3
1.5	Open	Short 1-4 (default trace)	Default value
2.5	Closed	Cut default trace across 1-4; short 1-2	Shorted by JU3
3.3	Closed	Cut default trace across 1-4; leave open	Shorted by JU3
Adjustable	Open	Short 1-4	Change

MAX1644 Evaluation Kit

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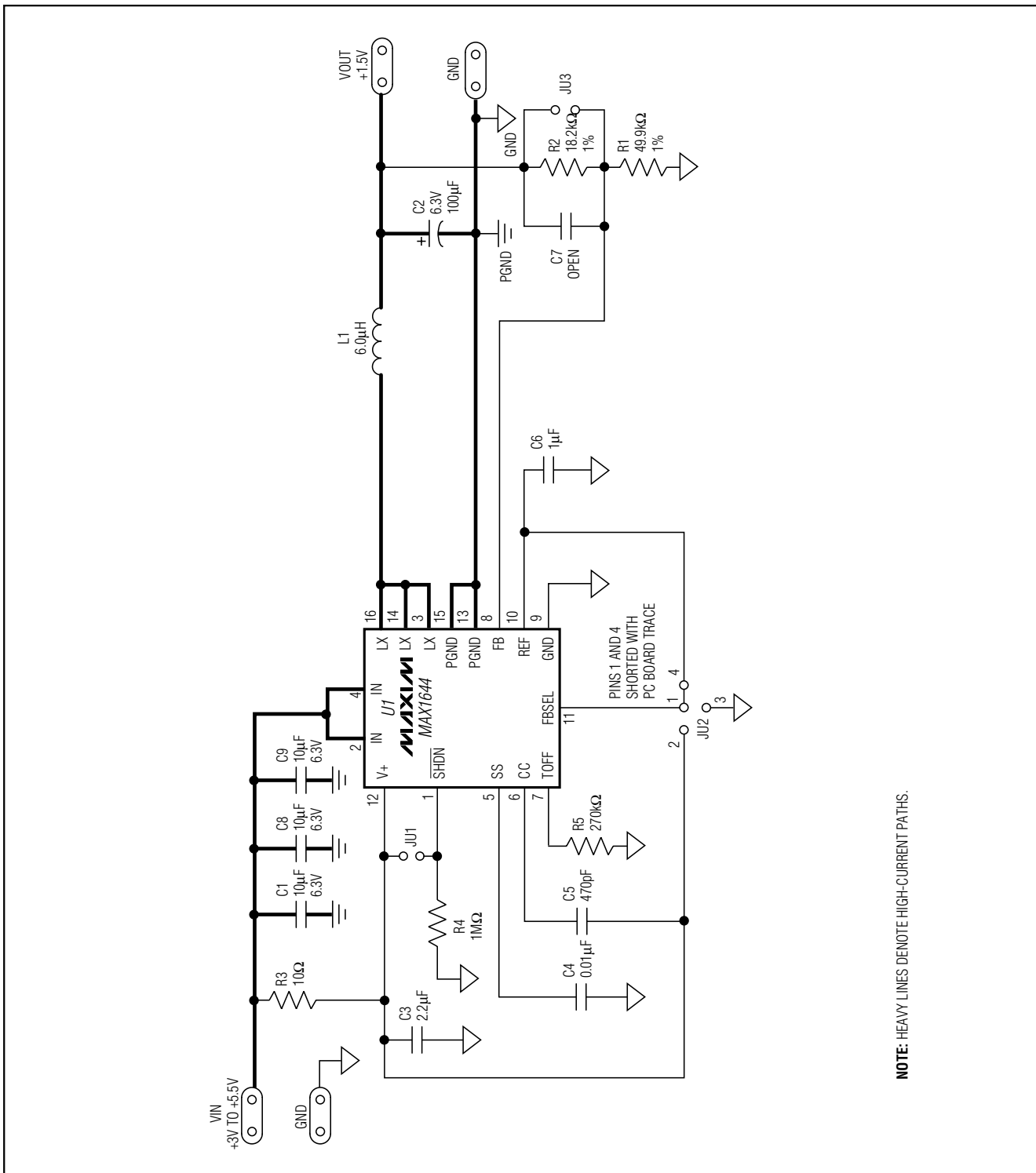


Figure 1. MAX1644 EV Kit Schematic

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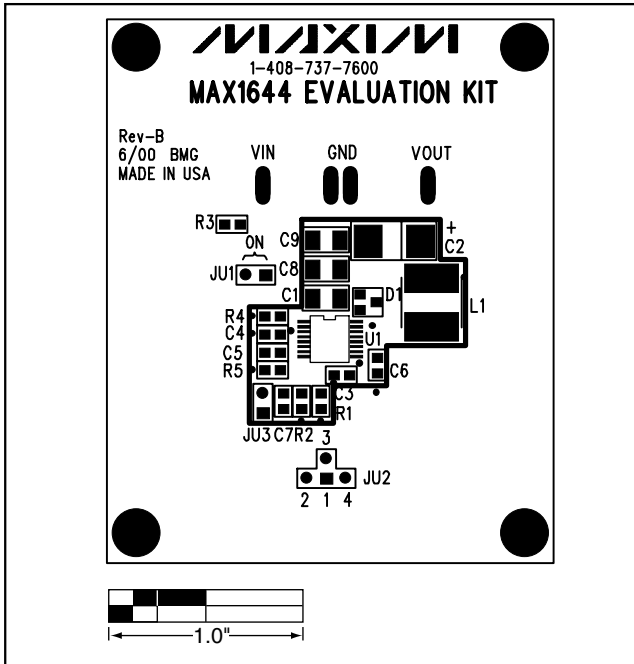


Figure 2. MAX1644 EV Kit Component Placement Guide—Component Side

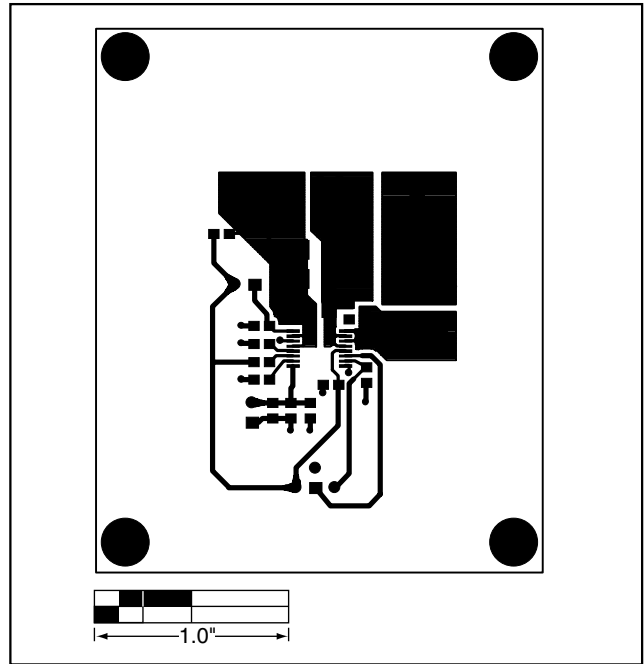


Figure 3. MAX1644 EV Kit PC Board Layout—Component Side

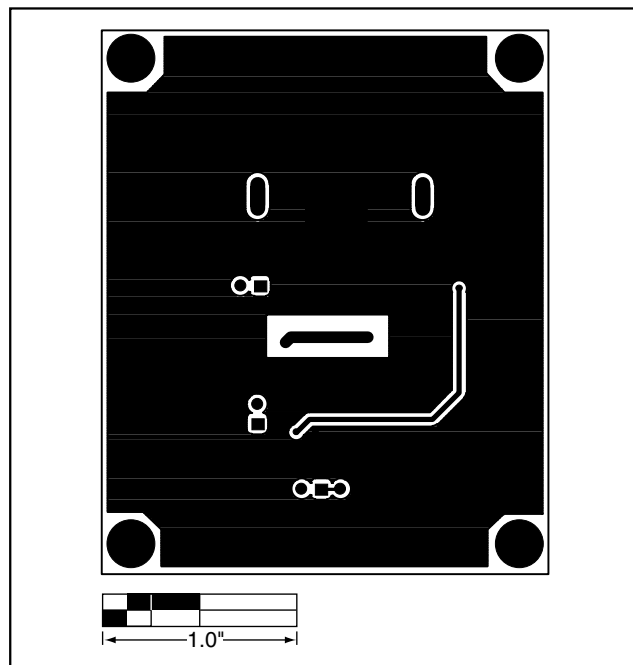


Figure 4. MAX1644 EV Kit PC Board Layout—Solder Side

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