

MAXIM

MAX1744 Evaluation Kit

General Description

The MAX1744 evaluation kit (EV kit) provides a selectable 3.3V or 5V output voltage from input as high as 36V. The MAX1744 operates up to 100% duty cycle, extending the usable input voltage range. The 100% duty cycle and a low 100mV current-sense level permit very low dropout voltages. The circuit is configured to deliver up to 2A of output current with greater than 90% conversion efficiency. The output current can be increased by changing the external components.

This EV kit is a fully assembled and tested circuit board. It can also be used to evaluate the MAX1745, which has an adjustable output voltage, by selecting feedback resistors R2 and R3.

Features

- ◆ High Input Voltage (up to 36V)
- ◆ Selectable 3.3V or 5V Output Voltage (MAX1744)
- ◆ 1.25V to 18V Adjustable Output Voltage (MAX1745)
- ◆ Low Dropout Voltage
- ◆ 100% Maximum Duty Cycle
- ◆ 2A Output Current
- ◆ Up to 330kHz Switching Frequency
- ◆ 4 μ A IC Shutdown Current
- ◆ 10-Pin μ MAX Package
- ◆ Fully Assembled and Tested

Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX1744EVKIT	0°C to +70°C	10 μ MAX

Note: To evaluate the MAX1745, request a MAX1745EUB free sample with the MAX1744EVKIT.

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2	2	120 μ F, 63V electrolytic capacitors Sanyo 63MV120GX
C3	1	220 μ F, 10V tantalum capacitor AVX TPSE227M010R0100 or Sprague 593D227X0010E 2W
C4, C5	2	4.7 μ F, 16V tantalum capacitors Sprague 595D475X0016A 2B
C6	1	0.1 μ F ceramic capacitor (1206)
C7	1	0.47 μ F ceramic capacitor (1206)
D1	1	2A, 60V Schottky diode Nihon EC21QS06 or Central Semiconductor CSMH2-60
L1	1	22 μ H inductor Sumida CDRH104R-220MC (shielded), Sumida CDRH124- 220MC (shielded), Coilcraft DO3316P-223 (unshielded), or Coiltronics UP2B-220 (unshielded)

DESIGNATION	QTY	DESCRIPTION
P1	1	60V P-channel MOSFET Fairchild NDS9407
R1	1	0.033 Ω $\pm$ 1% resistor (2010) Dale WSL-2010-R033F or IRC LR2010-R033F
R2, R3	0	Not installed
U1	1	MAX1744EUB (10-pin μ MAX)
JU1, JU2	2	3-pin headers
None	2	Shunts
None	1	MAX1744/MAX1745 PC board
None	1	MAX1744/MAX1745 data sheet
None	1	MAX1744 EV kit data sheet

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Quick Start

The MAX1744 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) Verify that the shunt on JU1 is across pins 1 and 2.
- 2) Verify that the shunt on JU2 is across pins 1 and 2 for a 5V output.
- 3) Connect a voltmeter and load, if any, to the VOUT pad.
- 4) Connect a 5.5V to 36V supply voltage to the VIN pad. Connect ground to the GND pad.
- 5) Turn on the power supply. Verify that the output voltage is 5V.
- 6) Remove the shunt from JU2 pins 1 and 2, and place it across pins 2 and 3 for a 3.3V output voltage.

Table 1. Jumper JU1 Functions (Shutdown Mode)

SHUNT LOCATION	SHDN PIN	OUTPUT VOLTAGE
1 and 2	Connected to VL	MAX1744 enabled
2 and 3	Connected to GND	Shutdown mode, V _{OUT} = 0

Table 2. Jumper JU2 Functions (Output Voltage Selection)

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

Detailed Description

Evaluating Other Output Voltages

To generate output voltages other than 3.3V or 5V, replace the MAX1744 with the MAX1745 (adjustable output), and select the external voltage-divider resistors, R2 and R3. The MAX1745 allows the output voltage to be set from 1.25V to 18V. The only other modification required is to remove the shunt from JU2. For output voltages greater than 5V, replace output capacitor C3 with a higher voltage rating. Refer to the *Setting the Output Voltage* section in the MAX1744/MAX1745 data sheet for instructions on calculating R2 and R3 values.

Component Suppliers

SUPPLIER	PHONE	FAX
AVX	803-946-0690	803-626-3123
Central Semiconductor	516-435-1110	516-435-1824
Coilcraft	708-639-6400	708-639-1469
Coiltronics	561-241-7876	561-241-9339
Dale-Vishay	402-564-3131	402-563-6418
Fairchild	408-721-2181	408-721-1635
IRC	361-992-7900	361-992-3377
Nihon	847-843-7500	847-843-2798
Sanyo	619-661-6835	619-661-1055
Sprague	603-224-1961	603-224-1430
Sumida	708-956-0666	708-956-0702

Note: Please indicate that you are using the MAX1744/MAX1745 when contacting these component suppliers.

MAX1744 Evaluation Kit

Evaluates: MAX1744/MAX1745

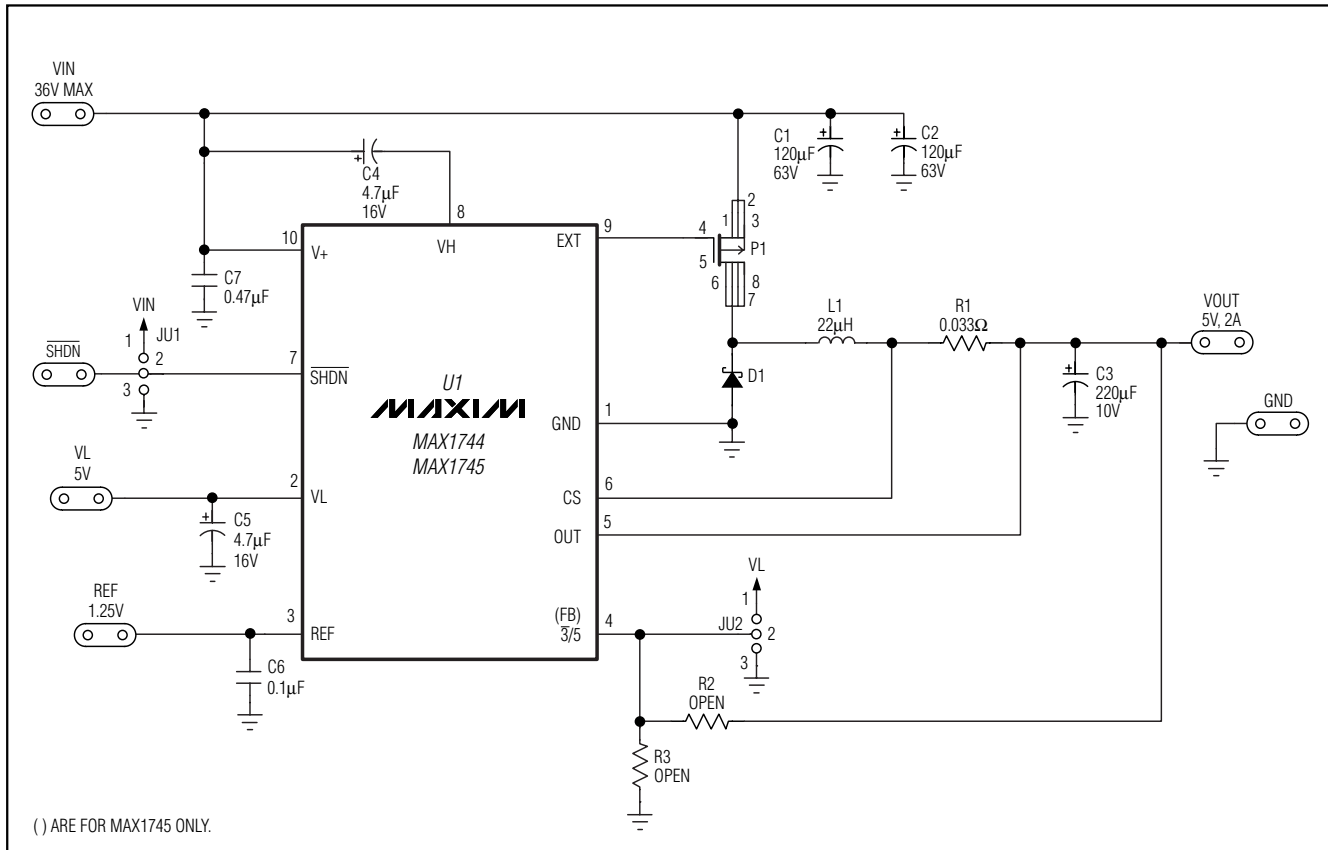


Figure 1. MAX1744 EV Kit Schematic

MAX1744 Evaluation Kit

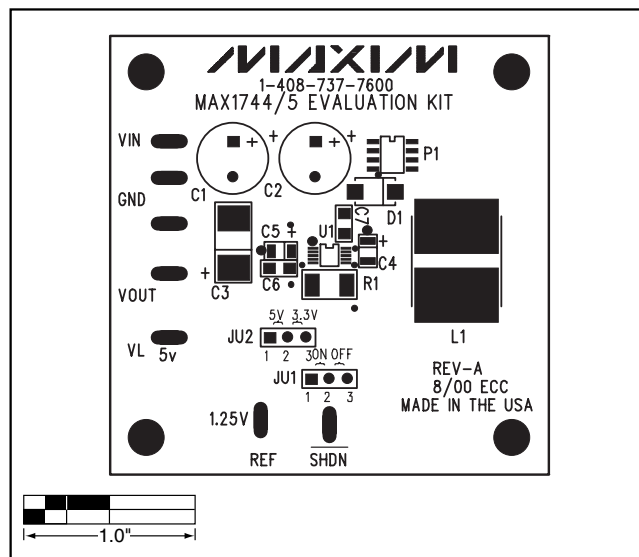


Figure 2. MAX1744 EV Kit Component Placement Guide—Top Silkscreen

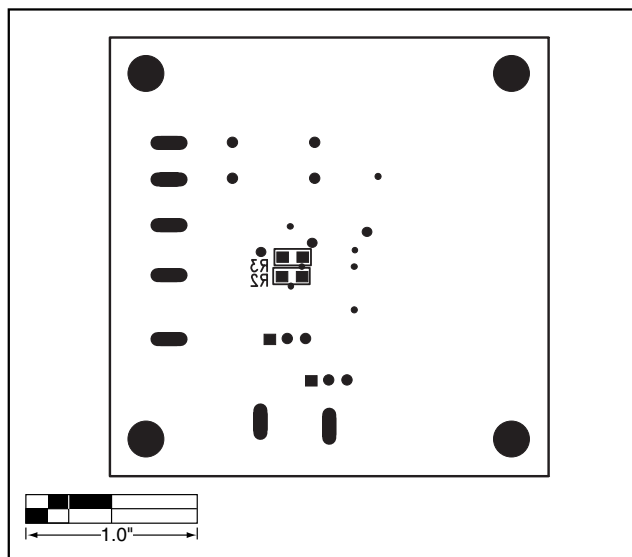


Figure 3. MAX1744 EV Kit Component Placement Guide—Bottom Silkscreen

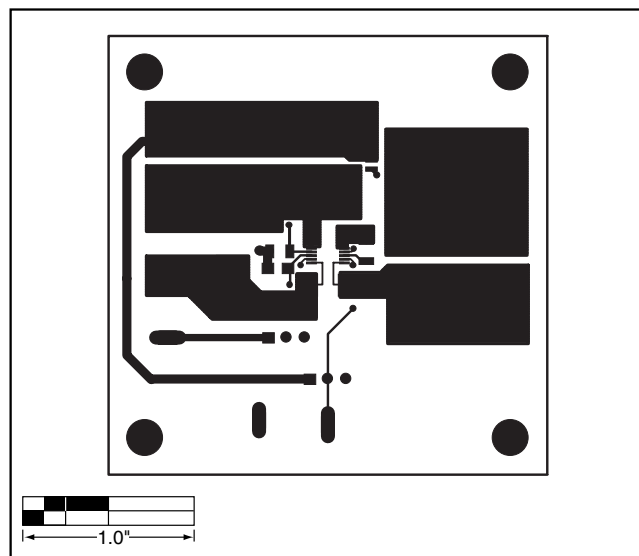


Figure 4. MAX1744 EV Kit PC Board Layout—Component Side

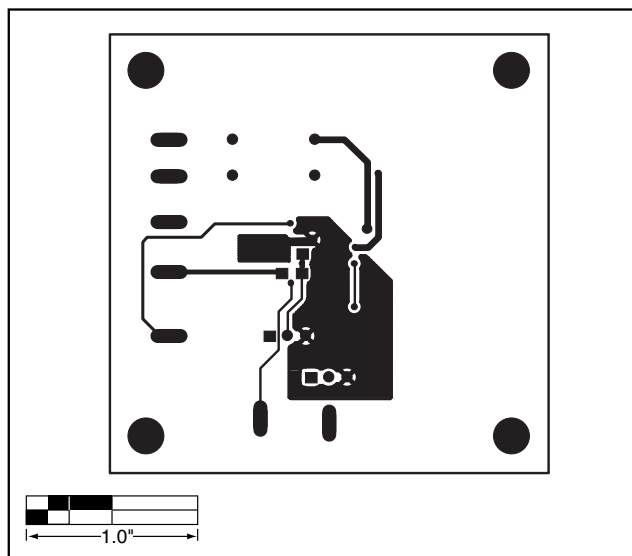


Figure 5. MAX1744 EV Kit PC Board Layout—Solder Side

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