19-5475; Rev 0; 8/10

MAX15032 Evaluation Kit

Evaluates: MAX15032

General Description

The MAX15032 evaluation kit (EV kit) is a fully assembled and tested surface-mount circuit board that contains the MAX15032 pulse-width-modulated (PWM) step-up DC-DC converter. The EV kit is configured to operate with a 500kHz switching frequency. It operates from a 2.9V to 5.5V DC supply voltage, is configured for a 30V output, and has an output power capability up to 600mW with a 2.9V input.

Features

- **2.9V to 5.5V Input Range**
- **30V Output Voltage**
- **500kHz Switching Frequency**
- **0.5µA IC Shutdown Current**
- **Fully Assembled and Tested**

Ordering Information

PART	TYPE
MAX15032EVKIT+	EV Kit

+Denotes lead(Pb)-free and RoHS compliant.

Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	1µF ±10%, 16V X7R ceramic capacitor (0603) Murata GRM188R71C105K
C2	1	10µF ±10%, 16V X7R ceramic capacitor (1210) Murata GRM32DR71C106K
C3, C4	2	2.2µF ±10% , 100V X7R ceramic capacitors (1210) Murata GRM32ER72A225K
C5	1	0.01µF ±10%, 50V X7R ceramic capacitor (0603) Murata GRM188R71H103K
D1	1	1A, 40V Schottky barrier diode Diodes Inc. B140-13-F (SMA) Fairchild SS14 (SMA) STMicro STPS140A (SMA)
JU1	1	3-pin header (0.1in center)
L1	1	4.7µH inductor TDK SLF7045T-4R7M2R0-PF Sumida CDRH5D28RHPNP-4R7NC (6mm x 6mm)
R1	1	143kΩ ±1% resistor (0603)
R2	1	6.19kΩ ±1% resistor (0603)
R3	1	10Ω ±1% resistor (0603)
TP1, TP2	2	Miniature test points, red
U1	1	PWM step-up DC-DC converter (8 TDFN-EP*) Maxim MAX15032ATA+
—	1	Shunt
—	1	PCB: MAX15032 EVALUATION KIT+

**EP = Exposed pad.*

Component Suppliers

SUPPLIER	PHONE	WEBSITE
Diodes Incorporated	805-446-4800	www.diodes.com
Fairchild Semiconductor	888-522-5372	www.fairchildsemi.com
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
STMicroelectronics	408-452-8585	www.us.st.com
Sumida Corp.	847-545-6700	www.sumida.com
TDK Corp.	847-803-6100	www.component.tdk.com

Note: *Indicate that you are using the MAX15032 when contacting these component suppliers.*

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim's website at www.maxim-ic.com.

MAX15032 Evaluation Kit

Quick Start

Recommended Equipment

- MAX15032 EV kit
- 2.9V to 5.5V, 100mA DC power supply (VIN)
- Voltmeter

Procedure

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

1) Verify that a shunt is placed across pins 1-2 of jumper JU1 to enable the device.
2) Connect the positive terminal of the DC power supply to the VIN pad. Connect the negative terminal of the DC power supply to the adjacent PGND pad.
3) Connect the voltmeter across the VOUT and GND pads.
4) Turn on the 2.9V to 5.5V DC power supply and verify that the output is 30V.

Detailed Description

The MAX15032 EV kit contains a high-efficiency pulse-width-modulated (PWM) step-up DC-DC converter. The MAX15032 features an adjustable output voltage and an internal MOSFET switch to achieve a fast transient response. The EV kit operates from a 2.9V to 5.5V DC power supply and provides a regulated 30V output, and has a 600mW output capability from a 2.9V input. The EV kit is configured for a 2.9V to 5.5V input, 30V output, and operates with a 500kHz switching frequency. Operation at a different input voltage or output voltage may require changes to the EV kit configuration. Refer to the MAX15032 IC data sheet for detailed information on device operation.

Input Voltage Range

The EV kit can be operated with a 2.9V to 5.5V input voltage range or a 5.5V to 11V input voltage range. By default, the EV kit is configured to operate with a 2.9V to 5.5V input voltage range. To operate the EV kit in the 5.5V to 11V input range, the following configuration changes should be made:

- Remove capacitor C5 (0.01µF).
- Connect the CP pin (U1, pin 7) to VIN.
- Leave the CN pin (U1, pin 6) unconnected.

Output Voltages

The EV kit is configured to provide a 30V output voltage. However, the output voltage can be adjusted from (VIN + 1V) to 36V by selecting appropriate R1 and R2 values. Select R2 in the 6kΩ to 10kΩ range. R1 is then given by:

$$R1 = R2\left[\left(\frac{V_{OUT}}{V_{FB}}\right) - 1\right]$$

where V_{FB} = 1.245V. For significantly different operation points, the EV kit may require a different inductor. Refer to the MAX15032 IC data sheet for proper component selection.

Shutdown Mode ($\overline{SHDN}$)

The EV kit features a shutdown mode that reduces the device's quiescent current to 0.5µA. Jumper JU1 selects the shutdown mode. See Table 1 for jumper JU1 functions.

Table 1. Jumper JU1 Functions

SHUNT POSITION	$\overline{SHDN}$ PIN	MAX15032 OUTPUT
1-2	Connected to VIN	Device enabled (V_{OUT} = 30V)
2-3	Connected to GND	Shutdown mode ($V_{OUT} = V_{IN} - V_{D1}$)

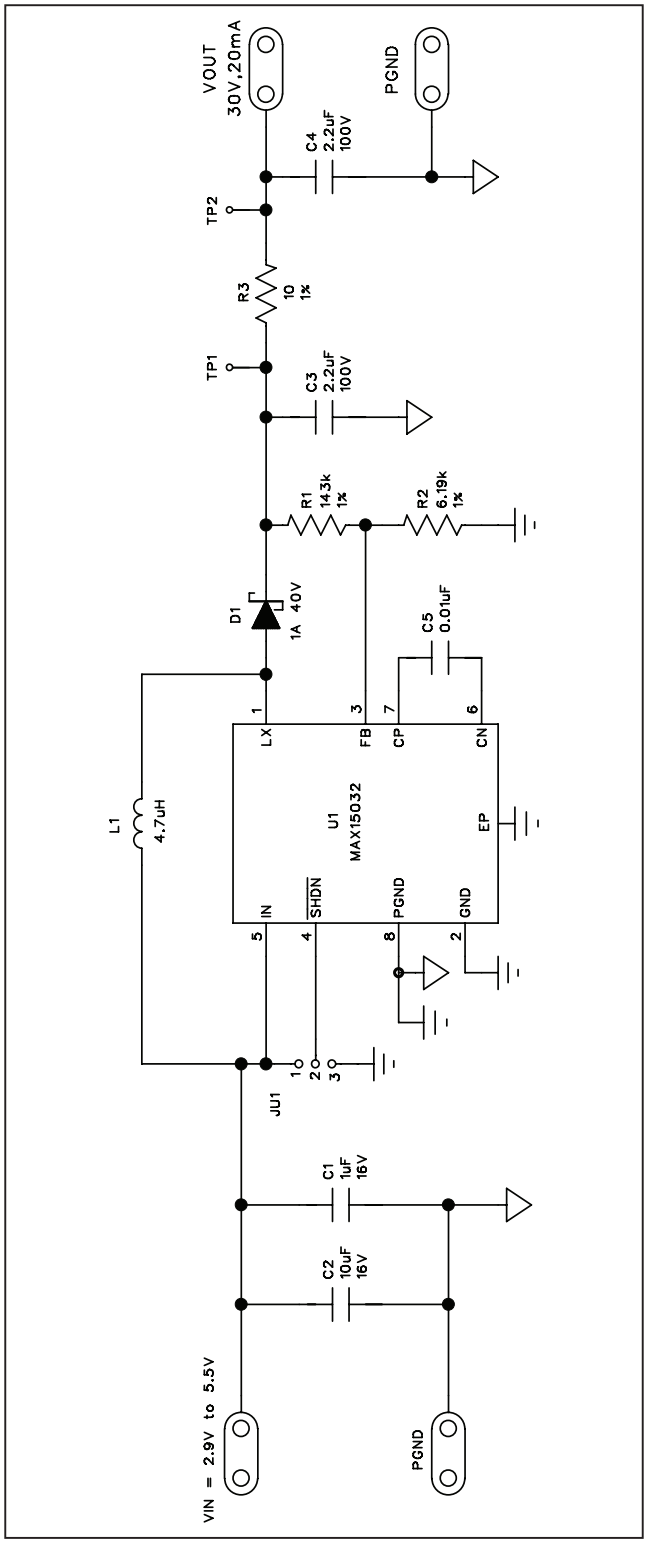


Figure 1. MAX15032 EV Kit Schematic

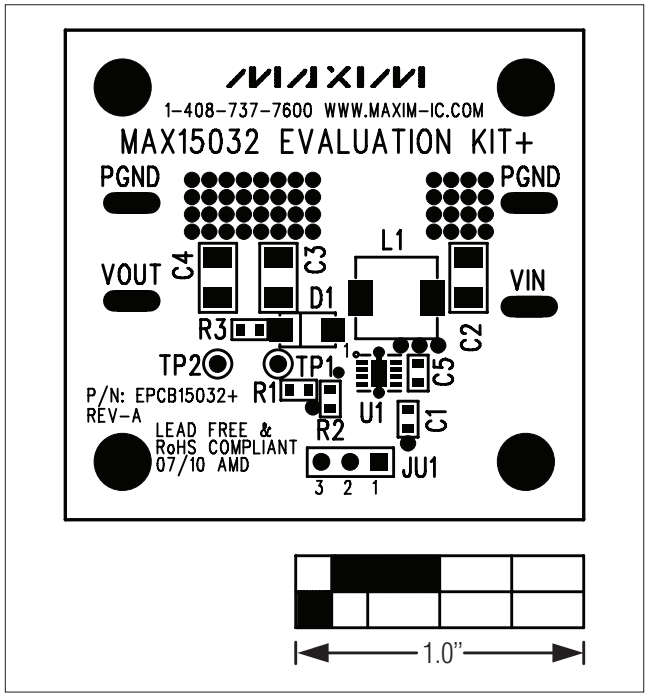


Figure 2. MAX15032 EV Kit Component Placement Guide—Component Side

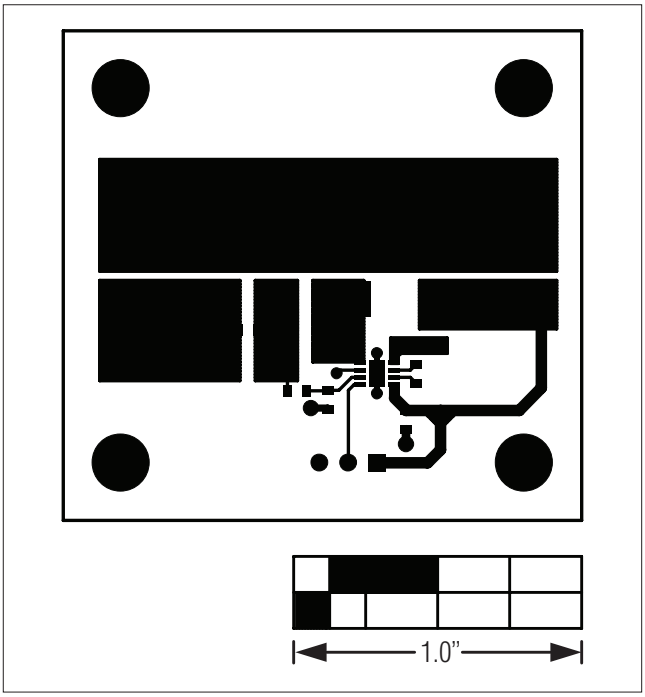


Figure 3. MAX15032 EV Kit PCB Layout—Component Side

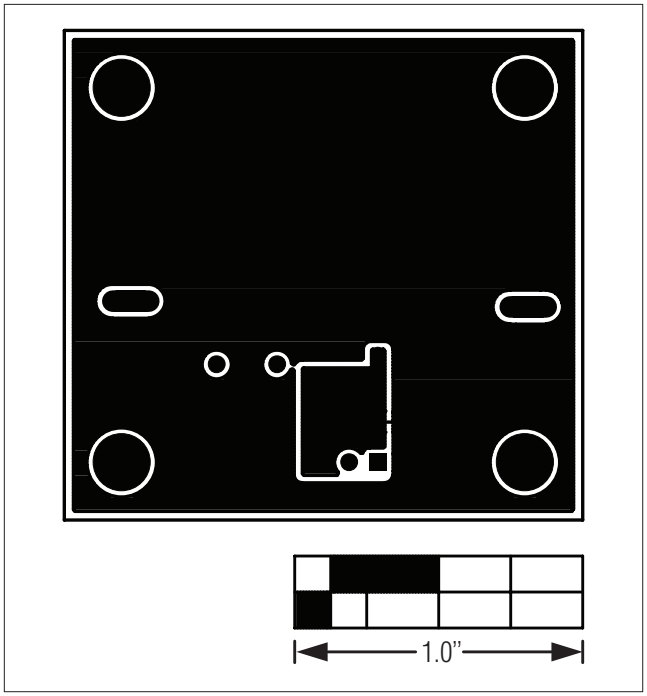


Figure 4. MAX15032 EV Kit PCB Layout—Solder Side

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	8/10	Initial release	—

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