MAX14630 Evaluation Kit

Evaluates: MAX14630/MAX14632

General Description

The MAX14630 evaluation kit (EV kit) is a fully assembled and tested circuit board that demonstrates the functionality of the MAX14630/MAX14632 USB charger adapter identification devices in a 5-pin TSOT package. The EV kit features a jumper for configuration and evaluation of both Autodetection 2A and Samsung (SS) 2A charging modes on the MAX14630, or Autodetection 2A and Autodetection 1A modes on the MAX14632. Input power to the EV kit is provided by a standard 5V USB bus or an external 5V power supply.

Features

- Proven PCB Layout
- Fully Assembled and Tested

Ordering Information appears at end of data sheet.

Component List

DESIGNATION	QTY	DESCRIPTION
C1–C3	3	47µF ±10%, 10V X5R ceramic capacitors (1210) Murata GRM32ER61A476K
C4	1	0.1µF ±10%, 10V X7R ceramic capacitor (0603) AVX 0603ZC104KAT
C5, C6	2	1µF, 10V X5R ceramic capacitors (0603) TDK C1608X5R1A105K
H5–H8	4	6-32 steel screws, 5/16in long
	4	6-32 FF aluminum spacers, 1/2in
J1	1	USB type-A, right-angle receptacle Molex 67643-3911
J2	1	USB type-B, right-angle receptacle Molex 67068-9000

DESIGNATION	QTY	DESCRIPTION
J3	1	3-pin header, 0.1in centers
JP1, JP2	2	2-pin headers, 0.1in centers
LED1	1	Red LED (0805) Lite-On LTST-C170CKT
R1	1	1kΩ ±1% resistor (0805)
R2	1	100kΩ ±1% resistor (0805)
R3	1	Not installed, 0Ω resistor (0805)
TP1, TP3, TP5	0	Red test points
TP2, TP4, TP6	3	Black test points
TP7	1	White test point
U1*	1	USB charger adapter emulator for dedicated chargers (5 TSOT) Maxim MAX14630EZK+ (Top Mark: ADSM)
—	3	Shunts
—	1	PCB: MAX14630 EVALUATION KIT

To evaluate the MAX14632, samples must be ordered separately and installed in place of U1 by the user.

Component Suppliers

SUPPLIER	PHONE	WEBSITE
AVX Corporation	843-946-0238	www.avx.com
Lite-On, Inc.	408-946-4873	www.us.liteon.com
Molex	800-786-6539	www.molex.com
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
TDK Corp.	847-803-6100	www.component.tdk.com

Note: Indicate that you are using the MAX14630 when contacting these component suppliers.

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Quick Start

Required Equipment

- MAX14630 EV kit
- USB port or 5V, 2.1A power supply
- Apple, Samsung, or USB battery charger (BC)-compliant device

Procedure

The EV kit is fully assembled and tested. Follow the steps below to verify board operation:

1) Verify that a shunt is installed across pins 2-3 on jumper J3 (supply is provided by USB type-B receptacle, J2) and that a shunt is installed across pins 1-2 of JP2 (places the device in Autodetection 2A mode).

2) Verify that a shunt is installed across pins 1-2 on jumper JP1 (connects capacitors to output to prevent sagging of the supply when a device is plugged in).

3) Connect the USB power supply to the EV kit's J2 receptacle.

4) Verify that the red LED (LED1) is lit indicating that the part is powered.

5) Plug in an Apple or USB BC-compliant device and verify that the device is charging.

6) If evaluation of a Samsung device is desired, verify that a shunt is installed across pins 1-2 on jumper JP2 (places the device in SS 2A mode).

If evaluation of the MAX14632 is desired, solder that part in place of U1, then follow the steps below to verify board operation:

1) Verify that a shunt is installed across pins 2-3 on jumper J3 (supply is provided by USB type-B receptacle, J2) and that no shunt is installed across pins 1-2 on JP2 (places the device in Autodetection 2A mode).

2) Verify that a shunt is installed across pins 1-2 on jumper JP1 (connects capacitors to output to prevent sagging of the supply when a device is plugged in).

3) Connect the USB power supply to EV kit's J2 receptacle.

4) Verify that the red LED (LED1) is lit indicating that the part is powered.

5) Plug in an Apple or USB BC-compliant device and verify that the device is charging.

6) If evaluation of Autodetection 1A mode is desired, verify that a shunt is installed across pins 1-2 on jumper JP2 (places the device in Autodetection 1A mode).

Detailed Description of Hardware

The MAX14630 EV kit is a fully assembled and tested circuit board that demonstrates the functionality of the MAX14630/MAX14632 USB charger adapter identification devices in a 5-pin TSOT package. The EV kit features a jumper for configuration and evaluation of both Autodetection 2A and Samsung (SS) 2A charging modes on the MAX14630, or Autodetection 2A and Autodetection 1A modes on the MAX14632. Input power to the EV kit is provided by a standard 5V USB bus or an external 5V power supply. Included with the EV kit is a USB type-A male to USB type-B male cable, providing a convenient way to power the EV kit. Input power can also be supplied by a 4.5V to 5.5V external DC source.

Capacitors C1–C3 provide a bulk capacitance to prevent voltage sagging during a plug-in event. The EV kit's PCB is designed with 1oz copper.

Power Supply

The EV kit is powered by a user-supplied USB port at J2 or by a 4.5V to 5.5V, 2.1A DC power supply connected between V_{EXT} and GND. Jumper J3's position selects the power source. With a shunt shorting pins 1-2 on J3, the EV kit is powered at V_{EXT}, while a shunt shorting pins 2-3 means that the EV kit is powered at the USB type-B receptacle. See Table 1 for jumper settings.

Reservoir Capacitors

The EV kit features a jumper (JP1) for connecting bulk capacitance to the V_{BUS} line to prevent voltage sagging during a plug-in event. Simply remove the shunt from JP1 to disconnect the bulk capacitance from the V_{BUS} line. See Table 1 for jumper settings.

Charger Adapter Identification Modes

The EV kit features a jumper to change the MAX14630 between Autodetection 2A mode and SS 2A mode, or the MAX14632 between Autodetection 1A mode and Autodetection 2A mode. Install a shunt across pins 1-2 on jumper JP2 to place the MAX14630 in Autodetection 2A mode or to place the MAX14632 in Autodetection 1A mode. Leave pins 1-2 of JP2 open circuit to put the MAX14630 in SS 2A mode or the MAX14632 in Autodetection 2A mode. See Table 1 for jumper settings.

Table 1. Jumper Settings (J3, JP1, JP2)

JUMPER		SHUNT POSITION	DESCRIPTION
J3		1-2	Power is supplied at V_{EXT}.
		2-3*	Power is supplied through the USB type-B receptacle (J2).
JP1		Open*	Reservoir capacitors are unconnected from V_{BUS}.
		1-2	Reservoir capacitors are connected to V_{BUS}.
JP2	MAX14630	Open	Places the MAX14630 in SS 2A mode.
		1-2*	Places the MAX14630 in Autodetection 2A mode.
	MAX14632	Open	Places the MAX14632 in Autodetection 2A mode.
		1-2	Places the MAX14632 in Autodetection 1A mode.

*Default position.
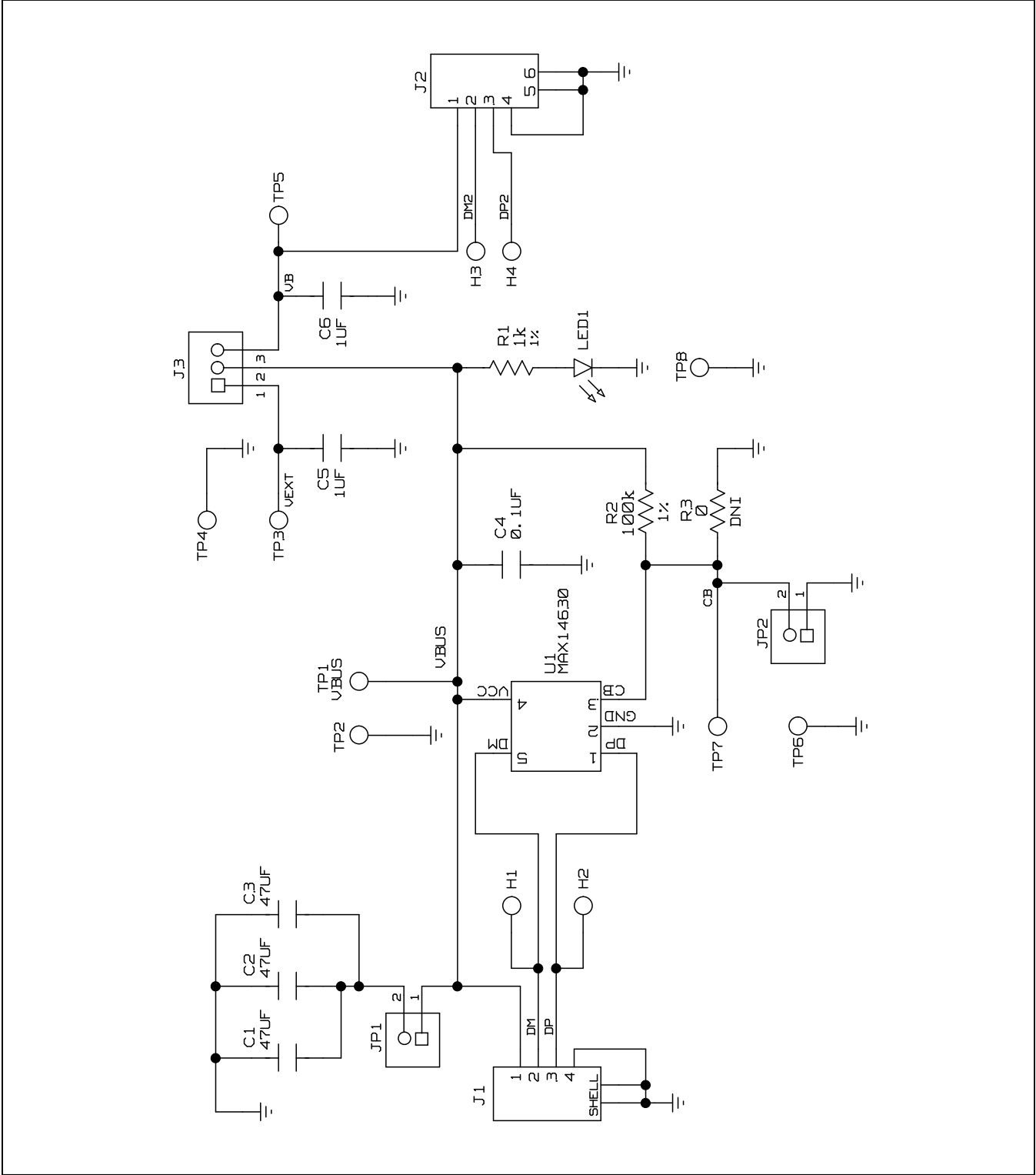
Figure 1. MAX14630 EV Kit Schematic
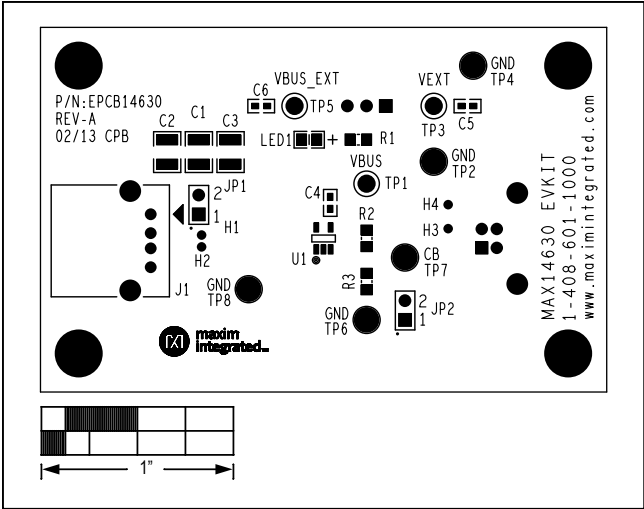
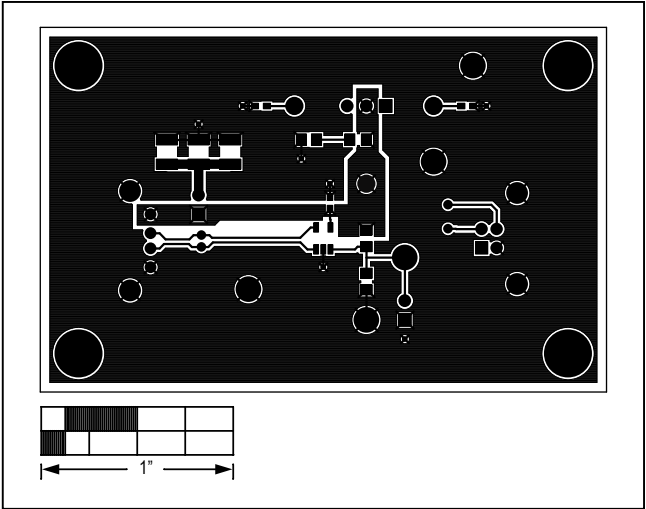Figure 2. MAX14630 EV Kit Component Placement Guide—Component Side

Figure 3. MAX14630 EV Kit Component Placement Guide—Solder Side
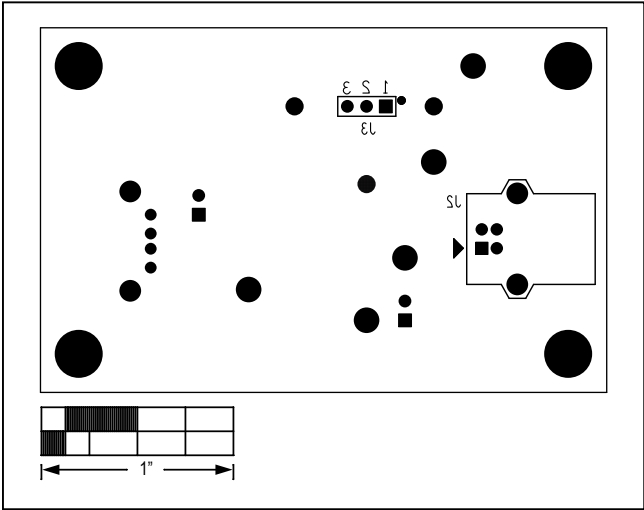

Figure 4. MAX14630 EV Kit PCB Layout—Component Side
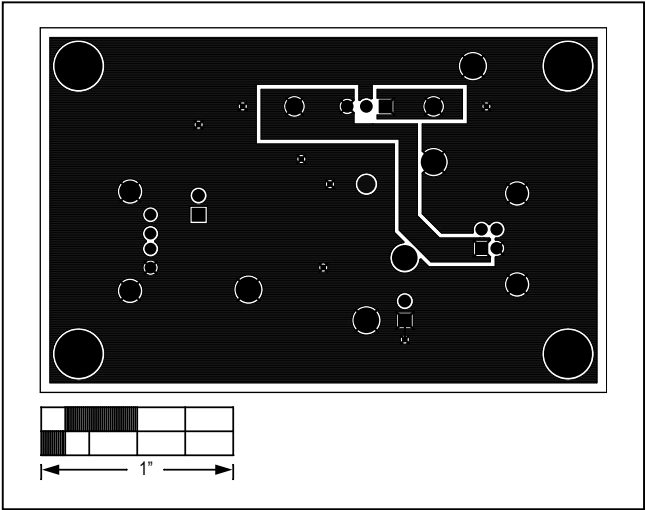

Figure 5. MAX14630 EV Kit PCB Layout—Solder Side

Ordering Information

PART	TYPE
MAX14630EVKIT#	EV Kit

#Denotes RoHS compliant.

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	3/13	Initial release	—

Mouser Electronics

Authorized Distributor

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