

MAX14636/MAX14637 Evaluation Kit

Evaluates: MAX14636/MAX14637

General Description

The MAX14636/MAX14637 evaluation kit (EV kit) is a fully assembled and tested circuit board that demonstrates the MAX14636/MAX14637 charger detectors. The EV kit features a USB-powered option and easy LED reading for logic outputs.

Features

- Evaluates Charger Detection Function
- No External Power Supply Required
- Proven PCB Layout
 - Independent Layouts for MAX14636 and MAX14637
 - Separate Layout with No MAX14636/MAX14637 for Verifying Insertion Loss
- Fully Assembled and Tested

Ordering Information appears at end of data sheet.

Quick Start

Required Equipment

- MAX14636/MAX14637 EV kit
- Computer
- USB-A male to USB-B male cable
- USB-A male to micro-B USB male cable
- USB flash drive (optional)

Procedure

The EV kit is fully assembled and tested. Follow these steps to verify board operation.

- 1) Verify that all jumpers are in their default positions.
- 2) Take USB-A male to USB-B male cable and connect the cable to J3 from a computer.
- 3) Install a shunt on JP5. Verify LED4 is on.
- 4) Install a shunt on JP4. Verify LED5 is on.
- 5) Take USB-A male to micro-B USB male cable and connect the cable to J2 from a computer. Verify LED1 and LED3 are on.
- 6) Optional: insert the USB flash drive in J1. Check that the drive is accessible from computer. The drive should enumerate and register in Windows.
- 7) Remove the USB flash drive and cable on J2. Remove the shunts on JP4 and JP5.
- 8) Install a shunt on JP15. Verify LED14 is on.
- 9) Install a shunt on JP14. Verify LED15 is on.
- 10) Connect the micro-B USB cable to J5 from a computer. Verify LED11 and LED13 are on.
- 11) Optional: insert the USB flash drive in J4. Check that the drive is accessible from computer. The drive should enumerate and register in Windows.
- 12) Remove USB flash drive and cable on J5. Remove the shunts on JP14 and JP15.

Detailed Description of Hardware

The MAX14636/MAX14637 EV kit is a fully assembled and tested circuit board demonstrating the MAX14636 and MAX14637 charger detector ICs in a 10-pin surface-mount Ultra TQFN package.

The EV kit circuit can be configured to evaluate the MAX14636 or the MAX14637 without an external power supply. There are LED indicators showing different logic outputs with different chargers attached. The EV kit also features a shorted USB path for board- and trace-only evaluation.

USB Transceiver Power

The EV kit features jumpers to select the power source for the USB transceiver side. Install shunts in below position to change the power source.

Logic Power

Use JP2, JP5, JP12, and JP15 to select power source for logic pins. They can be powered from the USB or external power supply.

VBUS

Use JP3 and JP13 to connect the VBUS pin to the VBUS of the micro-USB connector.

GOOD_BAT

Use JP4 and JP14 to connect GOOD_BAT to 3.3V or ground. LED5 or LED15 is on when GOOD_BAT is set high.

Table 1. LED Indicator

LED	NAME	DESCRIPTION
MAX14636		
LED1	SW_OPEN	LED1 is on when MAX14636 SW_OPEN = low (switches are closed).
LED2	CHG_DET	LED2 is on when MAX14636 CHG_DET = high.
LED3	CHG_AL_N	LED3 is on when MAX14636 CHG_AL_N = low (VBUS is valid and charging is allowed).
LED4	VHC_GOOD	LED4 is on when VHC1 is powered.
LED5	GOOD_BAT	LED5 is on when MAX14636 GOOD_BAT is set to high.
MAX14637		
LED11	SW_OPEN	LED11 is on when MAX14637 SW_OPEN = low (switches are closed).
LED12	CHG_DET	LED12 is on when MAX14637 CHG_DET = high.
LED13	CHG_AL_N	LED13 is on when MAX14637 CHG_AL_N = low (VBUS is valid and charging is allowed).
LED14	VHC_GOOD	LED14 is on when VHC2 is powered.
LED15	GOOD_BAT	LED15 is on when MAX14637 GOOD_BAT is set to high.

Table 2. USB Transceiver Jumper Selection

JUMPER	SHUNT POSITION	DESCRIPTION
MAX14636		
JP1	1-2*	J1 VBUS is connected to J2 VBUS
	2-3	J1 VBUS is connected to J3 VBUS
MAX14637		
JP11	1-2*	J4 VBUS is connected to J5 VBUS
	2-3	J4 VBUS is connected to J3 VBUS

*Default position.

Table 3. Logic Power Jumper Selection

JUMPER	SHUNT POSITION	DESCRIPTION
MAX14636		
JP2	Installed	VHC1 is connected to VEXT (TP3)
	Not installed*	VHC1 is not connected to VEXT (TP3)
JP5	Installed	VHC1 is connected to J3 VBUS
	Not installed*	VHC1 is not connected to J3 VBUS
MAX14637		
JP12	Installed	VHC2 is connected to VEXT (TP3)
	Not installed*	VHC2 is not connected to VEXT (TP3)
JP15	Installed	VHC2 is connected to J3 VBUS
	Not installed*	VHC2 is not connected to J3 VBUS

*Default position.

Table 4. VBUS Jumper Selection

JUMPER	SHUNT POSITION	DESCRIPTION
MAX14636		
JP3	Installed*	VBUS pin is connected to J2 VBUS
	Not installed	VBUS pin is not connected to J2 VBUS
MAX14637		
JP13	Installed*	VBUS pin is connected to J5 VBUS
	Not installed	VBUS pin is not connected to J5 VBUS

*Default position.

Table 5. GOOD_BAT Jumper Selection

JUMPER	SHUNT POSITION	DESCRIPTION
MAX14636		
JP4	Installed	GOOD_BAT is high
	Not installed*	GOOD_BAT is low
MAX14637		
JP14	Installed	GOOD_BAT is high
	Not installed*	GOOD_BAT is low

*Default position.

Component Suppliers

SUPPLIER	PHONE	WEBSITE
Amphenol	877-267-4366	www.amphenol.com
Chicago Miniature Lighting, LLC	855-877-2465	www.chml.com
Fairchild Semiconductor	888-522-5372	www.fairchildsemi.com
Hirose Electric U.S.A., Inc.	805-522-7958	www.hirose.com/us
Lite-On, Inc.	408-946-4873	www.us.liteon.com
Molex	800-786-6539	www.molex.com
Murata Americas	800-241-6574	www.murataamericas.com
OSRAM Opto Semiconductors	888-446-7726	www.osram-os.com
Taiyo Yuden	800-348-2496	www.t-yuden.com
TDK Corp.	847-803-6100	www.component.tdk.com

Note: Indicate that you are using the MAX14636/MAX14637 when contacting these component suppliers.

Ordering Information

PART	TYPE
MAX14636/7EVKIT#	EV Kit

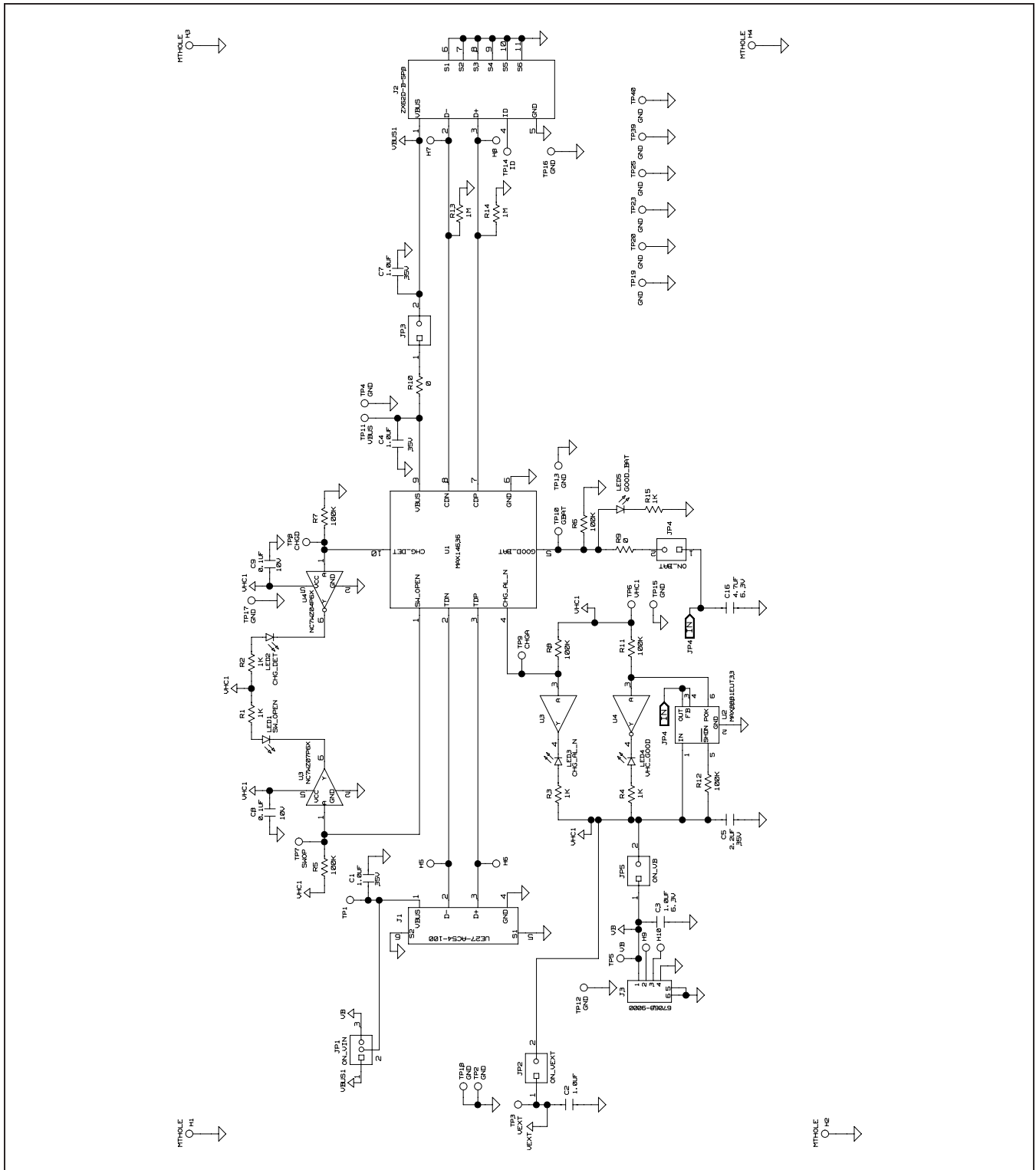
#Denotes RoHS compliance.

MAX14636/MAX14637 EV Kit Bill of Materials

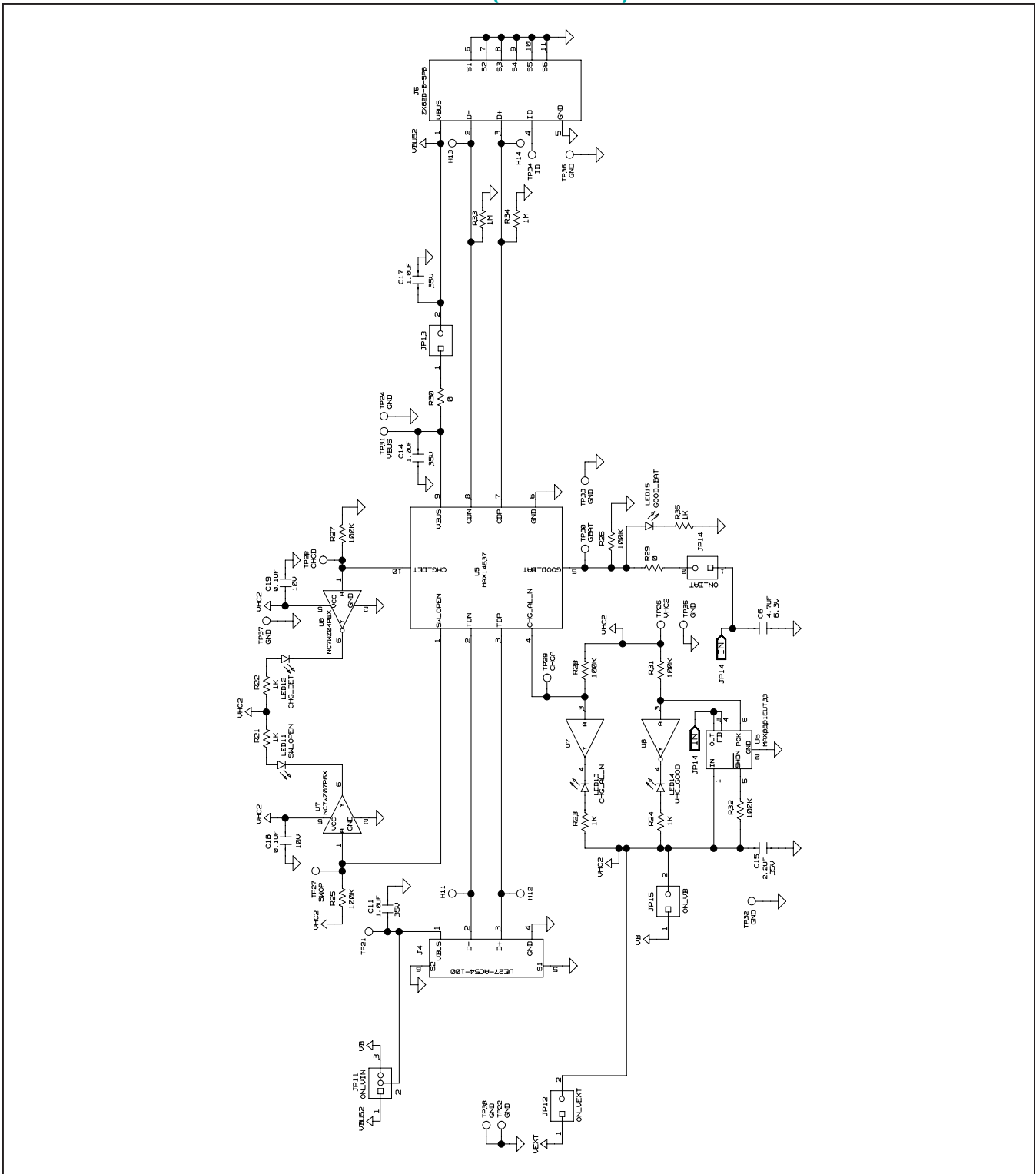
DESIGNATION	QTY	DESCRIPTION
C1, C2, C4, C7, C11, C14, C17	7	1µF ±10%, 35V X5R ceramic capacitors (0603) Taiyo Yuden GMK107BJ105KA-T
C3	1	1µF ±10%, 6.3V X7R ceramic capacitor (0603) Murata GRM188R70J105KA01D
C5, C15	2	2.2µF ±10%, 35V X5R ceramic capacitors (0603) TDK C1608X5R1V225K080AC
C6, C16	2	4.7µF ±20%, 6.3V X5R ceramic capacitors (0603) TDK C1608X5R0J475M080AB
C8, C9, C18, C19	4	0.1µF ±10%, 10V X5R ceramic capacitors (0201) Murata GRM033R61A104K
J1, J4, J6	3	USB A connectors Amphenol UE27AC54100
J2, J5, J7	3	Micro B USB connectors Hirose ZX62D-B-5P8
J3	1	USB B connector Molex 0670689000
JP1, JP11	2	3-pin single-row headers
JP2–JP5, JP12–JP15	8	2-pin single-row headers
LED1, LED4, LED11, LED14	4	Green LEDs OSRAM LG N971-KN-1
LED2, LED5, LED12, LED15	4	Yellow LEDs Chicago CMD15-21VYC/TR8
LED3, LED13	2	Red LEDs Lite-on LTST-C150CKT
R1–R4, R15, R21–R24, R35	10	1kΩ ±1% resistors (0805)
R5–R8, R11, R12, R25–R28, R31, R32	12	100kΩ ±1% resistors (0805)

DESIGNATION	QTY	DESCRIPTION
R9, R10, R29, R30	4	0Ω resistors (0805)
R13, R14, R33, R34	4	1MΩ ±5% resistors (0805)
TP1, TP3, TP5, TP6, TP11, TP21, TP26, TP31	8	Red test points
TP2, TP4, TP12, TP13, TP15–TP20, TP22–TP25, TP32, TP33, TP35–TP40	22	Black test points
TP7–TP10, TP14, TP27–TP30, TP34	10	White test points
U1	1	USB charger detector (10 Ultra TQFN) Maxim MAX14636CVB+ (Top Mark: ABE)
U2, U6	2	3.3V output LDOs (6 SOT) Maxim MAX8881EUT33+ (Top Mark: AAHU)
U3, U7	2	Dual buffers (SC70 6L) Fairchild NC7WZ07P6X
U4, U8	2	Dual inverters (SC70 6L) Fairchild NC7WZ04P6X
U5	1	USB charger detector (10 Ultra TQFN) Maxim MAX14637CVB+ (Top Mark: ABG)
—	10	Shunts
—	1	PCB: MAX14636/7 EVKIT

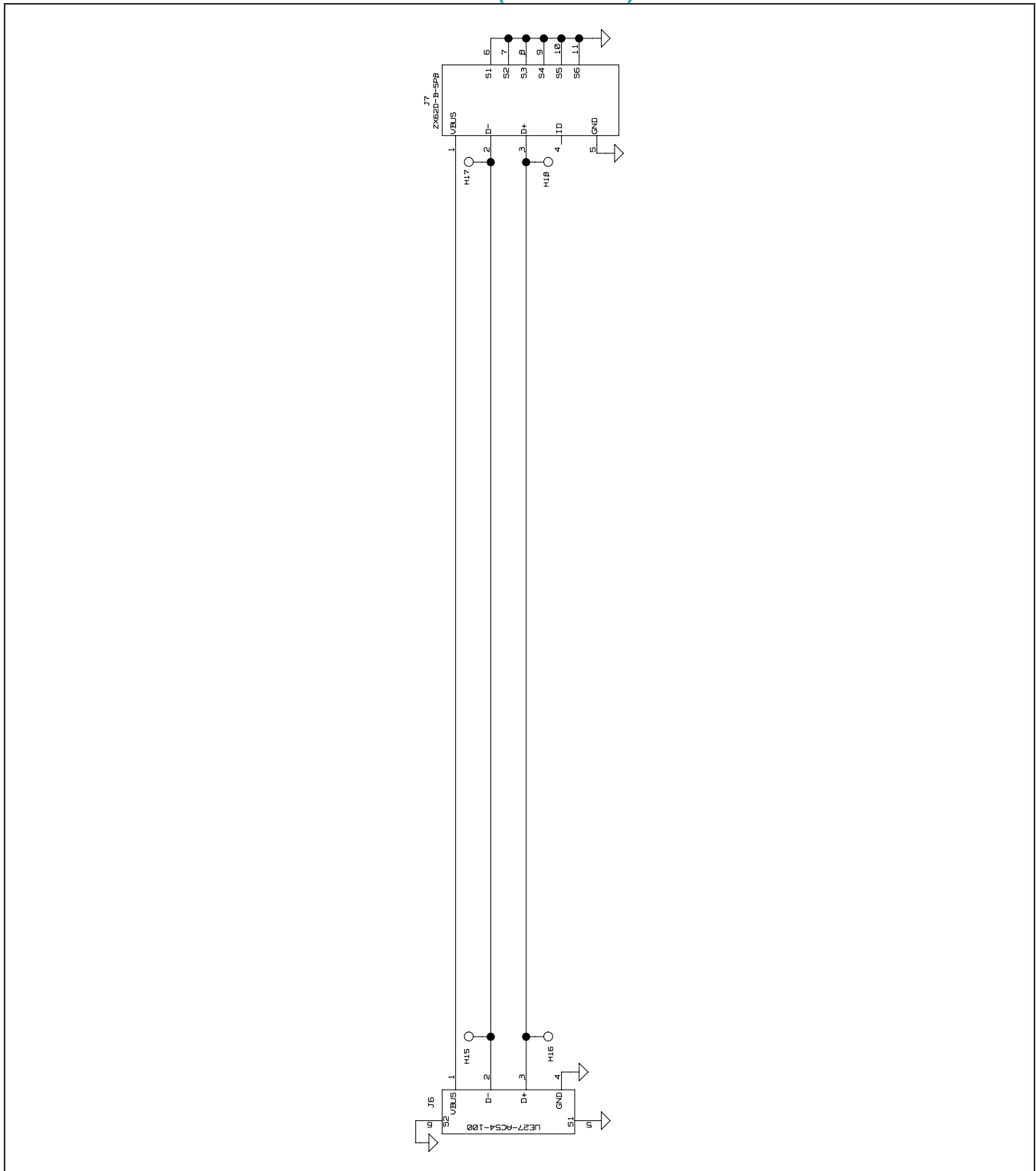
MAX14636/MAX14637 EV Kit Schematic



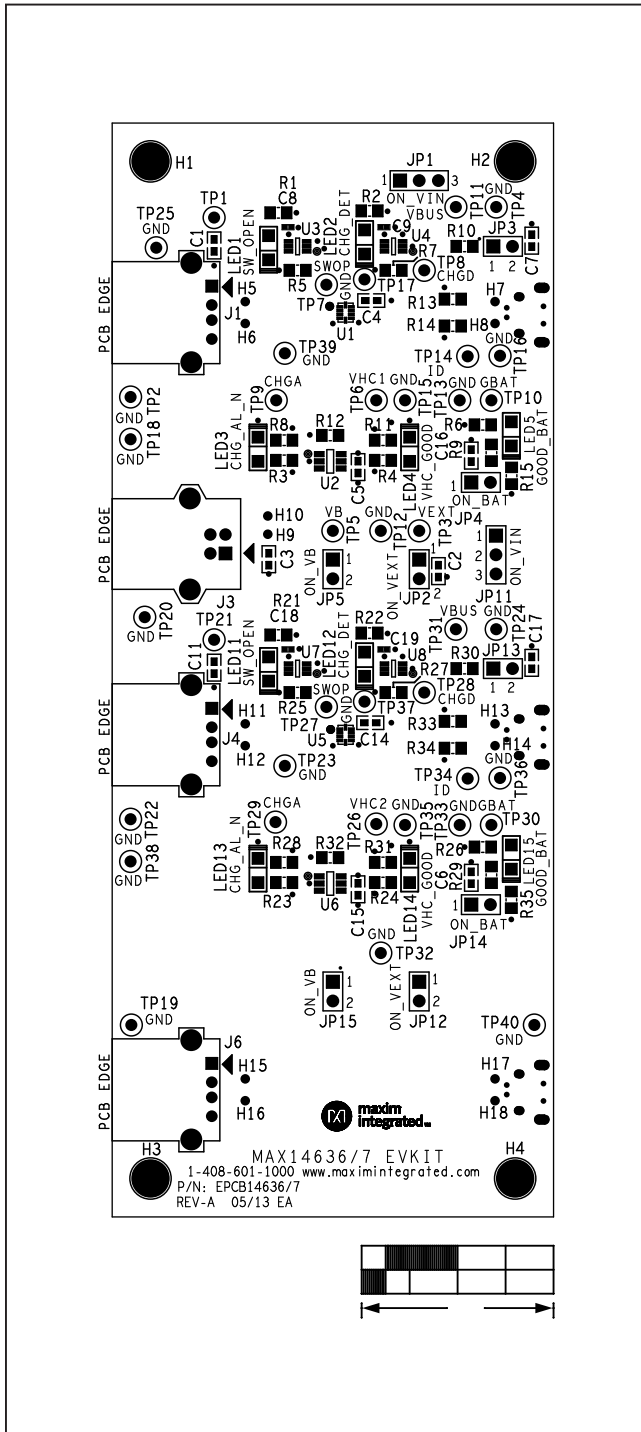
MAX14636/MAX14637 EV Kit Schematic (continued)



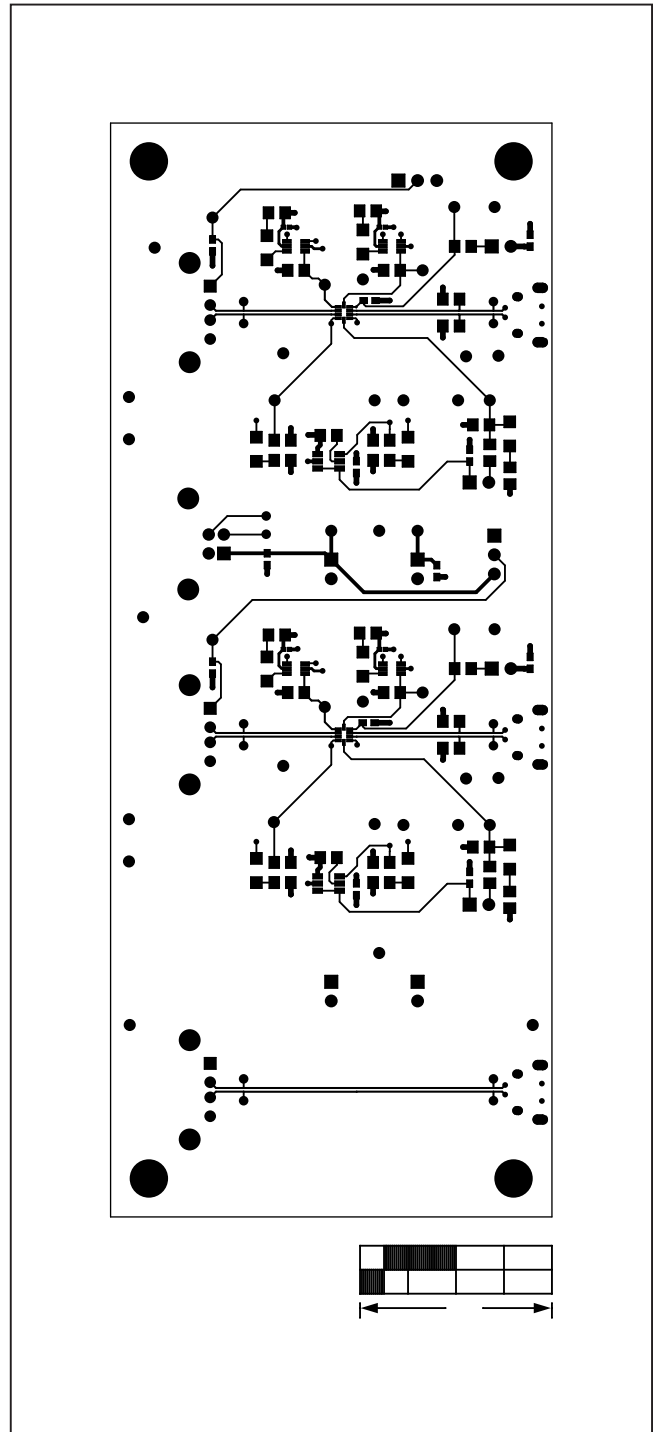
MAX14636/MAX14637 EV Kit Schematic (continued)



MAX14636/MAX14637 EV Kit PCB Layout Diagrams

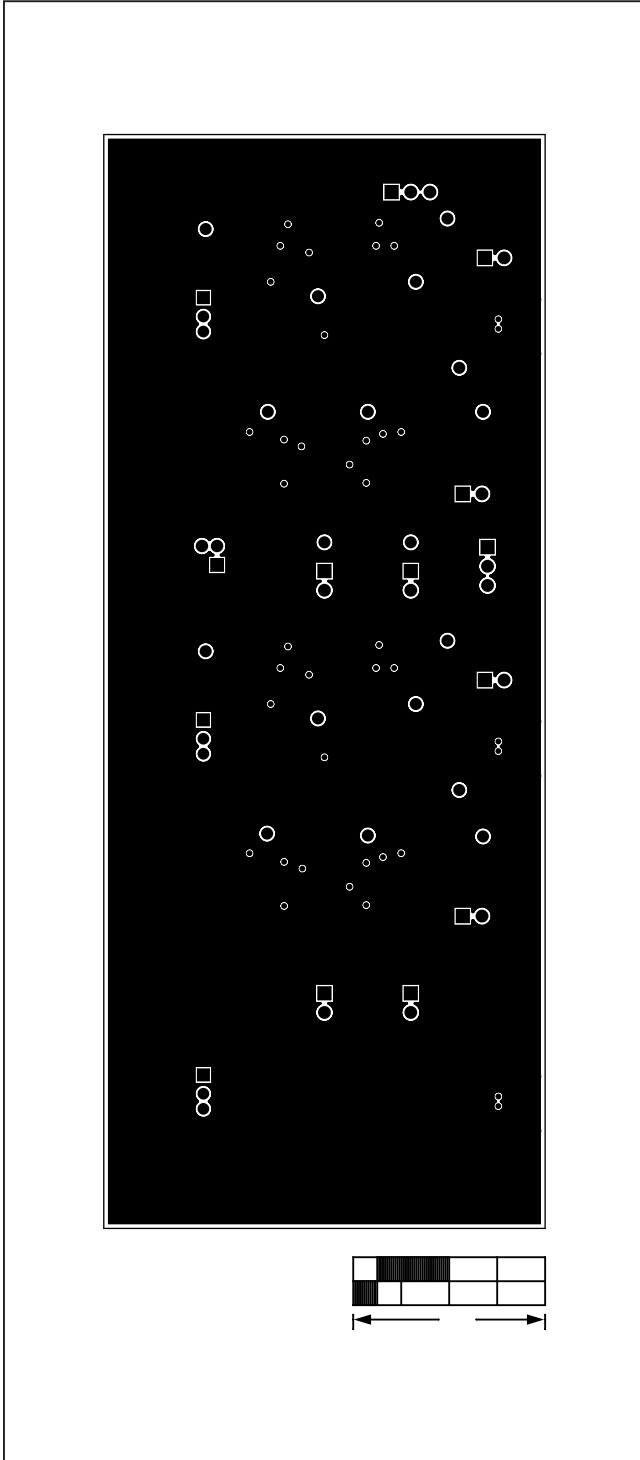


MAX14636/MAX14637 EV Kit Component Placement Guide—Component Side

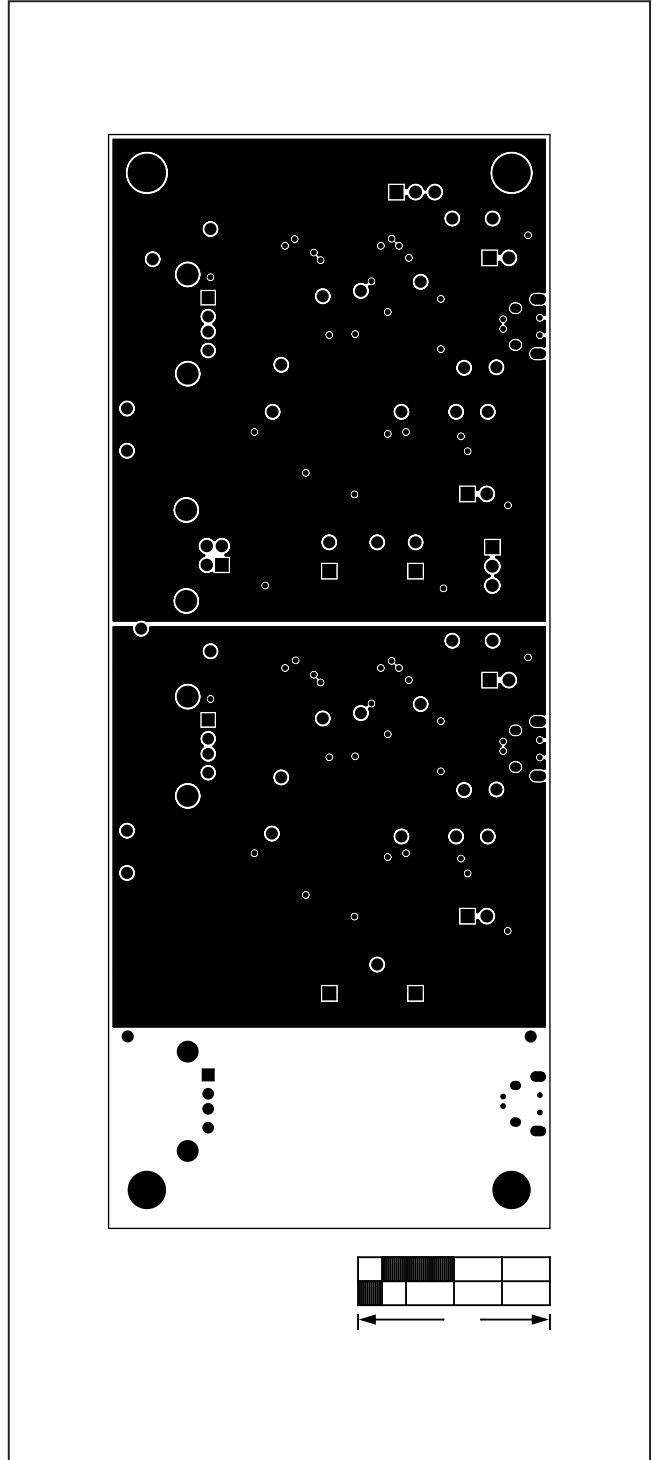


MAX14636/MAX14637 EV Kit PCB Layout—Component Side

MAX14636/MAX14637 EV Kit PCB Layout Diagrams (continued)

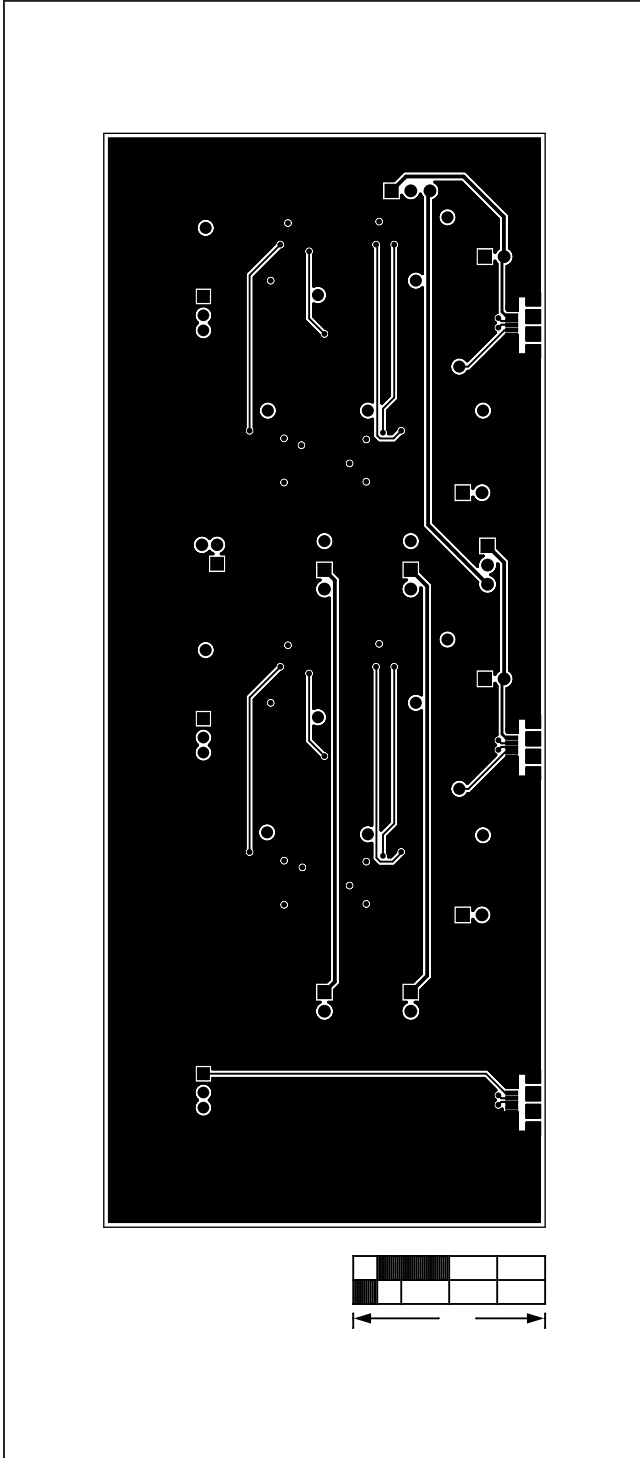


MAX14636/MAX14637 EV Kit PCB Layout—Layer 2

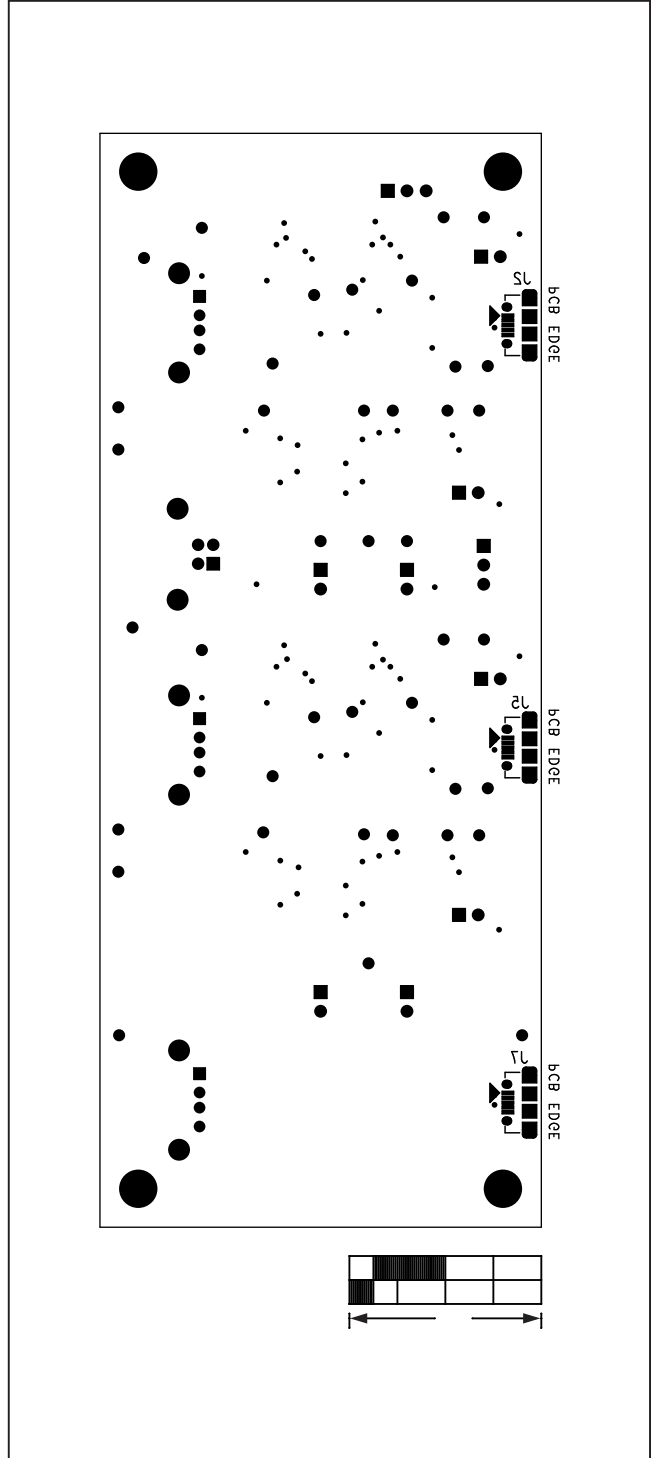


MAX14636/MAX14637 EV Kit PCB Layout—Layer 3

MAX14636/MAX14637 EV Kit PCB Layout Diagrams (continued)



MAX14636/MAX14637 EV Kit PCB Layout—Solder Side



MAX14636/MAX14637 EV Kit Component Placement Guide—Solder Side

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	9/13	Initial release	—
1	7/19	Updated the <i>Bill of Materials</i>	5

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