

General Description

The MAX14883E evaluation kit (EV kit) is a fully assembled and tested PCB that demonstrates the functionality of the MAX14883E fault-protected controller area network (CAN) transceiver. The EV kit features 2.75kV isolation between the CAN bus and the controller interface and operates from a 3.3V supply and isolated 5V supply.

Features

- Operates from a 3.3V Supply and Isolated 5V Supply
- Terminal Block Connectors for Easy CAN System Evaluation
- 2750V_{RMS} Isolation for 60s
- Fully Assembled and Tested

Quick Start

Required Equipment

- MAX14883E EV Kit
- 3.3V, 100mA DC power supply
- Isolated 5V, 500mA DC power supply
- Signal/function generator
- Oscilloscope

Startup Procedure

The MAX14883E EV kit is fully assembled and tested. Follow the steps below to verify board operation.

- 1) Set the DC power supply to 3.3V and connect the power supply to the 3.3V test point (TP4). Connect the ground terminal of the 3.3V supply to the GNDA test point (TP5).
- 2) Set the isolated power supply to 5V and connect the power supply to the 5V test point (TP9). Connect the ground terminal of the isolated power supply to the GNDB test point (TP8).
- 3) Ensure that J1, J2 and J3 are in their default positions (see [Table 1](#)).
- 4) Turn on the power supplies.
- 5) Set the signal/function generator to output a 500kHz 0-to-3.3V square wave.
- 6) Connect the signal/function generator to the A_TXD test point (TP1).

Ordering Information appears at end of data sheet.

- 7) Connect two oscilloscope probes to A_TXD (TP1) and A_RXD (TP3), respectively, to verify that the signal on RXD is the same as on TXD. Connect the ground leads of the scope probes to GNDA.
- 8) To view the CANH and CANL signals, connect the scope probes to the CANH test point (TP15) and the CANL test point (TP14). Connect the ground leads of the scope probes to GNDB.

Detailed Description of Hardware

The MAX14883E EV kit is a fully assembled and tested circuit board for evaluating the MAX14883E fault-protected CAN transceiver (U3). The EV kit has been designed to allow for evaluating the MAX14883E alone or in a CAN system.

Isolation

The MAX14883E EV kit features an isolated interface using the MAX14932 digital isolator between the MAX14883E transceiver and the CAN bus (the B-side of the board) and the controller/UART connections (the A-side of the board).

The MAX14932 provides up to 2.75kV_{RMS} of isolation, allowing the EV kit to be evaluated in an operating CAN system without risk.

Powering the Board

The MAX14883E EV kit requires two power supplies for operation: a 3.3V for controller-side power and an isolated 5V power supply for the MAX14883E.

Connect a 3.3V supply to the 3.3V test point (TP4) to power the controller side of the board. The ground terminal of the 3.3V supply must be connected to GNDA to preserve the isolation.

Connect an isolated 5V supply to the external supply to the 5V test point (TP9) to power the B-side of the MAX14932 and the MAX14883E transceiver. The ground terminal of the 5V supply must be connected to GNDB to preserve the isolation.

On-Board Termination

A properly terminated CAN bus is terminated at each end with the characteristic impedance of the cable. For cat5 or cat6 cables, this is typically 120Ω on each end for a 60Ω load on the CAN driver. The MAX14883E EV kit features a selectable split 60Ω-60Ω-47nF termination circuit between the CANH and CANL driver outputs. If the board is being evaluated in a system and is connected at the end of the cable, close the J3 jumper to enable this termination. If the board is connected to a bus that is terminated elsewhere, open J3 to avoid loading the bus down further.

The termination resistors on the MAX14883E EV should be changed to 30Ω-30Ω-47nF (a 60Ω load, total) to simulate a complete system load during evaluation.

Table 1. Jumper Table (J1-J7)

JUMPER	SHUNT POSITION	DESCRIPTION
J1	Open	MAX14932 B-side is disabled.
	Closed*	MAX14932 B-side is enabled.
J2	Open	VL is not connected to 5V. Apply an external voltage to VL.
	Closed*	VL is connected to 5V.
J3	Open	CANH and CANL are not connected through the on-board termination network.
	Closed*	CANH and CANL are connected through the on-board termination network.

*Default position.

MAX14883E EV Kit Bill of Materials

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	C1, C2, C5, C6	-	4	C0603C104K5RAC; C1608X7R1H104K	KEMET; TDK	0.1UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.1UF; 50V; TOL = 10%; TG = -55°C TO +125°C; TC = X7R;
2	C3	-	1	C0805C473J1RAC	KEMET	0.047UF	CAPACITOR; SMT; 0805; CERAMIC; 0.047uF; 100V; 5%; X7R; -55°C to + 125°C
3	C7	-	1	C3216X5R1H106K; GRM31CR61H106KA12	TDK; MURATA	10UF	CAPACITOR; SMT (1206); CERAMIC CHIP; 10UF; 50V; TOL = 10%; TG = -55°C TO +85°C; TC = X5R
4	D1, D2	-	2	SMAJ30A	LITTELFUSE	30V	DIODE; TVS; SMA (DO-214AC); VRM = 30V; IF = 8.3A
5	D3-D6	-	4	1N4001	N/A	1N4001	DIODE, RECTIFIER, DO-41, PIV = 50V, I(f(ave)) = 1A, Vf = 1.1V @ If = 1A
6	J1-J3	-	3	PBC02SAAN	SULLINS ELECTRONICS CORP.	PBC02SAAN	EVKIT PART-CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 2PINS; -65°C TO +125°C;
7	J4	-	1	PBC05SAAN	SULLINS ELECTRONICS CORP.	PBC05SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 5PINS; -65°C TO +125°C
8	J5	-	1	OSTTC042162	ON-SHORE TECHNOLOGY INC	OSTTC042162	CONNECTOR; FEMALE; THROUGH HOLE; TERMINAL BLOCK ONE PIECE WIRE PROTECTOR; COLOR BLUE; RIGHT ANGLE; 4PINS
9	R1, R2	-	2	CRCW060360R4FK	VISHAY DALE	60.4	RESISTOR; 0603; 60.4Ω; 1%; 100PPM; 0.10W; THICK FILM
10	R3	-	1	CRCW060310K0FK; 9C06031A1002FK; ERJ-3EKF1002	VISHAY DALE/YAGEO PHICOMP/PANASONIC	10K	RESISTOR; 0603; 10K; 1%; 100PPM; 0.10W; THICK FILM
11	R4-R6	-	3	RC1608J000CS; CR0603-J-000ELF; RC0603JR-070RL	SAMSUNG ELECTRONICS/ BOURNS/YAGEO PH	0	RESISTOR; 0603; 0 OHM; 5%; JUMPER; 0.10W; THICK FILM
12	TP1-TP3, TP14, TP15	-	5	5014	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.125IN; TOTAL LENGTH = 0.445IN; BOARD HOLE = 0.063IN; YELLOW; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
13	TP4, TP9, TP10	-	3	5010	KEYSTONE	N/A	TESTPOINT WITH 1.80MM HOLE DIA, RED, MULTIPURPOSE;
14	TP5-TP8	-	4	5011	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.125IN; TOTAL LENGTH = 0.445IN; BOARD HOLE = 0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
15	U1	-	1	MAX14932FASE+	MAXIM	MAX14932FASE+	IC; DISO; 2/2 CHANNEL; 150MBPS; DEFAULT LOW; 2.75KV/RMS DIGITAL ISOLATOR; NSOIC16 150MIL
16	U3	-	1	MAX14883EASA+	MAXIM	MAX14883EASA+	IC; TXRX; CAN TRANSCEIVER WITH ±60V FAULT PROTECTION AND SELECTABLE POLARITY; NSOIC8
17	PCB	-	1	MAX14883E	MAXIM	PCB	PCB:MAX14883E
18	C4	DNP	0	B32620A0472J	EPCOS	4700PF	CAPACITOR; THROUGH HOLE-RADIAL LEAD; POLYPROPYLENE; 4700pF; 1000V; TOL = 5%; TG = -55°C TO +105°C

TOTAL

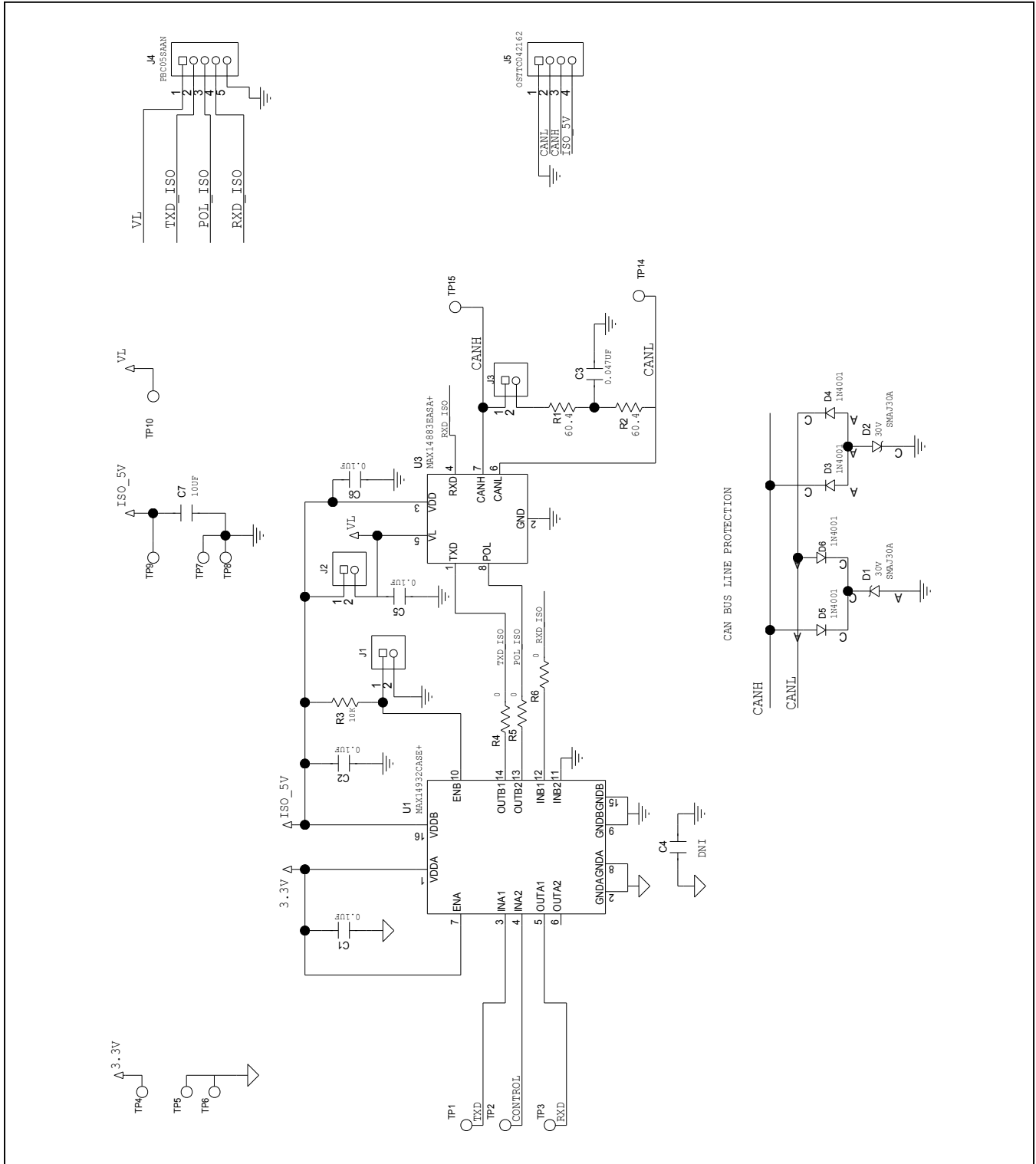
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Ordering Information

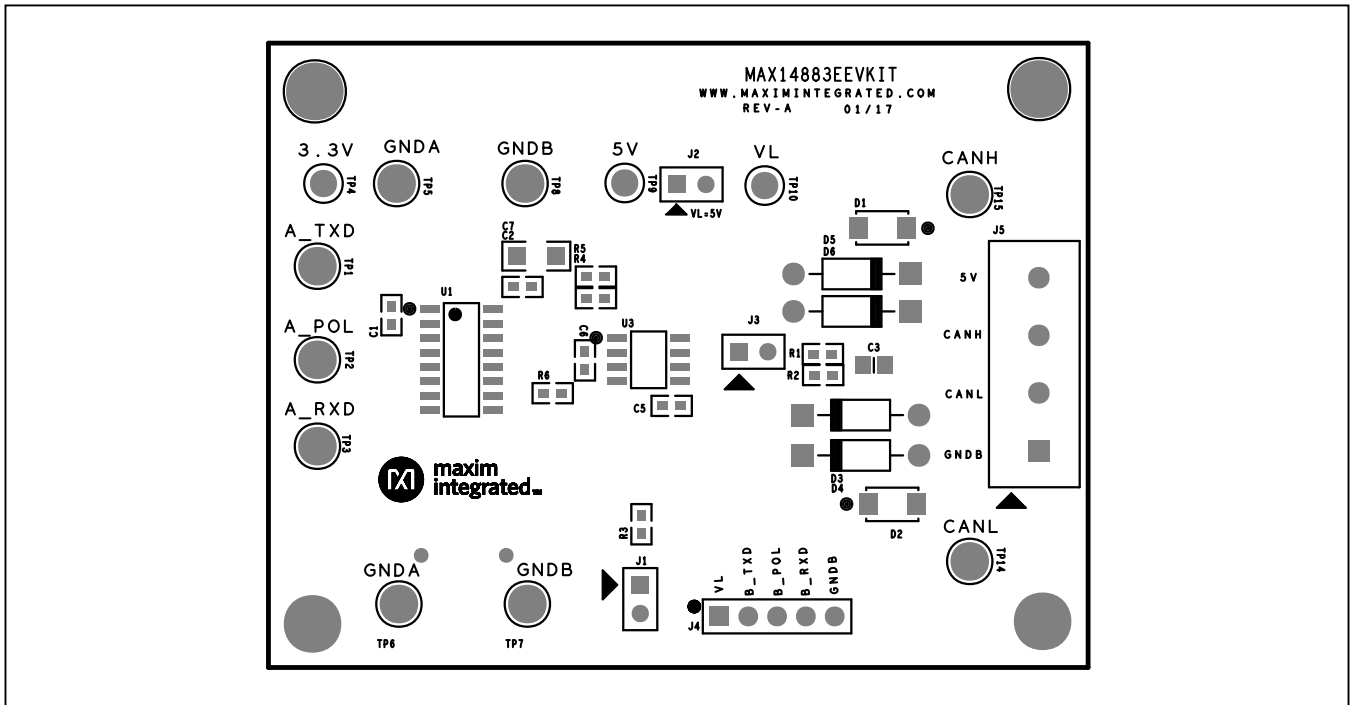
PART	TYPE
MAX14883E EVKIT#	EV Kit

#Denotes RoHS compliant.

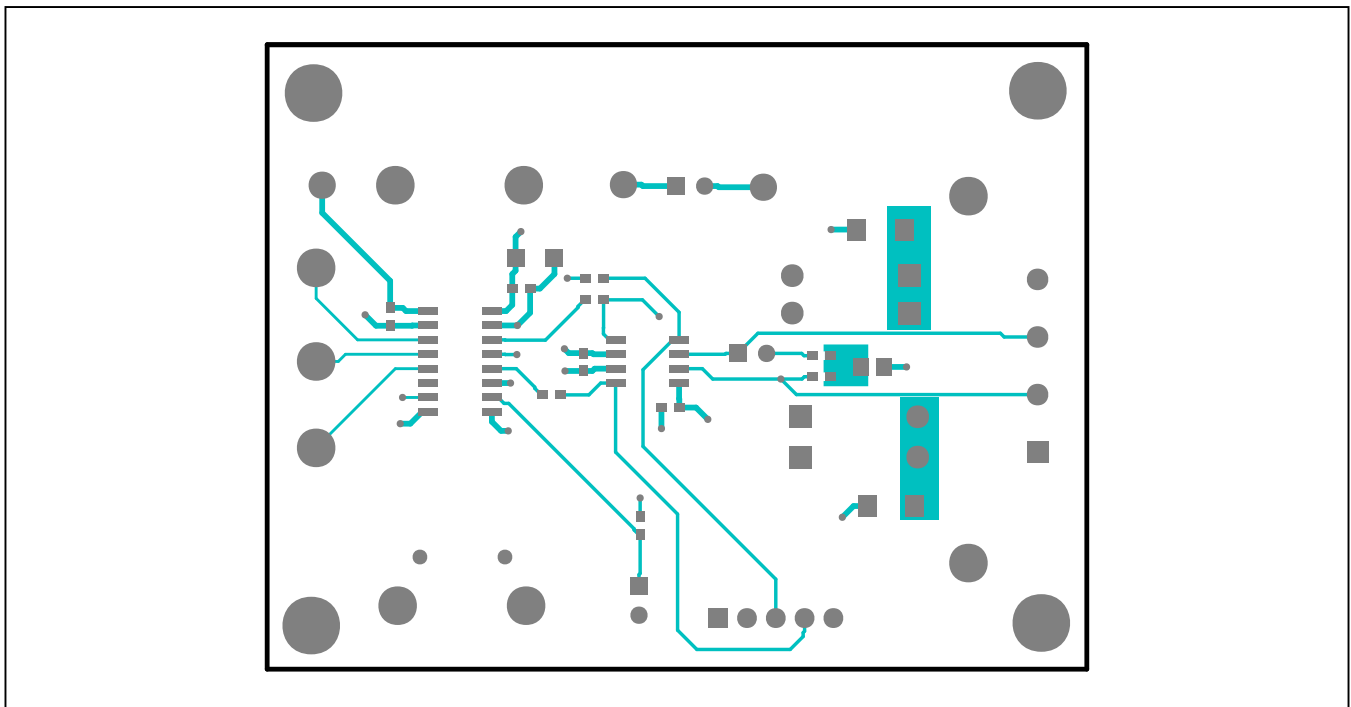
MAX14883E EV Kit Schematic



MAX14883E EV Kit PCB Layout Diagrams

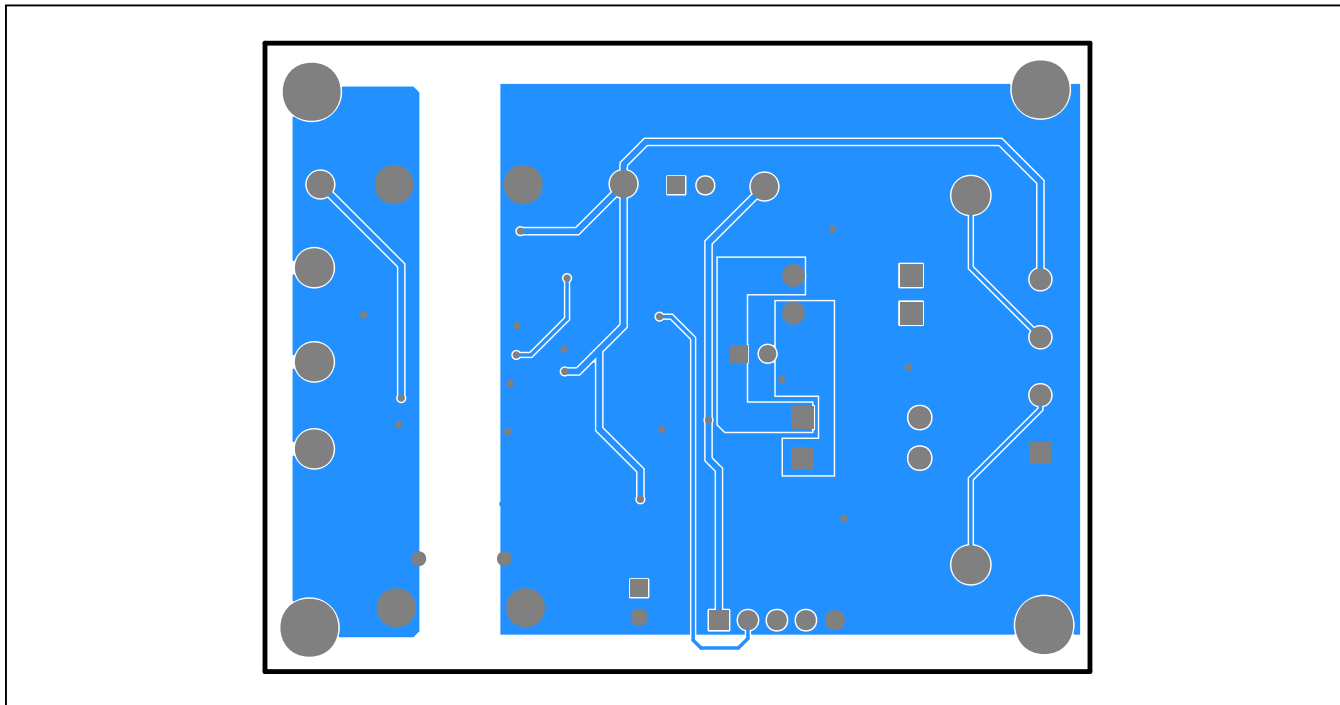


MAX14883E EV Kit—Top Silkscreen

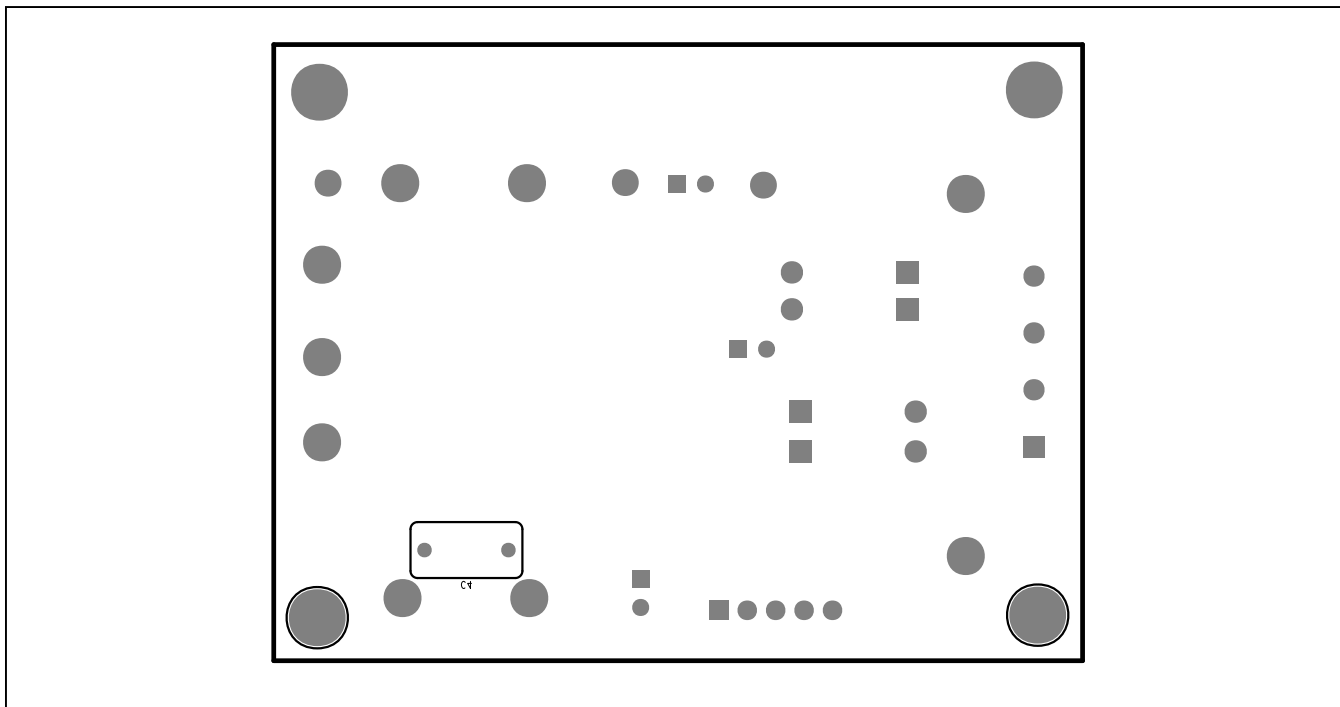


MAX14883E EV Kit—Top Layer

MAX14883E EV Kit PCB Layout Diagrams (continued)



MAX14883E EV Kit— Bottom Layer



MAX14883E EV Kit—Bottom Silkscreen

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	3/17	Initial release	—

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