

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

General Description

The MAX34441 evaluation kit (EV kit) simplifies evaluation of the MAX34441 and MAX34440 PMBus™ power-supply managers. The MAX34440 controls six power supplies, whereas the MAX34441 controls five power supplies plus a fan. The MAX34441 EV kit ships with the MAX34441 installed and a fan. The fully assembled and tested EV kit includes five power supplies that can be sequenced, monitored, and margined by the MAX34441 or MAX34440 and also includes a fan for closed-loop fan control using the MAX34441.

Ordering Information appears at end of data sheet.

Features

- ◆ Easy Evaluation of the MAX34441 or MAX34440
- ◆ Fully Assembled and Tested
- ◆ USB-Controlled GUI
- ◆ 5 Channels of Power Supply
- ◆ One Fan Control Channel

EV Kit Contents

- ◆ MAX34441 EV Kit Board Including Fan
- ◆ DS3900 USB to I²C Board
- ◆ CD with Required Documentation and Software

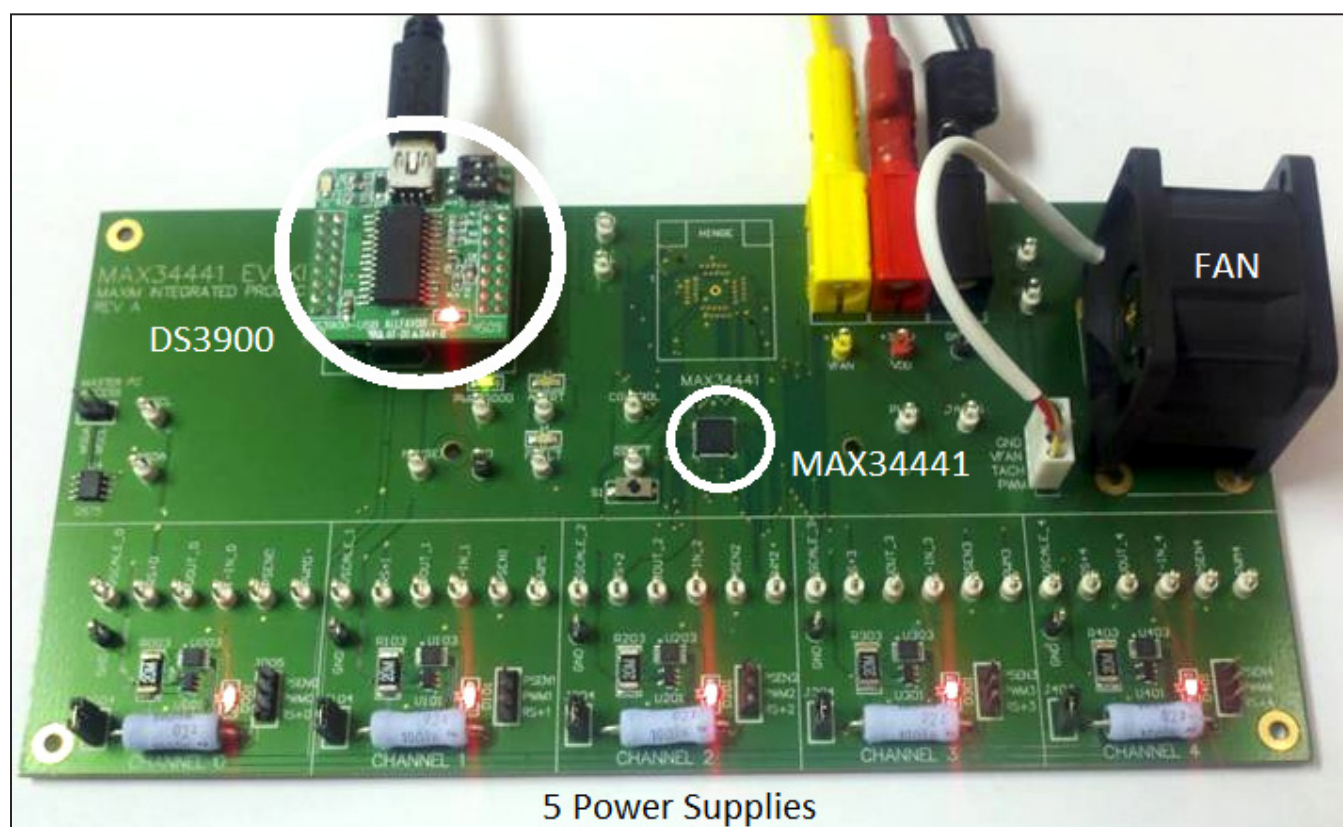


Figure 1. MAX34441 EV Kit Board

PMBus is a trademark of SMIF, Inc.

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

MAX34441 EV Kit Files

The following files are required to set up and evaluate the MAX34441 or the MAX34440 using the MAX34441 EV kit. These files are included on the CD that is provided with the MAX34441 EV kit. For the latest version of these files, go to www.maxim-ic.com/evkitsoftware.

FILE	DESCRIPTION
MAX3444x EVKit GUI.EXE	Application program
ds3900c.INF	USB driver file

Equipment Needed

The following equipment is required to use the MAX34441 EV kit:

- 3.3V (1A) DC power supply
- 12V (500mA) DC power supply (not required if fan operation is not needed)
- PC (Windows® 2000, Windows XP® or Windows 7 operating system) with an available USB port

Quick Start

Note: In the following sections, software-related items are identified by bolding. Text in **bold** refers to items directly from the EV kit software. Text in **bold and underlined** refers to items from the Windows operating system.

DS3900 USB to I²C Setup Procedure (Required Procedure)

Note: The DS3900 is the small daughter card located on top of the EV kit. It converts USB to I²C and allows the GUI to communicate to the MAX34441. **It is important when using the MAX34441 EV kit for the very first time to install the device driver prior to connecting.**

Installing the DS3900 USB device driver is simple.

- 1) Locate the **ds3900c.INF** file. It can be found on the CD that was included with the EV Kit.
- 2) Copy the **ds3900c.INF** file to a known location on the PC.
- 3) Connect the DS3900 to the PC using a USB cable.
 - a.) The DS3900 does not need to be removed from the MAX34441 EV kit.
 - b.) Power does not need to be supplied to the MAX34441 EV kit at this time. The PC's USB port will power the DS3900.
- 4) Once the DS3900 is connected to the PC, the Windows operating system should recognize that new hardware has been attached and begin a new hardware wizard.
- 5) Follow the wizard's instructions and point it to the **ds3900c.INF** that was copied to the PC. The driver installation process varies slightly depending on the operating system.

MAX34441 EV Kit Startup

- 1) Attach the GND (black connector) **first**, followed by the +3.3V (red connector) and +12V (yellow connector) power supplies. Then turn the power on. Either supply can be turned on first (no sequencing is required). The +12V supply is not required if fan operation is not needed.
- 2) After both supplies are on, the MAX34441 EV kit automatically sequences on the five on-board power supplies and turns the fan on.
- 3) If not already attached, attach a USB cable from the DS3900 to the PC. Then install the DS3900 on the MAX34441 EV kit.
- 4) Launch the MAX34441 EV kit GUI. When the GUI is loaded, it initially sets CONTROL low, sequencing off the power supplies.
- 5) The GUI can now be used to evaluate the MAX34441.

Windows and Windows XP are registered trademarks of Microsoft Corp.

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

MAX34441 EV Kit GUI

General Tab

The **General** tab, the main window of the evaluation software (Figure 2), includes a real-time monitor for the MAX34441 and an interface to read or write PMBus commands. To read all the data displayed in the GUI, click the **Read Once** button, or click **Start Monitor** for real-time monitoring. The data can be displayed as either the raw hexadecimal value received or can be converted to DIRECT format by the GUI. The data format display option is selected using the radio buttons in the **Select display** group box at the top left of the GUI.

To turn on the power supplies, the default setup of the MAX34441 EV kit requires that the CONTROL pin be set

high. The right side of the GUI has radio buttons to set the CONTROL pin high or low. Once CONTROL is set high, the power supplies begin sequencing on.

At the bottom of the GUI is a section that allows for reading or writing to a single PMBus command. To use this section, the correct page must first be selected from the **Select a Page** drop-down list. When a page is selected, the commands shown in the command drop-down list are filtered to only reflect PMBus commands available for the selected page. When a **Read** is performed, the PMBus command data is displayed in the **Data** box. This data is only displayed as a hexadecimal value, not in DIRECT format. Clicking the **Write** button writes the data in the **Data** box to the PMBus command. Note that the GUI does not error check the data being written to the PMBus commands.

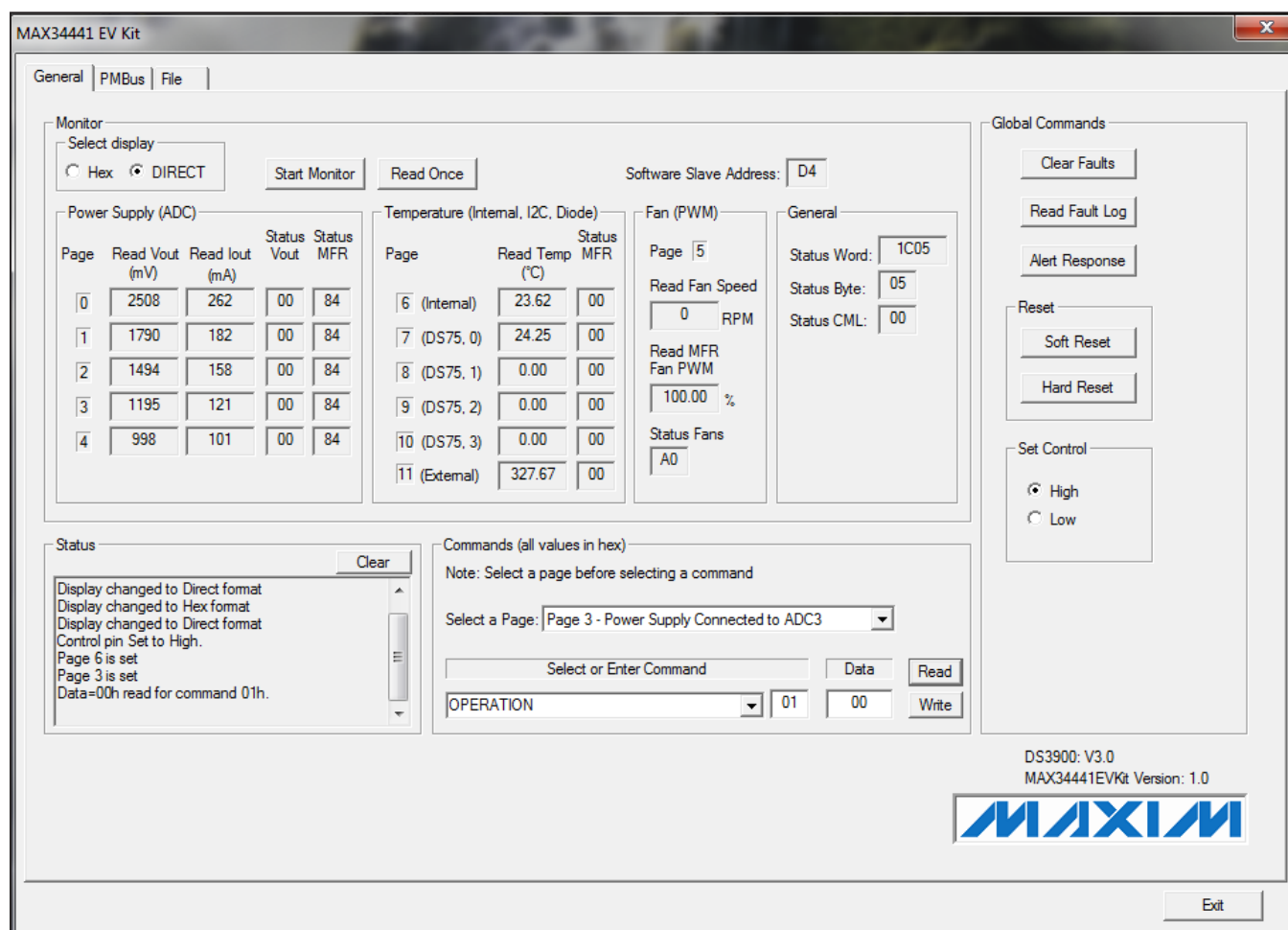


Figure 2. MAX34441 EV Kit GUI General Tab

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

PMBus Tab

The **PMBus** tab (Figure 3) provides a generic interface for a user to read or write PMBus commands to the MAX34441 or any other PMBus device that is on the bus. At the top of the page in the **Find PMBus Slave Addresses** group box is a **Find** button that can be used to detect the address of all slave addresses on the bus. The desired slave address to communicate with then needs to be entered into the **Software Slave Address** box, followed by clicking the **Change** button. A page to write to can then be selected. The command section allows writing to any command (00h–FFh) by entering the command number. The number of bytes or words can also be selected to be between 1 and 16. Data can

then be read or written by clicking on the **Read** or **Write** button.

File Tab

The **File** tab provides a tool to read or write all the MAX34441 configuration settings to a text file. By selecting **Dump**, all the current PMBus configuration commands are dumped to a text file. The configuration settings in the file can then be edited using a text editor or Microsoft Excel®. Clicking **Fill Device** then writes this new configuration file to the MAX34441. The **Machine Code Dump** button produces an Intel hex file. This file can be easily parsed by a PC for loading the MAX34441 configurations in a production environment.

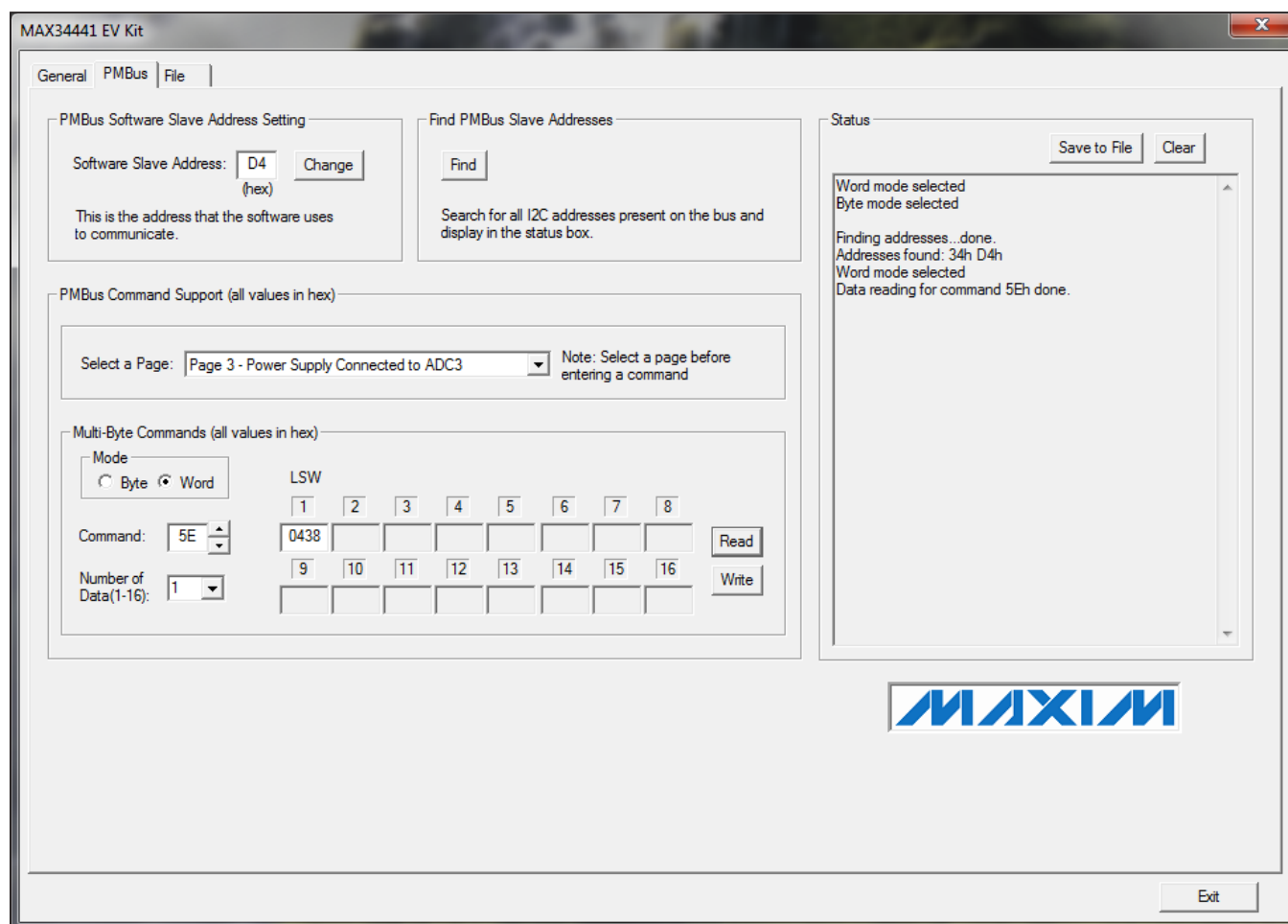


Figure 3. MAX34441 EV Kit GUI PMBus Tab

Microsoft Excel is a registered trademark of Microsoft Corp.

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

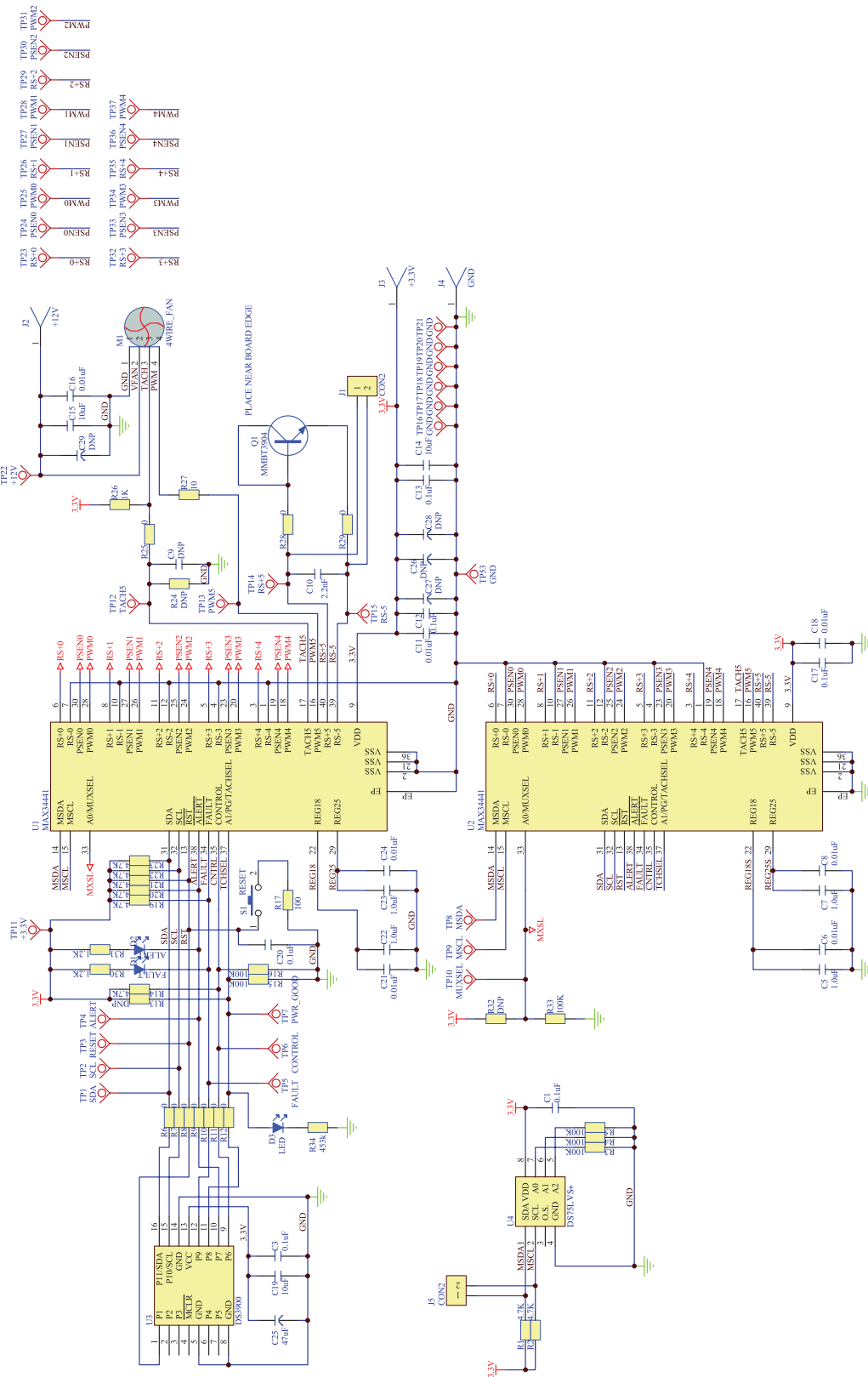


Figure 4. MAX34441 EV Kit Schematics (Sheet 1 of 1)

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

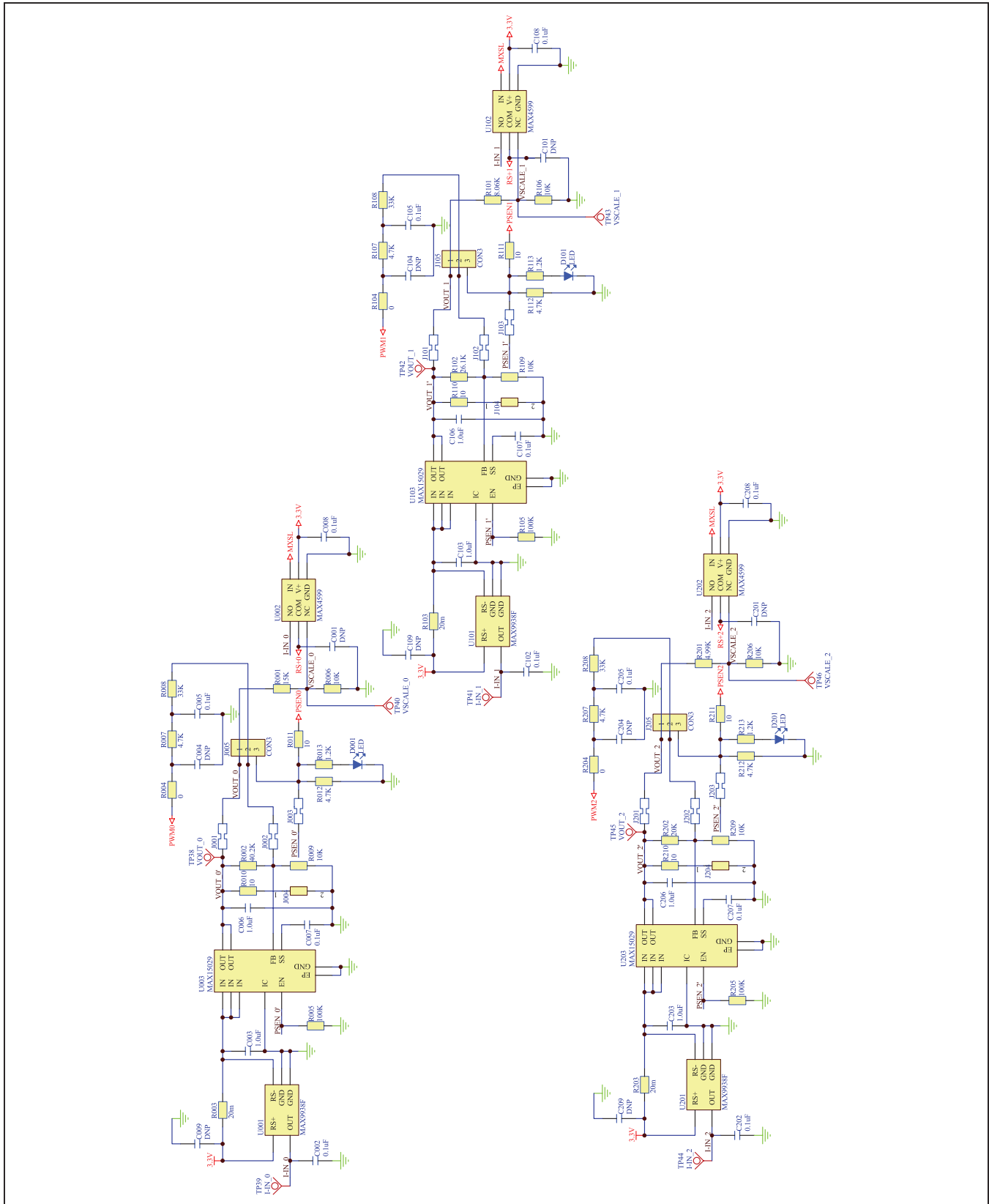


Figure 5. MAX34441 EV Kit Schematics (Sheet 2 of 3)

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

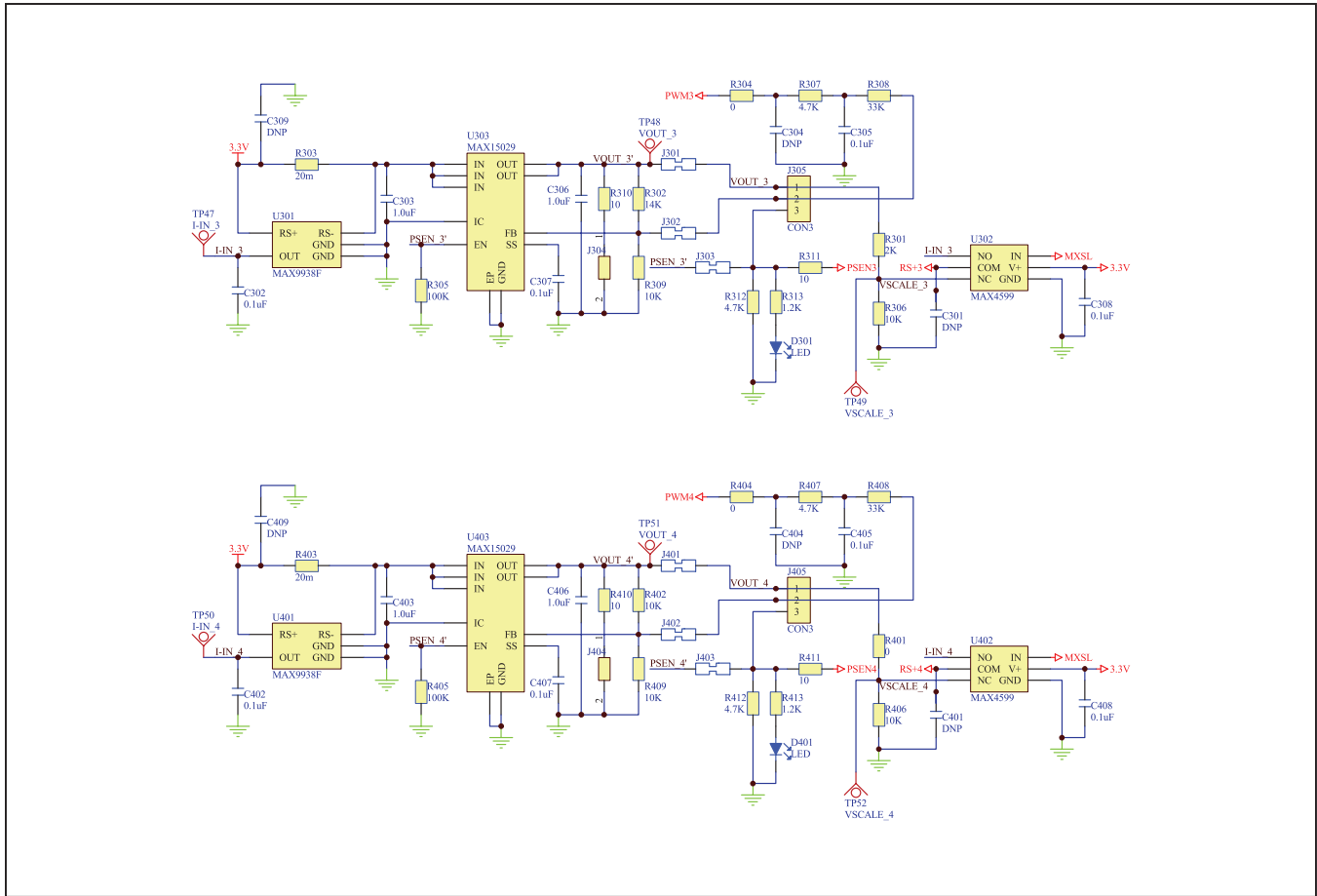


Figure 6. MAX34441 EV Kit Schematics (Sheet 3 of 3)

Table 1. Jumper Descriptions

NAME	FUNCTION
J1	Allows users to connect their remote diode.
Jn01	Connects the channel n MAX15029 output to MAX34441 ADC when soldered.
Jn02	Connects the filtered PWMn signal to the channel n MAX15029 FB node when soldered.
Jn03	Connects the PSENN signal to the channel n MAX15029 EN signal when soldered.
Jn04	Connects the 10Ω load to the respective power supply.
Jn05	Provides access to each channel's ADC, PWM, and PSEN signals to connect to a user's power supply if the MAX15029 is not used. If using a different power supply, then Jn01, Jn02, and Jn03 should be disconnected.

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C002, C3, C005, C007, C008, C12, C13, C17, C20, C102, C105, C107, C108, C202, C205, C207, C208, C302, C305, C307, C308, C402, C405, C407, C408	26	0.1μF capacitors
C001, C004, C009, C9, C101, C104, C109, C201, C204, C209, C301, C304, C309, C401, C404, C409, R13, R24, R32	19	Do not populate
C003, C5, C006, C7, C22, C23, C103, C106, C203, C206, C303, C306, C403, C406	14	1.0μF capacitors
C6, C8, C11, C16, C18, C21, C24	7	0.01μF capacitors
C10	1	2.2nF capacitor
C14, C15, C19	3	10μF capacitors
C25	1	47μF capacitor
C26, C27, C28, C29	4	Do not populate
D1	1	FAULT
D001, D3, D101, D201, D301, D401	6	LEDs
D2	1	ALERT
J1, J5	2	CON2
J001, J002, J003, J101, J102, J103, J201, J202, J203, J301, J302, J303, J401, J402, J403	15	SOLDER_BRIDGE2
J2	1	+12V
J3	1	+3.3V
J004, J104, J204, J304, J404	5	1X2_JMPR
J4	1	GND
J005, J105, J205, J305, J405	5	CON3
M1	1	4WIRE_FAN
Q1	1	MMBT3904
R1, R2, R007, R012, R14, R19, R20, R21, R22, R23, R107, R112, R207, R212, R307, R312, R407, R412	18	4.7kΩ resistors
R001	1	15kΩ resistor
R002	1	40.2kΩ resistors
R003, R103, R203, R303, R403	5	20mΩ ±1% resistors

DESIGNATOR	QTY	DESCRIPTION
R3, R4, R005, R5, R15, R16, R33, R105, R205, R305, R405	11	100kΩ resistors
R004, R6, R7, R8, R9, R10, R11, R12, R25, R28, R29, R104, R204, R304, R401, R404	16	0Ω resistors
R006, R009, R106, R109, R206, R209, R306, R309, R402, R406, R409	11	10kΩ resistors
R008, R108, R208, R308, R408	5	33kΩ resistors
R010, R110, R210, R310, R410	5	10Ω, 3W resistors
R011, R27, R111, R211, R311, R411	6	10Ω resistors
R013, R30, R31, R113, R213, R313, R413	7	1.2kΩ resistors
R17	1	100Ω resistor
R26	1	1kΩ resistor
R34	1	453kΩ resistor
R101	1	8.06kΩ resistor
R102	1	26.1kΩ resistor
R201	1	4.99kΩ resistor
R202	1	20kΩ resistor
R301	1	2kΩ resistor
R302	1	14kΩ resistor
S1	1	Switch
TESTPOINTS	52	Testpoints
U001, U101, U201, U301, U401	5	Current-sense amp (5 SOT23) Maxim MAX9938FEUK+
U1	1	Power-supply manager and fan controller (40 TQFN) Maxim MAX34441ETL+
U002, U102, U202, U302, U402	5	SPDT analog switch (6 SC70) Maxim MAX4599EXT+
U3	1	Serial communications module for EV kits Maxim DS3900K#
U003, U103, U203, U303, U403	5	Low dropout regulator (10 TDFN-EP) Maxim MAX15029ATB+
U4	1	Digital thermometer and thermostat (8 SO) Maxim DS75LV5+
—	—	PCB: MAX3441 EV KIT, REV A

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

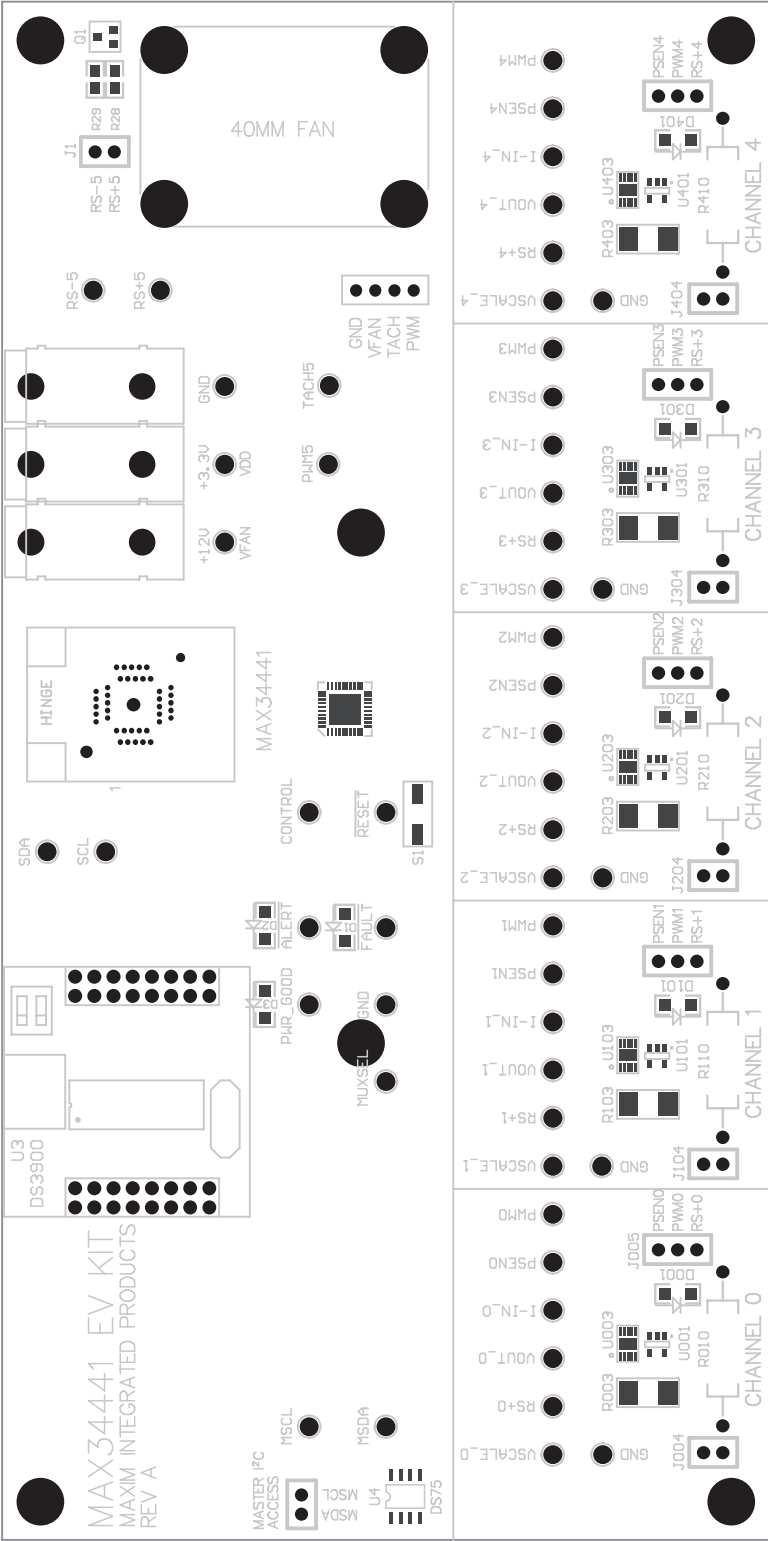


Figure 7. MAX34441 EV Kit Top Assembly Drawing

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

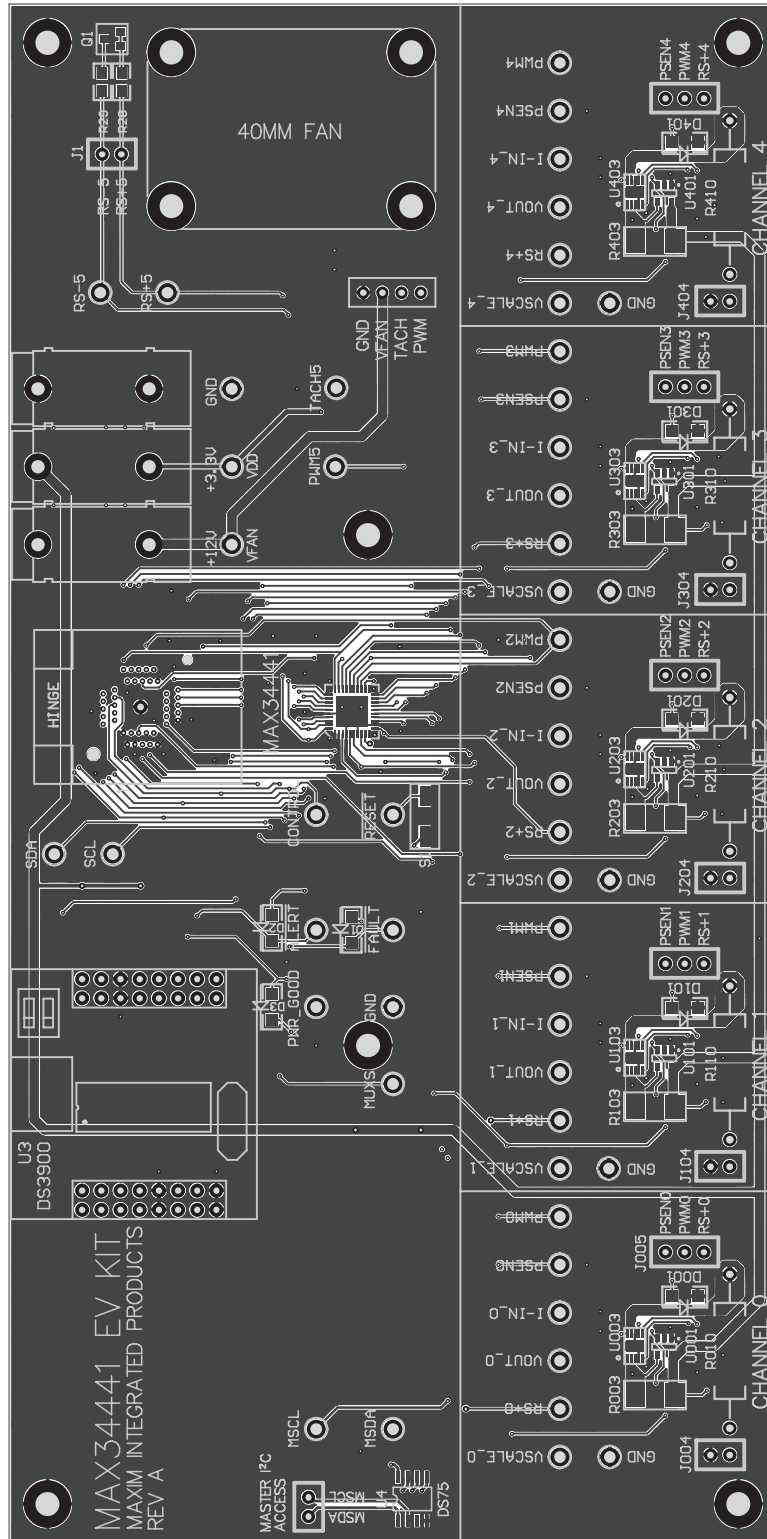


Figure 8. MAX34441 EV Kit Top Electrical Layout

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

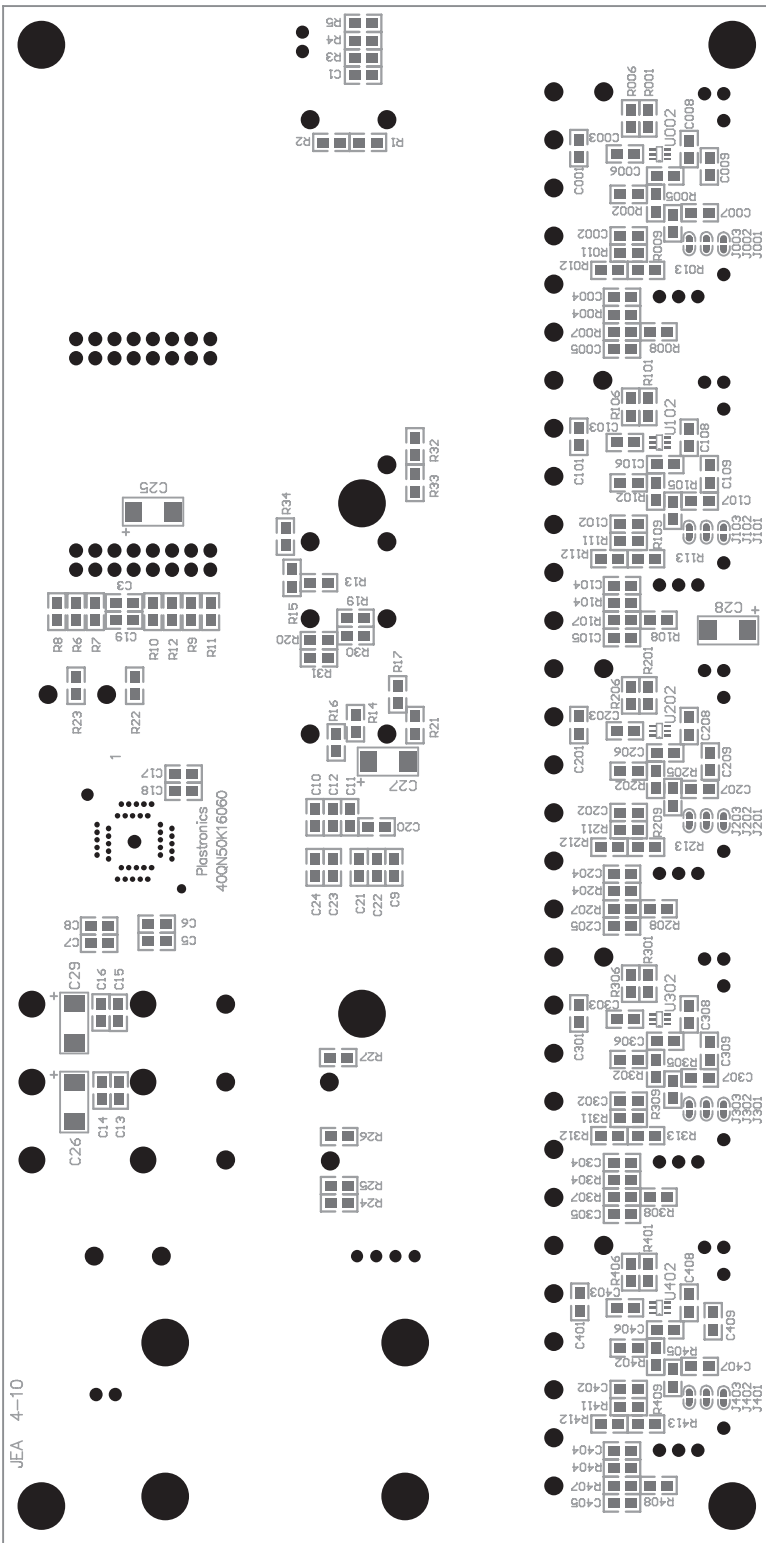


Figure 9. MAX34441 EV Kit Bottom Assembly Drawing

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

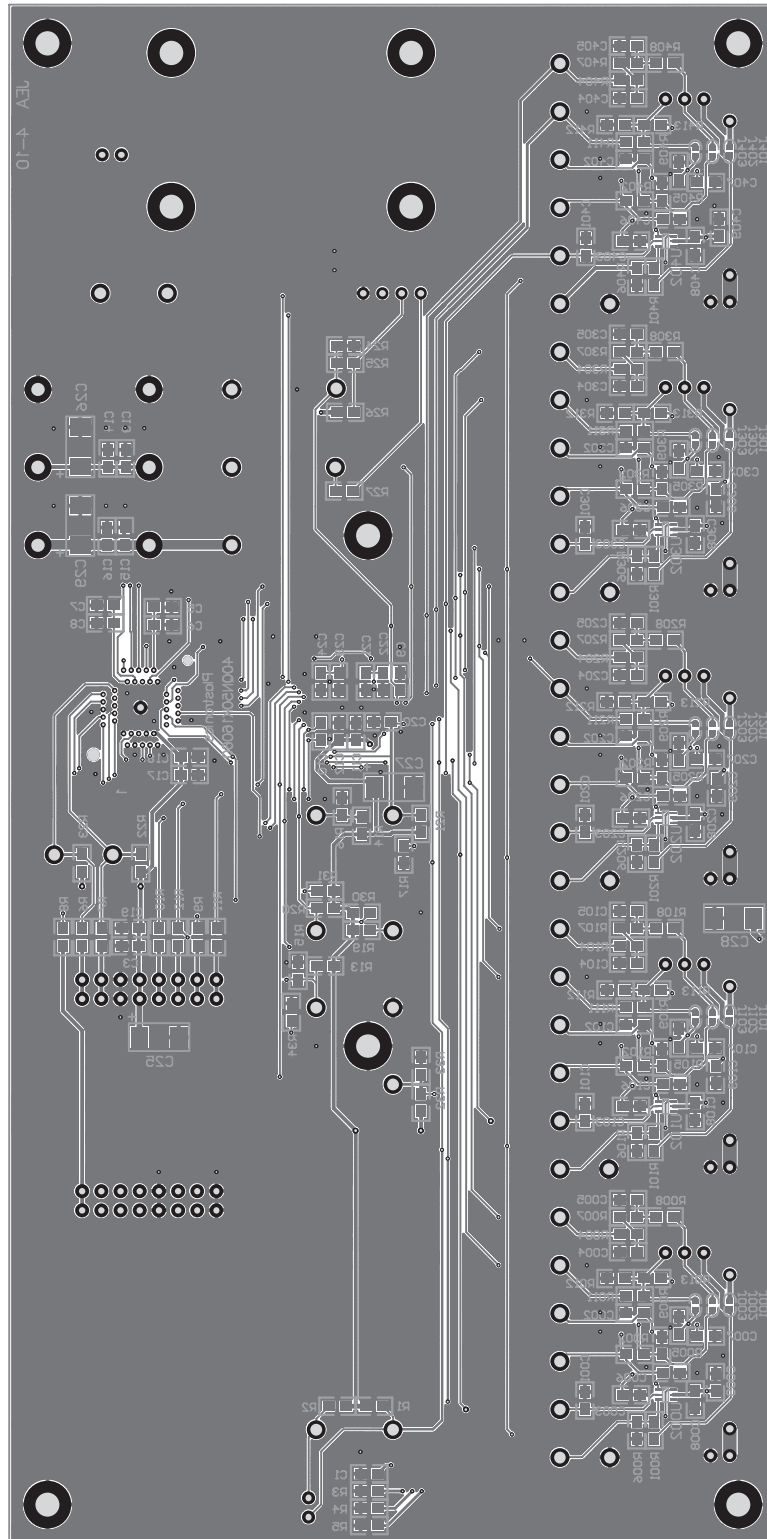


Figure 10. MAX34441 EV Kit Bottom Electrical Layout

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

Ordering Information

PART	TYPE
MAX34441EVKIT#	EV Kit

#Denotes a RoHS-compliant device that may include lead(Pb) that is exempt under the RoHS requirements.

MAX34441 Evaluation Kit

Evaluates: MAX34441 and MAX34440

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	11/11	Initial release	—

Maxim cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim product. No circuit patent licenses are implied. Maxim reserves the right to change the circuitry and specifications without notice at any time.

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