

Evaluates: MAX14515, MAX14515B

General Description

The MAX14515B evaluation kit (EV kit) is a fully assembled and tested application circuit that simplifies the evaluation of the MAX14515/MAX14515B liquid lens drivers. A liquid lens can be easily connected to the driver outputs. By default, the board is configured with the MAX14515B and a 200pF capacitor as a substitute load. The MAX14515B EV kit can also be used to evaluate the MAX14515 with minimal component changes.

The EV kit includes a MAX32625PICO application platform* that provides the MAX32625 microcontroller to enable I²C communication with the MAX14515B. Operation with an external microcontroller can be enabled by reconfiguring a few components on the board.

Features

- All Components and Software Included for Evaluating the MAX14515B
- Can be Powered from the MAX32625PICO Board or an External Power Supply
- I²C Communication Using the On-Board MAX32625 Microcontroller or an External Microcontroller
- Includes Layout Pads for Mounting Liquid Lens
- Test Configuration Uses 200pF Capacitive Load
- Demonstrates Simple, Compact Layout for MAX14515B
- Total Layout Area 20mm² Using a Space-Saving, 8-Bump WLP (1mm x 2mm) Package

MAX14515B EV Kit Files

FILE	DESCRIPTION
SetupSimpleI2C.exe	Installs I ² C GUI onto the computer
MAX14515_RM.xml	Loads the register map on the GUI

Quick Start

Required Equipment

- MAX14515B EV Kit
- MAX32625PICO Interface Board
- Liquid Lens (C_{LENS} = 200pF)
- Windows-Compatible Computer with a Spare USB Port

*Refer to the MAX32625PICO data sheet for more details on the MAX32625 microcontroller board.

Procedure

Note: In the following sections, software-related items are identified by **bolding**. Text in **bold** refers to items directly from the install or EV kit software.

The MAX14515B EV kit is fully assembled and tested in the configuration using the on-board microcontroller. It can also be configured for operation with an external microcontroller or I²C source.

1. Visit the [MAX14515B EV kit](#) product page under the **Software** tab to download the latest version of the MAX14515B EV kit software files. Save the software files to a temporary folder and unpack the zip file.
2. Install the Simple I²C software on the computer by running the **SetupSimpleI2C.exe** program inside the temporary folder.

Default Operation Using the MAX32625 Microcontroller

1. Mount the MAX32625PICO board on the MAX14515B EV kit U7 header.
2. Install 0Ω (0603) resistors on R1, R3, R7, R8, and R9.
 - SDA connects to the MAX32625PICO board pin 3.
 - SCL connects to the MAX32625PICO board pin 4.
 - EN and VDD connect to the MAX32625PICO board pin 3V3.
3. Install 1.5kΩ pull-up resistors on R2 and R4.
4. Connect the SDA and SCL test pads to the 3V3 test pad (P3_6) using wires to enable pull-up on SCL and SDA.
5. Verify the resistor pads R5 and R6 are OPEN.
6. If available, place the liquid lens on the VA and VB pads or install a 200pF (100V) 0805 capacitor at C1.
7. Open the Simple I²C program. Go to the **Regmap** option and load the 'MAX14515_RM.xml' file into the GUI. (See [Figure 2](#).)
8. In the **Register Grid** tab, enter 0x01 hex value in the **0x00 POWERMODE** register to enable the part.
9. To adjust the output voltage, change the hex value of the **0x01 LLV** register accordingly.
10. Measure the VA and VB voltages. These voltages should match with the corresponding value programmed in the **0x01 LLV** register.

Operation Using an External Microcontroller

1. Unmount the MAX32625 controller from the U7 header.
2. Connect the SDA, SCL, 3.3V, and GND solder pads to the external microcontroller using jumper wires.
3. Install 0Ω (0603) resistors on R2, R4, R7, R8, and R9 to enable connection from the external pads to the MAX14515B.
4. Install 1.5kΩ pull-up resistors on R1 and R3.
5. Connect pins 3 and 4 of the U7 header to pin 12 using jumper wires to enable pull-up on the SCL and SDA lines.
6. Verify the resistor pads R5 and R6 are OPEN.
7. If available, place the liquid lens on the VA and VB pads or install a 200pF (100V) 0805 capacitor across C1.
8. If using an external power supply to power the IC, enable the 3.3V power source.
9. Open the Simple I2C program. Go to the **Regmap** option and load the 'MAX14515_RM.xml' file into the GUI.
10. In the **Register Grid** tab, enter **0x01** hex value in **0x00 POWERMODE** register to enable the part.
11. To adjust the output voltage, change the hex value of **0x01 LLV** register accordingly.
12. Measure the VA and VB voltages. These voltages should match with the corresponding value programmed in the **0x01 LLV** register.

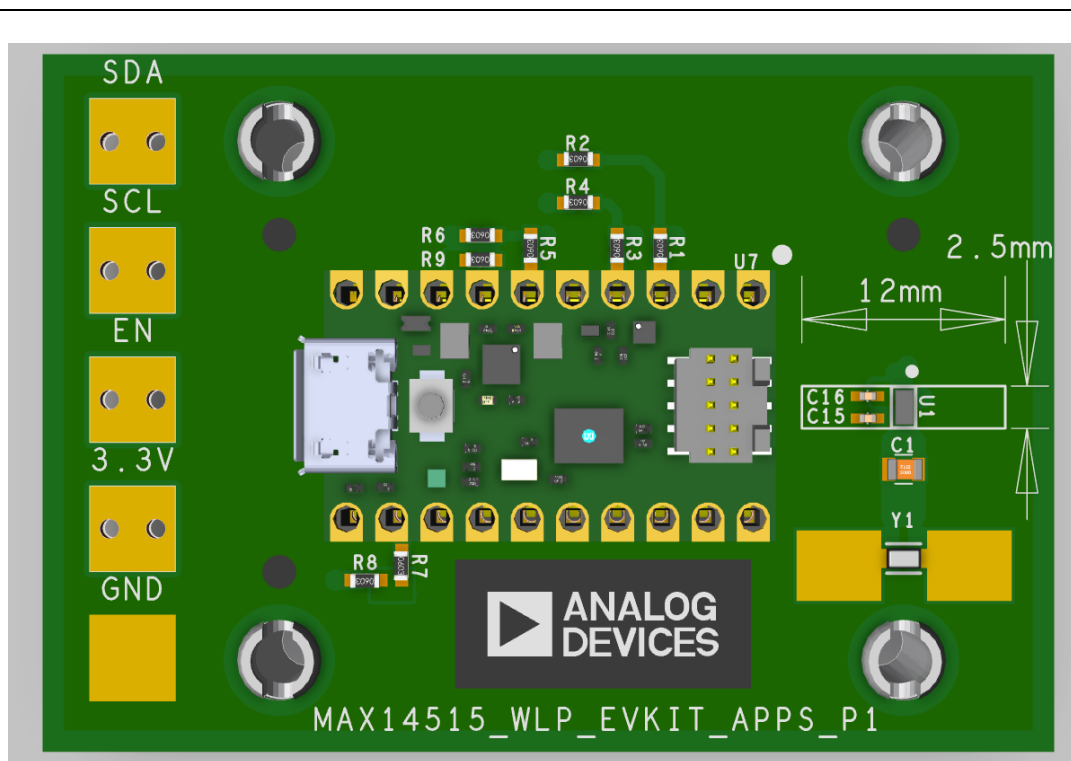
MAX14515B EV Kit Board

Figure 1. Top View of the MAX14515B EV Kit Board

Simple I2C GUI

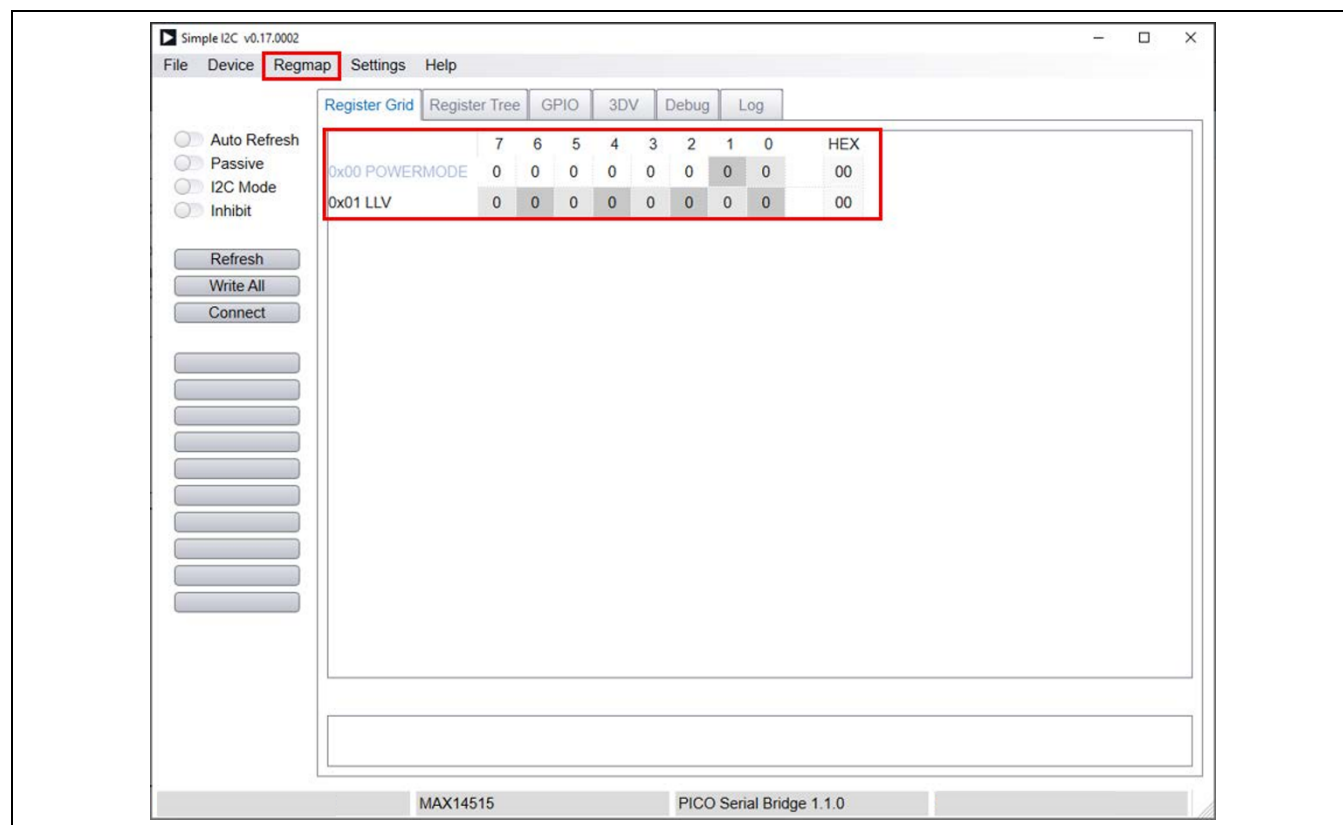


Figure 2. Simple I2C GUI

Hardware Details

The MAX14515B EV kit can use either the onboard MAX32625 microcontroller or an external microcontroller for communication with the part. The EV kit also offers the flexibility of using a 200pF (100V) capacitive load instead of the liquid lens.

The MAX14515B is evaluated based on the following parameters:

- Input supply current
- Output voltage values (RMS and peak)
- Output voltage peak-to-peak ripple
- Output switching frequency

The MAX14515B EV kit should be used with the following documents:

- MAX14515B data sheet
- MAX32625PICO data sheet
- MAX32625PICO schematic (in the MAX32625PICO data sheet)
- MAX14515B EV kit data sheet (this document)

These documents, or links to them, are included in the MAX14515B EV kit package. For the latest versions of the documents listed above, visit the [MAX14515B](#) product page.

Ordering Information

PART	TYPE
MAX14515BEVKIT#	EV Kit

#Denotes RoHS-compliant.

MAX14515B EV Kit Bill of Materials

PART	QTY	DESCRIPTION
C1	1	CAP; SMT (0805); 200PF; 5%; 100V; C0G; CERAMIC
C15	1	CAP; SMT (0402); 1UF; 10%; 16V; X5R; CERAMIC
C16	1	CAP; SMT (0402); 0.1UF; 10%; 16V; X7R; CERAMIC
R1, R2, R3, R4, R5, R6, R7, R8, R9	9	RES; SMT (0603); 0; JUMPER; JUMPER; 0.2500W
U1	1	MAX14515B IC; DRV; HIGH-VOLTAGE LIQUID LENS DRIVER; WLP8
U7	1	MODULE; BOARD; MAX32625PICO BOARD
Y1	1	Liquid-Lens

MECHANICAL STAND OFF

COMPONENTS:

- MAX4515EWMA (U1)
- SPACER1 (304 SS 3043029H-00)
- SPACER2 (304 SS 3043029H-00)
- SPACER3 (304 SS 3043029H-00)
- SPACER4 (304 SS 3043029H-00)
- SPACER5 (304 SS 3043029H-00)

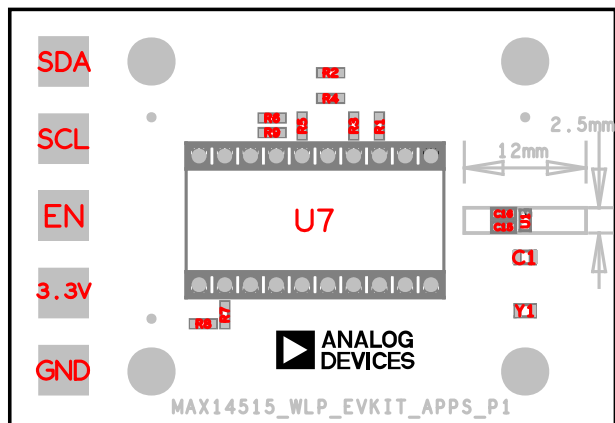
PIN CONNECTIONS:

- SDA: SOLDERPAD 5MMX5MM, SDA 1
- SCL: SOLDERPAD 5MMX5MM, SCL 1
- EN: SOLDERPAD 5MMX5MM, EN 1
- 3.3V: SOLDERPAD 5MMX5MM, 3.3V 1
- GND: SOLDERPAD 5MMX5MM

TABLE:

ZONE	ITEM	DESCRIPTION	DATE	AUTHOR
1	1	MAX4515EWMA	01/01/2024	ALPHAC

MAX14515B EV Kit PCB Layouts



Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	7/26	Initial release	—

Notes

ALL INFORMATION CONTAINED HEREIN IS PROVIDED “AS IS” WITHOUT REPRESENTATION OR WARRANTY. NO RESPONSIBILITY IS ASSUMED BY ANALOG DEVICES FOR ITS USE, NOR FOR ANY INFRINGEMENTS OF PATENTS OR OTHER RIGHTS OF THIRD PARTIES THAT MAY RESULT FROM ITS USE. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. NO LICENSE, EITHER EXPRESSED OR IMPLIED, IS GRANTED UNDER ANY ADI PATENT RIGHT, COPYRIGHT, MASK WORK RIGHT, OR ANY OTHER ADI INTELLECTUAL PROPERTY RIGHT RELATING TO ANY COMBINATION, MACHINE, OR PROCESS, IN WHICH ADI PRODUCTS OR SERVICES ARE USED. TRADEMARKS AND REGISTERED TRADEMARKS ARE THE PROPERTY OF THEIR RESPECTIVE OWNERS. ALL ANALOG DEVICES PRODUCTS CONTAINED HEREIN ARE SUBJECT TO RELEASE AND AVAILABILITY.