

## Evaluates: MAX77675

## MAX77675 Evaluation Kit

### General Description

The MAX77675 evaluation kit (EV kit) allows for easy experimentation with the MAX77675 CCM single-inductor, multiple-output (SIMO) regulator, and I<sup>2</sup>C interface.

The Windows®-based software provides a user-friendly graphical interface as well as a detailed register-based interface to exercise the features of the MAX77675.

[Ordering Information](#) appears at end of data sheet.

### Features

- Easy to Use
- GUI-Drives I<sup>2</sup>C Interface
- Assembled and Fully Tested
- On-Board Electronic Loads
- Electronic Loads with Steady-State, Transient, and Random Modes
- On-Board ADC
- Evaluation of Multiple On-Key Options
- Wide Inductor Pads for Wide Range of Case Codes

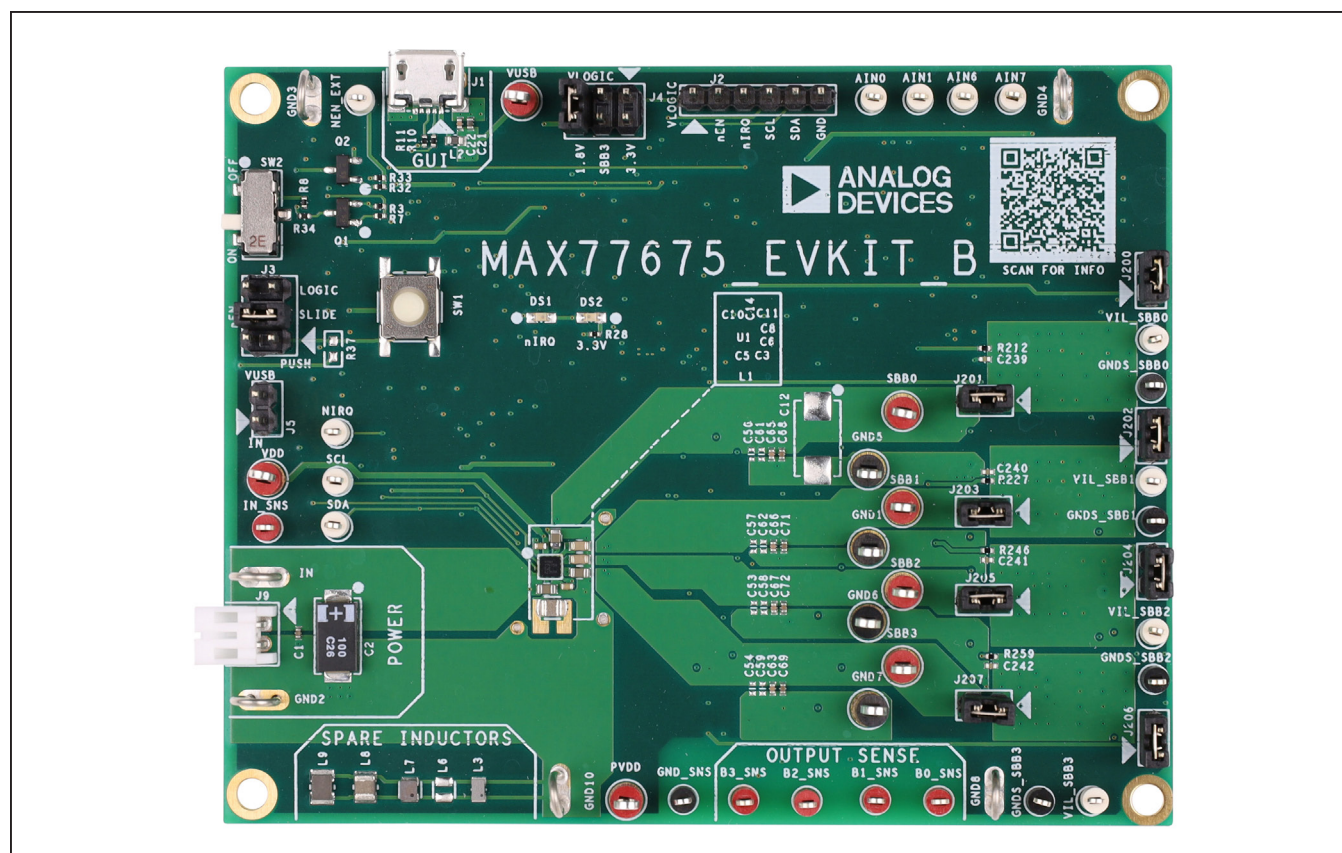


Figure 1. MAX77675 EV Kit Photograph

Windows is a registered trademark and registered service mark of Microsoft Corporation.

319-100986; Rev 0; 3/23

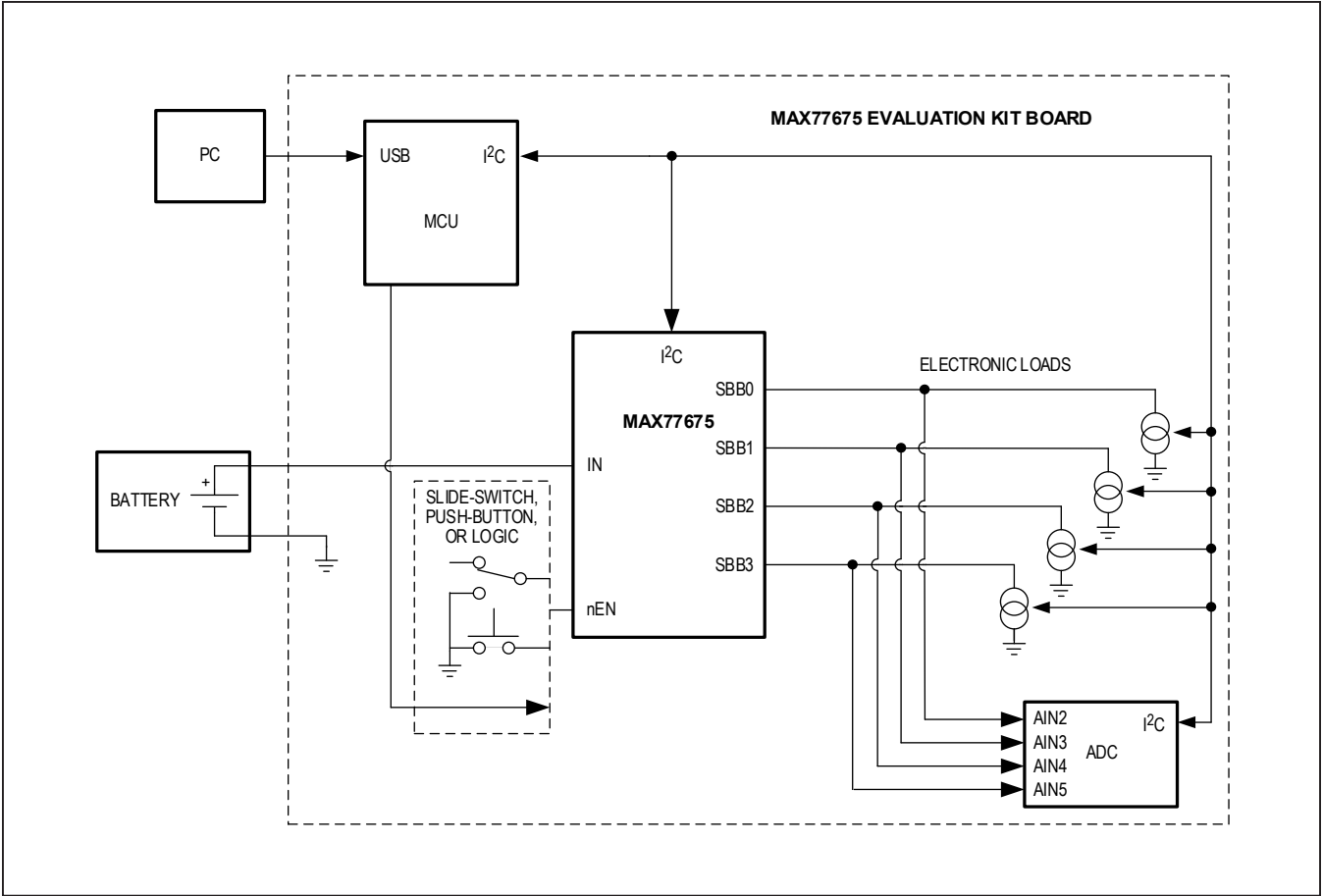


Figure 2. EV Kit Simplified Block Diagram

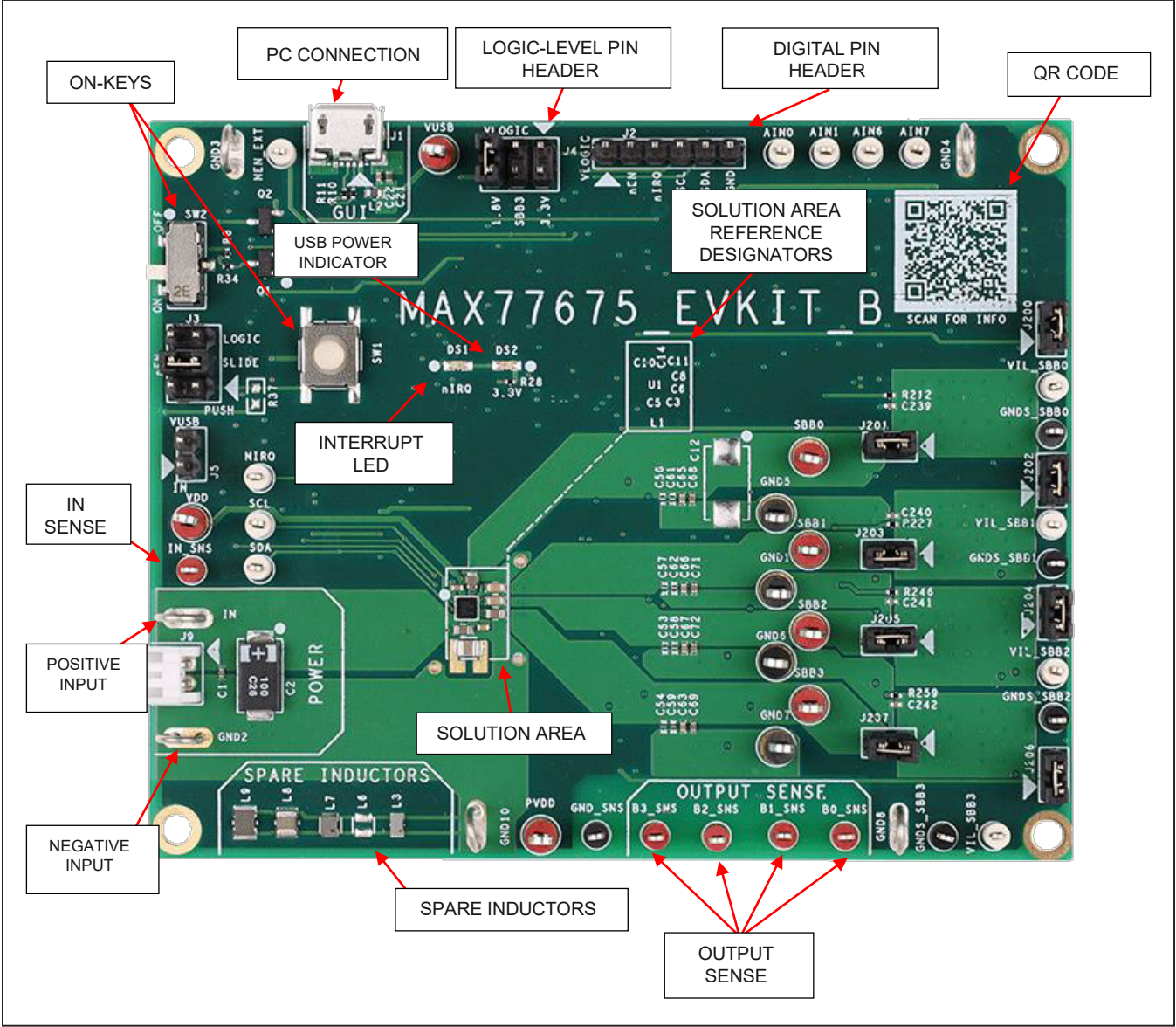


Figure 3. MAX77675 EV Kit Top View

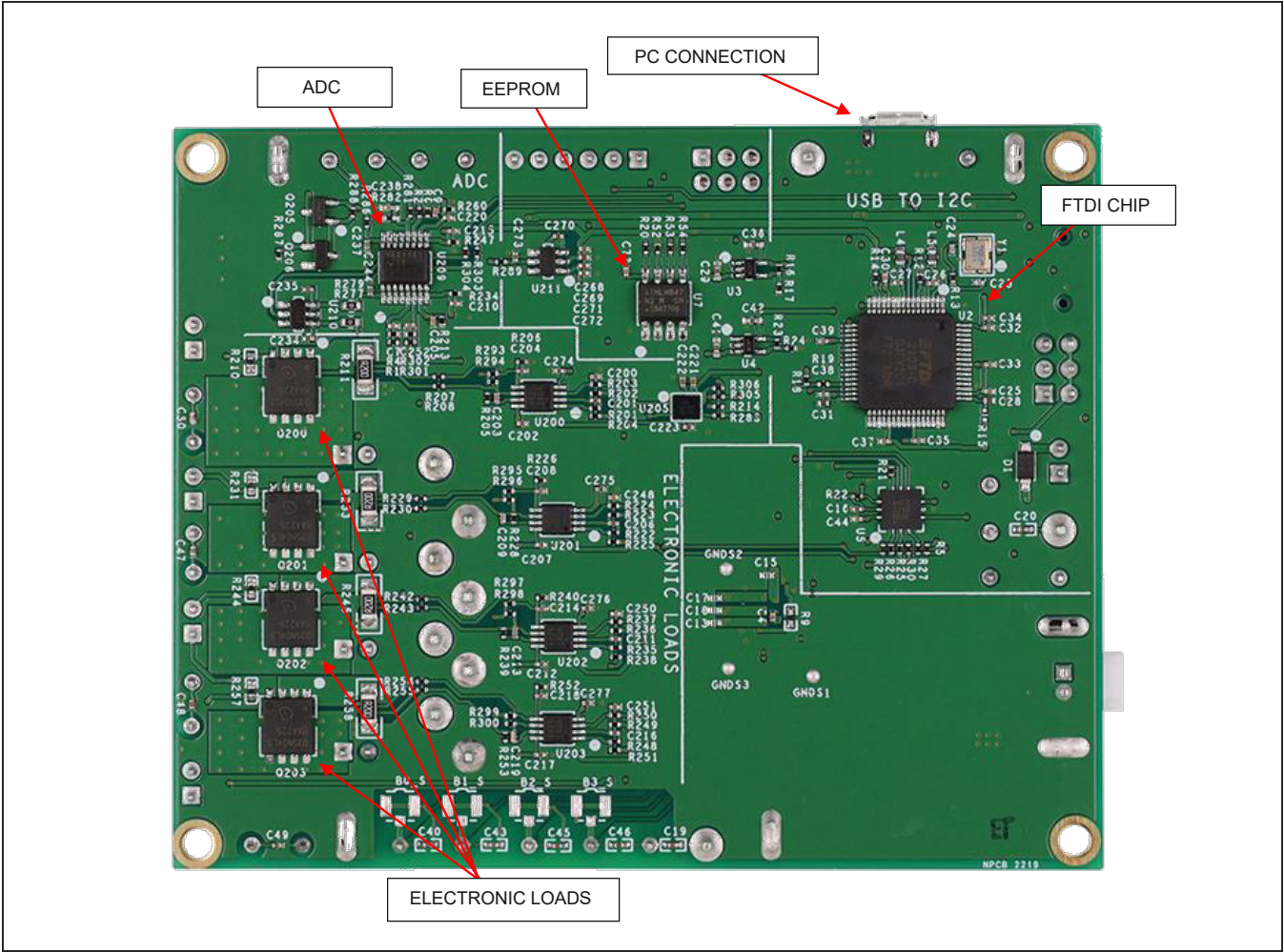


Figure 4. MAX77675 EV Kit Bottom View

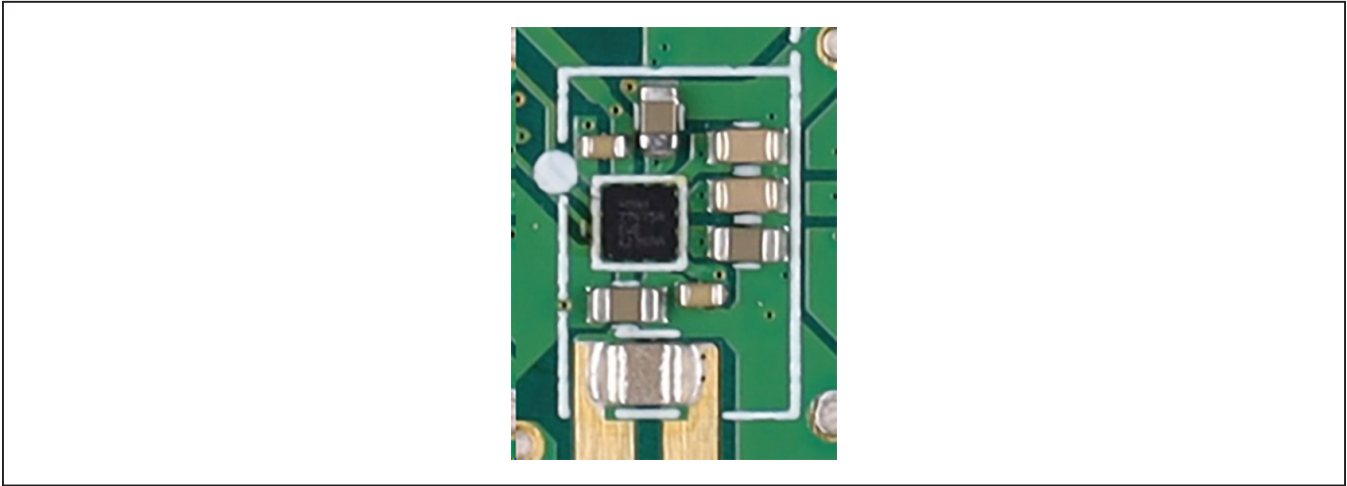


Figure 5. MAX77675 EV Kit Solution Area

## Quick Start

Perform the following procedure to familiarize yourself with the EV kit.

**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.

## Required Equipment

- MAX77675 EV kit
- MAX77675 EV kit GUI
- Windows-based PC
- Power supply
- DVM
- Micro-USB cable

## Procedure

- 1) Install the GUI software. Visit the product webpage at <http://www.analog.com/MAX77675evkit> and navigate to Design Resources to download the latest version of the EV kit software. Run the downloaded program to install the EV kit GUI on the computer.

- 2) Install EV kit shunts according to [Table 1](#).
- 3) Connect a Micro-B USB cable between the EV kit USB port labeled “GUI” and your Windows-based PC.
- 4) Apply a 3.7V supply (set for a 100mA current limit) across the IN and GND2 terminals of the EV kit. Turn the supply on.
- 5) Open the GUI and select **Device**→**Connect** in the upper-left corner. Wait for a **CONNECTED\_DEVICE\_LIST** window to pop up, and then press the **Connect** button.
- 6) On the **ADC/AMUX** tab of the GUI, click the **Read** buttons next to **VSBB0**, **VSBB1**, **VSBB2**, and **VSBB3**. For the MAX77675A, 1.8V, 1.1V, 0.7V, and 3.3V should appear, respectively ([Figure 6](#)).
- 7) This concludes the Quick Start procedure. Users are encouraged to explore the device and its register settings with the GUI. During general device evaluation, set the ammeter range to at least 1A to minimize the impact of its series resistance.

For more information on the GUI, see the [Software](#) section.

**Table 1. Default Shunt Positions and Jumper Descriptions**

| REFERENCE DESIGNATOR | DEFAULT POSITION | FUNCTION                                                                                                               |
|----------------------|------------------|------------------------------------------------------------------------------------------------------------------------|
| J3                   | 3-4              | 1-2: Connects nEN to SW1 (Push-button)<br>3-4: Connects nEN to SW2 (Slide-switch)<br>5-6: Connects nEN to GUI (Logic). |
| J4                   | 5-6              | 1-2: Connects VLOGIC to 3.3V<br>3-4: Connects VLOGIC to SBB0<br>5-6: Connects VLOGIC to 1.8V                           |
| J5                   | OPEN             | 1-2: Connects 5V from GUI USB to device IN pin                                                                         |
| J201                 | 1-2              | 1-2: Connects SBB0 to the on-board electronic load and ADC                                                             |
| J203                 | 1-2              | 1-2: Connects SBB1 to the on-board electronic load and ADC                                                             |
| J205                 | 1-2              | 1-2: Connects SBB2 to the on-board electronic load and ADC                                                             |
| J207                 | 1-2              | 1-2: Connects SBB3 to the on-board electronic load and ADC                                                             |
| J200                 | 1-2              | 1-2: Connects the gate of the Q200 load FET to the U200 amplifier                                                      |
| J202                 | 1-2              | 1-2: Connects the gate of the Q201 load FET to the U201 amplifier                                                      |
| J204                 | 1-2              | 1-2: Connects the gate of the Q202 load FET to the U202 amplifier                                                      |
| J206                 | 1-2              | 1-2: Connects the gate of the Q203 load FET to the U203 amplifier                                                      |

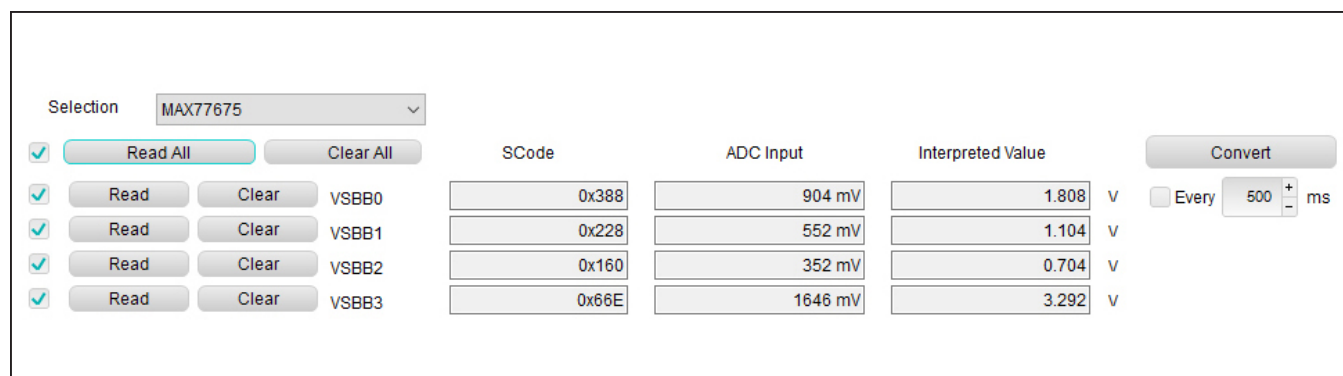


Figure 6. Quick Start: Regulator Check with the ADC

## EV Kit Features

### On-Key Options

For applications that require the IC to be enabled with a user-interactable switch or electrical signal, the EV kit comes with three options: push-button (momentary), slide-switch (persistent), and logic (electrical). The active-low enable pin (nEN) has an internal pullup resistor. Select which type of on-key to use with jumper J3. Refer to the MAX77675 data sheet for more information on configuring the nEN pin.

When jumper J3 is installed to position 5–6, the “GUI Output to nEN” control in the **Global Resources** tab can be used to manually apply a HIGH or LOW signal to nEN.

### Electronic Load

The EV kit comes with an electronic load that allows the user to evaluate the SIMO load current capabilities. On-board circuits set the load current through I<sup>2</sup>C. J201, J203, J205, and J207 connect the load to the output of the SBB0, SBB1, SBB2, and SBB3, respectively. There are two options to exercise load transient response. In the **Load Control** tab of the GUI offers load transient controls. If faster rise and fall times are required, remove J200 (for SBB0), J202 (for SBB1), J204 (for SBB2), or J206 (for SBB3) and connect a signal generator to the

gate of the load MOSFET (pin 2 of the respective header). Drive the gate with a signal between 1V (off) and 3V (fully on) to apply transients to the output of the SIMO or LDO. Note that there are 0.2Ω sense resistors with test points (called VIL\_SBB0, VIL\_SBB1, VIL\_SBB2, and VIL\_SBB3) for a 1:5 conversion of load current to voltage. See the [Software](#) section to learn how to set the load current from the GUI.

### On-Board ADC (MAX11614)

An on-board ADC is available to convert the output voltages of SBB0, SBB1, SBB2, and SBB3. Test points AIN0, AIN1, AIN6, and AIN7 are also measured. The GUI does the appropriate conversions. See the [Software](#) section for how to read these values from the GUI.

### Software

The graphical user interface (GUI) software allows for convenient, quick, and thorough evaluation of the MAX77675.

The GUI has individual tabs for each functional block of the device (global resources, interrupts/status, power sequencing, SIMO) and two additional tabs for controlling EV kit hardware (load control and ADC). In addition, the FPS Configuration tab contains a plot of the power-up and power-down sequences. See [Figure 8](#) and [Figure 9](#) for screenshots of the GUI upon opening.

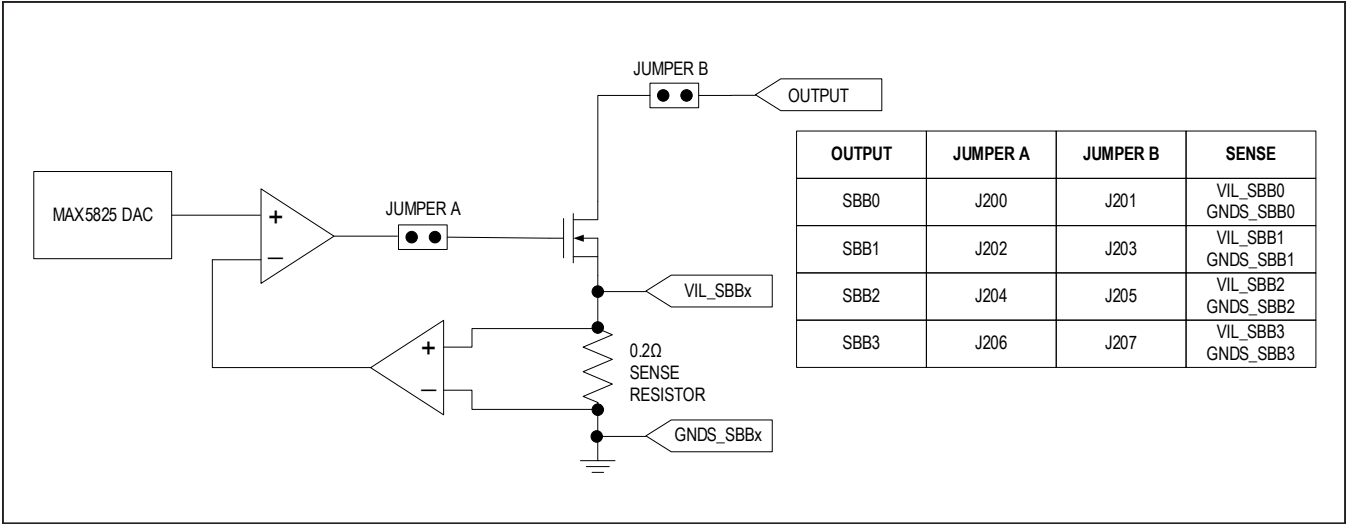


Figure 7. Electronic Load Block Diagram

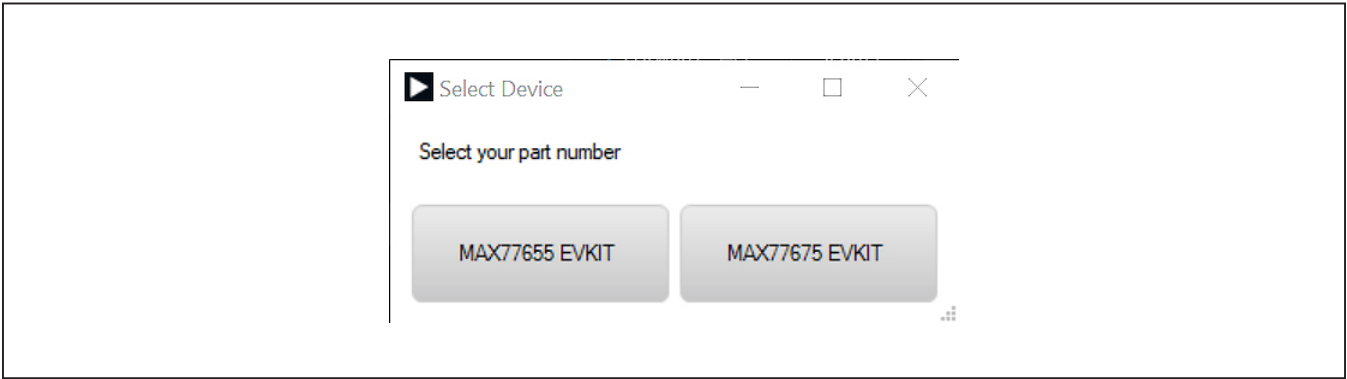


Figure 8. MAX77655/75 EV Kit Selection

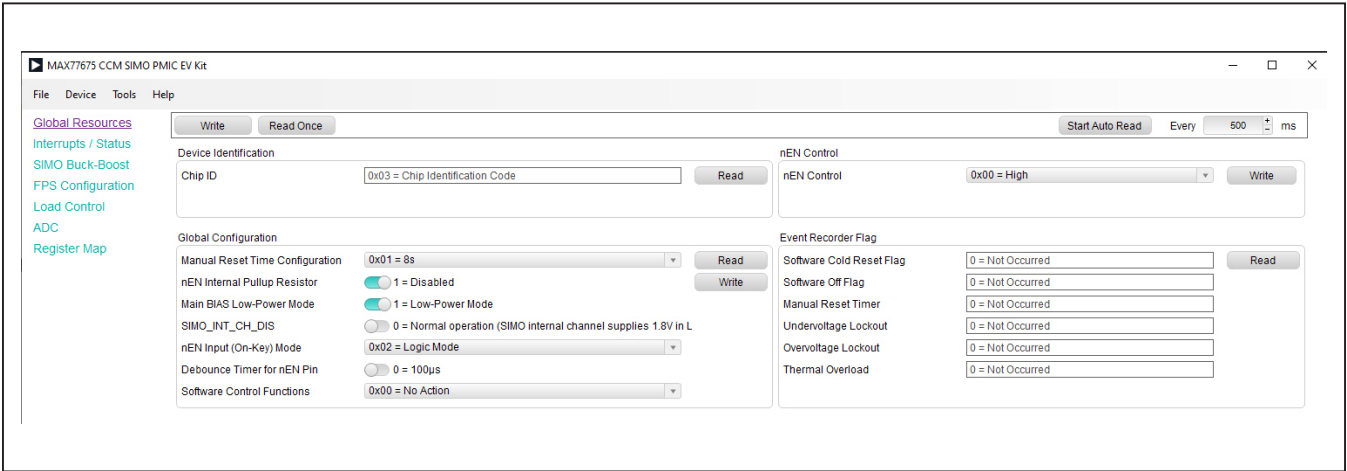


Figure 9. MAX77675 EV Kit GUI

## Installation

Visit the product webpage at <http://www.analog.com/max77675evkit> and navigate to Design Resources to download the latest version of the EV kit software. Save the EV kit software to a temporary folder and decompress the ZIP file.

## Windows Drivers

Upon connection of a Micro-USB cable between your PC and the EV kit for the first time, wait a few minutes for Windows to automatically install drivers.

## Graphical User Interface (GUI) Details

The GUI drives I<sup>2</sup>C communication with the EV kit. Every control in the GUI (excluding GUI Output to nEN, the **Load Control** tab, and the **ADC** tab) corresponds directly to a register within the MAX77675. Hover your cursor over control names for a description of that register. The complete register map is available in the **Register Map** tab of the GUI and the IC data sheet.

## Load Control Tab

The **Load Control** tab contains controls for load currents on the regulator outputs. The GUI is capable of setting steady-state, transient, and random load currents. To set a load current, use the slider bar or text field to input a value (mA) and check the **Enable** box. Shuffle through the modes to exercise different load conditions.

The offset and gain values are set by Analog Devices and do not need to be altered.

## ADC Tab

The **ADC** tab allows users to convert important voltage and current signals to digital readings. To read a signal, click the **Read** button and examine the **Value** column.

## Tips

### Testing Custom Power-Up Sequences

To test custom power-up sequences, send the device to standby state by setting the “Software Control Functions” control to “Software Standby” in the **Global Resources** tab. All channels on the power sequence should power down.

Then, use the “SBBx Enable Control for SIMO” controls in either the SIMO Buck-Boost or **FPS Configuration** tab.

Finally, exit standby state and trigger the power sequence using one of the following methods:

- Send a “Software Exit Standby” command using the “Software Control Functions” control.
- Press the on-board on-key or toggle the slide switch if using either push-button or slide-switch mode.

### Measuring Quiescent Current

The on-board electronic load and voltage dividers for the ADCs may affect quiescent current measurements while the device is in low-power mode. Remove jumpers J201, J203, J205, and J207 before making quiescent current measurements in low-power mode.

For stable, accurate measurements, set the input current ammeter to 100NPLC and monitor the average reading.

If no settings are changed on the MAX77675 EV kit, the quiescent current after applying power to IN is about 300nA. After waking up the device, quiescent current is about 4.3μA.

### Applying Fast Line Transients

A large bulk capacitor (C2) is located at the power input connection points to attenuate any ringing on the input voltage due to long cables between the board and the supply. Before applying fast line transients, remove this capacitor.

## Ordering Information

| PART           | IC            | TYPE   |
|----------------|---------------|--------|
| MAX77675EVKIT# | MAX77675AEWE+ | EV kit |

#Denotes RoHS compliance.

# MAX77675 Evaluation Kit

Evaluates: MAX77675

## MAX77675 EV Kit Bill of Materials

| ITEM          | REF DES                                                                     | DNI/DNP | QTY | MFG PART #                                                                                        | MANUFACTURER                                            | VALUE        | DESCRIPTION                                                                                                                                           |
|---------------|-----------------------------------------------------------------------------|---------|-----|---------------------------------------------------------------------------------------------------|---------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| SOLUTION AREA |                                                                             |         |     |                                                                                                   |                                                         |              |                                                                                                                                                       |
| 1             | C3, C10                                                                     | -       | 2   | GRM155R61A106ME44;<br>GRM155R61A106ME11;<br>0402ZD106MAT2A;<br>CL05A106MP5NUNC                    | MURATA;MURATA;<br>AVX;SAMSUNG                           | 10UF         | CAP; SMT (0402); 10UF; 20%; 10V; X5R; CERAMIC                                                                                                         |
| 2             | C4                                                                          | -       | 1   | C0402C103K5RAC;<br>GRM155R71H103KA88;<br>C1005X7R1H103K050BE;<br>CL05B103KB5NNN;<br>UMK105B7103KV | KEMET;MURATA;TDK;<br>SAMSUNG ELECTRONIC;<br>TAIYO YUDEN | 0.01UF       | CAP; SMT (0402); 0.01UF; 10%; 50V; X7R; CERAMIC                                                                                                       |
| 4             | C5, C6, C14                                                                 | -       | 2   | C1608X5R1A226M080AC;<br>GRM188R61A226ME15;<br>CL10A226MPCNUBE;<br>CL10A226MPMNUB                  | TDK;MURATA; SAMSUNG;<br>SAMSUNG ELECTRO-MECHANICS       | 22UF         | CAP; SMT (0603); 22UF; 20%; 10V; X5R; CERAMIC                                                                                                         |
| 5             | C8, C11                                                                     | -       | 2   | GRM188R60J476ME15                                                                                 | MURATA                                                  | 47UF         | CAP; SMT (0603); 47UF; 20%; 6.3V; X5R; CERAMIC                                                                                                        |
| 6             | L1                                                                          | -       | 1   | DFE201610E-1R5M=P2                                                                                | MURATA                                                  | 1.5UH        | INDUCTOR; SMT (0806); MAGNETICALLY SHIELDED;<br>1.5UH; TOL=+/-20%; 2.1A                                                                               |
| 7             | U1                                                                          | -       | 1   | MAX77675AEWE+                                                                                     | MAXIM                                                   | MAX77675     | EVKIT PART - IC; MAX77675; LOW IQ SIMO PMIC WITH 0.5V TO 5.5V OUTPUTS DELIVERING UP TO 700MA TOTAL OUTPUT CURRENT; PACKAGE OUTLINE DRAWING: 21-100374 |
| EVALUATION    |                                                                             |         |     |                                                                                                   |                                                         |              |                                                                                                                                                       |
| 1             | AIN0, AIN1, AIN6,<br>AIN7, NEN_EXT,<br>NIRQ, SCL, SDA,<br>VIL_SBB0-VIL_SBB3 | -       | 12  | 5002                                                                                              | KEYSTONE                                                | N/A          | TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; WHITE; PHOSPHOR BRONZE WIRE SILVER;                                                 |
| 2             | B0_SNS,<br>B1_SNS-B3_SNS,<br>IN_SNS                                         | -       | 5   | 5000                                                                                              | KEYSTONE                                                | N/A          | TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;                                      |
| 3             | C1, C234, C235                                                              | -       | 3   | GRM155R61C104KA88                                                                                 | MURATA                                                  | 0.1UF        | CAP; SMT (0402); 0.1UF; 10%; 16V; X5R; CERAMIC                                                                                                        |
| 4             | C2                                                                          | -       | 1   | 16TQC100MYF                                                                                       | PANASONIC                                               | 100UF        | CAP; SMT (7343); 100UF; 20%; 16V; TANTALUM                                                                                                            |
| 5             | C19, C20, C40,<br>C43, C45-C50                                              | -       | 10  | C0402C103K5RAC;<br>GRM155R71H103KA88;<br>C1005X7R1H103K050BE;<br>CL05B103KB5NNN;<br>UMK105B7103KV | KEMET;MURATA; TDK;SAMSUNG<br>ELECTRONIC; TAIYO YUDEN    | 0.01UF       | CAP; SMT (0402); 0.01UF; 10%; 50V; X7R; CERAMIC                                                                                                       |
| 6             | C7, C9, C200, C205, C210,<br>C215,C220, C238, C248,<br>C250-C252            | -       | 12  | C0402C472J5RAC                                                                                    | KEMET                                                   | 4700PF       | CAP; SMT (0402); 4700PF; 5%; 50V; X7R; CERAMIC                                                                                                        |
| 7             | C16, C29, C36,<br>C41, C42                                                  | -       | 5   | C0402C105K8PAC;<br>CC0402KRX5R6BB105                                                              | KEMET;YAGEO                                             | 1UF          | CAP; SMT (0402); 1UF; 10%; 10V; X5R; CERAMIC                                                                                                          |
| 8             | C21, C28, C31                                                               | -       | 3   | C1005X5R1A475K050                                                                                 | TDK                                                     | 4.7UF        | CAP; SMT (0402); 4.7UF; 10%; 10V; X5R; CERAMIC                                                                                                        |
| 9             | C22, C25-C27, C30, C32-<br>C35, C37-C39,C44, C73                            | -       | 14  | GRM155R71A104JA01                                                                                 | MURATA                                                  | 0.1UF        | CAP; SMT (0402); 0.1UF; 5%; 10V; X7R; CERAMIC                                                                                                         |
| 10            | C23, C24                                                                    | -       | 2   | C0402C0G500270JNP;<br>GRM1555C1H270JA01                                                           | VENKEL LTD.;MURATA                                      | 27PF         | CAP; SMT (0402); 27PF; 5%; 50V; COG; CERAMIC                                                                                                          |
| 11            | C63, C65-C67                                                                | -       | 4   | ANY                                                                                               | ANY                                                     | 0.1UF        | CAPACITOR; SMT; 0402; CERAMIC; 0.1uF; 10V; 10%; X5R; -55degC to +125degC; 0 +/-30PPM/degC; FORMFACTOR ;                                               |
| 12            | C68, C69, C71, C72,<br>C201, C206, C211,<br>C216                            | -       | 8   | ANY                                                                                               | ANY                                                     | 0.01UF       | CAPACITOR; SMT (0402); CERAMIC CHIP; 0.01UF; 10V; TOL=10%; MODEL=C0402C SERIES; TG=-55 DEGC TO +125 DEGC; TC=X7R                                      |
| 13            | C202, C207, C212,<br>C217, C221-C223,<br>C237, C244, C268,<br>C272-C277     | -       | 16  | ANY                                                                                               | ANY                                                     | 0.1UF        | CAPACITOR; SMT (0402); CERAMIC CHIP; 0.1UF; 25V; TOL=10%; MODEL=C SERIES; TG=-55 DEGC TO +125 DEGC; TC=X7R; FORMFACTOR                                |
| 14            | C203, C204, C208,<br>C209, C213, C214,<br>C218, C219                        | -       | 8   | GRM155R71H102JA01;<br>GCM155R71H102JA37                                                           | MURATA;MURATA                                           | 1000PF       | CAP; SMT (0402); 1000PF; 5%; 50V; X7R; CERAMIC                                                                                                        |
| 15            | C239-C242                                                                   | -       | 4   | ANY                                                                                               | ANY                                                     | 1UF          | CAPACITOR; SMT (0402); CERAMIC CHIP; 1UF; 6.3V; TOL=20%; MODEL=C SERIES; TG=-55 DEGC TO +85 DEGC; TC=X5R; FORMFACTOR                                  |
| 16            | C269-C271                                                                   | -       | 3   | ANY                                                                                               | ANY                                                     | 1UF          | CAPACITOR; SMT (0402); CERAMIC CHIP; 1UF; 16V; TOL=10%; MODEL=C SERIES; TG=-55 DEGC TO +85 DEGC; TC=X5R; FORMFACTOR                                   |
| 17            | D1                                                                          | -       | 1   | B0530W-7-F                                                                                        | DIODES INCORPORATED                                     | B0530W       | DIODE; SCH; SMT (SOD-123); PIV=30V; IF=0.5A                                                                                                           |
| 18            | DS1, DS2                                                                    | -       | 2   | LTST-C190CKT                                                                                      | LITE-ON ELECTRONICS INC.                                | LTST-C190CKT | DIODE; LED; STANDARD; RED; SMT (0603); PIV=5.0V; IF=0.04A; -55 DEGC TO +85 DEGC                                                                       |
| 19            | GND1, GND5-GND7                                                             | -       | 4   | S011                                                                                              | KEYSTONE                                                | N/A          | TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;                               |
| 20            | GND2-GND4,<br>GND8, GND10, IN                                               | -       | 6   | 9020 BUSS                                                                                         | WEICO WIRE                                              | MAXIMPAD     | EVK KIT PARTS; MAXIM PAD; WIRE; NATURAL; SOLID; WEICO WIRE; SOFT DRAWN BUS TYPE-S; 20AWG                                                              |

## MAX77675 EV Kit Bill of Materials (continued)

| ITEM | REF DES                                                   | DNI/DNP | QTY | MFG PART #                                              | MANUFACTURER                                                                                     | VALUE                | DESCRIPTION                                                                                                                    |
|------|-----------------------------------------------------------|---------|-----|---------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------|
| 21   | GNDS_SBB0-GNDS_SBB3,<br>GND_SNS                           | -       | 5   | 5001                                                    | KEystone                                                                                         | N/A                  | TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;             |
| 22   | J1                                                        | -       | 1   | 10118193-0001LF                                         | FCI CONNECT                                                                                      | 10118193-0001LF      | CONNECTOR; FEMALE; SMT; MICRO USB B TYPE RECEPTACLE; RIGHT ANGLE; 5PINS                                                        |
| 23   | J2                                                        | -       | 1   | PBC06SAAN                                               | SULLINS ELECTRONICS CORP.                                                                        | PBC06SAAN            | CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 6PINS; -65 DEGC TO +125 DEGC                                               |
| 24   | J3, J4                                                    | -       | 2   | PBC03DAAN                                               | SULLINS ELECTRONICS CORP.                                                                        | PBC03DAAN            | CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 6PINS; -65 DEGC TO +125 DEGC                                               |
| 25   | J5, J200-J207                                             | -       | 9   | TSW-102-07-T-S                                          | SAMTEC                                                                                           | TSW-102-07-T-S       | CONNECTOR; THROUGH HOLE; TSW SERIES; SINGLE ROW; STRAIGHT; 2PINS; -55 DEGC TO +105 DEGC                                        |
| 26   | J9                                                        | -       | 1   | S2B-PH-K-S(LF)(SN)                                      | JST MANUFACTURING                                                                                | S2B-PH-K-S(LF)(SN)   | CONNECTOR; MALE; THROUGH HOLE; 2.0MM PITCH; DISCONNECTABLE CRIMP STYLE CONNECTOR; SIDE ENTRY TYPE; RIGHT ANGLE; 2PINS          |
| 27   | L2, L4, L5                                                | -       | 3   | BLM18AG601SN1                                           | MURATA                                                                                           | 600                  | INDUCTOR; SMT (0603); FERRITE-BEAD; 600; TOL=+/-; 0.5A                                                                         |
| 28   | L3                                                        | -       | 1   | HTEG2012FE-1R5MDR                                       | CYNTEC                                                                                           | 1.5UH                | INDUCTOR; SMT (0805); FERRITE; 1.5UH; 20%; 1.6A                                                                                |
| 29   | L7                                                        | -       | 1   | HMLQ20161T-1R0MDR                                       | CYNTEC                                                                                           | 1UH                  | INDUCTOR; SMT (0806); COMPOSITE; 1UH; 20%; 3.9A                                                                                |
| 30   | L8                                                        | -       | 1   | D2E252012F-2R2M                                         | MURATA                                                                                           | 2.2UH                | INDUCTOR; SMT (1008); SHIELDED; 2.2UH; 20%; 2.3A                                                                               |
| 31   | L9                                                        | -       | 1   | MAMK2520H2R2M                                           | TAIYO YUDEN                                                                                      | 2.2UH                | INDUCTOR; SMT (1008); WIREWOUND; 2.2UH; 20%; 2.2A                                                                              |
| 32   | MISC1                                                     | -       | 1   | AK67421-2                                               | ASSMANN                                                                                          | AK67421-2            | CABLE; MALE; USB; USB2.0 MICRO CONNECTION CABLE; USB B MICRO MALE TO USB A MALE; 2000 MILLIMETERS; 5PINS-4PINS                 |
| 33   | PVDD, SBB0-SBB3,<br>VDD, VUSB                             | -       | 7   | 5010                                                    | KEystone                                                                                         | N/A                  | TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; RED; PHOSPHOR BRONZE WIRE SIL;                          |
| 34   | Q1, Q2                                                    | -       | 2   | BSS138                                                  | ON SEMICONDUCTOR                                                                                 | BSS138               | TRAN; LOGIC LEVEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR; NCH; SOT-23; PD-(0.36W); I-(0.22A); V-(50V); -55 DEGC TO +150 DEGC |
| 35   | Q200-Q203                                                 | -       | 4   | IPC100N04S5L1R1ATMA1                                    | INFINEON                                                                                         | IPC100N04S5L1R1ATMA1 | TRAN; OPTIMOS 5 POWER-TRANSISTOR; NCH; PG-TDSON-8-34; PD-(150W); I-(100A); V-(40V)                                             |
| 36   | Q205                                                      | -       | 1   | FDN360P                                                 | ON SEMICONDUCTOR                                                                                 | FDN360P              | TRANSISTOR, MOSFET P-CHANNEL, SUPERSOT-3, PD=0.5W, ID=2.0A, VDSS=-30V, VGSS=+/-20V                                             |
| 37   | Q206                                                      | -       | 1   | 2N7002; 2N7002;<br>2N7002; 2N7002                       | DIODES INCORPORATED;<br>ST MICROELECTRONICS;<br>ON SEMICONDUCTOR;<br>MICRO COMMERCIAL COMPONENTS | 2N7002               | TRAN; ; NCH; SOT-23; PD-(0.33W); IC-(0.5A); VCEO-(60V); -55 DEGC TO +150 DEGC                                                  |
| 38   | R1, R286, R302-R306                                       | -       | 7   | ANY                                                     | ANY                                                                                              | 0                    | RESISTOR; 0402; 0 OHM; 1%; 100PPM; 0.0625W; THICK FILM; FORMFACTOR                                                             |
| 39   | R2, R6                                                    | -       | 2   | ERJ-2GEJ103                                             | PANASONIC                                                                                        | 10K                  | RES; SMT (0402); 10K; 5%; +/-200PPM/DEGC; 0.1000W                                                                              |
| 40   | R3, R8, R33                                               | -       | 3   | CRCW040210M0FK                                          | VISHAY DALE                                                                                      | 10M                  | RES; SMT (0402); 10M; 1%; +/-100PPM/DEGC; 0.0630W                                                                              |
| 41   | R4, R13, R210, R231,<br>R244, R257, R301                  | -       | 7   | CRCW040210M0FK                                          | VISHAY DALE                                                                                      | 1M                   | RES; SMT (0402); 1M; 1%; +/-100PPM/DEGC; 0.0630W                                                                               |
| 42   | R5, R17, R24,<br>R214, R283                               | -       | 5   | ANY                                                     | ANY                                                                                              | 100K                 | RESISTOR; 0402; 100K; 1%; 100PPM; 0.0625W; THICK FILM; FORMFACTOR                                                              |
| 43   | R7, R32                                                   | -       | 2   | CRCW04021R00FK                                          | VISHAY DALE                                                                                      | 1                    | RES; SMT (0402); 1; 1%; +/-100PPM/DEGC; 0.0630W                                                                                |
| 44   | R9, R19, R20, R29,<br>R30, R34, R52-R54                   | -       | 9   | ERJ-2GE0R00                                             | PANASONIC                                                                                        | 0                    | RES; SMT (0402); 0; JUMPER; JUMPER; 0.1000W                                                                                    |
| 45   | R10, R11                                                  | -       | 2   | RC0402FR-0727RL                                         | YAGEO                                                                                            | 27                   | RES; SMT (0402); 27; 1%; +/-100PPM/DEGC; 0.0630W                                                                               |
| 46   | R12                                                       | -       | 1   | CRCW040212K0FK;<br>MCR01MZPF1202                        | VISHAY DALE;<br>ROHM SEMICONDUCTOR                                                               | 12K                  | RES; SMT (0402); 12K; 1%; +/-100PPM/DEGC; 0.0630W                                                                              |
| 47   | R14, R207, R208, R229,<br>R230, R242, R243, R254,<br>R255 | -       | 9   | ANY                                                     | ANY                                                                                              | 1K                   | RESISTOR; 0402; 1K; 1%; 100PPM; 0.0625W; THICK FILM; FORMFACTOR                                                                |
| 48   | R16                                                       | -       | 1   | CRCW04024752FK;<br>9C04021A4752FLHF3;<br>CRCW040247K5FK | VISHAY DALE;<br>YAGEO; VISHAY DALE                                                               | 47.5K                | RES; SMT (0402); 47.5K; 1%; +/-100PPM/DEGC; 0.0630W                                                                            |
| 49   | R18                                                       | -       | 1   | RC0402FR-07150RL                                        | YAGEO                                                                                            | 150                  | RES; SMT (0402); 150; 1%; +/-100PPM/DEGC; 0.0630W                                                                              |
| 50   | R21, R22                                                  | -       | 2   | CRCW04024K70FK;<br>MCR01MZPF4701                        | VISHAY DALE;<br>ROHM SEMICONDUCTOR                                                               | 4.7K                 | RES; SMT (0402); 4.7K; 1%; +/-100PPM/DEGC; 0.0630W                                                                             |

# MAX77675 Evaluation Kit

Evaluates: MAX77675

## MAX77675 EV Kit Bill of Materials (continued)

| ITEM | REF DES                                                                | DNI/DNP | QTY | MFG PART #                         | MANUFACTURER                        | VALUE          | DESCRIPTION                                                                                                      |
|------|------------------------------------------------------------------------|---------|-----|------------------------------------|-------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------|
| 51   | R23                                                                    | -       | 1   | CRCW0402169KFK                     | VISHAY DALE                         | 169K           | RES; SMT (0402); 169K; 1%; +/-100PPM/DEGC; 0.0630W                                                               |
| 52   | R25, R26                                                               | -       | 2   | RC0402FR-072K2L                    | YAGEO                               | 2.2K           | RES; SMT (0402); 2.2K; 1%; +/-100PPM/DEGC; 0.0630W                                                               |
| 53   | R27                                                                    | -       | 1   | CRCW0402222R0FK                    | VISHAY DALE                         | 22             | RES; SMT (0402); 22; 1%; +/-100PPM/DEGC; 0.0630W                                                                 |
| 54   | R28                                                                    | -       | 1   | CRCW0402470RKF                     | VISHAY DALE                         | 470            | RES; SMT (0402); 470; 1%; +/-100PPM/DEGC; 0.0630W                                                                |
| 55   | R201, R222, R235, R248, R289                                           | -       | 5   | 9C04021A1000FL; RC0402FR-07100RL   | PANASONIC; YAGEO PHYCOMP            | 100            | RES; SMT (0402); 100; 1%; +/-100PPM/DEGC; 0.0630W                                                                |
| 56   | R202, R223, R236, R249                                                 | -       | 4   | RC0402FR-07680RL                   | YAGEO                               | 680            | RES; SMT (0402); 680; 1%; +/-100PPM/DEGC; 0.0630W                                                                |
| 57   | R203, R224, R237, R250                                                 | -       | 4   | CRCW040220K0FK                     | VISHAY DALE                         | 20K            | RES; SMT (0402); 20K; 1%; +/-100PPM/DEGC; 0.0630W                                                                |
| 58   | R204, R225, R238, R251                                                 | -       | 4   | CRCW040210R0JN                     | VISHAY DALE                         | 10             | RES; SMT (0402); 10; 5%; +/-200PPM/DEGC; 0.0630W                                                                 |
| 59   | R205, R206, R226, R228, R239, R240, R252, R253, R281, R282, R287, R288 | -       | 12  | RC0402FR-0710KL; CR0402-FX-1002GLF | YAGEO;BOURNS                        | 10K            | RES; SMT (0402); 10K; 1%; +/-100PPM/DEGC; 0.0630W                                                                |
| 60   | R211, R233, R245, R258                                                 | -       | 4   | LRC-LR1206LF-01-R200-F             | TT ELECTRONICS                      | 0.2            | RES; SMT (1206); 0.2; 1%; +/-100PPM/DEGC; 0.5000W                                                                |
| 61   | R212, R213, R227, R234, R246, R247, R259, R260                         | -       | 8   | CRCW0402787KFK                     | VISHAY DALE                         | 787K           | RES; SMT (0402); 787K; 1%; +/-100PPM/DEGC; 0.0630W                                                               |
| 62   | R277, R279                                                             | -       | 2   | ANY                                | ANY                                 | 0              | RESISTOR; 0603; 0 OHM; 0%; JUMPER; 0.10W; THICK FILM; FORMFACTOR                                                 |
| 63   | R293, R295, R297, R299                                                 | -       | 4   | ERJ-2RKF4703                       | PANASONIC                           | 470K           | RES; SMT (0402); 470K; 1%; +/-100PPM/DEGC; 0.0630W                                                               |
| 64   | R294, R296, R298, R300                                                 | -       | 4   | CRCW0402649KFK                     | VISHAY DALE                         | 649K           | RES; SMT (0402); 649K; 1%; +/-100PPM/DEGC; 0.0630W                                                               |
| 65   | SW1                                                                    | -       | 1   | EVQ-Q2K03W                         | PANASONIC                           | EVQ-Q2K03W     | SWITCH; SPST; SMT; 15V; 0.02A; LIGHT TOUCH SWITCH; RCOIL= OHM; RINSULATION= OHM; PANASONIC                       |
| 66   | SW2                                                                    | -       | 1   | CL-SB-12B-11                       | NIDEC COPAL ELECTRONICS CORP        | CL-SB-12B-11   | SWITCH; SPDT; SMT; 12V; 0.2A; CL-SB SERIES; SLIDE SWITCH; RCOIL=0.05 OHM; RINSULATION=100M OHM                   |
| 67   | U2                                                                     | -       | 1   | FT2232HL                           | FUTURE TECHNOLOGY DEVICES INTL LTD. | FT2232HL       | IC; MMRY; DUAL HIGH SPEED USB TO MULTIPURPOSE UART/FIFO; LQFP64                                                  |
| 68   | U3, U4                                                                 | -       | 2   | MAX8512EXK+                        | MAXIM                               | MAX8512EXK     | IC, VREG, Ultra-Low-Noise, High PSRR, Adjustable Vout, SC70-5                                                    |
| 69   | U5                                                                     | -       | 1   | MAX3395EETC+                       | MAXIM                               | MAX3395EETC    | IC; TRANS; 15KV ESD-PROTECTED HIGH-DRIVE CURRENT QUAD-LEVEL TRANSLATOR WITH SPEED-UP CIRCUITRY; TQFN12 4X4       |
| 70   | U7                                                                     | -       | 1   | AT24CS02-SSHM                      | MICROCHIP                           | AT24CS02-SSHM  | IC; EPROM; I2C-COMPATIBLE TWO-WIRE SERIAL EEPROM; 150MIL; NSOIC8                                                 |
| 71   | U200-U203                                                              | -       | 4   | MAX44251AUA+                       | MAXIM                               | MAX44251AUA+   | IC; OPAMP; ULTRA-PRECISION; LOW-NOISE OP AMP; UMAX8                                                              |
| 72   | U205                                                                   | -       | 1   | MAX5825AWP+                        | MAXIM                               | MAX5825AWP+T   | IC; DAC; ULTRA-SMALL; OCTAL CHANNEL; 12-BIT BUFFERED OUTPUT DAC WITH INTERNAL REFERENCE AND I2C INTERFACE; WLP20 |
| 73   | U209                                                                   | -       | 1   | MAX11614EEE+                       | MAXIM                               | MAX11614EEE+   | IC; ADC; LOW-POWER; 8-CHANNEL; I2C; 12-BIT ADC IN ULTRA-SMALL PACKAGE; QSOP16                                    |
| 74   | U210                                                                   | -       | 1   | MAX6071AAUT41+                     | MAXIM                               | MAX6071AAUT41+ | IC; VREF; LOW NOISE; HIGH-PRECISION SERIES VOLTAGE REFERENCE; SOT23-6                                            |
| 75   | U211                                                                   | -       | 1   | MAX1697UEUT+                       | MAXIM                               | MAX1697UEUT+   | IC; INV; INVERTING CHARGE PUMP WITH SHUTDOWN; SOT23-6                                                            |
| 76   | Y1                                                                     | -       | 1   | 7M-12.000MAAJ                      | TXC CORPORATION                     | 12MHZ          | CRYSTAL; SMT; 12MHZ; 18PF; TOL = +/-30PPM; STABILITY = +/-30PPM                                                  |
| 77   | PCB                                                                    | -       | 1   | MAX77675                           | MAXIM                               | PCB            | PCB:MAX77675                                                                                                     |
| 78   | EV_KIT_BOX1                                                            | -       | 10  | NPC02SXON-RC                       | SULLINS ELECTRONICS CORP.           |                | CONNECTOR; FEMALE; MINI SHUNT; 0.100IN CC; OPEN TOP; JUMPER; STRAIGHT; 2PINS                                     |
| 79   | B0_S, B1_S-B3_S                                                        | DNP     | 0   | U.FL-R-SMT-1                       | HIROSE ELECTRIC CO LTD.             | U.FL-R-SMT-1   | CONNECTOR; MALE; SMT; ULTRA SMALL SURFACE MOUNT COAXIAL CONNECTOR; STRAIGHT; 2PINS                               |
| 80   | C12                                                                    | DNP     | 0   | TPSD107K020R0085                   | AVX                                 | 100UF          | CAP; SMT (7343); 100UF; 10%; 20V; TANTALUM                                                                       |
| 81   | L6                                                                     | DNP     | 0   | DFE201610E-1R5M=P2                 | MURATA                              | 1.5UH          | INDUCTOR; SMT (0806); MAGNETICALLY SHIELDED; 1.5UH; TOL= +/-20%; 2.1A                                            |
| 82   | C13, C15, C17, C18, C53, C54, C56-C59, C61, C62                        | DNP     | 0   | N/A                                | N/A                                 | OPEN           | CAPACITOR; SMT (0402); OPEN; FORMFACTOR                                                                          |
| 83   | R15                                                                    | DNP     | 0   | N/A                                | N/A                                 | OPEN           | RESISTOR; 0402; OPEN; FORMFACTOR                                                                                 |
| 84   | R37                                                                    | DNP     | 0   | N/A                                | N/A                                 | OPEN           | RESISTOR; 0603; OPEN; FORMFACTOR                                                                                 |

## MAX77675 EV Kit Schematic Diagram

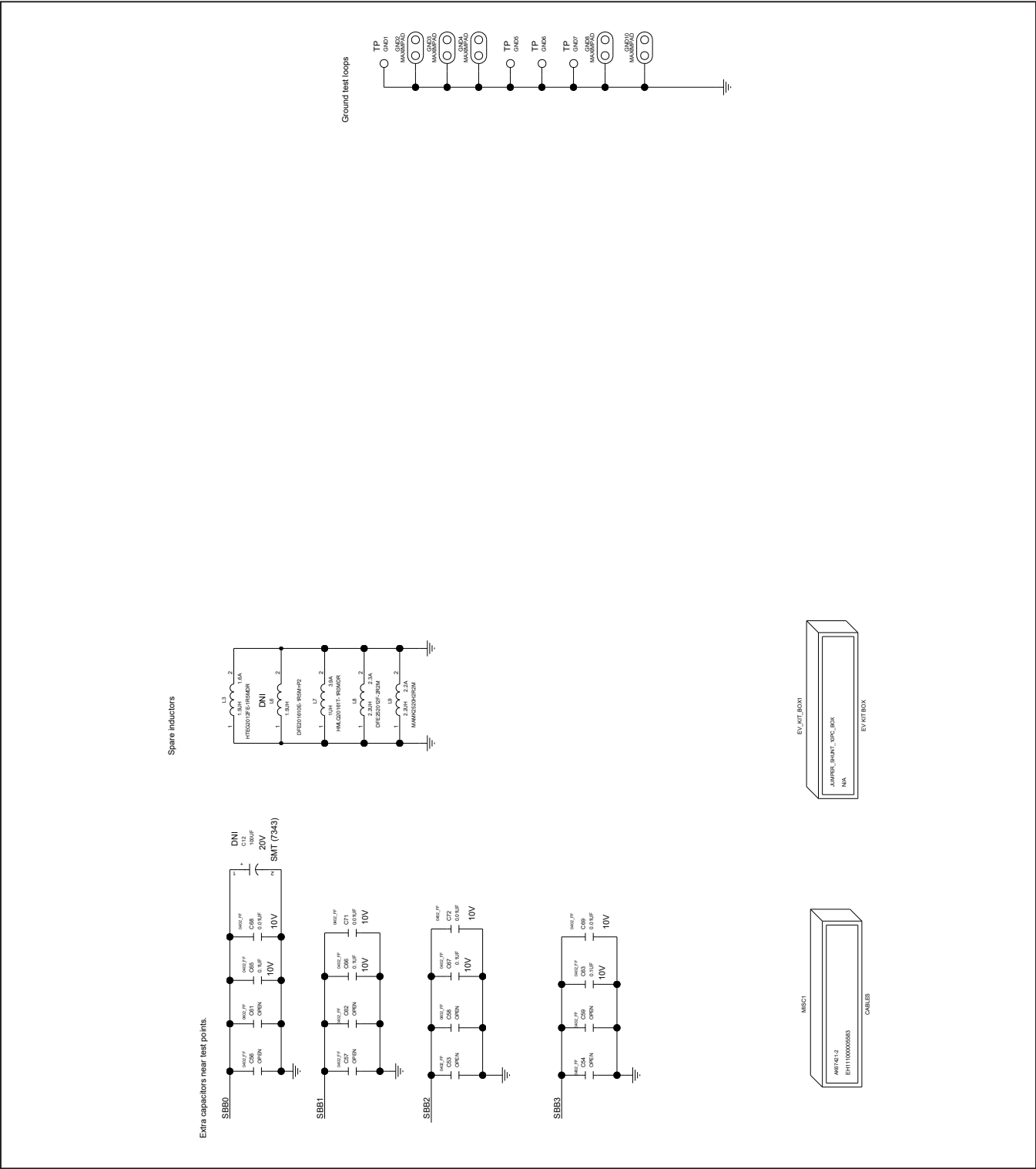
| Part Number          | Configuration             | 7-bit                                     | 8-bit Write                                  | 8-bit Read                                 |
|----------------------|---------------------------|-------------------------------------------|----------------------------------------------|--------------------------------------------|
| MAX77675<br>(PMIC)   | ADDR[1:0] OTP<br>Bitfield | 0x40, 0x44, 0x48<br>OR 0x52<br>0b100 xxx0 | 0x80, 0x88, 0x90<br>OR 0xA4<br>0b100x xx00   | 0x81, 0x89, 0x91<br>OR 0xA5<br>0b100x xx01 |
| MAX77675<br>(PMIC)   | Internal Test mode        | 0x49<br>0b100 1001                        | 0x92<br>0b1001 0010                          | 0x93<br>0b1001 0011                        |
| MAX11614<br>(ADC)    | N/A                       | 0x33<br>0b011 0011                        | 0x66<br>0b0110 0110                          | 0x67<br>0b0110 0111                        |
| MAX5825<br>(DAC)     | ADDR1=ADDR0=VDDIO         | 0x1F<br>0b001 1111                        | 0x3E<br>0b0011 1110<br>0x10 *<br>0b0010 1000 | 0x3F<br>0b0011 1111                        |
| AT24CS02<br>(EEPROM) | A0=A1=A2=GND              | 0x50 **<br>0b101 0000                     | 0b1010 0000                                  | 0b1010 0001                                |

\*MAX5825 ALSO RESPONDS TO AN I2C BROADCAST ADDRESS 0b0010 1000

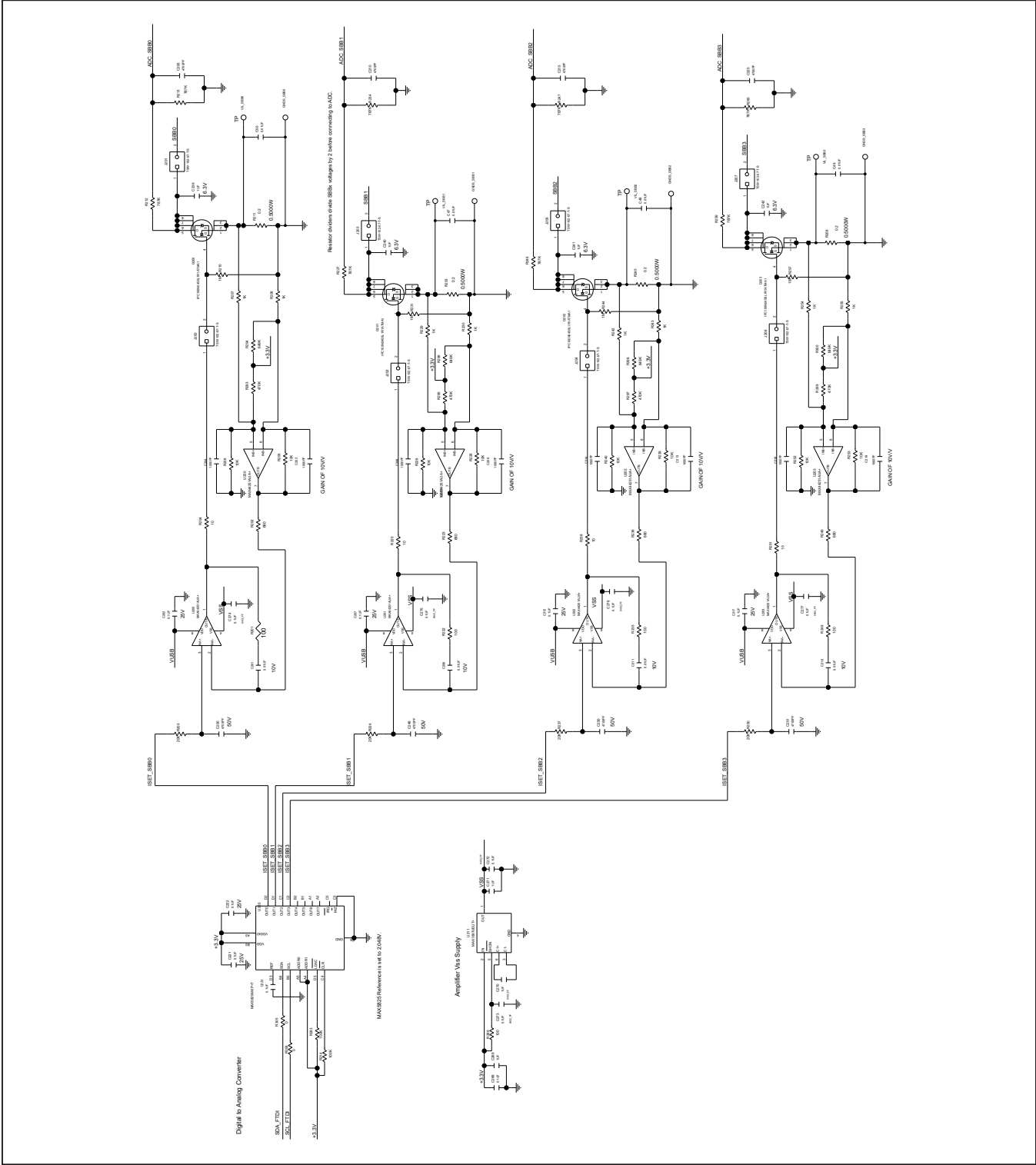
\*\*AT24CS02 ALSO RESPONDS TO 0b1011 0001 FOR READING THE SERIAL NUMBER



MAX77675 EV Kit Schematic Diagram (continued)



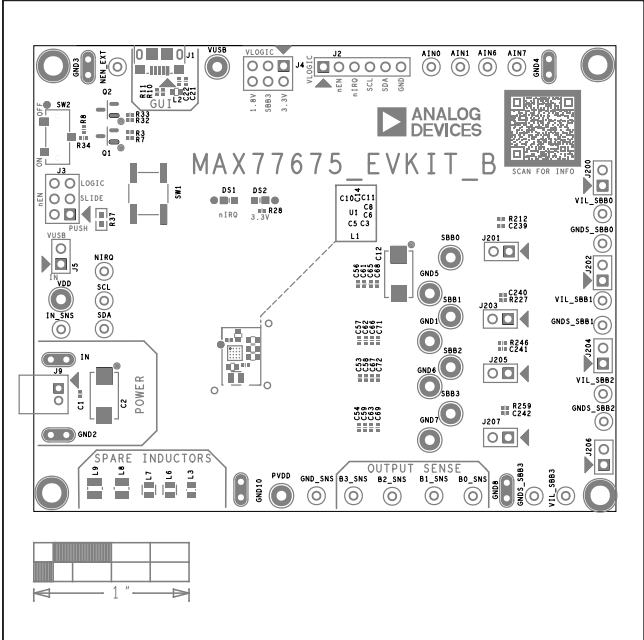
MAX77675 EV Kit Schematic Diagram (continued)



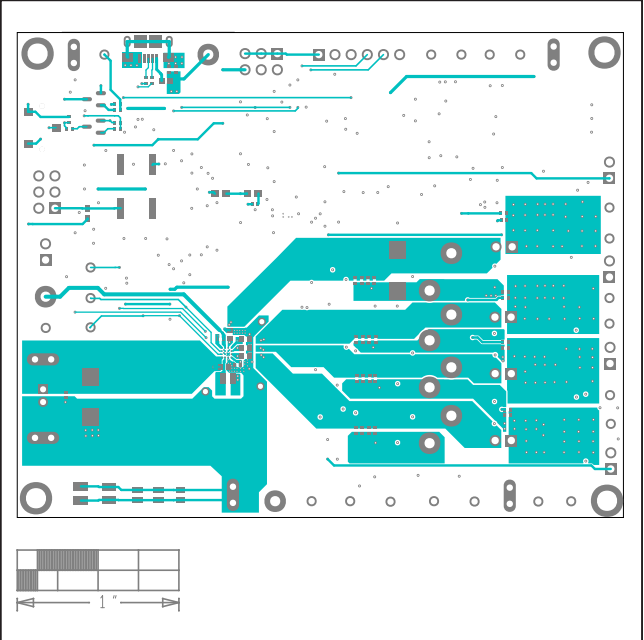
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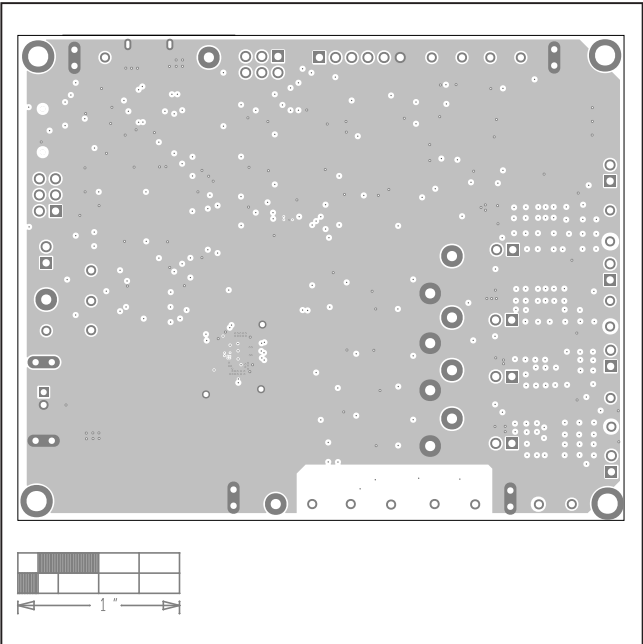
MAX77675 EV Kit PCB Layout Diagrams



MAX77675 EV Kit PCB Layout—Silkscreen Top

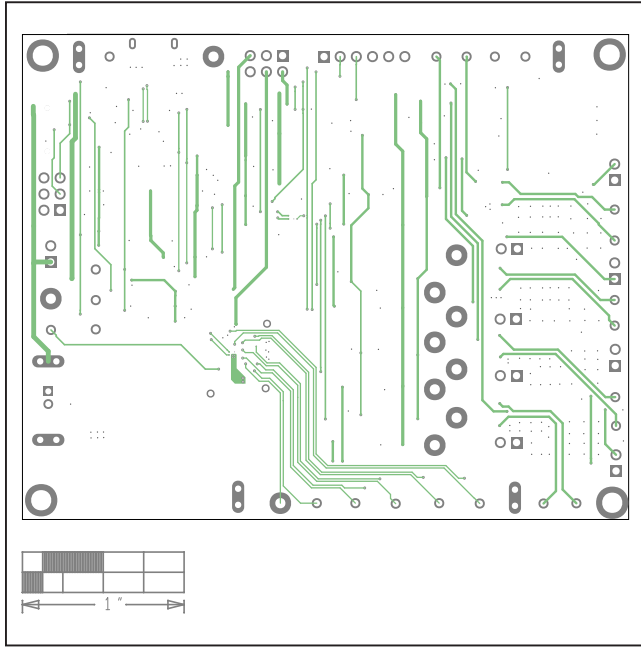


MAX77675 EV Kit PCB Layout—Top

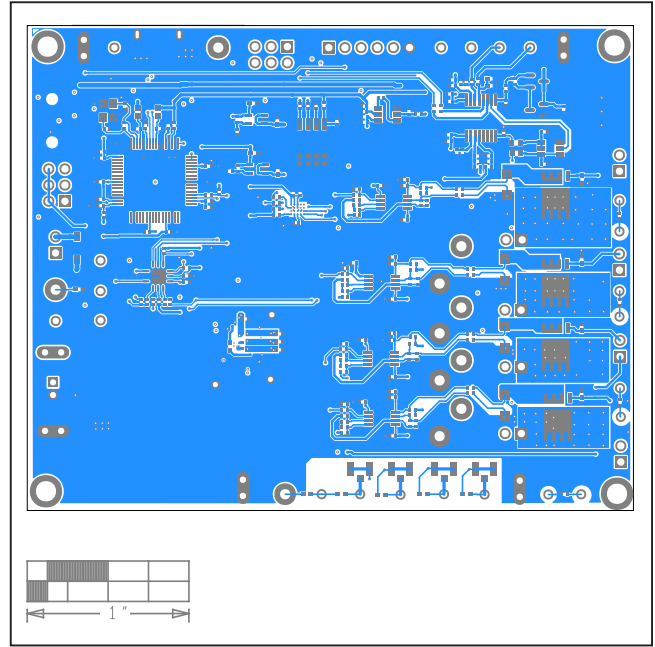


MAX77675 EV Kit PCB Layout—Internal 2

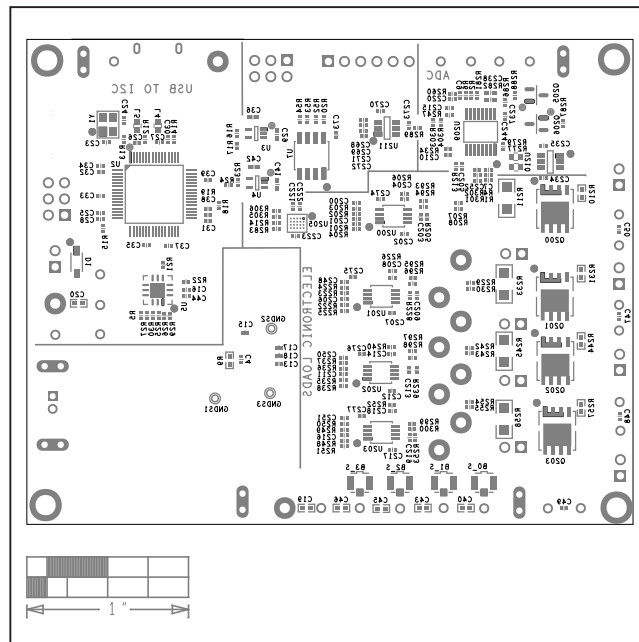
## MAX77675 EV Kit PCB Layout Diagrams (continued)



MAX77675 EV Kit PCB Layout—Internal 3



MAX77675 EV Kit PCB Layout—Bottom



MAX77675 EV Kit PCB Layout—Silkscreen Bottom

**Revision History**

| REVISION<br>NUMBER | REVISION<br>DATE | DESCRIPTION     | PAGES<br>CHANGED |
|--------------------|------------------|-----------------|------------------|
| 0                  | 3/23             | Initial release | —                |



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