MAX77655 Evaluation Kit

Evaluates: MAX77655

General Description

The MAX77655 evaluation kit (EV kit) allows for easy experimentation with the MAX77655 CCM single-inductor, multiple-output (SIMO) regulator and I^{2}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 MAX77655.

Ordering Information appears at end of data sheet.

Features

- Easy to Use
- GUI-Driven I^{2}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
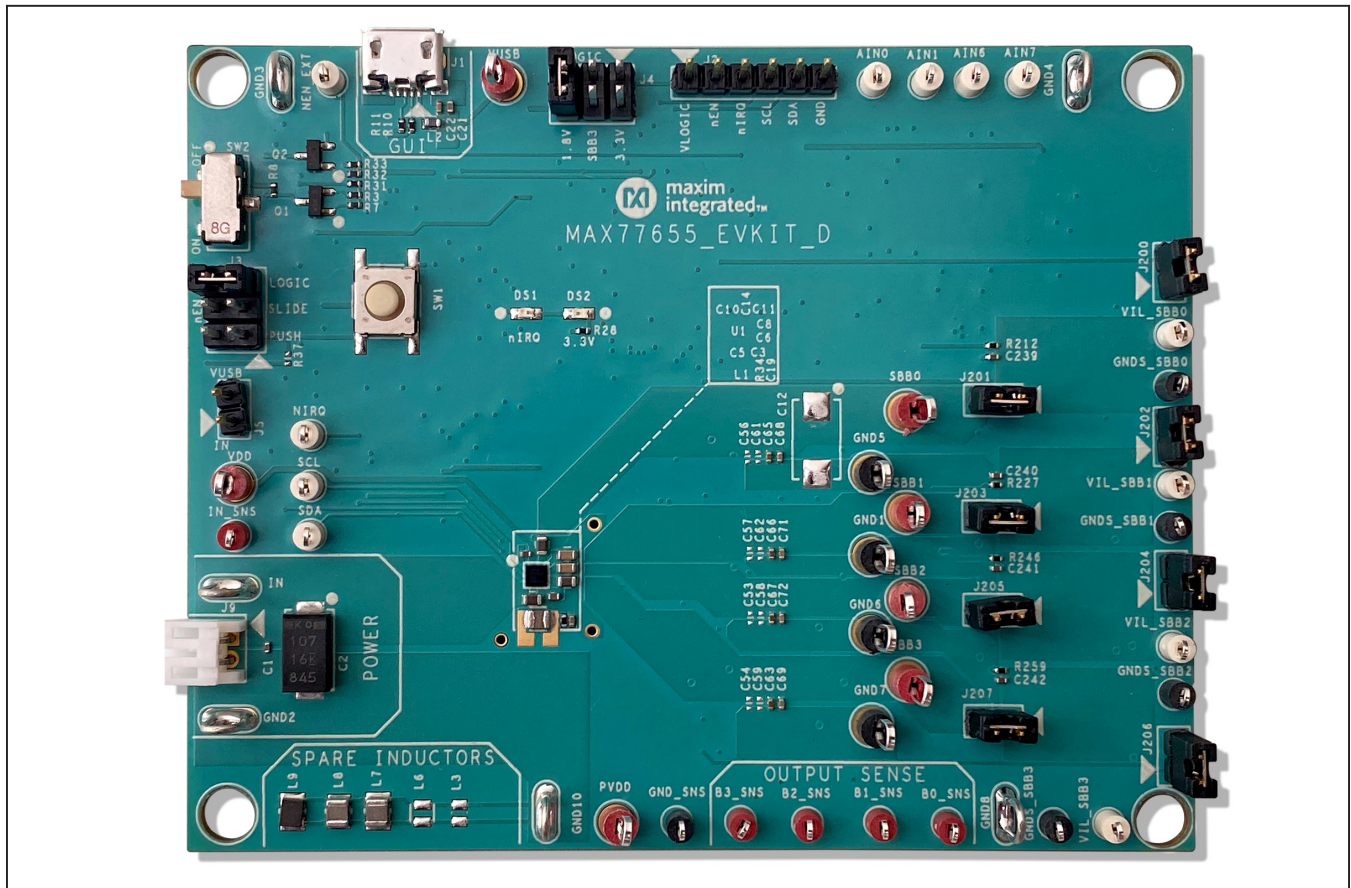- Wide Inductor Pads for Wide Range of Case Codes

Figure 1. MAX77655 EV Kit Photograph

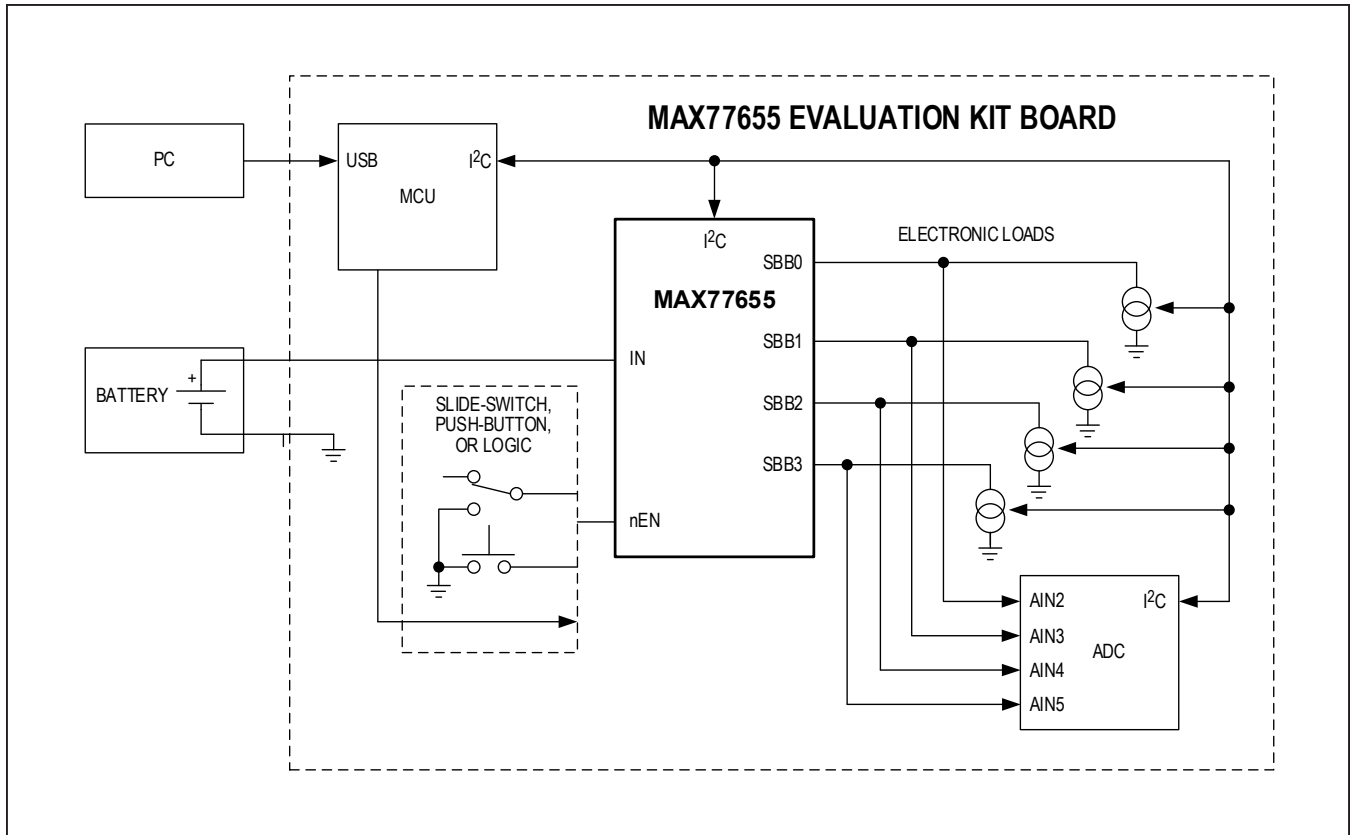*Windows is a registered trademark and registered service mark of Microsoft Corp.*

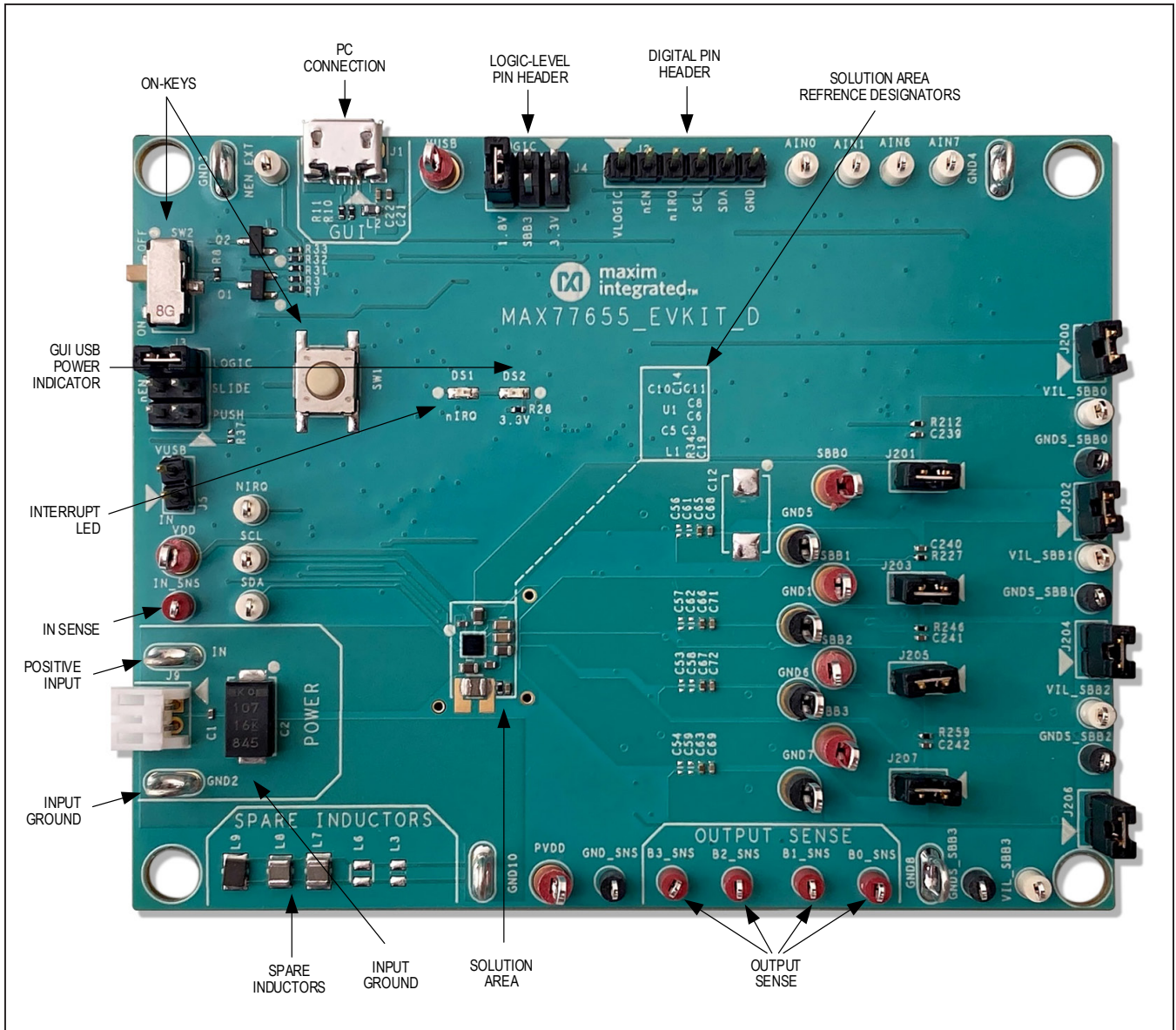Figure 2. EV Kit Simplified Block Diagram
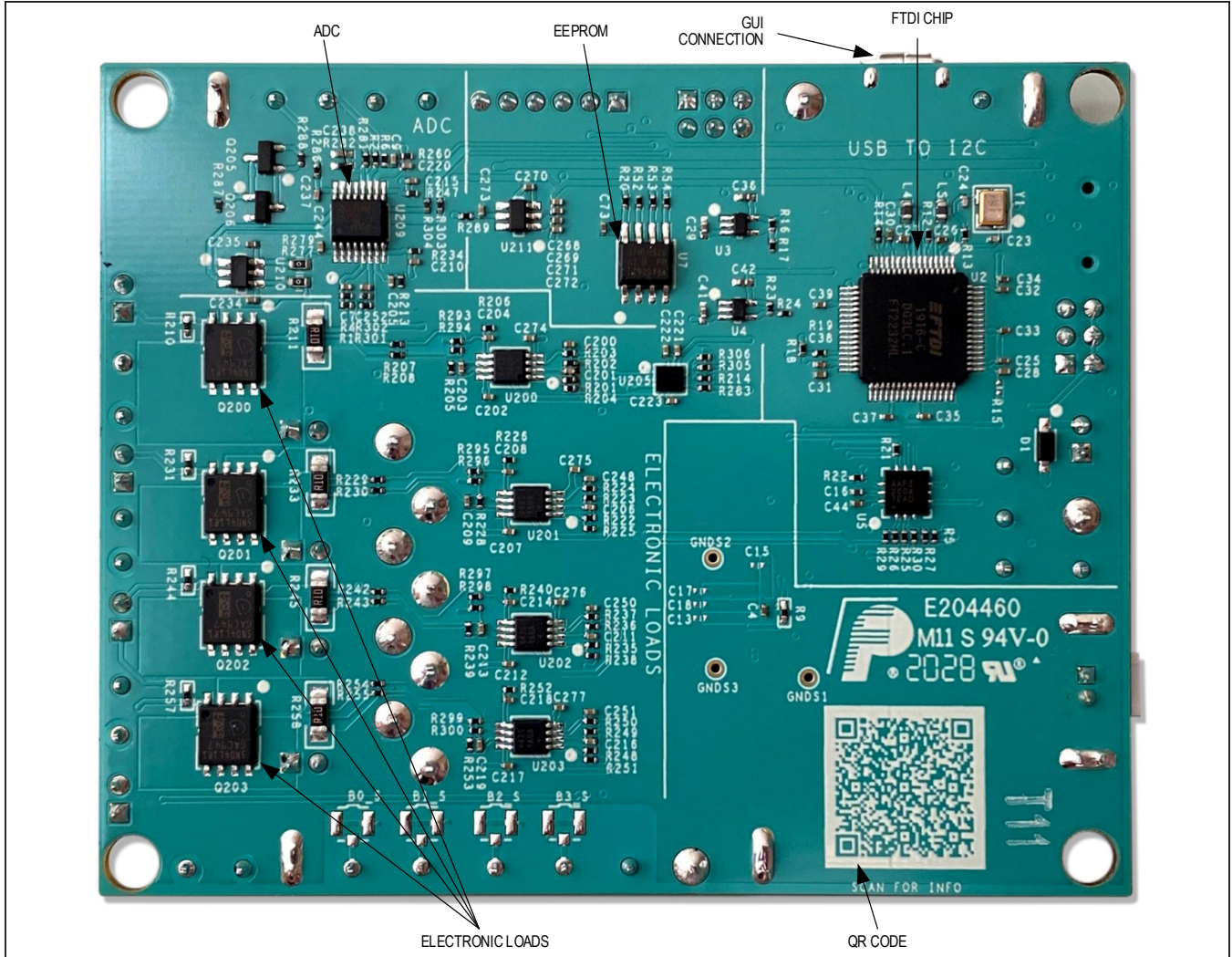
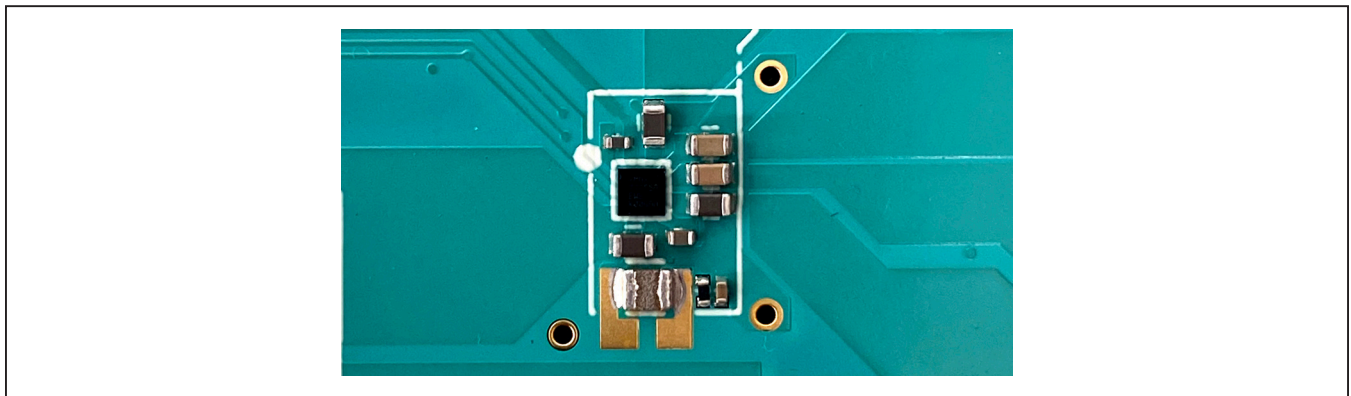*Figure 3. MAX77655 EV Kit Top View*

Figure 4. MAX77655 EV Kit Bottom View

Figure 5. MAX77655 EV Kit Solution Area

MAX77655 EV Kit Files

FILE	DESCRIPTION
MAX77655_SOLDERDOWN_EVKIT_REVD_BOM_2020-05-14.xlsx	BOM
MAX77655_SOLDERDOWN_EVKIT_REVD_PCB_2020-05-14.PDF	Schematic
MAX77655_SOLDERDOWN_EVKIT_REVD_PCB_2020-05-14.PDF	Layout

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

- MAX77655 EV kit
- MAX77655 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.maximintegrated.com/max77655evkit** 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.

2) Install EV kit shunts according to Table 1.

3) Connect a Micro-B USB cable between the EV kit USB port labelled "GUI" and your Windows-based PC.

4) Apply a 3.7V supply (set for 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 MAX77655A, 1.8V, 1.1V, 0.7V, and 3.3V should appear, respectively (Figure 6).

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.

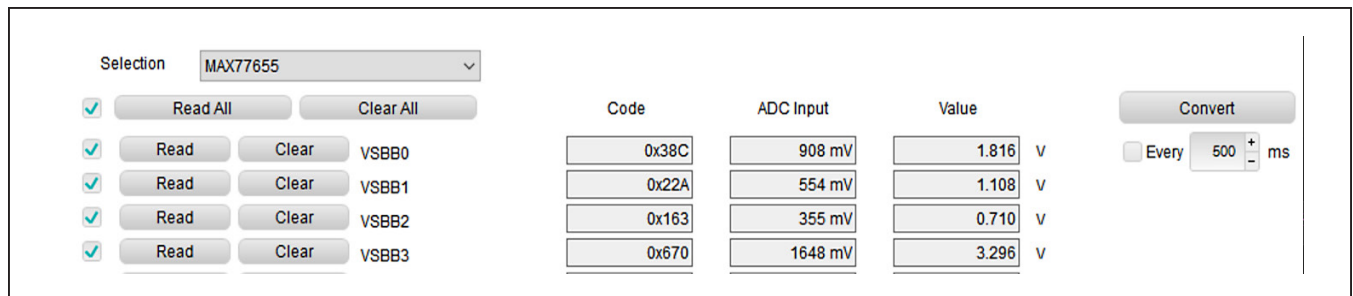For more information on the GUI, see the *Software* section.

Figure 6. Quick Start: Regulator Check with the ADC

Table 1. Default Shunt Positions and Jumper Descriptions

REFERENCE DESIGNATOR	DEFAULT POSITION	FUNCTION
J3	1-2	1-2: Connects nEN to SW1 (Push-button). 3-4: Connects nEN to SW2 (Slide-switch). 5-6: Connects nEN to GUI (Logic).
J4	5-6	1-2: Connects VLOGIC to 3.3V. 3-4: Connects VLOGIC to SBB0. 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.

Hardware

On-Key Options

For applications that require the IC to enable 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 MAX77655 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 the I^{2}C (see Table 2). There are two options to exercise load transient response. In the Load Control tab, 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 1 of the respective header). Drive the gate with a signal between 1V (off) and 3V (fully on) to apply transients to the output

Table 2. Electronic Load Jumpers and Sense Points

OUTPUT	JUMPER A	JUMPER B	SENSE
SBB0	J200	J201	VIL_SBB0 GNDS_SBB0
SBB1	J202	J203	VIL_SBB1 GNDS_SBB1
SBB2	J204	J205	VIL_SBB2 GNDS_SBB2
SBB3	J206	J206	VIL_SBB3 GNDS_SBB3

of the SIMO or LDO. Note that there are 0.1Ω sense resistors with test points (called VIL_SBB0, VIL_SBB1, VIL_SBB2, and VIL_SBB3) for a 1:10 conversion of load current to voltage. See the *Software* section to learn how to set the load current from the GUI.

On-Board ADC

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.
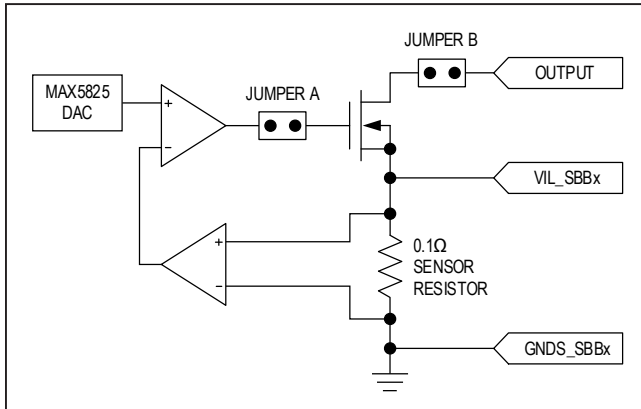
Figure 7. Electronic Load Block Diagram

Software

The graphical user interface (GUI) software allows for convenient, quick, and thorough evaluation of the MAX77655.

The GUI has individual tabs for each functional block of the device (global resources, interrupts/status, and SIMO) and two additional tabs for controlling the 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 for a screenshot of the GUI upon opening.

Figure 8. MAX77655 EV Kit GUI

Installation

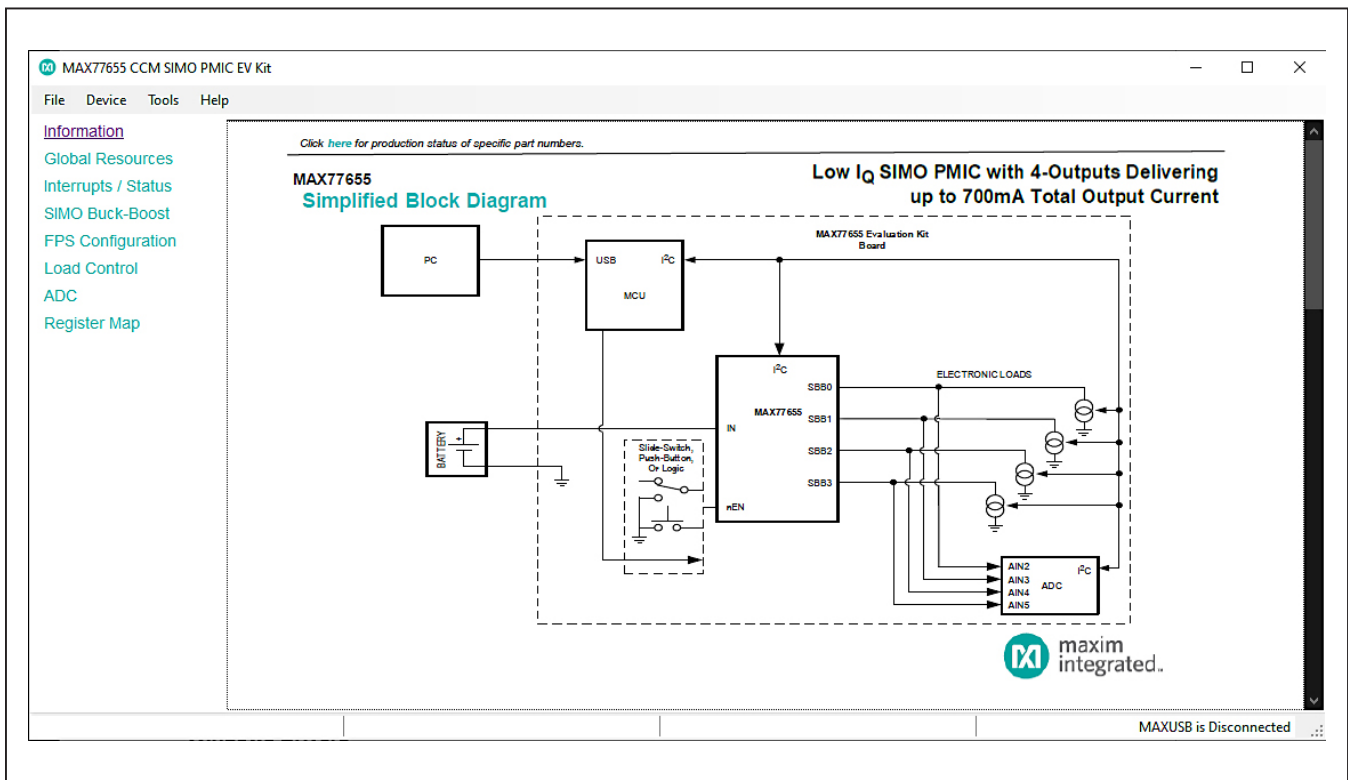Visit the product webpage at **http://www.maximinte-grated.com/max77655evkit** and navigate to Design Resources to download the latest version of the EV kit software. Save the EV kit software to a temporary folder and decompress the ZIP file.

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^{2}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 MAX77655. 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 Maxim 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 Sequences

To test custom power 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 MAX77655 EV kit, the quiescent current after applying power to IN is about 7µA.

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 a bench supply. Before applying fast line transients, remove this capacitor.

Ordering Information

PART	IC	TYPE
MAX77655EVKIT#	MAX77655AEWE+	EV Kit

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

MAX77655 EV Kit Bill of Materials

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	AIN0, AIN1, AIN6, AIN7, NEN_EXT, NIRQ, SCL, SDA, VIL_SBB0-VIL_SBB3	—	12	5002	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.1IN; TOTAL LENGTH = 00.3IN; BOARD HOLE = 00.04IN; WHITE; PHOSPHOR BRONZE WIRE SILVER;
2	B0_SNS, B1_SNS-B3_SNS, IN_SNS	—	5	5000	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.1IN; TOTAL LENGTH = 00.3IN; BOARD HOLE = 00.04IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
3	C1, C234, C235	—	3	GRM155R61C104KA88	MURATA	0.1µF	CAPACITOR; SMT (0402); CERAMIC; 0.1µF; 16V; TOL = 10%; MODEL = GRM SERIES; TG = -55°C to +85°C; TC = X5R
4	C2	—	1	16TQC100MYF	PANASONIC	100µF	CAPACITOR; SMT (7343); TANTALUM CHIP; 100UF; 16V; TOL = 20%; MODEL = TQC SERIES
5	C3	—	1	GRM155R61A106ME44; GRM155R61A106ME11; 0402ZD106MAT2A; CL05A106MP5NUNC	MURATA; MURATA; AVX; SAMSUNG	10µF	CAPACITOR; SMT (0402); CERAMIC CHIP; 10µF; 10V; TOL = 20%; TG = -55°C TO +85°C; TC = X5R
6	C4	—	1	C0402C103K5RAC; GRM155R71H103KA88; C1005X7R1H103K050BE; CL05B103KB5NNN; UMK105B7103KV	KEMET;MURATA; TDK; SAMSUNG ELECTRONIC; TAIYO YUDEN	0.01µF	CAPACITOR; SMT (0402); CERAMIC CHIP; 0.01µF; 50V; TOL = 10%; TG = -55°C TO +125°C; TC = X7R
7	C5	—	1	ANY	ANY	22µF	CAPACITOR; SMT (0603); CERAMIC CHIP; 22µF; 10V; TOL = 20%; MODEL = CL SERIES; TG = -55°C TO +85°C; TC = X5R; FORM FACTOR
8	C6, C14	—	2	C1608X5R1A226M080AC; GRM188R61A226ME15	TDK;MURATA	22µF	CAPACITOR; SMT (0603); CERAMIC CHIP; 22µF; 10V; TOL = 20%; TG = -55°C TO +85°C; TC = X5R
9	C7, C9, C200, C205, C210, C215, C220, C238, C248, C250-C252	—	12	C0402C472J5RAC	KEMET	4700PF	CAPACITOR; SMT; 0402; CERAMIC; 4700pF; 50V; 5%; X7R; -55°C to + 125°C; 0 ±15% °C MAX.
10	C8, C11	—	2	GRM188R60J476ME15	MURATA	47µF	CAPACITOR; SMT (0603); CERAMIC CHIP; 47µF; 6.3V; TOL = 20%; TG = -55°C TO +85°C; TC = X5R
11	C10, C16, C29, C36, C41, C42	—	6	C0402C105K8PAC; CC0402KRX5R6BB105	KEMET;YAGEO	1µF	CAPACITOR; SMT (0402); CERAMIC CHIP; 1µF; 10V; TOL = 10%; TG = -55°C TO +85°C; TC = X5R
12	C19	-	1	C0402C152K5RAC; GRM155R71H152KA01	KEMET;MURATA	1500PF	CAPACITOR; SMT (0402); CERAMIC CHIP; 1500PF; 50V; TOL = 10%; TG = -55°C TO +125°C; TC = X7R
13	C21, C28, C31	-	3	C1005X5R1A475K050	TDK	4.7µF	CAPACITOR; SMT (0402); CERAMIC CHIP; 4.7UF; 10V; TOL = 10%; TG = -55°C TO +85°C; TC = X5R
14	C22, C25-C27, C30, C32-C35, C37-C39, C44, C73	-	14	GRM155R71A104JA01	MURATA	0.1µF	CAPACITOR; SMT (0402); CERAMIC CHIP; 0.1µF; 10V; TOL = 5%; TG = -55°C TO +125°C; TC = X7R
15	C23, C24	-	2	C0402C0G500270JNP; GRM1555C1H270JA01	VENKEL LTD.;MURATA	27PF	CAPACITOR; SMT; 0402; CERAMIC; 27pF; 50V; 5%; C0G; -55°C to + 125°C; 0 ±30PPM/°C
16	C63, C65-C67	-	4	ANY	ANY	0.1µF	CAPACITOR; SMT; 0402; CERAMIC; 0.1µF; 10V; 10%; X5R; -55°C to + 125°C; 0 ±30PPM/°C; FORMFACTOR ;
17	C68, C69, C71, C72, C201, C206, C211, C216	-	8	ANY	ANY	0.01µF	CAPACITOR; SMT (0402); CERAMIC CHIP; 0.01µF; 10V; TOL = 10%; MODEL = C0402C SERIES; TG = -55°C TO +125°C; TC = X7R
18	C202, C207, C212, C217, C221-C223, C237, C244, C268, C272-C277	-	16	ANY	ANY	0.1µF	CAPACITOR; SMT (0402); CERAMIC CHIP; 0.1µF; 25V; TOL = 10%; MODEL = C SERIES; TG = -55°C TO +125°C; TC = X7R; FORM FACTOR
19	C203, C204, C208, C209, C213, C214, C218, C219	-	8	GRM155R71H102JA01; GCM155R71H102JA37	MURATA;MURATA	1000PF	CAPACITOR; SMT (0402); CERAMIC CHIP; 1000PF; 50V; TOL = 5%; MODEL = GRM SERIES; TG = -55°C TO +125°C; TC = X7R
20	C239-C242	-	4	ANY	ANY	1µF	CAPACITOR; SMT (0402); CERAMIC CHIP; 1µF; 6.3V; TOL = 20%; MODEL = C SERIES; TG = -55°C TO +85°C; TC = X5R; FORM FACTOR

MAX77655 EV Kit Bill of Materials (continued)

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
21	C269-C271	-	3	ANY	ANY	1µF	CAPACITOR; SMT (0402); CERAMIC CHIP; 1µF; 16V; TOL = 10%; MODEL = C SERIES; TG = -55°C TO +85°C; TC = X5R; FORM FACTOR
22	D1	-	1	B0530W-7-F	DIODES INCORPORATED	B0530W	DIODE; SCH; SMT (SOD-123); PIV = 30V; IF = 0.5A
23	DS1, DS2	-	2	LTST-C190CKT	LITE-ON ELECTRONICS INC.	LTST-C190CKT	DIODE; LED; STANDARD; RED; SMT (0603); PIV = 5.0V; IF = 0.04A; -55°C TO +85°C
24	GND1, GND5-GND7	-	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;
25	GND2-GND4, 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
26	GNDS_SBB0-GNDS_SBB3, 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;
27	J1	-	1	10118193-0001LF	FCI CONNECT	10118193-0001LF	CONNECTOR; FEMALE; SMT; MICRO USB B TYPE RECEPTACLE; RIGHT ANGLE; 5PINS
28	J2	-	1	PBC06SAAN	SULLINS ELECTRONICS CORP.	PBC06SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 6PINS; -65°C TO +125°C
29	J3, J4	-	2	PBC03DAAN	SULLINS ELECTRONICS CORP.	PBC03DAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 6PINS; -65°C TO +125°C
30	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°C TO +105°C
31	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
32	L1	-	1	DFE201610E-1R5M = P2	MURATA	1.5µH	INDµCTOR; SMT (0806); MAGNETICALLY SHIELDED; 1.5µH; TOL = ±20%; 2.1A
33	L2, L4, L5	-	3	BLM18AG601SN1	MURATA	600	INDUCTOR; SMT (0603); FERRITE-BEAD; 600; TOL = ±; 0.5A
34	L3	-	1	DFE201210S-1R5M	MURATA	1.5µH	INDUCTOR; SMT (0805); METAL; 1.5µH; 20%; 2.0A
35	L7	-	1	CIGT252012LM1R0MNE	SAMSUNG	1µH	INDUCTOR; SMT (1008); METAL; 1µH; 20%; 3.8A
36	L8	-	1	DFE252012F-2R2M	MURATA	2.2µH	INDUCTOR; SMT (1008); SHIELDED; 2.2µH; 20%; 2.3A
37	L9	-	1	MAMK2520H2R2M	TAIYO YUDEN	2.2µH	INDUCTOR; SMT (1008); WIREWOµND; 2.2µH; 20%; 2.2A
38	PVDD, SBB0-SBB3, 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;
39	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°C TO +150°C
40	Q200-Q203	-	4	IPC100N04S5L1R1ATMA1	INFINEON	IPC100N04S5L1R1ATMA1	TRAN; OPTIMOS 5 POWER-TRANSISTOR; NCH; PG-TDSON-8-34; PD-(150W); I-(100A); V-(40V)
41	Q205	-	1	FDN360P	FAIRCHILD SEMICONDUCTOR	FDN360P	TRANSISTOR, MOSFET P-CHANNEL, SUPERSOT-3, PD = 0.5W, ID = -2.0A, VDSS = -30V,VGSS = ±20V
42	Q206	-	1	2N7002;2N7002; 2N7002;2N7002	DIODES INCORPORATED; ST MICROELECTRONICS; ON SEMICONDUCTOR; MICRO COMMERCIAL COMPONENTS	2N7002	TRAN; ; NCH; SOT-23; PD-(0.33W); IC-(0.5A); VCEO-(60V); -55°C TO +150°C
43	R1, R204, R225, R238, R251, R286, R302-R306	-	11	ANY	ANY	0	RESISTOR; 0402; 0Ω; 1%; 100PPM; 0.0625W; THICK FILM; FORMFACTOR

MAX77655 EV Kit Bill of Materials (continued)

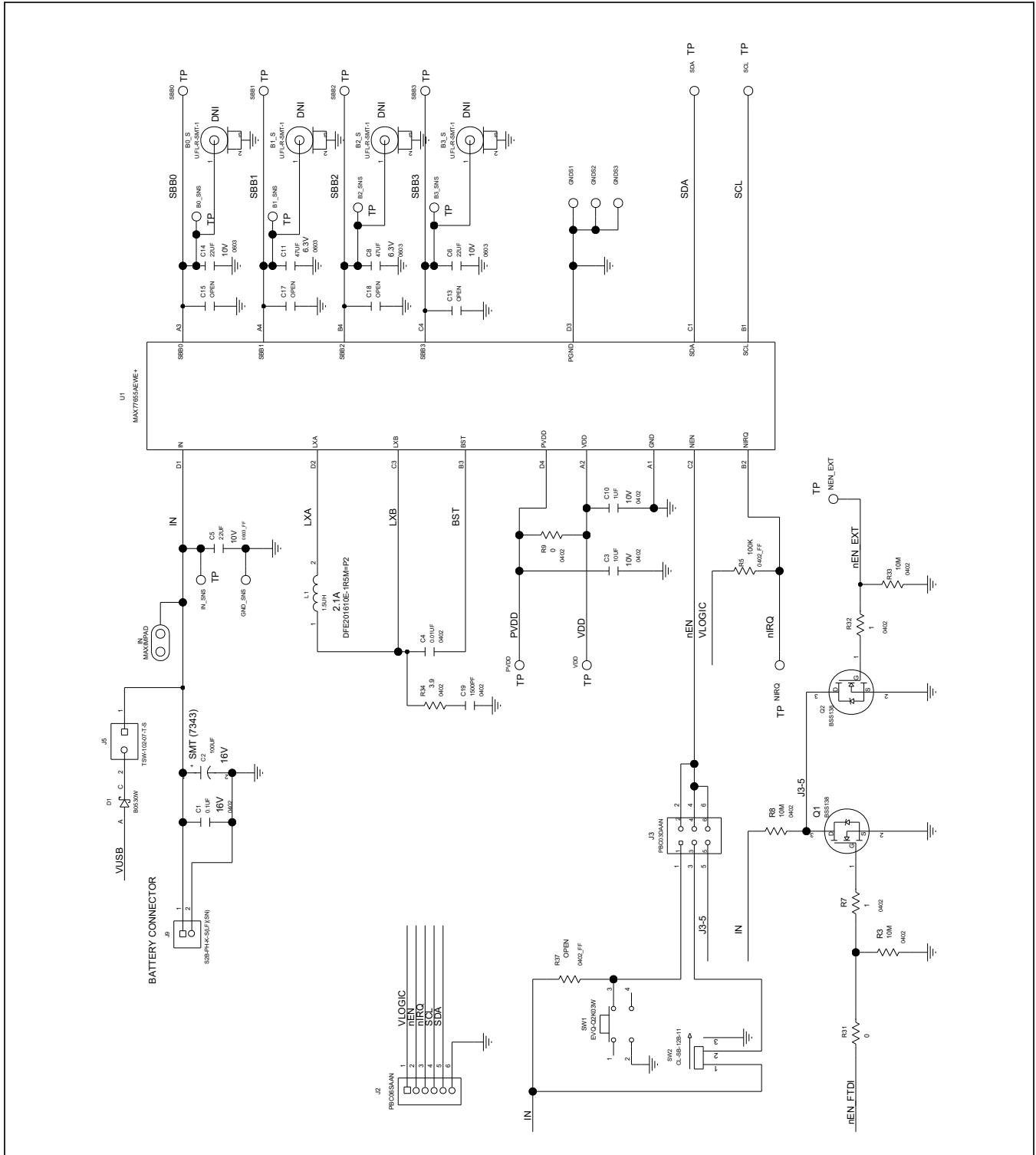| ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
44	R2, R6	-	2	ERJ-2GEJ103	PANASONIC	10K	RESISTOR; 0402; 10KΩ; 5%; 200PPM; 0.10W; THICK FILM
45	R3, R8, R33	-	3	CRCW040210M0FK	VISHAY DALE	10M	RESISTOR, 0402, 10MΩ, 1%, 100PPM, 0.0625W, THICK FILM
46	R4, R13, R210, R231, R244, R257, R301	-	7	CRCW04021M00FK	VISHAY DALE	1M	RESISTOR; 0402; 1M; 1%; 100PPM; 0.0625W; THICK FILM
47	R7, R32	-	2	CRCW04021R00FK	VISHAY DALE	1	RESISTOR, 0402, 1Ω, 1%, 100PPM, 0.0625W, THICK FILM
48	R9, R19, R20, R29-R31, R52-R54	-	9	ERJ-2GE0R00	PANASONIC	0	RESISTOR; 0402; 0Ω; 0%; JUMPER; 0.10W; THICK FILM
49	R10, R11	-	2	ERJ-2RKF27R0X; RC0402FR-0727RL; CRCW040227R0FK	PANASONIC;YAGEO PHICOMP;VISHAY DALE	27	RESISTOR, 0402, 27Ω, 1%, 100PPM, 0.0625W, THICK FILM
50	R12	-	1	CRCW040212K0FK; MCR01MZPF1202	VISHAY DALE; ROHM SEMICONDUCTOR	12K	RESISTOR, 0402, 12KΩ, 1%, 100PPM, 0.0625W, THICK FILM
51	R16	-	1	CRCW04024752FK; 9C04021A4752FLHF3; CRCW040247K5FK	VISHAY DALE; YAGEO; VISHAY DALE	47.5K	RESISTOR; 0402; 47.5K; 1%; 100PPM; 0.0625W; THICK FILM
52	R5, R214, R283, R17, R24	-	5	CRCW0402100KFK; RC0402FR-07100KL	VISHAY;YAGEO	100K	RESISTOR; 0402; 100K; 1%; 100PPM; 0.0625W; THICK FILM
53	R18	-	1	CRCW0402150RFK; 9C04021A1500FL	VISHAY DALE;YAGEO	150	RESISTOR; 0402; 150Ω; 1%; 100PPM; 0.0625W; THICK FILM
54	R21, R22	-	2	CRCW04024K70FK; MCR01MZPF4701	VISHAY DALE; ROHM SEMICONDUCTOR	4.7K	RESISTOR, 0402, 4.7KΩ, 1%, 100PPM, 0.0625W, THICK FILM
55	R23	-	1	CRCW0402169KFK	VISHAY DALE	169K	RESISTOR; 0402; 169KΩ; 1%; 100PPM; 0.063W; THICK FILM
56	R25, R26	-	2	CRCW04022K20FK; RC0402FR-072K2L	VISHAY DALE; YAGEO PHICOMP	2.2K	RESISTOR, 0402, 2.2KΩ, 1%, 100PPM, 0.0625W, THICK FILM
57	R27	-	1	CRCW040222R0FK	VISHAY DALE	22	RESISTOR, 0402, 22Ω, 1%, 100PPM, 0.0625W, THICK FILM
58	R28	-	1	CRCW0402470RFK	VISHAY DALE	470	RESISTOR, 0402, 470Ω, 1%, 100PPM, 0.0625W, THICK FILM
59	R34	-	1	CRCW04023R90FN	VISHAY DALE	3.9	RESISTOR, 0402, 3.9Ω, 1%, 100PPM, 0.0625W, THICK FILM
60	R201, R222, R235, R248, R289	-	5	9C04021A1000FL; RC0402FR-07100RL	PANASONIC; YAGEO PHYCOMP	100	RESISTOR; 0402; 100Ω; 1%; 100PPM; 0.063W; THICK FILM
61	R202, R223, R236, R249	-	4	CRCW0402680RFK; RC0402FR-07680RL	VISHAY DALE; YAGEO PHICOMP	680	RESISTOR, 0402, 680Ω, 1%, 100PPM, 0.0625W, THICK FILM
62	R203, R224, R237, R250	-	4	CRCW040220K0FK	VISHAY DALE	20K	RESISTOR; 0402; 20KΩ; 1%; 100PPM; 0.063W; THICK FILM
63	R205, R206, R226, R228, R239, R240, R252, R253	-	8	ERJ-2RKF2002	PANASONIC	20K	RESISTOR; 0402; 20KΩ; 1%; 100PPM; 0.1W; THICK FILM
64	R14, R207, R208, R229, R230, R242, R243, R254, R255	-	9	ANY	ANY	1K	RESISTOR; 0402; 1K; 1%; 100PPM; 0.0625W; THICK FILM; FORMFACTOR
65	R211, R233, R245, R258	-	4	CRL1206-JW-R100ELF	BOURNS	0.1	RESISTOR, 1206, 0.1Ω, 1%, 200PPM, 0.25W, THICK FILM
66	R212, R213, R227, R234, R246, R247, R259, R260	-	8	CRCW0402787KFK	VISHAY DALE	787K	RESISTOR; 0402; 787KΩ; 1%; 100PPM; 0.063W; METAL FILM
67	R277, R279	-	2	ANY	ANY	0	RESISTOR; 0603; 0Ω; 0%; JUMPER; 0.10W; THICK FILM; FORMFACTOR
68	R281, R282, R287, R288	-	4	CRCW040210K0FK; RC0402FR-0710KL	VISHAY DALE; YAGEO PHICOMP	10K	RESISTOR; 0402; 10K; 1%; 100PPM; 0.0625W; THICK FILM
69	R293, R295, R297, R299	-	4	ERJ-2RKF4703	PANASONIC	470K	RESISTOR, 0402, 470KΩ, 1%, 100PPM, 0.0625W, THICK FILM

MAX77655 EV Kit Bill of Materials (continued)

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
70	R294, R296, R298, R300	-	4	CRCW0402649KFK	VISHAY DALE	649K	RESISTOR; 0402; 649KΩ; 1%; 100PPM; 0.063W; THICK FILM
71	SW1	-	1	EVQ-Q2K03W	PANASONIC	EVQ-Q2K03W	SWITCH; SPST; SMT; 15V; 0.02A; LIGHT TOUCH SWITCH; RCOIL = Ω; RINSULATION = Ω; PANASONIC
72	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 = 0.05Ω; RINSULATION = 100MΩ
73	U1	-	1	MAX77655AEWE+	MAXIM	MAX77655AEWE+	EVKIT PART - IC; MAX77655AEWE+; LOW IQ SIMO PMIC WITH 4-OUTPUTS DELIVERING UP TO700MA TOTAL OUTPUT CURRENT; PACKAGE OUTLINE DRAWING: 21-100374; PACKAGE CODE: W161N1+1
74	U2	-	1	FT2232HL	FUTURE TECHNOLOGY DEVICES INTL LTD.	FT2232HL	IC; MMRY; DUAL HIGH SPEED USB TO MULTIPURPOSE UART/FIFO; LQFP64
75	U3, U4	-	2	MAX8512EXK+	MAXIM	MAX8512EXK	IC, VREG, Ultra-Low-Noise, High PSRR, Adjustable Vout, SC70-5
76	U5	-	1	MAX3395EETC+	MAXIM	MAX3395EETC	IC; TRANS; 15KV ESD-PROTECTED HIGH-DRIVE CURRENT QUAD-LEVEL TRANSLATOR WITH SPEED-UP CIRCUITRY; TQFN12 4X4
77	U7	-	1	AT24CS02-SSHM	MICROCHIP	AT24CS02-SSHM	IC; EPROM; I2C-COMPATIBLE TWO-WIRE SERIAL EEPROM; 150MIL; NSOIC8
78	U200-U203	-	4	MAX44251AUA+	MAXIM	MAX44251AUA+	IC; OPAMP; ULTRA-PRECISION; LOW-NOISE OP AMP; UMAX8
79	U205	-	1	MAX5825AWP+	MAXIM	MAX5825AWP+T	IC; DAC; ULTRA-SMALL; OCTAL CHANNEL; 12-BIT BUFFERED OUTPUT DAC WITH INTERNAL REFERENCE AND I2C INTERFACE; WLP20
80	U209	-	1	MAX11614EEE+	MAXIM	MAX11614EEE+	IC; ADC; LOW-POWER; 8-CHANNEL; I2C; 12-BIT ADC IN ULTRA-SMALL PACKAGE; QSOP16
81	U210	-	1	MAX6071AAUT41+	MAXIM	MAX6071AAUT41+	IC; VREF; LOW NOISE; HIGH-PRECISION SERIES VOLTAGE REFERENCE; SOT23-6
82	U211	-	1	MAX1697UEUT+	MAXIM	MAX1697UEUT+	IC; INV; INVERTING CHARGE PUMP WITH SHUTDOWN; SOT23-6
83	Y1	-	1	7M-12.000MAAJ	TXC CORPORATION	12MHZ	CRYSTAL; SMT; 18PF; 12MHZ; ±30PPM; ±30PPM
84	PCB	-	1	MAX77655	MAXIM	PCB	PCB:MAX77655
85	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
86	C12	DNP	0	TPSD107K020R0085	AVX	100UF	CAPACITOR; SMT; 7343; TANTALUM; 100uF; 20V; 10%; TPS; -55°C to +125°C
87	L6	DNP	0	DFE201610E-1R5M = P2	MURATA	1.5UH	INDμCTOR; SMT (0806); MAGNETICALLY SHIELDED; 1.5µH; TOL = ±20%; 2.1A
88	C13, C15, C17, C18, C53, C54, C56-C59, C61, C62	DNP	0	N/A	N/A	OPEN	CAPACITOR; SMT (0402); OPEN; FORMFACTOR
89	R15, R37	DNP	0	N/A	N/A	OPEN	RESISTOR; 0402; OPEN; FORMFACTOR
TOTAL			290				

MAX77655 EV Kit Schematic Diagram

Part Number	Configuration	7-bit	8-bit Write	8-bit Read
MAX77655 (PMIC)	ADDR[1:0] OTP Bitfield	0x40,0x44,0x48 OR 0x52 0b100 xxx0	0x80,0x88,0x90 OR 0xA4 0b100x xx00	0x81,0x89,0x91 OR 0xA5 0b100x xx01
MAX77655 (PMIC)	Maxim internal test mode	0x49 0b100 1001	0x92 0b1001 0010	0x93 0b1001 0011
MAX11614 (ADC)	N/A	0x33 0b011 0011	0x66 0b0110 0110	0x67 0b0110 0111
MAX5825 (DAC)	ADDR1=ADDR0=VDDIO	0x1F 0b001 1111	0x3E 0b0011 1110 0x10 * 0b0010 1000	0x3F 0b0011 1111
AT24CS02 (EEPROM)	A0=A1=A2=GND	0x50 ** 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

MAX77655 EV Kit Schematic Diagram (continued)

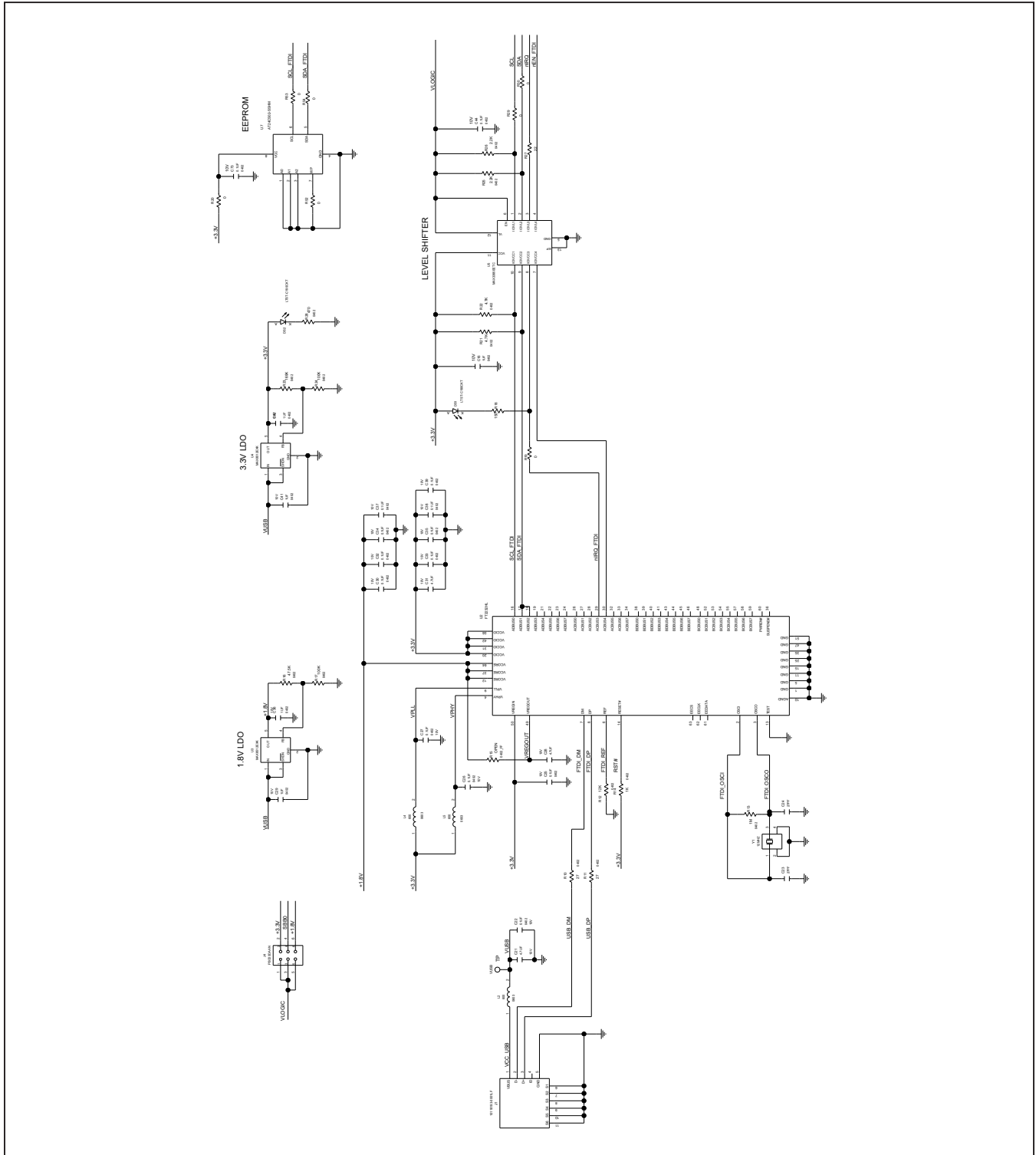## MAX77655 EV Kit Schematic Diagram (continued)

Ground test loops

TP GND1
GND2 MAXIMPAD
GND3 MAXIMPAD
GND4 MAXIMPAD
TP GND5
TP GND6
TP GND7
GND8 MAXIMPAD
GND10 MAXIMPAD

Spare inductors

L3 1.5UH 2.0A DFE201210S-1R5M

DNI L6 1.5UH DFE201610E-1R5M=P2

L7 1UH 3.8A CIGT252012LM1R0MNE

L8 2.2UH 2.3A DFE252012F-2R2M

L9 2.2UH 2.2A MAMK2520H2R2M

Extra capacitors near test points.

DNI C12 100UF 20V SMT (7343)

SBB0
0402_FF C68 0.01UF 10V
0402_FF C65 0.1UF 10V
0402_FF C61 OPEN
0402_FF C56 OPEN

SBB1
0402_FF C71 0.01UF 10V
0402_FF C66 0.1UF 10V
0402_FF C62 OPEN
0402_FF C57 OPEN

SBB2
0402_FF C72 0.01UF 10V
0402_FF C67 0.1UF 10V
0402_FF C58 OPEN
0402_FF C53 OPEN

SBB3
0402_FF C69 0.01UF 10V
0402_FF C63 0.1UF 10V
0402_FF C59 OPEN
0402_FF C54 OPEN

MAX77655 EV Kit Schematic Diagram (continued)

MAX77655 EV Kit Schematic Diagram (continued)

MAX77655 EV Kit Schematic Diagram (continued)

MAX77655 EV Kit PCB Layout Diagrams

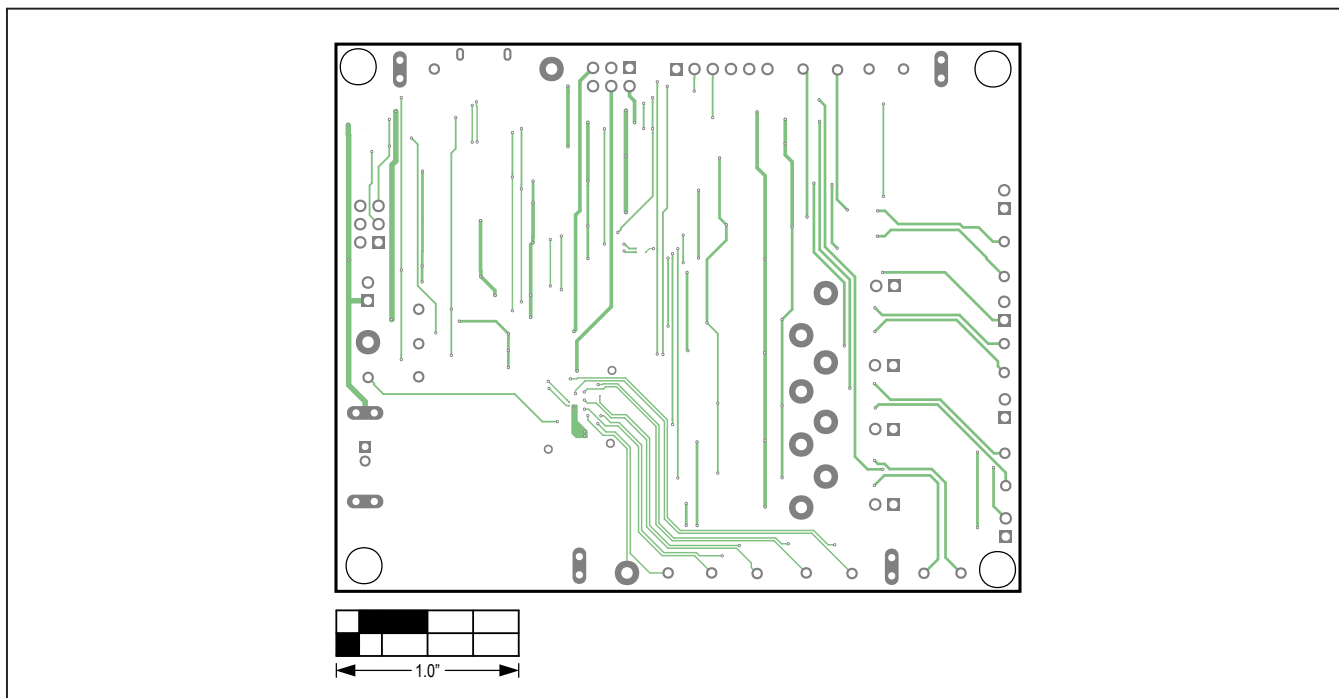*MAX77655 EV Kit PCB Layout – Silkscreen Top*
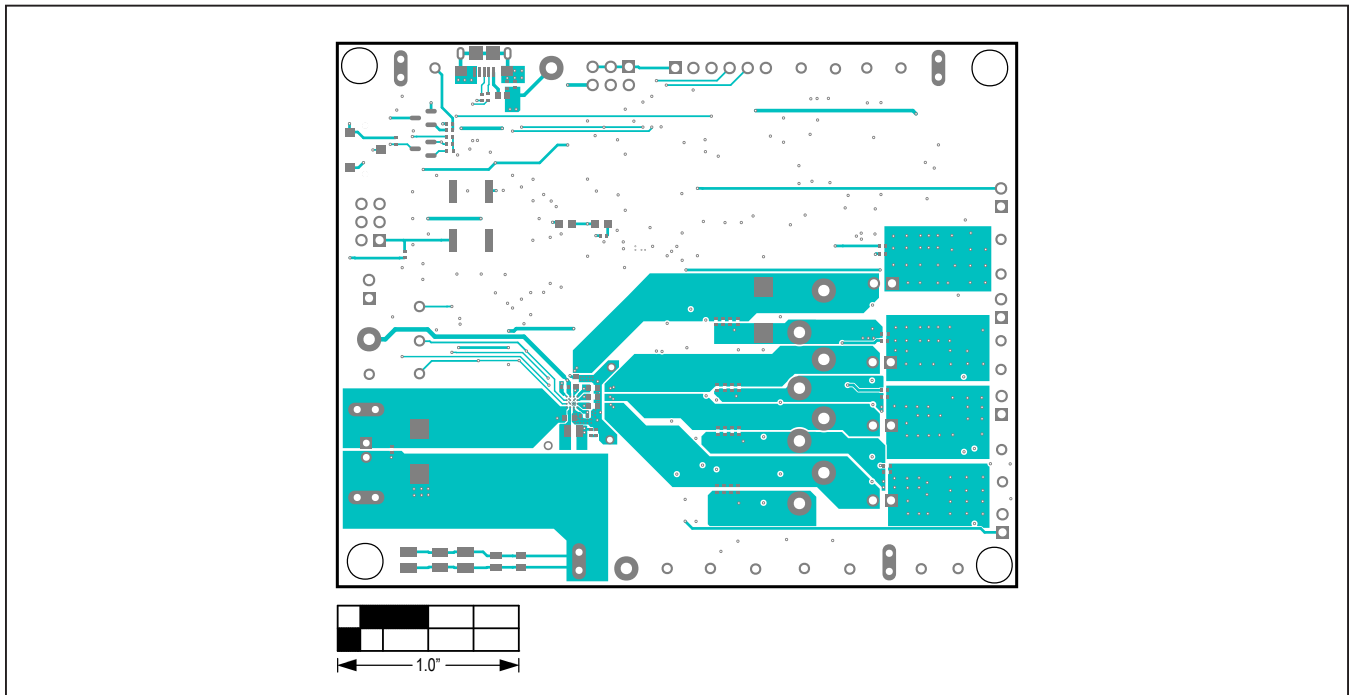
MAX77655 EV Kit PCB Layout – Top Layer

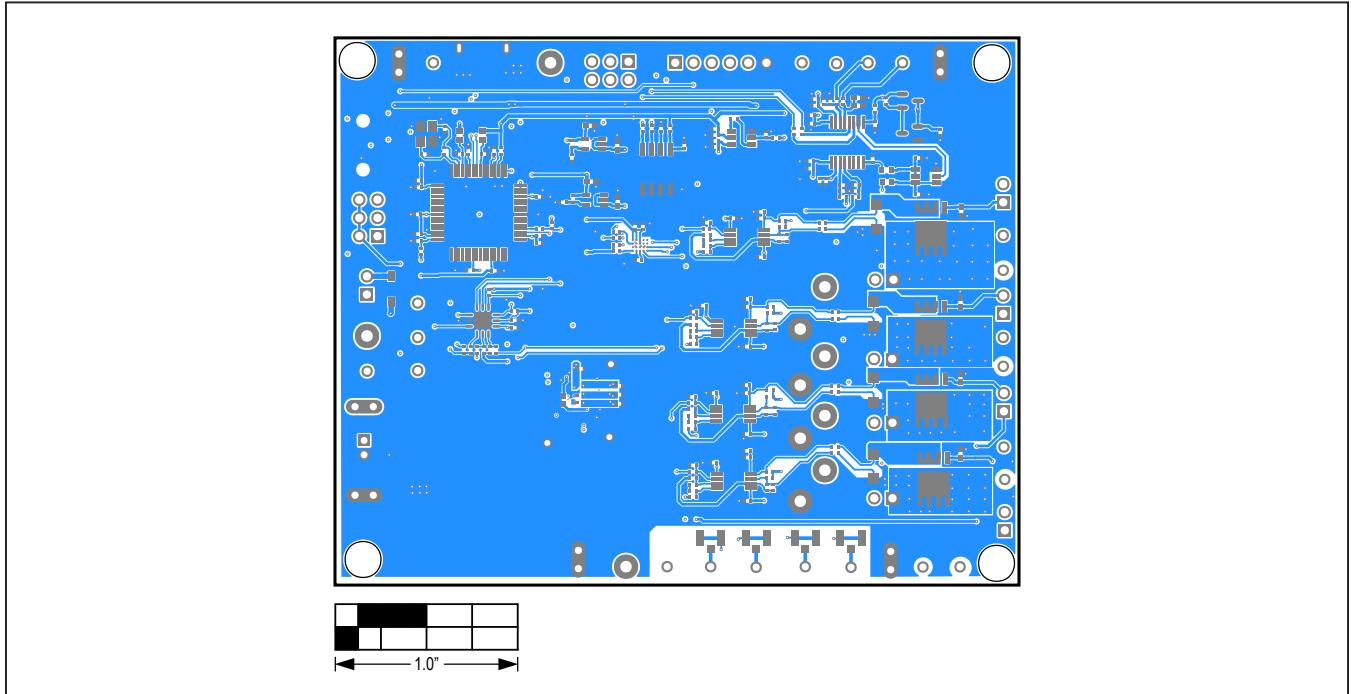## MAX77655 EV Kit PCB Layout Diagrams (continued)
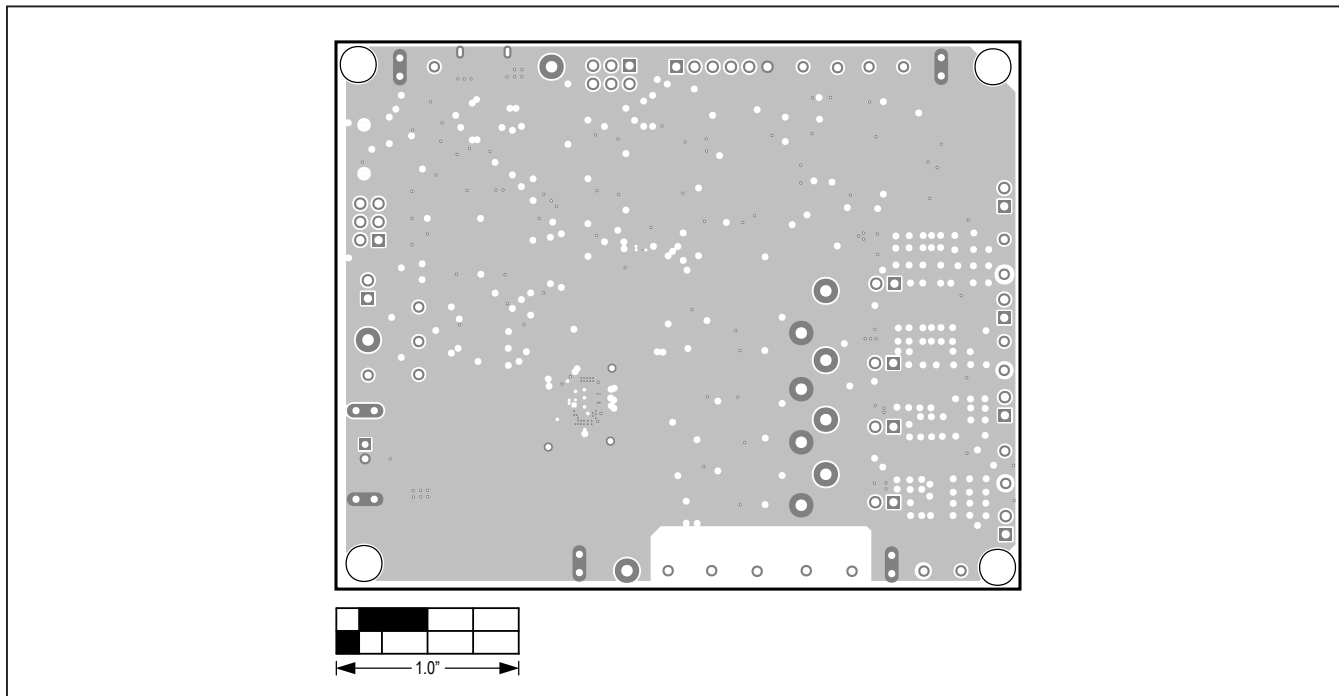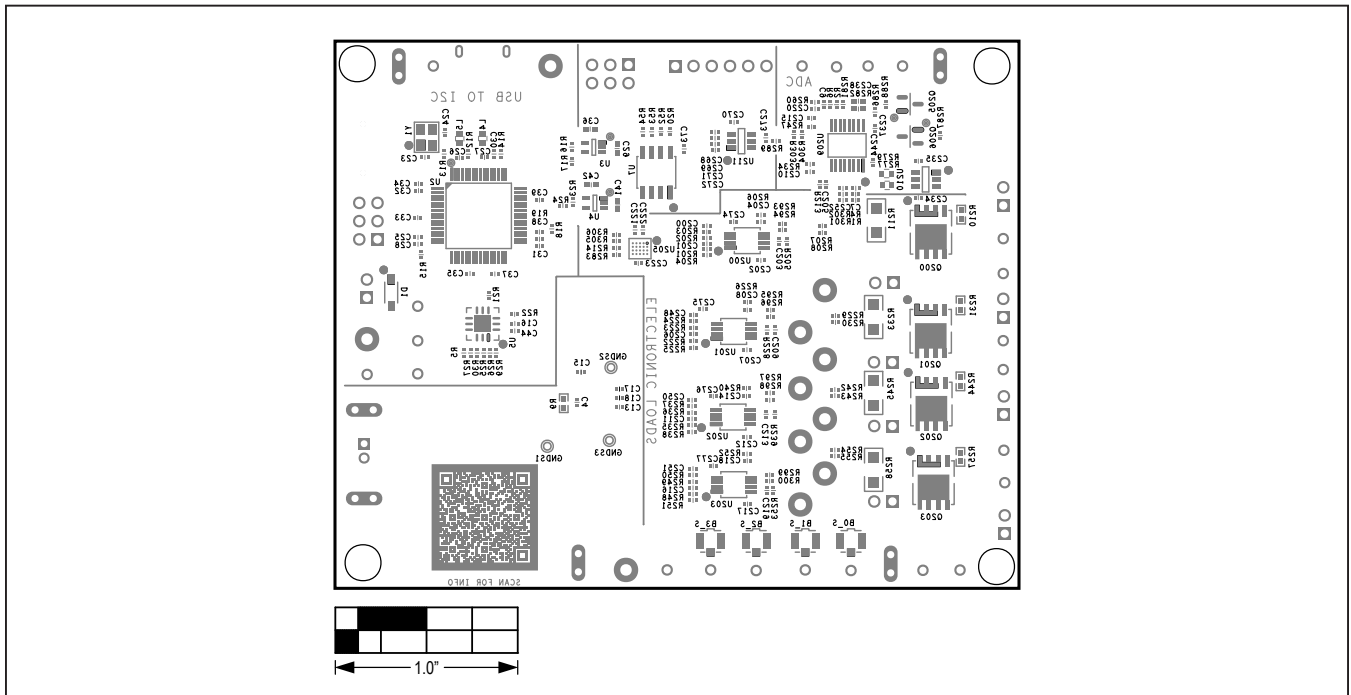

MAX77655 EV Kit PCB Layout – Internal 2

MAX77655 EV Kit PCB Layout – Internal 3

MAX77655 EV Kit PCB Layout Diagrams (continued)

MAX77655 EV Kit PCB Layout – Bottom Layer

MAX77655 EV Kit PCB Layout – Silkscreen Bottom

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	8/20	Initial release	—