MAX77928 Evaluation Kit

General Description

The MAX77928 evaluation kit (EV kit) is a fully assembled and tested surface-mount PCB that evaluates the MAX77928, a bi-directional 3:1/2:1/1:1 switched-capacitor converter (SCC) direct charger for a 1S battery. The MAX77928 EV kit includes the IC evaluation board with an integrated I²C communication interface and a USB micro-B cable. Windows® based graphical-user interface (GUI) software is available for use with the EV kit and can be downloaded from ADI's website at *www.analog.com/products/MAX77928evkit*. A Windows 7 or newer Windows operating system is required to use the EV kit software.

Features and Benefits

- Evaluates the MAX77928 10A 3:1/2:1/1:1 Switched-Capacitor Direct Charger for a 1S Li-Ion Battery
- Demonstrates 10A Bi-Directional Switched-Capacitor Converter
- Demonstrates 3:1/2:1/1:1 from V_{IN} to V_{OUT} for Battery Charging
- Demonstrates 1:3/1:2/1:1 from V_{OUT} to V_{IN} for OTG Mode
- Demonstrates 2-Channel Gate Drivers to Drive External MOSFET(s) or GaN FET for OVP or Input Selection
- Demonstrates Integrated VB FET with 24V AMR and 40mΩ Switch
- Demonstrates 12bit ADC
- Demonstrates SYNC Operation
- Demonstrates Skip Mode and Audio Mode
- Demonstrates Frequency Dithering
- Fully Assembled and Tested
- On-Board I²C Serial Interface
- Windows 7 or Newer Compatible Software

MAX77928 EV Kit Files

FILE	DESCRIPTION
MAX77928GUISetup0.4.0.exe	Installs EV kit files onto the computer

MAX77928 EV Kit Component List

PART	QTY	DESCRIPTION
MAX77928EVKIT	1	MAX77928 evaluation kit
USB high-speed A-to-B cable	1	USB Micro-B cable

***Ordering Information* appears at end of data sheet.**

Analog Devices is in the process of updating documentation to provide culturally appropriate terminology and language. This is a process with a wide scope and will be phased in as quickly as possible. Thank you for your patience.

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Quick Start

Required Equipment

- MAX77928 EV kit
- Adjustable DC power supply
- Battery or simulated battery
  - 1-cell Li-ion protected battery
  - Simulated battery or preloaded power supply
- Oscilloscope
- Two voltmeters
- Two ammeters
- Lab cables with appropriate current rating
- USB Micro-B cable
- PC with Windows 7 or newer operating system and USB port

A typical bench setup for the MAX77928 EV kit is shown in *Figure 2* and *Figure 3*.

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.

Procedure

The EV kit is fully assembled and tested. Follow the steps to install the EV kit software, make the required hardware connections, and start operation of the kit. The EV kit software can be run without hardware attached. Note that after communication is established, the IC must still be configured correctly for the desired operation mode. Make sure the PC is connected to the internet throughout the process so that the USB driver can be automatically installed.

1. Visit *www.analog.com/products/MAX77928evkit* under the Tools and Simulations tab to download the latest version of the MAX77928 EV kit software. Save the software to a temporary folder and unpack the zip file.
2. Install the EV kit software on the computer by running the **MAX77928GUISetup0.4.0.exe** program inside the temporary folder. This copies the program files and creates an icon in the Windows **Start** menu. The software requires the .NET Framework 4.5 or later. If connected to the internet, Windows automatically updates the .NET Framework as needed.
3. The EV kit software launches automatically after installation, and it can be launched by clicking on its icon in the Windows **Start** menu.
4. Make jumper connections based on the **Default Connection** column in *Table 1*. Change it later when evaluating more features.
5. Use the USB cable provided with the EV kit to connect the EV kit to the PC's USB port.
6. Connect a 1-cell Li-ion battery or simulated battery to the connectors labelled V_{OUT} and GND2.
7. Connect a DC power supply to the connectors labelled V_{IN} and GND.
8. Launch the MAX77928 GUI software. The EV kit software launches automatically after the GUI software is installed, and it can be launched by clicking on its icon in the Windows **Start** menu.
9. Select **Device > Connect** from the window options to connect to the EV kit.

EV Kit Photo

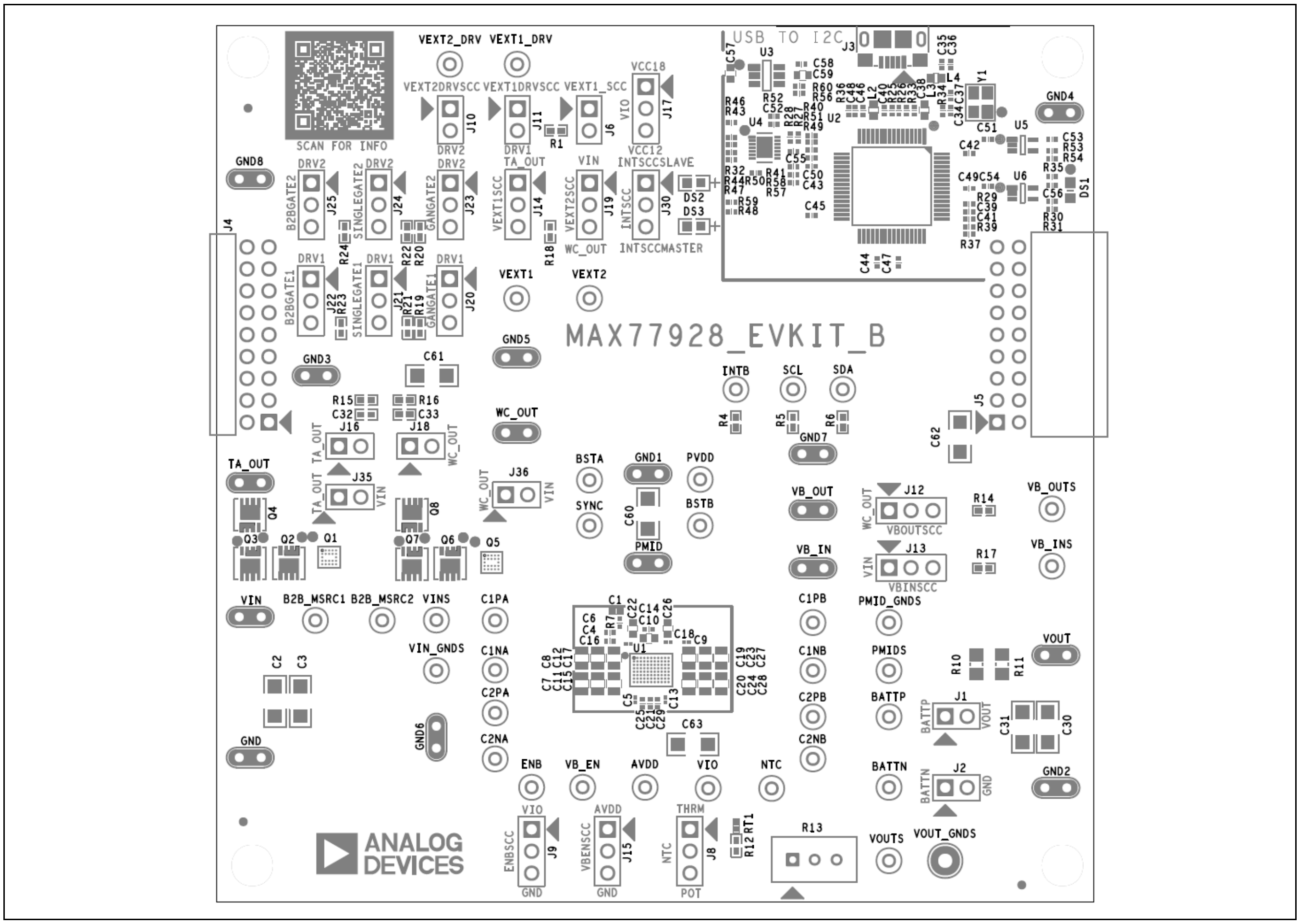


Figure 1. MAX77928 EV Kit Board Photo

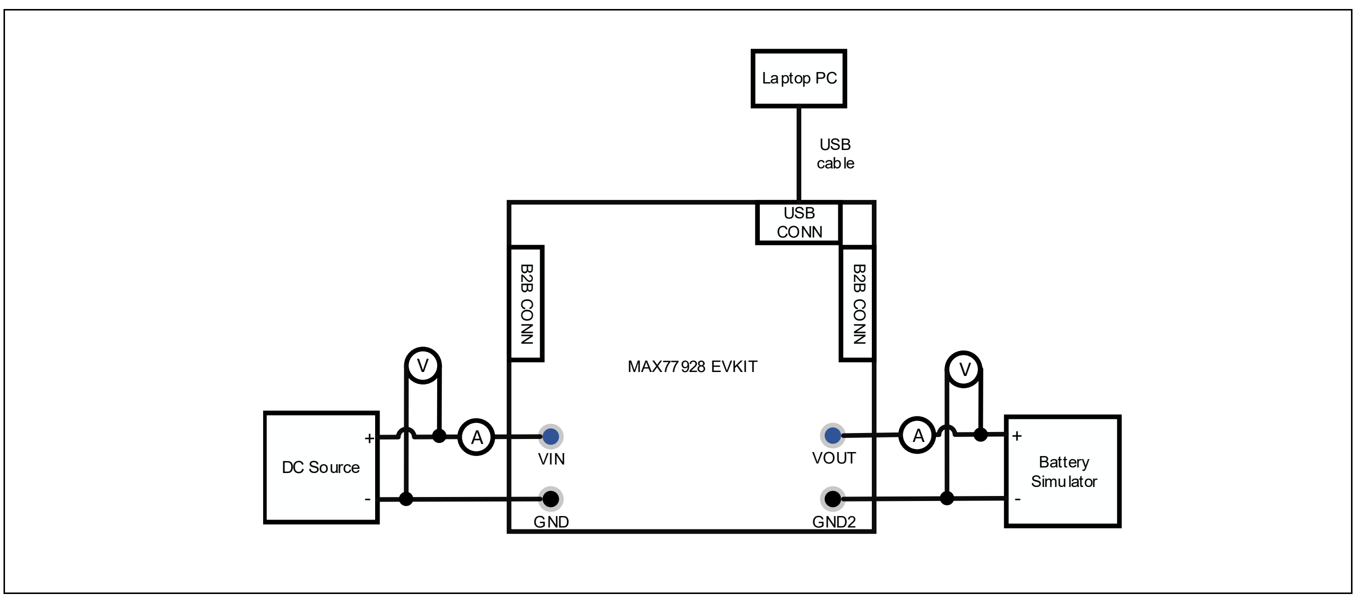


Figure 2. MAX77928 EV Kit Board Connections for Forward Mode

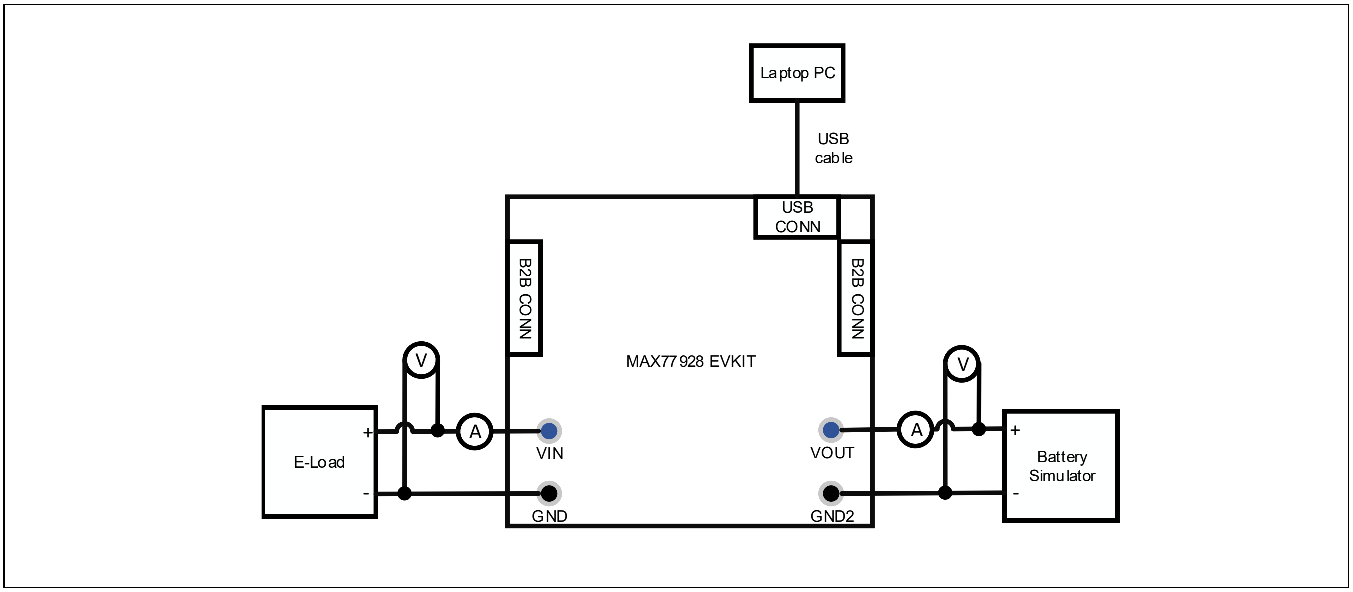


Figure 3. MAX77928 EV Kit Board Connections for Reverse Mode

Table 1. Jumper Connection Guide

JUMPER	PCB SILKSCREEN	DEFAULT CONNECTION	FEATURE
J1	BATTP	1-2	**1-2**: Connects V_{OUT} to BATTP for battery voltage sense. OPEN: Disconnects BATTP from V_{OUT}.
J2	BATTN	1-2	**1-2**: Connects V_{OUT} to BATTN for battery voltage sense. OPEN: Disconnects BATTN from V_{OUT}.
J6	—	1-2	**1-2**: Connects DRV1 to VEXT1_SCC for using R1 as Gate clamp. OPEN: Disconnects DRV1 from VEXT1_SCC.
J8	NTC	2-3	1-2: Use NTC RT1. **2-3**: Use R13 250kΩ trimming potentiometer.
J9	ENBSCC	2-3	1-2: Disable the MAX77928 with ENB pin, pulled up to VIO. **2-3**: Enable the MAX77928 with ENB pin, pulled down to GND.
J10	VEXT2DRVSCC	OPEN	1-2: Connects VEXT2_DRV to MOSFET Gate selection DRV2. **OPEN**: Disconnects VEXT2_DRV from MOSFET Gate selection DRV2.
J11	VEXT1DRVSCC	OPEN	1-2: Connects VEXT1_DRV to MOSFET Gate selection DRV1. **OPEN**: Disconnects VEXT1_DRV from MOSFET Gate selection DRV1.
J12	VBOUTSCC	2-3	1-2: Connects VB_OUT to WC_OUT. VB_OUT power path function is enabled, used in system configuration 6/7. **2-3**: VB_OUT function is not used.
J13	VBINSCC	2-3	1-2: Connects VB_IN to V_{IN}. VB_IN power path function is enabled, used in configuration 3/4/6/7. **2-3**: VB_IN function is not used.
J14	VEXT1SCC	2-3	1-2: Connects VEXT1 to TA_OUT, VEXT1 is used in system configuration 2/4/5/6/7. **2-3**: VEXT1 is not used.
J15	VBENSCC	OPEN	1-2: Connects VB_EN to AVDD, enabling input for auto control of the voltage blocking FET. If this connection is applied before power-up, it also changes the I^2C address of the MAX77928 to default 0x40 (7-bit). 2-3: Connects VB_EN to GND, disables input for auto control of voltage blocking FET. If this connection is applied before power-up, it also changes the I^2C address of the MAX77928 to 0x48 (7-bit). **OPEN**: Use default I^2C address 0x40 (7-bit).

J16	—	OPEN	1-2: Use RC snubber for TA_OUT input MOSFETs. **OPEN**: TA_OUT RC snubber is not used.
J17	VIO	1-2	**1-2**: 1.8V VIO is selected. 2-3: 1.2V VIO is selected.
J18	—	OPEN	1-2: Use RC snubber for WC_OUT input MOSFETs. **OPEN**: WC_OUT RC snubber is not used.
J19	VEXT2SCC	1-2	**1-2**: Connects VEXT2 to VIN. Used in system configuration 1/2/3/4. 2-3: Connects VEXT2 to WC_OUT. Used in system configuration 5/6/7.
J20	GANGATE1	1-2	1-2: Connects TA_OUT GaN FET Q1 gate to DRV1. **2-3**: Pull TA_OUT GaN FET gate to GND, GaN FET Q1 is in the OFF state.
J21	SINGLEGATE1	1-2	1-2: Connects TA_OUT single FET Q2 gate to DRV1. **2-3**: Pull TA_OUT single FET gate to GND, single FET Q2 is in the OFF state.
J22	B2BGATE1	1-2	1-2: Connects TA_OUT B2B FETs Q3/Q4 gate to DRV1. **2-3**: Pull TA_OUT B2B FETs gate to GND, B2B FETs Q3/Q4 are in the OFF state.
J23	GANGATE2	1-2	1-2: Connects WC_OUT GaN FET Q5 gate to DRV2. **2-3**: Pull WC_OUT GaN FET gate to GND, GaN FET Q5 is in the OFF state.
J24	SINGLEGATE2	1-2	1-2: Connects WC_OUT single FET Q6 gate to DRV2. **2-3**: Pull WC_OUT single FET gate to GND, single FET Q6 is in the OFF state.
J25	B2BGATE2	1-2	1-2: Connects WC_OUT B2B FETs Q7/Q8 gate to DRV2. **2-3**: Pull WC_OUT B2B FETs gate to GND, B2B FETs Q7/Q8 are in the OFF state.
J30	INTSCC	OPEN	1-2: INTSCC selection for the SLAVE role of SYNC operation. 2-3: INTSCC selection for the MASTER role of the SYNC operation. **OPEN**: INTSCC selection is not used when not in SYNC operation.
J35	—	OPEN	1-2: Reserved. **OPEN**: Default. Do not change.
J36	—	OPEN	1-2: Reserved. **OPEN**: Default. Do not change.

*Default options are in **bold**.*

Setup and Operation

A typical bench setup for the MAX77928 EV Kit is shown in *Figure 2* and *Figure 3*.

Detailed Description of Hardware

This evaluation kit should be used with the following documents:

- MAX77928 Data Sheet
- MAX77928 EV Kit Data Sheet (this document)

These documents, or links to them, are included in the MAX77928 EV Kit Package. For the latest versions of the documents listed above, use the following links: *www.analog.com/products/MAX77928*.

Forward Mode Test Setup

1. Connect a 1-cell Li-Ion battery or simulated battery between V_{OUT} and GND2. If a battery simulator is used, adjust the voltage and current limits of the battery simulator to ensure the voltage of V_{OUT} does not exceed the limitation. The connection diagram is shown in *Figure 2*. The output of the battery simulator is off.
2. Connect a DC power supply between V_{IN} and GND on the EV kit board. Adjust the voltage and current limits of the DC power supply to ensure the voltage of V_{IN} does not exceed the limitation. The output of the DC power supply is off.
3. Open the EV kit GUI software and connect the EV kit to the host PC via a USB Micro-B cable.
4. Enable the output of the battery simulator.
5. Enable the output of the DC power supply.
6. Establish communication between the EV kit and the host PC by running the GUI software. Program the appropriate SCC settings. In the **Regulation Config** tab, set **Input Current Regulation Threshold** in the **Input Current Regulation Threshold** register. Press **Write** to send the command to the SCC.
7. Select the proper SCC conversion ratio in the **Active State Mode Control** register of the **SCC Config** tab and click **Write** to enable the SCC mode.
8. Check that the SCC is charging correctly.

Reverse Mode Test Setup

9. Connect a 1-cell Li-Ion battery or simulated battery between V_{OUT} and GND2. If a battery simulator is used, adjust the voltage and current limits of the battery simulator to ensure the voltage of V_{OUT} does not exceed the limitation. The connection diagram is shown in *Figure 3*. The output of the battery simulator is off.
10. Connect an E-load between V_{IN} and GND on the EV kit board. Adjust the loading of the E-load to ensure the voltage of V_{IN} does not exceed the limitation. The output of the E-load is off.
11. Open the EV kit GUI software and connect the EV kit to the host PC via a USB Micro-B cable.
12. Enable the output of the battery simulator.
13. Establish communication between the EV kit and the host PC by running the GUI software. Program the appropriate SCC settings.
14. Select the proper SCC conversion ratio in the **Active State Mode Control** register of the **SCC Config** tab and click **Write** to enable SCC mode. Check if the expected output of SCC is present at the V_{OUT} node.
15. Enable the output of the E-load, and the SCC should deliver the loading requested by the E-load.

SYNC Operation Setup

16. Prepare all the necessary instruments as described by the **Forward Mode Test Setup**. The output of the instruments is off.
17. Connect a MASTER EV kit and a SLAVE EV kit with the B2B connector J4/J5 (*Figure 4*).
18. Make sure J15 of the MASTER EV kit is OPEN (or connected to AVDD) and J15 of the SLAVE EV kit is connected to GND.
19. Connect J30 of the MASTER EV kit to 2-3 and J30 of the SLAVE EV kit to 1-2.
20. Open the EV kit GUI software and connect the EV kit to the host PC via a USB Micro-B cable.
21. Enable the output of the battery simulator.
22. Enable the output of the DC power supply.
23. Establish communication between the EV kit and the host PC by running the GUI software. Program the appropriate SCC settings. In the **Regulation Config** tab, set **Input Current Regulation Threshold** in the **Input Current Regulation Threshold** register. Press **Write** to send the command to the SCC.

24. Select the proper SCC conversion ratio in the **Active State Mode Control** register of the **SCC Config** tab and click **Write** to enable the SCC mode. Make sure the **Active State Mode Control** setting is the same in both EV kits.
25. Check that both SCCs are charging properly.

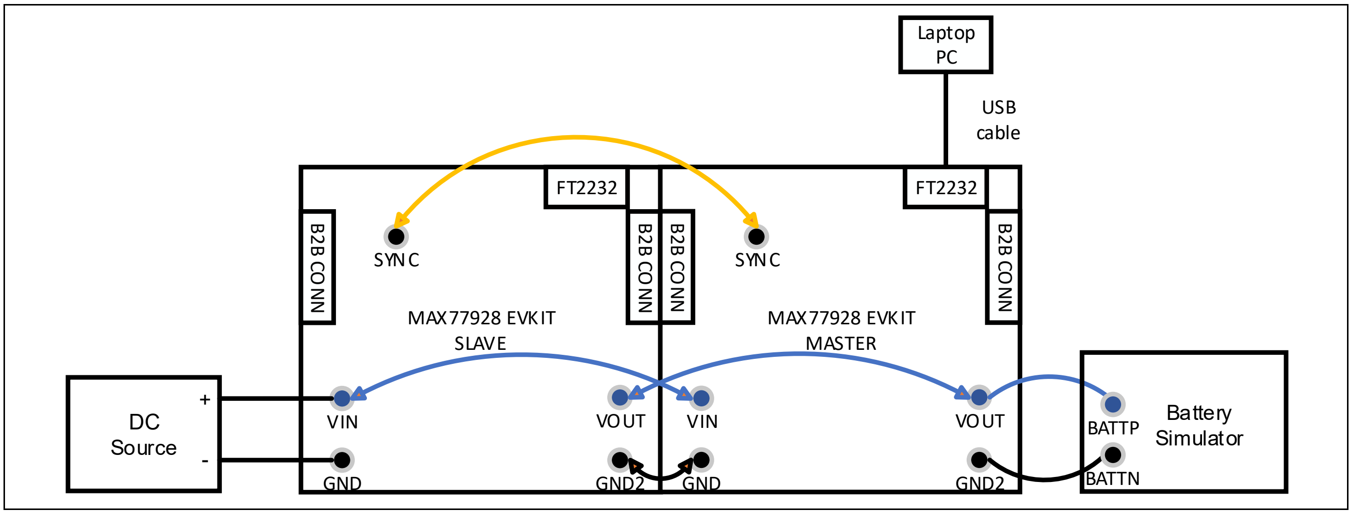


Figure 4. SYNC Operation

System configurations

The jumper settings for seven typical system configurations in the data sheet are as follows. System configuration 1 is the default setup according to *Table 1* and *Figure 5*. For jumper setup of other system configurations, follow the setup from *Figure 6* to *Figure 11*. Note that GaN FETs Q1 and Q5 are not populated on the MAX77928 EV kit by default, so use single FET or B2B FETs instead for system power path control applications.

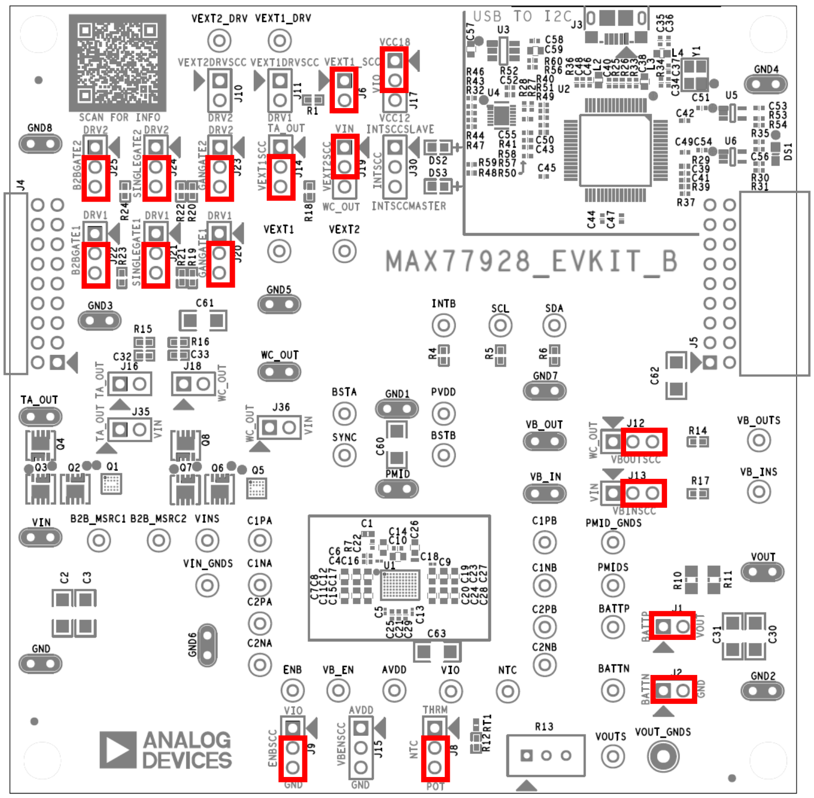


Figure 5. System Configuration 1 Jumper Setup

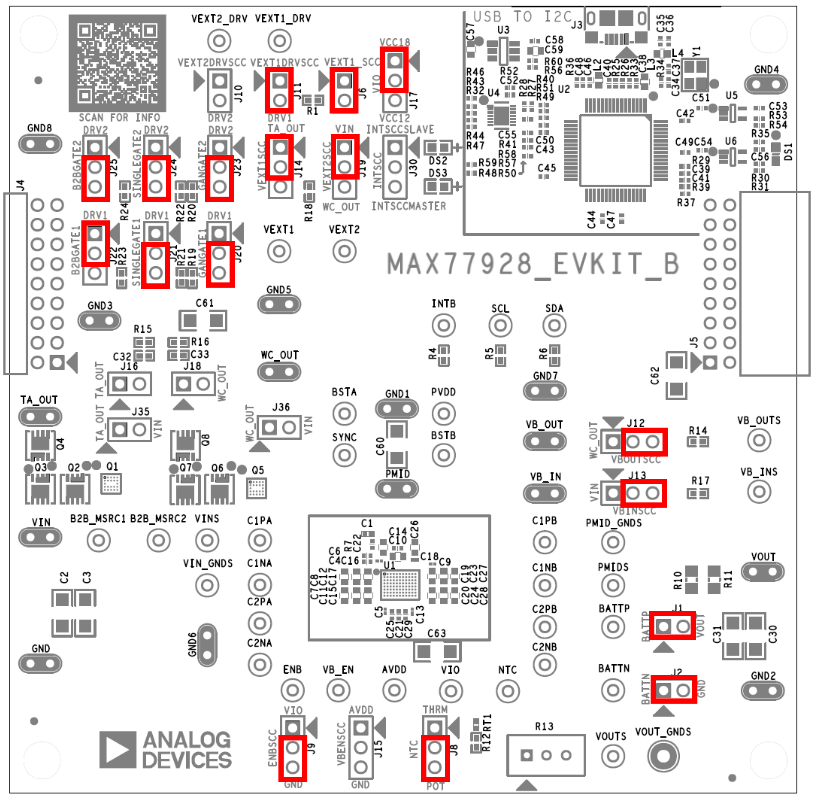


Figure 6. System Configuration 2 Jumper Setup

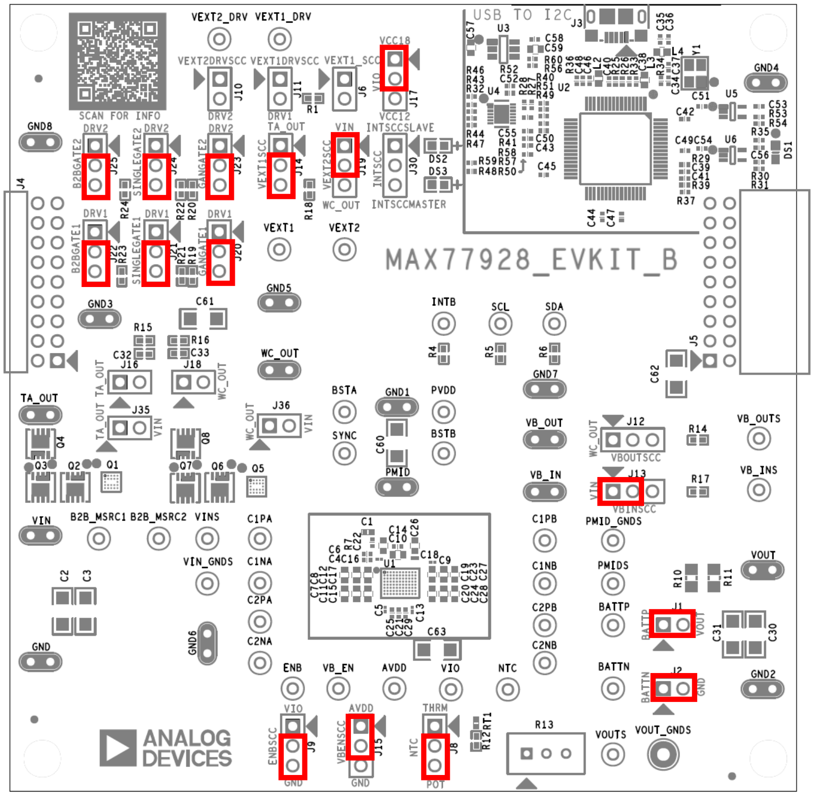


Figure 7. System Configuration 3 Jumper Setup

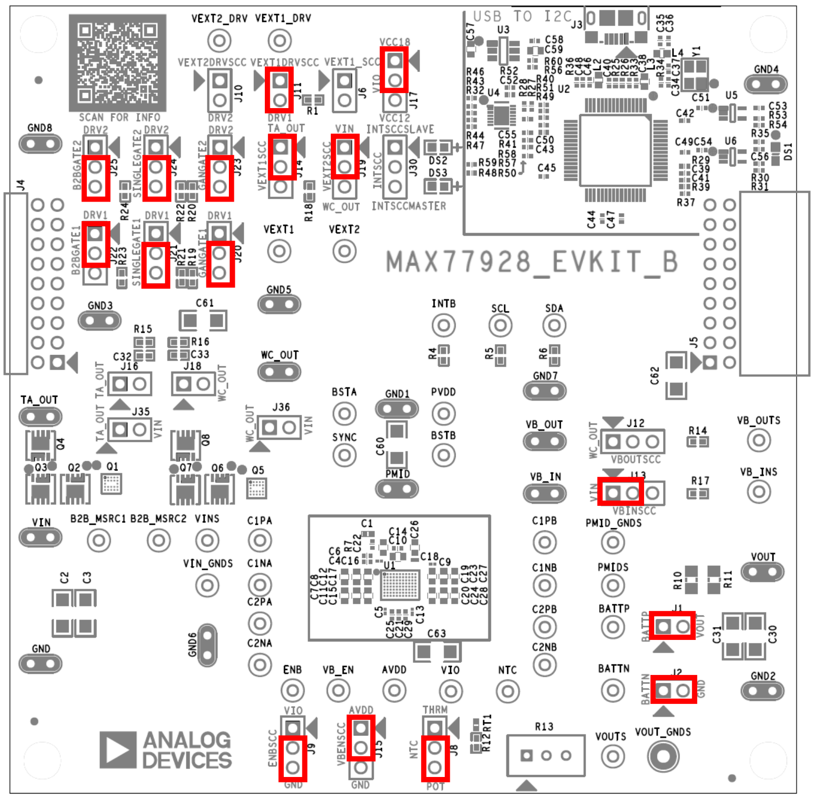


Figure 8. System Configuration 4 Jumper Setup

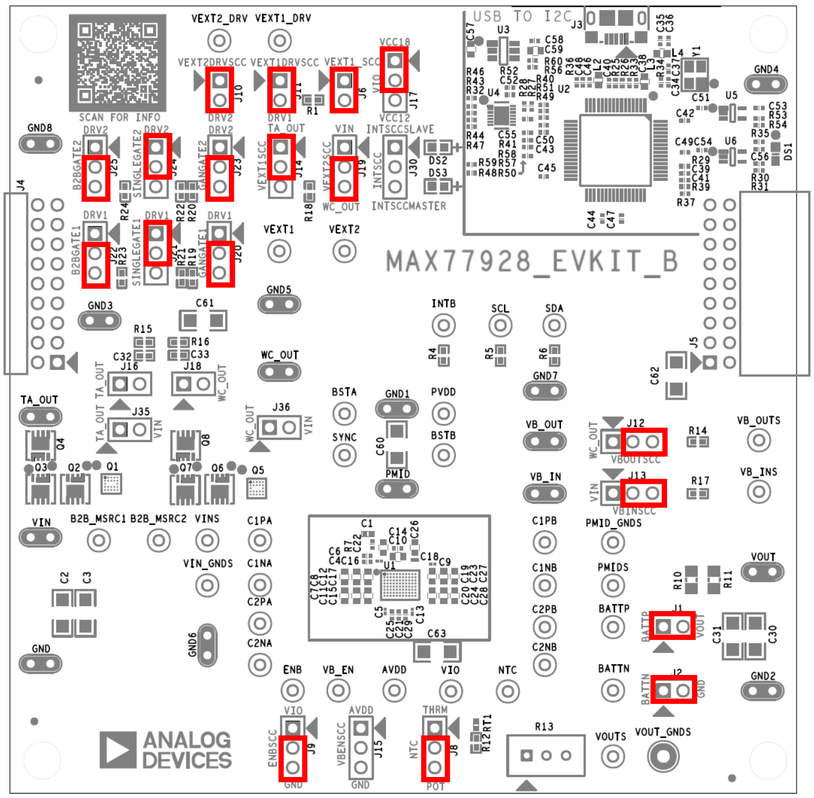


Figure 9. System Configuration 5 Jumper Setup

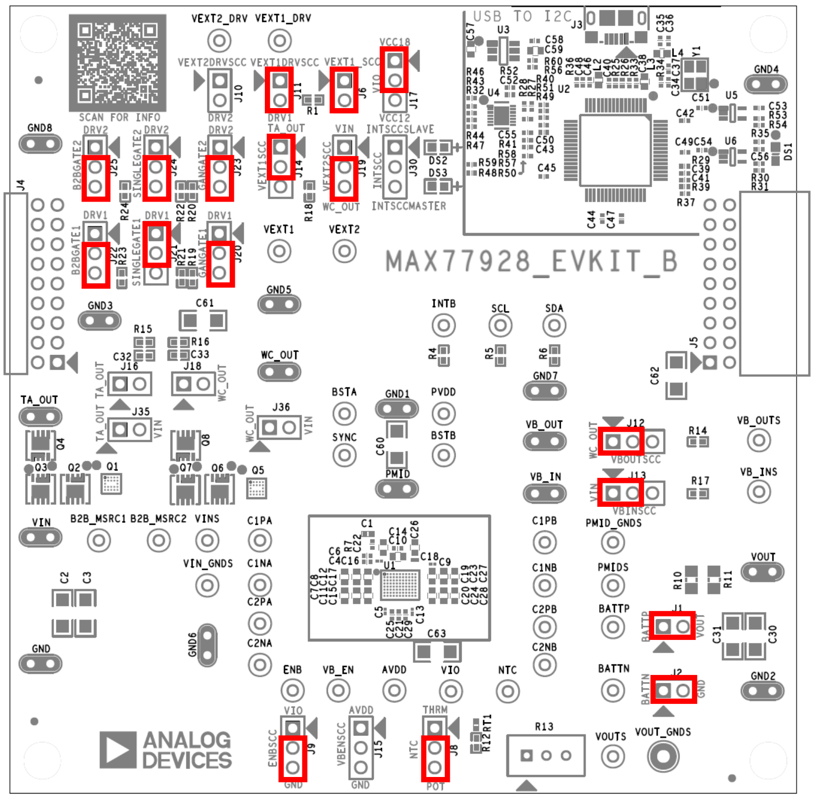


Figure 10. System Configuration 6 Jumper Setup

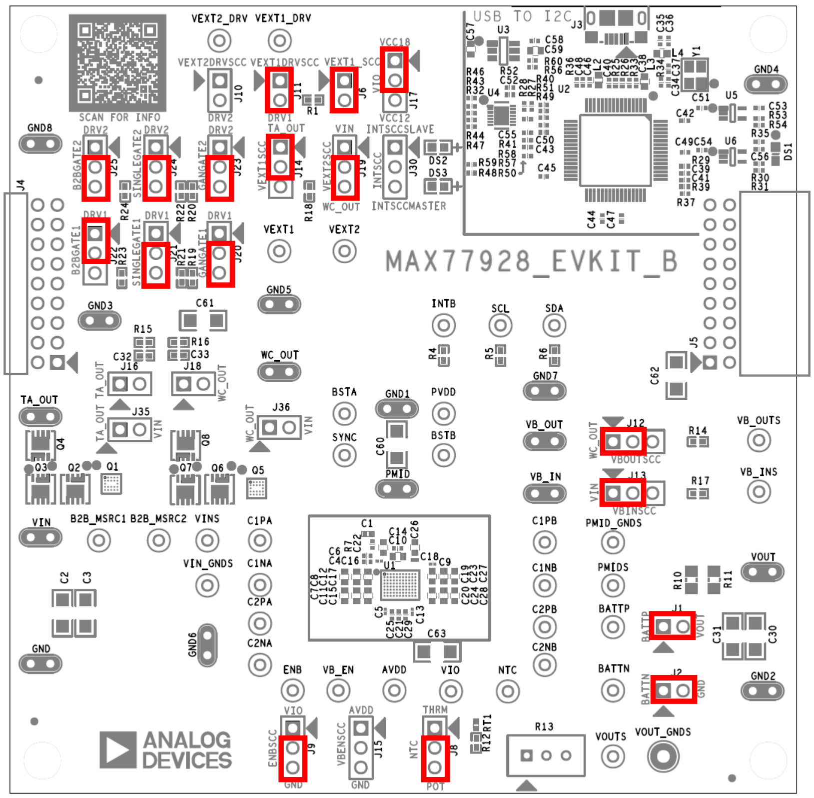


Figure 11. System Configuration 7 Jumper Setup

Power Supply

For testing at full loading, it is recommended to power up the EV kit by a 5A-or-above DC power supply at V_{IN} for Forward Mode or a 10A-or-above DC power supply at V_{OUT} for Reverse Mode.

Detailed Description of Software

The MAX77928 GUI software provides an easy-to-use interface to control the functional blocks of the IC. Double-click the **MAX77928GUISetup0.4.0.exe** icon to begin the installation process. Follow the prompts to complete the installation. The evaluation software can be uninstalled in the **Add/Remove Programs** tool in the **Control Panel**. After the installation is completed, open the **Analog Devices/MAX77928** folder and run **MAX77928.exe** or select it from the program menu. *Figure 12* shows a splash screen containing information about the evaluation kit that appears while the program is loading.

Figure 12. Splash Screen

Establish Communication

Power up the MAX77928 by connecting a 1-cell Li-ion battery or simulated battery at V_{OUT}/GND2. Open the GUI software and select **Device > Connect**. If only 1 MAX77928 EV kit is connected, a window should pop up showing that SCC_1 or SCC_2 is not found. If both SCC_1 and SCC_2 cannot be found, check the USB connection and power. Click **Yes** to continue. Having at least one slave device found on the I^2C bus signifies active communication. An example of a successful connection is shown in *Figure 13*. Click **Close**, and the status bar shows **Connected**.

The MAX77928 EV kit supports SYNC operation. The male B2B connector (J4) is compatible with the female B2B connector (J5), so 2 MAX77928 EV kits can be connected to perform the system application test as shown in *Figure 4*.

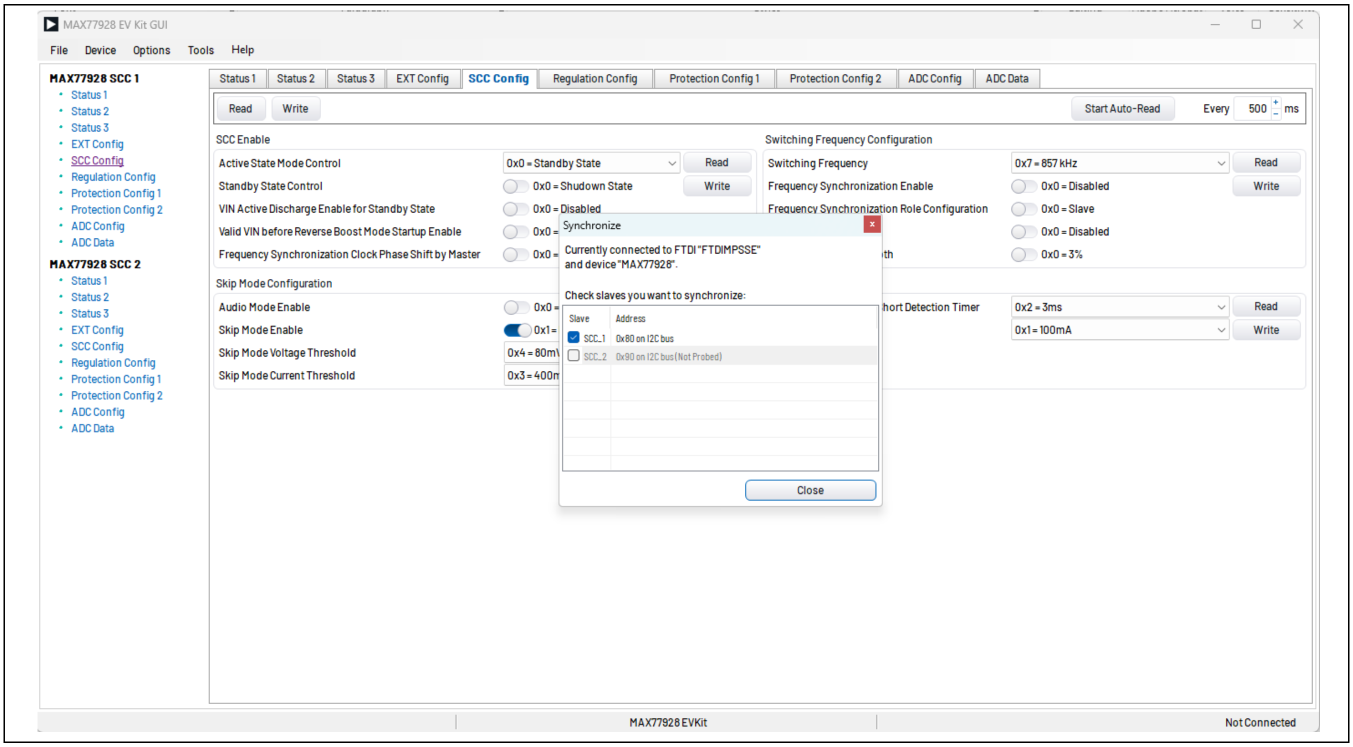


Figure 13. Communication Window

Main Display

Status bits and programmable functions of the SCC can be accessed through the interface tabs in the left column of the window, as shown in *Figure 14*.

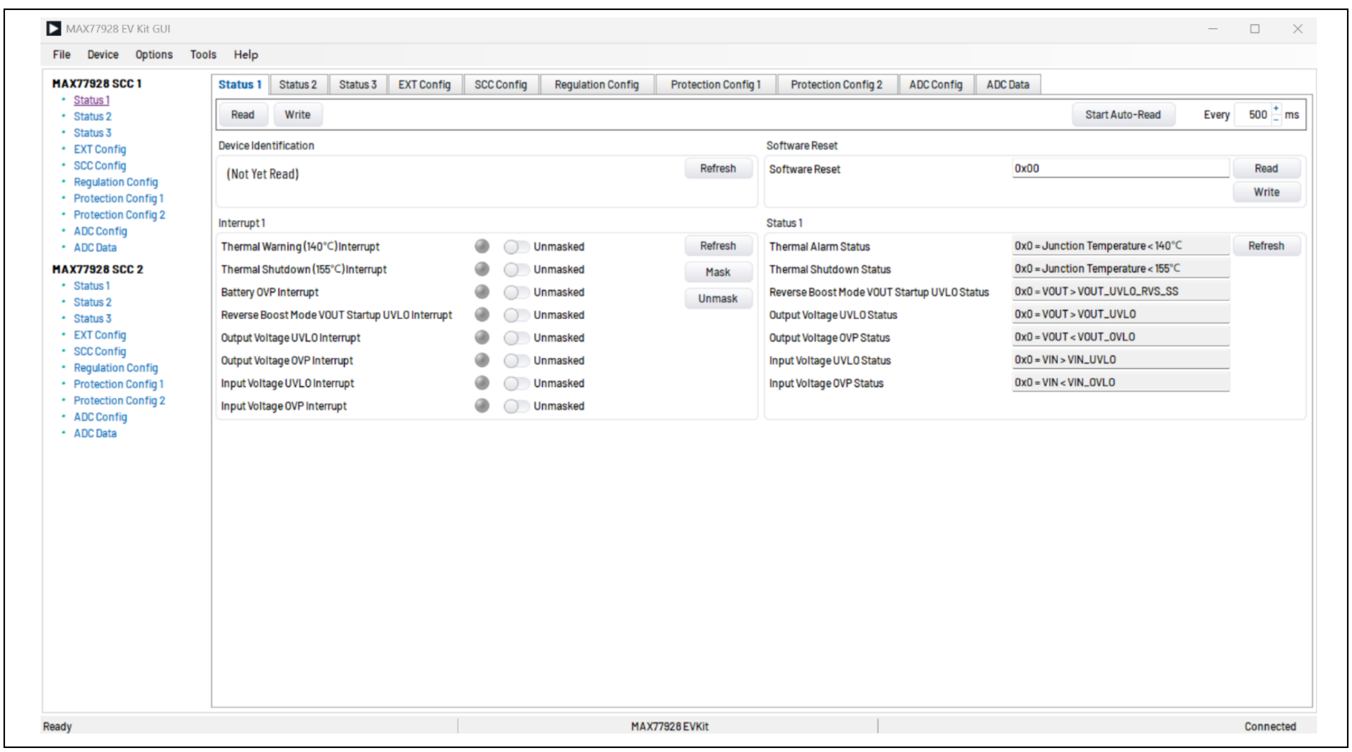


Figure 14. Status Registers

Register Write Access

The GUI provides access to any registers of the EV kit by **Read/Write** to them. For example, the **Active State Mode Control** can be changed in the **SCC Config** tab by selecting a desired value and clicking **Write** (*Figure 15*), and the **Input Current Regulation Threshold** can be changed in the **Regulation Config** tab by selecting a proper value and clicking **Write** (*Figure 16*).

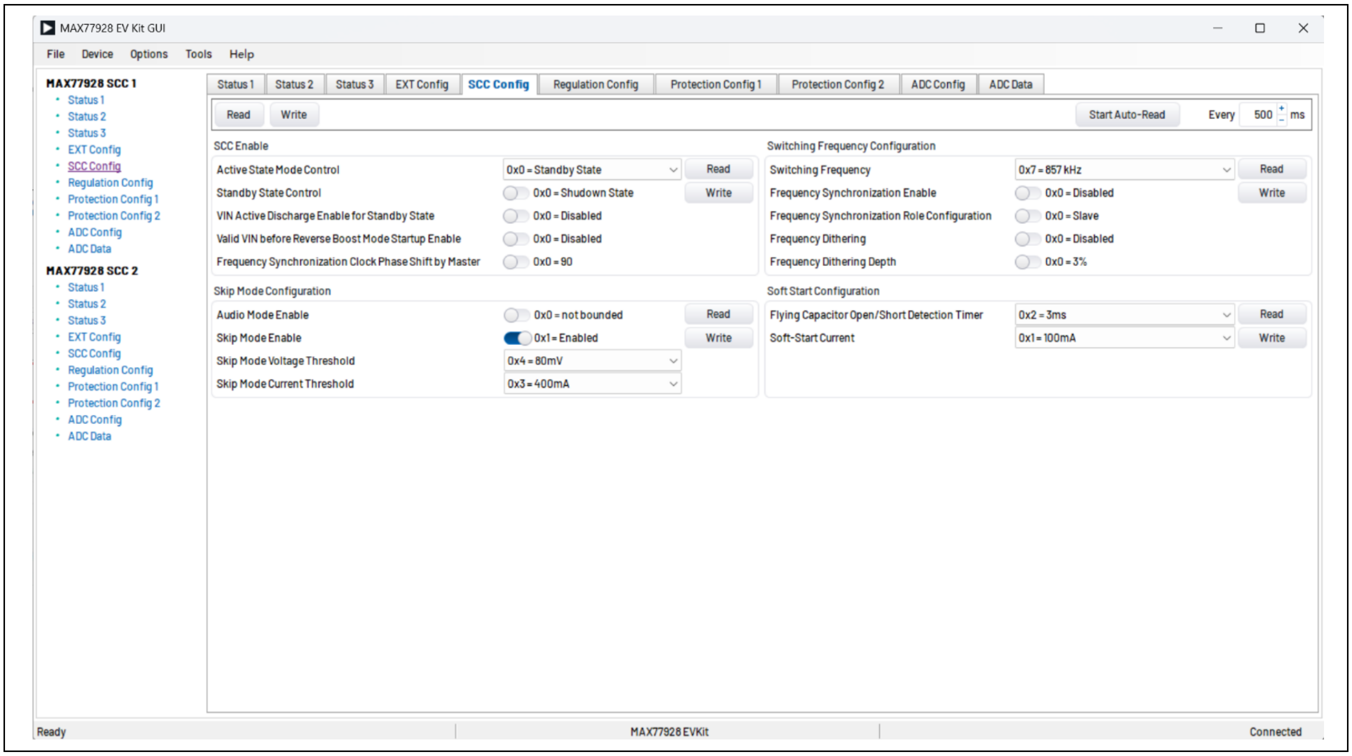


Figure 15. Setting of Active State Mode Control.

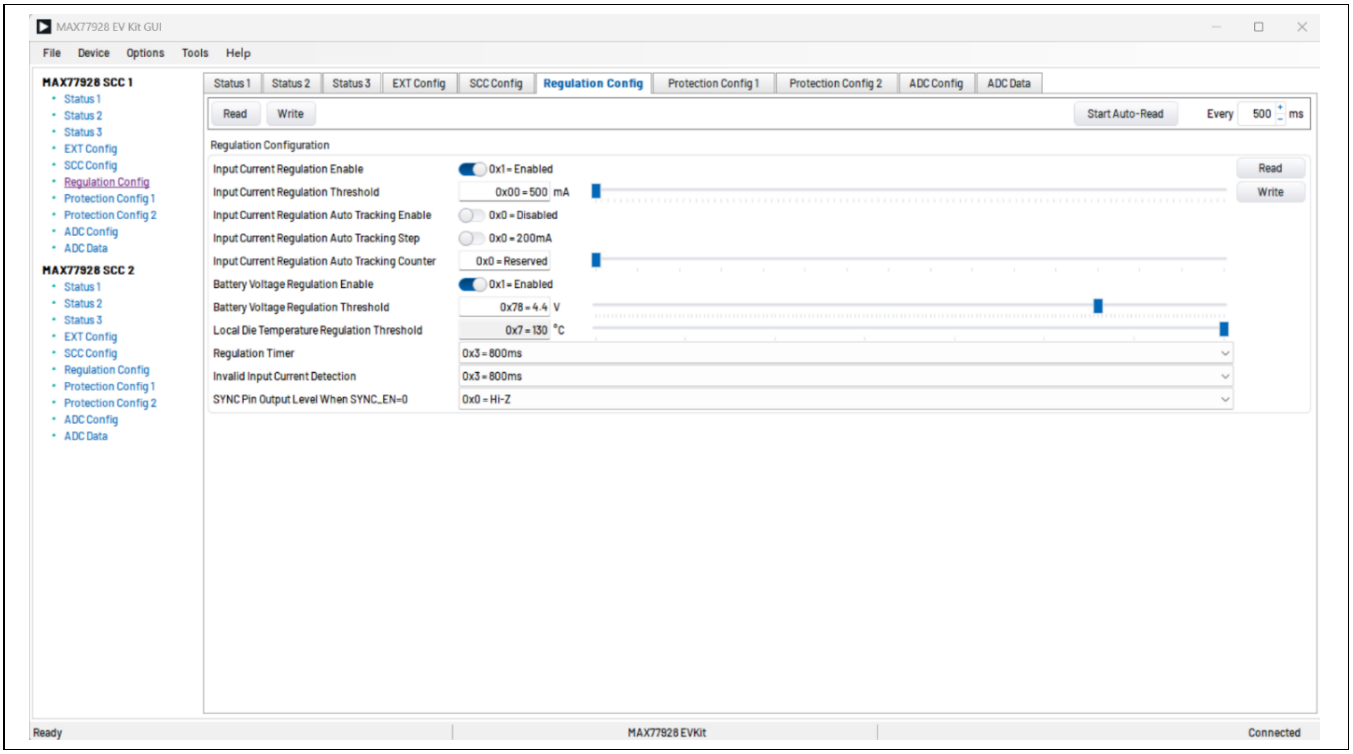


Figure 16. Setting of the Input Current Regulation Threshold.

Ordering Information

PART	TYPE
MAX77928EVKIT#	EV Kit

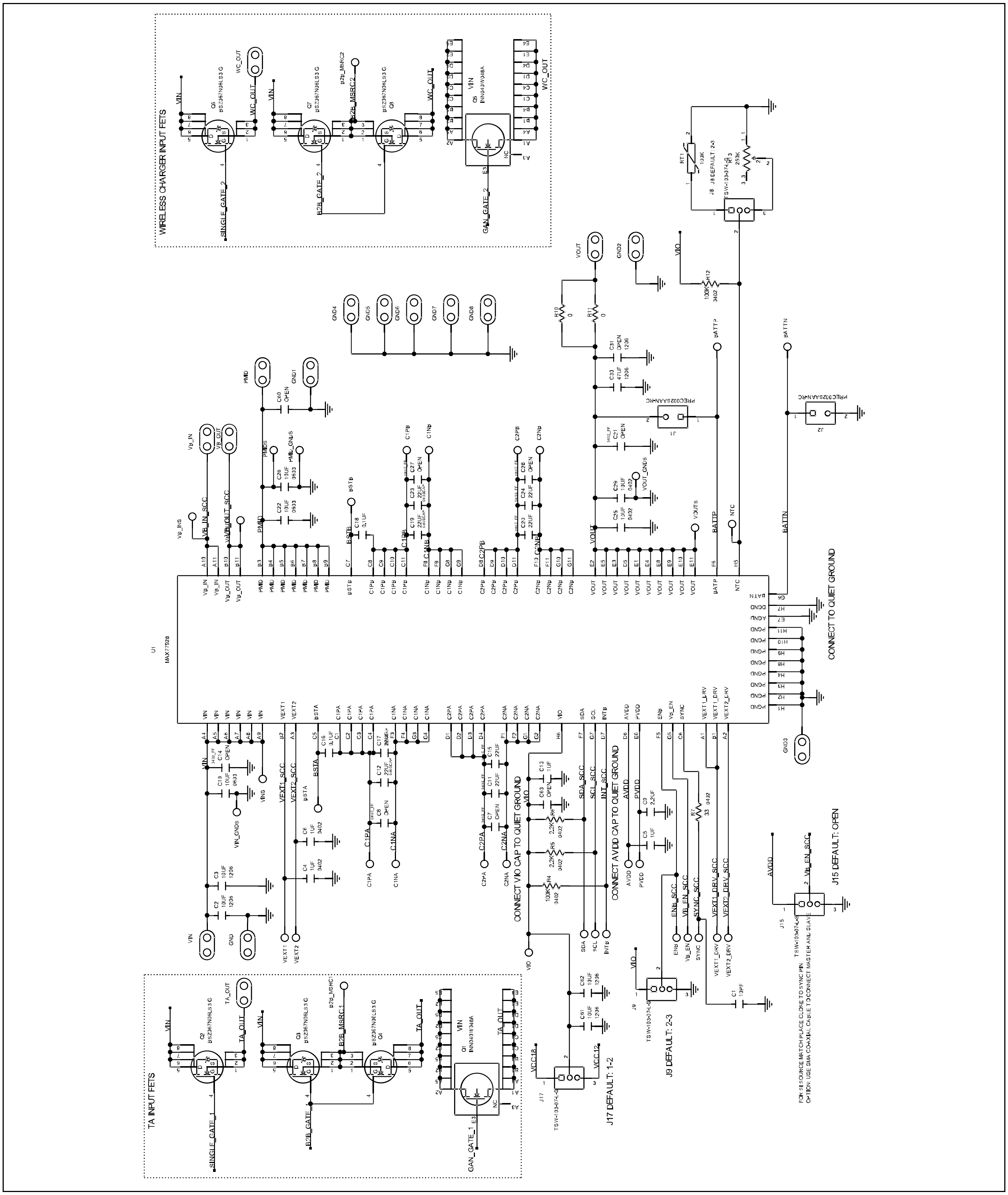
#Denotes RoHS-compliant.

MAX77928 EV Kit Bill of Materials

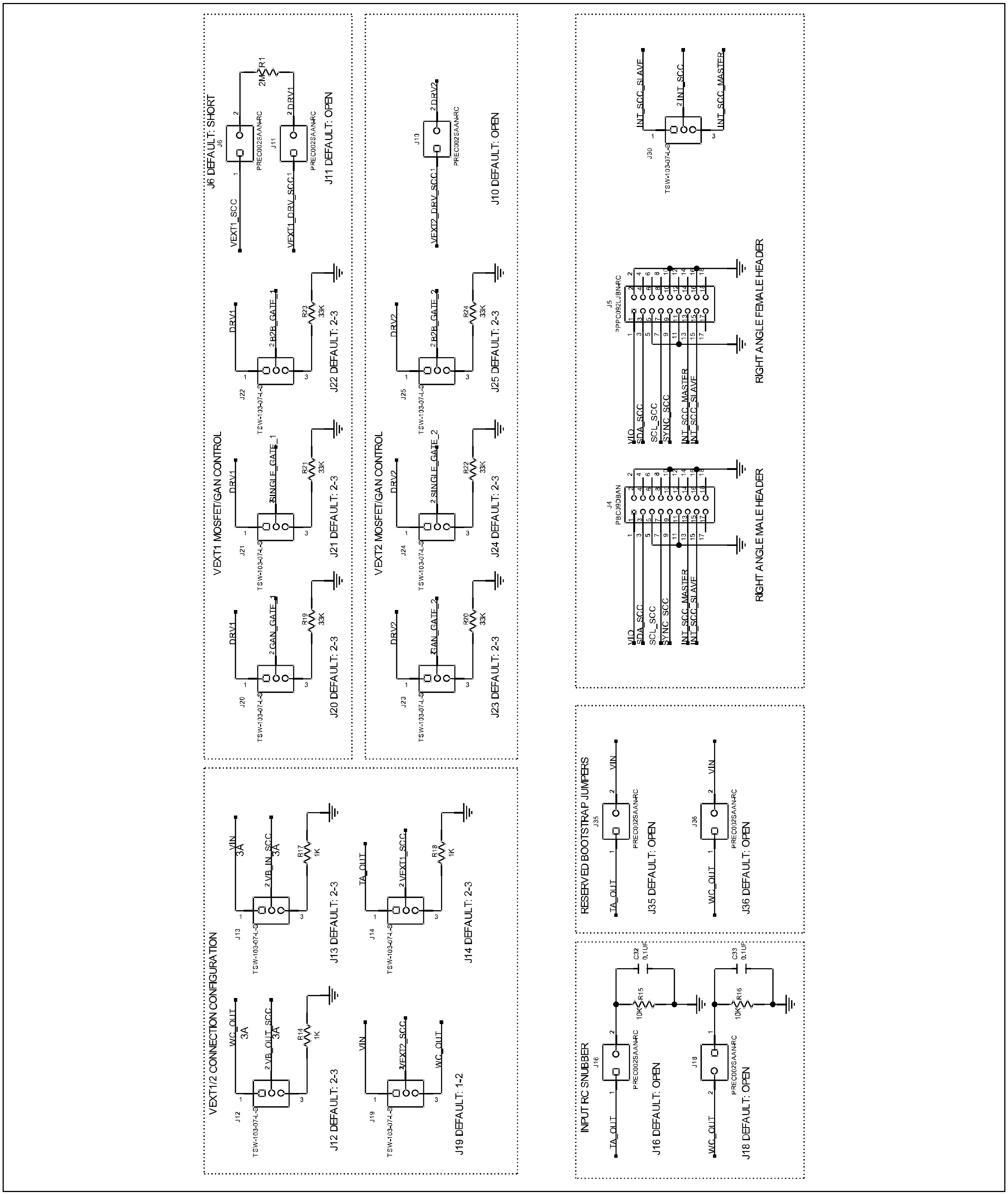
REF_DES	QTY	DESCRIPTION
AVDD, B2B_MSRC1, B2B_MSRC2, BSTA, BSTB, C1NA, C1NB, C1PA, C1PB, C2NA, C2NB, C2PA, C2PB, NTC, PMIDS, PVDD, VB_INS, VB_OUTS, VEXT1, VEXT2, VINS, VIO, VOUTS	23	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
BATTN, BATTP, PMID_GNDS, VIN_GNDS	4	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
C1	1	CAP; SMT (0201); 10PF; 1%; 25V; C0G; CERAMIC
C2, C3, C61, C62	4	CAP; SMT (1206); 10UF; 10%; 35V; X7T; CERAMIC ;
C4, C6	2	CAP; SMT (0402); 1UF; 20%; 50V; X5R; CERAMIC;
C5, C13	2	CAP; SMT (0201); 1UF; 20%; 10V; X5R; CERAMIC
C9	1	CAP; SMT (0201); 2.2UF; 10%; 10V; X5R; CERAMIC
C10, C22, C26, C57, C59	5	CAP; SMT (0603); 10UF; 20%; 25V; X5R; CERAMIC
C11, C15, C20, C24	4	CAPACITOR; SMT (0805); CERAMIC CHIP; 22UF; 16V; TOL=10%; MODEL=C SERIES; TG=-55ºC TO +85ºC; TC=X5R; FORMFACTOR
C12, C17, C19, C23	4	CAP; SMT (0805); 22UF; 20%; 16V; X5R; CERAMIC
C16, C18	2	CAP; SMT (0201); 0.1UF; 10%; 10V; X5R; CERAMIC
C25, C29	2	CAP; SMT (0402); 10UF; 20%; 10V; X5R; CERAMIC
C30	1	CAP; SMT (1206); 47UF; 20%; 25V; X5R; CERAMIC
C32, C33	2	CAP; SMT (0402); 0.1UF; 10%; 50V; X7R; CERAMIC
C34, C37	2	CAP; SMT (0402); 27PF; 5%; 50V; C0G; CERAMIC
C35, C41, C43	3	CAP; SMT (0402); 4.7UF; 20%; 10V; X5R; CERAMIC
C36, C38-C40, C42, C44-C50, C55, C58	14	CAP; SMT (0402); 0.1UF; 5%; 10V; X7R; CERAMIC
C51-C54, C56	5	CAP; SMT (0402); 1UF; 10%; 10V; X5R; CERAMIC
DS1	1	DIODE; LED; STANDARD; YELLOW; SMT (0603); PIV=5.0V; IF=0.02A; -55ºC TO +85ºC
DS2	1	DIODE; LED; ; SMT (0603); PIV=5V; IF=0.02A; BLUE
DS3	1	DIODE; LED; ULTRA BRIGHT CHIP LEAD; ORANGE; SMT (0603); VF=2V; IF=0.02A
ENB, INTB, SCL, SDA, SYNC, VB_EN, VEXT1_DRV, VEXT2_DRV	8	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; WHITE; PHOSPHOR BRONZE WIRE SILVER;
GND, GND1-GND8, PMID, TA_OUT, VB_IN, VB_OUT, VIN, VOUT, WC_OUT	16	EVK KIT PARTS; MAXIM PAD; WIRE; NATURAL; SOLID; WEICO WIRE; SOFT DRAWN BUS TYPE-S; 20AWG
J1, J2, J6, J10, J11, J16, J18, J35, J36	9	CONNECTOR; MALE; THROUGH HOLE; HEADER; STRAIGHT; 2PINS
J3	1	CONNECTOR; FEMALE; SMT; MICRO USB B TYPE RECEPTACLE; RIGHT ANGLE; 5PINS
J4	1	CONNECTOR; MALE; THROUGH HOLE; PBC SERIES; RIGHT ANGLE; 18PINS
J5	1	CONNECTOR; FEMALE; THROUGH HOLE; PPP SERIES; RIGHT ANGLE; 18PINS
J8, J9, J12-J15, J17, J19-J25, J30	15	CONNECTOR; THROUGH HOLE; SINGLE ROW; STRAIGHT; 3PINS
L2-L4	3	INDUCTOR; SMT (0603); FERRITE-BEAD; 600; TOL=±0.5A
MISC1	1	CABLE; MALE; USB; USB2.0 MICRO CONNECTION CABLE; USB B MICRO MALE TO USB A MALE; 2000 MILLIMETERS; 5PINS-4PINS
Q1, Q5	2	TRAN; BIGAN ENHANCEMENT-MODE FET; BGA22; I-(20A); V-(40V) ;
Q2-Q4, Q6-Q8	6	TRAN; OPTIMOS 3 POWER-TRANSISTOR; MOSFET; NCH; PG-TSDSON-8; PD-(69W); I-(79A); V-(60V);

R1	1	RES; SMT (0402); 2M; 1%; ±100PPM/DEGC; 0.0630W
R4, R12	2	RES; SMT (0402); 100K; 1%; ±100PPM/DEGC; 0.1000W
R5, R6	2	RES; SMT (0402); 2.2K; 5%; ±200PPM/DEGK; 0.0630W
R7	1	RES; SMT (0402); 33; 1%; ±100PPM/DEGC; 0.0630W
R10, R11	2	RES; SMT (0805); 0; JUMPER; JUMPER; 0.5000W
R13	1	RES; THROUGH HOLE-RADIAL LEAD; 250K; 10%; ±100PPM/ºC; 0.5W
R14, R17, R18	3	RES; SMT (0402); 1K; 5%; ±100PPM/DEGK; 0.0630W
R15, R16	2	RES; SMT (0402); 10K; 1%; ±100PPM/ºC; 0.1000W;
R19-R24	6	RES; SMT (0402); 33K; 1%; ±100PPM/ºC; 0.0630W
R25, R26	2	RES; SMT (0402); 27; 1%; ±100PPM/ºC; 0.0630W
R27, R28	2	RES; SMT (0402); 4.7K; 1%; ±100PPM/ºC; 0.0630W
R29, R32, R37, R40, R43, R44, R46, R47, R49-R52, R57	13	RES; SMT (0402); 0; JUMPER; JUMPER; 0.1000W
R30	1	RES; SMT (0402); 169K; 1%; ±100PPM/DEGK; 0.0630W
R31, R41, R54, R58	4	RES; SMT (0402); 100K; 1%; ±100PPM/ºC; 0.0630W
R33	1	RES; SMT (0402); 12K; 1%; ±100PPM/ºC; 0.0630W
R34	1	RES; SMT (0402); 1M; 1%; ±100PPM/ºC; 0.0630W
R35	1	RES; SMT (0402); 470; 1%; ±100PPM/ºC; 0.0630W
R36	1	RES; SMT (0402); 1K; 1%; ±100PPM/ºC; 0.0630W
R48, R59	2	RES; SMT (0402); 1.3K; 5%; ±200PPM/ºC; 0.1000W
R53	1	RES; SMT (0402); 47.5K; 1%; ±100PPM/ºC; 0.0630W
R56	1	RES; SMT (0402); 40.2K; 1%; ±100PPM/DEGK; 0.0630W
R60	1	RES; SMT (0402); 20K; 5%; ±200PPM/ºC; 0.1000W;
RT1	1	THERMISTOR; SMT (0201); 100K; ±1%; 0.10A; -40ºC TO +125ºC
U1	1	EVKIT PART -10A 3:1/2:1/1:1 SWITCHED-CAPACITOR DIRECT CHARGER FOR 1S LI-ION BATTERY; PACKAGE OUTLINE DRAWING: 21-100731; PACKAGE CODE: W883A4Z+1; WLP88
U2	1	IC; MMRY; DUAL HIGH SPEED USB TO MULTIPURPOSE UART/FIFO; LQFP64
U3	1	IC; VREG; LOW-VOLTAGE, LOW-DROPOUT LINEAR REGULATOR WITH EXTERNAL BIAS SUPPLY; SOT23-6
U4	1	IC; TRANS; QUAD BIDIRECTIONAL LOW-VOLTAGE LOGIC LEVEL TRANSLATOR; TDFN14-EP
U5, U6	2	IC, VREG, Ultra-Low-Noise, High PSRR, Adjustable Vout, SC70-5
VOUT_GNDS	1	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
Y1	1	CRYSTAL; SMT; 12MHZ; 18PF; TOL = ±30PPM; STABILITY = ±30PPM
PCB	1	PCB: MAX77928
MH1-MH4	0	MACHINE FABRICATED; ROUND-THRU HOLE SPACER; NO THREAD; M3.5; 5/8IN; NYLON
C7, C8, C27, C28	0	CAPACITOR; SMT (0805); OPEN; FORMFACTOR
C14, C21	0	CAPACITOR; SMT (0402); OPEN; FORMFACTOR
C31, C60, C63	0	CAPACITOR; SMT (1206); OPEN; IPC MAXIMUM LAND PATTERN
R39	0	RESISTOR; 0402; OPEN; FORMFACTOR

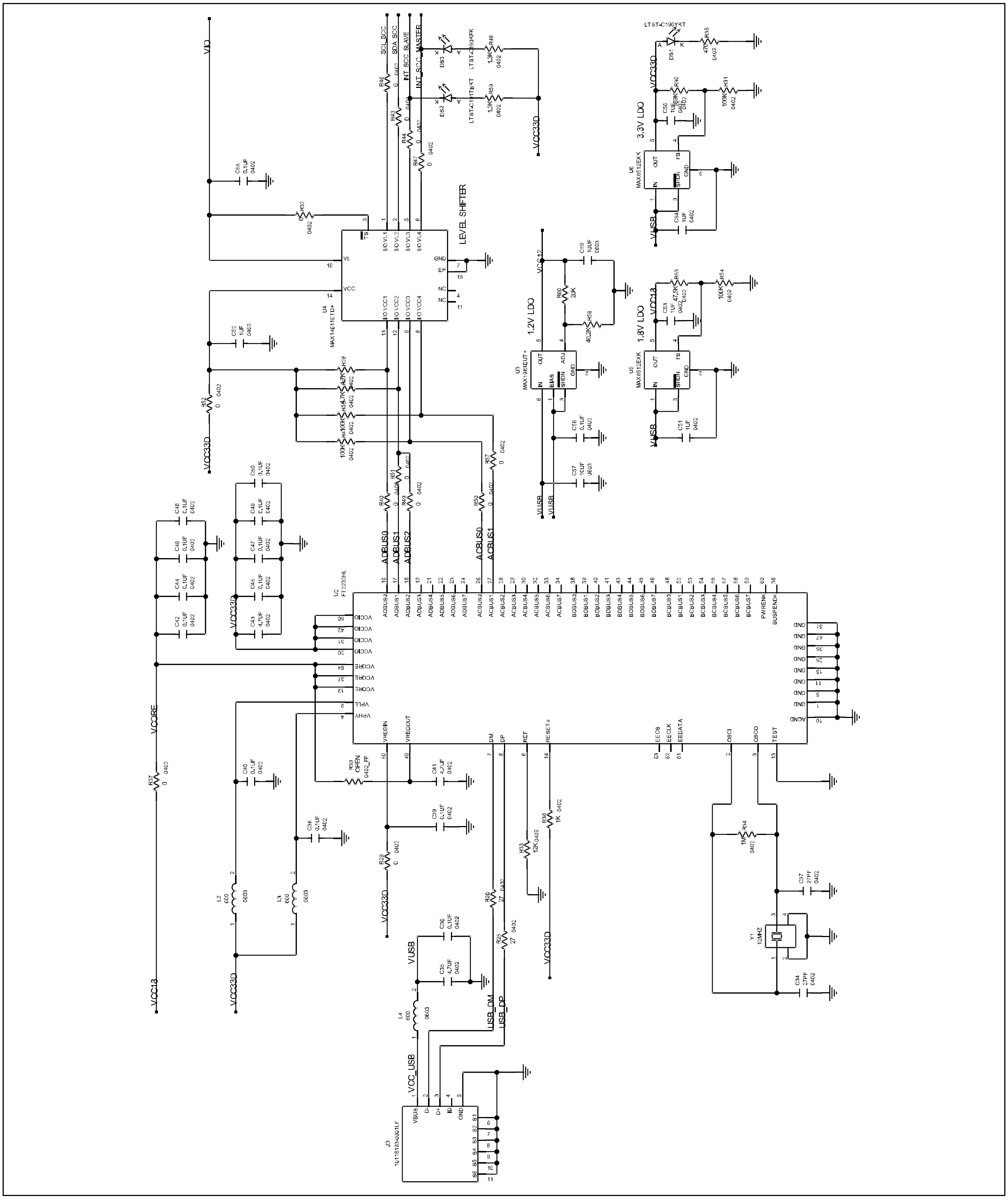
MAX77928 EV Kit Schematic



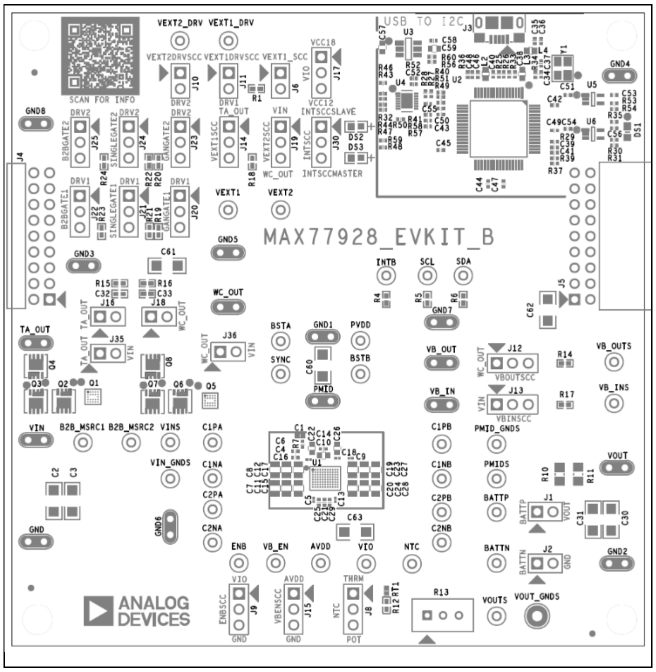
MAX77928 EV Kit Schematic (continued)



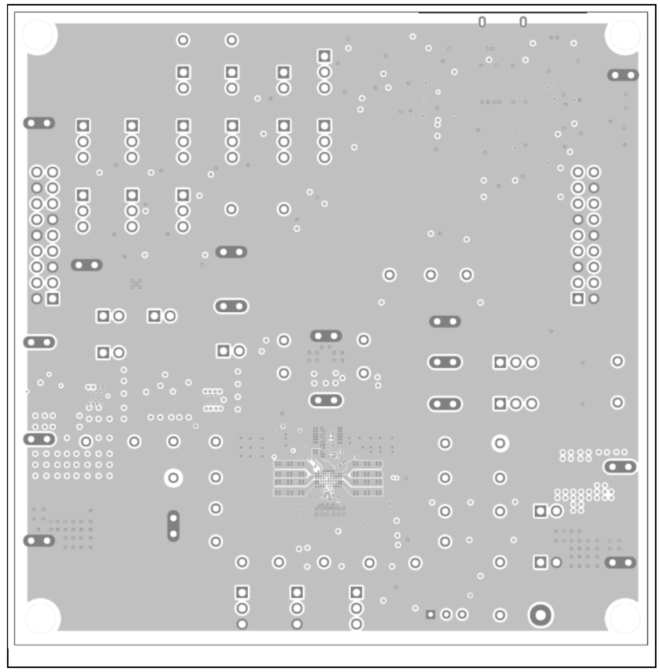
MAX77928 EV Kit Schematic (continued)



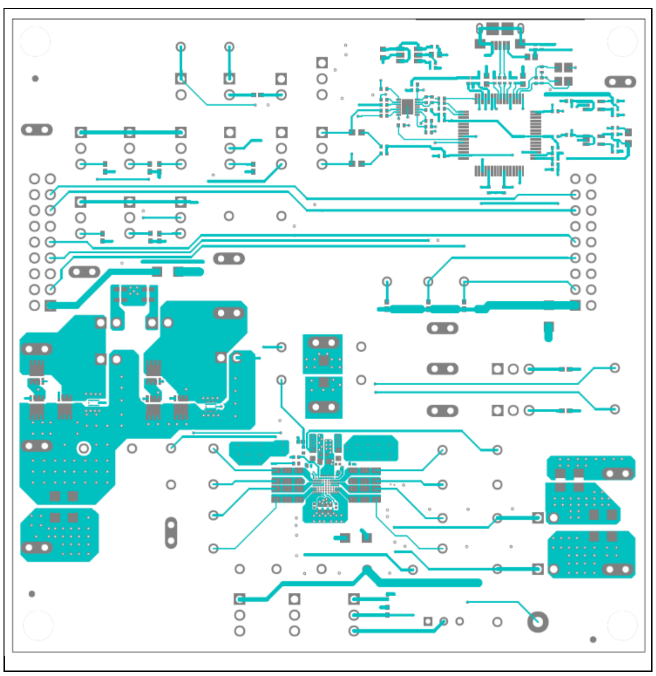
MAX77928 EV Kit PCB Layout



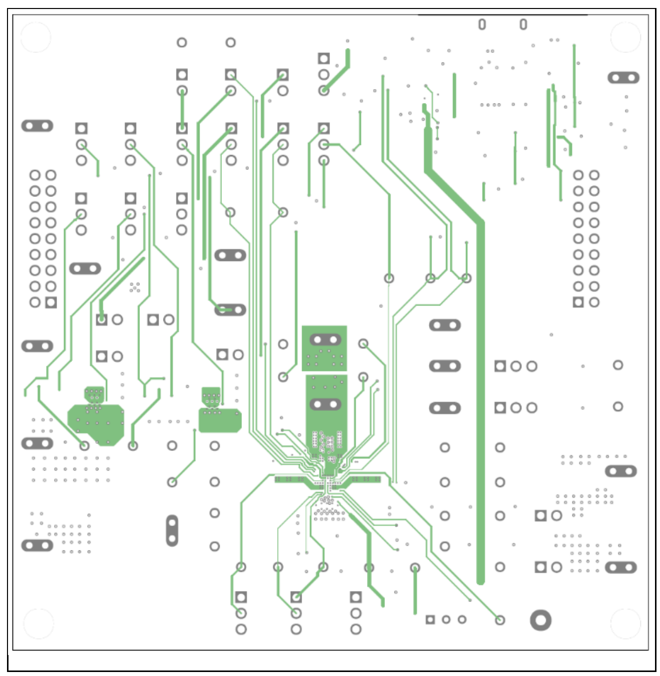
MAX77928 EV Kit Component Placement Guide—Top Silkscreen



MAX77928 EV Kit PCB Layout—Layer 2

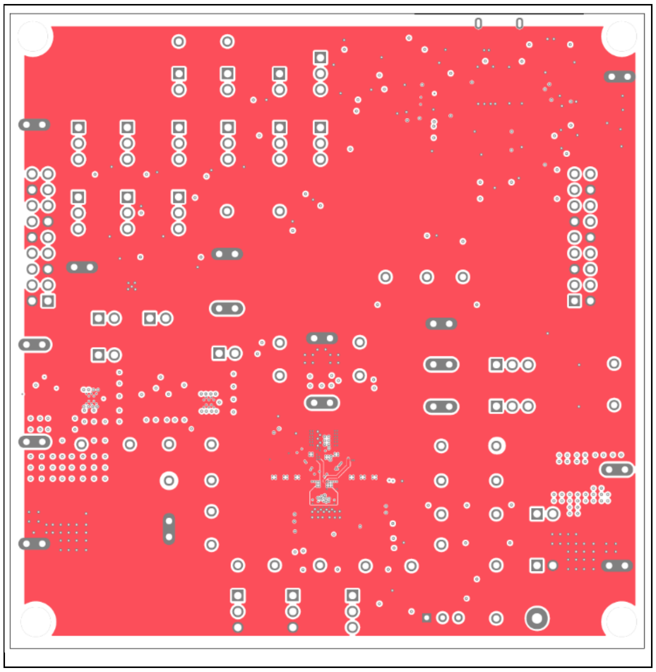


MAX77928 EV Kit PCB Layout—Top

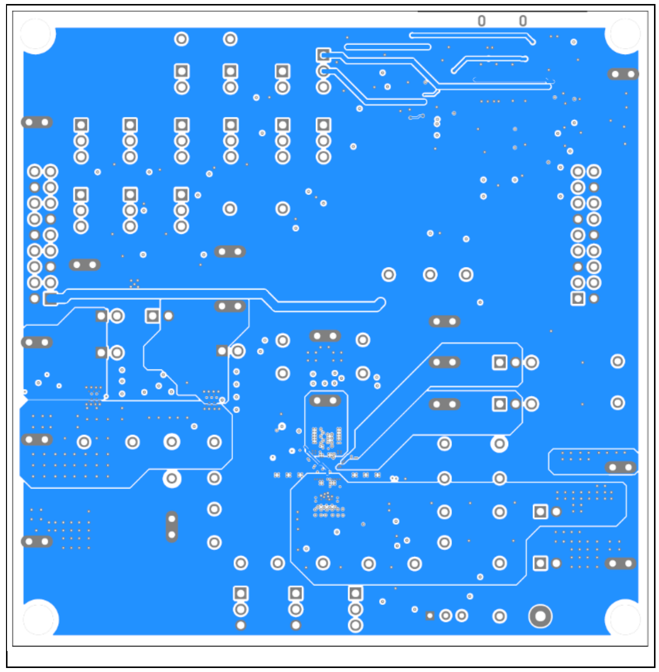


MAX77928 EV Kit PCB Layout—Layer 3

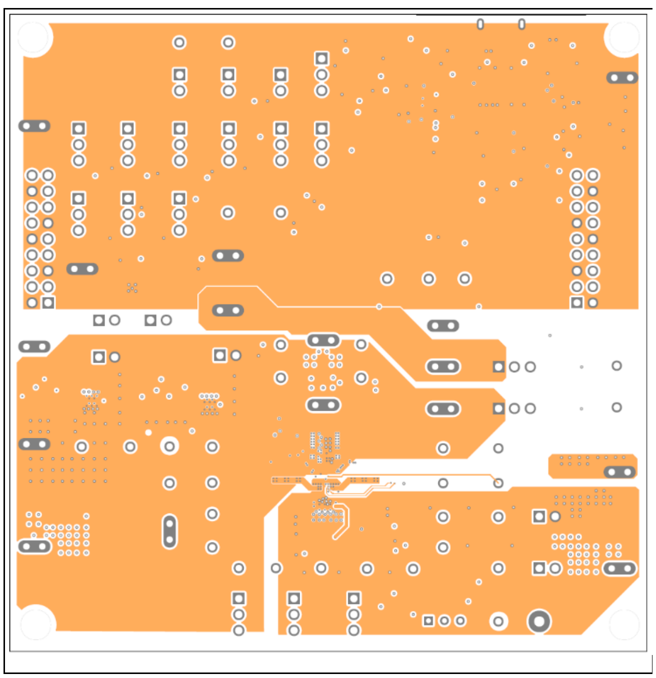
MAX77928 EV Kit PCB Layout (continued)



MAX77928 EV Kit PCB Layout—Layer 4



MAX77928 EV Kit PCB Layout—Bottom



MAX77928 EV Kit PCB Layout—Layer 5

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	9/25	Initial release	—

Notes

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