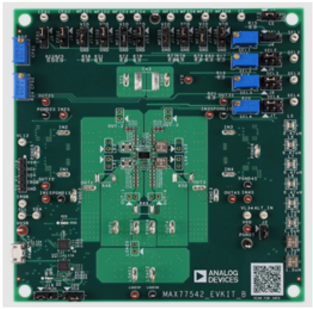
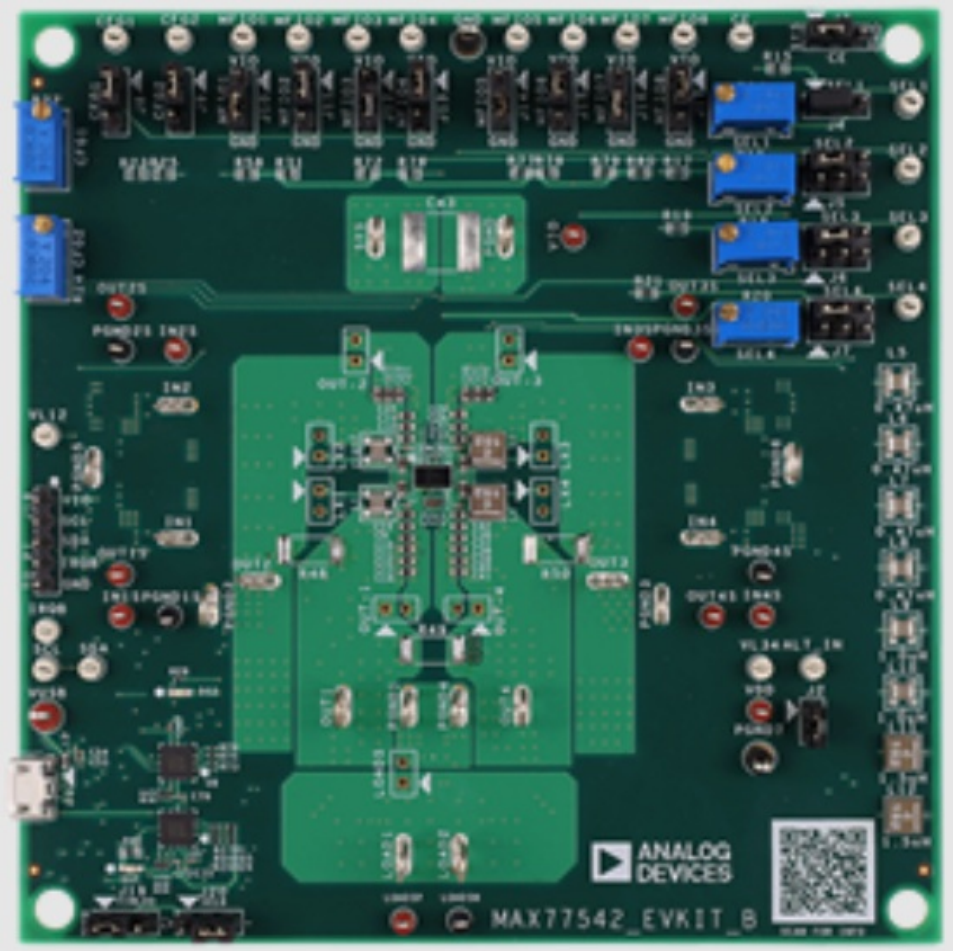


ANALOG DEVICES MAX77542 Evaluation Kit User Manual

ANALOG DEVICES MAX77542 Evaluation Kit



Contents

General Description

The MAX77542 evaluation kit (EV kit) is a fully assembled and tested printed circuit board (PCB) that demonstrates the MAX77542 four-phase configurable step-down regulator. The board is equipped with test points and jumpers for testing all pins on the device.
Six potentiometers allow for adjusting the SEL1/2/3/4 and CFG1/2 configuration pins at will.
There are also probe sockets on critical nodes (VOUTx, LXx) for precise measurements.
The board also comes with some spare inductors (L5–L12) for testing out efficiency/performance tradeoffs. The PCB is designed with Analog Devices, Inc.'s, recommended layout of the IC and external components.
The IC sets default output voltages by way of R15, R17, R19, and R21 but can be changed with the potentiometers or through I2C communication. Analog Devices' GUI can be used by connecting a Windows®-based PC to J1 through a USB Type-A to Micro-USB cable.

Ordering Information appears at end of data sheet.

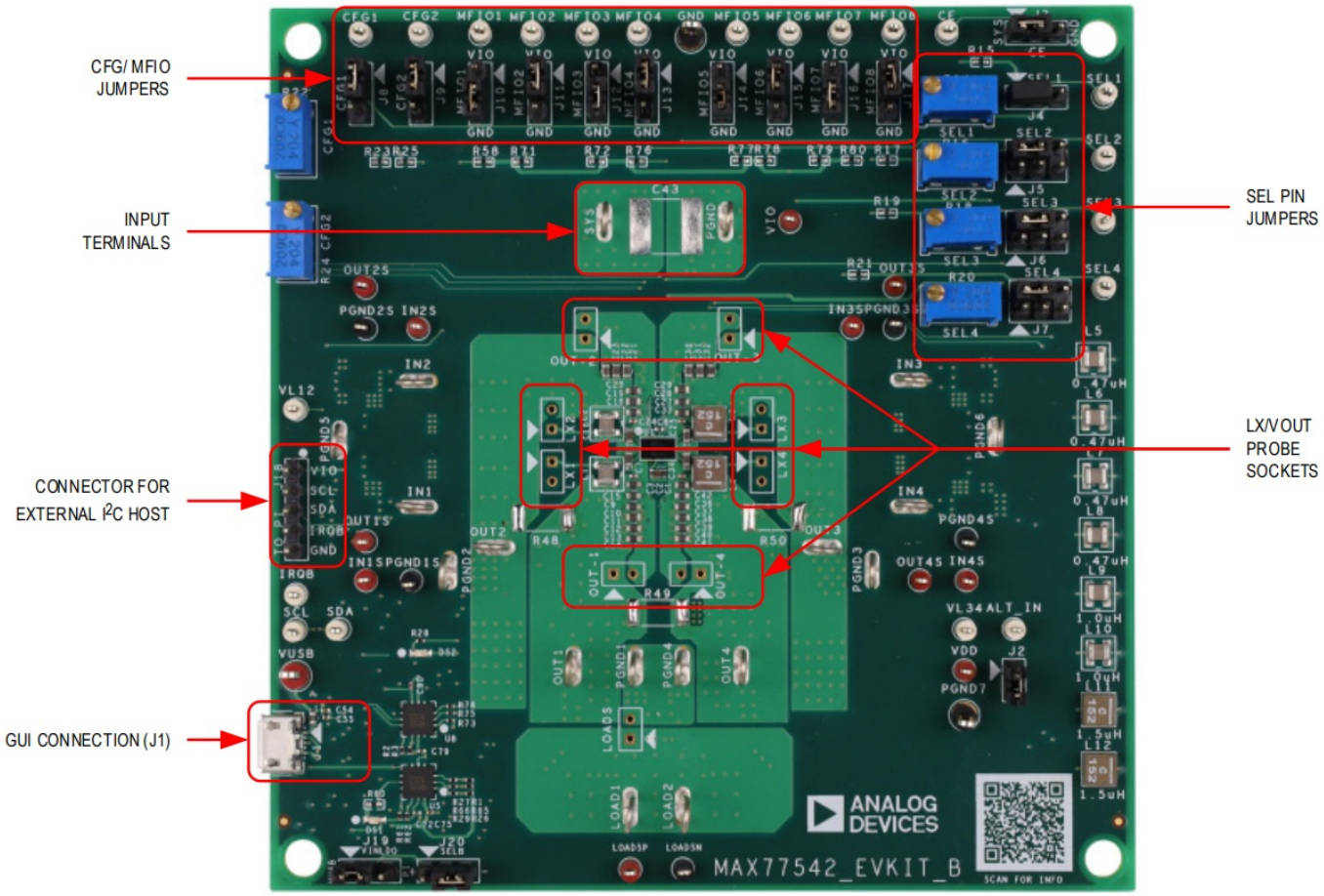
Features

- Probe Sockets for High-Accuracy Measurements
- Test Points for All Features (MFIO, CE, IRQB)
    - Default Output Voltage Adjustable Via SEL1/2/3/4
    - Default MFIO Function and I2C Slave ID Set Via CFG1
    - Default Peak Current Limit and FSW Set Via CFG2
- Connector for Custom I2C Host

EV Kit Contents

- The MAX77542 EV kit
- USB Type-A to Micro-USB Cable
- Windows-based GUI software is available for use with the EV kit and can be downloaded from Analog Devices website at **www.analog.com/max77542evkit** (under the Design Resources tab).
  Windows 7 or newer is required to use with the EV kit GUI software.

Figure 1. MAX77542 Evaluation Board



EV Kit Specifications and Default Configuration

The MAX77542 EV kit comes with the following default settings:

- VOUT1 = 1.0V
- VOUT2 = 1.8V
- VOUT3 = 3.3V
- VOUT4 = 5.0V
- FSW = 1.0MHz
- Skip Mode
- Soft-Start and DVS Ramp-Up Rate = 5.0mV/µs
- Soft-Stop and DVS Ramp-Down Rate = -0.15mV/µs
- 100Ω Active Discharge Enabled (1Ω is Disabled)
    - Peak Current Limit = 5.5A
    - MFIO1-8 set to EN inputs and POK outputs
    - MFIO1: EN1
    - MFIO2: POK1
    - MFIO3: EN2
    - MFIO4: POK2
    - MFIO5: EN3
    - MFIO6: POK3

- MFIO7: EN4
- MFIO8: POK4
- MAX77542AAWU+ Installed

Quick Start

Required Equipment

- Adjustable DC Power Supply or Applicable Battery
- Multimeter
- USB Type-A to Micro-USB Cable (optional)
- Windows-based PC with MAX77542 EV kit GUI

Setup Overview

Figure 2 depicts a simplified block diagram of a typical EV kit setup.
Attach more meters and scope probes as necessary.

Figure 2. Simplified Setup Block Diagram

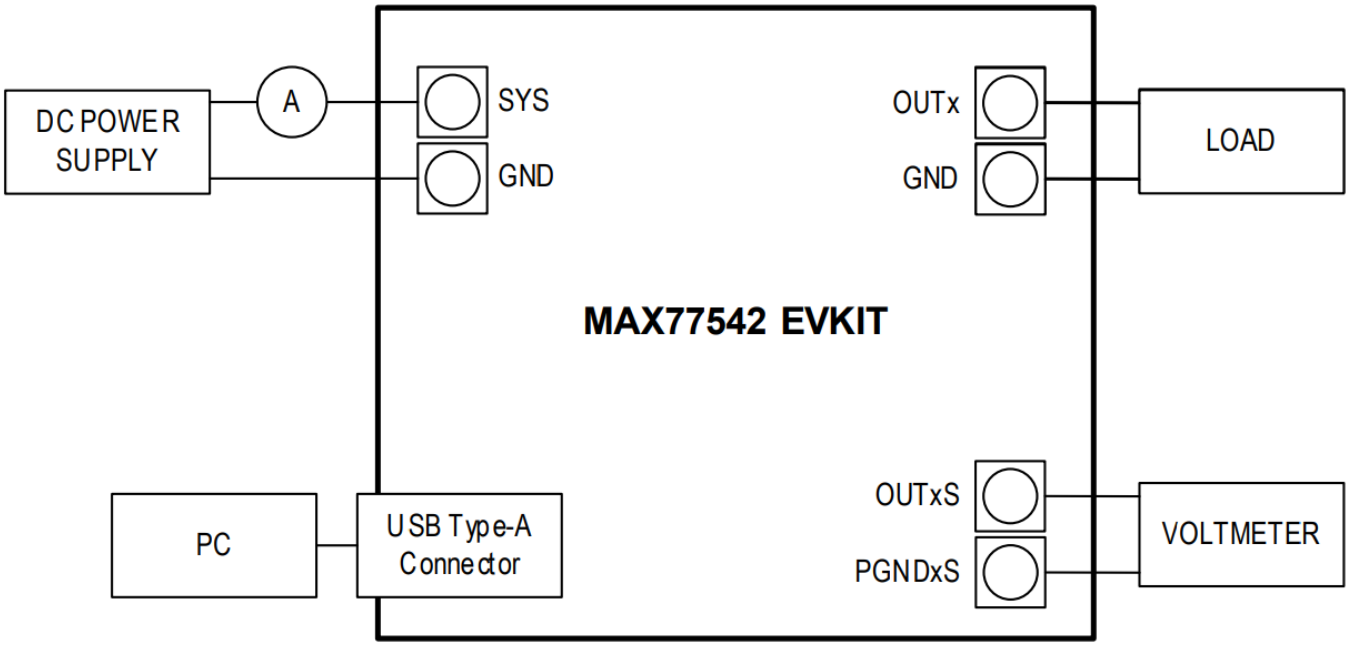


Figure 3 depicts a typical application circuit of the MAX77542.

Figure 3. Typical Application Circuit

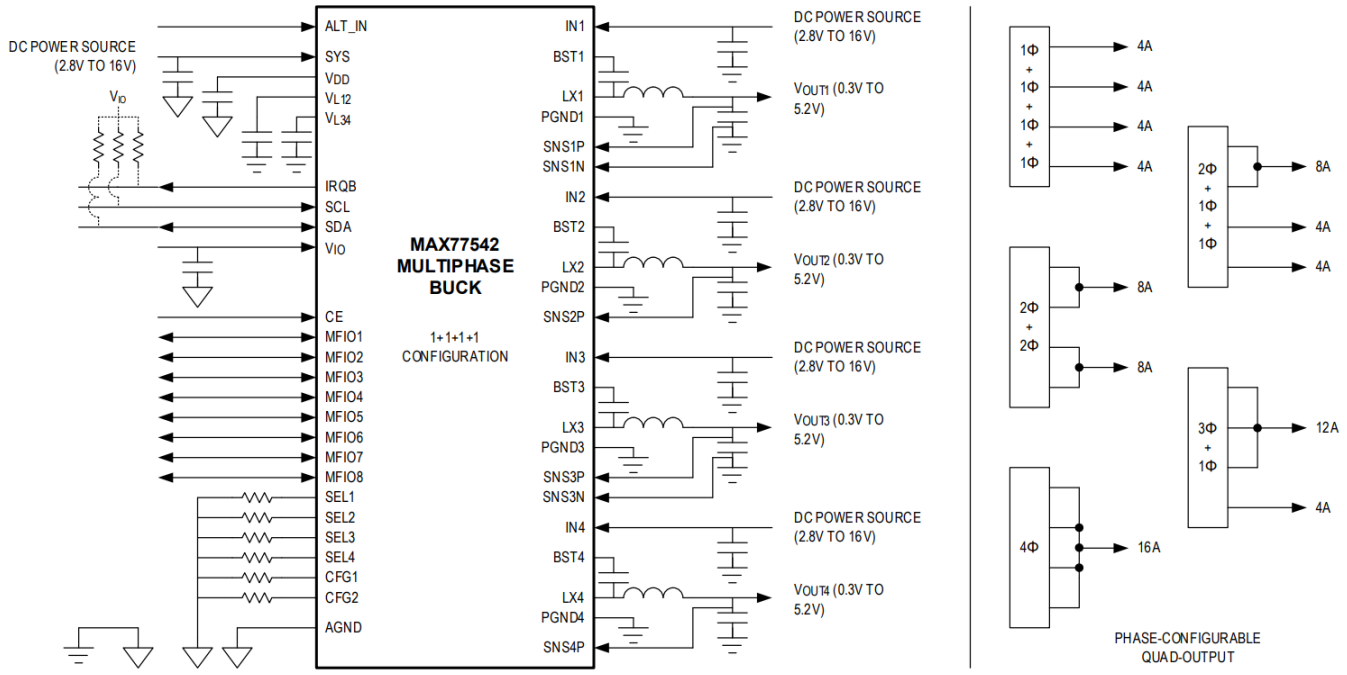


Table 1. EV Kit Default Specifications

SPECIFICATIONS	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage		2.8		16.0	V
Output Voltage	Configurable by SEL or through I2C	0.3		5.2	V
Output Current	Per Phase	0		4	A
Switching Frequency		1			MHz
Peak Current Limit		5.5			A

Procedure

Follow this procedure for first time evaluation:

1. Install GUI software. Visit the product webpage at **https://www.analog.com/max77542evkit** and navigate to Design Resources to download the latest version of the EV kit software. Save the EV kit software installation file to a temporary folder and decompress the ZIP file. Run the .EXE file and follow the on-screen instructions to complete installation.
2. Ensure that the jumpers are configured as per Table 2.
3. Apply a valid voltage (like 7.6V) from a power supply to the SYS and PGND terminals of the EV Kit. Do not enable the power supply yet.
4. Important: Make sure that the phase configuration is correct. See the Phase Configuration section.
5. Connect a USB cable between your PC and J1 USB port on the EV kit.

6. Turn on the input power supply.
7. Open the GUI and click Device in the menu bar. Click Connect in the Device drop-down list. Wait for the device to respond, and in the Synchronize window, press Connect. The GUI takes a few seconds to read the device registers after pressing Connect.
8. Navigate to the Buck 1 Configuration tab. Drag the slide bar in Buck Normal Output Voltage section to change the output voltage and click Write.
9. Navigate to the **Global Configuration 2** tab. Toggle Buck Master1 Enable Control to Enable and press **Write.**
10. Measure OUT1 with a voltmeter. It should read the voltage set in the GUI in Step 8.
11. Use the GUI to exercise the various features of the MAX77542. This concludes the Quick Start procedure. Users are now encouraged to further explore the device and its register settings with the GUI software. For more information on the GUI, see Detailed Description of Software section.

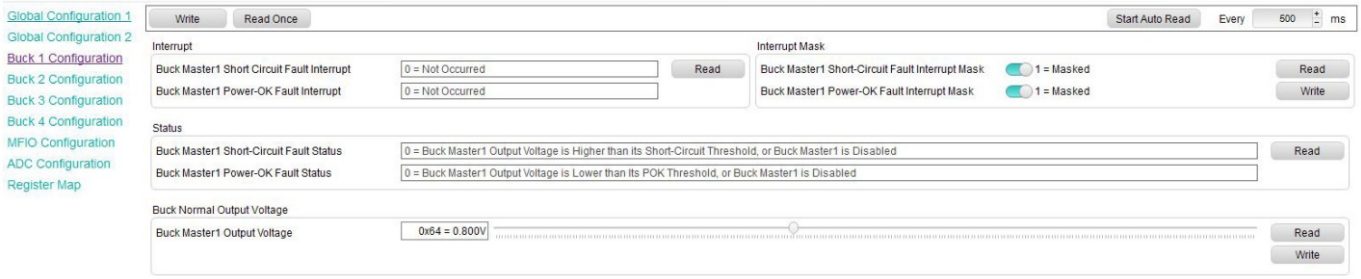


Table 2. Default Shunt Positions and Jumper Descriptions

JUMPER	NODE OR FUNCTION	SHUNT POSITION	FUNCTION
J1	USB Connector (GUI)	N/A	GUI USB Connector
J2	ALT_IN	1-2*	Connects ALT_IN to GND. Leave disconnected if ALT_IN functionality is used.
J3	CE	1-2*	Connects CE to SYS (Enables internal bias)
		2-3	Connects CE to GND (Disables internal bias)
J4	SEL1	1-2*	Connects SEL1 to fixed 1.87kΩ resistor (1.0VOUT default)
		2-3	Connects SEL1 to the potentiometer for adjustable default VOUT
J5	SEL2	2-4*	Connects SEL2 to fixed 30.9kΩ resistor (1.8VOUT default)
		3-4	Connects SEL2 to GND (enables multiphase operation)
		4-6	Connects SEL2 to the potentiometer for adjustable default VOUT

J6	SEL3	2-4*	Connects SEL3 to fixed 64.9kΩ resistor (3.3VOUT default)
		3-4	Connects SEL3 to GND (enables multiphase operation)
		4-6	Connects SEL3 to the potentiometer for adjustable default VOUT
J7	SEL4	2-4*	Connects SEL4 to fixed 100kΩ resistor (5VOUT default)
		3-4	Connects SEL4 to GND (enables multiphase operation)
		4-6	Connects SEL4 to the potentiometer for adjustable default VOUT
J8	CFG1	1-2*	Connects CFG1 to fixed 0Ω resistor (Sets MFIO default functions. Refer to the device data sheet for more information.)
		2-3	Connects CFG1 to the potentiometer for adjustable MFIO functio ns
J9	CFG2	1-2*	Connects CFG2 to fixed 0Ω resistor (Sets default Mx_ILIM and M x_FREQ values. Refer to the device data sheet for more informati on.)
		2-3	Connects CFG2 to the potentiometer for adjustable Mx_ILIM and Mx_FREQ
J10	MFIO1	1-2	MFIO1 pulled up to VIO through 10kΩ resistor
		2-3*	MFIO1 tied to GND
		N/A	MFIO1 left disconnected (Hi-Z)
J11	MFIO2	1-2*	MFIO2 pulled up to VIO through 10kΩ resistor
		2-3	MFIO2 tied to GND
		N/A	MFIO2 left disconnected (Hi-Z)
J12	MFIO3	1-2	MFIO3 pulled up to VIO through 10kΩ resistor
		2-3*	MFIO3 tied to GND
		N/A	MFIO3 left disconnected (Hi-Z)

JUMPER	NODE OR FUNCTION	SHUNT POSITION	FUNCTION
J13	MFIO4	1-2*	MFIO4 pulled up to VIO through 10kΩ resistor
		2-3	MFIO4 tied to GND
		N/A	MFIO4 left disconnected (Hi-Z)
J14	MFIO5	1-2	MFIO5 pulled up to VIO through 10kΩ resistor
		2-3*	MFIO5 tied to GND
		N/A	MFIO5 left disconnected (Hi-Z)
J15	MFIO6	1-2*	MFIO6 pulled up to VIO through 10kΩ resistor
		2-3	MFIO6 tied to GND
		N/A	MFIO6 left disconnected (Hi-Z)
J16	MFIO7	1-2	MFIO7 pulled up to VIO through 10kΩ resistor
		2-3*	MFIO7 tied to GND
		N/A	MFIO7 left disconnected (Hi-Z)
J17	MFIO8	1-2*	MFIO8 pulled up to VIO through 10kΩ resistor
		2-3	MFIO8 tied to GND
		N/A	MFIO8 left disconnected (Hi-Z)
J18	I2C Header for External I2C Bus	N/A	Test points for I2C signals to be connected to an external I2C Bus
J19	VIN_LDO	1-2*	VIO LDO powered from VUSB
		2-3	VIO LDO powered from VIO_PI (External I2C Bus)
J20	VIO Level	1-2	VIO is set to 1.2V

		2-3*	VIO is set to 1.8V

EV Kit Hardware

GUI Interface

The MAX77542EVKIT# can be connected to the GUI by connecting a USB cable to J1 on the EV kit.

External I2C Bus

To use a different I2C host, disconnect the USB cable and attach I2C wires to J18 on the EV kit. Move the jumper on J19 to position 2-3. The J19 jumper sets the input of the LDO that provides VIO to either the USB input voltage or the voltage applied to VIO on J18. Jumper J18 is the input to a level shifter rather than an input to the actual pins on the IC.

Phase Configuration

The SEL2, SEL3, and SEL4 are used to set the phase configuration of the MAX77542. R48, R49, R50, and R57 are used to connect the outputs together for multiphase configuration. The default configuration is four outputs (1ϕ + 1ϕ + 1ϕ + 1ϕ). See Table 3 to configure the MAX77542 according to the correct phase configuration.

Table 3. Phase Configuration Truth Table for Local Sensing

PHASE CONFIGURATION	SEL2	SEL3	SEL4	R48	R49	R50	R57
4 Outputs (1ϕ + 1ϕ + 1ϕ + 1ϕ)	>200Ω	>200Ω	>200Ω	Open	Open	Open	Open
3 Outputs (2ϕ + 1ϕ + 1ϕ)	0Ω	>200Ω	>200Ω	0Ω	Open	Open	Open
2 Outputs (2ϕ + 2ϕ)	0Ω	>200Ω	0Ω	0Ω	Open	0Ω	Open
2 Outputs (3ϕ + 1ϕ)	0Ω	0Ω	>200Ω	0Ω	Open	Open	0Ω
1 Output (4ϕ)	0Ω	0Ω	0Ω	0Ω	0Ω	0Ω	0Ω

Buck Feedback Configuration

Buck feedback configuration is specific to the selected phase configuration. Each of the four bucks have their own feedback inputs (SNSxP and SNSxN for Buck 1 and Buck 3; SNSxP alone for Buck 2 and Buck 4). Only the master feedback pins need to connect to the output voltage to ensure regulation (see Table 4). Unused or slave feedback pins can connect to the output voltage during evaluation at no consequence.

For example, a 2ϕ + 2ϕ configuration creates Buck 1 (using L1 and L2) and Buck 3 (using L3 and L4). Buck 1's feedback is SNS1P and SNS1N. Buck 3's feedback is SNS3P and SNS3N. In this example, Buck 2 and Buck 4 are not configured as stand-alone channels. Therefore, SNS2P and SNS4P are do not care but can connect to their corresponding multiphase outputs with no consequence. Each inductor under a single buck's control must be the same value. Refer to the device data sheet for recommendations on which inductor to use for each output voltage range.

Table 4. Buck Output Naming Convention and Feedback

PHASE CONFIGURATION	NAMING CONVENTION AND PHASES USED	FEEDBACK INPUTS
4 Outputs (1ϕ + 1ϕ + 1ϕ + 1ϕ)	Buck 1 (1ϕ) uses L1	SNS1P, SNS1N
	Buck 2 (1ϕ) uses L2	SNS2P
	Buck 3 (1ϕ) uses L3	SNS3P, SNS3N
	Buck 4 (1ϕ) uses L4	SNS4P
3 Outputs (2ϕ + 1ϕ + 1ϕ)	Buck 1 (2ϕ) uses L1, L2	SNS1P, SNS1N
	Buck 3 (1ϕ) uses L3	SNS3P, SNS3N
	Buck 4 (1ϕ) uses L4	SNS4P
2 Outputs (2ϕ + 2ϕ)	Buck 1 (2ϕ) uses L1, L2	SNS1P, SNS1N
	Buck 3 (2ϕ) uses L3, L4	SNS3P, SNS3N
2 Outputs (3ϕ + 1ϕ)	Buck 1 (3ϕ) uses L1, L2, L3	SNS1P, SNS1N
	Buck 3 (1ϕ) uses L3	SNS4P
1 Output (4ϕ)	Buck 1 (4ϕ) uses ALL (L1, L2, L3, L4)	SNS1P, SNS1N

MAX77542 Evaluation Kit

Buck Feedback Sense Location

The EV kit uses additional 0Ω resistors to modify the feedback routing between the IC and the output voltage sense
location. In general, single-phase configurations should take feedback close to the corresponding output capacitor as close to the IC as possible (this is the default EV kit configuration). However, the MAX77542 supports remote sensing in addition to local sensing. The EV kit includes a LOAD plane for testing remote sensing on the EV kit. Table 5 describes which resistors to install depending on whether local or remote sensing is being evaluated. Buck 1, Buck 2, Buck 3, and Buck 4 can be connected to the remote LOAD plane by installing R45, R44, R46, and R47, respectively. These resistors are for the high current connections.

Table 5. Multiphase Buck Feedback Recommended Routing

BUCK	LOCAL SENSING		REMOTE SENSING	
	SNSxP	SNSxN	SNSxP	SNSxN
Buck 1 (1ϕ, 2ϕ, 3ϕ, 4ϕ)	R5	R6	R38	R42
Buck 2 (1ϕ)	R8	N/A	R39	N/A
Buck 3 (1ϕ, 2ϕ)	R10	R11	R40	R43
Buck 4 (1ϕ)	R13	N/A	R41	N/A

Change Default Setup with RSEL1/RSEL2/ RSEL3/RSEL4/CFG1/CFG2

Note that the MAX77542 EV kit is default configured for four output, single-phase operation, with VOUT1 set to 1.0V, VOUT2 set to 1.8V, VOUT3 set to 3.3V, and VOUT4 set to 5.0V (by way of R15, R17, R19, and R21). The CFG1 sets MFIO1-8 to EN_M1, POK_M1, EN_M2, POK_M2, EN_M3, POK_M3, EN_M4, and POK_M4 through R23. CFG2 sets Mx_ILIM to 5.5A and Mx_FREQ to 1.0MHz through R25. To evaluate other default configurations (for different voltages/ranges upon first powerup), change the resistance at SEL1/2/3/4 and CFG1/2 with the potentiometers or R15, R17, R19, R21, R23, and R25. Refer to the device data sheet for more information.

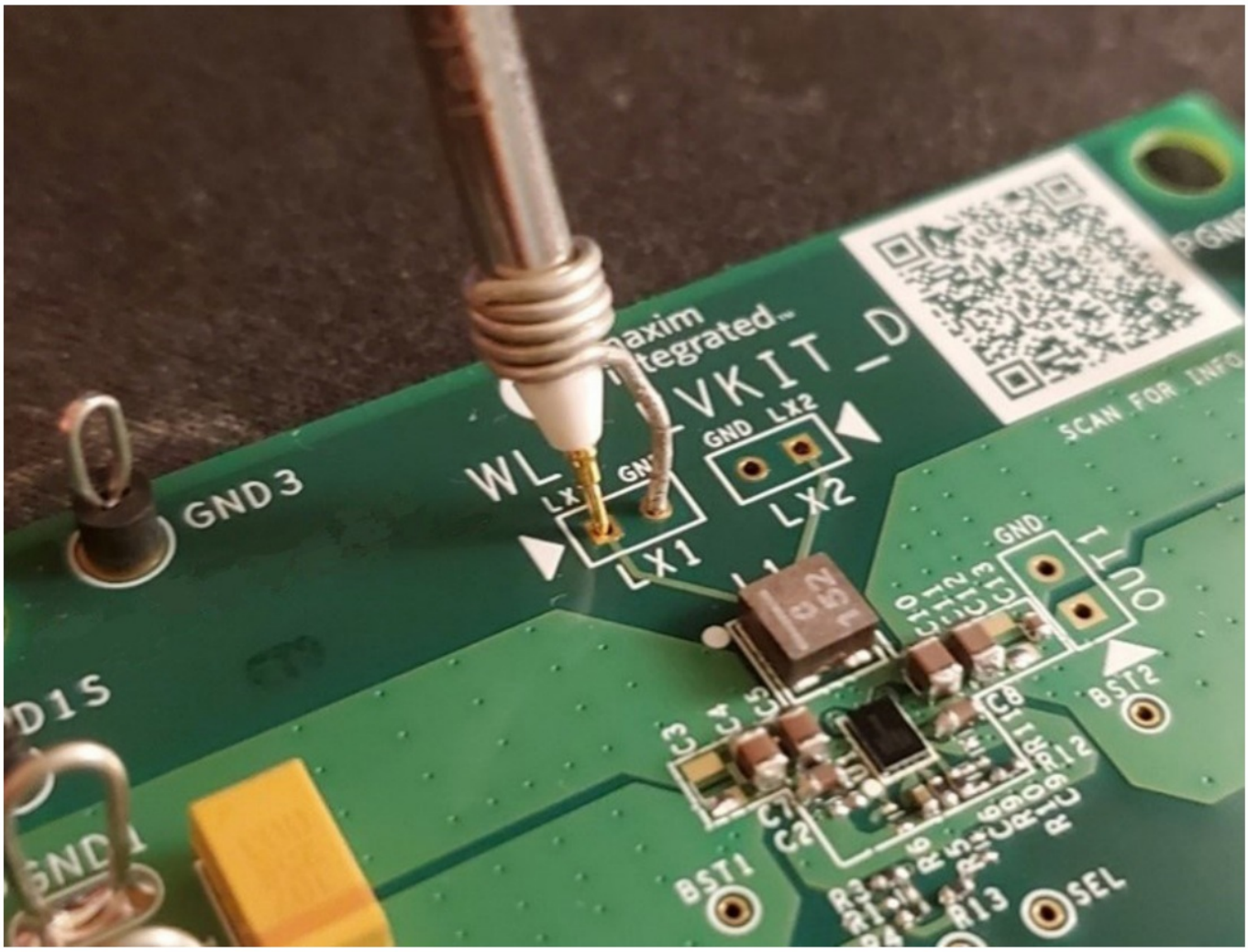
Alternative Low-Voltage Input (ALT_IN) Functionality

The ALT_IN pin can be accessed through Jumper J2. When ALT_IN functionality is unused, either install a jumper on J2 to tie ALT_IN to GND or leave J2 open to leave ALT_IN disconnected. To power ALT_IN using one of the buck outputs or another alternative power source, use a wire to tie pin 1 of J2 or the ALT_IN test point to the desired power source. Refer to the device data sheet for more information on the operation of the ALT_IN pin.

Test Points and Critical Node Measurement (VOUT and LX)

The EV kit comes with test points where sockets can be soldered onto the board for measuring the critical nodes VOUT1-4 and LX1-4. Use these probe sockets to eliminate as much noise as possible when measuring the critical nodes. To ensure best results, use a very short ground wire from the ground sleeve of the scope probe to the GND side of the probe test point, and use the bare tip of the probe directly to the signal side of the probe socket. Following these guidelines give the most accurate results when measuring parameters like output voltage ripple, switching waveforms, and load transient response.

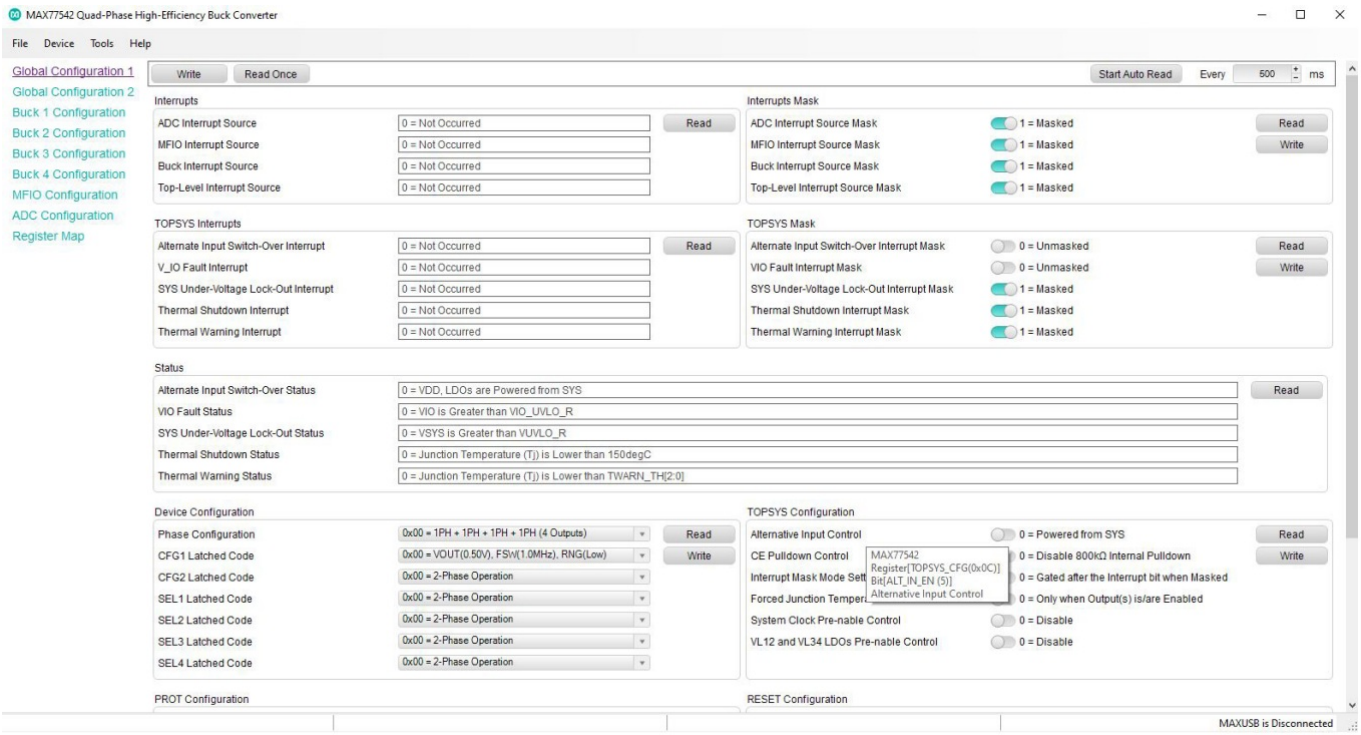
Figure 4. Example of Probing Sensitive Node



Detailed Description of Software

The GUI software allows for quick, easy, and thorough evaluation of the MAX77542. The GUI drives I2C communication with the EV kit. Every control in the GUI corresponds directly to a register within the MAX77542. Refer to the Register Map section of the MAX77542 IC data sheet for a complete description of the registers. See Figure 5 for a screenshot of the GUI upon first opening.

Figure 5. MAX77542 Evaluation Kit GUI Top-Level Interface (Before Connecting)



Installation

Visit the product webpage at **https://www.analog.com/max77542evkit** and navigate to Design Resources to download the latest version of the EV kit software. Save the EV kit software installation file to a temporary folder and decompress the ZIP file. Run the .EXE installer and follow the on-screen instructions to complete the installation.

Windows Driver

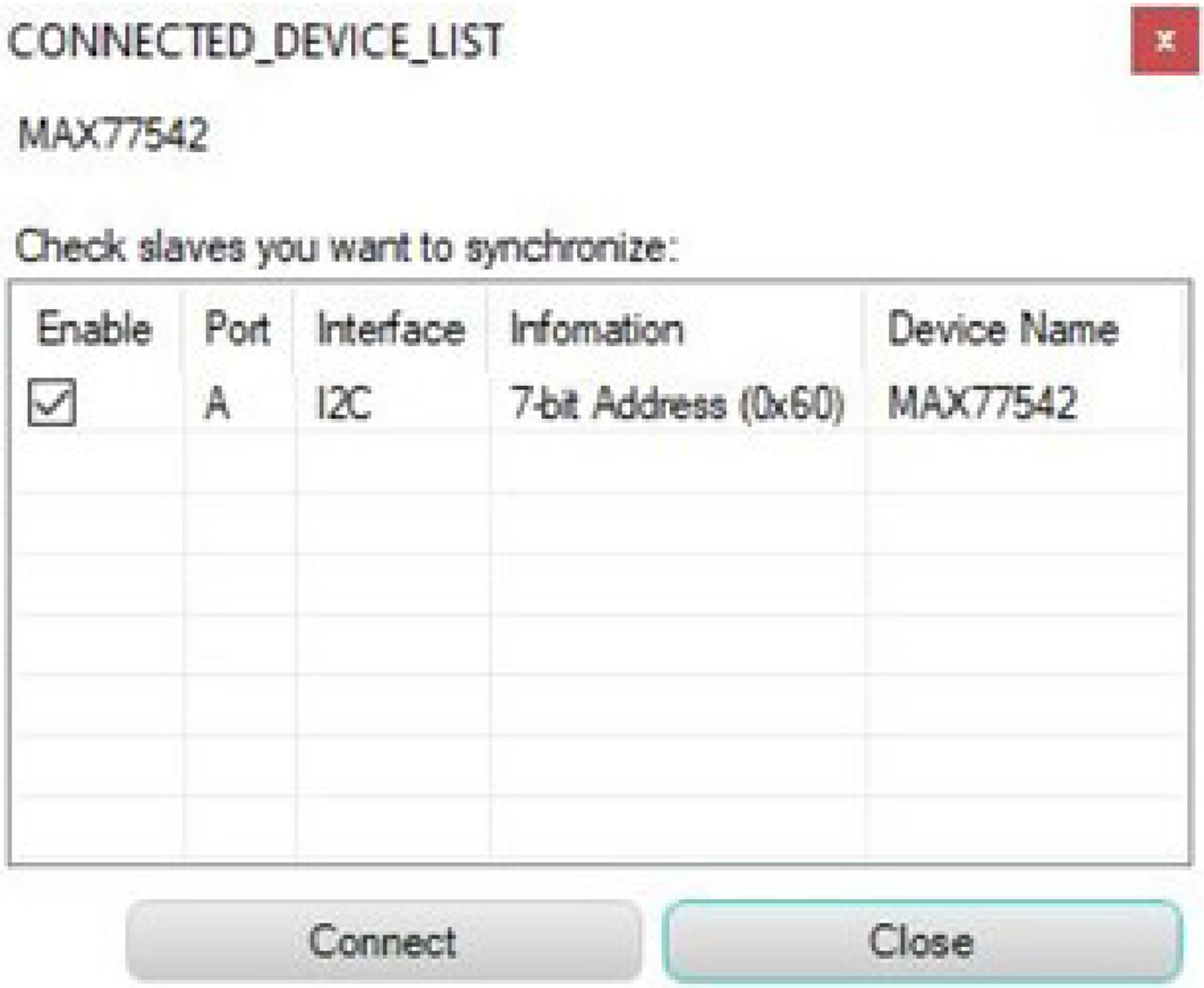
After plugging in the MAX77542EVKIT# to the PC with a Micro-USB cable for the first time, wait about 30 seconds for Windows to automatically install the necessary drivers.

Connecting GUI

After opening the GUI, click Device in the upper left corner of the GUI window. Click Connect in the drop-down menu.

The Device Synchronization menu opens (Figure 6) once the MAX77542 IC responds (voltages on SYS pin, VIO pin, and CE pin must be valid on the MAX77542 IC for it to respond). The I2C address shown is the MAX77542 IC's 7-bit slave address. The address shown changes depending on the EV kit's CFG1 configuration. Click Connect and Read. The text at the bottom right of the GUI window changes from MAXUSB_INTERFACE# is Disconnected to MAXUSB_INTERFACE# is Connected.

Figure 6. Port Synchronization Menu



Global Configuration Tabs

The GUI has two tabs for global configuration of the bucks (Global Configuration 1 and Global Configuration 2). Global Configuration 1 displays high-level information about the IC such as the interrupts, interrupt masks, status bits, and device configuration. Figure 7 shows a snapshot of the Global Configuration 1 tab. Global Configuration 2 is used to enable and disable the buck outputs, enable and disable low power mode, and change the flexible power sequencer settings.

Figure 7. Global Configuration 1 Window

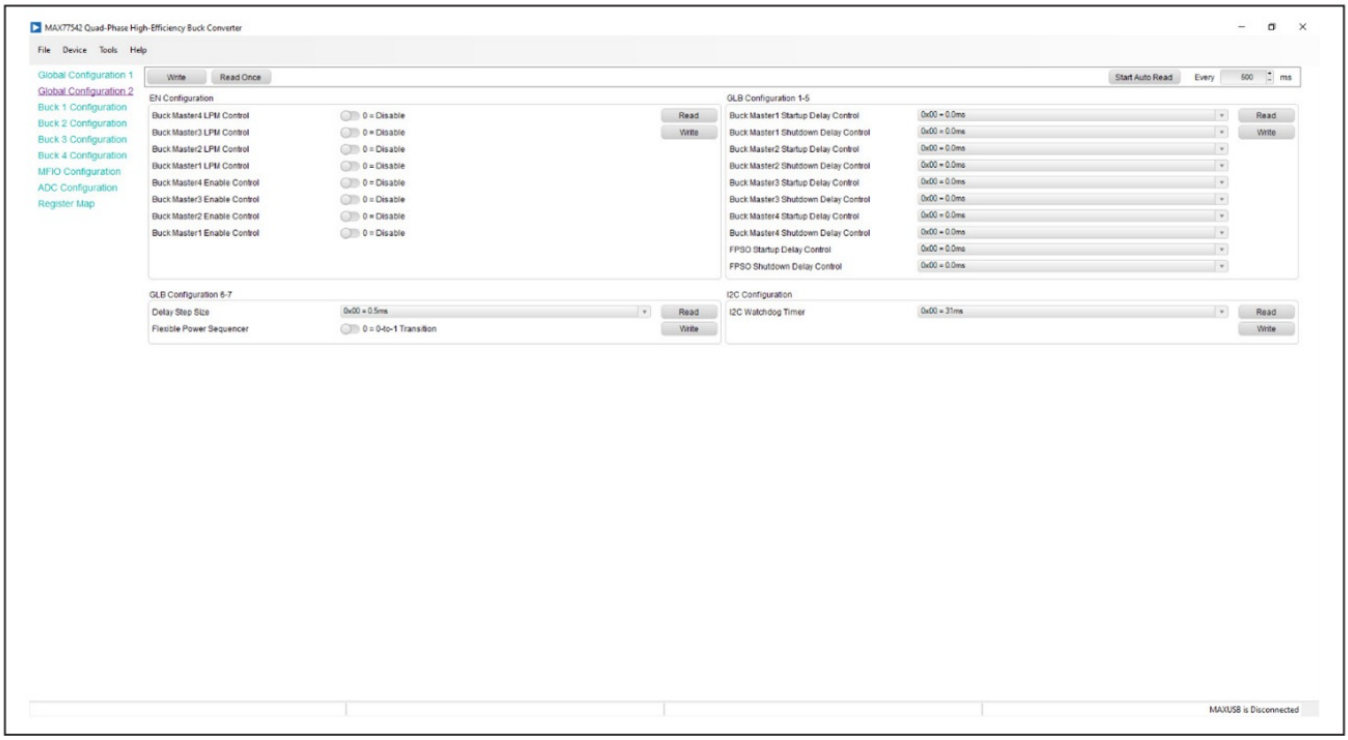
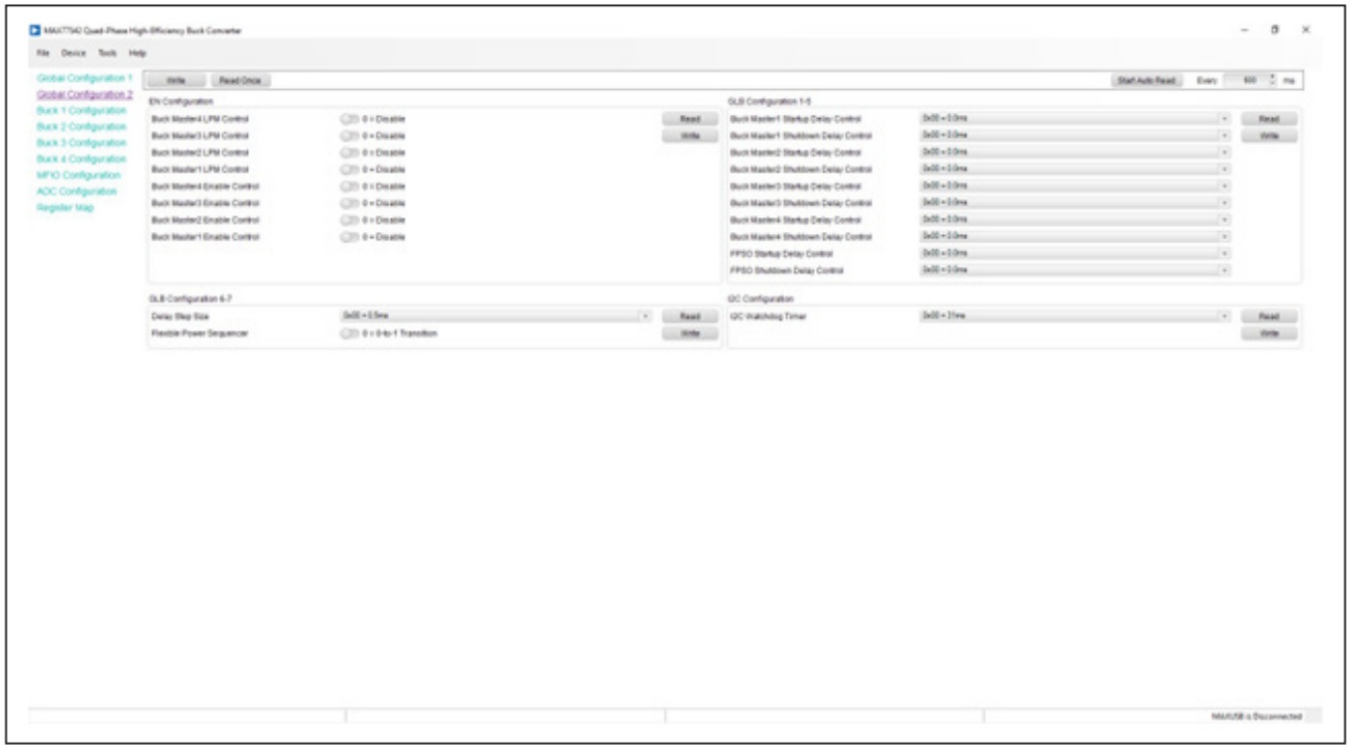


Figure 8 shows a snapshot of the Global Configuration 2 tab.

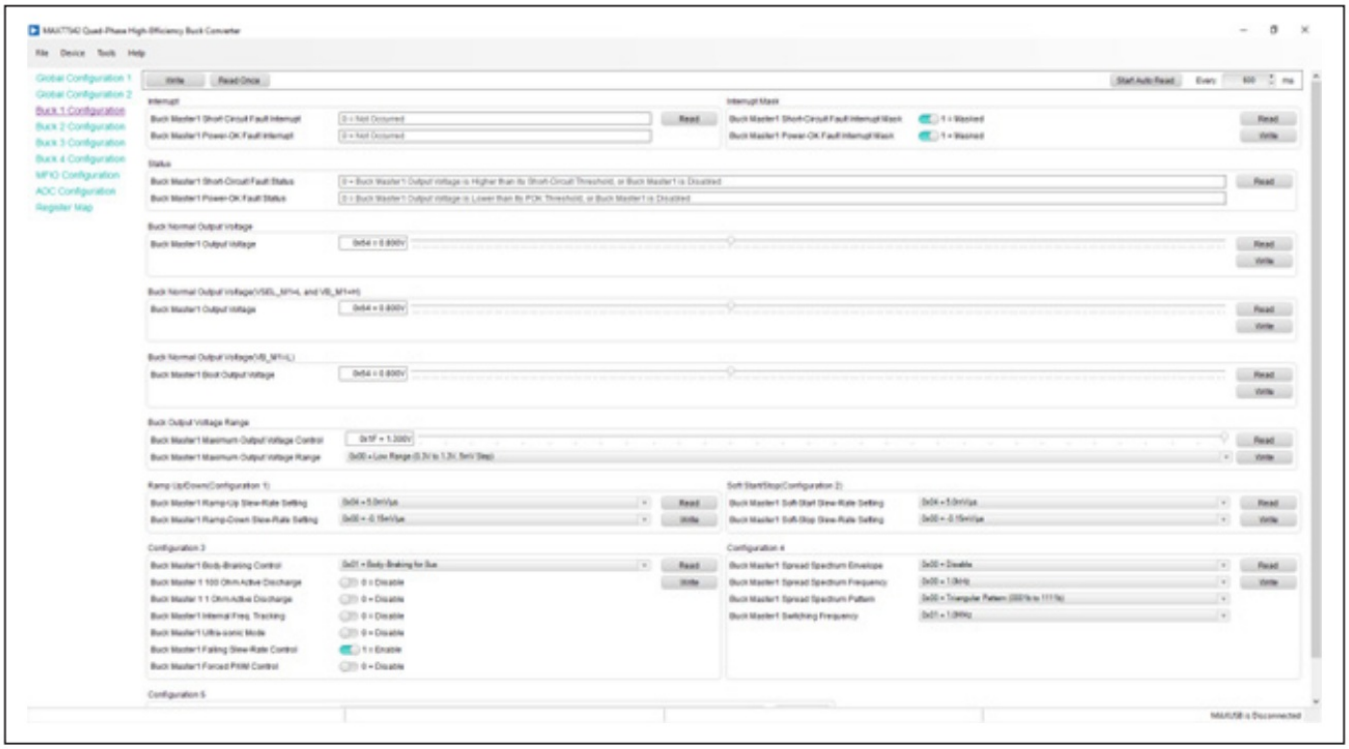
Figure 8. Global Configuration 1 Window



Configuring the Regulator

The GUI has a configuration tab for each buck (Buck 1-4 Configuration). Use these to adjust the various parameters of each buck. Note that Buck 2, Buck 3, and Buck 4 Configuration is disabled when those phases are configured as slave phases in multiphase configuration. **Figure 9** shows a snapshot of the Buck 1 Configuration tab. To use the GUI, select the desired option in one of the interactable fields (button, slider, drop-down list) and press Write next to it. Use the Read command to refresh the current state of the registers.

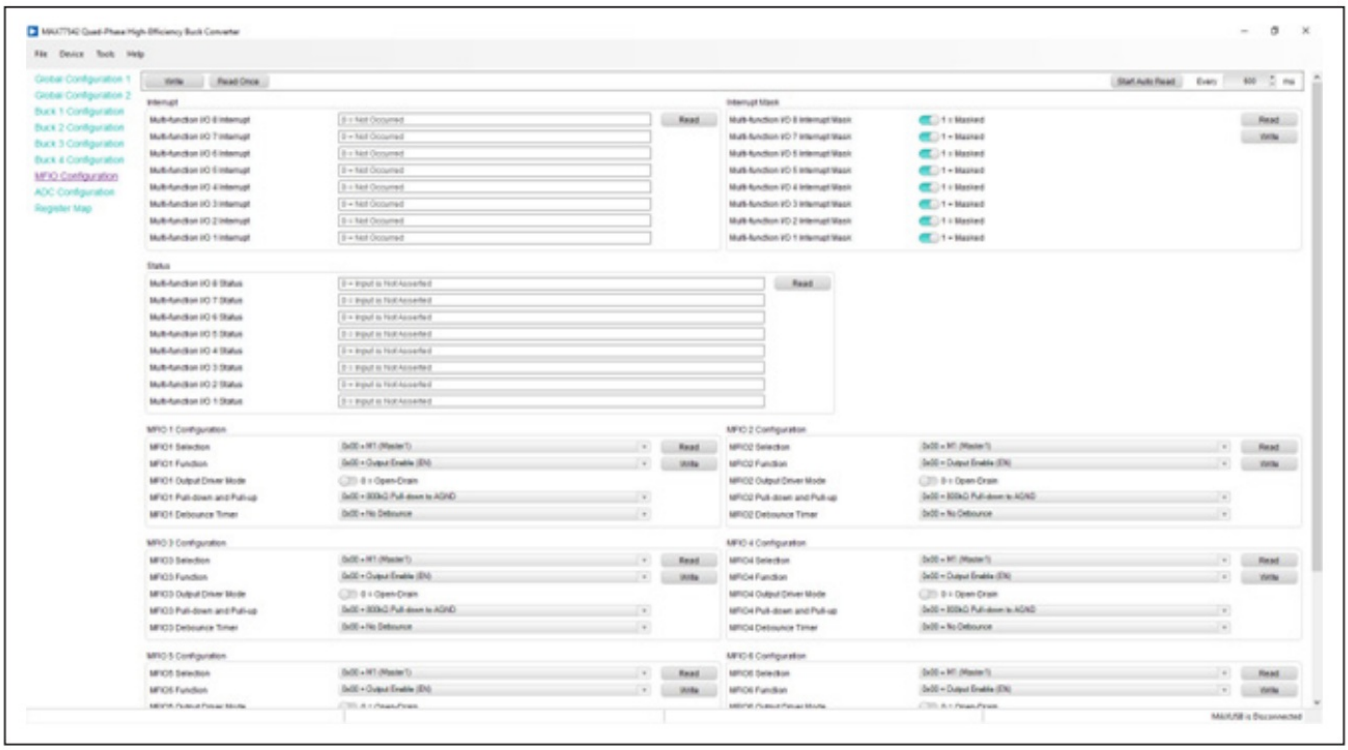
Figure 9. Buck 1 Configuration Window



Configuring the Multifunction I/Os

The GUI has a configuration tab for the MFIOs. The tab includes the interrupt bits, interrupt mask bits, and status bits. It also includes the configuration registers for each MFIO pin to set its functionality. **Figure 10** shows a snapshot of the MFIO Configuration tab.

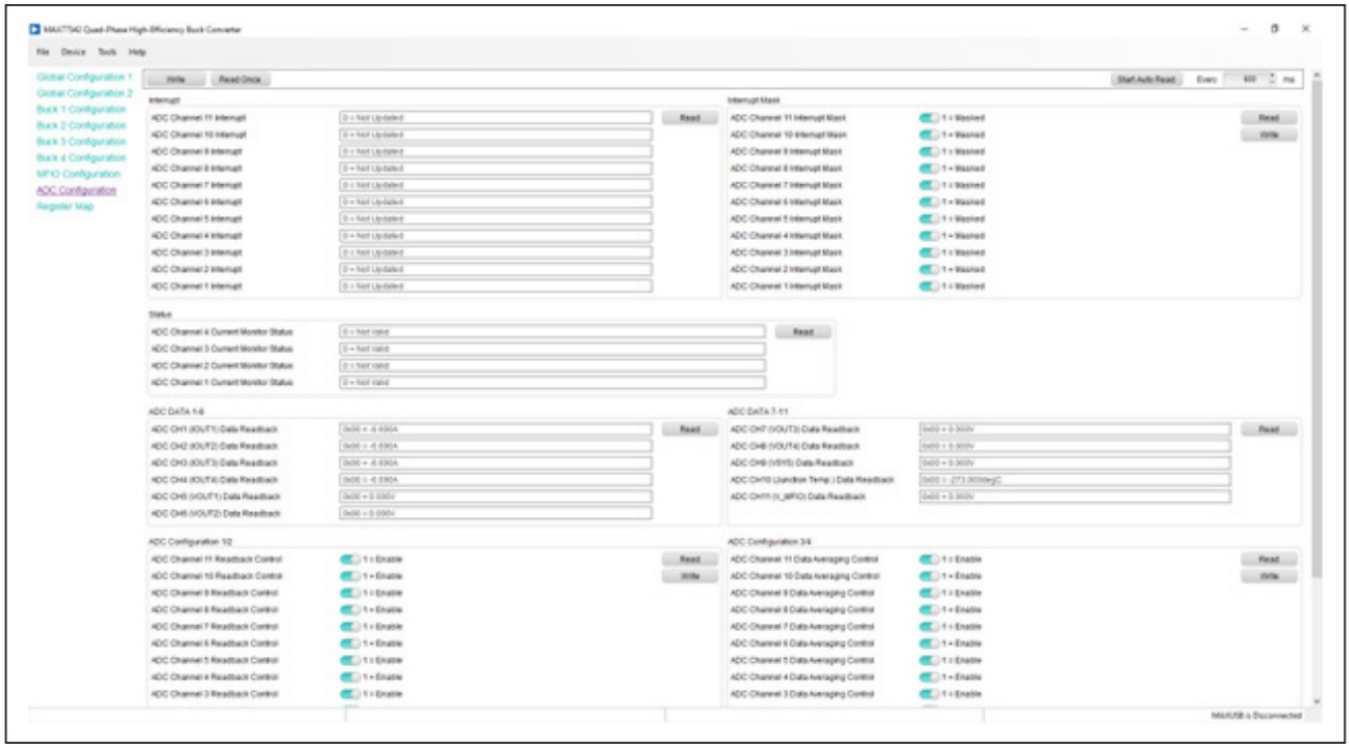
Figure 10. MFIO Configuration Window



Configuring the ADC

The GUI has a configuration tab for the ADC. The ADC tab includes the interrupt bits, interrupt masks, and status bit for each ADC channel. It also includes the readback control bits, averaging control bits, measurement settings, and readback values. **Figure 11** shows a snapshot of the ADC Configuration tab.

Figure 11. ADC Configuration Window



PCB Layout Guidelines

Careful circuit board layout is critical to achieve low switching power losses and clean, stable operation. Refer to the PCB Layout Guidelines of the MAX77542 data sheet at https://www.analog.com/max77542evkit

Ordering Information

PART	TYPE
MAX77542EVKIT#	EV Kit

#Denotes RoHS compliance.

MAX77542 EV Kit Bill of Materials

REF_DES	QTY *	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
C1, C4, C5	3	C1005X7S1A225K050BC	TDK	2.2µF	CAP; SMT (0402); 2.2UF; 10 %; 10V; X7S; CERAMIC
C2	1	C1005X5R1E225K050; GRM155R61E225KE11	TDK;MURATA	2.2µF	CAP; SMT (0402); 2.2µF; 10 %; 25V; X5R; CERAMIC
C3, C6	2	C1005X7S1A105K; GRM155C71A105KE11	TDK;MURATA	1µF	CAP; SMT (0402); 1µF; 10%; 10V; X7S; CERAMIC

C7, C16, C25, C34	4	C1608X5R1E106M080AC; CL10A106MA8NRNC; GRM188R61E106MA73; ZRB18AR61E106ME01; GRT188R61E106ME13	TDK;SAMSUNG ELECTRONICS; MURATA; MURATA; MURATA	10µF	CAP; SMT (0603); 10µF; 20%; 25V; X5R; CERAMIC
C8, C17, C26, C35	4	C1005X7R1C104K050BC; ATC530L104KT16; 0402YC104KAT2A; C0402X7R160-104KNE; CL05B104KO5NNNC; GRM155R71C104KA88; C1005X7R1C104K; CC0402KRX7R7BB104; EMK105B7104KV; CL05B104KO5	TDK;AMERICAN TECHNICAL CERAMICS;AVK; VENKEL LTD.;SAMSUNG ELECTRONICS; MURATA; TDK;YAGEO PHICOMP;TAIYO YUDEN;SAMSUNG ELECTRONICS	0.1µF	CAP; SMT (0402); 0.1µF; 10%; 16V; X7R; CERAMIC
C9-C14, C18-C23, C27-C32, C36-C41	24	C1608X5R1A226M080AC; GRM188R61A226ME15; CL10A226MPCNUBE; CL10A226MPMNUB; GRM187R61A226ME15	TDK;MURATA; SAMSUNG; SAMSUNG;MURATA	22µF	CAP; SMT (0603); 22µF; 20%; 10V; X5R; CERAMIC
C15, C24, C33, C42, C53, C55, C58-C60, C63, C65-C67, C69-C71, C75, C80	18	GRM155R71E104KE14; C1005X7R1E104K050BB; TMK105B7104KVH; CGJ2B3X7R1E104K050BB	MURATA;TDK;TAIYO YUDEN;TDK	0.1µF	CAP; SMT (0402); 0.1µF; 10%; 25V; X7R; CERAMIC
C44-C47	4	TMK325ABJ476MM	TAIYO YUDEN	47µF	CAP; SMT (1210); 47µF; 20%; 25V; X5R; CERAMIC
L1, L2	2	DFE252012F-1R0M	MURATA	1UH	EVKIT PART – INDUCTOR; SMT (1008); METAL; 1UH; 20%; 3.3A
L3, L4	2	XEL4020-152ME	COIL CRAFT	1.5UH	INDUCTOR; SMT; N/A; 1.5UH; 20%; 7.5A
U1	1	MAX77542AAWU+	ADI	MAX77542AAWU+	EVKIT PART-IC; MAX77542; PACKAGE OUTLINE: 21-100610; PACKAGE CODE: W602A4Z+1; WLP60
COMPONENTS BELOW THIS LINE ARE OUTSIDE OF THE IMMEDIATE MAX77542 EVALUATION CIRCUIT AND SOLUTION SILKSCREEN.					

ALT_IN, CE, CFG1, CFG2, IRQB, MFIO1-MFIO8, SCL, SDA, SEL1- SEL4, VL12, VL34	21	5002	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; WHITE; PHOSPHOR BRONZE WIRE SILVER;

MAX77542 EV Kit Bill of Materials (continued)

REF_DES	QTY*	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
C50-C52	3	ANY	ANY	10µF	CAPACITOR; SMT (0603); CERAMIC CHIP; 10µF; 16V; TOL=20%; MODEL=GRM SERIES; TG=-55 DEGC T+85 DEGC; TC=X5R; FORMFACTOR
C54, C61, C64	3	C1005X5R1A475K050	TDK	4.7µF	CAP; SMT (0402); 4.7µF; 10%; 10V; X5R; CERAMIC
C56, C57	2	C0402C0G500270JNP; GRM1555C1H270JA01	VENKEL LTD.;MURATA	27PF	CAP; SMT (0402); 27PF; 5%; 50V; C0G; CERAMIC
C72-C74, C79	4	C0402C105K8PAC; CC0402KRX5R6BB105	KEMET;YAGEO	1µF	CAP; SMT (0402); 1µF; 10%; 10V; X5R; CERAMIC
C76, C78	2	ZRB15XR61A475ME01; CL05A475MP5NRN; GRM155R61A475MEAA; C1005X5R1A475M050BC	MURATA;SAMSUNG; MURATA;TDK	4.7µF	CAP; SMT (0402); 4.7µF; 20%; 10V; X5R; CERAMIC
C77	1	C0402C103K5RAC; GRM155R71H103KA88; C1005X7R1H103K050BE; CL05B103KB5NNN; UMK105B7103KV	KEMET;MURATA; TDK; SAMSUNG ELECTRONIC;TAIYO YUDEN	0.01µF	CAP; SMT (0402); 0.01µF; 10%; 50V; X7R; CERAMIC
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

GND, PGND 7	2	5011	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125 IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; BLA CK; PHOSPHOR BRONZE WIRE SILVER PLATE FINIS H;
IN1-IN4, LO AD1, LOAD2 , OUT1- OU T4, PGND, P GND1-PGN D6, SYS	18	9020 BUSS	WEICO WIRE	MAXIMPAD	EVK KIT PARTS; MAXIM PA D; WIRE; NATURAL; SOLID; WEICO WIRE; SOFT DRAW N BUS TYPE-S; 20AWG
IN1S-IN4S, LOADSP, O UT1S-OUT4 S, VDD, VIO	11	5000	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOA RD HOLE=0.04IN; RED; PH OSPHOR BRONZE WIRE SI LVER PLATE FINISH;
J1	1	10118193-0001LF	FCI CONNECT	10118193-00 01LF	CONNECTOR; FEMALE; SM T; MICRO USB B TYPE REC EPTACLE; RIGHT ANGLE; 5 PINS
J2	1	PBC02SAAN	SULLINS ELECTR ONICS CORP.	PBC02SAAN	CONNECTOR; MALE; THRO UGH HOLE; BREAKAWAY; S TRAIGHT; 2PINS
J3, J4, J8-J1 7, J19, J20	14	TSW-103-07-T-S	SAMTEC	TSW-103-07- T-S	CONNECTOR; THROUGH H OLE; TSW SERIES; SINGLE ROW; STRAIGHT; 3PINS

REF_DES	**QTY ***	**MFG PART #**	**MANUFACTURER**	**VALUE**	**DESCRIPTION**
J5-J7	5	TSW-102-26-T-T	SAMTEC	TSW-102-26- T-T	CONNECTOR; THROUGH H OLE; TSW SERIES; TRIPLE ROW; STRAIGHT; 6PINS
J18	1	PBC05SAAN	SULLINS ELECTR ONICS CORP.	PBC05SAAN	CONNECTOR; MALE; THRO UGH HOLE; BREAKAWAY; S TRAIGHT; 5PINS; -65 DEGC TO +125 DEGC
L9, L10	2	DFE252012F-1R0M	MURATA	1UH	EVKIT PART – INDUCTOR; SMT (1008); METAL; 1UH; 2 0%; 3.3A

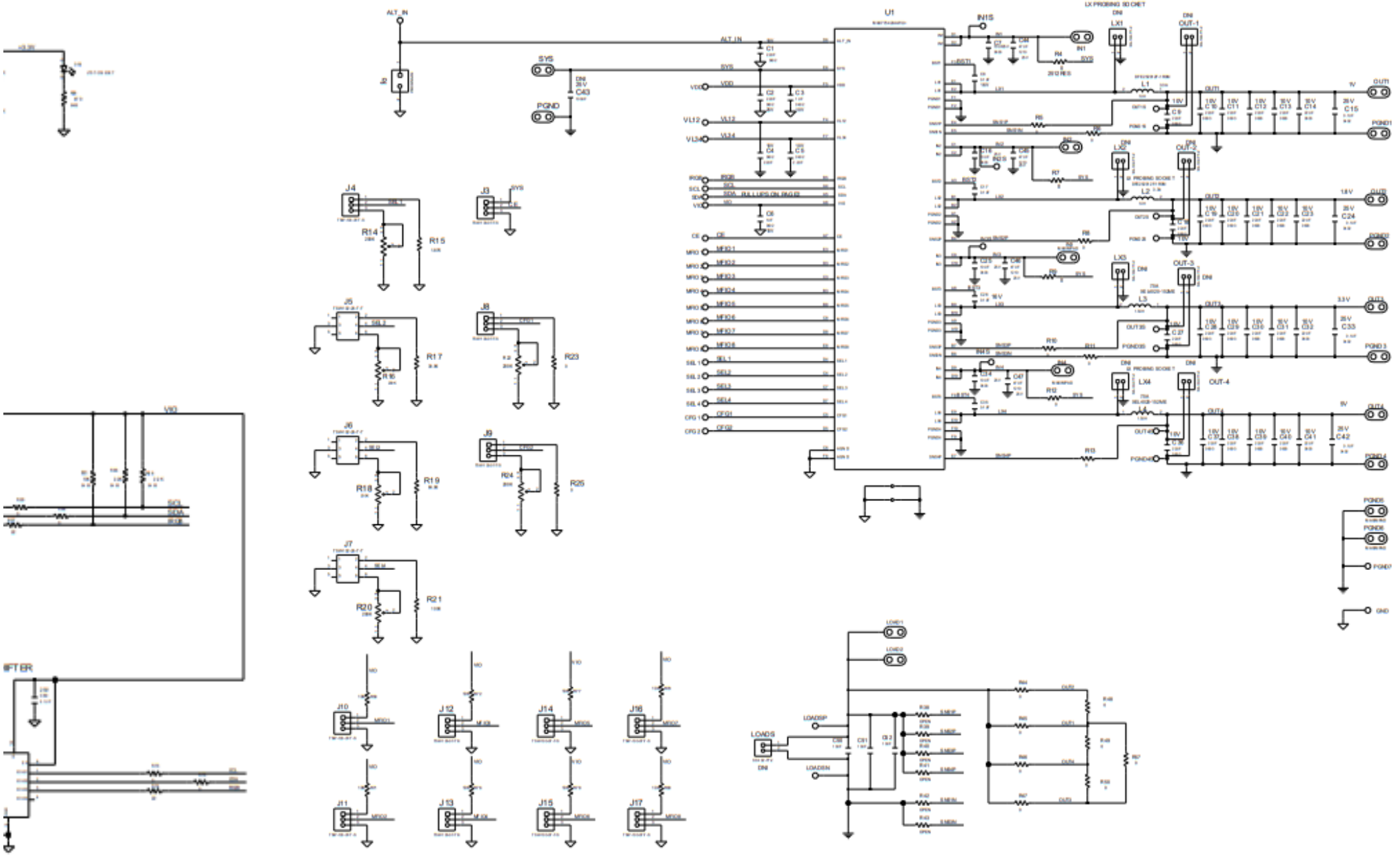
L11, L12	2	XEL4020-152ME	COIL CRAFT	1.5UH	INDUCTOR; SMT; N/A; 1.5UH; 20%; 7.5A
L5-L8	4	DFE252012F-R47M	MURATA	0.47UH	EVKIT PART – INDUCTOR; SMT (1008); METAL; 0.47UH; 20%; 4.9A
L13-L15	3	BLM18AG601SN1	MURATA	600	INDUCTOR; SMT (0603); FERRITE-BEAD; 600; TOL=+/-; 0.5A
LOADSN, PGND1S-PGND4S	5	5001	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
MH1-MH4	4	9032	KEYSTONE	9032	MACHINE FABRICATED; ROUND-THRU HOLE SPACER; NO THREAD; M3.5; 5/8IN; NYLON
R1, R58, R71, R72, R76-R80	9	RC0402FR-0710KL; CR0402-FX-1002GLF	YAGEO;BOURNS	10K	RES; SMT (0402); 10K; 1%; +/-100PPM/ DEGC; 0.0630W
R2, R3, R61, R62	4	ERJ-2GEJ472	PANASONIC	4.7K	RES; SMT (0402); 4.7K; 5%; +/-200PPM/ DEGC; 0.1000W
R4, R7, R9, R12, R44-R50, R57, R67-R70	14	RC0402JR-070RL; CR0402-16W-000RJT	YAGEO PHYCOMP;VENKEL LTD.	0	RES; SMT (0402); 0; 5%; JUMPER; 0.0630W
R5, R6, R8, R10, R11, R13, R23, R25, R29, R56, R59, R66, R73, R75	14	RC0402JR-070RL; CR0402-16W-000RJT	YAGEO PHYCOMP;VENKEL LTD.	0	RES; SMT (0402); 0; 5%; JUMPER; 0.0630W
R14, R16, R18, R20, R22, R24	6	3296Y-1-204LF	BOURNS	200K	RESISTOR; THROUGH HOLE-RADIAL LEAD; 3296 SERIES; 200K OHM; 10%; 100PPM; 0.5W
R15	1	ERJ-2RKF1871	PANASONIC	1.87K	RES; SMT (0402); 1.87K; 1%; +/-100PPM/ DEGC; 0.1000W

R17	1	CRCW040230K9FK	VISHAY DALE	30.9K	RES; SMT (0402); 30.9K; 1% ; +/-100PPM/ DEGC; 0.0630 W
R19	1	CRCW040264K9FK; RC0402FR-0764K9 L	VISHAY;YAGEO	64.9K	RES; SMT (0402); 64.9K; 1% ; +/-100PPM/ DEGK; 0.0630 W
R21, R64	2	CRCW0402100KFK; RC0402FR-07100K L	VISHAY;YAGEO	100K	RES; SMT (0402); 100K; 1%; +/-100PPM/ DEGC; 0.0630W

REF_DES	**QTY ***	**MFG PART #**	**MANUFACTURER**	**VALUE**	**DESCRIPTION**
R26, R65	2	RC0402FR-072K2L	YAGEO	2.2K	RES; SMT (0402); 2.2K; 1%; +/-100PPM/ DEGC; 0.0630W
R27, R74	2	RC0402FR-0722RL	YAGEO PHYCOM P	22	RES; SMT (0402); 22; 1%; +/ -100PPM/ DEGC; 0.0630W
R28	1	CRCW0402470RFK	VISHAY DALE	470	RES; SMT (0402); 470; 1%; + /-100PPM/ DEGC; 0.0630W
R51, R52	2	RC0402FR-0727RL	YAGEO	27	RES; SMT (0402); 27; 1%; +/ -100PPM/ DEGC; 0.0630W
R53	1	ERJ-2RKF1202	PANASONIC	12K	RES; SMT (0402); 12K; 1%; +/-100PPM/ DEGC; 0.1000W
R54	1	CRCW04021M00FK	VISHAY DALE	1M	RES; SMT (0402); 1M; 1%; +/ -100PPM/ DEGC; 0.0630W
R55	1	ERJ-2RKF1001	PANASONIC	1K	RES; SMT (0402); 1K; 1%; +/ -100PPM/ DEGC; 0.1000W
R60	1	RC0402FR-07150R L	YAGEO	150	RES; SMT (0402); 150; 1%; + /-100PPM/ DEGC; 0.0630W
R63	1	CRCW0402169KFK	VISHAY DALE	169K	RES; SMT (0402); 169K; 1%; +/-100PPM/ DEGK; 0.0630W

U3	1	MAX38902A-ATA+	MAXIM	MAX38902A-ATA+	EVKIT PART – IC; MAX38902A-ATA+; PACKAGE OUTLINE DEVICE: 21-0168; PACKAGE CODE XXXX
U4	1	MAX8512EXK+	MAXIM	MAX3395EETC	IC; TRANS; 15KV ESD-PROTECTED HIGH-DRIVE CURRENT QUAD-LEVEL TRANSLATOR WITH SPEED-UP CIRCUITRY; TQFN12 4X4
U5, U8	2	MAX3395EETC+	MAXIM	MAX3395EETC	IC; TRANS; 15KV ESD-PROTECTED HIGH-DRIVE CURRENT QUAD-LEVEL TRANSLATOR WITH SPEED-UP CIRCUITRY; TQFN12 4X4
U6	1	FT2232HL	FUTURE TECHNOLOGY DEVICES INTL LTD.	FT2232HL	IC; MMRY; DUAL HIGH-SPEED USB TO MULTIPURPOSE UART/FIFO; LQFP64
VUSB	1	5010	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125 IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; RED; PHOSPHOR BRONZE WIRE SIL;
Y1	1	7M-12.000MAAJ	TXC CORPORATION	12MHZ	CRYSTAL; SMT; 12MHZ; 18PF; TOL =+/-30PPM; STABILITY = +/-30PPM

MAX77542 EV Kit Schematic


U1
ALT_IN
SYS
PGND
VDD
VL12
VL34
SCL
SDA
SEL1
SEL2
SEL3
SEL4
CFG1
CFG2
IN1S
IN1
IN5
OUT-1
OUT-2
OUT-3
OUT-4
LX1
LX2
LX3
LX4
L1
L2
L3
OUT1
OUT2
OUT3
OUT4
PGND1
PGND2
PGND3
PGND4
PGND5
PGND6
PGND7
GND
LOAD1
LOAD2
LOADSP
LOADSN
LOADEN
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
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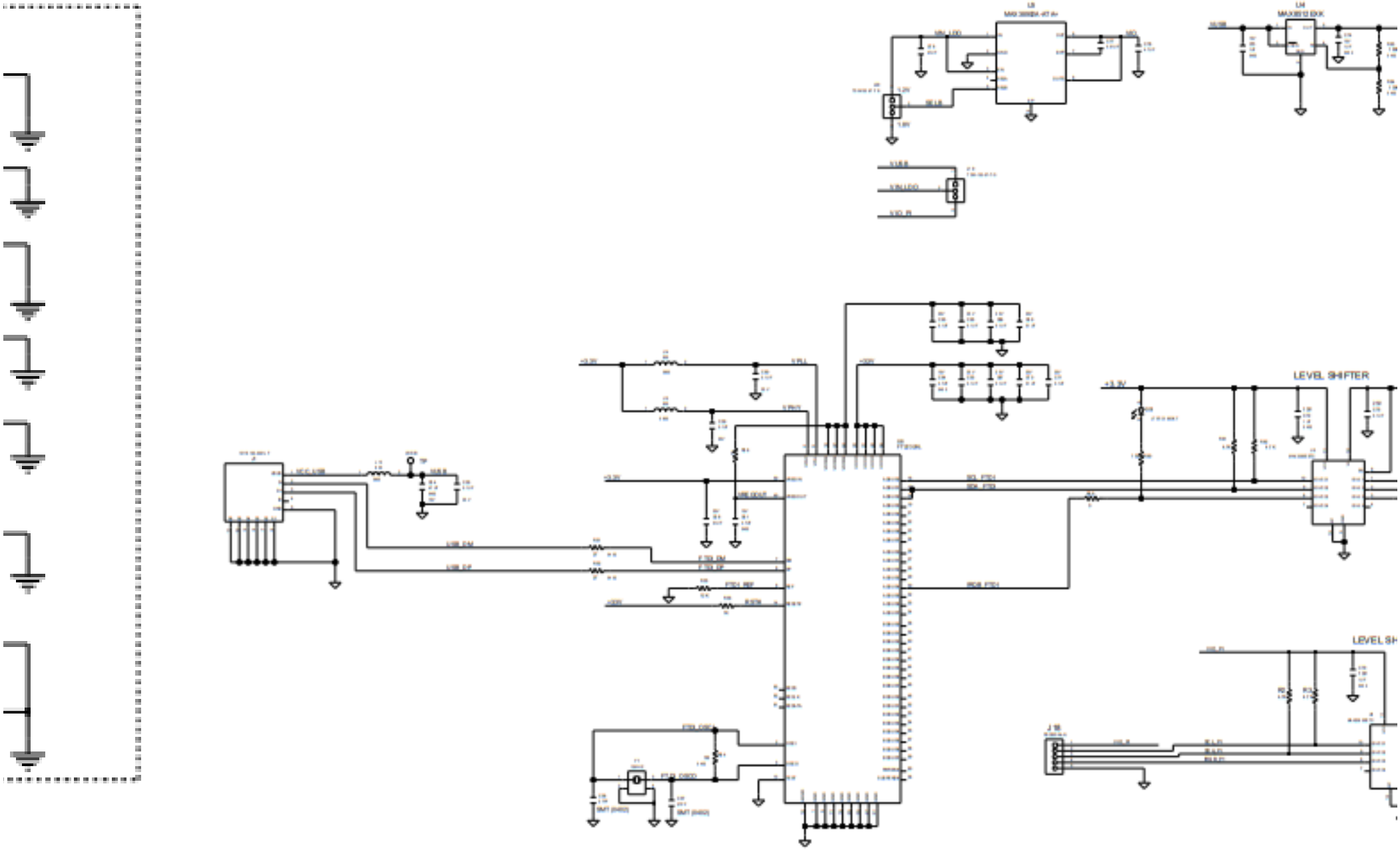
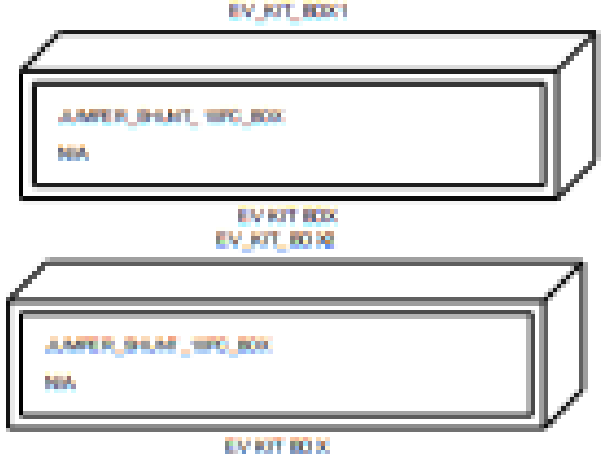
J16
J17
R14
R15
R16
R17
R18
R19
R20
R21
R23
R24
R25


1.2V/1.8V LDO
3.3V LDO
LEVEL SHIFTER

AL



SPARE RESISTORS

R67

0 2512 0.5

R68

0 2512 0.5

R69

0 2512 0.5

R70

0 2512 0.5

SPARE INDUCTORS

L5

0.47UH

DFE252012F-R47M

L6

0.47UH

DFE252012F-R47M

L7

0.47UH

DFE252012F-R47M

L8

0.47UH

DFE252012F-R47M

L9

1UH

DFE252012F-1R0M

L10

1UH

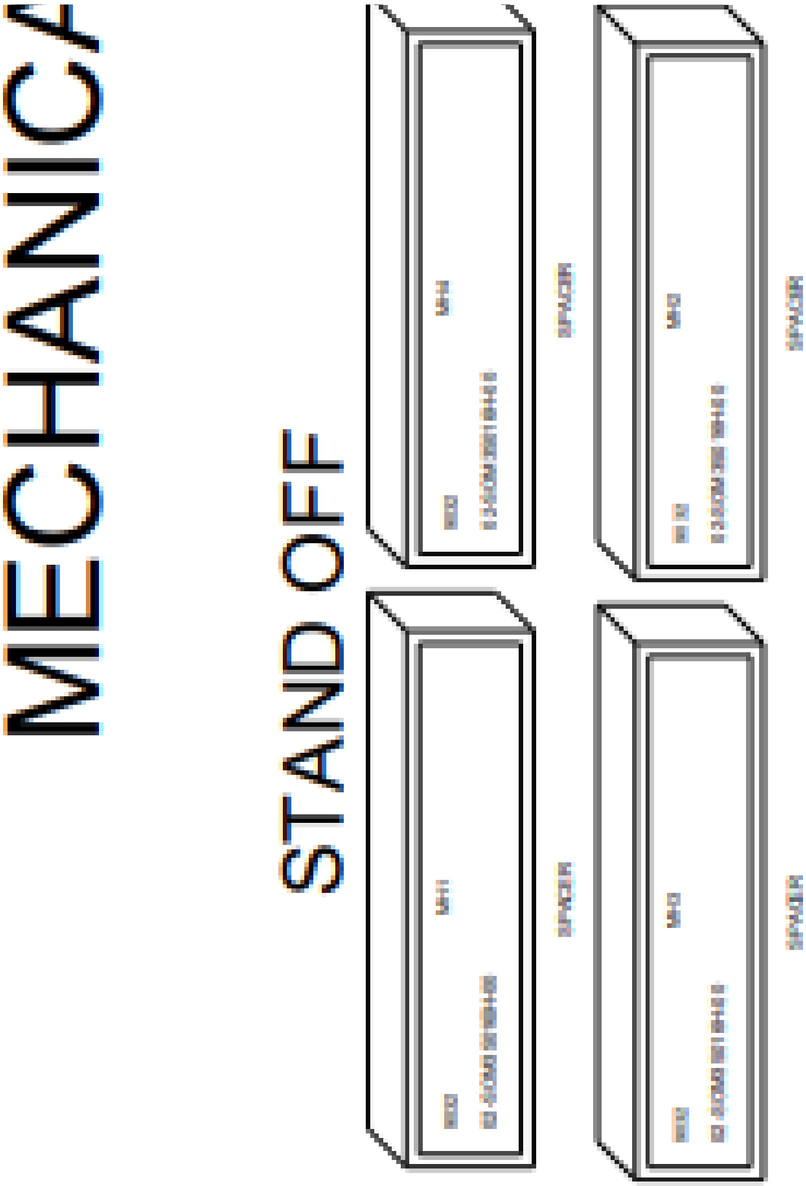
DFE252012F-1R0M

L11

1.5UH

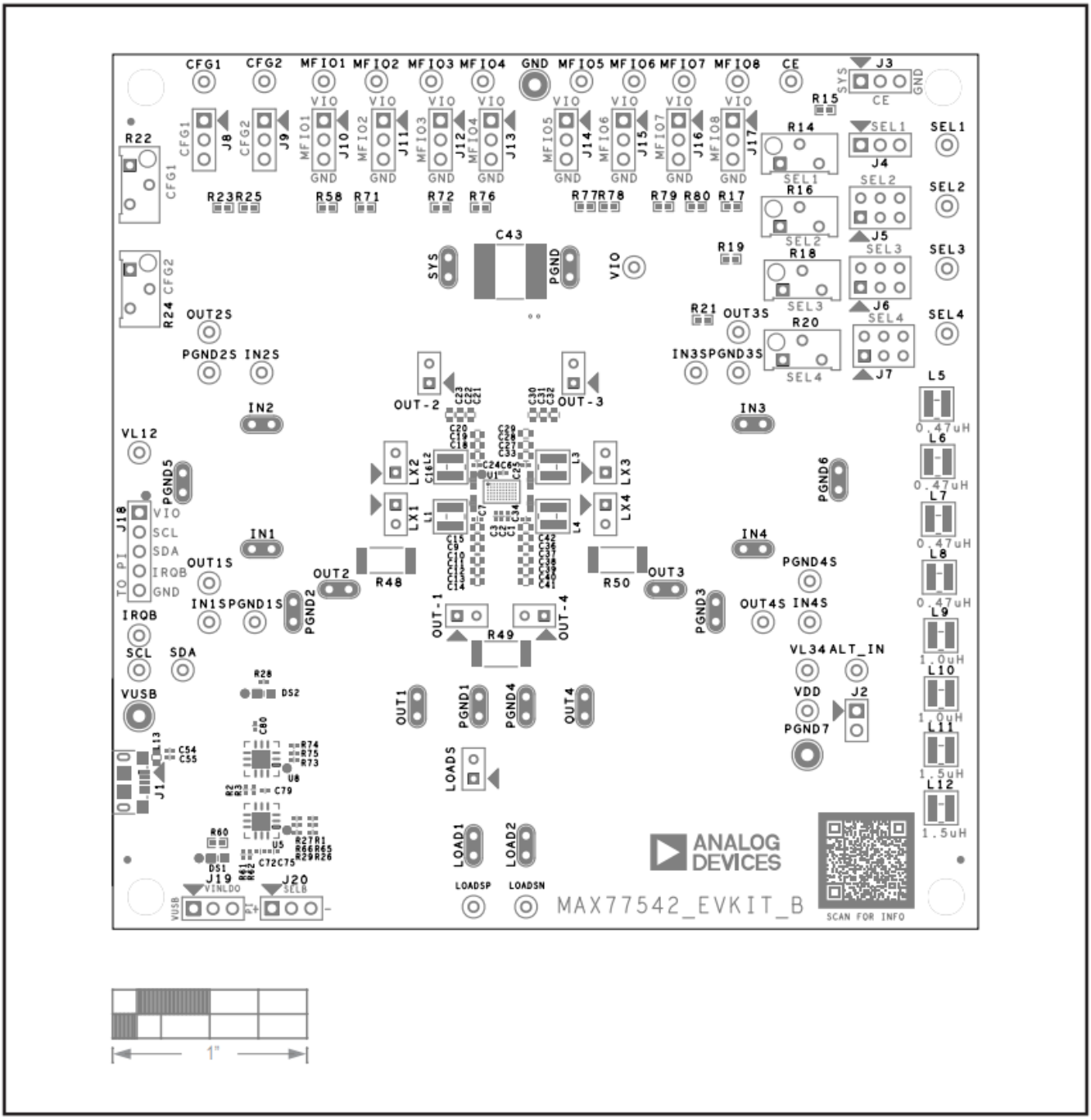
L12

1.5UH

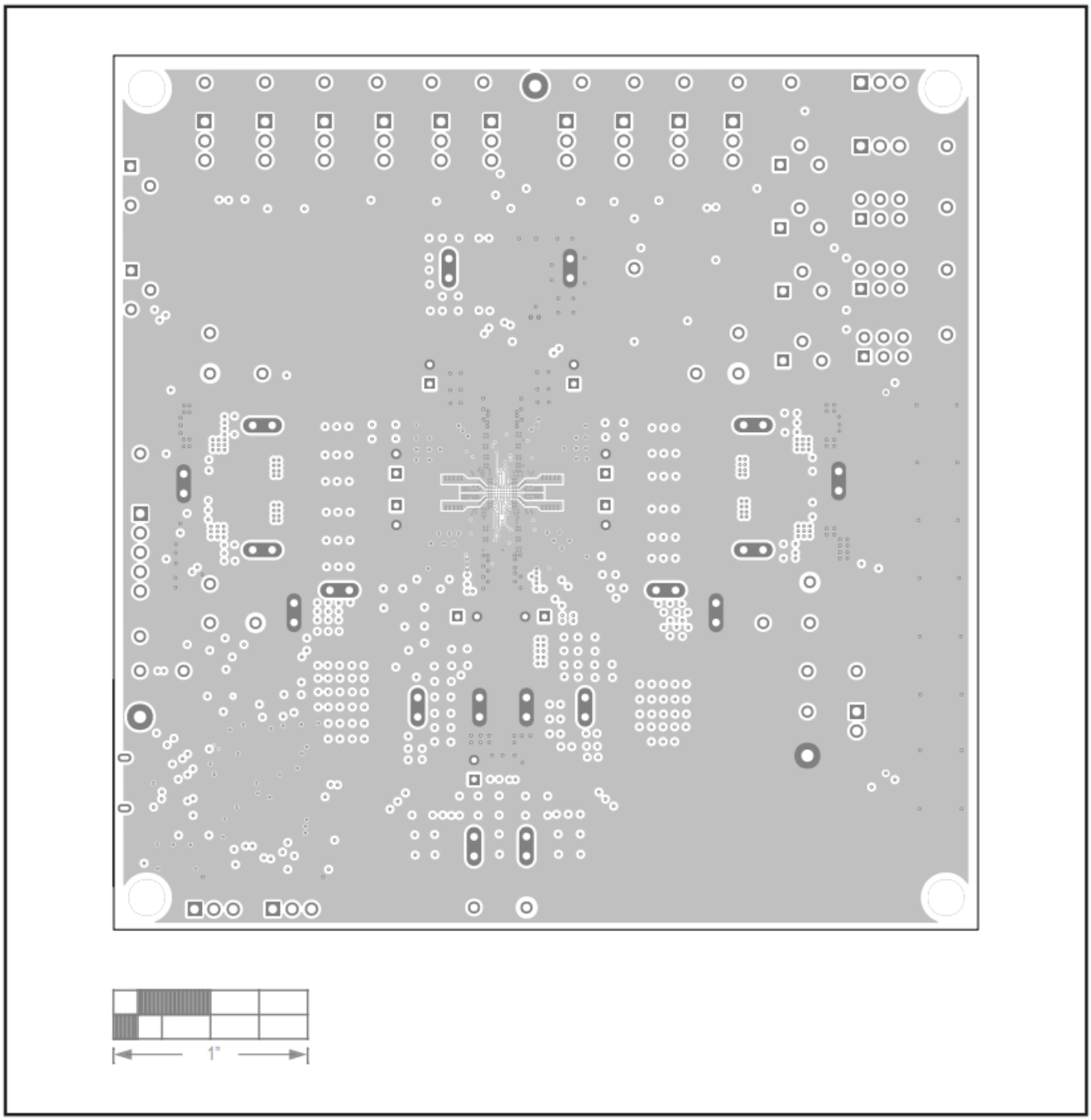


MAX77542 EV Kit PCB Layout

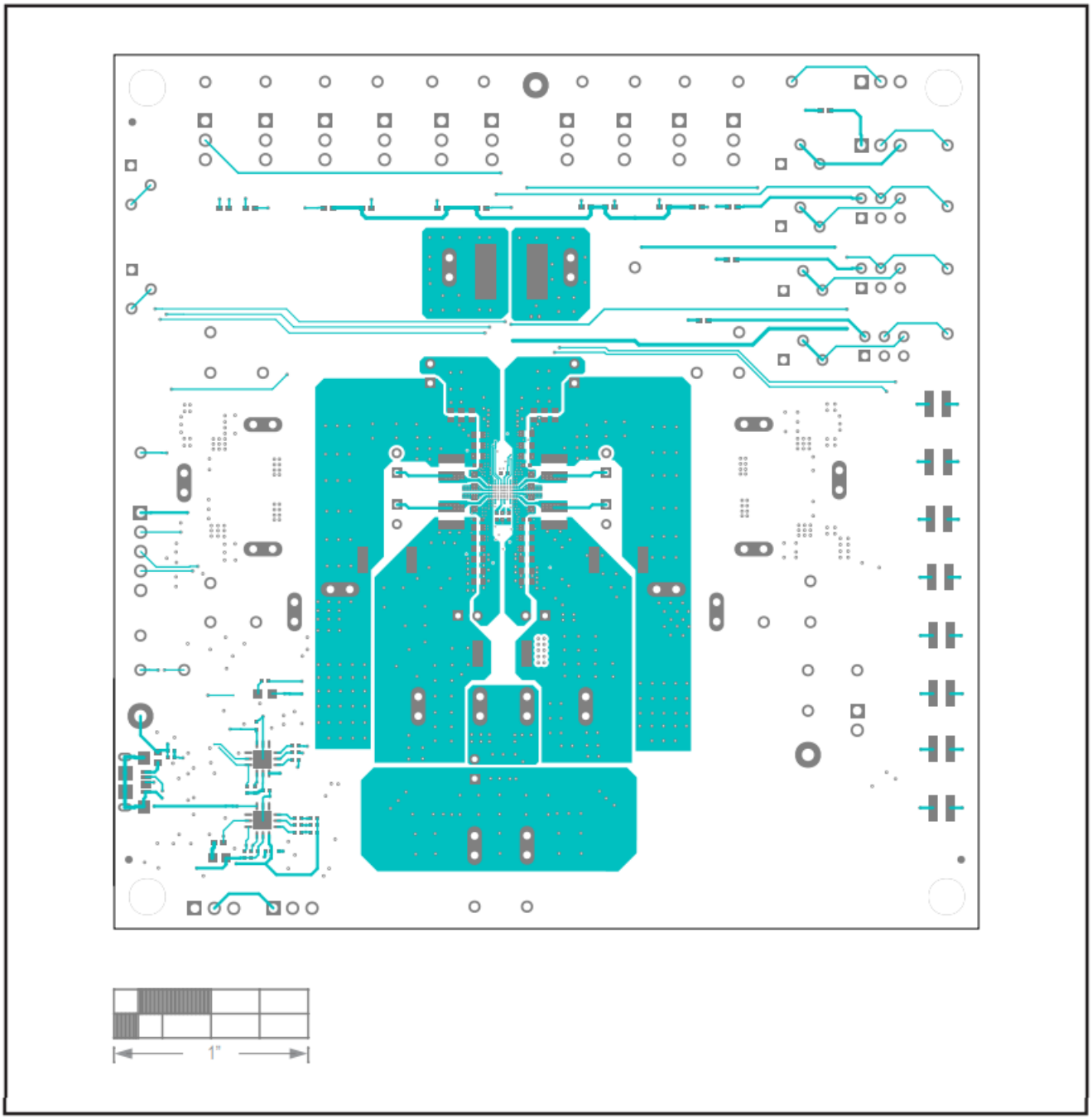
MAX77542 EV—Silk Top



MAX77542 EV—Internal2



MAX77542 EV—Top



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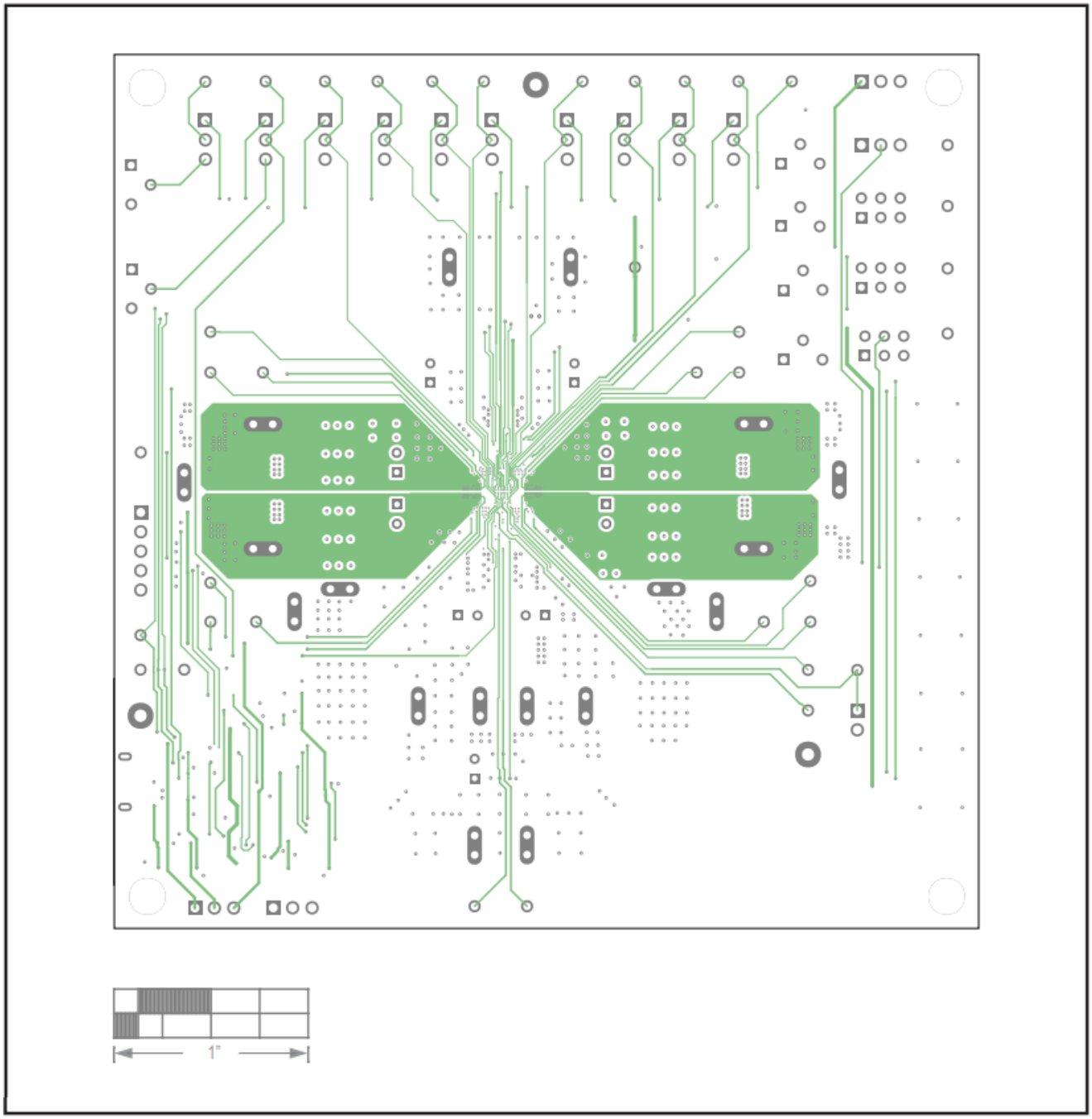
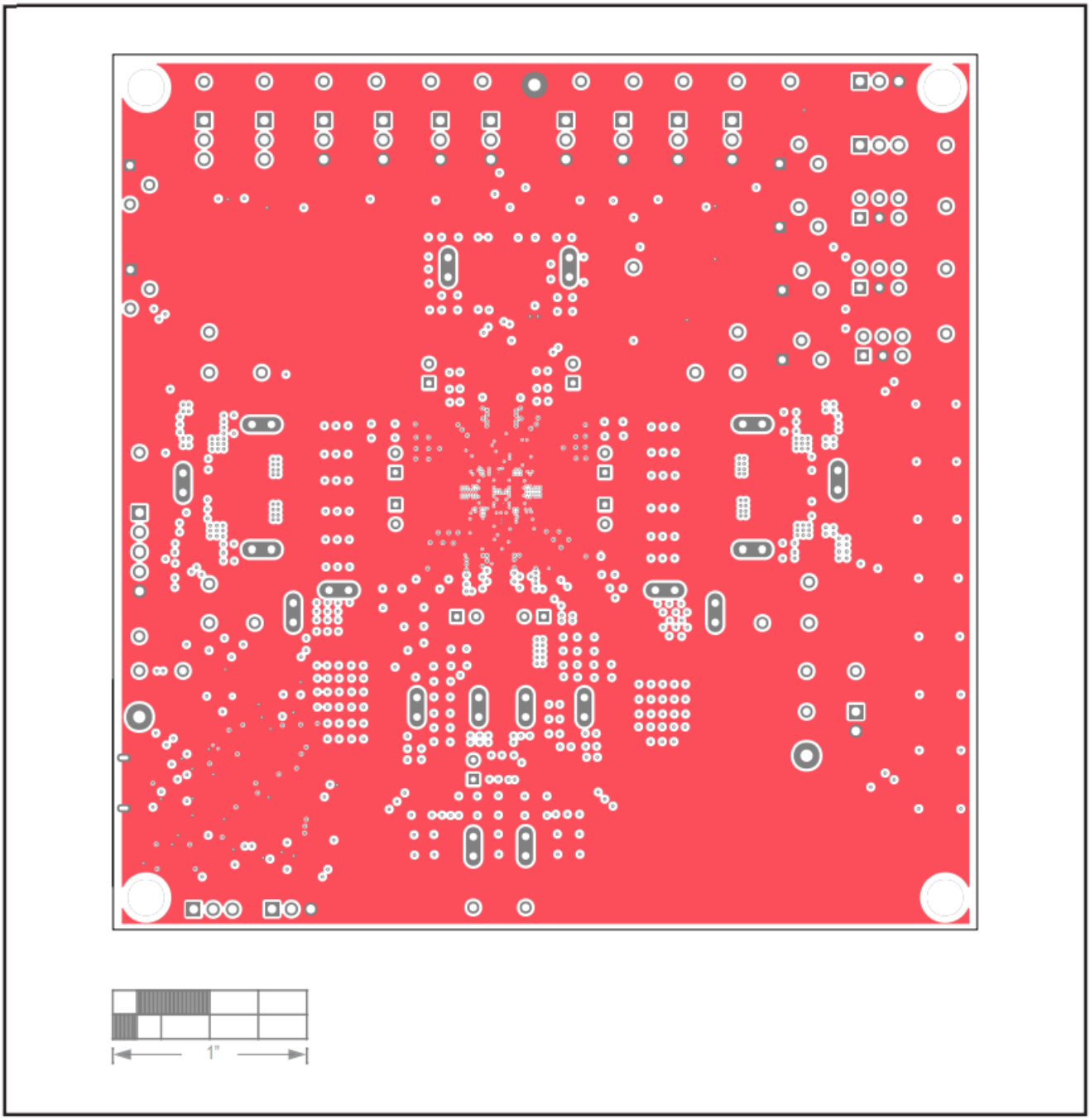
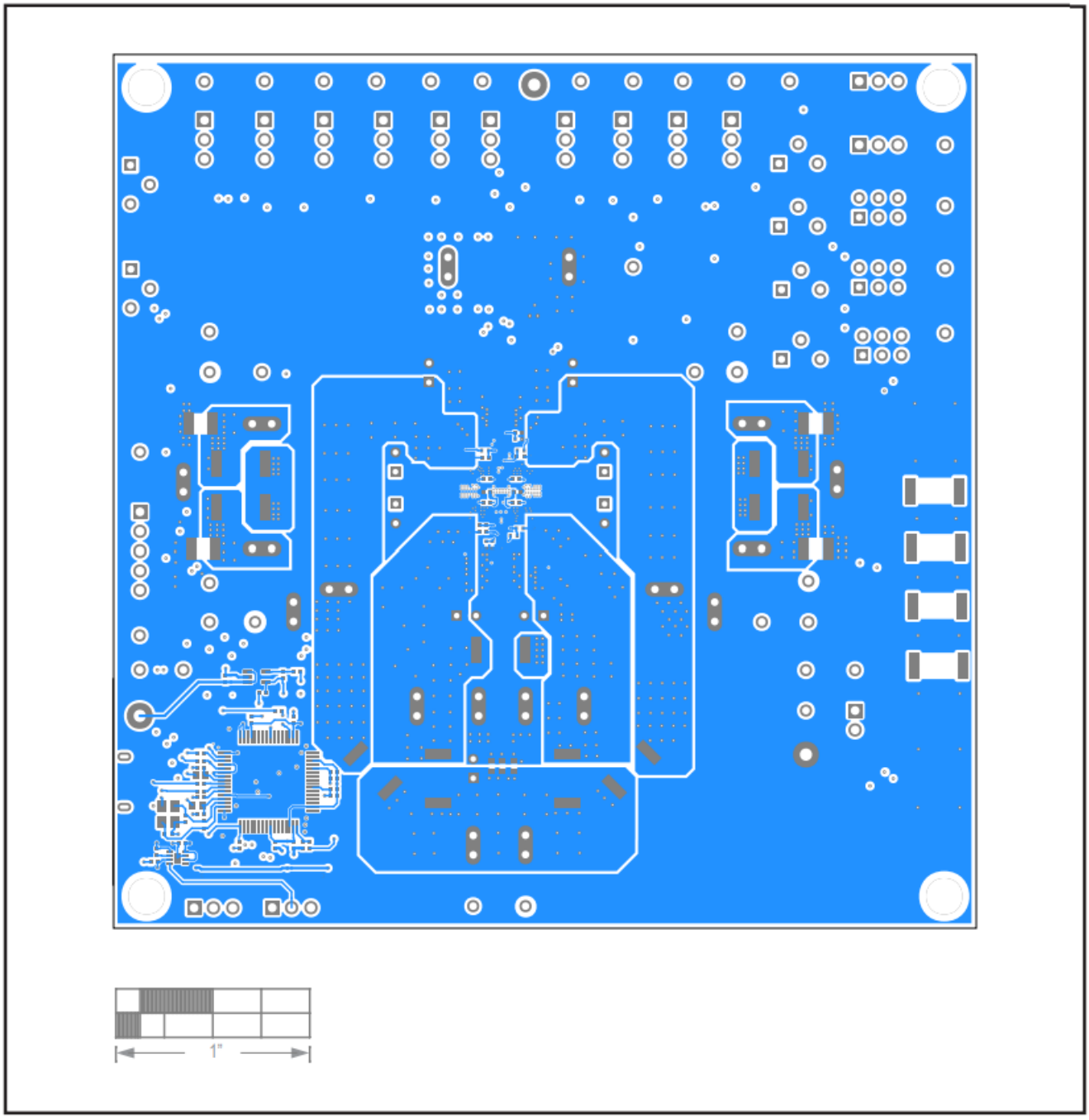


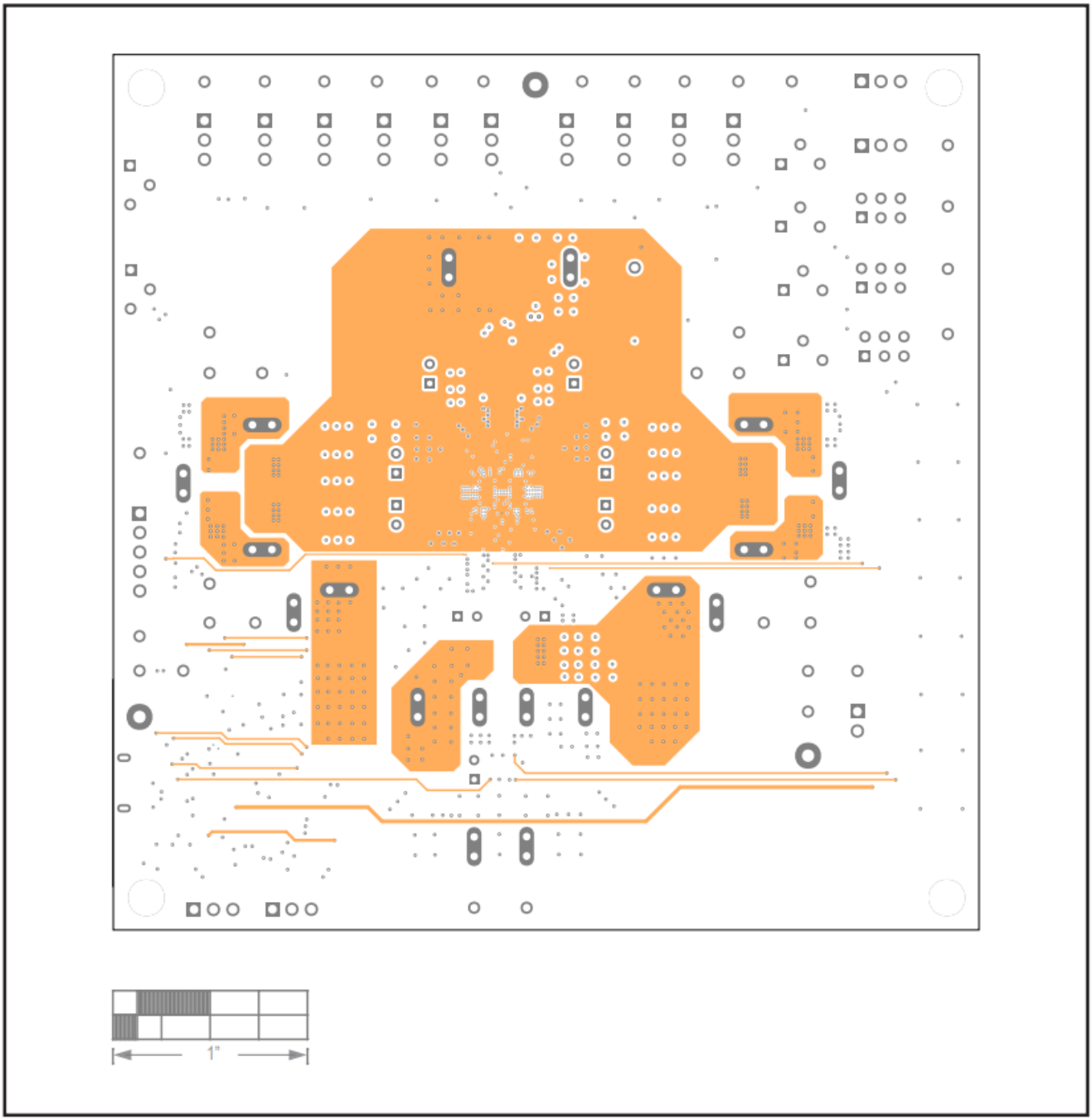
MAX77542 EV—Internal4



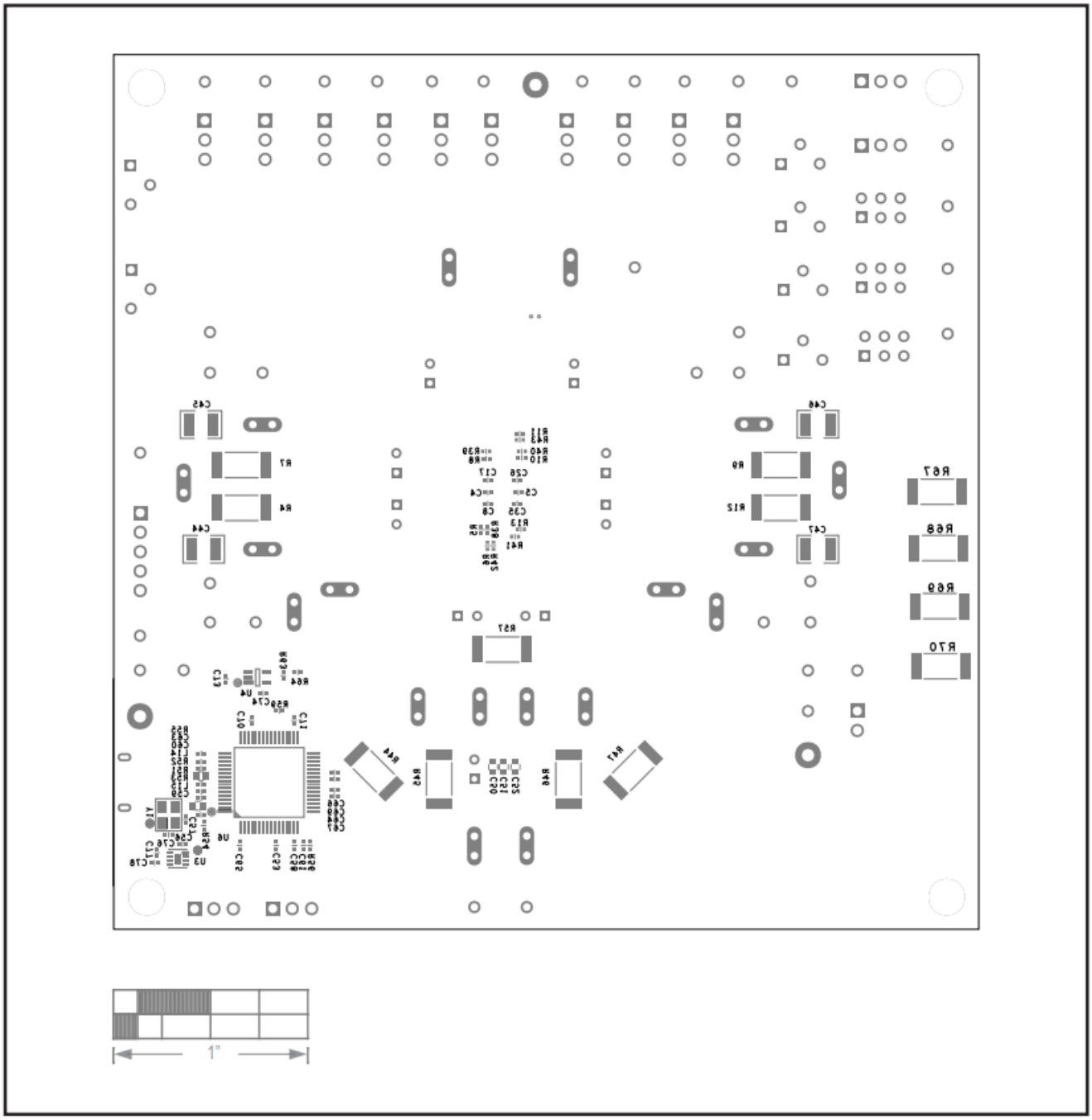
MAX77542 EV—Bottom



MAX77542 EV—Internal5



MAX77542 EV—Silk Bottom



Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	03/23	Initial release	—

Customer Support

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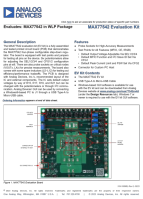
Documents / Resources

	ANALOG DEVICES MAX77542 Evaluation Kit [pdf] User Manual MAX77542 Evaluation Kit, MAX77542, Evaluation Kit, Kit

References

- Mixed-signal and digital signal processing ICs | Analog Devices
- Buy Parts, Request Quote and Sample from Maxim Integrated
- User Manual