

General Description

The MAX1240 evaluation kit (EV kit) demonstrates the MAX1240, low-power, 12-bit serial ADC. The MAX1240 peripheral module (Pmod™) and the USB2PMB2 module form a system, the MAX1240 EV kit. Windows XP, and Windows® 7/8/8.1/10-compatible software provides a user friendly interface that demonstrates features of the MAX1240.

The MAX1240 peripheral module comes installed with the 8-pin SO package, MAX1240ACSA++.

Features

- 6-Pin PMod-Compatible Connector SPI)
- On-Board Voltage Reference (MAX6126)
- Proven PCB Layout
- Fully Assembled and Tested
- Windows XP, Windows 7/8/8.1/10-Compatible Software

Quick Start

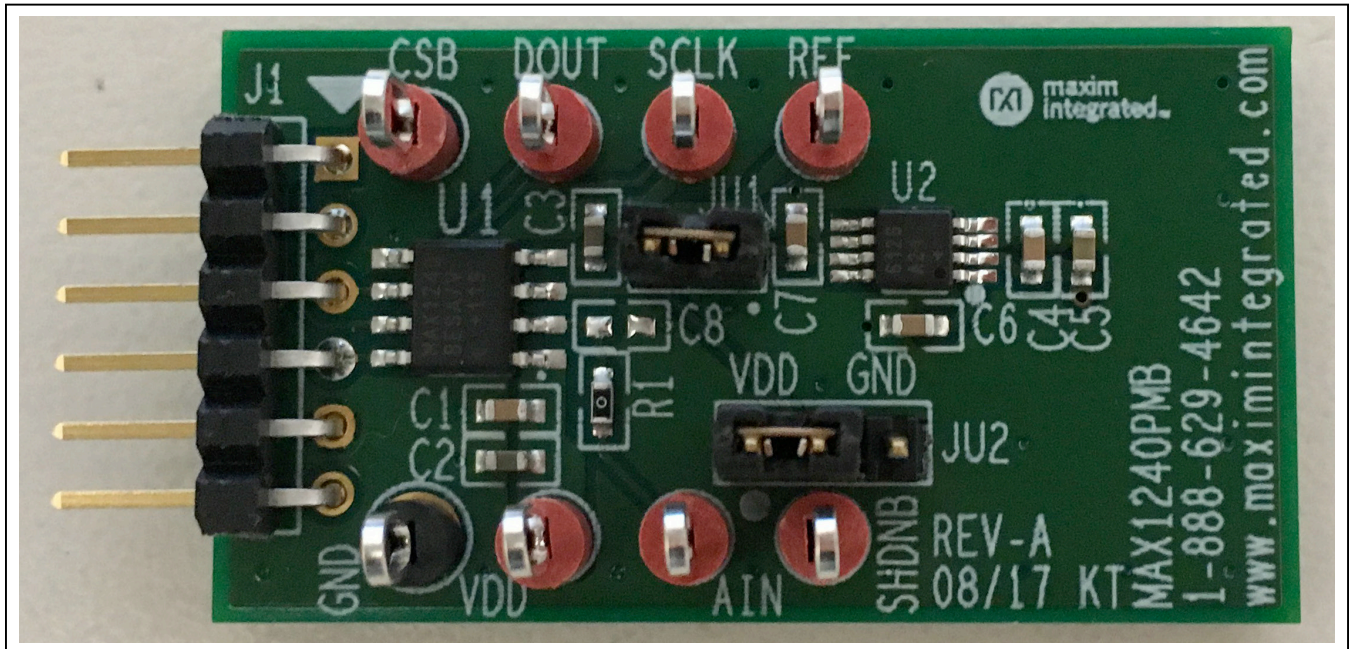
Required Equipment

- MAX1240 EV kit (includes MAX1240PMB and USB2PMB2 module with micro-USB cable)
- Signal Source
- Windows PC

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.

Ordering Information appears at end of data sheet.

MAX1240 EV Kit Photo



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Pmod is a trademark of Digilent Inc.

Procedure

The EV kit is fully assembled and tested. Follow the steps below to verify board operation:

- 1) Visit <http://www.maximintegrated.com/en/design/tools/applications/evkit-software/> to download the latest version of the EV kit software, MAX1240EVMKit.zip. Save the EV kit software to a temporary folder and uncompress the ZIP file.
- 2) Align the X2 top row connector of the USB2PMB2 with the J1 connector of the MAX1240 Pmod.
- 3) Verify that shunts are in the default position as shown in [Table 1](#).
- 4) Connect the USB cable from the PC to the USB2PMB2 board.
- 5) Open the GUI, MAX1240EVMKit.exe ([Figure 1](#)).
- 6) Click the **Scan Adapters** button. Then select the option **PMODxxxxxx** (where xxxxxx is numeric) and click the **Connect** button.
- 7) Connect the a signal source between 0V and 2.5V at the AIN test point.
- 8) Start evaluating the MAX1240 by clicking on the **Sample Continuously** button.

General Description of Software

The main window of the MAX1240 peripheral module contains controls to evaluate the MAX1240 IC. The peripheral module GUI allows different sample sizes, adjustable sampling rates, internal or external reference options, and graphing that includes ADC count, voltage, FFT, and histogram of the sampled signal.

Device Setting

The **Device Setting** groupbox is mainly used for changing the voltage reference. Select between the MAX1240 and MAX1241, and entered in the appropriate voltage in the VREF edit box. Please see [User-Supplied REF](#) section.

Sampling

The **Sample** groupbox allows for a single or continuous sample. It also features adjusting the sampling rate and sampling up to 16384 samples. The **Scope** captures data in **ADC Counts**, **Voltage(V)**, **FFT**, and **Histogram** graphing options.

Table 1. Jumper Descriptions

JUMPER	SHUNT POSITION	DESCRIPTION
JU1	Not installed*	Internal reference when using $\overline{\text{SHDN}}$ pin. External reference when $\overline{\text{SHDN}}$ pin is unconnected. Disconnects MAX6126 from the REF pin of the MAX1240.
	Installed	External reference only. Connects MAX6126 to the REF pin of the MAX1240.
JU2	1-2*	Connects $\overline{\text{SHDN}}$ pin of MAX1240 to VDD for normal operation.
	1-3	Connects $\overline{\text{SHDN}}$ pin of MAX1240 to GND to place part into shutdown.
	Not Installed	$\overline{\text{SHDN}}$ pin of MAX1240 is unconnected to allow external reference

*Default position.

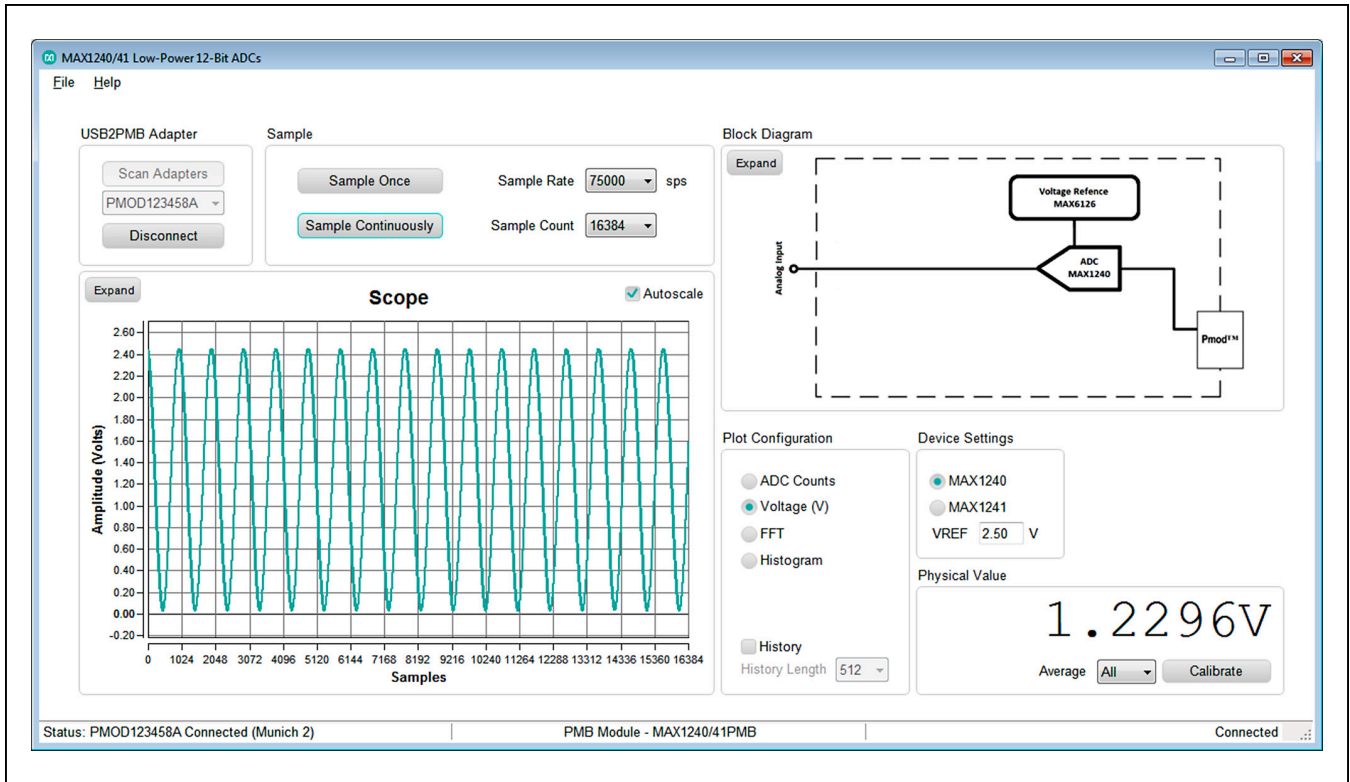


Figure 1. 1240 EV Kit Main Window

General Description of Hardware

The MAX1240 EV kit demonstrate the 12-bit ADC with 2.5V internal reference. The USB2PMB2 module and the MAX1240 Pmod completes the system. The USB2PMB2 act as the master and generates all the SPI communications.

User-Supplied SPI

To evaluate the EV kit with a user-supplied **SPI** bus, the connector J1 is a compatible PMod connector. If the master does not have a compatible PMod connector, then make connection directly to the SCLK, CSB, DOUT, and GND test points.

Ordering Information

PART	TYPE
MAX1240EVKIT#	EV KIT
MAX1240PMB#	Peripheral Module
USB2PMB2#	Adapter Board

#Denotes RoHS compliant.

User-Supplied VDD

The MAX1240 is powered through USB and regulated to 3.3V by default when a PMod compatible master module is connected to the J1 connector of the EV kit. For a user-supplied VDD, a PMod master module is not allowed on the J1 connector. The user will need to apply a voltage between +2.7V and +3.6V at the VDD test point.

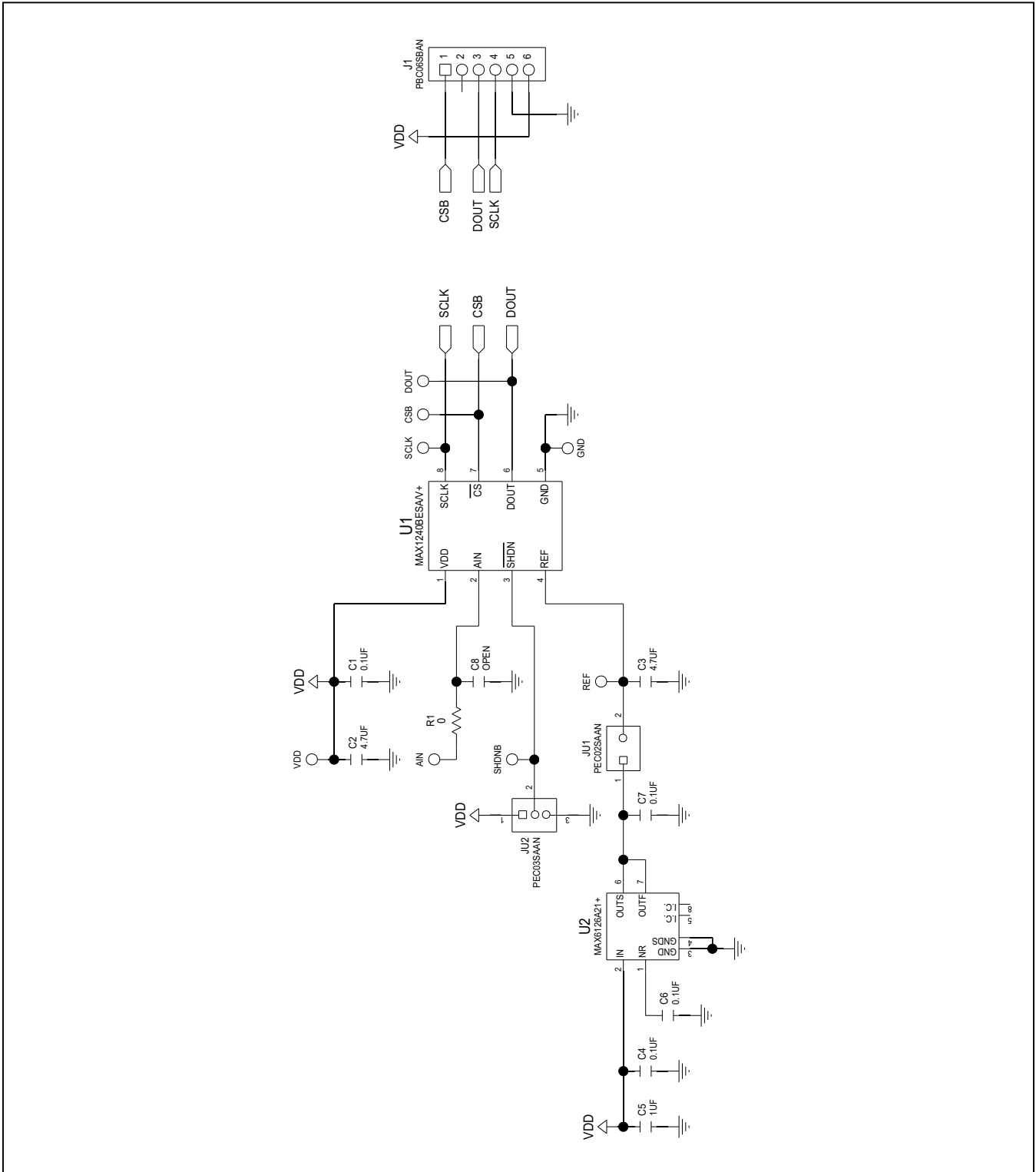
User-Supplied REF

The internal reference is set at 2.5V. The MAX1240PMB comes with an on-board MAX6126, 2.048V reference. To use this feature, a shunt on JU1 header must be installed. In order to use other external reference option, do not place shunt on header JU2 and apply 1V to VDD + 50mV to REF test point.

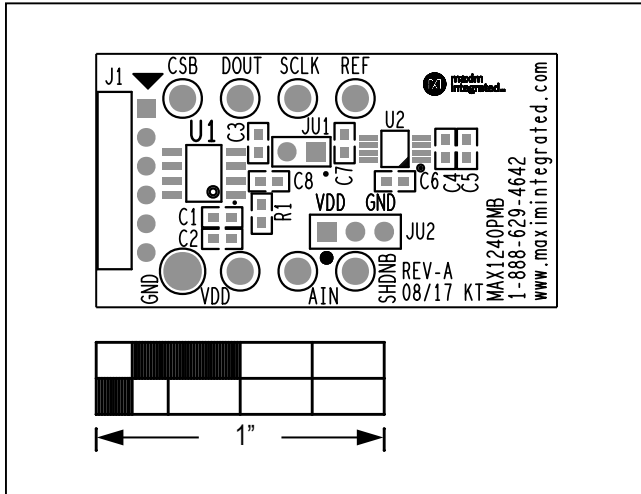
MAX1240 EV Kit Bill of Materials

ITEM	QTY	REF DES	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
1	7	AIN, CSB, REF, VDD, DOUT, SCLK, SHDNB	5010	KEYSTONE	N/A	TESTPOINT WITH 1.80MM HOLE DIA, RED, MULTIPURPOSE; NOT FOR COLD TEST	
2	4	C1, C4, C6, C7	C0603C104K5RAC; C1608X7R1H104K	KEMET; TDK	0.1UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.1UF; 50V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R;NOTE: NOT RECOMMENDED FOR NEW DESIGN USE 20-000u1-01	
3	2	C2, C3	C1608X5R0J475M080AB; GRM188R60J475ME19; JMK107BJ475MA-T	TDK/MURATA/TAIYO YUDEN	4.7UF	CAPACITOR; SMT (0603); CERAMIC; 4.7UF; 6.3V; TOL=20%; MODEL=C SERIES; TG=-55 DEGC TO +85 DEGC; TC=X5R	
4	1	C5	UMK107BJ105KA-T; C1608X5R1H105K080AB; CL10A105KB8NNN; GRM188R61H105KAAL	TAIYO YUDEN; TDK; SAMSUNG; MURATA	1UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 1UF; 50V; TOL=10%; MODEL=_MK SERIES; TG=-55 DEGC TO +85 DEGC	
5	1	GND	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; RECOMMENDED FOR BOARD THICKNESS=0.062IN; NOT FOR COLD TEST	
6	1	J1	PBC06SBAN	SULLINS ELECTRONICS CORP.	PBC06SBAN	EVKIT PART-CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; RIGHT ANGLE; 6PINS; NOTE: RE-ARRANGED PIN SEQUENCE; PIN 1 ON THE RIGHT	
7	1	JU1	PEC02SAAN	SULLINS	PEC02SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 2PINS	
8	1	JU2	PEC03SAAN	SULLINS	PEC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS	
9	1	R1	RC1608J000CS; CR0603-J/-000ELF; RC0603JR-070RL	SAMSUNG ELECTRONICS/ BOURNS/YAGEO PH	0	RESISTOR; 0603; 0 OHM; 5%; JUMPER; 0.10W; THICK FILM	
10	1	U1	MAX1240BESA/V+	MAXIM	MAX1240BESA/V+	IC; ADC; +2.7V; LOWER-POWER; 12-BIT SERIAL ADC; NSOIC8	
11	1	U2	MAX6126A21+	MAXIM	MAX6126A21+	IC; VREF; ULTRA-HIGH PRECISION; ULTRA-LOW NOISE; SERIES VOLTAGE REFERENCE; UMAX8	
TOTAL	21						

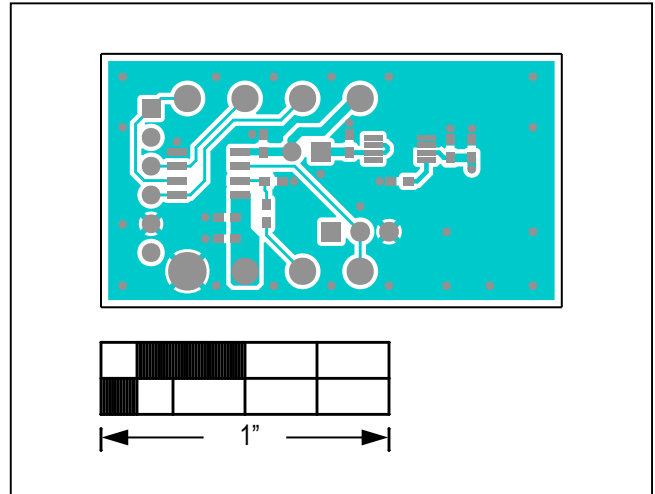
MAX1240PMB Schematic



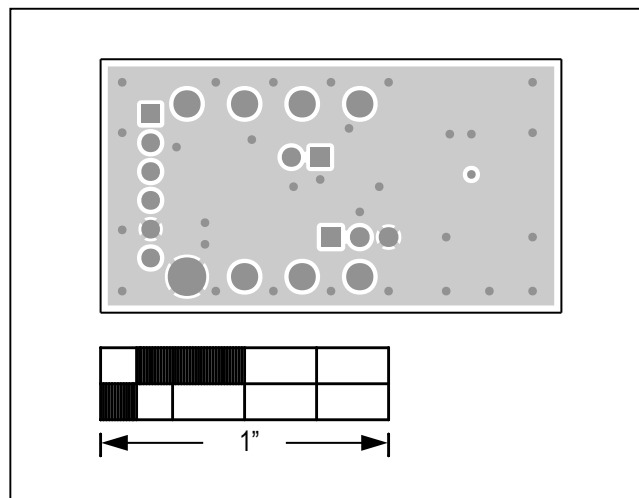
MAX1240 EV Kit Layout Diagrams



MAX1240 EV Kit—Top Silkscreen

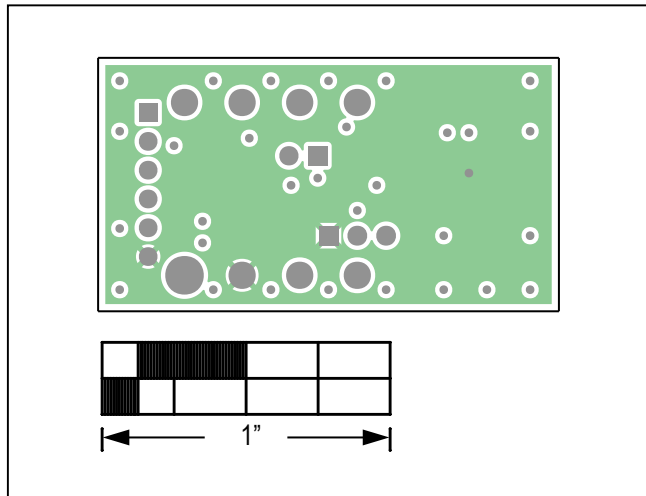


MAX1240 EV Kit—Top

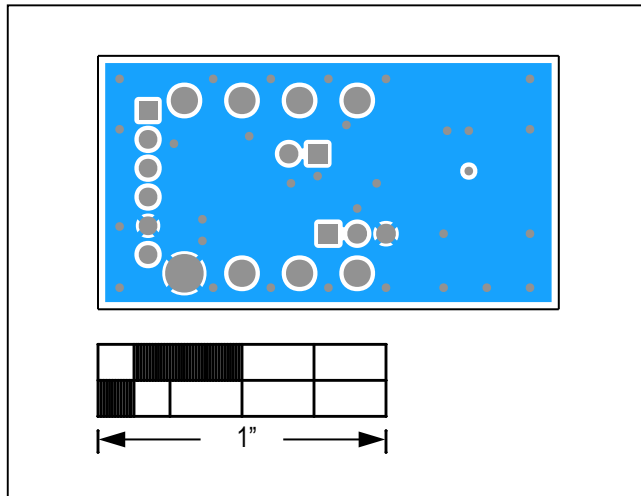


MAX1240 EV Kit—Layer 2

MAX1240 EV Kit Layout Diagrams (continued)



MAX1240 EV Kit—Layer 3



MAX1240 EV Kit—Bottom