Click here to ask an associate for production status of specific part numbers.

Evaluates: MAX31888

MAX31888 Evaluation System

General Description

The MAX31888 evaluation system (EV system) demonstrates the MAX31888 1-Wire® temperature sensor with alarm function. The MAX31888 EV system includes the MAX31888 evaluation kit (EV kit) and the USB2PMB2 module. Windows® 7/8/8.1/10 -compatible software provides a user-friendly interface that demonstrates the features of the MAX31888.

The MAX31888 EV kit contains an on-board DS2484 I²C to 1-Wire converter and comes with the 6-pin µDFN MAX31888ALT+T installed.

Features

- On-Board I²C to 1-Wire Converter (DS2484)
- Proven PCB Layout
- Fully Assembled and Tested
- Windows 7/8/8.1/10-Compatible Software

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

MAX31888 EV Kit Files

FILE	DECRIPTION
MAX31888_uDFN_ EVKIT _A_SCHEMATIC	EVKIT SCHEMATIC
MAX31888_uDFN_ EVKIT _A _MARKETING_PCB	EVKIT PCB LAYOUT
BUILD_BOM_ MAX31888_uDFN_ EVKIT _A	EVKIT BILL OF MATERIALS
MAX31888_uDFN_ EVKIT _A _ODB	EVKIT ODB

Note: EVKIT design files are attached at the end of this document.

Quick Start

Required Equipment

- MAX31888 EV system (USB cable included)
- Windows PC
- MAX31888GUISetup.msi file

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 system is fully assembled and tested. Follow the steps to verify board operation:

Caution: Do not turn on the power supply until all connections are completed.

1) Download the software from **www.analog.com/en/resources/evaluation-hardware-and-software/evaluation-boards-kits/max31888evsys** and extract it to a temporary folder.
2) Install the MAX31888GUISetup.msi software on a computer.
3) Align the X2 connector of the USB2PMB2 with the J1 connector of the MAX31888 EV kit.
4) Verify that the shunts are in the default position as shown in Table 1.
5) Connect the USB cable from the computer to the USB2PMB2 board.
6) Open the EV kit GUI, MAX31888EvaluationKitTool.exe (Figure 1).
7) Click the Scan Adapters button. Then select the option PMODxxxxxx (where xxxxxx is numeric) and click the Connect button.
8) Click the Convert T button.
9) Click the Read button. Figure 2 shows the measured temperature.

1-Wire is a registered trademark of Maxim Integrated Products, Inc.
Windows is a registered trademark of Microsoft Corporation.
Pmod™" is a trademark of Digilent Inc.

319-100839; Rev 1; 4/24

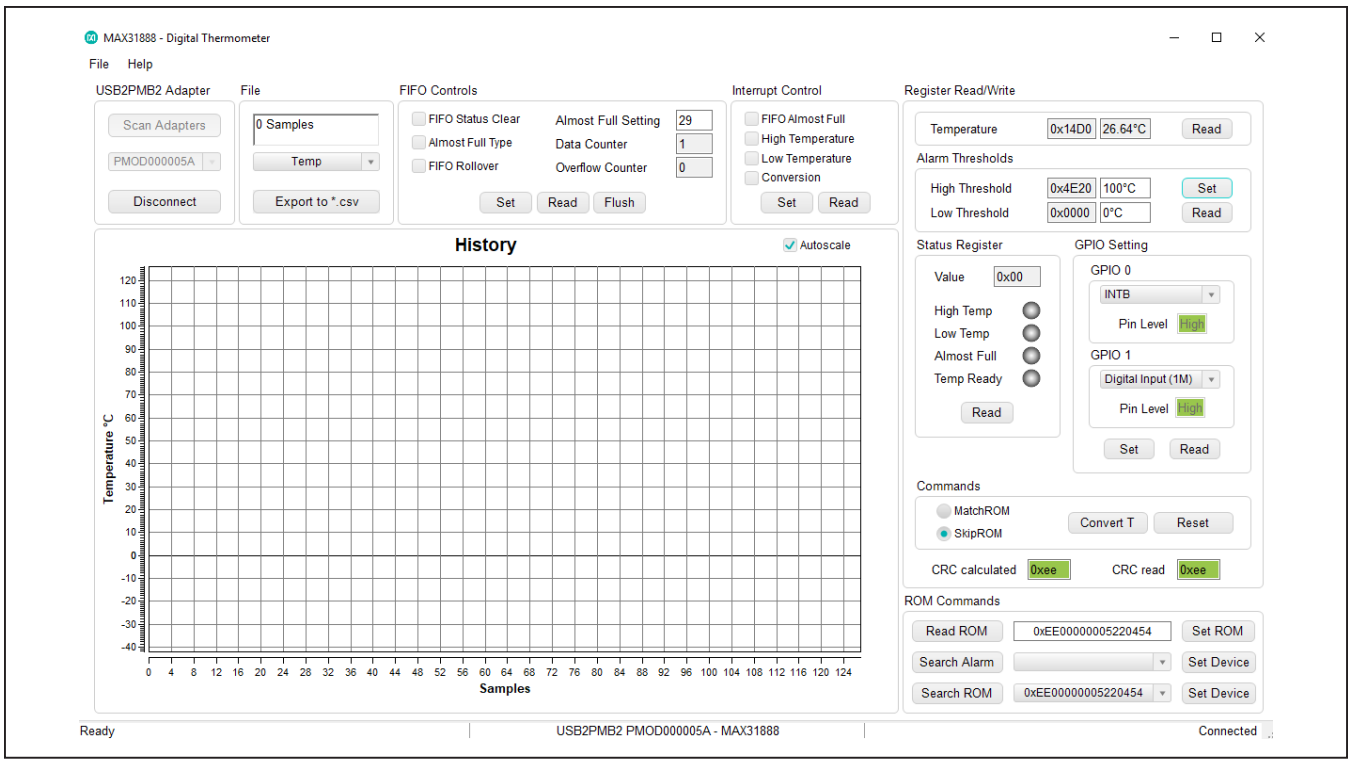


Figure 1. MAX31888 Main Window

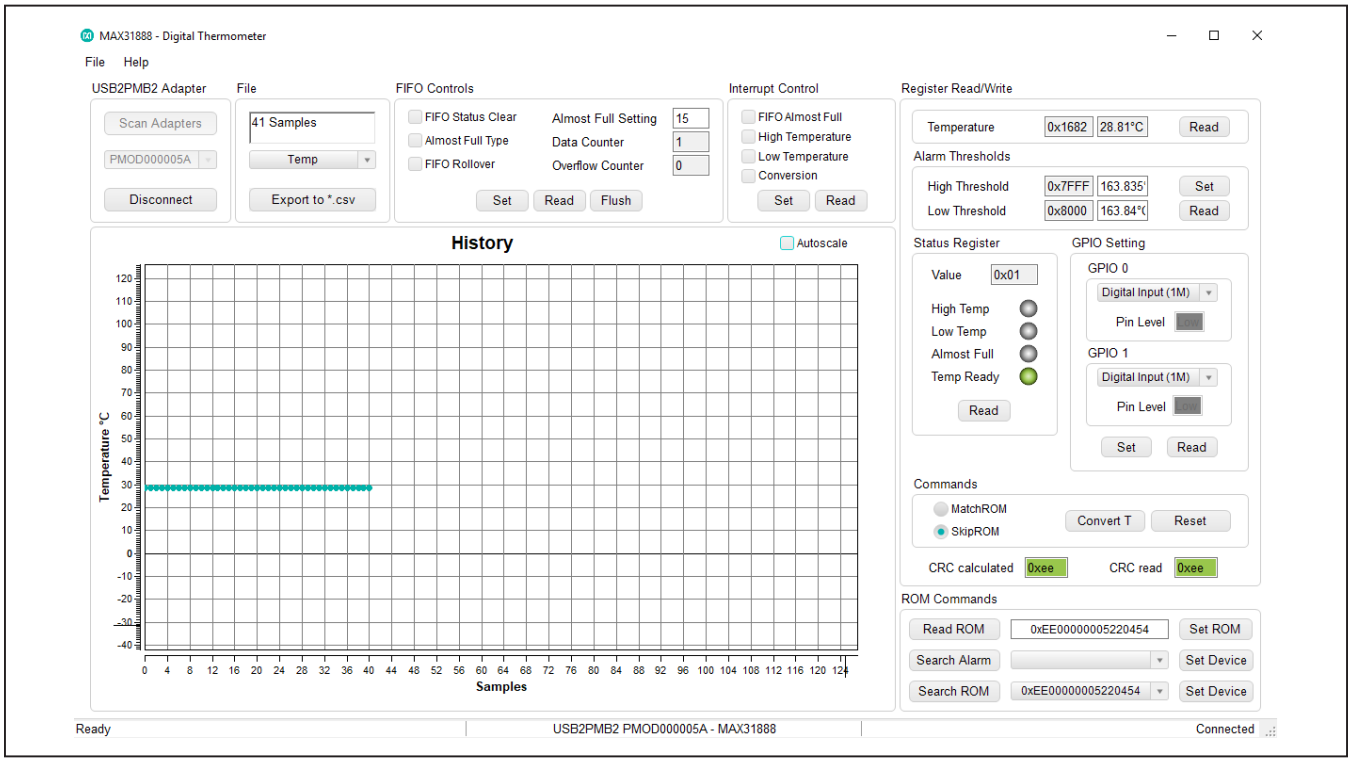


Figure 2. Measuring Temperature on the MAX31888

General Description of Software

The main window of the MAX31888 EV kit software contains controls to evaluate the MAX31888 IC.

FIFO Controls

The **FIFO Controls** groupbox allows the user to select the **FIFO Status Clear**, **Almost Full Type**, **FIFO Rollover**, and **Almost Full Setting**. Click the checkbox to enable them and click again to disable. The **Data Counter** shows the quantity of the data stored in the FIFO and the **Overflow Counter** shows the quantity the data overflowed.

Click **Set** to apply the above settings.

Click **Read** to confirm the settings.

Click **Flush** to clear the FIFO data.

Alarm Thresholds

Adjust the **High Threshold** (Temperature High) and **Low Threshold** (Temperature Low) edit boxes to the desired temperature threshold. When the desired setting is set, click the **Set** button to apply. Click the **Read** button to confirm they are set correctly.

Status Register

The **High Temp** or **Low Temp** fault status bit displays red when the **Read** button is clicked and the temperature exceeds the threshold range.

The **Almost Full** fault status bit displays red when the **Read** button is clicked and the FIFO data quantity exceeds 32 minus **Almost Full Setting**.

The **Temp Ready** status bit displays green when the **Read** button is clicked and temp data has been converted.

ROM

The controls within the **Commands** groupbox include **Convert T**, **Reset**, **Match ROM**, and **Skip ROM**.

Temperature

The temperature is displayed in a graph. View hexadecimal code and converted temperature by clicking on the **Read** button.

Logging Data

The temperature and raw code can be saved to a file. Click the **Export to *.CSV** button before collecting data.

General Description of Hardware

The MAX31888 EV system demonstrates the MAX31888, a 1-Wire temperature sensor with alarm. The USB2PMB2 module and the EV kit complete the system. The DS2484 acts as the 1-Wire master for the MAX31888 and as an I^2C slave for the USBPMBP2.

User-Supplied I^2C and I/O

To evaluate the EV kit with a user-supplied I^2C bus, use connector J1 which is a PMod™-compatible connector. If the master does not have a PMod-compatible connector, then make the connection directly to the SCL and SDA test points. Make sure the return ground is the same as the DS2484.

User-Supplied VPU

The MAX31888 is powered through USB by default when a PMod-compatible master module is connected to the J1 connector of the EV kit. If the user-supplied VPU is used, change J6 jumper position from default to 2-3 and apply a voltage between +1.7V and +3.6V at the VPU test point and ensure that ground is connected at the GND test point.

Table 1. Jumper Descriptions

JUMPER	SHUNT POSITION	DESCRIPTION
J1	1-2*	Connects VCC (onboard power supply)
	2-3	Connects VPU (external power supply)

**Default position.*

Component Suppliers

SUPPLIER	PHONE	WEBSITE
KEYSTONE	(516) 328-7500	https://www.keyelco.com/
WURTH ELECTRONICS INC	+1 877 6902207	https://www.we-ics.com
TDK	+81 3 67 78 10 00	https://www.tdk-electronics.tdk.com/
KEMET	+91-95131-45888	https://www.kemet.com/en/us.html
AVX	+1 (864) 967-2150	https://www.avx.com/
LITE-ON ELECTRONICS INC.	0515-83368598	https://www.liteon.com/en-us
SAMTEC	1-800-726-8329	https://www.samtec.com/
VISHAY	1-800-344-4539	https://www.vishay.com/
PANASONIC	0571-87257895	https://panasonic.cn/
BOURNS	+1 951-781-5500	https://www.bourns.com/
YAGEO	+886 2 6629 9999	https://www.yageo.com/en/Home
ANALOG DEVICES	408-601-1000	https://www.analog.com

Note: *Indicate that you are using the MAX31888 when contacting these component suppliers.*

Ordering Information

PART	TYPE
MAX31888EVSYS#	EV System (EV Kit + Master Board)
MAX31888EVKIT#	EV Kit
USB2PMB2#	Master Board

#Denotes RoHS compliant.

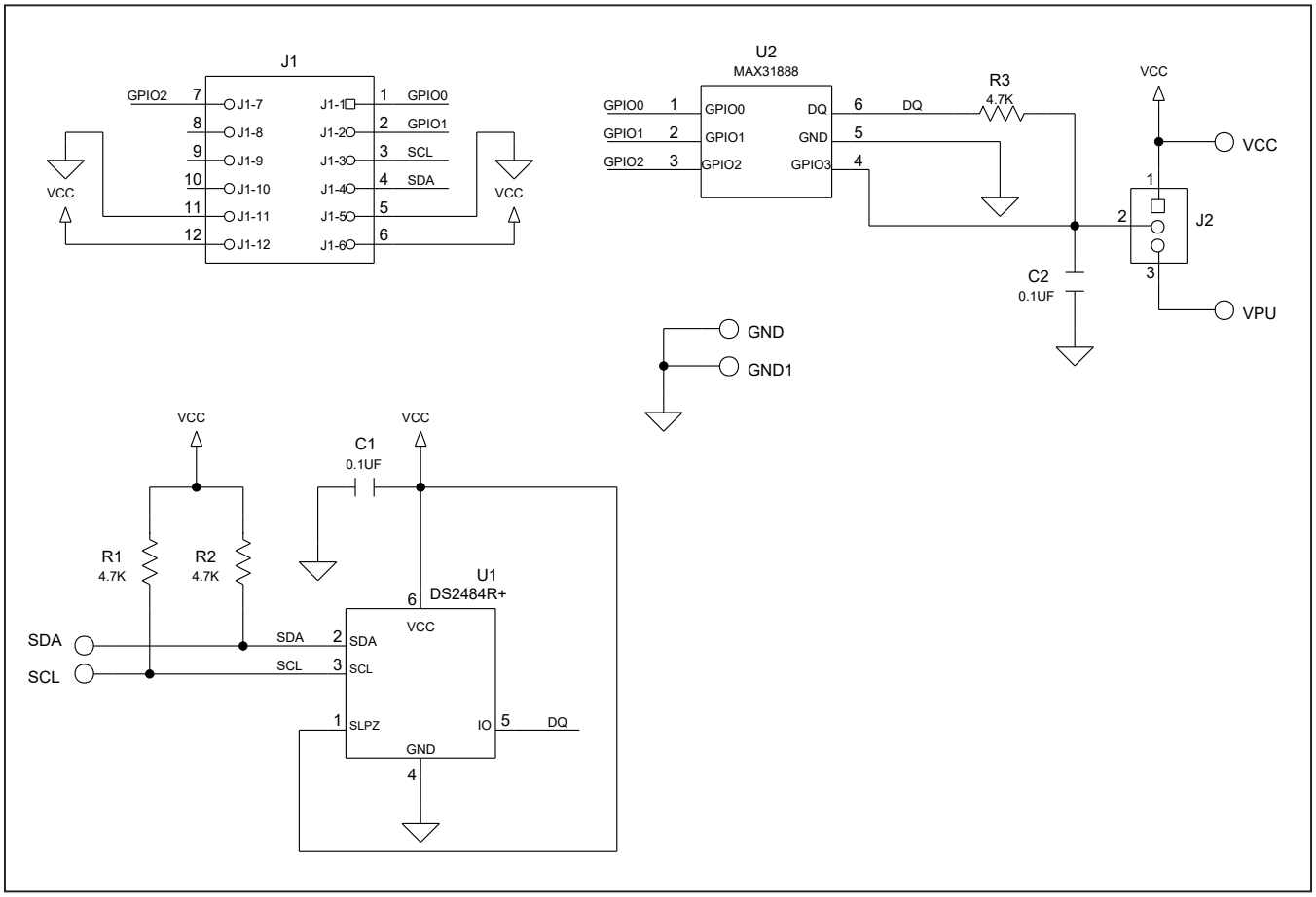
MAX31888 EV Kit Bill of Materials

ITEM	QTY	REF DES	MAXINV	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	STATUS	EST_PRICE	COMMENTS
1	2	C1, C2	20-000U1-03	885012206071; C1608X7R1E104K080AA; C0603C104K3RAC; GRM188R71E104KA01; C1608X7R1E104K; 06033C104KAT2A	WURTH ELECTRONICS INC;TDK; KEMET;MURATA;TDK;AVX	0.1UF	CAP; SMT (0603); 0.1UF; 10%; 25V; X7R; CERAMIC	ACTIVE	$0.03	
2	4	DQ, SCL, SDA, VPU	02-TPCOMP5007-00	5007	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.35IN; BOARD HOLE=0.063IN; WHITE; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH; RECOMMENDED FOR BOARD THICKNESS=0.062IN; NOT FOR COLD TEST	ACTIVE	$1.56	
3	2	GND, GND1	02-TPCOMP5006-00	5006	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.35IN; BOARD HOLE=0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH; RECOMMENDED FOR BOARD THICKNESS=0.062IN; NOT FOR COLD TEST	ACTIVE	$0.46	
4	1	J1	01-TSW10608SDRA12P-17	TSW-106-08-S-D-RA	SAMTEC	TSW-106-08-S-D-RA	CONNECTOR; THROUGH HOLE; DOUBLE ROW; RIGHT ANGLE; 12PINS; THIS PART IS DEDICATED FOR PMOD PERIPHERAL BOARD	EVKIT-NOT FOR TEST	$3.23	
5	1	J2	01-TSW10307TS3P-17	TSW-103-07-T-S	SAMTEC	TSW-103-07-T-S	CONNECTOR; THROUGH HOLE; TSW SERIES; SINGLE ROW; STRAIGHT; 3PINS	EVKIT-NOT FOR TEST	$0.47	
6	3	R1-R3	80-004K7-19	CRCW06034K70FK	VISHAY DALE	4.7K	RES; SMT (0603); 4.7K; 1%; +/-100PPM/DEGC; 0.1000W	TEMPLATE	$0.02	
7	4	SPACER1-SPACER4	02-SOM35016H-00	9032	KEYSTONE	9032	MACHINE FABRICATED; ROUND-THRU HOLE SPACER; NO THREAD; M3.5; 5/8IN; NYLON	EVKIT-NOT FOR TEST	$0.98	
8	1	U1	10-DS2484R-U	DS2484R+	ANALOG DEVICES	DS2484R+	IC; INFC; SINGLE-CHANNEL 1-WIRE MASTER WITH ADJUSTABLE TIMING AND SLEEP MODE; SOT23-6	ACTIVE	$0.66	
9	1	U2	00-SAMPLE-01	MAX31888	ANALOG DEVICES	MAX31888	EVKIT PART - IC; PACKAGE OUTLINE DRAWING: 21-100397; PACKAGE LAND PATTERN: 90-100138; PACKAGE CODE: L622-2; UDFN6	EVKIT-CUSTOM	$0.00	
10	1	VCC	02-TPCOMP5005-00	5005	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.35IN; BOARD HOLE=0.063IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH; RECOMMENDED FOR BOARD THICKNESS=0.062IN	ACTIVE	$0.19	
11	1		USB2PMB2				Adapter Board for the Munich			
TOTAL	20								$7.60	

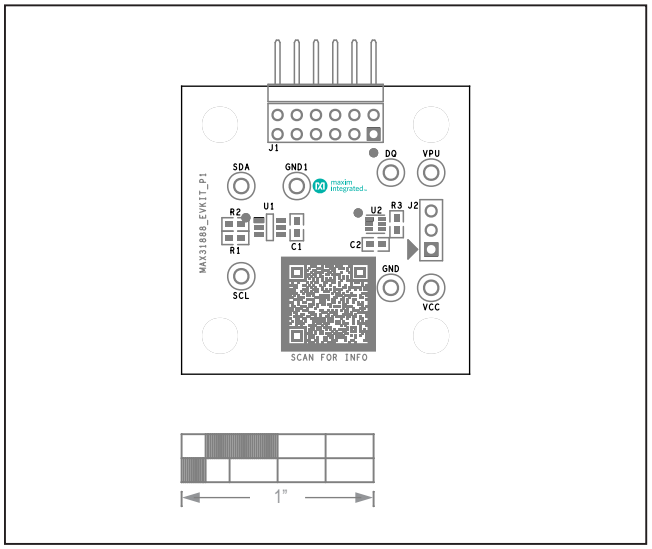
PACKOUT (These are purchased parts but not assembled on PCB and will be shipped with PCB)

ITEM	QTY	REF DES	MAXINV	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	STATUS	EST_PRICE	COMMENTS
TOTAL	0								$0.00	
TOTAL	20								$7.60	

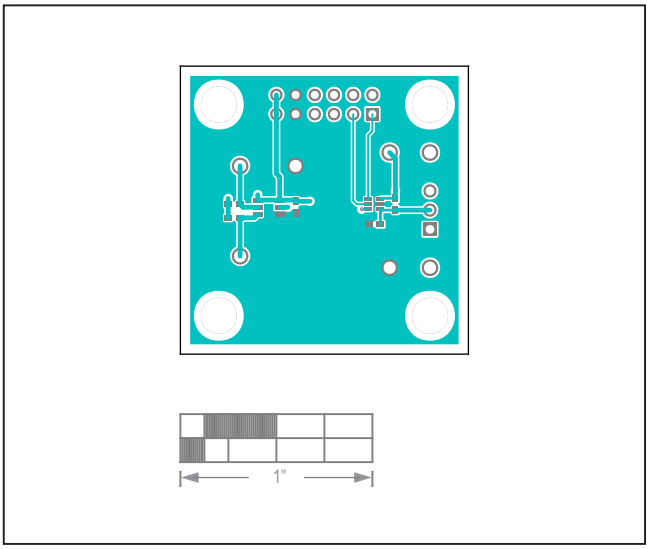
MAX31888 EV Kit Schematics



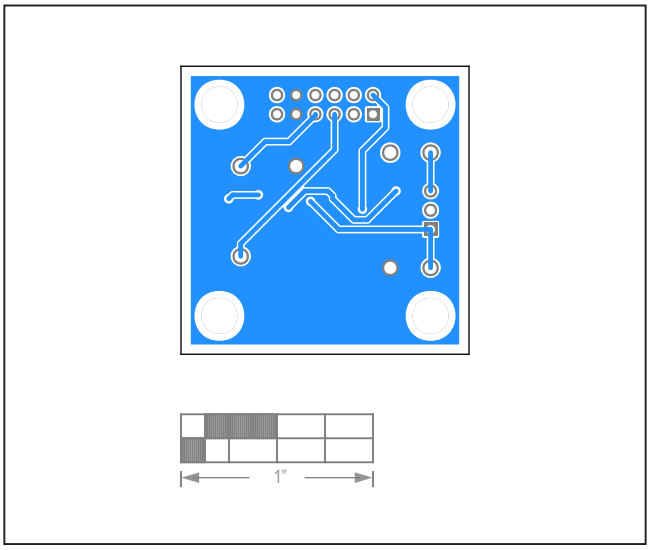
MAX31888 EV Kit PCB Layout



MAX31888 EV Kit–Silk Top



MAX31888 EV Kit–Top



MAX31888 EV Kit–Bottom

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	11/21	Release for Market Intro	—
1	4/24	Added Note and updated *Quick Start* section.	1, 2