

## General Description

The MAX14838 evaluation kit (EV kit) is a fully assembled and tested circuit board that evaluates the MAX14838 pin-configurable industrial sensor output driver.

The MAX14838 EV kit may also be used to evaluate the MAX14839.

## Features

- Operates from a Wide 4.75V to 34V Supply
- Standalone Operation
- Proven PCB Layout
- Fully Assembled and Tested

*[Ordering Information](#) appears at end of data sheet.*

## Quick Start

### Recommended Equipment

- MAX14838 EV kit
- 24V, 1A Power Supply
- Multimeter or voltmeter
- Function/signal generator
- Oscilloscope

### Procedure

The EV kit is fully assembled and tested. Follow the steps below to verify board operation before exercising the full features of the device:

- 1) Verify that all jumpers are in their default positions, as shown in [Table 1](#).
- 2) Connect the 24V DC power supply to VCC and GND test points on the EV kit board.
- 3) Connect the multimeter to the VLDO and GND test points on the EV kit board.
- 4) Turn on the power supply.
- 5) Verify that the multimeter reads 5V on the VLDO pin.
- 5) Set the function/signal generator to generate a 0-3V 1kHz signal.
- 5) Remove the J1 jumper.
- 6) Connect the function/signal generator to the DIN test point. Connect the oscilloscope to the DO test point.
- 6) Verify that DO switches as expected.

## Detailed Description of Hardware

The MAX14838 EV kit is a fully tested circuit board demonstrating the capabilities of the MAX14838 industrial binary sensor driver. The EV kit is designed to demonstrate all of the major features of the device.

### Configuring the DO Output

The MAX14838 is a pin-configurable binary sensor driver that can be configured for NPN, PNP, or push-pull operation in a normally-open or normally-closed configuration. Set the NO (J2), PP (J3), and NPN (J5) jumpers high or low to configure the DO output. [Table 2](#) shows the DO configuration settings.

### LDO Linear Regulator

The MAX14838 features and integrated 5V low-dropout linear regulator (VLDO) to power external loads up to 30mA.

### LED Output Drivers (LEDS, LED2)

The MAX14838 EV kit includes two on-board LEDs for visual feedback.

The LEDS output (LED1) indicates the state of the DO driver. See [Table 2](#).

The LED connected to the LED2 output (LED2) is a general-purpose LED and can be turned on or off with the  $\overline{\text{LED2IN}}$  input. Connect the J4 jumper high (1-2) to turn the LED2 output off. Connect the J4 jumper low (1-4) to turn the LED2 output on.

The default connection for the J4 jumper (1-3) connects the  $\overline{\text{LED2IN}}$  input to the  $\overline{\text{FAULT}}$  output. In this configuration, the LED2 output turns on when  $\overline{\text{FAULT}}$  goes low due to an overcurrent or thermal shutdown condition on DO.

**Table 1. Jumper Descriptions**

JUMPER	SHUNT POSITON	DESCRIPTION
J1	1-2	DIN is high.
	2-3*	DIN is low.
J2	1-2	NO is high.
	2-3*	NO is low.
J3	1-2	PP is high.
	2-3*	PP is low.
J4	1-2	$\overline{\text{LED2IN}}$ is high. The LED2 LED is off.
	1-3*	$\overline{\text{LED2IN}}$ is connected to FAULT. In this configuration, the LED2 LED is used a fault indicator. LED2 turns on when an overcurrent or thermal shutdown fault occurs on DO.
	1-4	$\overline{\text{LED2IN}}$ is high is low. The LED2 LED is turned on.
J5	1-2	NPN is high.
	2-3*	NPN Is low.

\*Default position.

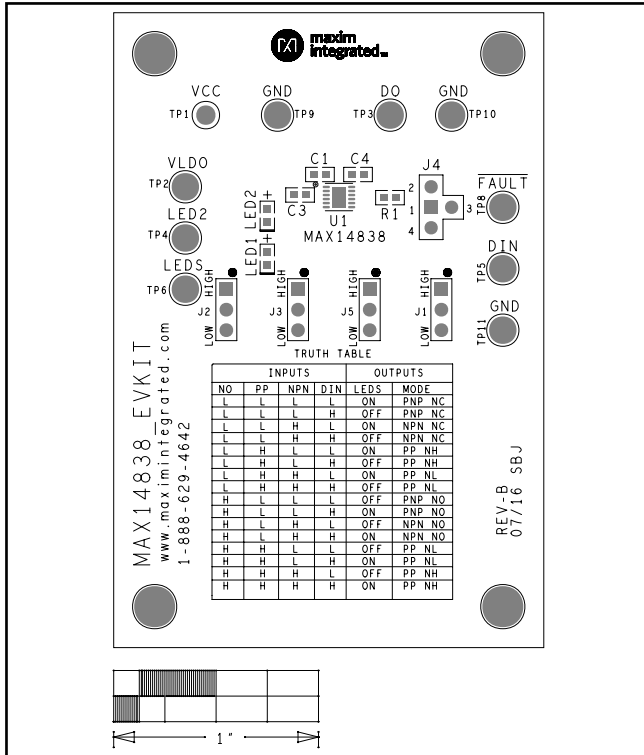
**Table 2. DO Configuration Settings**

INPUTS				OPERATION		
NO	PP	NPN	DIN	MODE	DO STATUS	LEDS
L	L	L	L	PNP NC	ON (High)	ON
L	L	L	H	PNP NC	OFF (High Impedance)	OFF
L	L	H	L	NPN NC	ON (Low)	ON
L	L	H	H	NPN NC	OFF (High Impedance)	OFF
L	H	L	L	Push-Pull NH	HIGH	ON
L	H	L	H	Push-Pull NH	LOW	OFF
L	H	H	L	Push-Pull NL	LOW	ON
L	H	H	H	Push-Pull NL	HIGH	OFF
H	L	L	L	PNP NO	OFF (High Impedance)	OFF
H	L	L	H	PNP NO	ON (High)	ON
H	L	H	L	NPN NO	OFF (High Impedance)	OFF
H	L	H	H	NPN NO	ON (Low)	ON
H	H	L	L	Push-Pull NL	LOW	OFF
H	H	L	H	Push-Pull NL	HIGH	ON
H	H	H	L	Push-Pull NH	HIGH	OFF
H	H	H	H	Push-Pull NH	LOW	ON

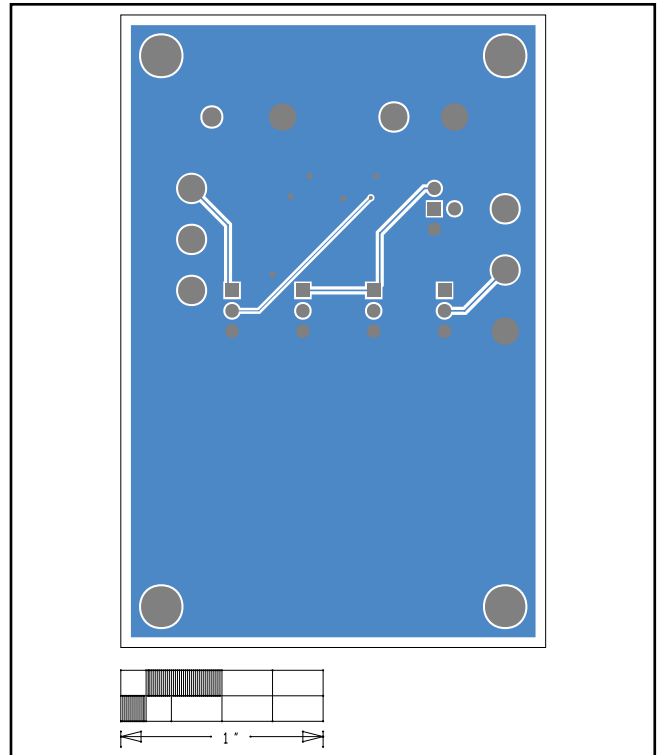
## MAX14838 EV Bill of Materials

PART	QTY	DESCRIPTION
C1, C3	2	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.1UF; 100V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R
J1-J3, J5	4	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 3PINS; -65 DEGC TO +125 DEGC
J4	1	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 4PINS
LED1	1	DIODE; LED; LY L29K SERIES; SMARTLED; YELLOW; SMT (1608); VF=1.8V; IF=0.02A
LED2	1	DIODE; LED; SMART; RED; SMT (0603); PIV=1.8V; IF=0.02A; -40 DEGC TO +100 DEGC
R1	1	RESISTOR; 0603; 5K OHM; 0.1%; 25PPM; 0.15W; THIN FILM
SU1-SU5	5	TEST POINT; JUMPER; STR; TOTAL LENGTH=0.24IN; BLACK; INSULATION=PBT;PHOSPHOR BRONZE CONTACT=GOLD PLATED
TP1	1	TESTPOINT WITH 1.80MM HOLE DIA, RED, MULTIPURPOSE;
TP2-TP6, TP8	6	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; WHITE; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
TP9-TP11	3	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
U1	1	IC; DRV; 24V PIN-CONFIGURABLE INDUSTRIAL SENSOR OUTPUT DRIVERS; TDFN12-EP
C4	0	PACKAGE OUTLINE 0603 NON-POLAR CAPACITOR
PCB	1	PCB Board:MAX14838 EVALUATION KIT

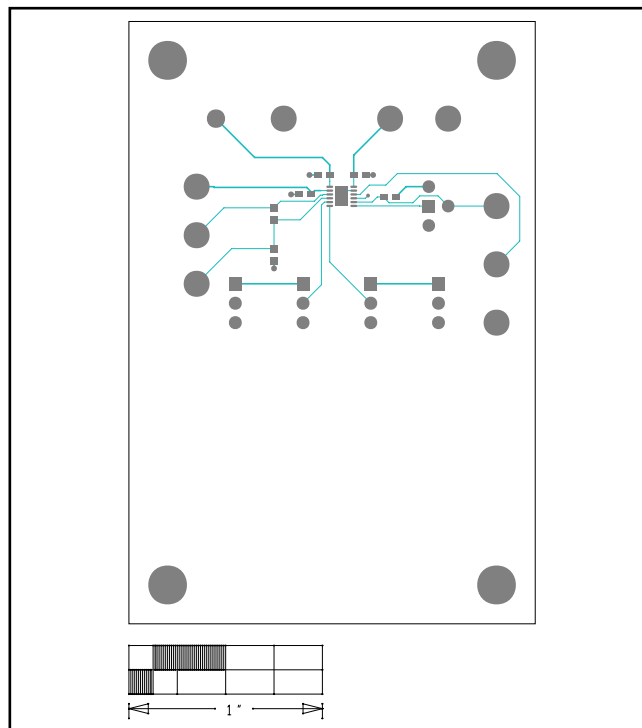
MAX14838 EV PCB Layout



MAX14838 EV Top Silkscreen

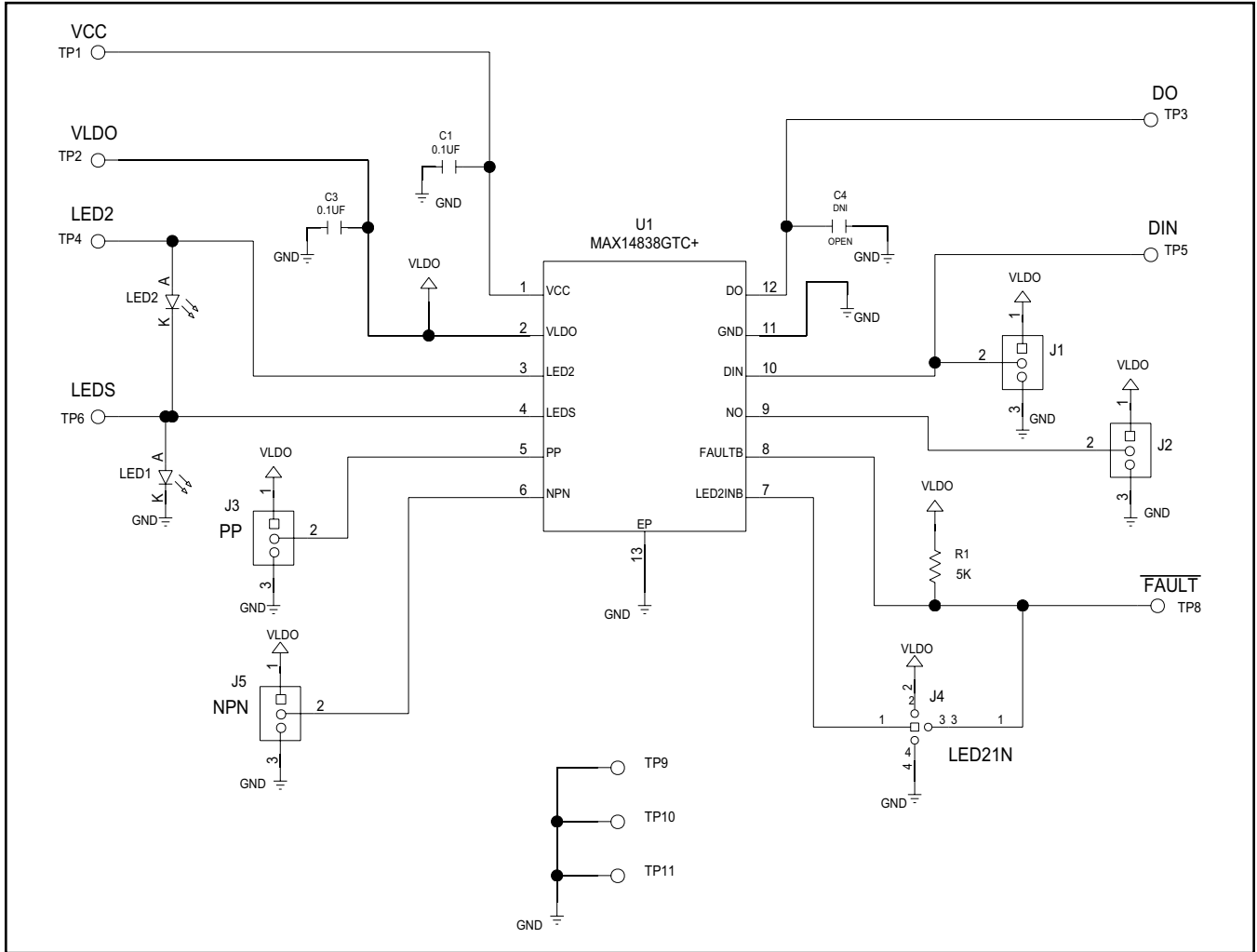


MAX14838 EV Bottom



MAX14838 EV Top

MAX14838 EV Schematic



Ordering Information

PART	TYPE
MAX14838EVKIT#	EV Kit

#Denotes RoHS compliant.

## Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	8/16	Initial release	—

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at [www.maximintegrated.com](http://www.maximintegrated.com).

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