

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.

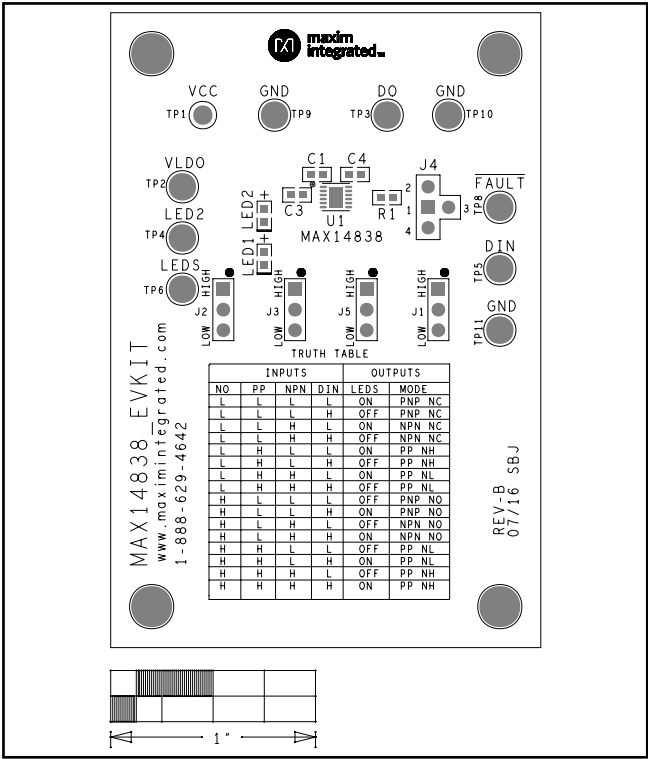
Table 2. DO Configuration Settings

| 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 |

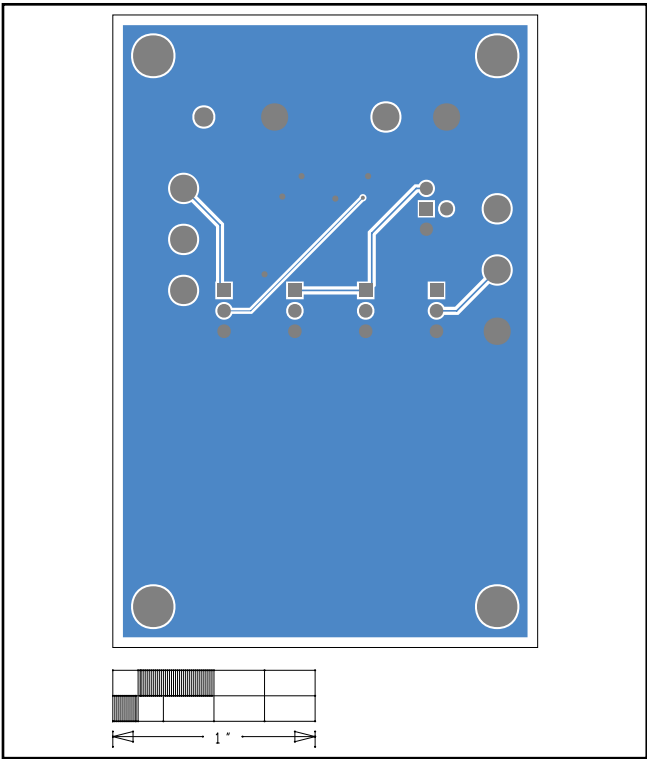
MAX14838 EV Bill of Materials

| 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 |

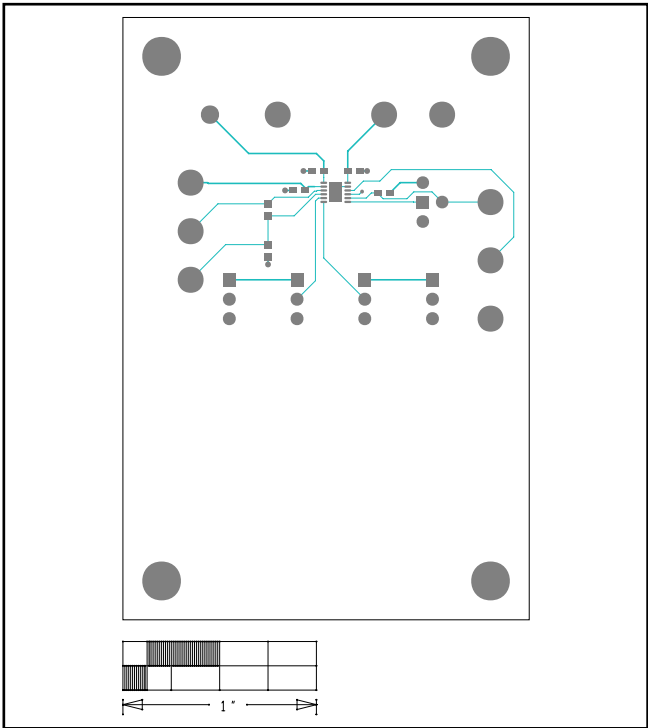
MAX14838 EV PCB Layout



MAX14838 EV Top Silkscreen

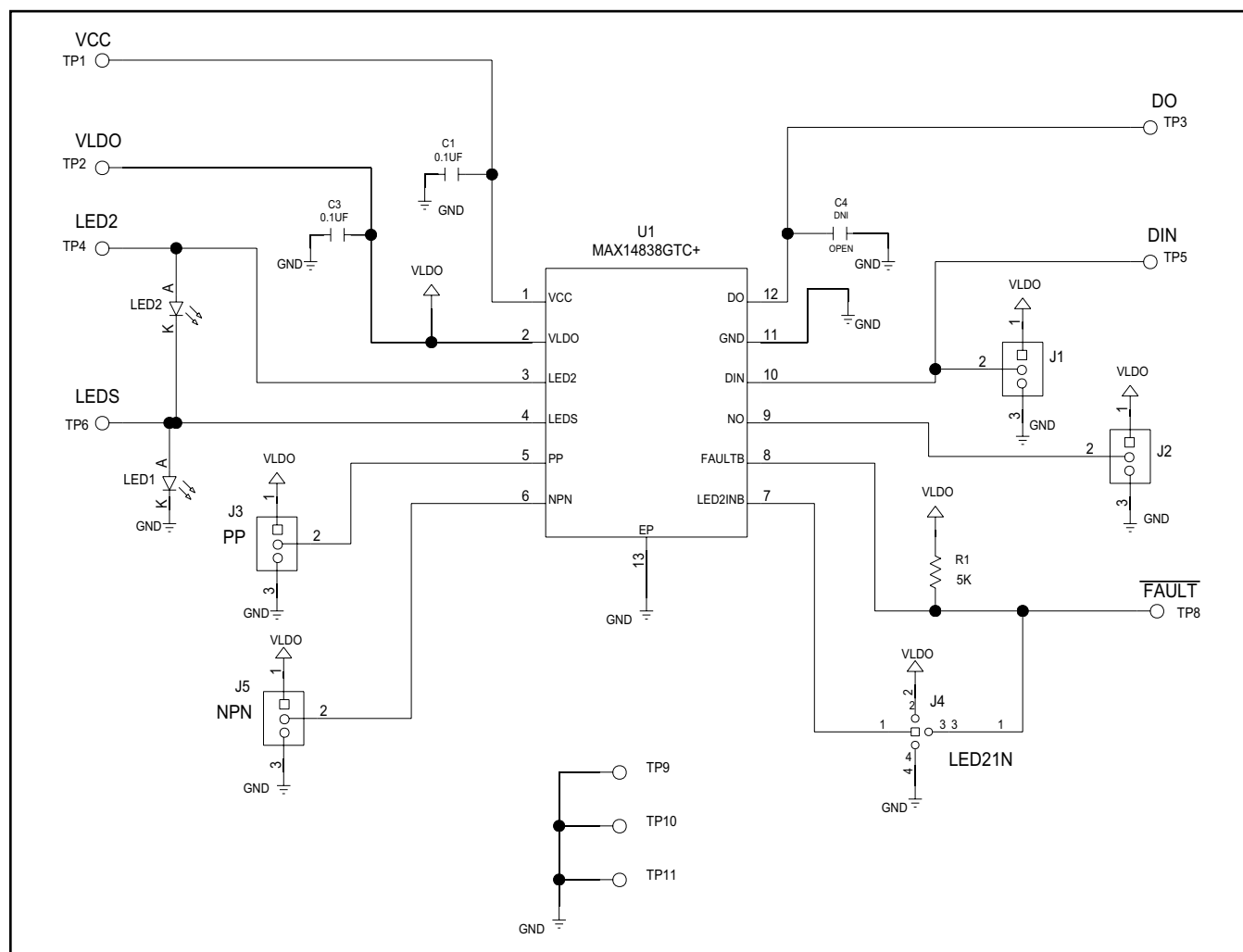


MAX14838 EV Bottom



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.

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