MAX16138 Evaluation Kit

General Description

The MAX16138 evaluation kit (EV kit) is designed to evaluate the MAX1613800/VY, a 0.7% accuracy, window-detector supervisory reset IC with BIST (Built-In Self-Test) capability and overvoltage fault output in an 8-pin TDFN package. A number of test points are provided to facilitate device evaluation. The EV kit is fully assembled and tested over the automotive temperature range of -40°C to +125°C and is available with the MAX1613800/VY+ installed.

Features

- 1.71V to 5.5V Supply Voltage Range
- Push-Button Switch to Clear OV Latch
- Proven 2-Layer 2oz Copper PCB Layout
- Automotive Temperature Range: -40°C to +125°C
- Demonstrates Compact Solution Size
- Fully Assembled and Tested

MAX16138 EV Kit Files

FILE	DESCRIPTION
max16138_evkit_p1_Schematic.pdf	EVKIT schematic
MAX16138_EVKIT_P1_MARKETING_PCB.PDF	EVKIT PCB LAYOUT
build_bom_max16138_evkit_p1.csv	EVKIT Bill of Materials
max16138_evkit_p1_odb.tgz	EVKIT ODB

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

EV Kit Photo
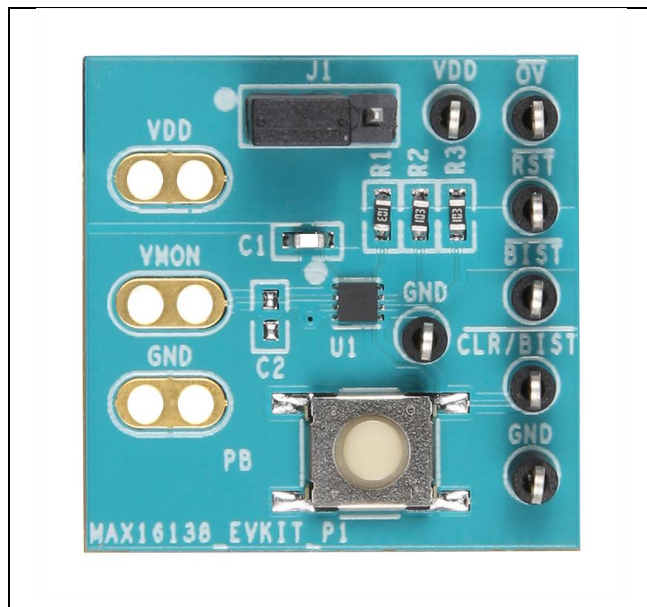
Quick Start

Required Equipment

- MAX16138 EV kit
- Two 5V DC power supplies
- One Digital Multimeter (DMM)
- 4-Channel Scope Oscilloscope

Procedure

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

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

1. Verify that the shunt is installed onto its respective default position for jumper J1 (*Table 1*).
2. Connect one of the 5V power supply between the VDD and GND terminal posts.
3. Connect the other 5V power supply between the VMON and GND terminal posts.
4. Connect the DMM between VMON and GND posts.
5. Connect channel 1 probe of the oscilloscope to RST, channel 2 of the oscilloscope to OV, channel 3 of the oscilloscope to CLR/BIST, and channel 4 of the oscilloscope to BIST of the EV kit.
6. Turn on the power supply.
7. Manually increase the power supply connected from VDD to GND to 5V.
8. Manually increase the power supply connected from VMON to GND to 0.85V. Verify RST, OV and CLR/BIST trace on the scope pulled up to 5V.
9. Slowly Increase VMON voltage while monitoring the voltage on the DMM. When VMON reading on DMM is past 0.884V, RST, OV, should assert low while CLR/BIST and BIST are pulled up to 5V pull-up supply.
10. Slowly bring VMON voltage below the 0.884V and verify that RST deasserts while OV is latched low.
11. Push the PB switch momentarily to ground and verify OV latched is cleared. The EV kit is ready to for further evaluation. Refer to device datasheet for specification and functional detail.

Table 1. Jumper J1 Connection Guide

JUMPER	SHUNT POSITION	FEATURE
J1	1-2*	V_{NR} = VDD (through pull-up resistor R1). BIST is completed without the device pulling RST low when performing BIST during normal operation.
	2-3	V_{NR} = GND (through pull-down resistor R2). BIST is completed with the device pulling RST low when performing BIST during normal operation.

*Default Jumper Position.

Detailed Description

The MAX16138 evaluation kit (EV kit) evaluates the MAX1613800/VY, a 0.7% accuracy, window-detector supervisory reset IC with BIST (Built-In Self Test) capability and overvoltage fault output. OV, RST and BIST are open-drain outputs and are pulled up to VDD with external resistors. An optional capacitor (C2) provides additional filtering capability at IN and a jumper (J1) facilitates configuration of BIST during normal operation.

CLR/BIST **Push-Button Switch**

The EV kit includes a push button switch to clear overvoltage latched output when the input exceeds the overvoltage threshold. The overvoltage fault clears on the falling edge of the CLR/BIST. In addition, the push-button switch allows the MAX16138 to perform BIST operation during normal operation when CLR/BIST is pulled low for more than 150µs (min). See *Table 1* and refer to the device datasheet for more detail.

NR Jumper (J1)

Jumper (J1) allows the MAX16138 to perform BIST either with pulling RST low or without pulling RST low during normal operation after power-up. See *Table 1* for jumper settings.
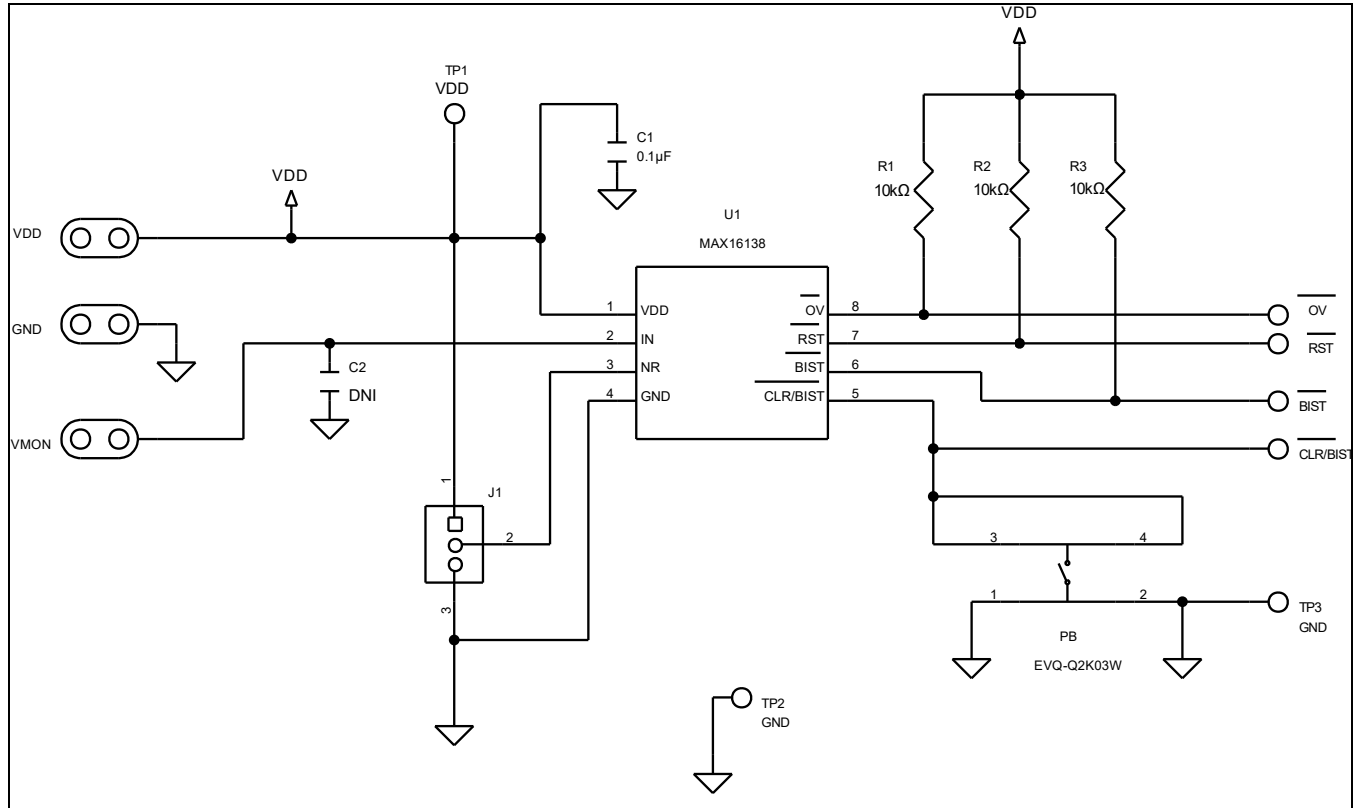
Ordering Information

PART	TYPE
MAX16138EVKIT#	EV Kit

#Denotes RoHS-compliant.

MAX16138 EV Kit Bill of Materials

| PART	QTY	DESCRIPTION
C1	1	0.1µF ±10%, 25V X7R ceramic capacitors (0603) Murata: GRM188R71E104KA01 TDK: C1608X7R1E104K080AA; C0603C104K3RAC
C2	1	Not installed, capacitor (0603)
VDD, VMON, GND	3	20G tinned copper bus wire from / into "U" shaped loops (0.25in off the PCB)
VDD, OV, RST, BIST, CLR/BIST, GND (X2)	7	Test points Vero Technologies
J1	1	3-pin headers, 0.1in centers
PB	1	15V, 20mA 100Ω SPST push-button switch Panasonic: EVQ-Q2K03W
R1-R3	1	10kΩ ±5% (0603)
U1	1	MAX1613800/VY+
-	1	Shunts
-	1	PCB: MAX16138 EVALUATION KIT

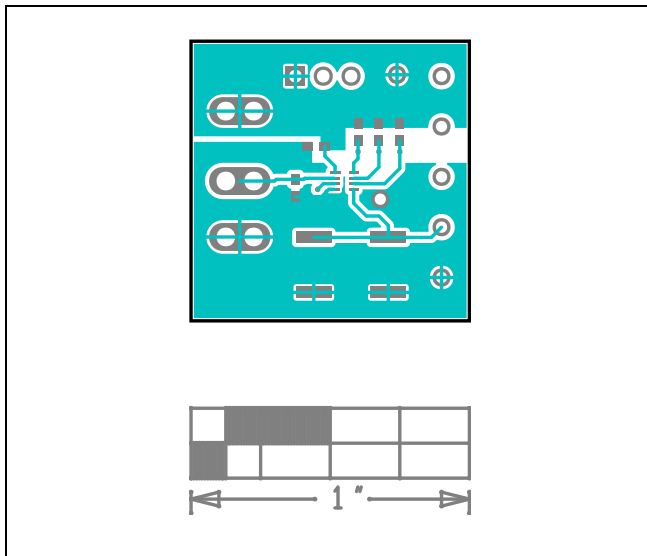## MAX16138 EV Kit Schematic

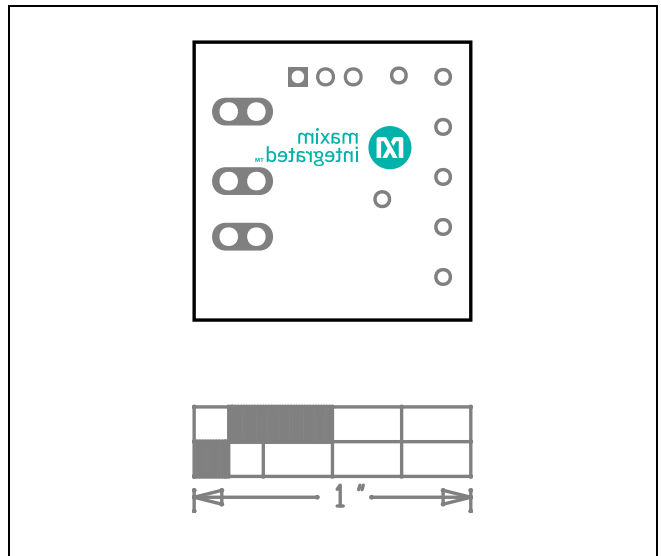## MAX16138 EV Kit PCB Layout
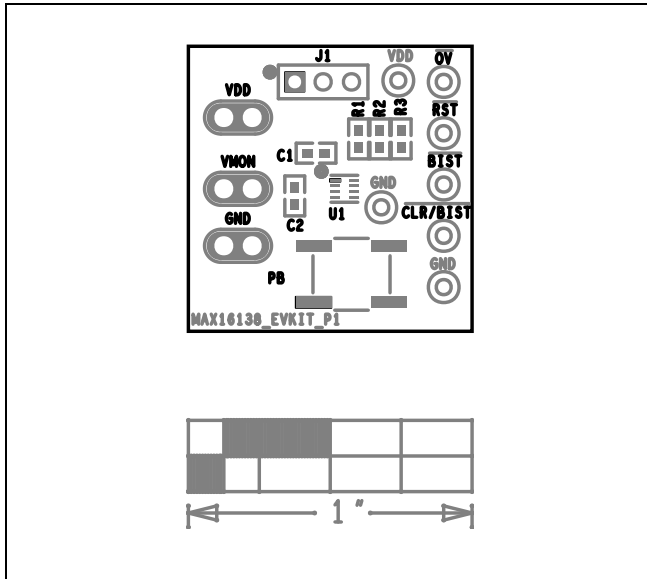
MAX16138 EV Kit PCB Layout—Top Silkscreen
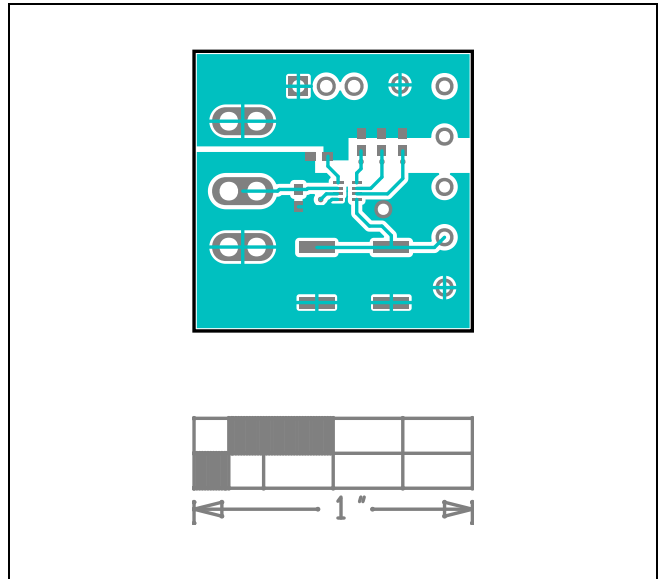
MAX16138 EV Kit PCB Layout—Top Layer

MAX16138 EV Kit PCB Layout—Bottom Layer

MAX16138 EV Kit PCB Layout—Bottom Silkscreen

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	3/22	Initial release	—
1	4/22	Added EV kit photo	1