



# MAX16913A Evaluation Kit

## General Description

The MAX16913A evaluation kit (EV kit) is a fully assembled and tested surface-mount circuit board that evaluates the MAX16913A high-voltage, high-side current-sense switches. The EV kit operates from a DC supply voltage from 5V to 18V. The EV kit demonstrates the device's open-drain fault signals ( $\overline{OL}$  and  $\overline{SC}$ ), open-load threshold setting input (OLT), and shutdown function (SHDN).

The MAX16913A EV kit can also be used to evaluate the MAX16913, which features an internally set open-load threshold. To evaluate the MAX16913, request a free sample of the MAX16913GEE+ when ordering the MAX16913A EV kit.

## Features

- ◆ 5V to 18V Input Range
- ◆ Tolerates Inputs Up to 42V
- ◆ Resistor-Adjustable Open-Load Threshold
- ◆ Open-Load Threshold Setting Input (OLT, MAX16913A only)
- ◆ Open-Drain, Open-Load Indicator Output ( $\overline{OL}$ )
- ◆ Open-Drain, Short-Circuit Indicator Output ( $\overline{SC}$ )
- ◆ Lead(Pb)-Free and RoHS Compliant
- ◆ Fully Assembled and Tested

## Ordering Information

PART	TYPE
MAX16913AEVKIT+	EV Kit

+Denotes lead(Pb)-free and RoHS compliant.

## Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	0.01 $\mu$ F $\pm$ 10%, 100V X7R ceramic capacitor (0805) Murata GRM21BR72A103KA TDK C2012X7R2A103K
C2, C5	2	100 $\mu$ F $\pm$ 10%, 63V electrolytic capacitors (10mm x 10.2mm) SANYO 63CE100PC Panasonic EEEFK1J101P
C3, C6	2	0.1 $\mu$ F $\pm$ 10%, 100V X7R ceramic capacitors (0603) Murata GRM188R72A104KA
C4	1	2.2 $\mu$ F $\pm$ 10%, 50V X7R ceramic capacitor (1206) Murata GRM31CR71H225K KEMET C1206C225K5RACTU
D1	1	1A diode (SMA) Fairchild S1G Vishay S1G
IN, REF, SENS	3	Miniature test points
JU1, JU4	2	2-pin headers, 0.1in centers
JU2	1	3-pin header, 0.1in centers

DESIGNATION	QTY	DESCRIPTION
JU3	0	Not installed, 2-pin header, 0.1in centers
LED1	1	Yellow LED (0805)
LED2	1	Red LED (0805)
R1	1	1 $\Omega$ $\pm$ 1% sense resistor (0805) IRC LVC-LVC0805LF-1R00-F Vishay L0805M1R00FST
R2	1	10k $\Omega$ $\pm$ 5% resistor (0805)
R3	1	464k $\Omega$ $\pm$ 1% resistor (0805)
R4	1	100k $\Omega$ $\pm$ 1% resistor (0805)
R5	1	115k $\Omega$ $\pm$ 1% resistor (0805)
R6, R7	2	1k $\Omega$ $\pm$ 5% resistors (0805)
U1	1	Remote antenna current-sense amplifier (16 QSOP) Maxim MAX16913AGEE+
U2	1	5V linear regulator (8 SO-EP*) Maxim MAX15006BASA+
—	1	PCB: MAX16913A Evaluation Kit+

\*EP = Exposed pad.

Evaluates: MAX16913/MAX16913A

# MAX16913A Evaluation Kit

## Component Suppliers

SUPPLIER	PHONE	WEBSITE
Fairchild Semiconductor	888-522-5372	www.fairchildsemi.com
KEMET Corp.	864-963-6300	www.kemet.com
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
Panasonic Corp.	800-344-2112	www.panasonic.com
SANYO Semiconductor (U.S.A.) Corp.	201-825-8080	http://semicon.us.sanyo.com
TDK Corp.	847-803-6100	www.component.tdk.com
Vishay	402-563-6866	www.vishay.com

**Note:** Indicate that you are using the MAX16913/MAX16913A when contacting these component suppliers.

## Quick Start

### Recommended Equipment

Before beginning, the following equipment is needed:

- 18V power supply
- Load
- Voltmeter

### Procedure

The MAX16913A EV kit is fully assembled and tested. Follow the steps below to verify board operation.

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

- 1) Verify that shunts are installed on jumpers JU1 and JU4.
- 2) Verify that the shunt on jumper JU2 is shorting pins 2-3.
- 3) Connect the power supply across the VIN and GND pads.
- 4) Connect the load across the OUT and GND pads.
- 5) Configure the power supply for 10V.
- 6) Configure the load for 20mA.
- 7) Enable the power supply then enable the load.
- 8) Verify that AOUT is approximately 0.66V.

## Detailed Description of Hardware

The MAX16913A evaluation kit (EV kit) evaluates the MAX16913A high-voltage, high-side current-sense switches. The EV kit operates from a DC supply voltage from 5V to 18V. The EV kit demonstrates the device's open-drain fault signals ( $\overline{OL}$  and  $\overline{SC}$ ), open-load threshold setting input (OLT), and shutdown function (SHDN).

The MAX16913A EV kit provides LED1 and LED2 to facilitate the monitoring of the open-load and short-circuit open-drain fault signals, respectively. The open-load threshold setting input is configurable for two possible settings using jumper JU2.

An on-board LDO (U2) is provided to support single-supply evaluation. The LDO is powered by the input supply voltage (VIN) and provides a 5V output (LDO), used to source the on-board indicator LEDs.

The EV kit can also be used to evaluate the MAX16913, which features an internally set open-load threshold. See the *Evaluating the MAX16913* section.

### Shutdown (JU1)

The MAX16913A EV kit provides jumper JU1 to configure the devices shutdown pin (SHDN). See Table 1.

**Table 1. Jumper JU1 Functions**

SHUNT POSITION	SHDN PIN	DESCRIPTION
Installed*	Connected to GND	Device enabled
Not installed	Connected to LDO (5V) through R2	Device disabled

\*Default position.

# MAX16913A Evaluation Kit

**Table 2. Jumper JU2 Functions**

SHUNT POSITION	OPEN-LOAD THRESHOLD (mA)
1-2	10
2-3*	15

\*Default position.

**Table 3. Jumper JU4 Function**

SHUNT POSITION	DESCRIPTION
Installed*	Indicator LEDs (LED1 and LED2) used to monitor fault signals
Not installed	Indicator LEDs (LED1 and LED2) not used. $\overline{OL}$ and $\overline{SC}$ pads used to monitor fault signals.

\*Default position.

**Table 4. Jumper JU3 Function (2-Pin Header Not Installed)**

SHUNT POSITION	OLT PIN	DESCRIPTION
Installed	Connected to GND	EV kit configured to evaluate the MAX16913
Not installed	Connected to resistor-divider	EV kit configured to evaluate the MAX16913A

## Open-Load Threshold (JU2)

The open-load threshold setting is configured by the resistor-divider between the REF and OLT device pins. The MAX16913A EV kit provides for two threshold settings that are selected by configuring jumper JU2. See Table 2.

## Open-Drain Fault Signals ( $\overline{OL}$ , $\overline{SC}$ )

The MAX16913A EV kit includes LED1 and LED2 to provide visual monitoring of the open-load and short-circuit fault signals. LED1 monitors the open-load ( $\overline{OL}$ ) signal and LED2 monitors the short-circuit ( $\overline{SC}$ ) signal. Both LED networks are driven by the on-board LDO voltage (5V). To monitor the indicator outputs by external means, remove the shunt from jumper JU4 and connect the monitoring system to the  $\overline{OL}$  and  $\overline{SC}$  pads. Ensure that the monitoring system provides pullup resistors on the open-drain indicator output pins,  $\overline{OL}$  and  $\overline{SC}$ . See Table 3.

## Evaluating the MAX16913

The MAX16913A EV kit can also be used to evaluate the MAX16913 device. The open-load threshold for the MAX16913 device is internally set. As such, when evaluating the MAX16913 device the OLT resistor-divider network is not needed and jumper JU3 should be installed and configured with a shunt. See Table 4.



# MAX16913A Evaluation Kit

Evaluates: MAX16913/MAX16913A

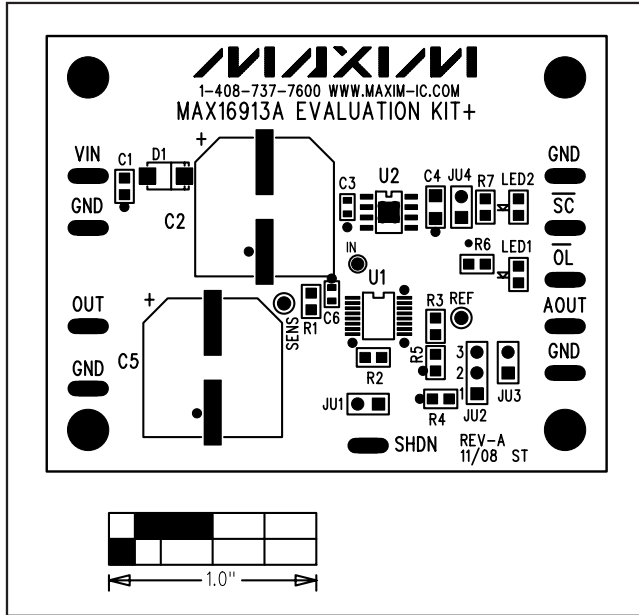


Figure 2. MAX16913A EV Kit Component Placement Guide—Component Side

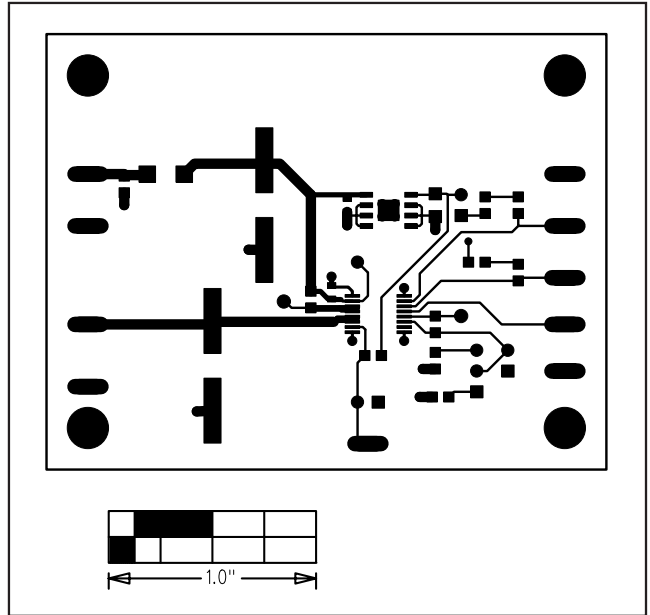


Figure 3. MAX16913A EV Kit PCB Layout—Component Side

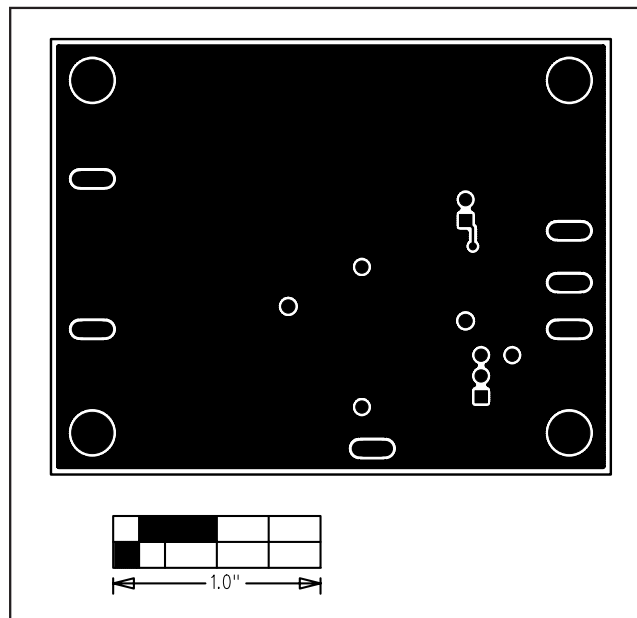


Figure 4. MAX16913A EV Kit PCB Layout—Solder Side

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