# MAX14738/MAX14739 Evaluation Kit

# Evaluates: MAX14738, MAX14739

## General Description

The MAX14738/MAX14739 evaluation kit (EV kit) is a fully assembled and tested circuit board that demonstrates the functionality of the MAX14738/MAX14739 overvoltage protection (OVP) devices.

## Features

- Evaluates Overvoltage Protection
- Allows User-Setting of OVLO Voltage
  - Jump to Ground to Use Internal Setting
  - 1MΩ Resistor and 500kΩ Potentiometer Resistive-Divider Allows Variable OVLO Voltage
- Test Points at Every Voltage Pin for Easy Measurements
- Fully Assembled and Tested

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

## Quick Start

### Required Equipment

Before beginning, the following equipment is needed:

- MAX14738/MAX14739 EV kit
- Power supply capable of supplying up to 36V at 3A
- DMM
- Flathead screwdriver (optional)

### Procedure

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

1) Verify that the shunt on jumper (J1) is not installed.
2) Adjust the potentiometer (a small screwdriver may be helpful for this) to set the OVLO threshold voltage to the desired value.
   a) The OVLO threshold is determined by $V_{IN\_OVLO}$ = 1.22 x (1 + 1MΩ/R2).
   b) The resistance of R2 can be measured across the leads of J1.
3) Apply a voltage between 2.5V and the set OVLO threshold to $V_{IN}$ and use the DMM to observe that $V_{OUT}$ follows $V_{IN}$.
4) Raise $V_{IN}$ beyond the OVLO threshold and observe that $V_{OUT}$ goes to 0V.
5) Short J1 to use the built in OVLO threshold.
6) Repeat steps 3 and 4.

*19-8615; Rev 0; 8/16*

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## Detailed Description of Hardware

The MAX14738/MAX14739 EV kit is a fully assembled and tested circuit board that demonstrates the MAX14738/MAX14739 OVP devices. The MAX14738/MAX14739 OVPs are compact, high-current devices ideal for use in portable applications. The MAX14738/MAX14739 provide an internal overvoltage threshold (OVLO) of 6.8V and 10V, respectively. A jumper (J1) allows a user to switch between using the internal OVLO and using a potentiometer to select the desired threshold.

### OVLO Input

The MAX14738/MAX14739 feature the flexibility to use an internal OVLO threshold or to set the threshold with an external resistive divider. When the input voltage exceeds this threshold, the device output disconnects from the input to protect a load from high voltages.

To use the internal threshold, install J1. This connects the OVLO bump to ground and signals the device to use its internal threshold value. To use an externally set threshold, remove J1 so the resistive divider formed by R1 and R2 determines the voltage at OVLO. The EV kit fixes R1 = 1MΩ and includes a 500kΩ multi-turn potentiometer for R2. This allows for setting the threshold anywhere within the range of 4V to 20V.

The precise threshold value can be determined from the following formula:

$$V_{IN\_OVLO} = V_{OVLO\_THRESH}(1 + R1/R2)$$

## Table 1. Jumper Description

| JUMPER | SHUNT POSTION | DESCRIPTION |
|---|---|---|
| J1 | Installed | Connects the B3 bump of MAX14738/MAX14739 to GND to use the internal OVLO threshold |
| | Not installed* | The OVLO threshold is set by an externally controlled resistive divider |

**Denotes default position.*

## Table 2. Test Point Assignment

| TP | BUMP | SIGNAL |
|---|---|---|
| 1 | B1, B2 | $V_{IN}$ |
| 2 | A3 | GND |
| 3 | A1, A2 | $V_{OUT}$ |
| 4 | A3 | GND |
| 5 | B3 | $V_{OVLO\_SET}$ |
| 6 | A3 | GND |

## Component Suppliers

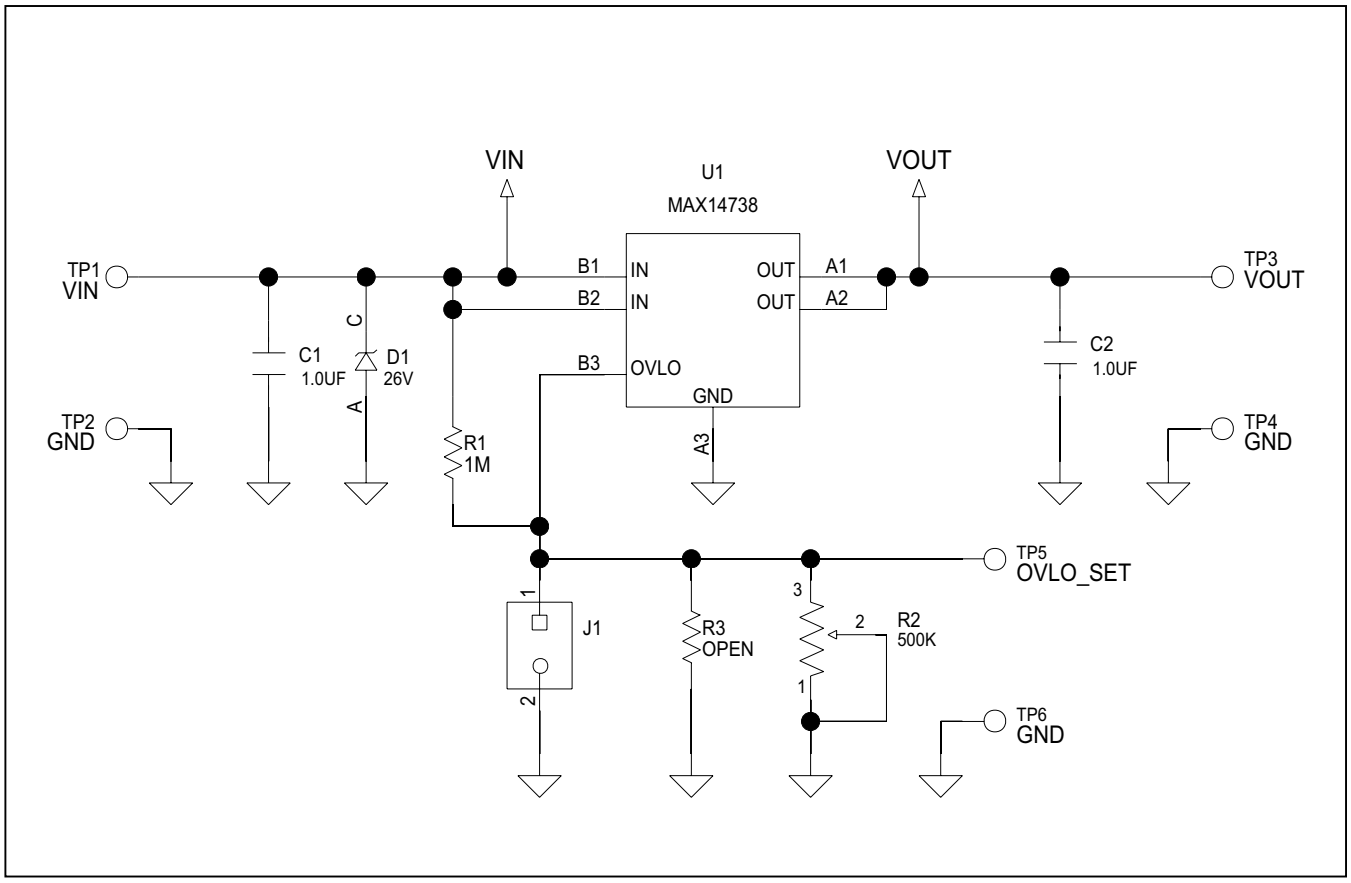
| SUPPLIER | WEBSITE |
|---|---|
| Taiyo Yuden | www.t-yuden.com |
| Panasonic | www.industrial.panasonic.com |
| Sullins Electronics Corp. | www.sullenselectronics.com |
| Bourns | www.bourns.com |
| Keystone Electronics Corp. | www.keyelco.com |
| Micro Commercial Components | www.mccsemi.com |

***Note:*** *Indicate that you are using the MAX14738/MAX14739 when contacting these component suppliers.*

## MAX14738 EV Bill of Materials

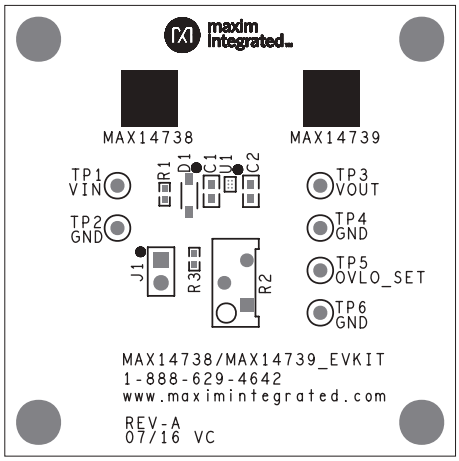
| PART | QTY | DESCRIPTION |
|---|---|---|
| C1, C2 | 2 | 1µF ±10%, 35V X5R ceramic capacitors (0603) Taiyo Yuden GMK107BJ05KA |
| D1 | 1 | 26V standoff, 42.1V clamping TVS Diode (SOD-123FL) Micro Commercial SMF26A-TP |
| J1 | 1 | 2-pin single-row headers |
| R1 | 1 | 1MΩ ±1% resistor (0402) Panasonic ERJ-2RKF1004 |
| R2 | 1 | 500kΩ variable resistor through-hole Bourns 3296Y-1-504LF |
| R3 | 0 | User-installed resistor (0402) |
| TP2, TP4, TP6 | 3 | Red test points |
| TP1, TP3 | 2 | Black test points |
| TP5 | 1 | Orange test point |

## MAX14738 EV Schematic

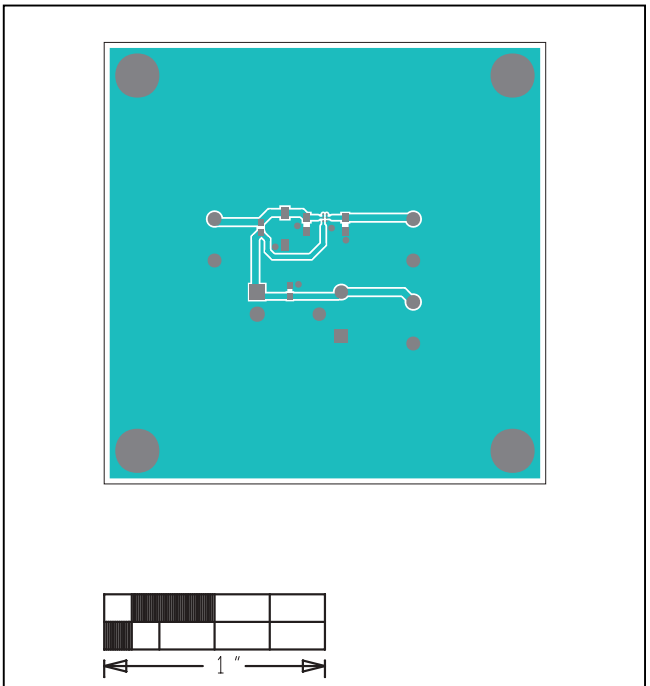



*MAX14738 EV Kit—Schematic*

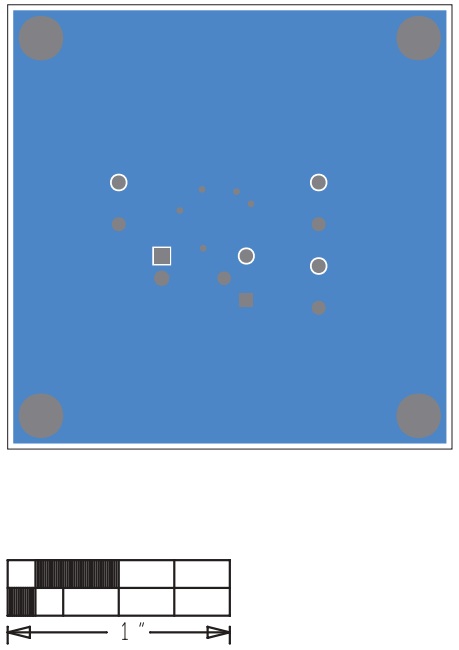
## MAX14738 EV PCB Layout




*MAX14738 EV Kit—Top Silkscreen*




*MAX14738 EV Kit—Top*




*MAX14738 EV Kit—Bottom*

## Ordering Information

| PART | TYPE |
|---|---|
| MAX14738EVKIT# | EV Kit |
| MAX14739EVKIT# | EV Kit |

## Revision History

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