

## General Description

The MAX14699 evaluation kit (EV kit) is a fully assembled and tested circuit board that demonstrates the MAX14699 high-accuracy, surge-protected overvoltage protector device. The EV kit comes with the MAX14699EWC+ installed.

## Features

- 2.1V to 28V Operating Voltage Range
- $\overline{\text{ACOK}}$  LED Reading
- Proven PCB Layout
- Fully Assembled and Tested

## EV Kit Contents

- EV Kit Board Containing a MAX14699

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

## Quick Start

### Required Equipment

- MAX14699 EV kit
- 15V power supply
- Multimeter

### Procedure

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

- 1) Connect 5V on IN. Verify OUT is 5V and LED1 is on.
- 2) Install shunt on JU1. The OUT voltage goes down.
- 3) Remove shunt on JU1. OUT is 5V.
- 4) Increase IN voltage. Verify OUT voltage follows IN voltage.
- 5) The switch turns off, OUT voltage goes down, and LED1 turns off when IN voltage goes up to about 13.75V.

## Detailed Description

The MAX14699 EV kit is a fully assembled and tested circuit board demonstrating the MAX14699 high accuracy, surge protected overvoltage protector device in a 12-bump wafer-level package (WLP).

### LED Indicator

The EV kit features LED1 that indicates  $\overline{\text{ACOK}}$  is asserted.

### Enable Pin

Use jumper JU1 and JU2 to set  $\overline{\text{EN}}$  pin connection. ([Table 1](#))

### OVLO

Use jumper JU3 to choose OVLO pin connection. ([Table 2](#))

### Digital Voltage

Use jumper JU4 to power digital voltage from  $V_{\text{IN}}$ . ([Table 3](#))

**Table 1. JU1, JU2 Jumper Setting**

| JUMPER | SHUNT POSITION | DESCRIPTION   |
|--------|----------------|---|
| JU1    | Installed      | $\overline{EN}$ is pulled up.                           |
|        | Not installed* | $\overline{EN}$ is pulled down.                         |
| JU2    | Installed      | $\overline{EN}$ is connected to TP8 (external control). |
|        | Not installed* | $\overline{EN}$ is not connected to TP8.                |

\*Default position.

**Table 2. JU3 Jumper Setting**

| JUMPER | SHUNT POSITION | DESCRIPTION  |
|--------|----------------|--|
| JU3    | Installed*     | OVLO is connected to ground. Internal OVLO threshold is used.                      |
|        | Not installed  | OVLO is connected to external resistor divider. Adjustable OVLO threshold is used. |

\*Default position.

**Table 3. JU4 Jumper Setting**

| JUMPER | SHUNT POSITION | DESCRIPTION   |
|--------|----------------|---|
| JU4    | Installed*     | U2 is powered from $V_{IN}$ .   |
|        | Not installed  | U2 is not powered from $V_{IN}$ . Please disconnect U2 from $V_{IN}$ when testing high/surge voltage. |

\*Default position.

## Ordering Information

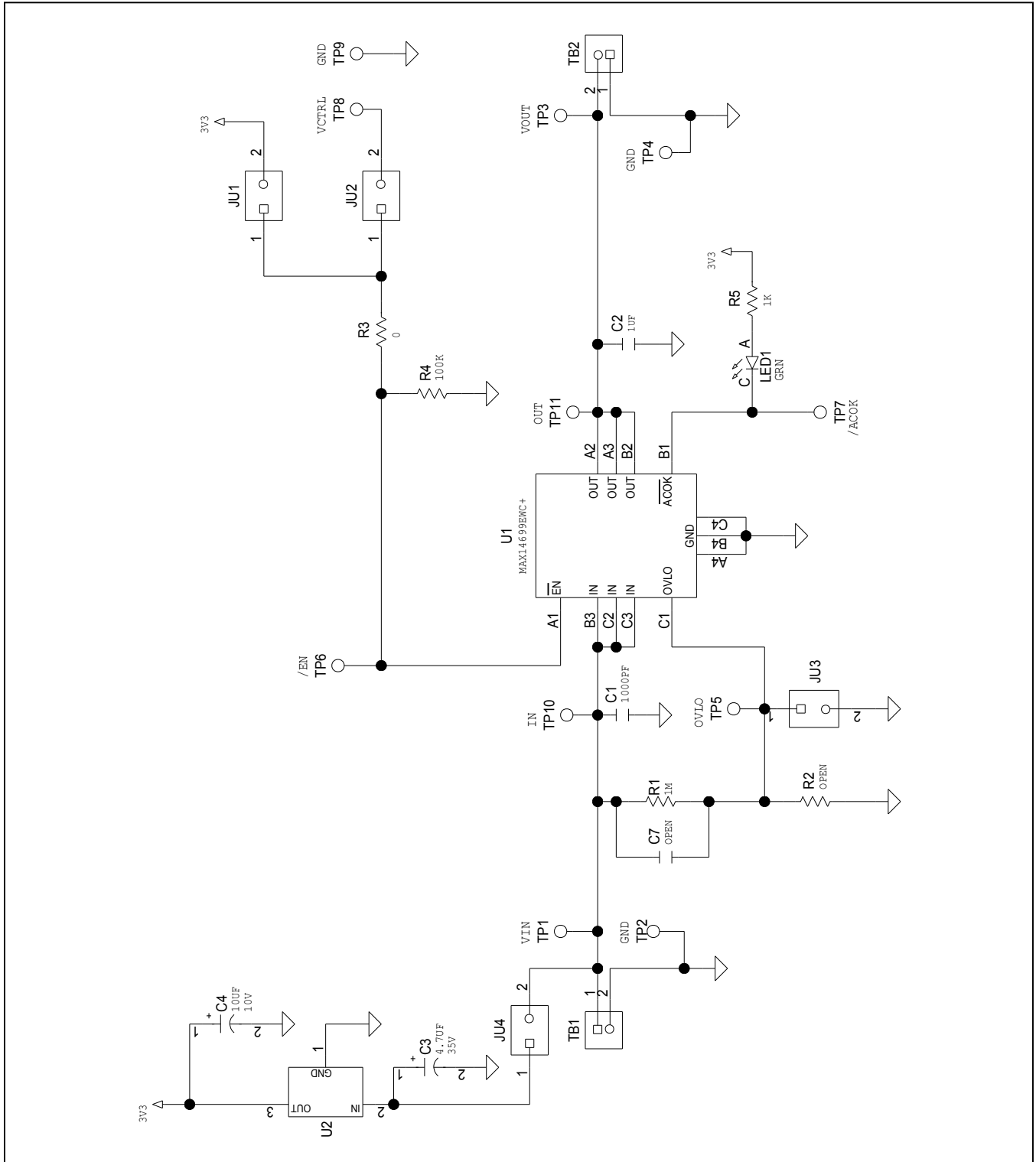
| PART           | TYPE  |
|----------------|-------|
| MAX14699EVKIT# | EVKIT |

#Denotes RoHS compliant.

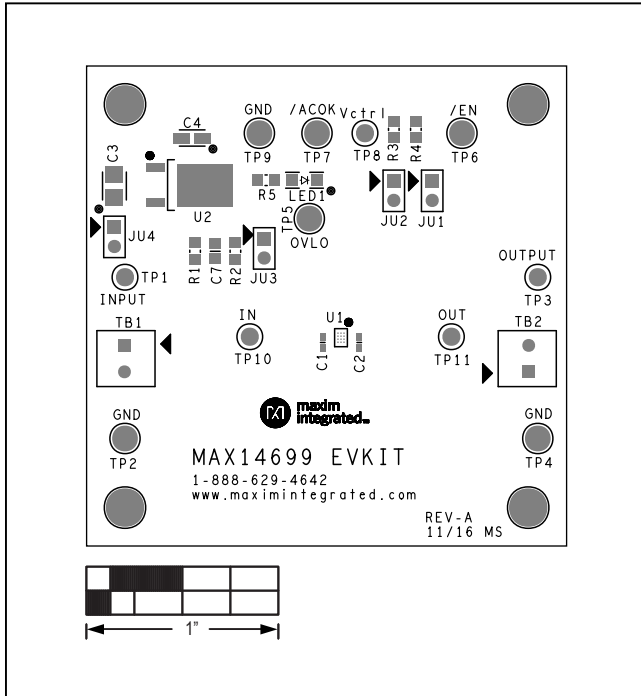
MAX14699 EV Kit Bill of Materials

| ITEM  | REF_DES                   | DN/DNP | QTY | MFG PART #   | MANUFACTURER                           | VALUE        | DESCRIPTION  | COMMENTS |
|-------|---------------------------|--------|-----|--|--|--------------|--|----------|
| 1     | C1                        | -      | 1   | 06035C102KAT2A   | AVX                                    | 1000PF       | CAPACITOR; SMT (0603); CERAMIC CHIP; 1000PF; 50V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R  |          |
| 2     | C2                        | -      | 1   | C0603C105K3PAC;<br>GRM188R61E105KA12;<br>06033D105KAT2A              | KEMET; MURATA; AVX                     | 1UF          | CAPACITOR; SMT (0603); CERAMIC CHIP; 1UF; 25V; TOL=10%; TG=-55 DEGC TO +85 DEGC;   |          |
| 3     | C3                        | -      | 1   | TAJ475M035RNU  | AVX                                    | 4.7UF        | CAPACITOR; SMT (3528); TANTALUM CHIP; 4.7UF; 35V; TOL=20%; TG=-55 DEGC TO +125 DEGC; AUTO  |          |
| 4     | C4                        | -      | 1   | TPSA106M010R0900;<br>T491A106M010AT                                  | AVX; KEMET                             | 10UF         | CAPACITOR; SMT (3216); TANTALUM CHIP; 10UF; 10V; TOL=20%   |          |
| 5     | JU1-JU4                   | -      | 4   | 68001-202HLF   | FCI/CONNECT                            | 68001-202HLF | CONNECTOR; MALE; THROUGH HOLE; BERGSTIK BREAKAWAY HEADER; STRAIGHT; 2PINS  |          |
| 6     | LED1                      | -      | 1   | LG N971-KN-1   | OSRAM                                  | LG N971-KN-1 | DIODE; LED; SMT (1206); PV=2.6V; IF=0.025A; -30 DEGC TO +85 DEGC; GREEN  |          |
| 7     | R1                        | -      | 1   | RCRW08051M00FK;<br>RC0805FR-071ML                                    | VISHAY DALE/YAGEO PHICOMP              | 1M           | RESISTOR; 0805; 1M; 1%; 100PPM; 0.125W; THICK FILM   |          |
| 8     | R3                        | -      | 1   | RC0805JR-070RL   | YAGEO/PHYCOMP                          | 0            | RESISTOR; 0805; 0 OHM; 5%; JUMPER; 0.125W; THICK FILM  |          |
| 9     | R4                        | -      | 1   | RCRW0805100KFK;<br>RK73H2ATTD1003;<br>ERJ-6ENF1003V                  | VISHAY DALE/KOA SPEER/PANASONIC        | 100K         | RESISTOR; 0805; 100K; 1%; 100PPM; 0.125W; THICK FILM   |          |
| 10    | R5                        | -      | 1   | RCRW08051K00FK;<br>ERJ-6ENF1001V;<br>MCR10EZH1001;<br>RC0805FR-071KL | VISHAY DALE; PANASONIC;<br>ROHM; YAGEO | 1K           | RESISTOR; 0805; 1K; 1%; 100PPM; 0.125W; THICK FILM   |          |
| 11    | SU1-SU4                   | -      | 4   | STC02SYAN  | SULLINS ELECTRONICS CORP.              | STC02SYAN    | TEST POINT; JUMPER; STR; TOTAL LENGTH=0.256IN; BLACK; INSULATION=PBT CONTACT=PHOSPHOR BRONZE; COPPER PLATED TIN OVERALL  |          |
| 12    | TB1, TB2                  | -      | 2   | 393570002  | MOLEX                                  | 393570002    | CONNECTOR; FEMALE; THROUGH HOLE; 0.3MM PITCH BEAU EUROSTYLE FIXED MOUNT PCB TERMINAL BLOCK; RIGHT ANGLE; 2PINS   |          |
| 13    | TP1, TP3, TP8, TP10, TP11 | -      | 5   | 5010   | KEYSTONE                               | N/A          | TESTPOINT WITH 1.80MM HOLE DIA, RED, MULTIPURPOSE;   |          |
| 14    | TP2, TP4, TP9             | -      | 3   | 5011   | KEYSTONE                               | N/A          | TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; BLACK;  |          |
| 15    | TP5-TP7                   | -      | 3   | 5013   | KEYSTONE                               | N/A          | PHOSPHOR BRONZE WIRE SILVER PLATE FINISH; TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; ORANGE; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH; |          |
| 16    | U1                        | -      | 1   | MAX14699EWC+   | MAXIM                                  | MAX14699EWC+ | EVKIT PART-IC; PROT; HIGH ACCURACY; SURGE-PROTECTED OVERVOLTAGE PROTECTOR; WLP12 1.98X1.28   |          |
| 17    | U2                        | -      | 1   | LD1086DT33   | ST MICROELECTRONICS                    | LD1086DT33   | IC; VREG; 1.5A FIXED LOW DROP POSITIVE VOLTAGE REGULATOR; DPAK   |          |
| 18    | C7                        | DNP    | 0   | N/A  | N/A                                    | OPEN         | PACKAGE OUTLINE 0805 NON-POLAR CAPACITOR   |          |
| 19    | R2                        | DNP    | 0   | N/A  | N/A                                    | OPEN         | PACKAGE OUTLINE 0805 RESISTOR  |          |
| 20    | PCB                       | -      | 1   | MAX14699   | MAXIM                                  | PCB          | PCB Board:MAX14699 EVALUATION KIT  |          |
| TOTAL |                           |        | 33  |  |  |              |  |          |

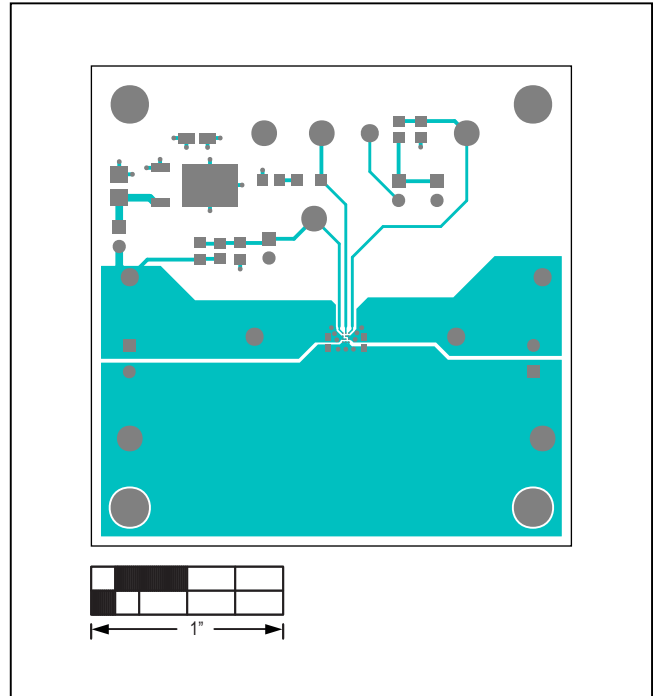
MAX14699 EV Kit Schematic



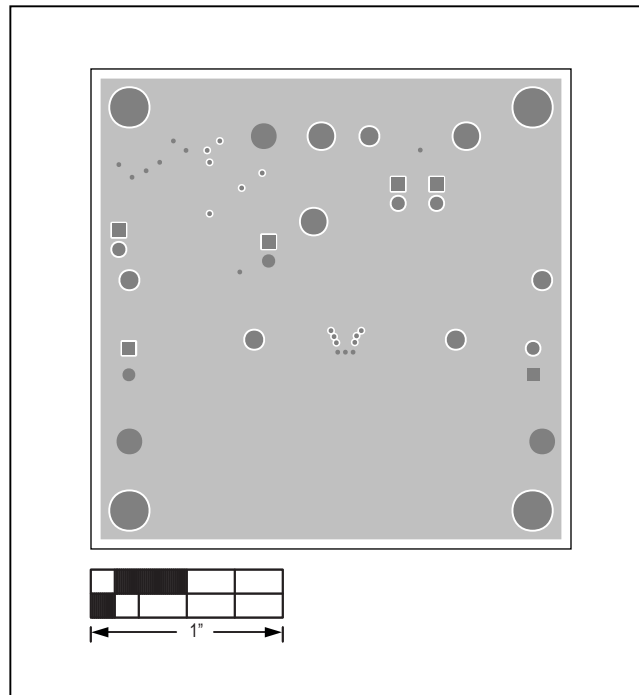
MAX14699 EV Kit PCB Layout Diagrams



MAX14699 EV Kit—Top Silkscreen

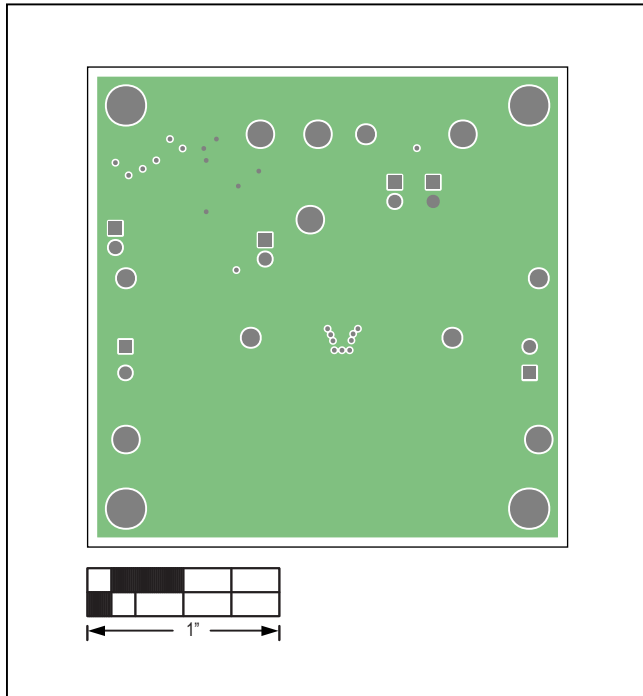


MAX14699 EV Kit—Top

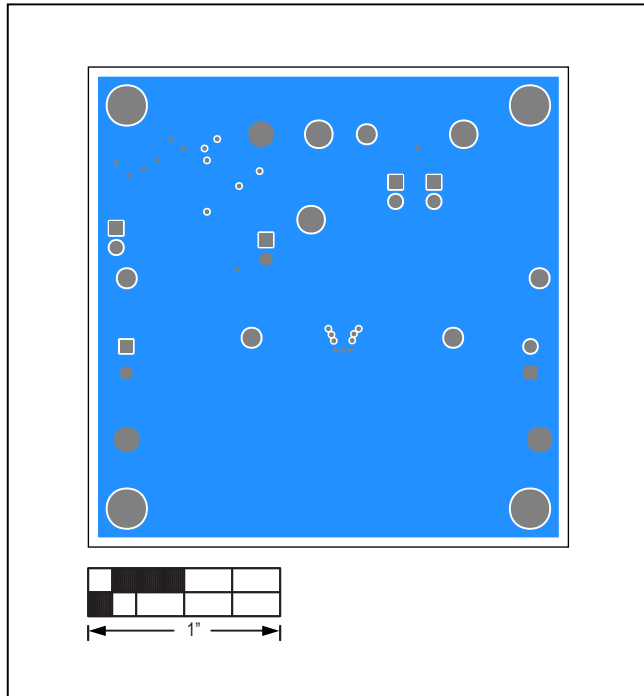


MAX14699 EV Kit—Layer 2 GND

MAX14699 EV Kit PCB Layout Diagrams (continued)



MAX14699 EV Kit—Layer 3 Power



MAX14699 EV Kit—Bottom

### Revision History

| REVISION NUMBER | REVISION DATE | DESCRIPTION     | PAGES CHANGED |
|-----------------|---------------|-----------------|---------------|
| 0               | 11/16         | Initial release | —             |

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