



# MAX8559 Evaluation Kit

Evaluates: MAX8559

## General Description

The MAX8559 evaluation kit (EV kit) is a fully assembled and tested surface-mount circuit board that contains two independent dual-output low-dropout (LDO) regulator circuits. The top circuit utilizes the TDFN package and is configured for outputs of 2.85V at 300mA and 1.8V at 300mA. The bottom circuit uses the UCSP™ package to minimize board space and is configured for 3.0V at 150mA and 2.85V at 150mA. Each circuit features two on-board shutdown controls, one for each regulator output. Pulling both shutdown controls low places the corresponding MAX8559 into a 0.01μA low-power shutdown mode.

## Component List

DESIGNATION	QTY	DESCRIPTION
C1, C4, C5	3	4.7μF, 6.3V X5R ceramic capacitors (0603) Murata GRM188R60J475KE19
C3, C8	2	0.01μF, 25V X7R ceramic capacitors (0402) Taiyo Yuden TMK105BJ103KV
C7, C9, C10	3	2.2μF, 6.3V X5R ceramic capacitors (0603) Murata GRM185R60J225K
SHDNA, SHDNB, SHDNA2, SHDNB2	4	3-pin headers
Shunts	4	Shunts
U1	1	MAX8559ETA (TDFN)
U2	1	MAX8559EBA (UCSP)
None	1	MAX8559 EV kit PC board

## Component Suppliers

SUPPLIER	PHONE	WEBSITE
Murata	814-237-1431	www.murata.com
Taiyo Yuden	408-573-4150	www.t-yuden.com

**Note:** Indicate that you are using the MAX8559 when contacting these component suppliers.

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## Features

- ◆ **Dual-Output Power Supply**  
MAX8559ETA: 2.85V at 300mA and 1.8V at 300mA  
MAX8559EBA: 3.0V at 150mA and 2.85V at 150mA
- ◆ **2.5V to 6V Input Supply Range**
- ◆ **Low-Noise (<40μV<sub>RMS</sub>) Outputs**
- ◆ **Individual On-Board Shutdown Control**
- ◆ **Surface-Mount Construction**
- ◆ **Fully Assembled and Tested**

## Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX8559EVKIT	0°C to +70°C	8 TDFN 8 UCSP

## Quick Start

### Recommended Equipment

- One variable DC power supply capable of supplying up to 6V at 0.8A
- Two voltmeters (DMM)

### Procedure (MAX8559ETA, TDFN Package)

The MAX8559 EV kit is fully assembled and tested. Follow the steps below to verify board operation:

- 1) Set the power supply to 3.6V.
- 2) Ensure the power supply is turned off. **Do not turn on the power supply until all connections are completed.**
- 3) Ensure shunts are placed across pins 2 and 3 of jumpers SHDNA and SHDNB on the MAX8559 EV kit.
- 4) Connect the positive output of the power supply to the VIN pad on the PC board and the negative output of the power supply to the GND pad.
- 5) Connect a voltmeter across the VOUTA pad on the PC board and the corresponding GND pad.
- 6) Connect a voltmeter across the VOUTB pad on the PC board and the corresponding GND pad.
- 7) Turn on the power supply.
- 8) Verify the voltage at VOUTA is 2.85V.
- 9) Verify the voltage at VOUTB is 1.8V.

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## Procedure (MAX8559EBA, UCSP Package)

The MAX8559 EV kit is fully assembled and tested. Follow the steps below to verify board operation:

- 1) Set the power supply to 3.6V.
- 2) Ensure the power supply is turned off. **Do not turn on the power supply until all connections are completed.**
- 3) Ensure shunts are placed across pins 2 and 3 of jumpers  $\overline{\text{SHDNA2}}$  and  $\overline{\text{SHDNB2}}$  on the MAX8559 EV kit.
- 4) Connect the positive output of the power supply to the VIN2 pad on the PC board and the negative output of the power supply to the GND2 pad.
- 5) Connect a voltmeter across the VOUTA2 pad on the PC board and the corresponding GND2 pad.
- 6) Connect a voltmeter across the VOUTB2 pad on the PC board and the corresponding GND2 pad.
- 7) Turn on the power supply.
- 8) Verify the voltage at VOUTA2 is 3.0V.
- 9) Verify the voltage at VOUTB2 is 2.85V.

## Detailed Description

The MAX8559 EV kit contains two separate LDO regulator circuits. Either circuit can be powered from a DC power supply with a 2.5V to 6V input range. The top and bottom circuits are separate from each other and do not share a common ground plane.

The top circuit (MAX8559ETA) provides two fixed output voltages (2.85V and 1.8V) at 300mA each. The TDFN package is 3mm x 3mm and allows 1.95W of power dissipation.  $\overline{\text{SHDNA}}$  and  $\overline{\text{SHDNB}}$  are wired out to jumpers for selection between VIN and GND.

The bottom circuit (MAX8559EBA) provides two fixed output voltages (3.0V and 2.85V) at 150mA each. This circuit is used to demonstrate the excellent low-noise performance of the MAX8559.  $\overline{\text{SHDNA}}$  and  $\overline{\text{SHDNB}}$  are wired out to jumpers for selection between VIN and GND.

### Shutdown Control

The MAX8559 has two  $\overline{\text{SHDN}}$  inputs. A logic low on  $\overline{\text{SHDNA}}$  shuts down regulator A, while a logic low on  $\overline{\text{SHDNB}}$  shuts down regulator B. If  $\overline{\text{SHDNA}}$  and  $\overline{\text{SHDNB}}$  are both low, both regulators and the internal reference are off and the supply current is reduced to 10nA. If either  $\overline{\text{SHDNA}}$  or  $\overline{\text{SHDNB}}$  is a logic high, the internal reference is on. See Table 1 and Table 2 for shunt positions.

**Table 1. Shutdown Selection (MAX8559ETA, TDFN Package)**

$\overline{\text{SHDNA}}$ JUMPER POSITION	$\overline{\text{SHDNA}}$	$\overline{\text{SHDNB}}$ JUMPER POSITION	$\overline{\text{SHDNB}}$	DESCRIPTION
1 and 2	Connected to GND	1 and 2	Connected to GND	Both regulators are shut down. Typical supply current is 10nA.
2 and 3	Connected to VIN	1 and 2	Connected to GND	Regulator A is enabled, regulator B is shut down.
1 and 2	Connected to GND	2 and 3	Connected to VIN	Regulator A is shut down, regulator B is enabled.
2 and 3*	Connected to VIN	2 and 3*	Connected to VIN	Both outputs are enabled.

\*Default configuration for  $\overline{\text{SHDNA}}$  and  $\overline{\text{SHDNB}}$  jumpers.

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**Table 2. Shutdown Selection (MAX8559EBA, UCSP Package)**

$\overline{\text{SHDNA2}}$ JUMPER POSITION	$\overline{\text{SHDNA}}$	$\overline{\text{SHDNB2}}$ JUMPER POSITION	$\overline{\text{SHDNB}}$	DESCRIPTION
1 and 2	Connected to GND2	1 and 2	Connected to GND2	Both outputs are shut down. Typical supply current is 10nA.
2 and 3	Connected to VIN2	1 and 2	Connected to GND2	Regulator A is enabled, regulator B is shut down.
1 and 2	Connected to GND2	2 and 3	Connected to VIN2	Regulator A is shut down, regulator B is enabled.
2 and 3*	Connected to VIN2	2 and 3*	Connected to VIN2	Both outputs are enabled.

\*Default configuration for  $\overline{\text{SHDNA2}}$  and  $\overline{\text{SHDNB2}}$  jumpers.

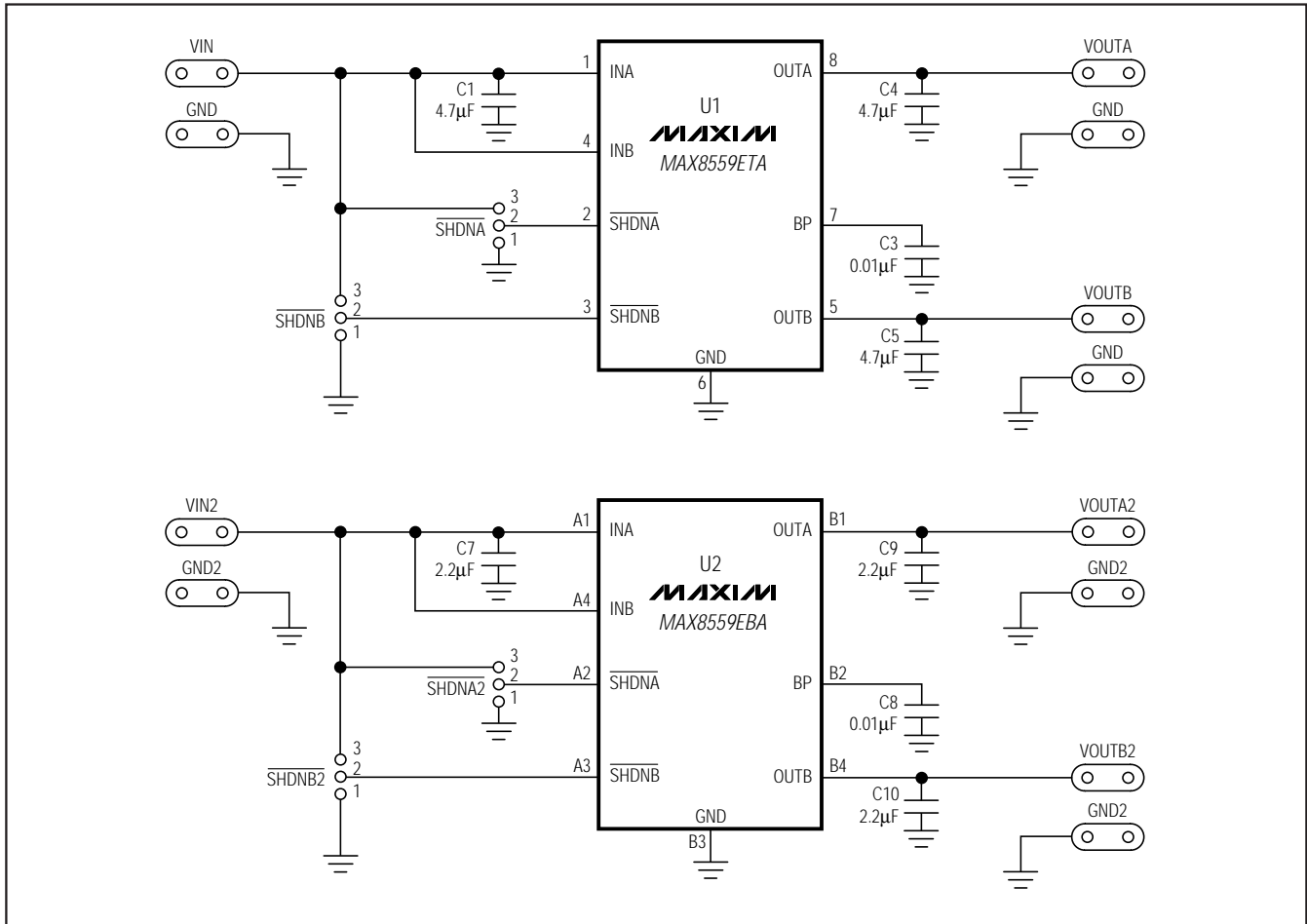


Figure 1. MAX8559 EV Kit Schematic

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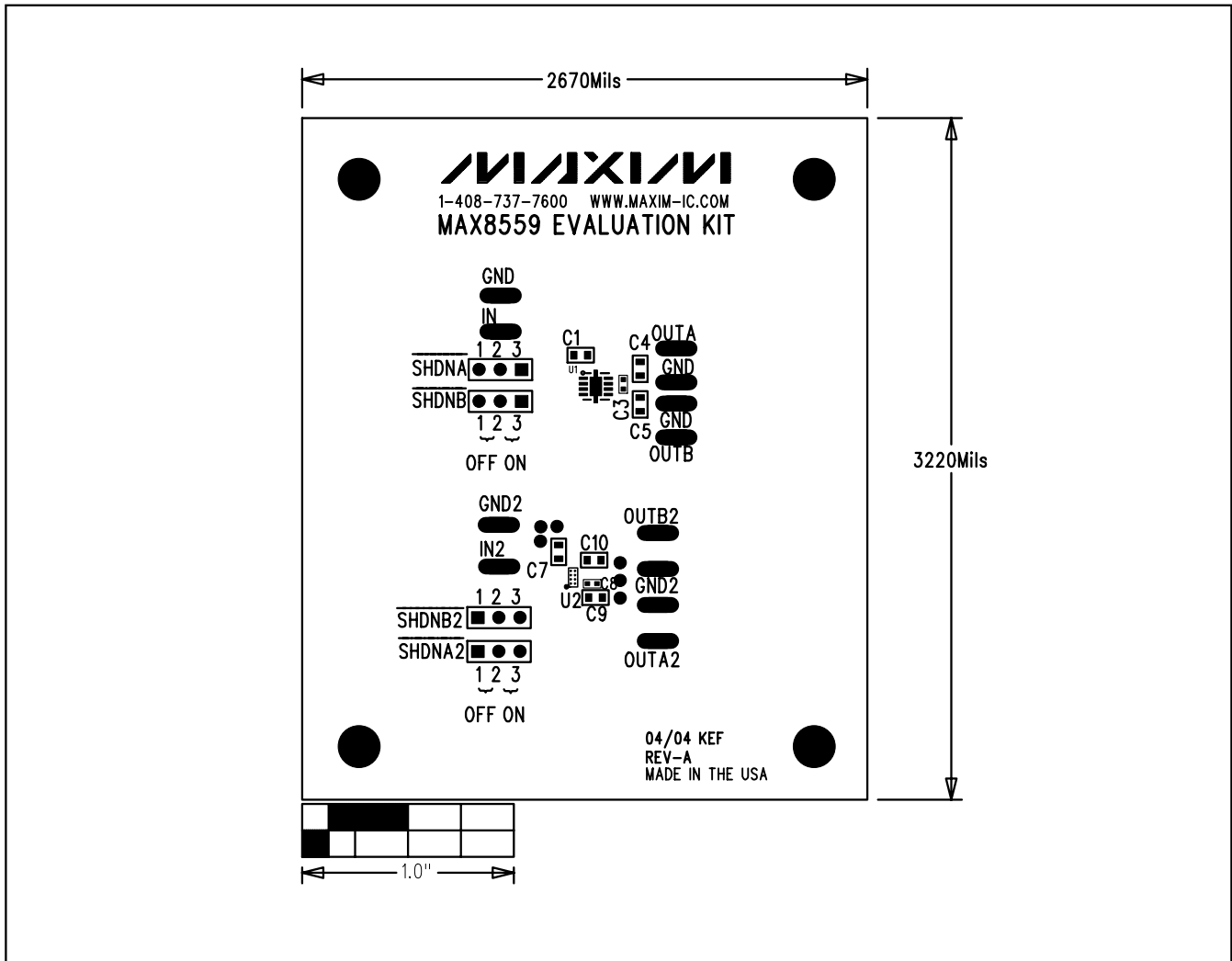


Figure 2. MAX8559 EV Kit Component Placement Guide—Component Side

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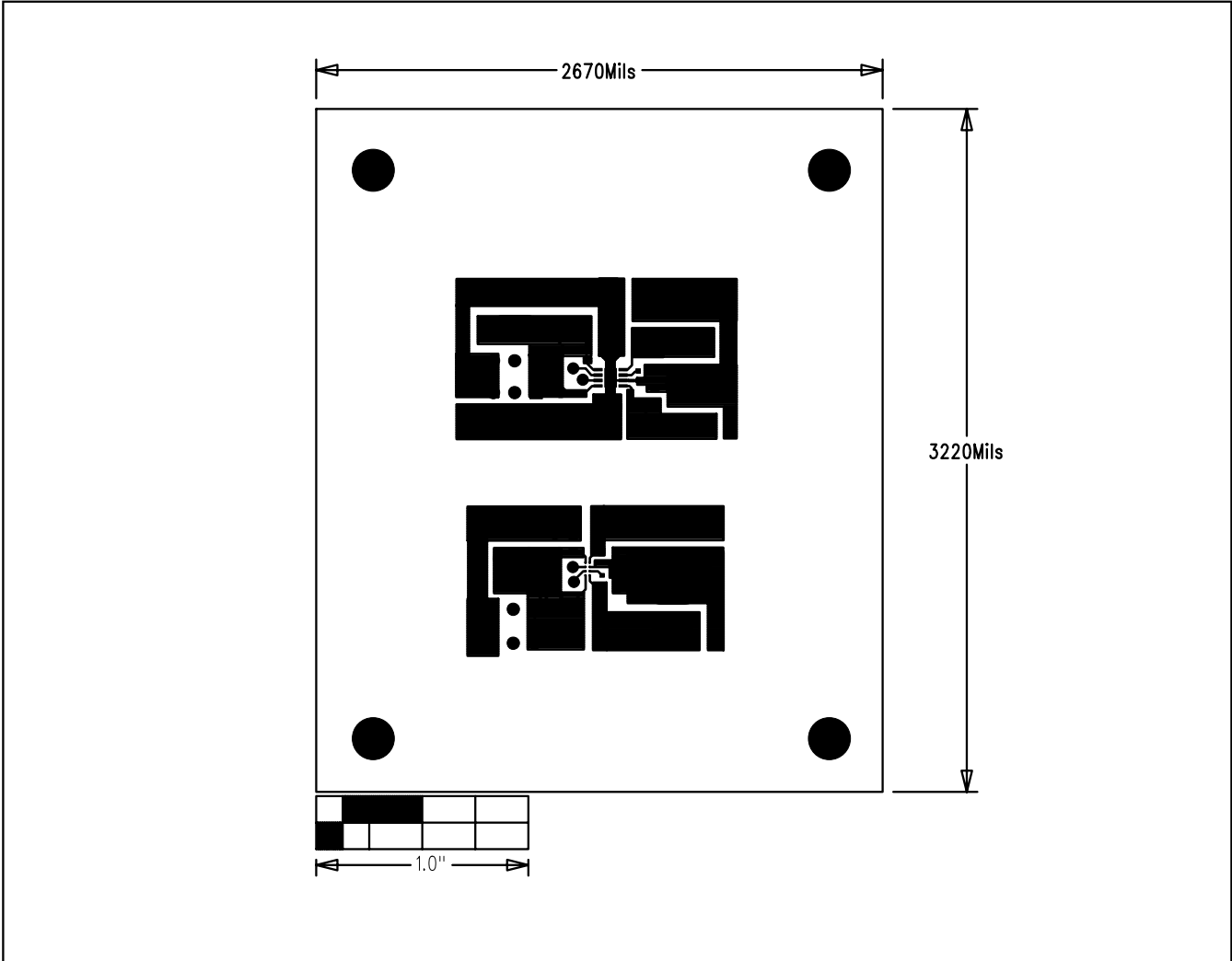


Figure 3. MAX8559 EV Kit PC Board Layout—Component Side

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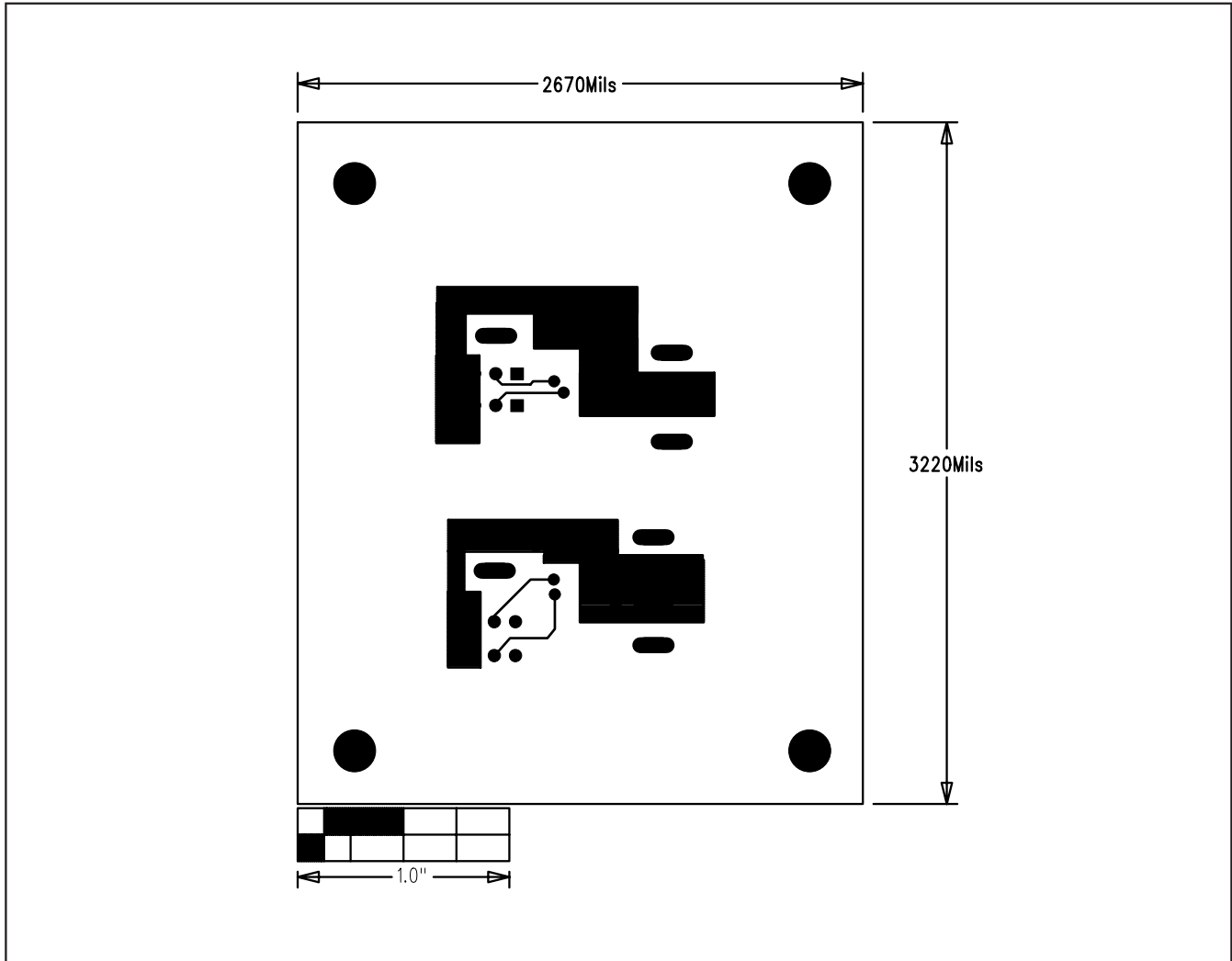


Figure 4. MAX8559 EV Kit PC Board Layout—Solder Side

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