

MAXIM

MAX7438 Evaluation Kit

General Description

The MAX7438 evaluation kit (EV kit) is a fully assembled and tested surface mount board. The MAX7438 EV kit includes the MAX7438, a three-channel standard-definition video reconstruction filter with a back-porch clamp that sets the output blanking level of the video signal to ground. The MAX7438 has an internal gain of +2V/V, and the EV kit provides five levels of high-frequency boost. The EV kit operates from $\pm 5\text{V}$ dual supplies.

The MAX7438 EV kit can also be used to evaluate the MAX7439, which is a three-channel, standard-definition video reconstruction filter with an internal gain of +3V/V.

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2	2	1 μF $\pm 20\%$, 6.3V X5R ceramic capacitors (0603) Taiyo Yuden JMK107BJ105MA
C3, C4	2	0.1 μF $\pm 10\%$, 16V X7R ceramic capacitors (0603) Taiyo Yuden EMK107BJ104KA TDK C1608X7R1C104KT
IN1, OUT1, IN2, OUT2, IN3, OUT3	6	BNC PC board-mount jack connectors
JU1–JU22, JU24, JU26	24	2-pin headers
JU23, JU25, JU27	3	3-pin headers
R1, R5, R13, R21	4	10k Ω $\pm 1\%$ resistors (0603)
R2, R10, R18	3	75k Ω $\pm 1\%$ resistors (0603)
R3, R11, R19	3	5.11k Ω $\pm 1\%$ resistors (0603)
R4, R9, R12, R17, R20, R25	6	56.2k Ω $\pm 1\%$ resistors (0603)
R6, R14, R22	3	82.5k Ω $\pm 1\%$ resistors (0603)
R7, R15, R23	3	33.2k Ω $\pm 1\%$ resistors (0603)
R8, R16, R24	3	61.9k Ω $\pm 1\%$ resistors (0603)
R26–R29, R31, R33	6	75 Ω $\pm 1\%$ resistors (0603)
R30, R32, R34	3	200 Ω $\pm 1\%$ resistors (0603)
R35, R36, R37	3	162 Ω $\pm 1\%$ resistors (0603)
TB1	1	Three-circuit terminal block
U1	1	MAX7438ETP (20-pin thin QFN 5mm x 5mm)
None	3	Shunts
None	1	MAX7438 PC board

Features

- ◆ $\pm 5.0\text{V}$ Power Supplies
- ◆ Selectable Input 75 Ω Termination or DAC Termination
- ◆ Selectable 75 Ω Output Series Termination
- ◆ Selectable High-Frequency Boost Levels
- ◆ Surface-Mount Construction
- ◆ Fully Assembled and Tested

Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX7438EVKIT	0°C to +70°C	20 Thin QFN-EP*

*EP = Exposed paddle.

Note: To evaluate the MAX7439, please order a MAX7439ETP free sample with the MAX7438EVKIT.

Quick Start

Recommended Equipment

- $\pm 5.0\text{V}$ dual DC power supplies
- Video signal generator (e.g., Tektronix TG 2000)
- Video measurement equipment (e.g., Tektronix VM 700A)

The MAX7438 EV kit is a fully assembled and tested surface-mount board. Follow the steps below to verify board operation. **Do not turn on the power supply until all connections are completed:**

Evaluating Channel 1

- 1) Verify that there are shunts across jumpers JU6, JU22, JU24, and JU26.
- 2) Verify that a shunt is installed across pins 1 and 2 on jumpers JU23, JU25, and JU27.
- 3) Verify that the rest of the jumpers are open.
- 4) Connect the output of the video signal generator to the IN1 BNC connector on the EV kit.
- 5) Connect the OUT1 BNC connector on the EV kit to the input of the video measurement equipment.

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- 6) Connect both power-supply grounds to the three-circuit terminal block labeled GND.
- 7) Connect one +5.0V supply to the three-circuit terminal block labeled VCC. Connect the -5.0V supply to the three-terminal block labeled VSS.
- 8) Set the video signal generator for the desired video input signal, such as multiburst sweep. This signal must contain sync information (i.e., composite or Y).
- 9) Turn on all power supplies, and enable the signal generator.
- 10) Analyze the output signal with the VM700 video measurement equipment.

Detailed Description

Jumper Selection

The MAX7438 EV kit provides options for evaluating with a video signal generator output or a current-output video DAC/encoder. Table 1 lists the jumper settings for selecting the input from either a video generator or a DAC. When interfacing to a video DAC or encoder

output, the 200 Ω termination resistor is provided on the board and is selected by changing jumpers JU23, JU25, and JU27 for channels 1, 2, and 3, respectively. A typical DAC termination resistor is 200 Ω .

The external resistors R2–R25 form a voltage-divider between VCC and GND, and are used to program the level of high-frequency boost for each channel by setting different voltage levels at HFB_ pins. The MAX7438 EV kit incorporates jumpers to provide five different boost options for each individual channel. Refer to the *High-Frequency Boost* section in the MAX7438/MAX7439 data sheet. The resistor values used in the EV kit are for demonstration purposes only. Use the resistor values in Table 1 in the MAX7438/MAX7439 data sheet for actual designs. These lower value resistors have less coupling to noise. Table 2 lists the JU1–JU18 functions.

Evaluating the MAX7439

The MAX7438 EV kit can be also used to evaluate the MAX7439. To evaluate the MAX7439, replace the MAX7438ETP with a MAX7439ETP.

Table 1. Jumpers JU23, JU25, and JU27 Functions

JU23 SHUNT LOCATION	JU25 SHUNT LOCATION	JU27 SHUNT LOCATION	INPUT TERMINATION
Pins 1 and 2	Pins 1 and 2	Pins 1 and 2	75 Ω
Pins 2 and 3	Pins 2 and 3	Pins 2 and 3	200 Ω
All other combinations			Undefined

Note: To emulate a 200 Ω DAC source resistor when driving from a 75 Ω generator, remove jumpers JU22, JU24, and JU26. The 162 Ω resistor added to a standard 75 Ω termination equals approximately 200 Ω .

Table 2. Jumpers JU1–JU18 Functions

NOMINAL BOOST LEVEL (dB)		JUMPER IS CLOSED		
MAX7438	MAX7439	CHANNEL 1	CHANNEL 2	CHANNEL 3
0	0	JU2	JU8	JU14
0.5	0.75	JU3	JU9	JU15
1.0	1.50	JU4	JU10	JU16
1.5	2.25	JU5	JU11	JU17
2.0	3.00	JU1	JU7	JU13
Bypass	Bypass	JU6	JU12	JU18

Note: Make sure only one shunt is installed at a time for each channel.

Component Suppliers

SUPPLIER	PHONE	FAX	WEBSITE
Taiyo Yuden	800-348-2496	847-925-0899	www.t-yuden.com
TDK	847-803-6100	847-390-4405	www.component.tdk.com

Note: Please indicate that you are using the MAX7438/MAX7439 when contacting these suppliers.

MAX7438 Evaluation Kit

Evaluates: MAX7438/MAX7439

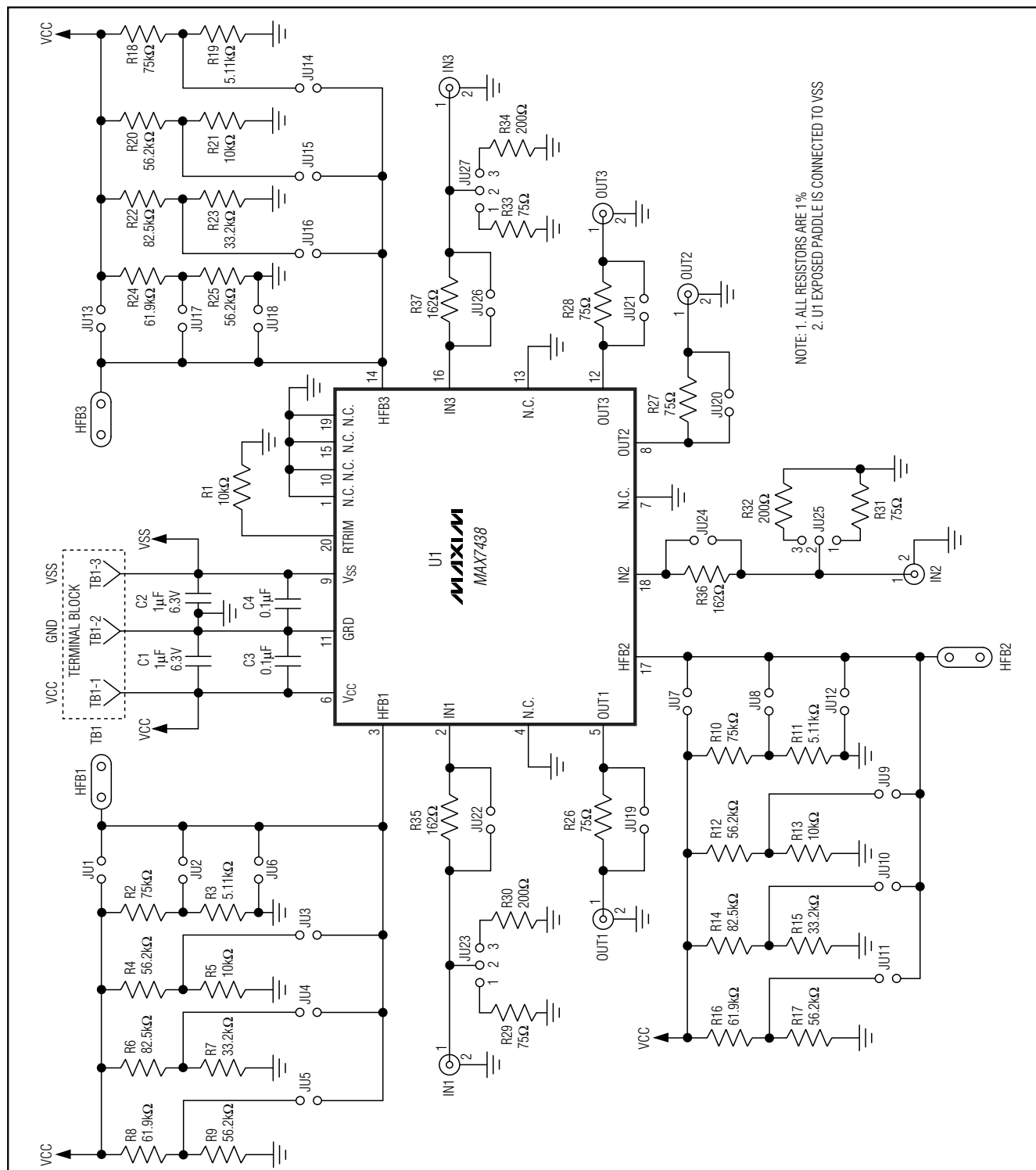


Figure 1. MAX7438 EV Kit Schematic

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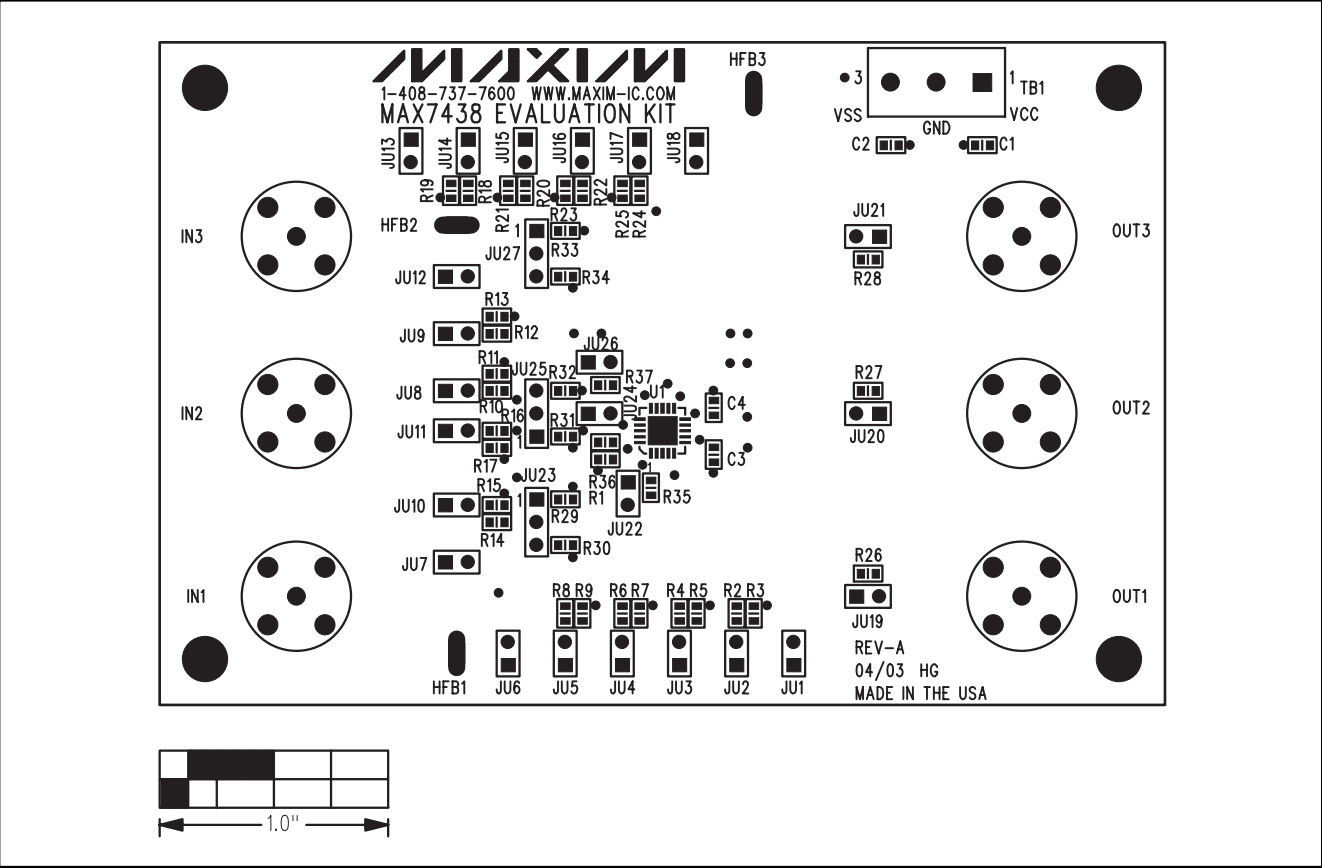


Figure 2. MAX7438 EV Kit Component Placement Guide—Top Silkscreen

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Evaluates: MAX7438/MAX7439

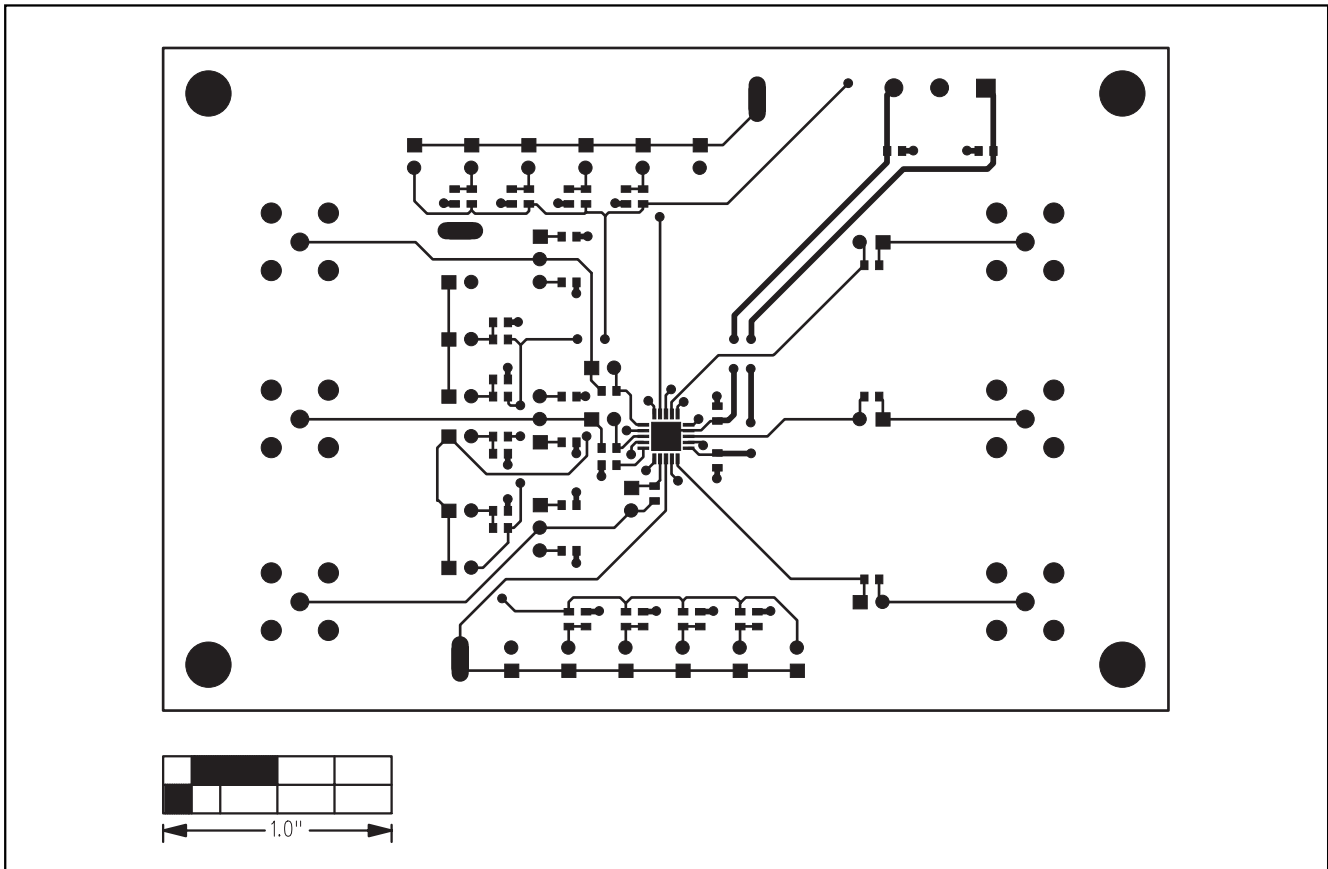


Figure 3. MAX7438 EV Kit PC Board Layout—Component Side

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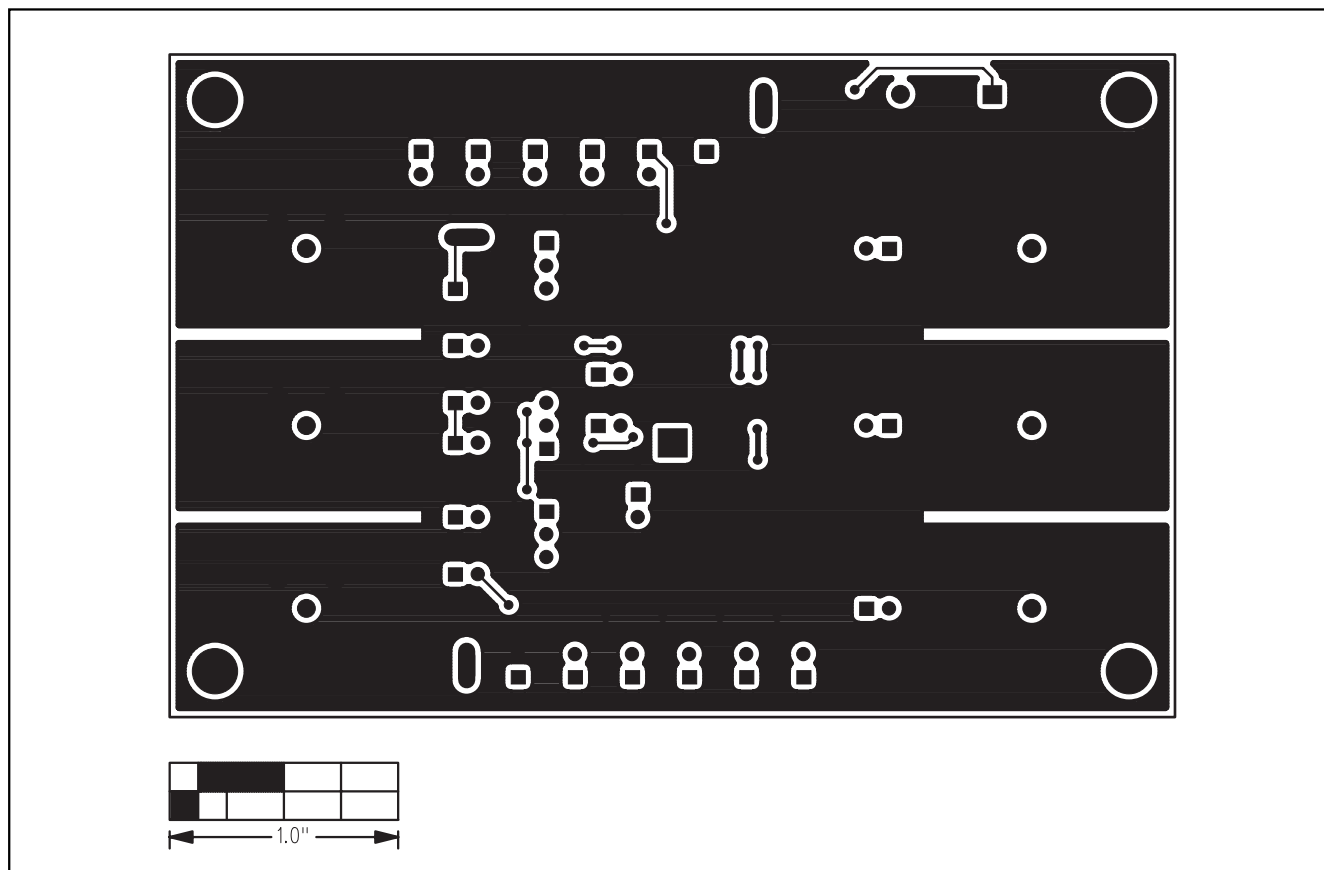


Figure 4. MAX7438 EV Kit PC Board Layout—Solder Side

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