

# 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 ±5V 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	1μF ±20%, 6.3V X5R ceramic capacitors (0603) Taiyo Yuden JMK107BJ105MA
C3, C4	2	0.1μF ±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	10kΩ ±1% resistors (0603)
R2, R10, R18	3	75kΩ ±1% resistors (0603)
R3, R11, R19	3	5.11kΩ ±1% resistors (0603)
R4, R9, R12, R17, R20, R25	6	56.2kΩ ±1% resistors (0603)
R6, R14, R22	3	82.5kΩ ±1% resistors (0603)
R7, R15, R23	3	33.2kΩ ±1% resistors (0603)
R8, R16, R24	3	61.9kΩ ±1% resistors (0603)
R26–R29, R31, R33	6	75Ω ±1% resistors (0603)
R30, R32, R34	3	200Ω ±1% resistors (0603)
R35, R36, R37	3	162Ω ±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

- ◆ ±5.0V Power Supplies
- ◆ Selectable Input 75Ω Termination or DAC Termination
- ◆ Selectable 75Ω 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

- ±5.0V 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 200Ω 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 200Ω.

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	75Ω
Pins 2 and 3	Pins 2 and 3	Pins 2 and 3	200Ω
All other combinations			Undefined

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

**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

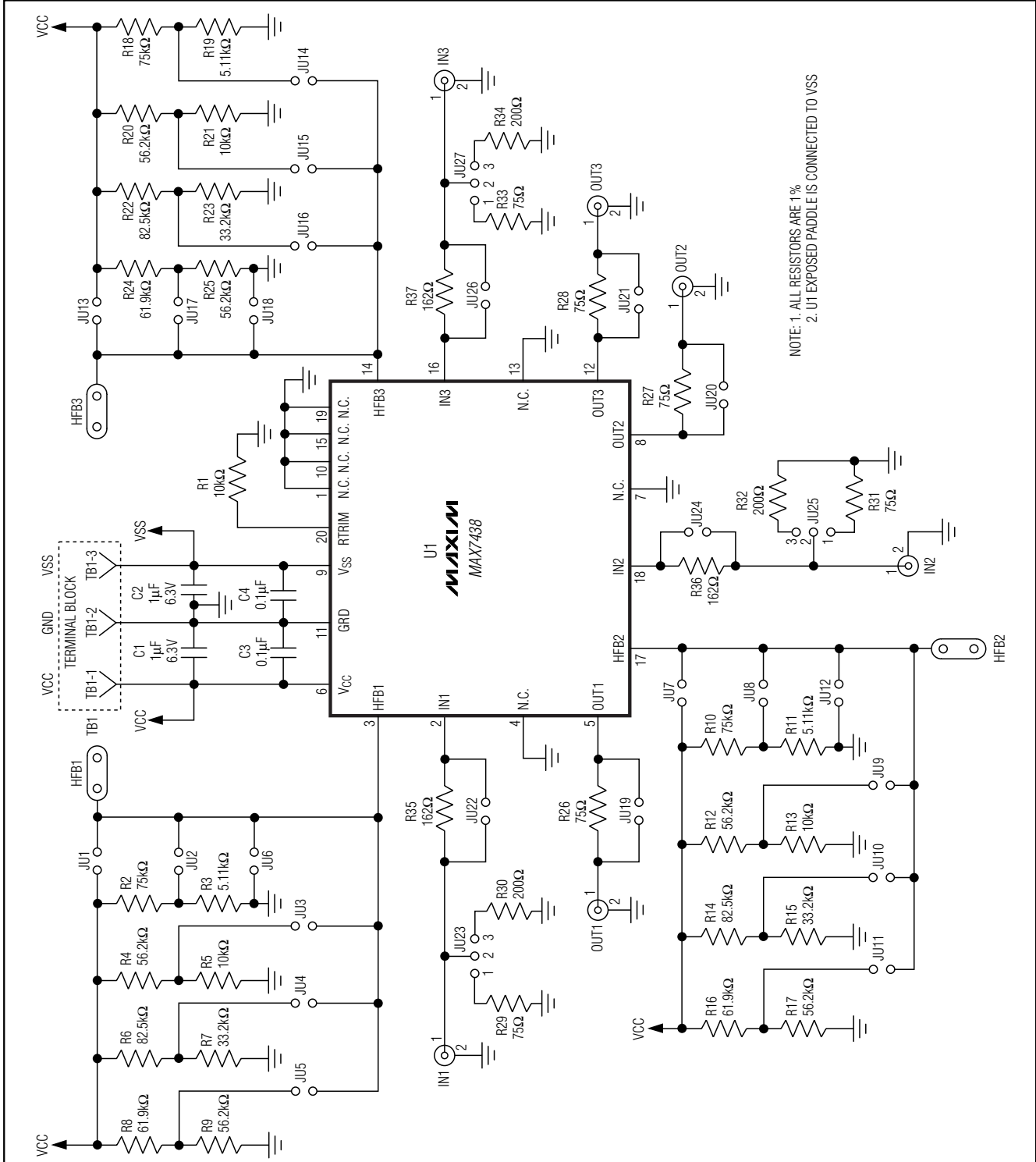


Figure 1. MAX7438 EV Kit Schematic

# MAX7438 Evaluation Kit

Evaluates: MAX7438/MAX7439

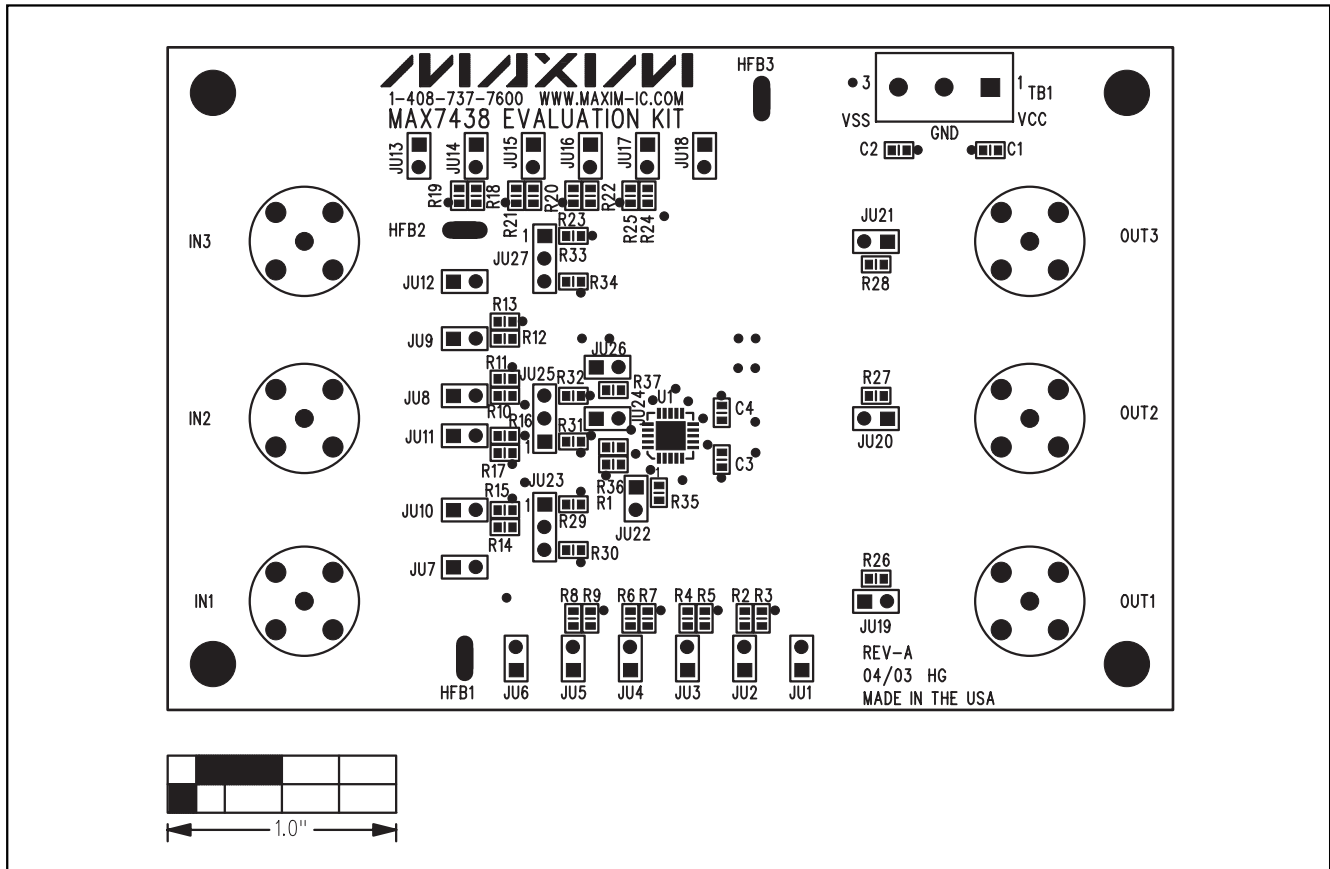


Figure 2. MAX7438 EV Kit Component Placement Guide—Top Silkscreen

# MAX7438 Evaluation Kit

Evaluates: MAX7438/MAX7439

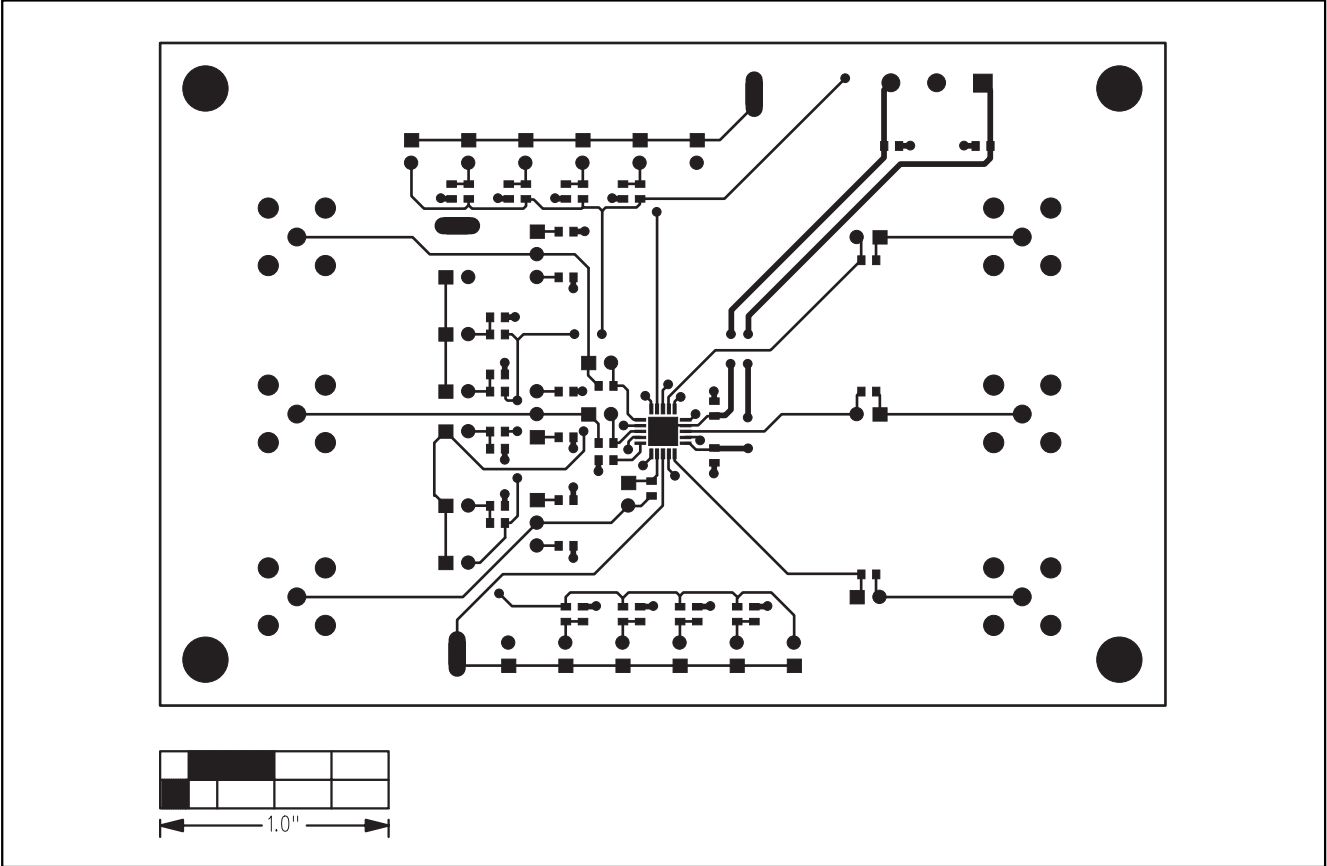


Figure 3. MAX7438 EV Kit PC Board Layout—Component Side

# MAX7438 Evaluation Kit

**Evaluates: MAX7438/MAX7439**

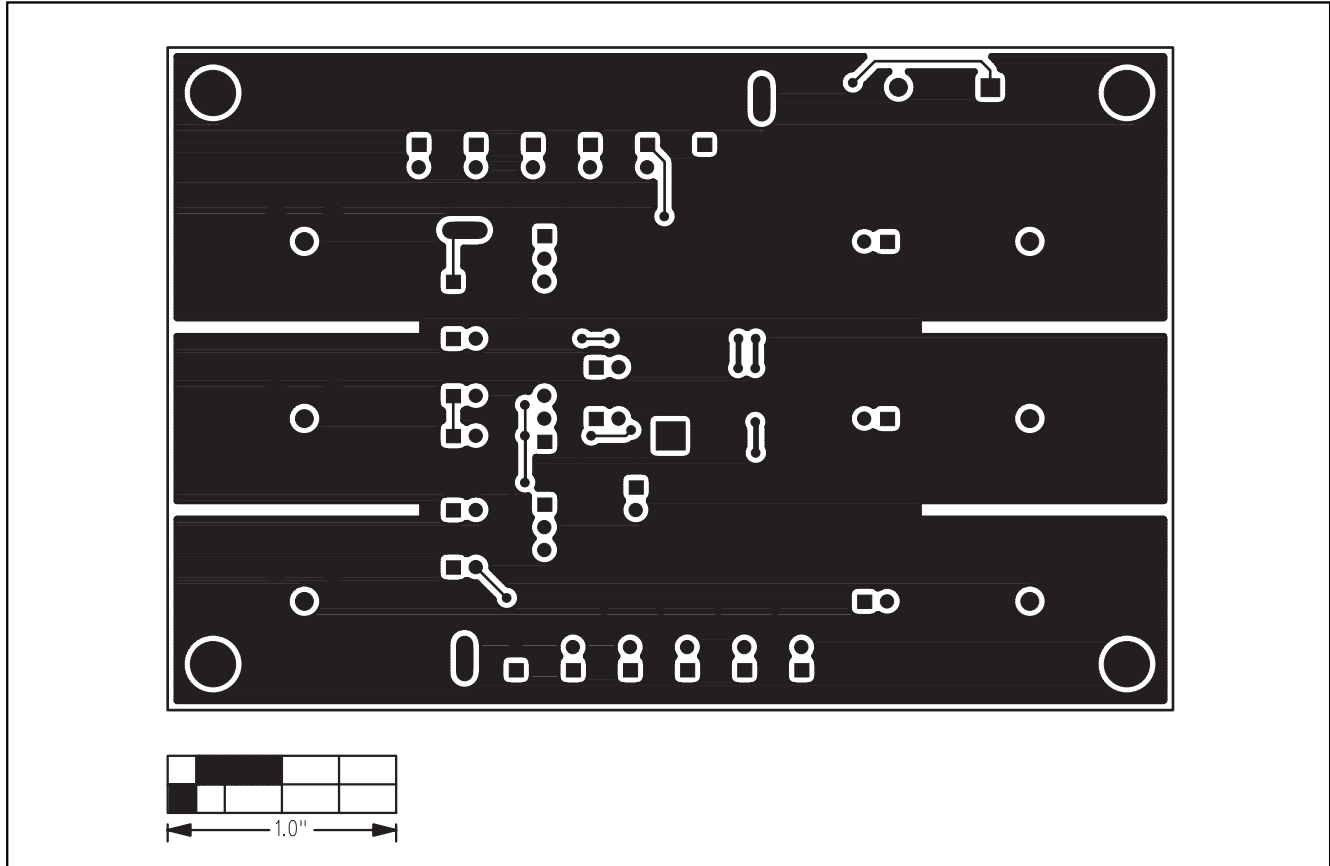


Figure 4. MAX7438 EV Kit PC Board Layout—Solder Side

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