/MAXIM

MAX7450 Evaluation Kit

Evaluates: MAX7450/MAX7451

General Description

The MAX7450 evaluation kit (EV kit) is a fully assembled and tested surface-mount circuit board that contains a MAX7450. The MAX7450 is a low-cost, high-performance, complete front-end video-signal conditioner with automatic gain control (AGC) and a back-porch clamp to GND. The device includes an out-of-band noise filter, blank-level clamp, loss-of-sync (LOS) detector, ±6dB of AGC, and an output buffer capable of driving either a 150Ω video load or a high-impedance load. These features optimize the video-signal quality for further video processing through a cross-point device or video decoder.

The MAX7450 EV kit can also evaluate the MAX7451. The EV kit operates from a dual ±5V power supply for the MAX7450 or ±3V power supply for the MAX7451.

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C4	2	1µF ±10%, 10V X5R ceramic capacitors (0603) TDK C1608X5R1A105K
C2, C3, C5	3	0.1µF ±10%, 25V X7R ceramic capacitors (0603) TDK C1608X7R1E104K
R1, R2	2	75.0Ω ±1% resistors (0805)
U1	1	MAX7450ESA (8-pin SO with exposed paddle)
IN, OUT	2	75Ω BNC PC-board mount jack connectors
JU1, JU2	2	2-pin headers
JU3, JU4	2	3-pin headers
None	4	Shunts
None	1	MAX7450 PC board

Features

♦ **Dual-Supply Operation**
  MAX7450 (±5V)
  MAX7451 (±3V)

♦ **Output Buffer Drives Standard Video Load or High-Impedance Load with 0dB or +6dB Gain**

♦ **Input Fault Detection with LOS Output**

♦ **AGC (±6dB Range)**

♦ **Standard 75Ω Input/Output Termination**

♦ **Evaluates the MAX7451 (±3V V$_{CC}$)**

♦ **Surface-Mount Components**

♦ **Fully Assembled and Tested**

Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX7450EVKIT	0°C to +70°C	8 SO-EP*

EP = Exposed paddle.

Quick Start

Recommended Equipment

- ±5V dual DC power supply
- Video-signal generator (e.g., Tektronix TG-2000)
- Video measurement equipment (e.g., Tektronix VM-700A)

Procedure

The MAX7450 EV kit is fully assembled and tested. Follow these steps to verify board operation. **Do not turn on the power supply until all connections are completed:**

1) Verify that a shunt is installed across jumper JU1 (75Ω input termination).

Component Supplier

SUPPLIER	PHONE	FAX	WEBSITE
TDK	847-803-6100	847-390-4405	www.component.tdk.com

Note: Indicate that you are using the MAX7450 EV kit when contacting this supplier.

For pricing, delivery, and ordering information, please contact Maxim/Dallas Direct! at

MAX7450 Evaluation Kit

2) Verify that a shunt is not installed across jumper JU2 (75Ω output termination).

3) Verify that a shunt is installed across pins 1 and 2 of jumper JU3 (gain = 2).

4) Verify that a shunt is installed across pins 2 and 3 of jumper JU4 (AGC enabled).

5) Connect the output of the video-signal generator to the IN BNC connector on the MAX7450 EV kit.

6) Connect the OUT BNC connector on the EV kit to the input of the video measurement equipment.

7) Connect both power-supply grounds to the GND pad.

8) Connect the +5V supply to the V$_{CC}$ pad on the EV kit. Connect the -5V supply to the V$_{SS}$ pad on the EV kit.

9) Set the video signal generator for the desired video input signal, such as multiburst sweep. This signal must contain sync information (i.e., CVBS or Y).

10) Turn on the power supply and enable the video signal generator.

11) Analyze the video output signal with the VM-700A video measurement equipment.

Detailed Description

The MAX7450 EV kit is a fully assembled and tested surface-mount circuit board that contains a MAX7450, which provides complete front-end video-signal conditioning. The MAX7450 is designed to improve the quality of standard-definition video signals. The MAX7450 also provides out-of-band noise filtering, LOS detection, back-porch clamping to ground, AGC that normalizes the sync amplitude to a standard video level, and an output buffer with selectable gains (0dB or +6dB).

The MAX7450 EV kit features an option to disable the AGC by setting the logic level at the AGCD pin of the MAX7450. When the AGC is enabled (AGCD = logic low), the video input signal is set to 1V$_{P-P}$ and then fed into the output buffer. When the AGC is disabled (AGCD = logic high), the video signal is fed straight into the output buffer. The output buffer amplifies the video signal with a gain of 1V/V or 2V/V according to the logic level at the GSET pin of the MAX7450.

An LOS test point is also provided on the EV kit. The LOS output is logic high when the sync signal is not present on the input for approximately 15 horizontal lines.

The video input channel on the MAX7450 EV kit is AC-coupled, while the video output channel is DC-coupled. Both the input and output channels can be terminated

at 75Ω with jumpers. The MAX7450 EV kit operates from a dual ±5V power supply.

The MAX7450 EV kit can also evaluate the MAX7451 after replacing IC U1. See the *Evaluating the MAX7451* section for further details.

Jumper Selection

Input Termination

The MAX7450 EV kit features an option to terminate the video input channel to 75Ω or open. Jumper JU1 selects the input termination on the MAX7450 EV kit. Table 1 lists the selectable jumper options.

Table 1. JU1 Jumper Selection

SHUNT POSITION	VIDEO INPUT SIGNAL TERMINATION
Installed	75Ω
Not installed	High impedance

Output Termination

The MAX7450 EV kit features an option to terminate the video output channel to 75Ω or 0Ω. Jumper JU2 selects the output termination on the MAX7450 EV kit. Table 2 lists the selectable jumper options.

Table 2. JU2 Jumper Selection

SHUNT POSITION	BACK-MATCH RESISTOR VALUE (Ω)
Installed	0
Not installed	75

Gain Selection

The MAX7450 EV kit features an option to select the video gain. Jumper JU4 (GSET) controls the AGC enable and disable, while JU3 (AGCD) sets the output buffer gain for the MAX7450 EV kit. Table 3 lists the selectable jumper options.

Table 3. JU3 and JU4 Gain-Control Settings

SHUNT POSITION		V$_{OUT}$
JU3 (GSET)	JU4 (AGCD)	
2-3 (low)	2-3 (low)	1V$_{P-P}$ fixed
1-2 (high)	2-3 (low)	2V$_{P-P}$ fixed
2-3 (low)	1-2 (high)	V$_{OUT}$ = V$_{IN}$
1-2 (high)	1-2 (high)	V$_{OUT}$ = 2V$_{IN}$

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Evaluating the MAX7451

The MAX7450 EV kit can also evaluate the MAX7451.

To evaluate the MAX7451, replace U1 with a MAX7451 and power the EV kit with a ±3V power supply.
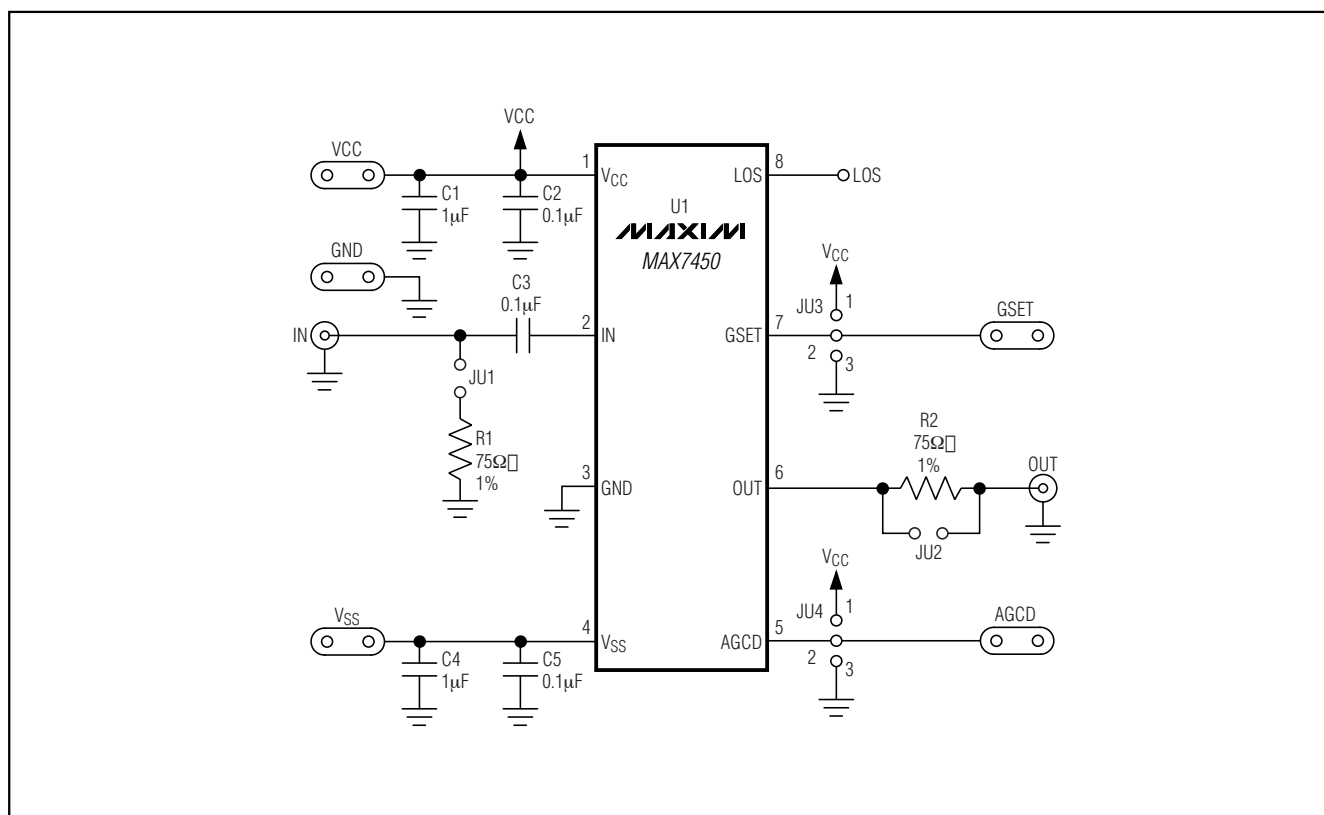

Figure 1. MAX7450 EV Kit Schematic

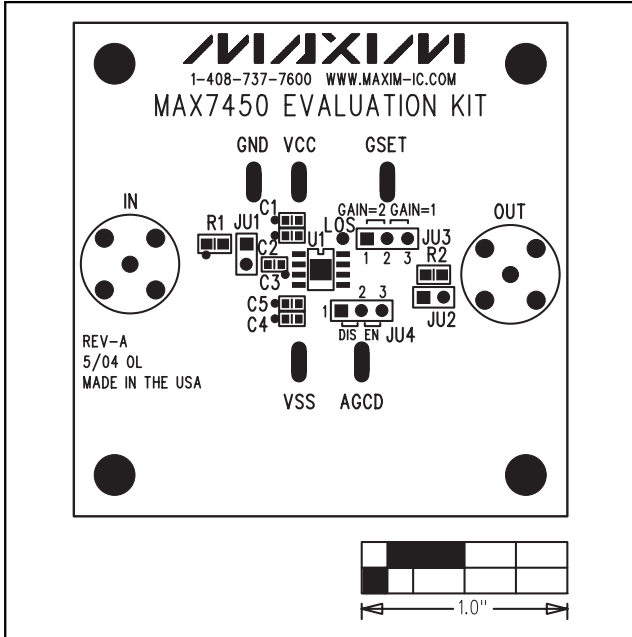*Evaluates: MAX7450/MAX7451*

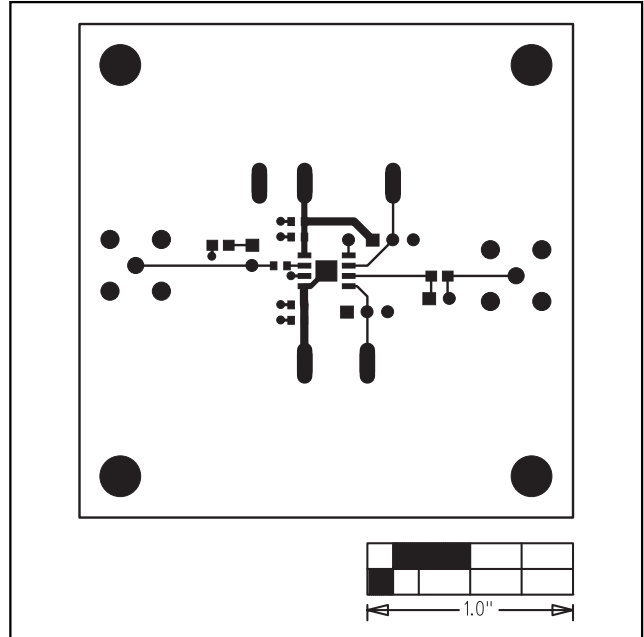# MAX7450 Evaluation Kit

Figure 2. MAX7450 EV Kit Component Placement Guide—Component Side

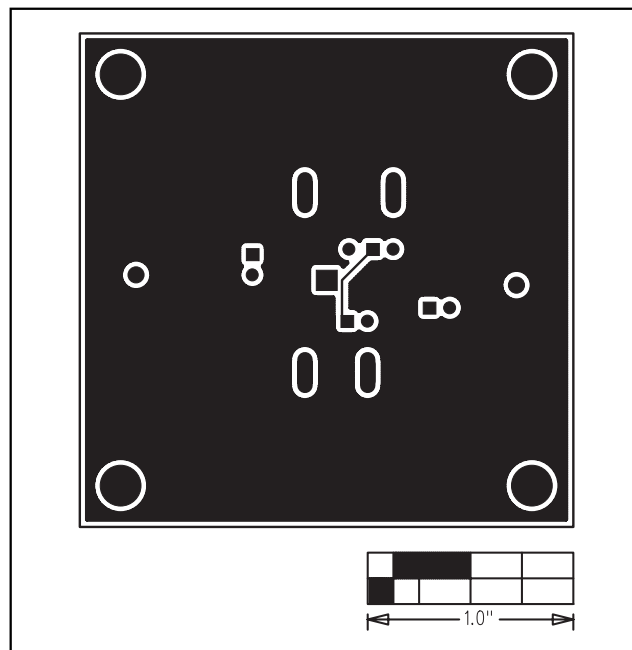Figure 3. MAX7450 EV Kit PC Board Layout—Component Side

Figure 4. MAX7450 EV Kit PC Board Layout—Solder Side

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