



MAX9680 Evaluation Kit

Evaluates: MAX9680

General Description

The MAX9680 evaluation kit (EV kit) is a fully assembled and tested surface-mount circuit board that evaluates the MAX9680 IC. The MAX9680 is optimized for 3V portable video applications and is specifically designed to be compatible with video encoders embedded in application processors with a 0.4Vp-p video output. The EV kit operates from a 2.7V to 3.6V single power supply.

The MAX9680 provides an internal fixed gain of 5.2V/V and has an internal 2-pole reconstruction filter that typically has bandwidth (-3dB) of 9MHz and -18dB attenuation at 27MHz. The MAX9680 EV kit accepts a 0.4Vp-p input full-scale video signal and provides an output full-scale video signal of 2Vp-p (nominal).

Features

- ◆ Single 2.7V to 3.6V Supply Operation
- ◆ Internal Preset Gain of 5.2V/V
- ◆ Input Range Includes Ground
- ◆ DC-Coupled Inputs and Outputs
- ◆ Enable Input
- ◆ Fully Assembled and Tested
- ◆ Lead(Pb)-Free and RoHS Compliant

Ordering Information

PART	TYPE
MAX9680EVKIT+	EV Kit

+Denotes lead(Pb)-free and RoHS compliant.

Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	0.1μF ±10%, 50V X7R ceramic capacitor (0603) Murata GRM188R71H104K TDK C1608X7R1H104K
C2	1	10μF ±20%, 6.3V X7R ceramic capacitor (0805) Murata GRM21BR70J106K TDK C2012X7R0J106K
IN, OUT	2	75Ω BNC PCB vertical-mount connectors

DESIGNATION	QTY	DESCRIPTION
JU1, JU2	2	3-pin headers
JU3, JU4	2	2-pin headers
R1	1	75Ω ±1% resistor (0603)
R2, R3, R4	0	Not installed, resistors (0603)
U1	1	Single-channel video-filter amplifier (6 SC70) Maxim MAX9680AXT+
—	1	PCB: MAX9680 EVALUATION KIT+

Component Suppliers

SUPPLIER	PHONE	WEBSITE
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
TDK Corp.	847-803-6100	www.component.tdk.com

Note: Indicate that you are using the MAX9680 when contacting these component suppliers.

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Quick Start

Recommended Equipment

- 2.7V to 3.6V, 500mA DC power supply (VDD)
- Video signal generator
- Video-measurement equipment (e.g., Tektronix VM-700T)

Procedure

The MAX9680 EV kit is fully assembled and tested. Follow the steps below to verify board operation.

Caution: Do not turn on the power supply until all connections are completed.

- 1) Connect the power-supply ground to the GND pad on the EV kit.
- 2) Connect the 2.7V to 3.6V supply to the VDD pad on the EV kit.
- 3) Connect the output of the video signal generator to the IN BNC connector on the EV kit. The video signal must be approximately 0 to 0.4V.
- 4) Connect the OUT BNC connector on the EV kit to the input of the video measurement equipment.
- 5) Verify that a shunt is installed across pins 1-2 of jumper JU1 (enabled).
- 6) Verify that a shunt is not installed across jumpers JU2, JU3, and JU4.
- 7) Set the video signal generator for the desired video input signal.
- 8) Turn on the power supply and enable the video signal generator.
- 9) Analyze the video output signal with the VM-700T video-measurement equipment.

Detailed Description of Hardware

The MAX9680 EV kit is a fully assembled and tested surface-mount circuit board that evaluates the MAX9680 IC. The MAX9680 is optimized for 3V portable video applications and has an internal 2-pole reconstruction filter that smoothes the steps and reduces the spikes on the video signal from the video digital-to-analog converter (DAC). The reconstruction filter typically has a bandwidth (-3dB) of 9MHz and -18dB attenuation at 27MHz.

The MAX9680 provides an internal fixed gain of 5.2V/V. The MAX9680 EV kit accepts a 0.4V_{P-P} input full-scale video signal and provides an output full-scale video signal of 2V_{P-P} (nominal).

Video input and output signals from the EV kit are DC-coupled. The input of the EV kit can be directly connected to the output of a video-current DAC and the EV kit's output has a 75Ω back-termination resistor.

Enable Input

The MAX9680 EV kit incorporates jumper JU1 to control the enable input. When the enable input is set high, the device is enabled. When the enable input is set low, the device enters a low-power shutdown mode. See Table 1 for Jumper JU1 settings.

Short-Circuit Protection

The MAX9680 EV kit circuit includes a 75Ω back-termination resistor that limits short-circuit current when an external short is applied to the video output. Jumper JU3 is provided to apply an external short to GND at the output to test this current-limiting feature.

The MAX9680 also features an internal output short-circuit protection to prevent device damage in prototyping and applications where the amplifier output can be directly shorted to ground. Jumper JU2 is provided to test the internal output short-circuit protection.

Input Considerations

The MAX9680 input is DC-coupled. When the supply voltage is between 2.7V and 3.6V, the input-voltage range extends from ground to 0.445V. When the supply voltage is between 2.8V and 3.6V, the input-voltage range extends from ground to 0.464V. A typical current-output DAC that operates from a single supply usually creates a composite video signal with a sync tip very close to ground. Hence, the DAC output can be directly connected to the MAX9680 input.

Input termination resistor R2 is provided, if necessary. Jumper JU4 is provided to set the input to GND.

Output Consideration

The MAX9680 EV kit connects directly to the video cable through a 75Ω series back-termination resistor. The other end of the cable should be properly terminated with a 75Ω resistor as well. Because of this configuration, the peak-to-peak amplitude, as well as the DC level of the signal, is divided by two. The MAX9680 output signal is level-shifted up so the sync tip is approximately 130mV.

Table 1. Jumper JU1 Settings

SHUNT POSITION	ENABLE PIN	OUTPUT
1-2*	Connected to VDD	Enabled
2-3	Connected to GND	Disabled

*Default position.

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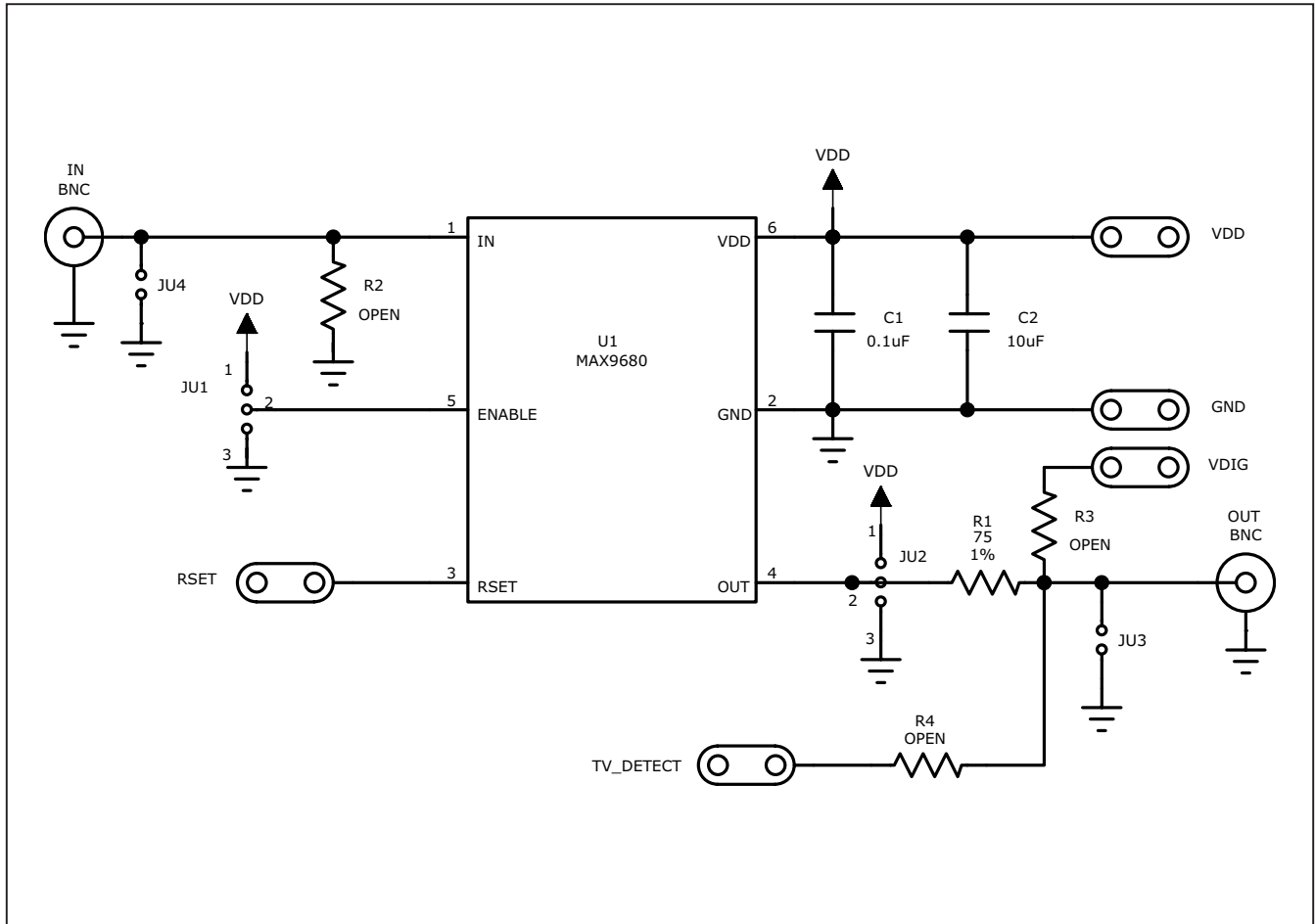


Figure 1. MAX9680 EV Kit Schematic

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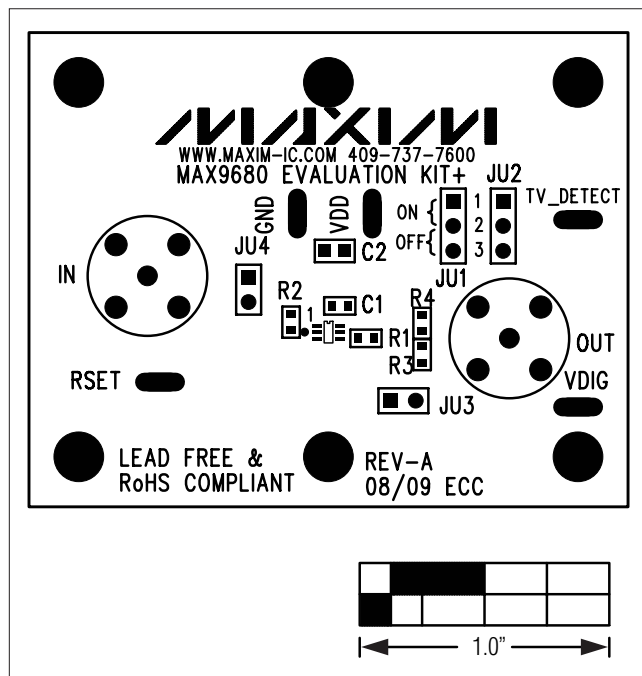


Figure 2. MAX9680 EV Kit Component Placement Guide—Component Side

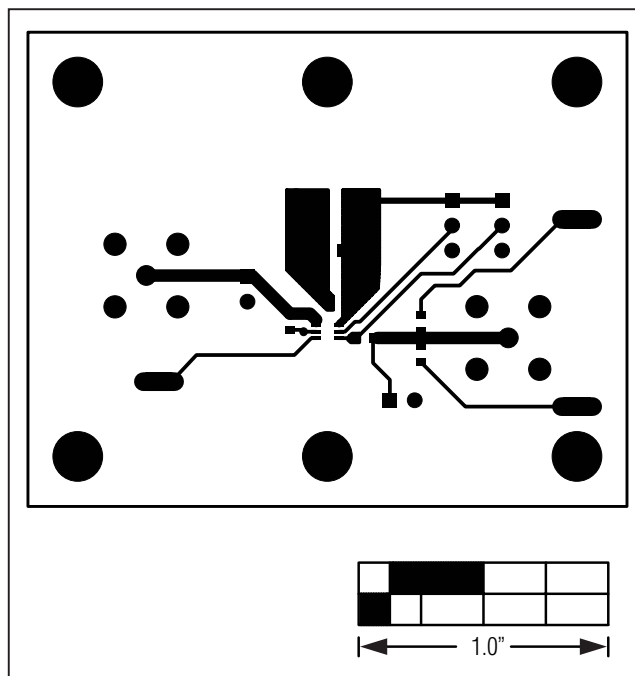


Figure 3. MAX9680 EV Kit PCB Layout—Component Side

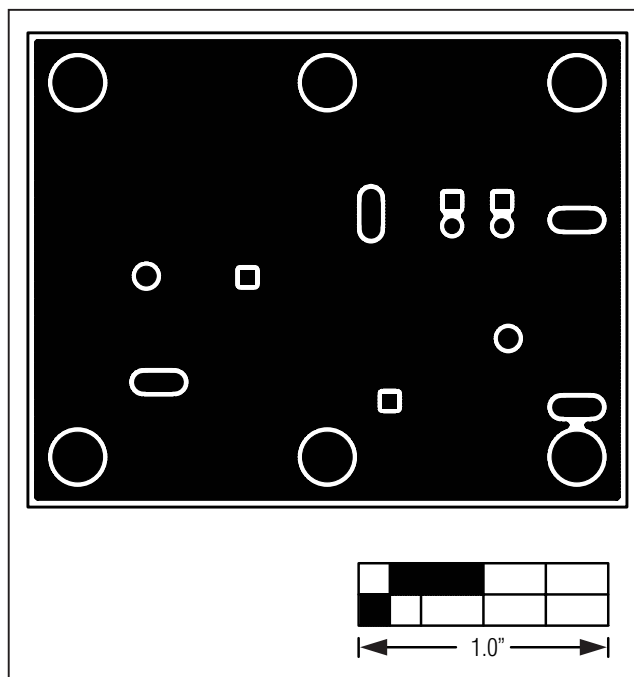


Figure 4. MAX9680 EV Kit PCB Layout—Solder Side

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