



MAX9657 Evaluation Kit

General Description

The MAX9657 evaluation kit (EV kit) is a fully assembled and tested surface-mount PCB that evaluates the MAX9657 low-power quad video amplifier with input sync-tip clamps and fixed gain of 2V/V (6dB). It has a bandwidth of 15MHz, making it suitable not only for standard-definition video signals, but also video graphics array (VGA) signals with 640 x 480 resolution at up to 85Hz refresh rate. The EV kit features a shutdown mode to control the device operation. The EV kit operates from a single-supply voltage of 2.7V to 3.6V.

The MAX9657 EV kit can also be used to evaluate the MAX9658, which is similar to the MAX9657 except that it has integrated lowpass filters. To evaluate the MAX9658, request a free sample with the MAX9657 EV kit and replace U1 with the pin-compatible MAX9658 IC.

Features

- ◆ 2.7V to 3.6V Single-Supply Operation
- ◆ AC-Coupled Video Inputs
- ◆ Shutdown Mode
- ◆ Standard 75Ω Input/Output Termination
- ◆ Surface-Mount Components
- ◆ Lead(Pb)-Free and RoHS Compliant
- ◆ Fully Assembled and Tested

Ordering Information

PART	TYPE
MAX9657EVKIT+	EV Kit

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

Component List

DESIGNATION	QTY	DESCRIPTION
C1–C5	5	0.1μF ±10%, 25V X7R ceramic capacitors (0603) TDK C1608X7R1E104K Murata GRM188R71C104K
C6	1	10μF ±20%, 6.3V X5R ceramic capacitor (0805) TDK C2012X5R0J106M Taiyo Yuden JMK212BJ106MG
C7–C10	0	Not installed, aluminum electrolytic capacitors (10mm x 7.7mm)

DESIGNATION	QTY	DESCRIPTION
INPUT0–INPUT3, OUTPUT0–OUTPUT3	8	75Ω BNC PCB-mount connectors
JU1	1	3-pin header Sullins PEC36SAAN or equivalent Digi-Key S1012E-36-ND
R1–R8	8	75Ω ±1% resistors (0603)
U1	1	Quad video amplifier (16 QSOP) Maxim MAX9657AEE+
—	1	Shunt (JU1)
—	1	PCB: MAX9657 Evaluation Kit+

Component Suppliers

SUPPLIER	PHONE	WEBSITE
Digi-Key Corp.	800-344-4539	www.digikey.com
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
Sullins Electronics Corp.	760-744-0125	www.sullinselectronics.com
Taiyo Yuden	800-348-2496	www.t-yuden.com
TDK Corp.	847-803-6100	www.component.tdk.com

Note: Indicate that you are using the MAX9657 when contacting these component suppliers.

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Quick Start

Recommended Equipment

- 2.7V to 3.6V DC power supply (VDD)
- Four composite video signal generators
- Video measurement equipment (e.g., Tektronix VM700T or equivalent)

Procedure

The MAX9657 EV kit is fully assembled and tested. Follow the steps below to verify board operation.

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

- 1) Verify that a shunt is installed across pins 1-2 of jumper JU1 (EV kit enabled).
- 2) Connect the positive terminal of the DC power supply to the VDD pad on the EV kit. Connect the ground terminal of the DC power supply to the GND pad.
- 3) Connect the composite video test signals from the video signal generators to the INPUT0–INPUT3 BNC connectors.
- 4) Connect the output signals from the OUPUT0–OUPUT3 BNC connectors to the inputs of the video measurement equipment.
- 5) Turn on the power supply and turn on the signal generator.
- 6) Verify the output signals.

Detailed Description of Hardware

Input

Each video input signal of the MAX9657 EV kit is configured for AC-coupling. The EV kit provides each input with an AC-coupling 0.1 μ F capacitor and a termination resistor. A sync-tip clamp at each input provides bias for the incoming video signal. The sync-tip voltage is internally set to 300mV.

Output

The video output amplifiers can both source and sink load current, allowing output loads to be DC- or AC-coupled. The amplifier output stage needs approximately 300mV of headroom from either supply rail. The devices have an internal level-shift circuit that positions the sync tip at approximately 300mV at the output. If the supply voltage is greater than 3.135V (5% below a 3.3V supply), each amplifier can drive two DC-coupled video loads to ground. If the supply is less than 3.135V, each amplifier can drive only one DC-coupled or AC-coupled video load.

The MAX9657 EV kit comes with DC-coupled outputs, but can also be configured for AC-coupled outputs. To configure the EV kit for AC-coupled outputs, cut the short traces across C7–C10 and install 220 μ F or greater AC-coupling output capacitors. Refer to the *Applications Information, AC-Coupling the Outputs* section in the MAX9657 IC data sheet for more information.

Jumper Selection

Shutdown Mode ($\overline{\text{SHDN}}$)

The MAX9657 EV kit features an option to shut down all the video outputs on the EV kit. For normal operation, connect $\overline{\text{SHDN}}$ to VDD by placing a shunt across pins 1-2 of jumper JU1. For low-power shutdown mode, connect $\overline{\text{SHDN}}$ to GND by placing a shunt across pins 2-3 of jumper JU1. Table 1 lists the selectable jumper options.

Table 1. Jumper JU1 Functions ($\overline{\text{SHDN}}$)

SHUNT POSITION	$\overline{\text{SHDN}}$ PIN	DEVICE MODE
1-2*	Connected to VDD	Normal operation
2-3	Connected to GND	Shutdown mode

*Default position.

MAX9657 Evaluation Kit

Evaluates: MAX9657/MAX9658

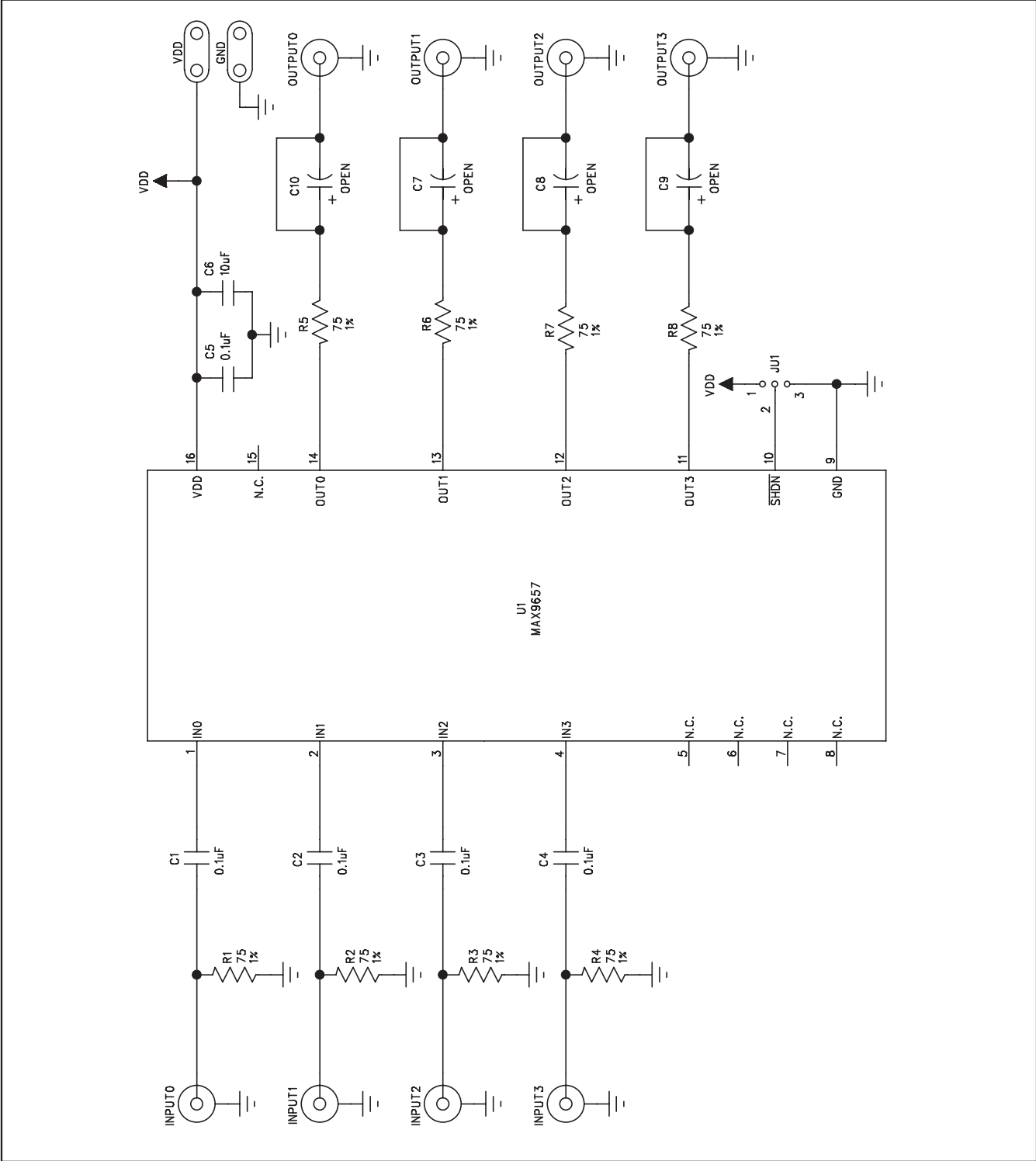


Figure 1. MAX9657 EV Kit Schematic

MAX9657 Evaluation Kit

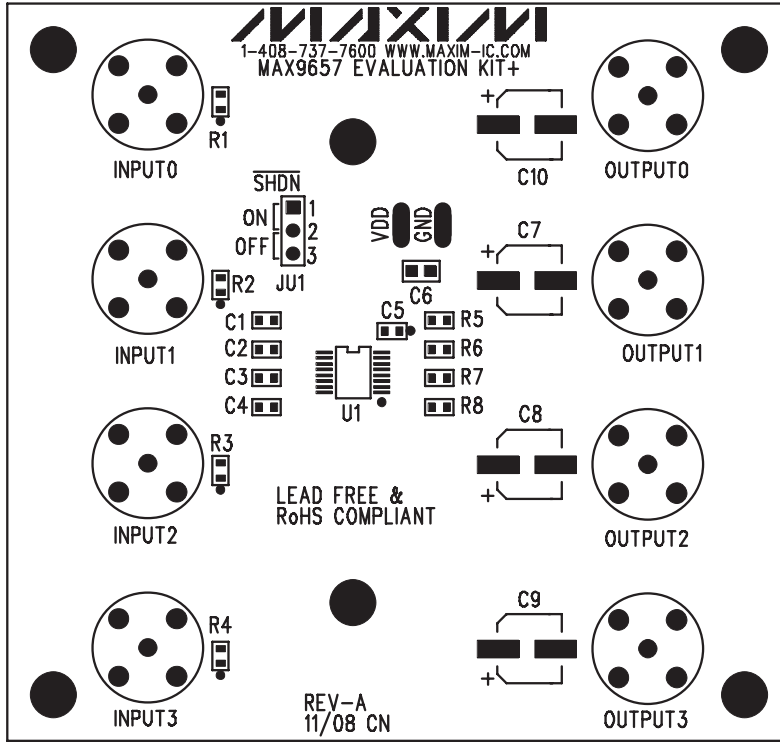


Figure 2. MAX9657 EV Kit Component Placement Guide—Component Side

MAX9657 Evaluation Kit

Evaluates: MAX9657/MAX9658

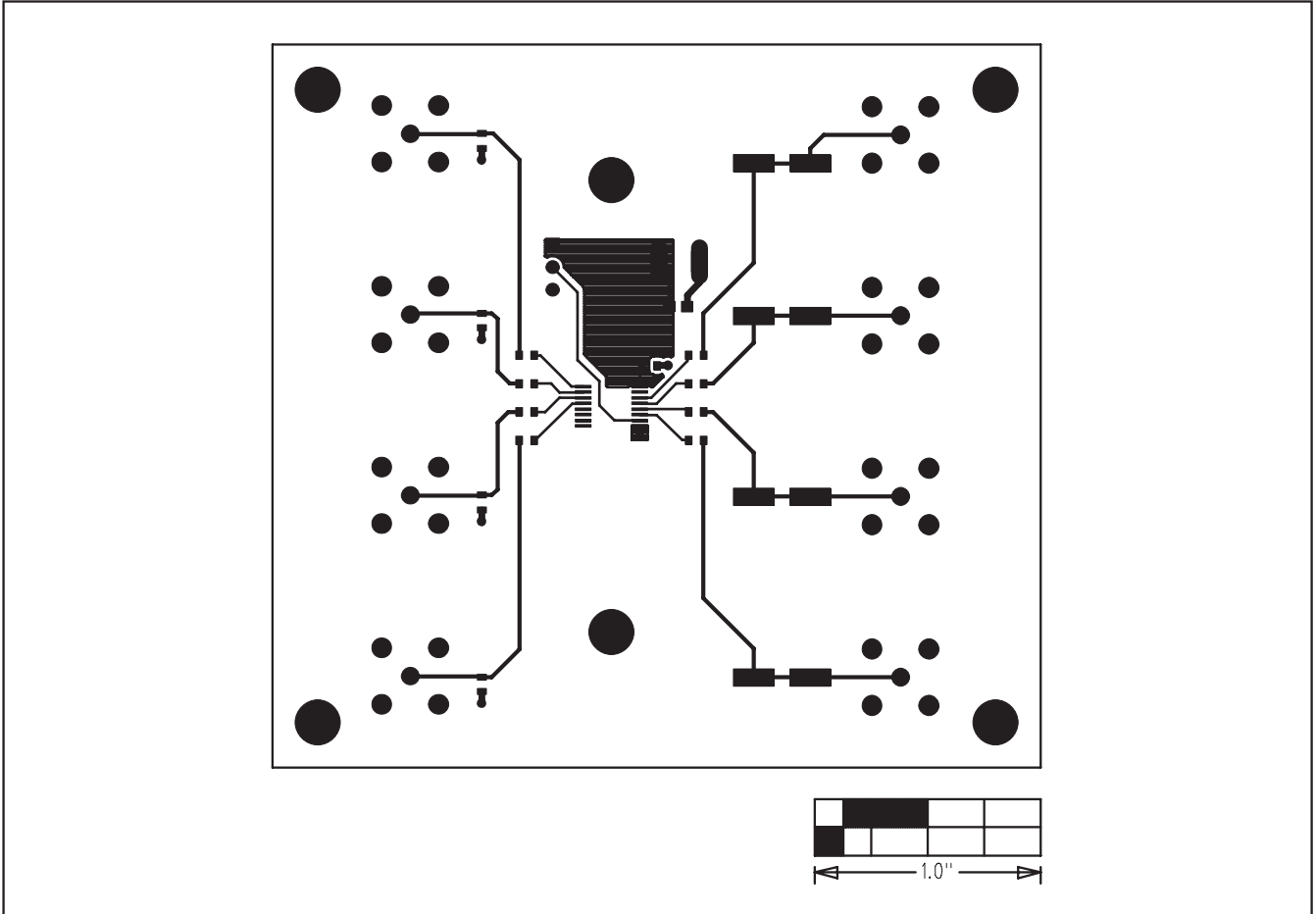


Figure 3. MAX9657 EV Kit Component PCB Layout—Component Side

MAX9657 Evaluation Kit

Evaluates: MAX9657/MAX9658

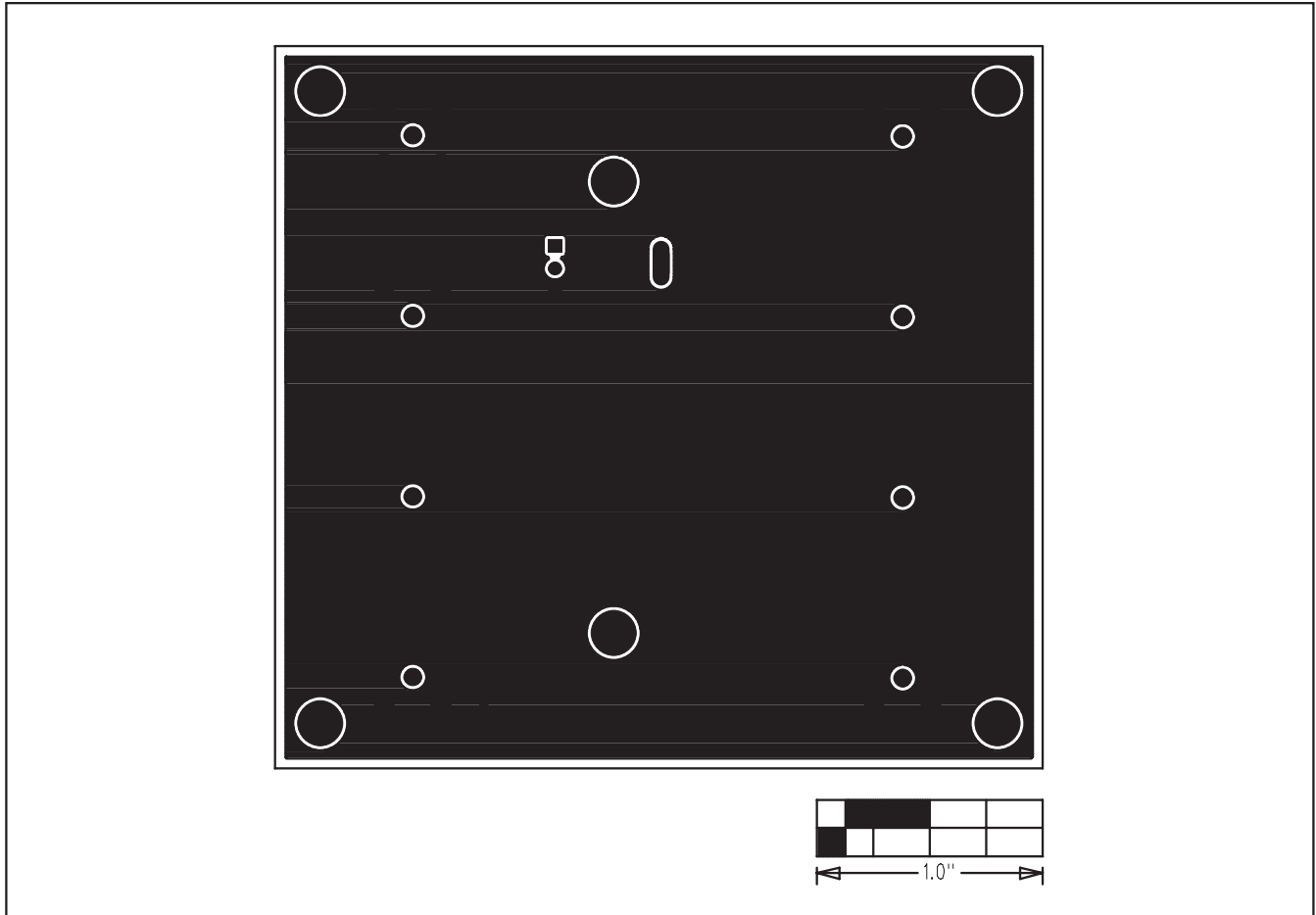


Figure 4. MAX9657 EV Kit PCB Layout—Solder Side

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