



MAX4159 Evaluation Kit

Evaluates: MAX4159/MAX4259

General Description

The MAX4159 evaluation kit (EV kit) simplifies evaluation of the MAX4159 two-channel, 350MHz video multiplexer (mux) amplifier. The EV kit circuit demonstrates the MAX4159 in the noninverting unity-gain configuration. RF connectors (SMA) and 50Ω terminating resistors are included.

The EV kit comes with the MAX4159 installed. To evaluate the MAX4259, simply order a free sample (MAX4259ESD), replace the MAX4159 with the MAX4259 on the EV board, and change the gain-setting resistors for the desired gain. The MAX4259's minimum closed-loop gain is 2V/V (6db).

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C4	2	0.1μF, 10% ceramic capacitors
C2, C3	2	10μF, 10V, 20% tantalum capacitors AVX TAJB106M010 or Sprague 293D106X0010B
IN0, IN1, OUT	3	SMA connectors
R1, R2, R3	3	49.9Ω, 1% resistors
RF	1	430Ω, 1% resistor
RG	0	Open
SW1	1	DIP switch
U1	1	MAX4159ESD
None	1	MAX4159 data sheet
None	1	MAX4159 PC board

Component Suppliers

SUPPLIER	PHONE	FAX
AVX	(803) 946-0690	(803) 626-3123
Sprague	(603) 224-1961	(603) 224-1430

Features

- ◆ 350MHz -3dB Bandwidth
- ◆ 100MHz 0.1dB Gain Flatness
- ◆ 700V/μs Slew Rate
- ◆ 0.01%/0.01° Differential Gain/Phase Error
- ◆ Directly Drives 50Ω Cables
- ◆ Fully Assembled and Tested
- ◆ Low Power: 100mW
- ◆ 20ns Settling Time to 0.1%
- ◆ 20ns Channel-Switching Time

Ordering Information

PART	TEMP. RANGE	BOARD TYPE
MAX4159EVKIT-SO	-40°C to +85°C	Surface Mount

Quick Start

The MAX4159 EV kit is fully assembled and tested. Follow these steps to verify board operation.

- 1) Set all switches on DIP switch SW1 to the logic-low (off) position.
- 2) Connect the power-supply grounds to the pad marked GND. Connect a +5V supply to the pad marked V+ and a -5V supply to the pad marked V-.
- 3) Connect the output marked OUT to a 50Ω terminated oscilloscope input.
- 4) Turn on the power supply. Apply a signal of ±2.5V (max) to the SMA connector marked IN0.
- 5) Verify the output signal on the oscilloscope. The output amplitude will be half that on the input, due to the voltage divider formed by the 49.9Ω back-terminating resistor (R3) and the oscilloscope input termination.



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Detailed Description

Evaluating the MAX4259

The MAX4159 EV kit can also be used to evaluate the MAX4259. Simply replace the MAX4159 with the MAX4259 and change the gain-setting resistors for the desired gain ($2V/V$ min). Refer to the *Choosing Feedback and Gain Resistors* section of the MAX4158/MAX4159/MAX4258/MAX4259 data sheet for more information.

Logic Controls

The MAX4159 EV kit has control logic for input channel address (A0), input latch enable (LE), and output enable (\overline{EN}). DIP switch SW1 provides simple manual control of these inputs by switching each input to $V+$ (logic inputs default low when the circuit is open). Table 1 lists the options available with SW1. An external controller can be used by connecting the controller to the appropriate user pad and opening the corresponding switch (SW1_i). A0, LE, and \overline{EN} are TTL/CMOS-compatible logic-level inputs.

Layout Considerations

The MAX4159 EV kit layout is optimized for high-speed signals and low distortion, with careful attention given to grounding, power-supply bypassing, and signal-path layout. The small, surface-mount, ceramic bypass capacitors (C1, C4) are located as close to the MAX4159 supply pins as possible. The ground plane has been removed around and under R_F and R_G to reduce stray capacitance. Removing the ground plane around the input SMA connectors reduces distortion.

Table 1. SW1 Settings

LOGIC INPUTS	SW1 SETTINGS	
	LOGIC LOW	LOGIC HIGH
A0	Input channel 0 selected	Input channel 1 selected
LE	Input address transparent	Input address latched
\overline{EN}	Output enabled	Output disabled (high impedance)

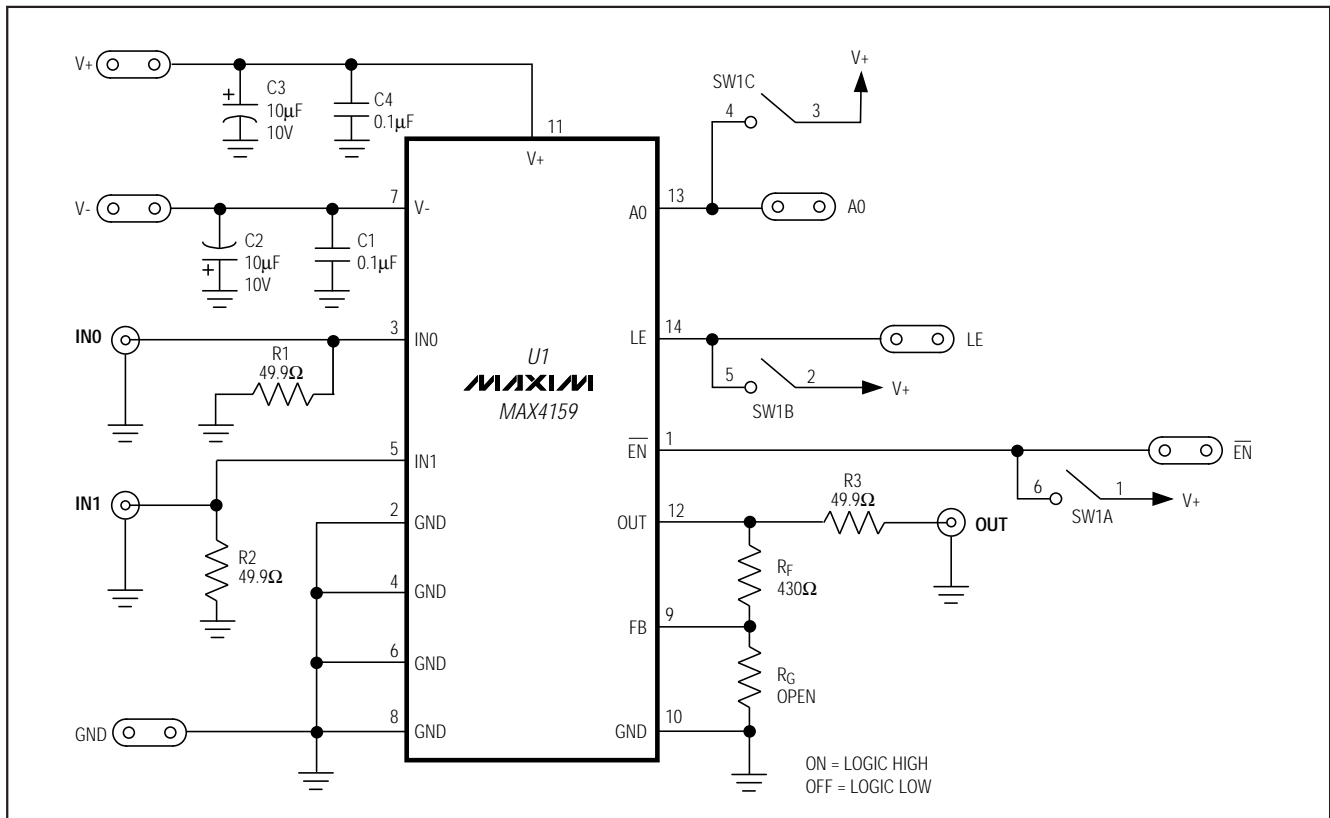


Figure 1. MAX4159 EV Kit Schematic

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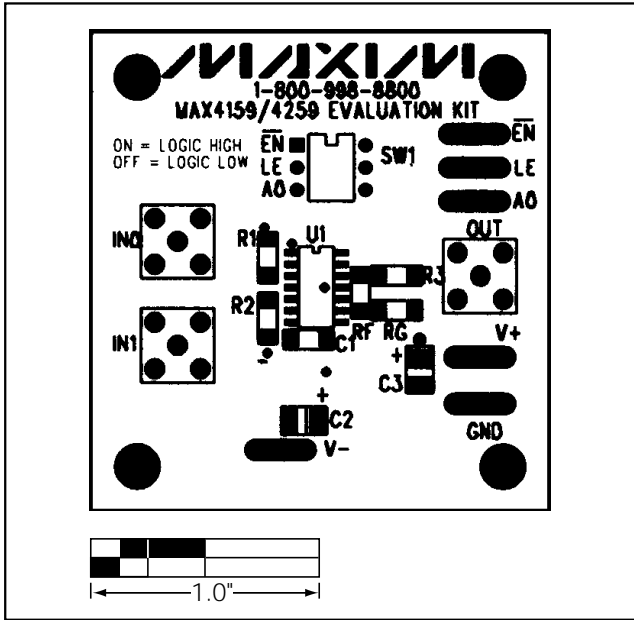


Figure 2. MAX4159 EV Kit Component Placement Guide—Component Side

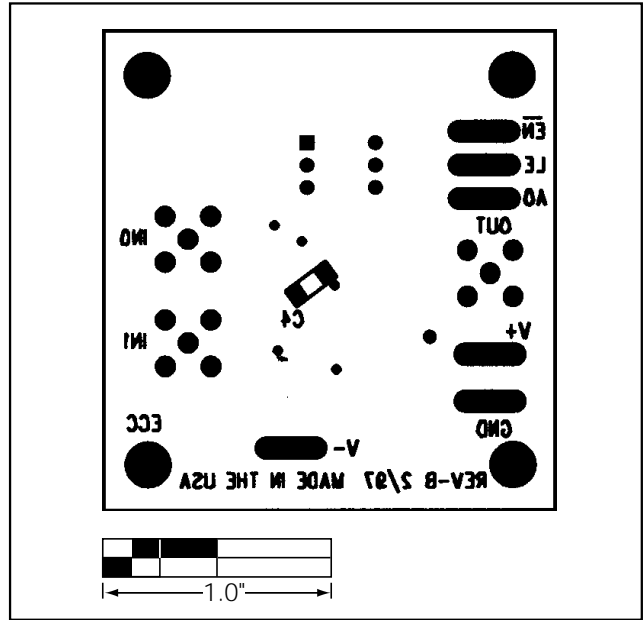


Figure 3. MAX4159 EV Kit Component Placement Guide—Solder Side

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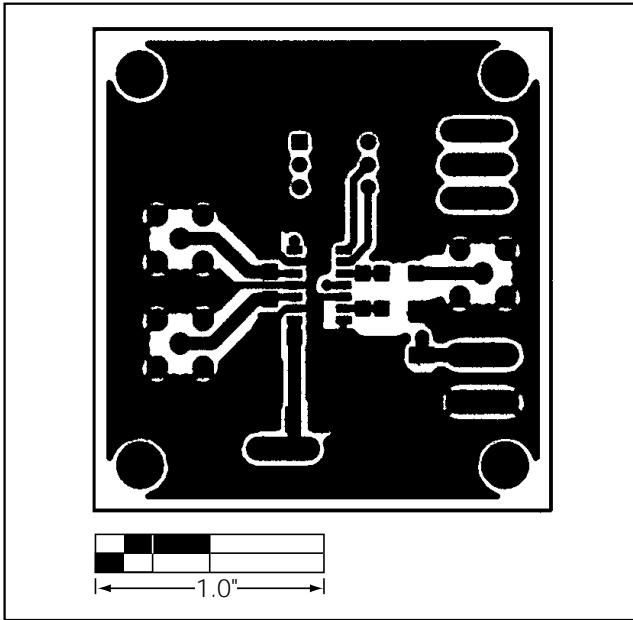


Figure 4. MAX4159 EV Kit PC Board Layout—Component Side

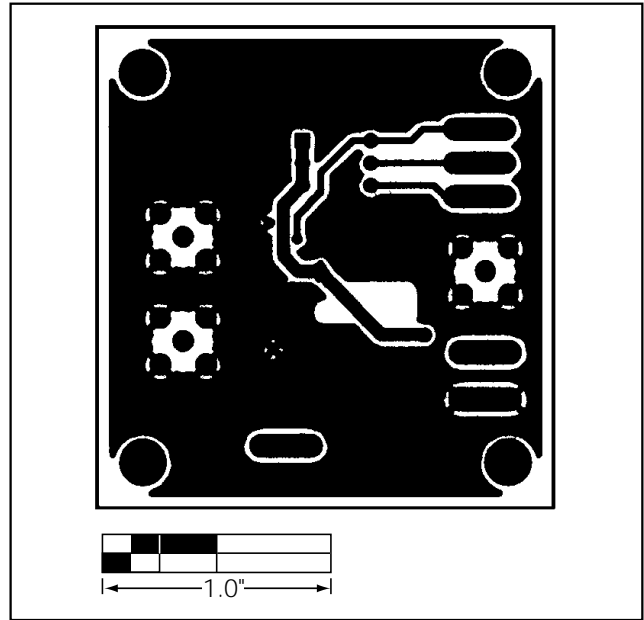


Figure 5. MAX4159 EV Kit PC Board Layout—Solder Side

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4 _____ Maxim Integrated Products, 120 San Gabriel Drive, Sunnyvale, CA 94086 (408) 737-7600

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