

MAXIM

MAX4108 Evaluation Kit

Evaluates: MAX4108/MAX4109

General Description

The MAX4108 evaluation kit (EV kit) simplifies evaluation of the MAX4108 high-speed amplifier. The EV kit circuit demonstrates the MAX4108 in the noninverting, unity-gain configuration.

The EV kit comes with the MAX4108 installed. To evaluate the MAX4109, simply order a free sample (MAX4109ESA), replace the MAX4108 with the MAX4109 on the EV board, and change the gain-setting resistors for the desired gain. The minimum closed-loop gain for the MAX4109 is +2V/V.

Features

- ◆ 400MHz Unity-Gain Bandwidth
- ◆ Optional Adjustable Gain
- ◆ Fully Assembled and Tested

Ordering Information

PART	TEMP. RANGE	BOARD TYPE
MAX4108EVKIT-SO	+25°C	Surface Mount

Note: To evaluate the MAX4109, request a MAX4109ESA free sample.

Component List

DESIGNATION	QTY	DESCRIPTION
U1	1	MAX4108ESA
C3, C6	2	10 μ F, 10V 20% tantalum capacitors AVX TAJB106M010 Sprague 293D106X0010B
C1, C2, C4, C5	4	0.1 μ F, 10% ceramic capacitors Vitraron VJ1206Y104KXX
R1, R2	2	49.9 Ω , 1% resistors
R _F	1	24 Ω , 5% resistor
IN, OUT	2	SMA connectors
None	1	MAX4108 PC board
None	1	MAX4108/MAX4109 data sheet

Quick Start

The MAX4108 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) The circuit requires supply voltages of ± 5 V. Connect ± 5 V supplies to the corresponding pads marked V_{CC} and V_{EE}. Connect the power-supply ground to the pad marked GND.
- 2) Apply a signal between +2.5V and -3.1V to the SMA connector marked IN.
- 3) Connect the output marked OUT to an oscilloscope through a terminated 50 Ω cable.
- 4) Turn on the power supply and verify the output signal on the oscilloscope.

Detailed Description

Voltage-Gain Adjustment

The MAX4108 gain can be adjusted with the following minor modifications to the EV board.

- 1) Referring to Table 1, select the feedback (R_F) and gain-setting (R_G) resistors for the desired gain.
- 2) Install R_F and R_G.

Component Suppliers

SUPPLIER	PHONE	FAX
AVX Sprague Vishay/Vitramon	(803) 946-0690 (603) 224-1961 (203) 268-6261	(803) 626-3123 (603) 224-1430 (203) 452-5670

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Table 1. Gain-Set Resistors

GAIN	R _F (Ω)	R _G (Ω)	SMALL-SIGNAL BANDWIDTH (MHz)	DEVICE
1	24	Open	400	MAX4108
2	270	270	225	MAX4109
5	270	68	50	MAX4109
10	270	30	25	MAX4109

Layout Considerations

The MAX4108 EV kit layout has been optimized for high-speed signals and low distortion, with careful attention to grounding, power-supply bypassing, and signal-path layout. The small, surface-mount, ceramic bypass capacitors (C1, C2, C4, and C5) have been placed as close to the four MAX4108 supply pins as possible. Bypass capacitors for pins 5 and 8 must connect to a low-impedance ground. Individual power-supply traces are used to separate the MAX4108 input and output stage currents to reduce distortion. Unused pin 1 is grounded to prevent unwanted noise from coupling into the circuit.

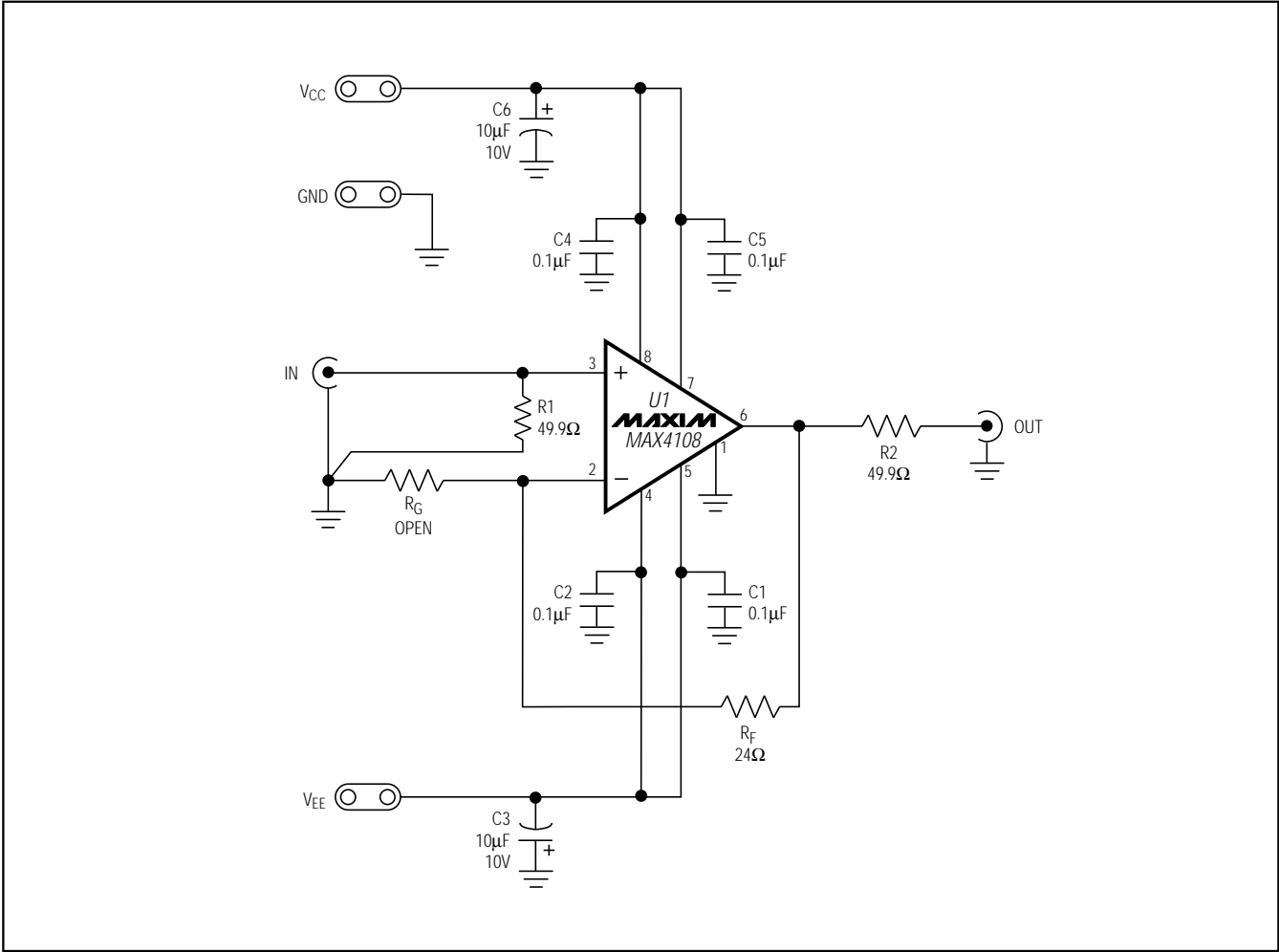


Figure 1. MAX4108 EV Kit Schematic

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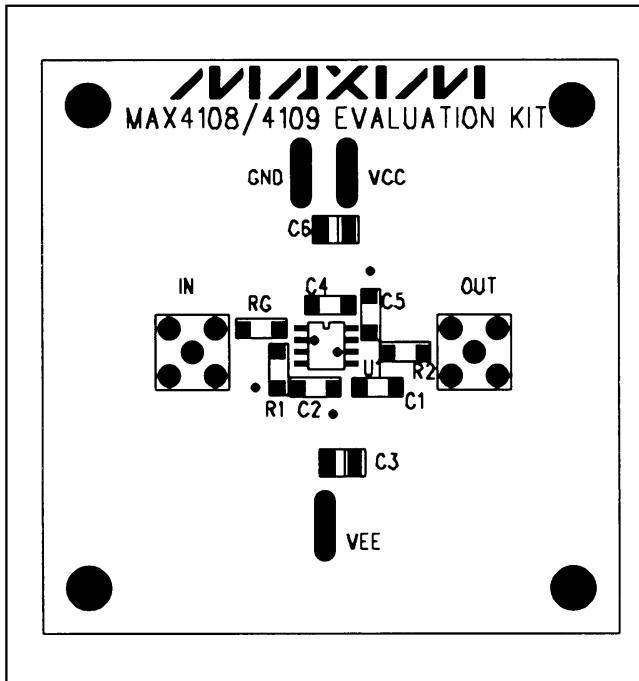


Figure 2. MAX4108 EV Kit Component Placement Guide—Component Side

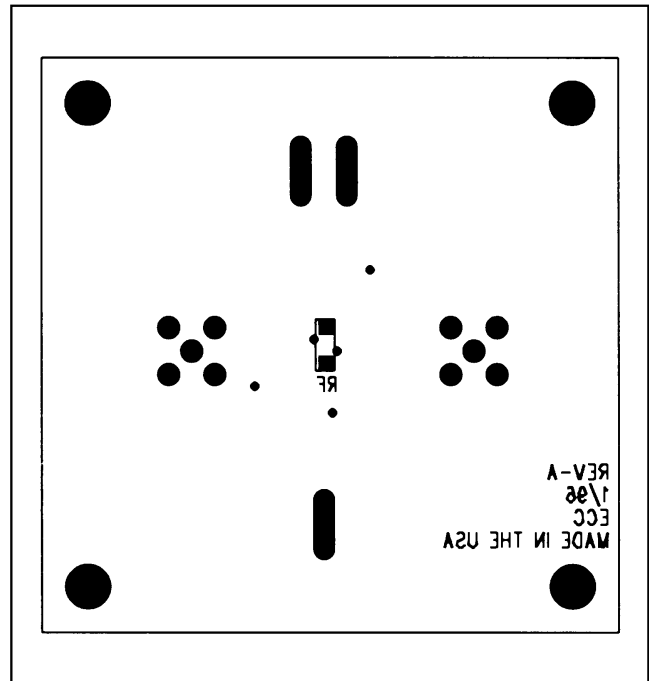


Figure 3. MAX4108 EV Kit Component Placement Guide—Solder Side

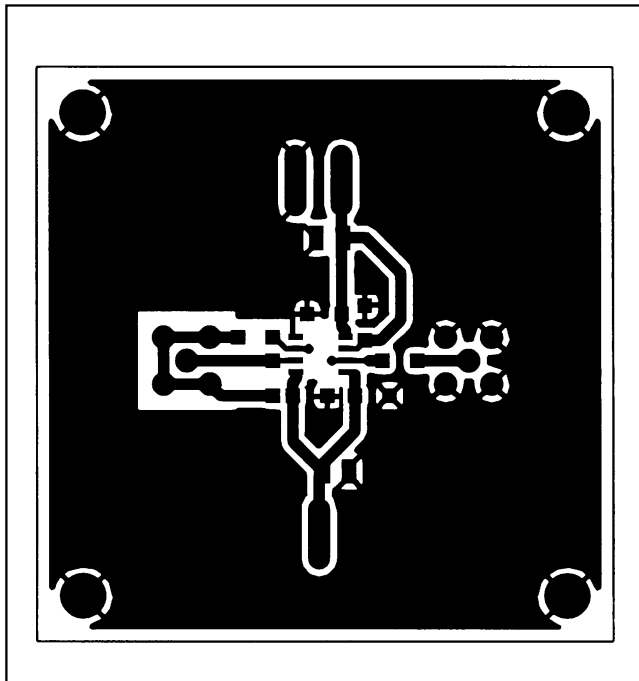


Figure 4. MAX4108 EV Kit PC Board Layout—Component Side

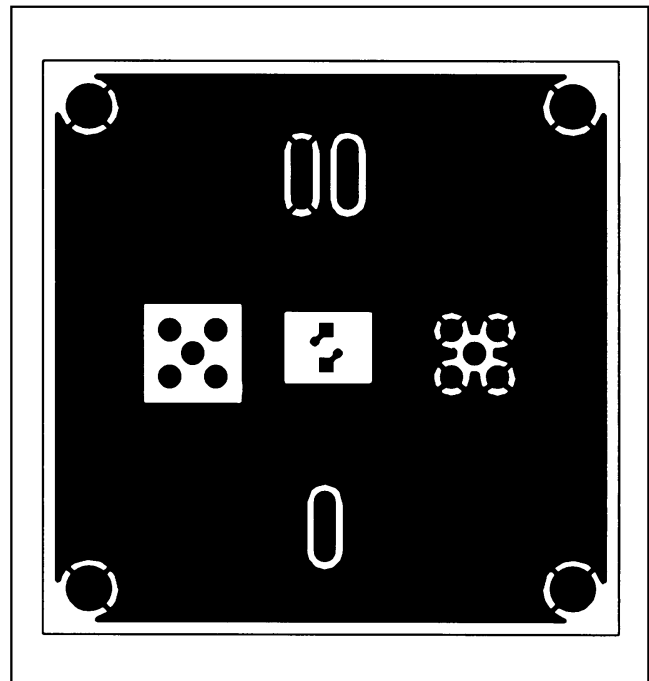


Figure 5. MAX4108 EV Kit PC Board Layout—Solder Side

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