

MAXIM

MAX4100 Evaluation Kit

General Description

The MAX4100 evaluation kit (EV kit) simplifies evaluation of the MAX4100 high-speed amplifier. The EV kit circuit demonstrates the MAX4100 in the noninverting unity-gain configuration. RF-style connectors (SMA) and 75 Ω terminating resistors are included for video test equipment compatibility.

The EV kit comes with the MAX4100 installed. To evaluate the MAX4101, simply order a free sample (MAX4101ESA), replace the MAX4100 with the MAX4101 on the EV board, and change the gain-setting resistors for the desired gain. The minimum closed-loop gain for the MAX4101 is +2V/V or -1V/V.

Component List

DESIGNATION	QTY	DESCRIPTION
U1	1	Maxim MAX4100ESA
C1, C6	2	10 μ F, 10V, 20% tantalum capacitors AVX TAJB106M010 or Sprague 293D106X0010B
C2, C5	2	0.1 μ F, 10% ceramic capacitors Vitramon VJ1206Y104KXX
C3, C4	2	1000pF, 10% ceramic capacitors Vitramon VJ1206Y102KXX
R1, R2	2	75 Ω , 5% resistors
R _F	1	24 Ω , 5% resistor
IN, OUT	2	SMA connectors
None	1	High-frequency-amplifier PC board
None	1	MAX4100/MAX4101 data sheet
None	1	Shunt
J1	1	3-pin jumper

Component Suppliers

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

Features

- ◆ 500MHz Unity-Gain Bandwidth
- ◆ Optional Adjustable Gain
- ◆ Fully Assembled and Tested

Ordering Information

PART	TEMP. RANGE	BOARD TYPE
MAX4100EVKIT-SO	+25°C	Surface Mount

Note: To evaluate the MAX4101, request a MAX4101ESA free sample.

Quick Start

The MAX4100 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 these supplies to the corresponding pads marked V+ and V-. Connect the power-supply ground to the pad marked GND.
- 2) Verify that the J1 shunt is across pins 2 and 3 of the 3-pin jumper J1.
- 3) Apply a signal no greater than ± 3.5 V_{PK} (16dBm) to the SMA connector marked IN.
- 4) Connect the output marked OUT to an oscilloscope through a terminated 75 Ω cable.
- 5) Turn on the power supply and verify the output signal on the oscilloscope.

Detailed Description

Voltage-Gain Adjustment

The MAX4100's 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 with the desired gain.
- 2) Install R_F and R_G.

Table 1. Gain-Setting Resistors

DEVICE	GAIN	R _F (Ω)	R _G (Ω)	SMALL-SIGNAL BANDWIDTH (MHz)
MAX4100	1	24	Open	500
MAX4101	2	200	200	210
MAX4101	5	200	51	45
MAX4101	10	200	30	20

Evaluates: MAX4100/MAX4101

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Layout Considerations

The MAX4100 EV kit layout has been optimized for high-speed signals, with careful attention given to grounding, power-supply bypassing, and signal-path layout. The small, surface-mount, ceramic bypass capacitors C2–C5 have been placed as close to the MAX4100 supply pins as possible. The unused pins have been grounded to prevent unwanted noise from coupling into the circuit. Refer to the *Layout and Power-Supply Bypassing* section of the MAX4100 data sheet for details.

Shutdown Control

The MAX4100/MAX4101 EV kit is a standard EV kit used for many of Maxim's high-speed op amps. As a result, a shutdown (SHDN) function is incorporated on the EV kit, but does not apply to the MAX4100/MAX4101. Because the shutdown control is not applicable to the MAX4100/MAX4101, verify that a shunt is connected to pins 2 and 3 of jumper J1.

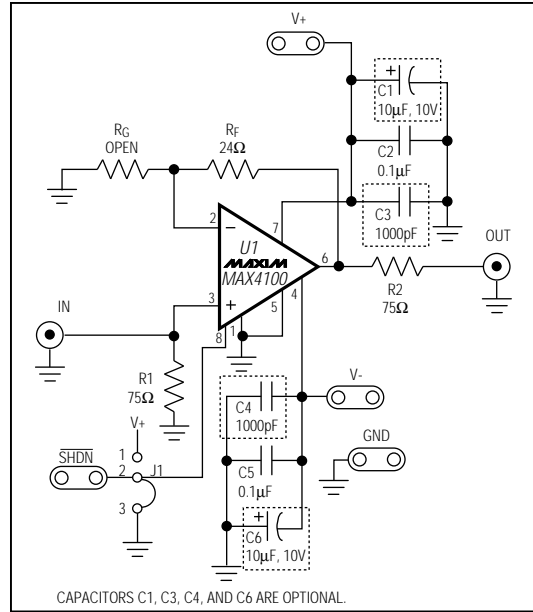


Figure 1. MAX4100 EV Kit Schematic

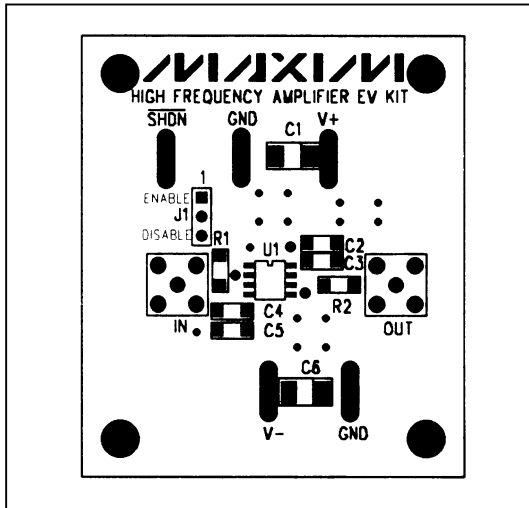


Figure 2. MAX4100 EV Kit Component Placement Guide—Component Side

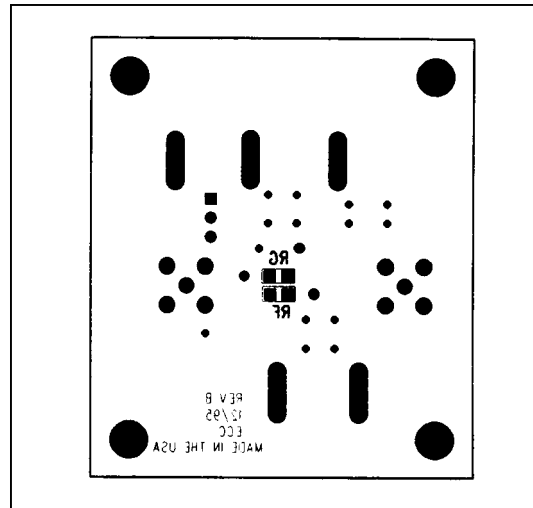


Figure 3. MAX4100 EV Kit Component Placement Guide—Solder Side

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Evaluates: MAX4100/MAX4101

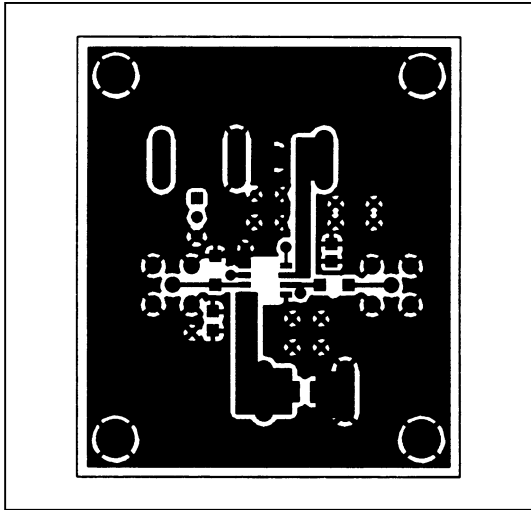


Figure 4. MAX4100 EV Kit PC Board Layout—Component Side

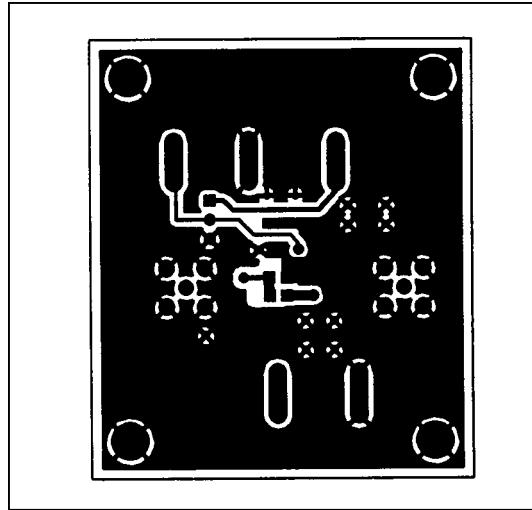


Figure 5. MAX4100 EV Kit PC Board Layout—Solder Side

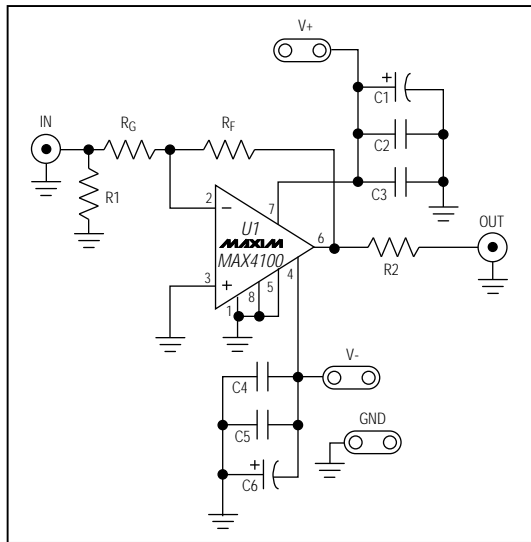


Figure 6. Inverting Schematic (for PCB Layout of Figures 7-10)*

* The Inverting Gain Configuration layouts and schematic are shown for reference only. The PC board supplied does not include the inverting configuration.

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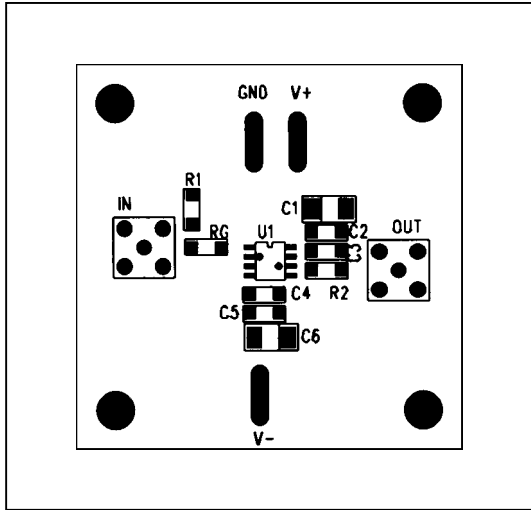


Figure 7. Inverting Gain Configuration, Component Placement Guide—Component Side*

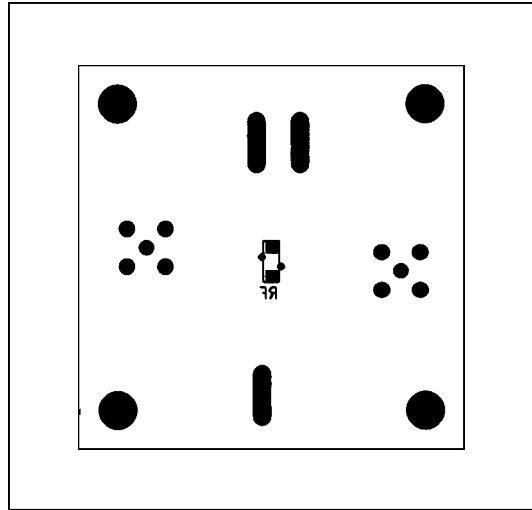


Figure 8. Inverting Gain Configuration, Component Placement Guide—Solder Side*

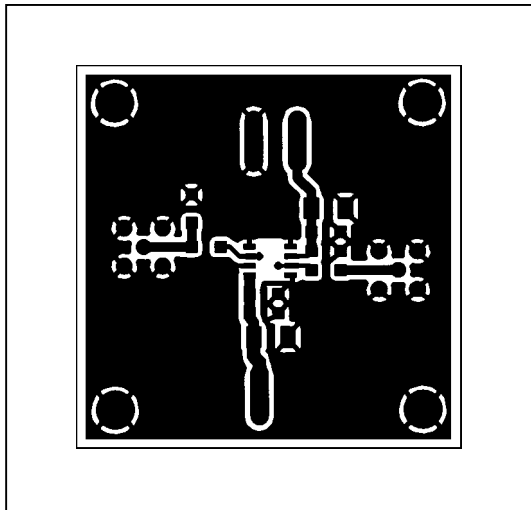


Figure 9. Inverting Gain Configuration, PC Board Layout—Component Side*

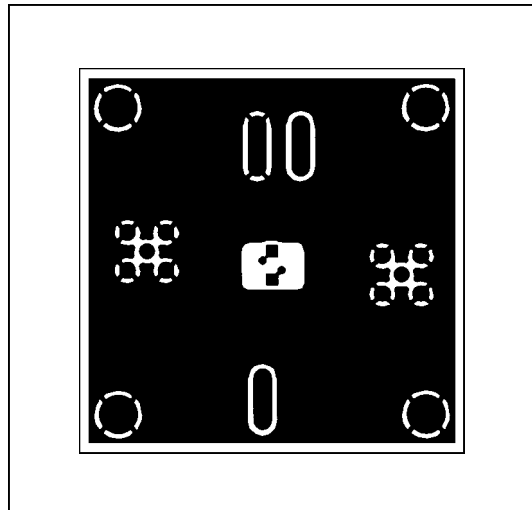


Figure 10. Inverting Gain Configuration, PC Board Layout—Solder Side*

* The Inverting Gain Configuration layouts and schematic are shown for reference only. The PC board supplied does not include the inverting configuration. Maxim cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim product. No circuit patent licenses are implied. Maxim reserves the right to change the circuitry and specifications without notice at any time.