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# MAXIM

## MAX4104 Evaluation Kit

### General Description

The MAX4104 evaluation kit (EV kit) simplifies evaluation of the MAX4104 ultra-high-speed, low-noise, 880MHz amplifier. The EV kit circuit demonstrates the MAX4104 in the noninverting unity-gain configuration. RF-style connectors (SMA) and 50 $\Omega$  terminating resistors are included for test equipment compatibility.

The MAX4104 EV kit can also be used to evaluate the MAX4105, MAX4304, and MAX4305. Simply order a free sample of the appropriate part (MAX4105ESA, MAX4304ESA, or MAX4305ESA), replace the IC on the EV board, and change the gain-setting resistors for the desired gain. Refer to the MAX4104/MAX4105/MAX4304/MAX4305 data sheet for suggested resistor values.

### Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX4104EVKIT	-40°C to +85°C	8 SO

### Component List

DESIGNATION	QTY	DESCRIPTION
C1, C3	2	10 $\mu$ F, 10V, 20% tantalum capacitors AVX TAJB106M010 or Sprague 293D106X0010B
C2, C4	2	0.1 $\mu$ F 10% ceramic capacitors
IN, OUT	2	SMA connectors
R1, R2	2	49.9 $\Omega$ , 1% resistors
R <sub>F</sub>	1	22 $\Omega$ , 5% resistor
R <sub>G</sub>	0	Open
U1	1	MAX4104ESA
None	1	MAX4104 PC board
None	1	MAX4104/MAX4105/MAX4304/ MAX4305 data sheet

### Component Suppliers

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

**Note:** Please indicate that you are using the MAX4104 when contacting these component suppliers.



For free samples & the latest literature: <http://www.maxim-ic.com>, or phone 1-800-998-8800.  
For small orders, phone 1-800-865-8769.

### Features

- ◆ 880MHz (typical) -3dB Bandwidth
- ◆ 100MHz 0.1dB Gain Flatness
- ◆ 2.1nV/ $\sqrt{\text{Hz}}$  Voltage Noise Density
- ◆ 400V/ $\mu$ s Slew Rate
- ◆  $\pm$ 70mA Output Current Drive
- ◆ -88dBc SFDR (at 50MHz)
- ◆ Fully Assembled and Tested Surface-Mount Board

### Quick Start

The MAX4104 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  $\pm$ 3.5V to  $\pm$ 5.5V. For evaluation purposes, connect a +5V supply to the pad labeled VCC and a -5V supply to the pad labeled VEE. Connect the power-supply grounds to the pad marked GND.
- 2) Connect the output marked OUT to an oscilloscope through a terminated 50 $\Omega$  cable.
- 3) Turn on the power supply. Apply a signal of  $\pm$ 3.4V maximum to the SMA connector marked IN.
- 4) Verify the output signal on the oscilloscope. **Note:** when using a 50 $\Omega$  terminated oscilloscope input, the output amplitude observed on the oscilloscope will be half that on the input, due to the voltage divider formed by the 49.9 $\Omega$  back-terminating resistor (R2) and the oscilloscope input termination impedance.

### Layout Considerations

The MAX4104 EV kit layout has been 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 C2 and C4 have been placed as close to the MAX4104 supply pins as possible. A continuous ground plane has been maintained under the IC, R<sub>F</sub>, and R<sub>G</sub> to reduce inductance to the signal return path. Capacitance at the inverting input pin has been minimized by reducing the feedback-trace length and using 0805-size surface-mount feedback and gain-set resistors.

# MAX4104 Evaluation Kit

Evaluates: MAX4104/MAX4105/MAX4304/MAX4305

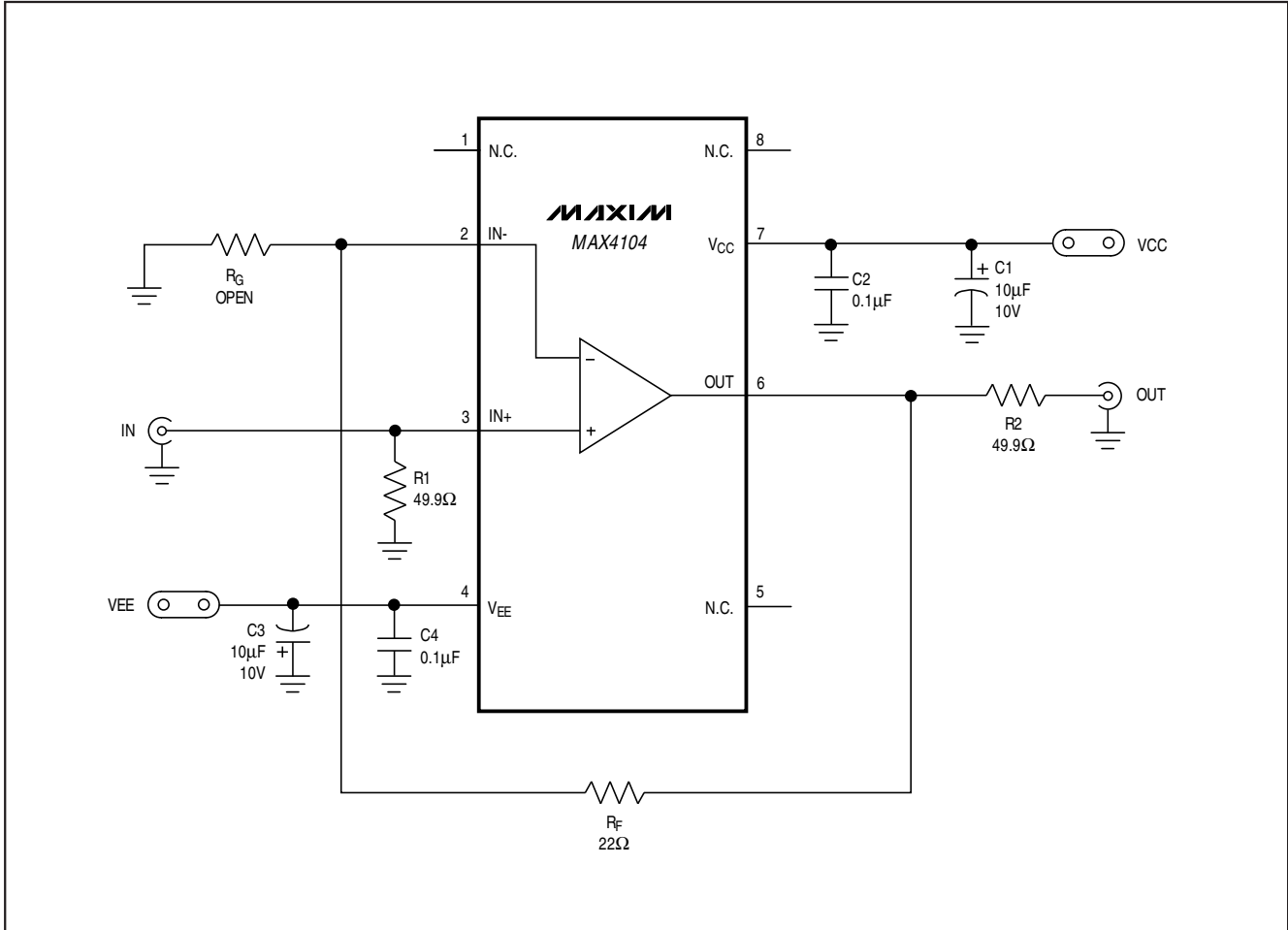


Figure 1. MAX4104 EV Kit Schematic

# MAX4104 Evaluation Kit

Evaluates: MAX4104/MAX4105/MAX4304/MAX4305

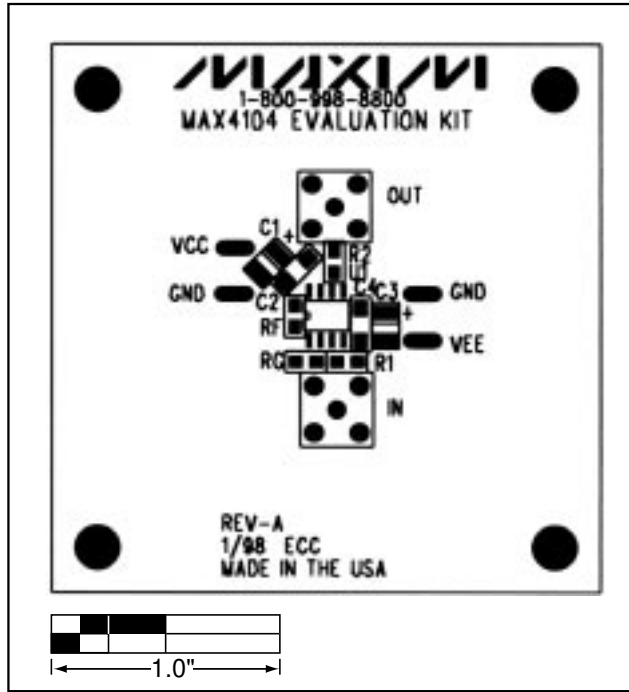


Figure 2. MAX4104 EV Kit Component Placement Guide—Component Side

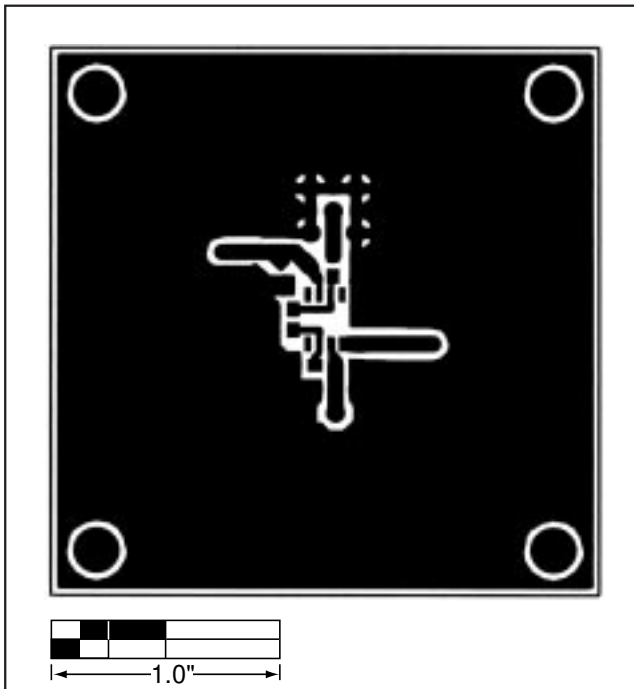


Figure 3. MAX4104 EV Kit PC Board Layout—Component Side

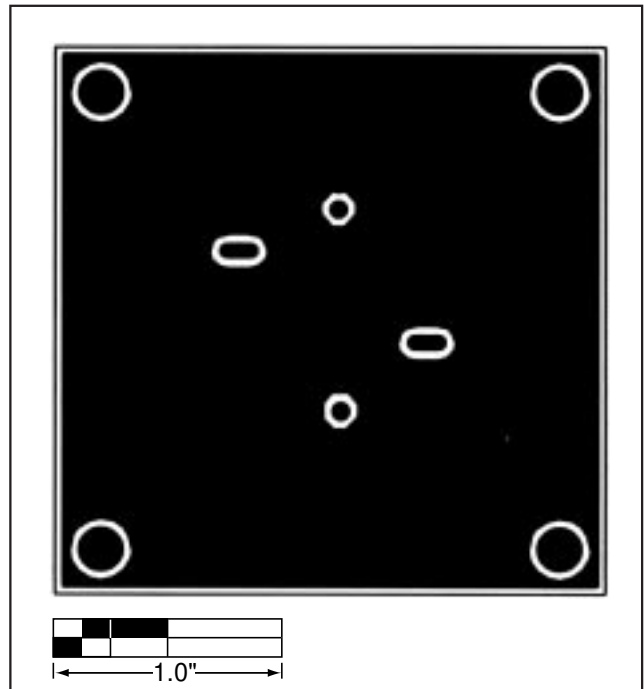


Figure 4. MAX4104 EV Kit PC Board Layout—Solder Side

# MAX4104 Evaluation Kit

## NOTES

**Evaluates: MAX4104/MAX4105/MAX4304/MAX4305**

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