

# MAXIM

## MAX4060 Evaluation Kit

Evaluates: MAX4060

### General Description

The MAX4060 evaluation kit (EV kit) is a fully assembled and tested circuit board used to evaluate the MAX4060 low-noise microphone amplifier. The MAX4060 contains a differential input amplifier typically used for an internal microphone and a single-ended auxiliary-input amplifier used for an external microphone. Both amplifiers have an internally set fixed gain of 10V/V. The MAX4060 EV kit also provides a bias voltage for powering microphones, compliant with the PC99/2001 specification.

The MAX4060 EV kit has low quiescent current and high power-supply rejection. The MAX4060 is available in 8-pin QFN and  $\mu$ MAX packages. The MAX4060 EV kit uses the smaller 8-pin QFN package.

### Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	0.1 $\mu$ F $\pm$ 10%, 16V X7R ceramic capacitor (0603) TDK C1608X7R1C104K
C2	1	10 $\mu$ F $\pm$ 20%, 6.3V X5R ceramic capacitor (0805) TDK C2012X5R0J106MT
C3, C4, C5	3	1 $\mu$ F $\pm$ 10%, 10V X5R ceramic capacitors (0603) TDK C1608X5R1A105KT
C6	1	1 $\mu$ F $\pm$ 10%, 6.3V tantalum capacitor (0603) AVX TACL105K006R
AUX_IN	1	3.5mm stereo jack
OUT	1	Non-switched, PC-mount jack, red
R1	1	100k $\Omega$ $\pm$ 5% resistor (0603)
JU1	1	3-pin header
None	1	Shunt (JU1)
None	1	MAX4060 PC board
None	1	MAX4060-MAX4063 data sheet
None	1	MAX4060 EV kit data sheet
U1	1	MAX4060EGA (8-pin QFN)

### Features

- ◆ 4.5V to 5.5V Single-Supply Operation
- ◆ Low 0.75mA Supply Current
- ◆ High 86dB PSRR at 1kHz
- ◆ Single-Ended and Differential Inputs
- ◆ PC99/2001 Compliant
- ◆ Low-Noise Microphone Bias Voltage
- ◆ Small 8-Pin QFN Package (3mm x 3mm)
- ◆ Fully Assembled and Tested

### Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX4060EVKIT	0°C to +70°C	8 QFN

### Quick Start

The MAX4060 EV kit is fully assembled and tested. Follow the steps listed below to verify board operation. **Do not turn on the power supply until all connections are completed.**

#### Recommended Equipment

- 5V, 100mA power supply
- Function generator
- Oscilloscope

#### Equipment Setup

- 1) Set the power supply to 5V.
- 2) Set the function generator's output for a sine wave with 0.2V<sub>p-p</sub>, 100Hz frequency, and 0 Offset.
- 3) Turn off the power supply and function generator.

### Component Suppliers

SUPPLIER	PHONE	FAX	WEBSITE
AVX	843-946-0238	843-626-3123	www.avxcorp.com
TDK	847-803-6100	847-390-4405	www.component.tdk.com

**Note:** Please indicate that you are using the MAX4060 when contacting these component suppliers.

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**For pricing, delivery, and ordering information, please contact Maxim/Dallas Direct! at 1-888-629-4642, or visit Maxim's website at [www.maxim-ic.com](http://www.maxim-ic.com).**

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## Quick Test

- 1) Install a shunt across pins 1 and 2 of jumper JU1 (INT/AUX).
- 2) Connect the output of the function generator to the AUX\_IN pad on the MAX4060 EV kit and the ground lead of the function generator to the GND pad.
- 3) Connect the 5V terminal of the power supply to the VCC pad and the ground terminal of the power supply to the GND pad.
- 4) Turn on the power supply and then the function generator.
- 5) Using the oscilloscope, verify that the signal at the OUT pad is 2V<sub>P-P</sub>.
- 6) Move the shunt on JU1 to pins 2 and 3.
- 7) Move the output of the function generator to the IN+ pad on the MAX4060 EV kit and the ground lead of the function generator to the IN- pad.
- 8) Using the oscilloscope, verify that the signal at the OUT pad is 2V<sub>P-P</sub>.

## Detailed Description

The MAX4060 EV kit evaluates the MAX4060 which contains two low-noise amplifiers: a differential amplifier typically used for amplifying an internal microphone and an auxiliary single-ended amplifier typically used for amplifying an external microphone.

The MAX4060 EV kit operates from a 4.5V to 5.5V supply and provides a DC biasing voltage with an internal, 2.5k $\Omega$  resistor to power a microphone. This DC biasing voltage is PC99/2001 compliant. The two amplifiers within the MAX4060 have an internally set fixed gain of 10V/V.

### Jumper Selection Input Mode

Jumper JU1 provides an option to select between single-ended mode (AUX) and differential mode (INT) inputs. The input mode (INT/AUX) can also be controlled by an external controller connected to the (INT/AUX) pad after removing the shunt on jumper JU1 (see Table 1 for shunt positions).

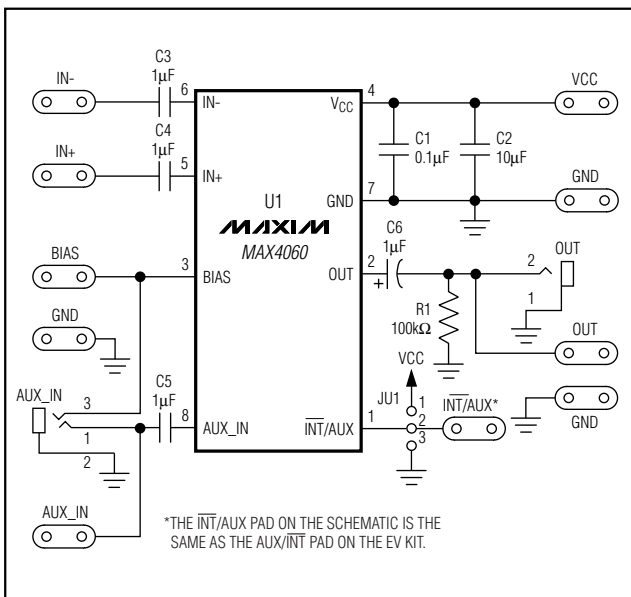


Figure 1. MAX4060 EV Kit Schematic

Table 1. JU1 Jumper Selection

SHUNT POSITION	INT/AUX PIN	EV KIT INPUT
1-2 (AUX)	Pulled up to VCC	Single ended
2-3 (INT)	Pulled down to GND	Differential
None. External controller connected to INT/AUX pad	Driven by external source	Driven by external source

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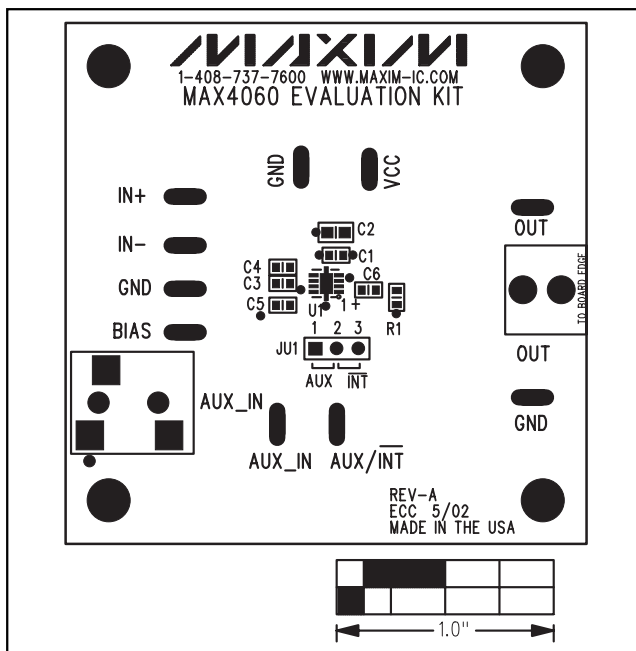


Figure 2. MAX4060 EV Kit Component Placement Guide—Component Side

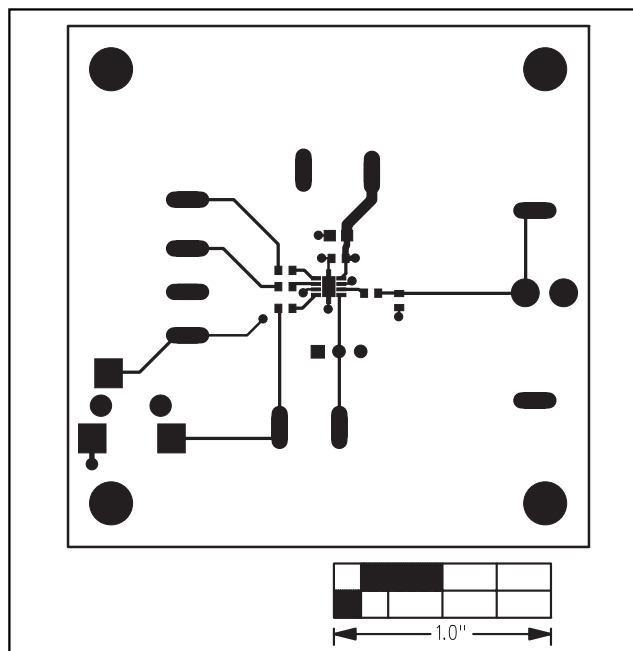


Figure 3. MAX4060 EV Kit PC Board Layout—Component Side

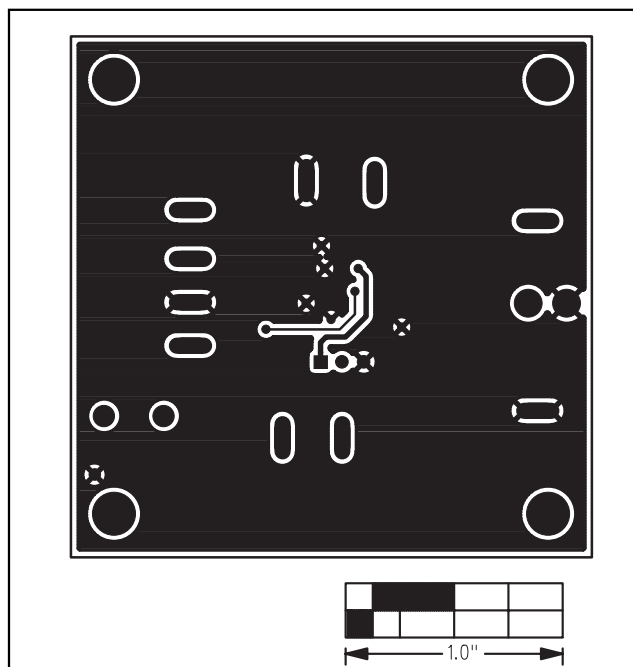


Figure 4. MAX4060 EV Kit PC Board Layout—Solder Side

**Note:** The AUX/ $\overline{\text{INT}}$  pad on the MAX4060 EV kit connects to the  $\overline{\text{INT}}$ /AUX pin on the device.

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