General Description

The MAX44265 evaluation kit (EV kit) provides a proven design to evaluate the MAX44265 low-power, MOS-input operational amplifier (op amp) in a 6-bump wafer-level package (WLP). The EV kit circuit is preconfigured as a noninverting amplifier, but can easily be adapted to other topologies by changing a few components. Low power, low-input V<sub>OS</sub>, and rail-to-rail input/output stages make this device ideal for a variety of measurement applications. The component pads accommodate 0805 packages, making them easy to solder and replace. The EV kit comes with a MAX44265EWT+ installed.

Features

- +1.8V to +5.5V Supply Voltage Range
- Accommodates Multiple Op-Amp Configurations
- Component Pads Allow for Sallen-Key Filter
- Rail-to-Rail Inputs/Outputs
- Accommodates Easy-to-Use 0805 Components
- Proven PCB Layout
- Fully Assembled and Tested

Ordering Information appears at end of data sheet.

Component List

<table>
<thead>
<tr>
<th>DESIGNATION</th>
<th>QTY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>1</td>
<td>0.1μF ±10%, 16V X7R ceramic capacitor (0603) Murata GRM188R71C104K</td>
</tr>
<tr>
<td>C2</td>
<td>1</td>
<td>4.7μF ±10%, 6.3V X5R ceramic capacitor (0603) Murata GRM188R60J475K</td>
</tr>
<tr>
<td>C3, C4, C8, C9</td>
<td>0</td>
<td>Not installed, ceramic capacitors (0805)</td>
</tr>
<tr>
<td>JU1</td>
<td>1</td>
<td>2-pin header</td>
</tr>
<tr>
<td>JU2</td>
<td>1</td>
<td>3-pin header</td>
</tr>
<tr>
<td>R1, R2</td>
<td>2</td>
<td>1kΩ ±1% resistors (0805)</td>
</tr>
<tr>
<td>R5</td>
<td>1</td>
<td>10kΩ ±1% resistor (0805)</td>
</tr>
<tr>
<td>R6, R8</td>
<td>2</td>
<td>0Ω ±5% resistors (0805)</td>
</tr>
<tr>
<td>U1</td>
<td>1</td>
<td>Single low-power, rail-to-rail I/O op amp (6 WLP) Maxim MAX44265EWT+</td>
</tr>
</tbody>
</table>

Component Supplier

<table>
<thead>
<tr>
<th>SUPPLIER</th>
<th>PHONE</th>
<th>WEBSITE</th>
</tr>
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<tbody>
<tr>
<td>Murata Electronics North America, Inc.</td>
<td>770-436-1300</td>
<td><a href="http://www.murata-northamerica.com">www.murata-northamerica.com</a></td>
</tr>
</tbody>
</table>

Note: Indicate that you are using the MAX44265 when contacting this component supplier.
MAX44265 Evaluation Kit
Evaluates: MAX44265

Quick Start

Required Equipment
• MAX44265 EV kit
• +5V, 10mA DC power supply (PS1)
• Precision voltage source
• Digital multimeter (DMM)

Procedure
The EV kit is fully assembled and tested. Follow the steps below to verify board operation:
1) Verify that the jumpers are in their default positions, as shown in Table 1.
2) Connect the positive terminal of the +5V supply to the VDD PCB pad and the negative terminal to the GND PCB pad closest to VDD.
3) Connect the positive terminal of the precision voltage source to the IN+ PCB pad. Connect the negative terminal of the precision voltage source to GND (GND or IN- PCB pads).
4) Connect the DMM to monitor the voltage on the OUT PCB pad. With the 10kΩ feedback resistor (R5) and 1kΩ series resistor (R1), the gain is +11 (noninverting configuration).
5) Turn on the +5V power supply.
6) Apply 100mV from the precision voltage source. Observe the output at OUT on the DMM. OUT should read approximately +1.1V.
7) Apply 400mV from the precision voltage source. OUT should read approximately +4.4V.

Table 1. Jumper Descriptions (JU1, JU2)

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>SHUNT POSITION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>JU1</td>
<td>Installed*</td>
<td>Connects the IN- PCB pad to GND.</td>
</tr>
<tr>
<td></td>
<td>Not installed</td>
<td>Isolates the IN- PCB pad from GND.</td>
</tr>
<tr>
<td>JU2</td>
<td>1-2*</td>
<td>Connects SHDN to VDD (normal operation).</td>
</tr>
<tr>
<td></td>
<td>2-3</td>
<td>Connects SHDN to GND (shutdown).</td>
</tr>
</tbody>
</table>

*Default position.
**Lowpass Sallen-Key Filter**

To configure the Sallen-Key as a lowpass filter, populate the R2 and R8 pads with resistors and the C3 and C4 pads with capacitors. The corner frequency and Q are then given by:

\[
f_C = \frac{1}{2\pi \sqrt{R_2 \times C_3 \times R_8 \times C_4}}
\]

\[
Q = \frac{\sqrt{R_2 \times C_3 \times R_8 \times C_4}}{C_4(R_2 + R_8)}
\]

**Highpass Sallen-Key Filter**

To configure the Sallen-Key as a highpass filter, populate the C3 and C4 pads with resistors and the R2 and R8 pads with capacitors. The corner frequency and Q are then given by:

\[
f_C = \frac{1}{2\pi \sqrt{C_{R8} \times R_{C4} \times C_{R2} \times R_{C3}}}
\]

\[
Q = \frac{\sqrt{C_{R8} \times R_{C4} \times C_{R2} \times R_{C3}}}{R_{R3}(C_{R2} + C_{R8})}
\]

**Capacitive Loads**

Some applications require driving large capacitive loads. To improve the stability of the amplifier in such cases, replace R6 with a suitable resistor value to improve amplifier phase margin in the presence of the capacitive load (C9), or apply a resistive load in parallel with C9.
MAX44265 Evaluation Kit
Evaluates: MAX44265

Figure 1. MAX44265 EV Kit Schematic
MAX44265 Evaluation Kit
Evaluates: MAX44265

Figure 2. MAX44265 EV Kit Component Placement Guide—Component Side
Figure 3. MAX44265 EV Kit PCB Layout—Component Side
Figure 4. MAX44265 EV Kit PCB Layout—Solder Side
### Ordering Information

<table>
<thead>
<tr>
<th>PART</th>
<th>TYPE</th>
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<tbody>
<tr>
<td>MAX44265EVKIT#</td>
<td>EV Kit</td>
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#Denotes RoHS compliant.
**Revision History**

<table>
<thead>
<tr>
<th>REVISION NUMBER</th>
<th>REVISION DATE</th>
<th>DESCRIPTION</th>
<th>PAGES CHANGED</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3/11</td>
<td>Initial release</td>
<td>—</td>
</tr>
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