

MAXIM

MAX4365 Evaluation Kit

Evaluates: MAX4365

General Description

The MAX4365 evaluation kit (EV kit) is a fully assembled and tested circuit board that uses the MAX4365 high-power bridged amplifier to drive loudspeakers in portable audio applications. Designed to operate from a 2.7VDC to 5.5VDC power supply, the EV kit is capable of delivering 1W into an 8Ω load.

Component List

DESIGNATION	QTY	DESCRIPTION
A1	1	MAX4365EUA (8-pin μMAX)
C1	1	0.1μF ±10%, 16V X7R ceramic capacitor (0603) TDK C1608X7R1C104K
C2	1	10μF ±20%, 6.3V X5R ceramic capacitor (1206) TDK C3216X5R0J106M
C3	1	1.0μF ±10%, 6.3V X5R ceramic capacitor (0603) TDK C1608X5R0J105K
C4	1	0.033μF ±5%, 50V C0G ceramic capacitor (1206) TDK C3216C0G1H333J
C5	0	Not installed (0603)
IN	1	Right-angle phono jack (red)
JU1	1	2-pin header
R1, R2	2	20kΩ ±1% resistors (0805)
R3–R6	4	100kΩ ±5% resistors (0603)
None	1	Shunt (JU1)
None	1	MAX4365 PC board
U1	1	MAX4365ETA (8-pin thin QFN)

Features

- ◆ 2.7V to 5.5V Single-Supply Operation
- ◆ Drives 1W into an 8Ω Speaker
- ◆ 0.1% THD+N at 1kHz
- ◆ Externally Adjustable Gain
- ◆ Clickless/Popless Operation
- ◆ 5mA Supply Current, 10nA Shutdown Current
- ◆ Tiny 8-Pin Thin QFN Package (3mm × 3mm × 0.8mm), Also Available in 8-Pin μMAX Package
- ◆ Fully Assembled and Tested

Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX4365EVKIT	0°C to +70°C	8 Thin QFN

Quick Start

The MAX4365 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, 1A power supply
- 8Ω speaker
- Audio source (e.g., CD player, tape player)

Setup

- 1) Verify that jumper JU1 (SHDN) does not have a shunt installed.
- 2) Connect the 8Ω speaker across the OUT+ and OUT- pads.
- 3) Connect an audio source to the input jack (IN).
- 4) Connect the 5V terminal of the power supply to the VCC pad and the ground terminal of the power supply to the GND pad.
- 5) Turn on the power supply.
- 6) Turn on the audio source.

MAX4365 Evaluation Kit

Component Suppliers

SUPPLIER	PHONE	FAX	WEBSITE
TDK	847-803-6100	847-390-4405	www.component.tdk.com

Note: Please indicate that you are using the MAX4365 when contacting these component suppliers.

Detailed Description

The MAX4365 EV kit contains the MAX4365 high-power bridged amplifier, designed to drive loudspeakers in portable audio applications. The EV kit is designed to operate with a 2.7V to 5.5V, 1A power supply. The EV kit can accept audio source inputs (IN) with peak-to-peak amplitudes up to V_{CC} . The audio source is amplified to drive 1W into an 8Ω speaker.

The MAX4365 EV kit has positive and negative differential outputs that are 180° out of phase and are DC offset to $V_{CC}/2$. This allows the voltage at the load to see a peak voltage of almost V_{CC} . The closed-loop gain of the EV kit is configured for $2V/V$, but can be reconfigured to other gains. Refer to the *Gain-Setting Resistors* section of the MAX4364/MAX4365 data sheet. However, if the closed-loop gain is reconfigured to greater than 10, a feedback capacitor, C5, can be added to limit the bandwidth, or to compensate for stray capacitance at the inverting input.

The MAX4365 EV kit's component values have been chosen to minimize audible clicks and pops during power-up, power-down, and shutdown transitions. With these component values, the frequency response is tailored for small loudspeaker applications, where response below 300Hz is less critical (refer to the *Bias Capacitor* section of the MAX4364/MAX4365 data sheet for further details on component selection).

Jumper Selection

Shutdown

Jumper JU1 controls the MAX4365's shutdown pin (SHDN). The shutdown function can be activated on the MAX4365 EV kit by installing a shunt across the pins of JU1. The shutdown function can also be controlled by an external source connected to the SHDN pad and removing the shunt on JU1 (see Table 1 for shunt positions). **Note:** When measuring supply current in shutdown mode, the bias through resistor R3 and JU1 must be taken into account. The shutdown current can be calculated by the following equation:

$$I_{SUPPLY} = I_{RES} + I_{MAX4365}$$

$$I_{RES} = V_{CC} / R3$$

Table 1. JU1 Jumper Selection

JUMPER	SHUNT POSITION	EV KIT FUNCTION
JU1	Installed (SHDN = high)	Shutdown mode
	None (SHDN = low)	EV kit enabled
	None. External controller connected to SHDN pad (TTL/CMOS input).	SHDN driven by external controller. Shutdown is active high.

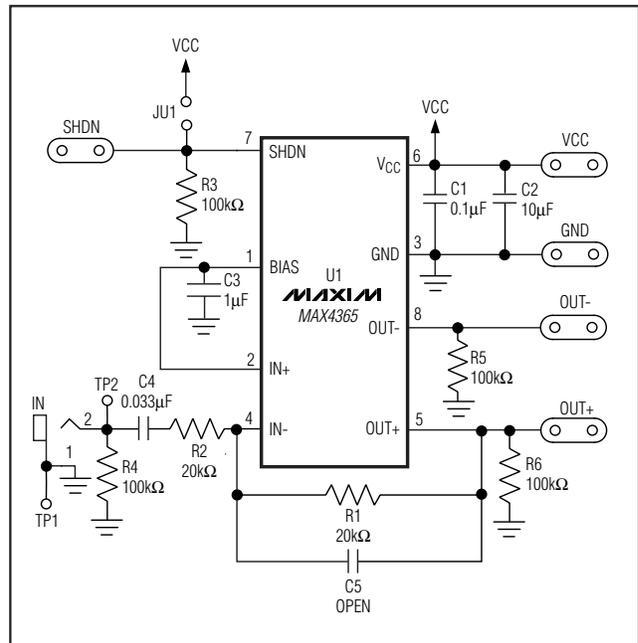


Figure 1. MAX4365 EV Kit Schematic

MAX4365 Evaluation Kit

Evaluates: MAX4365

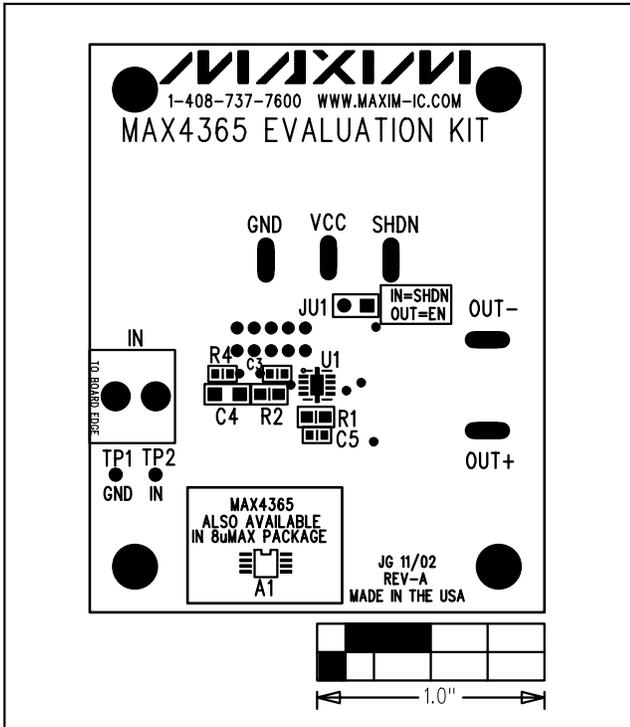


Figure 2. MAX4365 EV Kit Component Placement Guide—Component Side

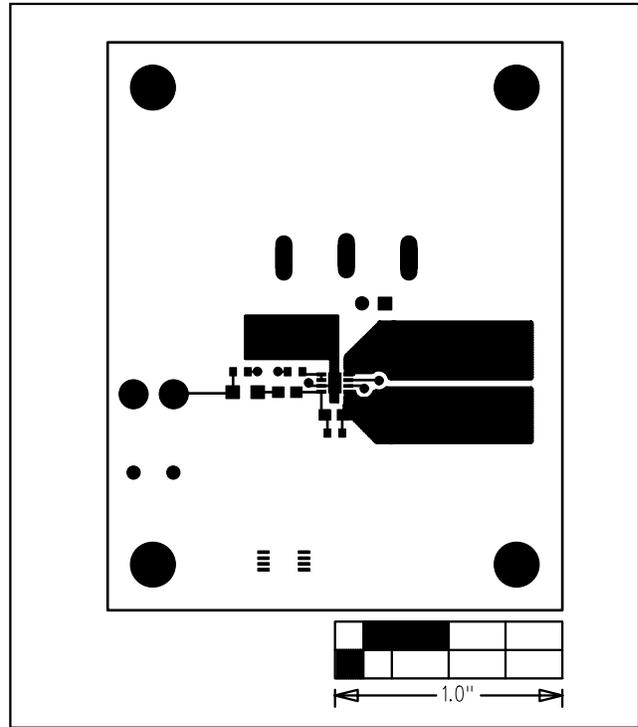


Figure 3. MAX4365 EV Kit PC Board Layout—Component Side

MAX4364 Evaluation Kit

Evaluates: MAX4364

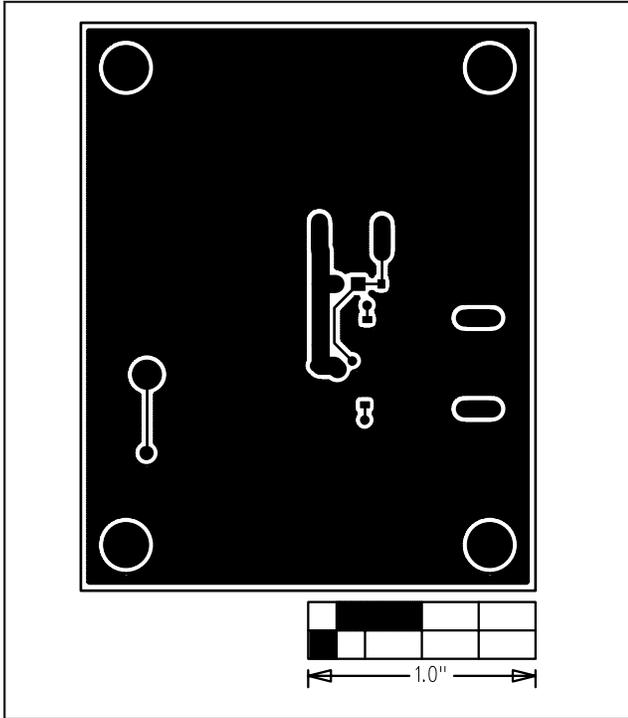


Figure 4. MAX4365 EV Kit PC Board Layout—Solder Side

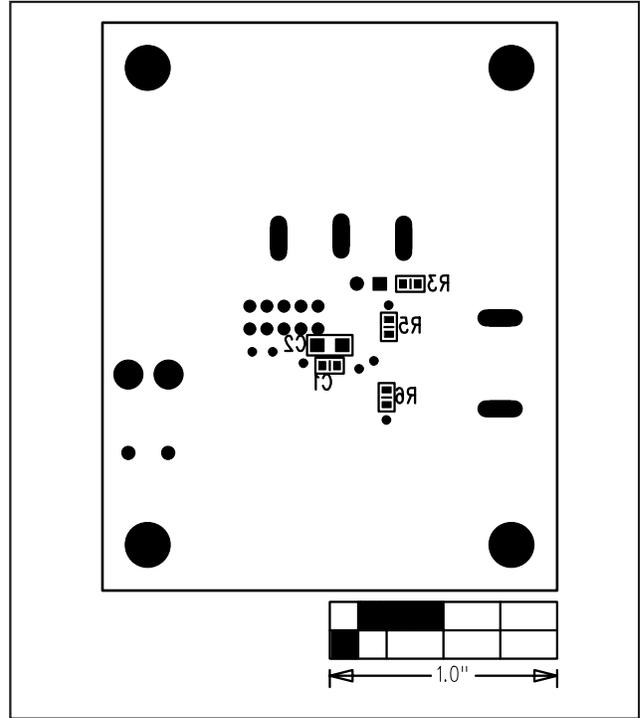


Figure 5. MAX4365 EV Kit Component Placement Guide—Solder Side

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.

4 _____ **Maxim Integrated Products, 120 San Gabriel Drive, Sunnyvale, CA 94086 408-737-7600**