



# MAX9788 Evaluation Kit

## General Description

The MAX9788 evaluation kit (EV kit) is a fully assembled and tested PCB that uses the MAX9788 Class G amplifier to drive a bridge-tied-load (BTL) ceramic speaker in portable audio applications. Designed to operate from a 2.7V to 5.5VDC power supply, the EV kit accepts a single-ended or differential input signal and provides a fully differential output capable of delivering greater than 14V<sub>P-P</sub> into a ceramic speaker.

## Component List

| DESIGNATION | QTY | DESCRIPTION                                                                     |
|-------------|-----|---------------------------------------------------------------------------------|
| C1, C2, C3  | 3   | 0.1μF ±10%, 6.3V X5R ceramic capacitors (0402)<br>Murata GRM155R60J104K         |
| C5, C6      | 2   | 1μF ±10%, 6.3V X5R ceramic capacitors (0402)<br>Murata GRM155R60J105K           |
| C7          | 1   | 4.7μF ±10%, 6.3V X5R ceramic capacitor (0603)<br>Murata GRM188R60J475K          |
| C8, C9, C10 | 3   | 10μF ±20%, 6.3V X5R ceramic capacitors (0603)<br>Murata GRM188R60J106M          |
| C11, C12    | 0   | Not installed, capacitors (0603)                                                |
| JU1         | 1   | 3-pin header                                                                    |
| OUT         | 1   | 3.5mm stereo phone jack (3-position, non-switch)                                |
| R1–R4       | 4   | 10kΩ ±0.5% precision thick-film chip resistors (0603)<br>Panasonic ERJ3RBD1002V |
| R5          | 1   | 100kΩ ±1% resistor (0603)                                                       |
| R6, R7      | 2   | 5.1Ω ±5% resistors (0805)                                                       |
| U1          | 1   | MAX9788EBP+ (20-bump, 4 x 5 UCSP, 2mm x 2.5mm)                                  |
| —           | 1   | Shunt                                                                           |
| —           | 1   | PCB: MAX9788EVKIT+                                                              |

## Features

- ◆ 5V Single-Supply Operation
- ◆ Fully Differential Output
- ◆ Delivers Greater than 14V<sub>P-P</sub> into a Ceramic Speaker
- ◆ Evaluates the MAX9788 in a 20-Bump UCSP (2mm x 2.5mm) Package
- ◆ The MAX9788 IC Also Available in 28-Pin (4mm x 4mm) TQFN Package
- ◆ Fully Assembled and Tested

## Ordering Information

| PART          | TEMP RANGE    | IC PACKAGE               |
|---------------|---------------|--------------------------|
| MAX9788EVKIT+ | 0°C to +70°C* | 20 UCSP-20 (2mm x 2.5mm) |

+Denotes a lead-free and RoHS-compliant EV kit.

\*This limited temperature range applies to the EV kit PCB only. The MAX9788 IC temperature range is -40°C to +85°C.

## Component Suppliers

| SUPPLIER              | PHONE        | WEBSITE           |
|-----------------------|--------------|-------------------|
| Murata Mfg. Co., Ltd. | 770-436-1300 | www.murata.com    |
| Panasonic Corp.       | 714-373-7366 | www.panasonic.com |

**Note:** Indicate that you are using the MAX9788 when contacting these component suppliers.

Evaluates: MAX9788

# MAX9788 Evaluation Kit

## Quick Start

### Recommended Equipment

- 5V, 1A power supply
- Audio source (i.e., CD player, MP3 player)
- One ceramic speaker (recommended suppliers: Murata, Taiyo Yuden)

### Procedure

The MAX9788 EV kit is fully assembled and tested. Follow the steps below to verify board operation.

**Caution:** Do not turn on the power supply until all connections are completed.

- 1) Install a shunt across pins 1-2 of jumper JU1 (EV kit ON).
- 2) Connect the ceramic speaker across the OUT- and OUT+ pads.
- 3) Connect the positive terminal of the power supply to the VCC pad and the ground terminal to the GND pad.
- 4) Connect the positive terminal of the audio source to the IN+ pad.
- 5) Connect the negative terminal of the audio source to the IN- pad. Connect the IN- pad to GND if the audio source is single ended.
- 6) Connect the ground terminal of the audio source to the GND pad.
- 7) Turn on the audio source.
- 8) Turn on the power supply.

### Detailed Description

The MAX9788 EV kit features the MAX9788 Class G amplifier IC, designed to drive a ceramic speaker in a BTL configuration. The EV kit operates from a DC power supply that provides 2.7V to 5.5V and 1A of current.

The EV kit accepts single-ended or a differential audio input and provides a fully differential output. The audio input source is amplified to drive greater than 14V<sub>p-p</sub> into a ceramic speaker.

### Customizing the Gain

The MAX9788 EV kit is shipped with a gain of +12dB. Change the resistors (R1–R4) to customize the gain of the EV kit (refer to the MAX9788 IC data sheet for details).

### Jumper Selection

#### Shutdown Mode ( $\overline{\text{SHDN}}$ )

Jumper JU1 controls the shutdown pin ( $\overline{\text{SHDN}}$ ) of the MAX9788 IC. The shutdown pin is also controlled by an external logic controller connected to the EV kit  $\overline{\text{SHDN}}$  pad. Remove the shunt from jumper JU1 before connecting an external controller to the  $\overline{\text{SHDN}}$  pad. See Table 1 for shunt positions.

**Table 1. Shutdown Mode, JU1 Jumper Selection**

| SHUNT POSITION | MAX9788 $\overline{\text{SHDN}}$ PIN CONNECTED TO | EV KIT FUNCTION                                                                                                |
|----------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 1-2*           | VDD                                               | EV kit enabled                                                                                                 |
| 2-3            | GND                                               | Shutdown mode                                                                                                  |
| None           | External logic controller                         | $\overline{\text{SHDN}}$ driven by external logic controller. Shutdown is active low and 1.8V logic compliant. |

\*Default position.

# MAX9788 Evaluation Kit

Evaluates: MAX9788

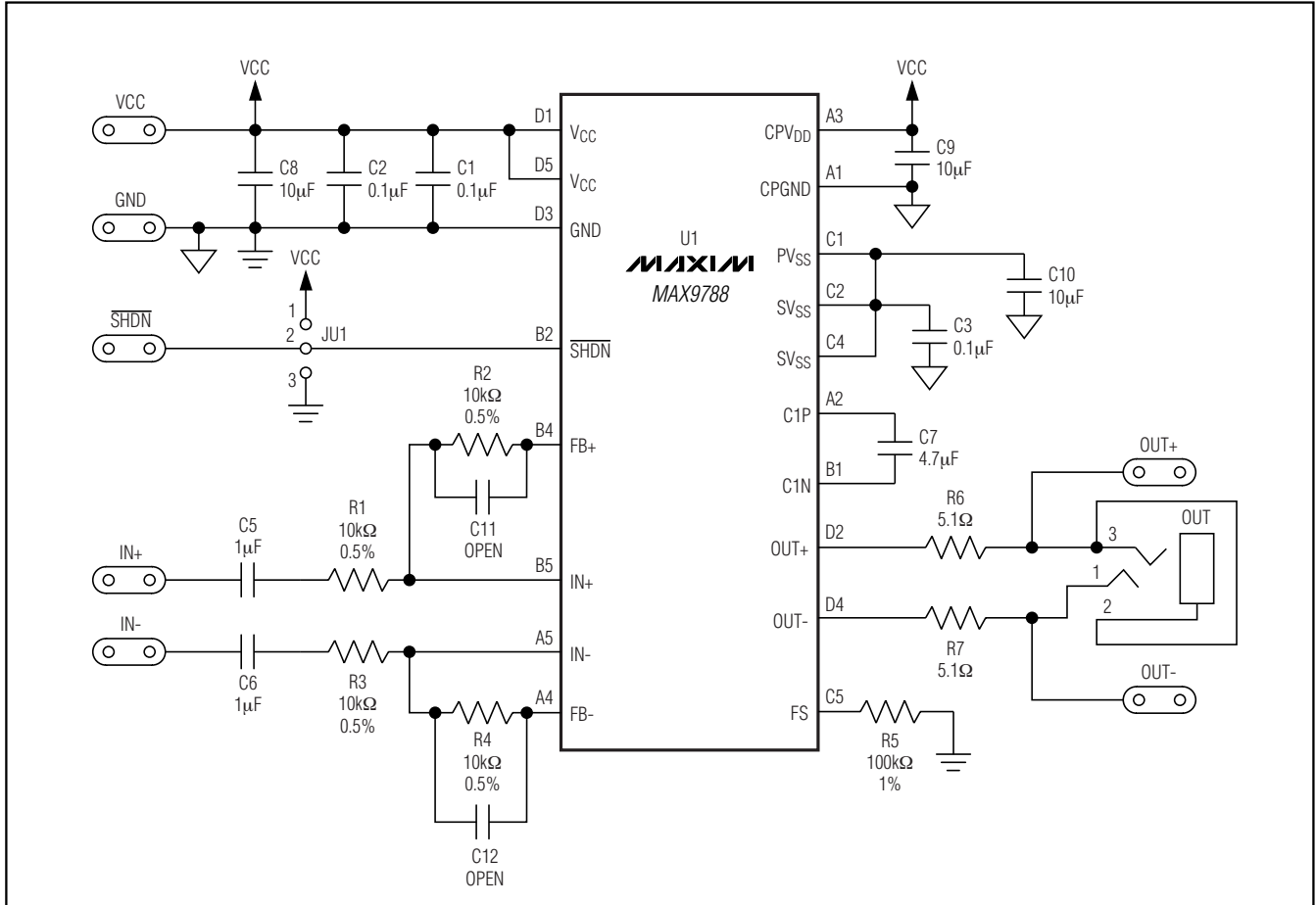


Figure 1. MAX9788 EV Kit Schematic

# MAX9788 Evaluation Kit

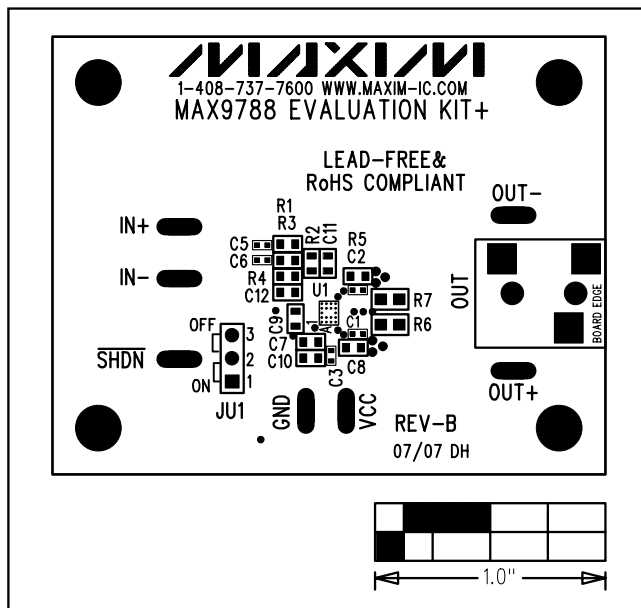


Figure 2. MAX9788 EV Kit Component Placement Guide—Component Side

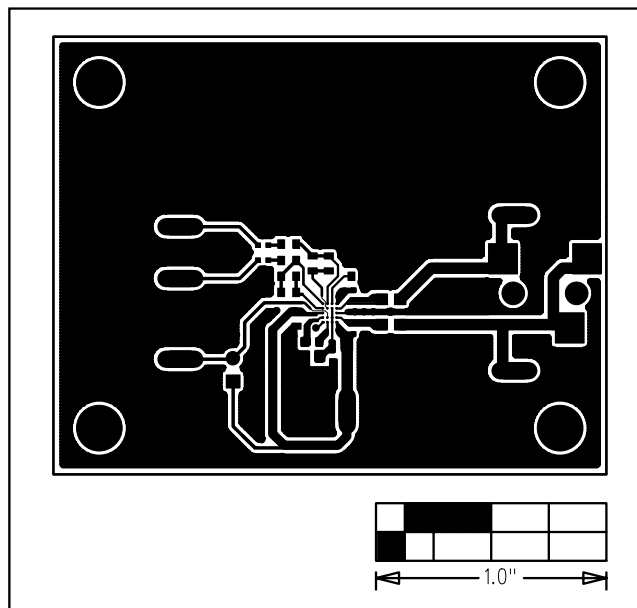


Figure 3. MAX9788 EV Kit PCB Layout—Component Side

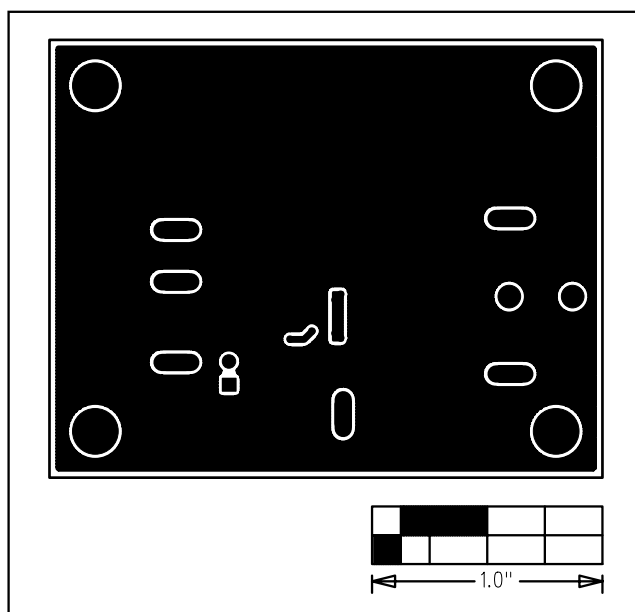


Figure 4. MAX9788 EV Kit PCB Layout—Solder Side

## Revision History

Pages changed at Rev 2: 1, 3, 4

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

© 2007 Maxim Integrated Products

MAXIM is a registered trademark of Maxim Integrated Products, Inc.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.