

# MAXIM

## MAX9716 Evaluation Kit

### General Description

The MAX9716 evaluation kit (EV kit) is a fully assembled and tested circuit board that uses the MAX9716, a low-cost, mono, 1.4W, bridge-tied-load (BTL) audio power amplifier with adjustable gain. Designed to operate from a 2.7V to 5.5VDC power supply, the EV kit is capable of delivering 1.4W into a 4Ω load with less than 1% THD+N.

The EV kit can be used to evaluate the MAX9717A/B/C/D. To evaluate the MAX9717A with the EV kit, replace the MAX9716 IC with a MAX9717A. To evaluate the MAX9717B/C/D with the EV kit, replace the MAX9716 IC with a MAX9717B/C/D, remove resistors R1 and R2, and short the R1 pads.

### Features

- ◆ Single Power Supply: 2.7V to 5.5V
- ◆ 10nA (typ) IC Shutdown Current
- ◆ 1.4W into 4Ω at 1% THD+N
- ◆ 1.1W into 8Ω
- ◆ Resistor Adjustable Gain (MAX9716/MAX9717A)
- ◆ Surface-Mount Construction
- ◆ Fully Assembled and Tested

### Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX9716EVKIT	0°C to +70°C	8 TDFN (3mm x 3mm)

**Note:** To evaluate the MAX9717A/B/C/D, request a MAX9717AETA/MAX9717BETA/MAX9717CETA/MAX9717DETA free sample with the MAX9716 EV kit.

### Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	10μF ±20%, 6.3V X5R ceramic capacitor (0805) TDK C2012X5R0J106M
C2	1	0.1μF ±10%, 16V X7R ceramic capacitor (0603) TDK C1608X7R1C104K
C3	1	0.47μF ±20%, 10V tantalum capacitor (0402) AVX TACK474M010
C4	1	1μF ±10%, 10V X5R ceramic capacitor (0603) TDK C1608X5R1A105K
C5	1	10μF ±20%, 6.3V tantalum capacitor (A case) AVX TAJA106M006

DESIGNATION	QTY	DESCRIPTION
JU1	1	4-pin header
JU2	1	3-pin header
OUT	1	3.5mm SMT stereo headphone jack
R1, R2	2	10kΩ ±1% resistors (0603)
U1	1	MAX9716ETA (8-lead TDFN)
U2	0	Not installed, MAX9716EUA (8-pin μMAX)
U3	0	Not installed, MAX9716EBL (9-bump UCSP™)
None	2	Shunts
None	1	MAX9716 PC board

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### 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 MAX9716/MAX9717 when contacting these component suppliers.



**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).**

# MAX9716 Evaluation Kit

## Quick Start

The MAX9716 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.**

### Recommended Equipment

- 2.7V to 5.5V, 1A power supply
  - Audio source (i.e., CD player, cassette player)
  - 4Ω/8Ω speaker
  - Headphone with 3.5mm plug (MAX9717 only)
- 1) Verify that JU2 has a shunt across pins 1 and 2 (SHDN = high).
  - 2) Verify that JU1 has a shunt across pins 1 and 3 (IN+ = BIAS).
  - 3) Connect the speaker across OUT+ and OUT-.
  - 4) Connect the 5.0V power supply to the VCC pad and the power-supply ground to the GND pad.
  - 5) Connect the audio source to VIN- pad.
  - 6) Turn on the power supply, and then turn on the audio source.
  - 7) Plug in the headphone for the headphone mode (MAX9717 only).

## Detailed Description

### Jumper Selection

Jumper JU1 controls the IN1+ pin (MAX9716) or  $\overline{\text{BTL/SE}}$  pin (MAX9717). See Table 1 for JU1 function.

Jumper JU2 controls the SHDN pin of the MAX9716/MAX9717 IC. See Table 2 for JU2 functions.

### Gain Settings (MAX9716/MAX9717A)

R1 and R2 set the gain of the EV kit. The EV kit comes with R1 and R2 equal to 10kΩ, setting the BTL gain to 2V/V. To change the output-voltage gain, choose R2 between 10kΩ to 50kΩ. The BTL output gain is determined by the following equation:

$$A_V = 2 \times (R2/R1)$$

where  $A_V$  is the desired BTL output-voltage gain.

For the MAX9717A, the gain of single-ended mode is set by  $A_V = R2/R1$ .

### Evaluating MAX9717A/B/C/D

To evaluate the MAX9717A with the MAX9716 EV kit, replace the MAX9716ETA with a MAX9717AETA. Change jumper JU1 position according to Table 1.

To evaluate the MAX9717B/C/D with the MAX9716 EV kit, replace the MAX9716ETA with a MAX9717BETA/MAX9717CETA/MAX9717DETA, remove input and feedback resistors R1 and R2, then short the R1 pads. The MAX9717B/C/D has internally fixed BTL gains of 6dB, 9dB, and 12dB, respectively. Change jumper JU1 position according to Table 1.

Table 1. JU1 Functions

JU1 SHUNT POSITION	IN+ PIN (MAX9716)	$\overline{\text{BTL/SE}}$ PIN (MAX9717)
Pins 1 and 2	Not allowed	$\overline{\text{BTL/SE}} = V_{CC}$ , single-ended output mode
Pins 1 and 3 (default)	IN+ = BIAS	Not allowed
Pins 1 and 4	Not allowed	$\overline{\text{BTL/SE}} = \text{GND}$ , BTL output mode

Table 2. JU2 Functions

JU2 SHUNT POSITION	$\overline{\text{SHDN}}$ PIN	EV KIT OUTPUT
Pins 1 and 2 (default)	Connected to $V_{CC}$	Enabled
Pins 2 and 3	Connected to GND	Disabled

# MAX9716 Evaluation Kit

Evaluates: MAX9716/MAX9717A/B/C/D

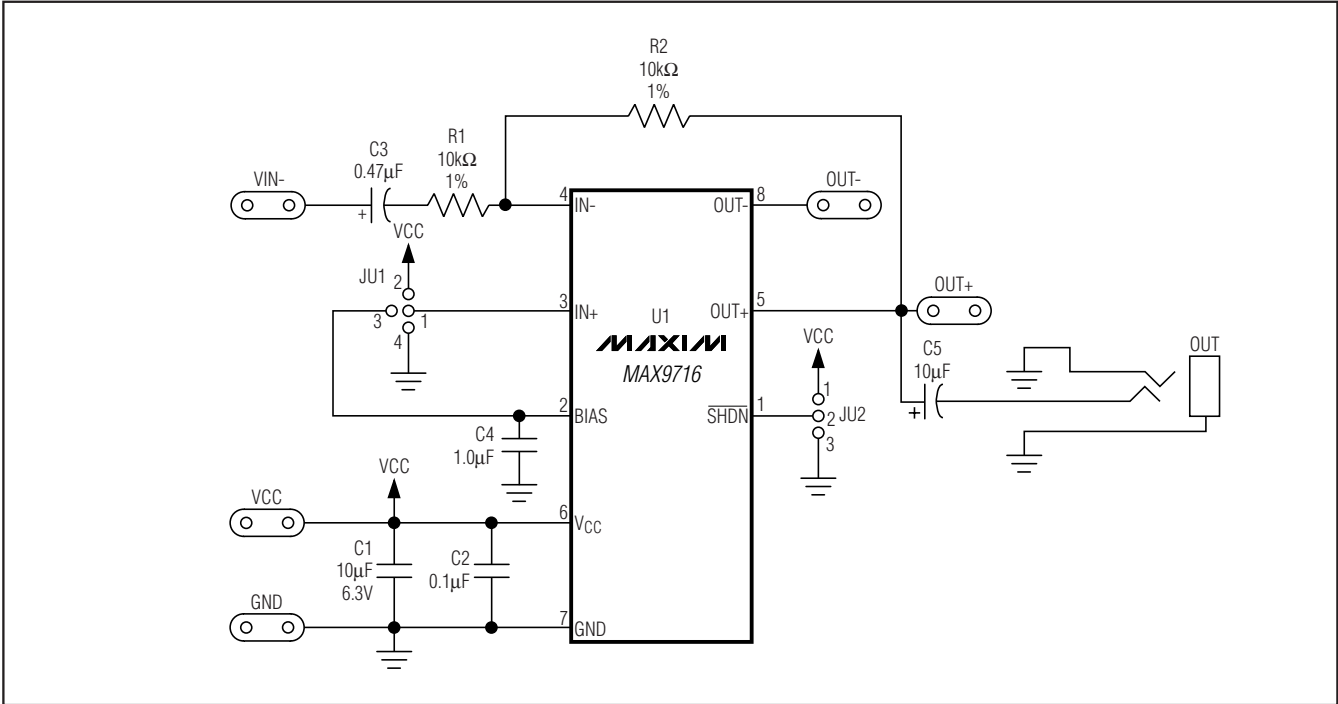


Figure 1. MAX9716 EV Kit Schematic

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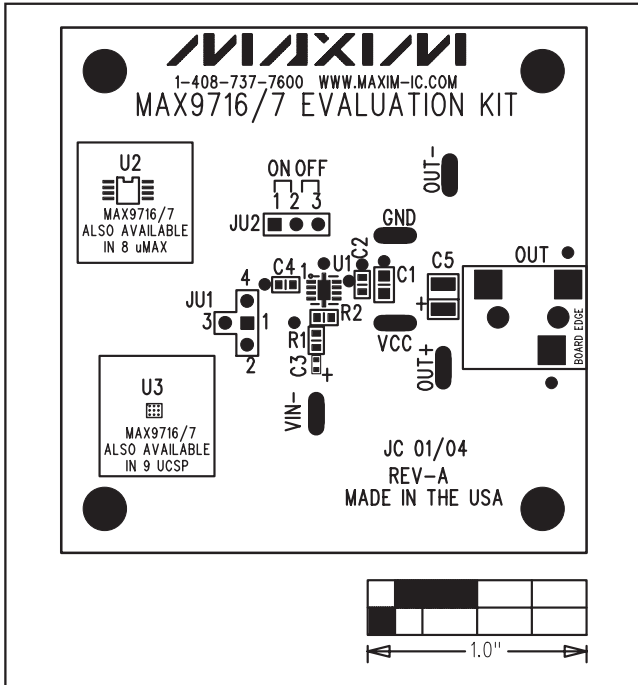


Figure 2. MAX9716 EV Kit Component Placement Guide—Component Side

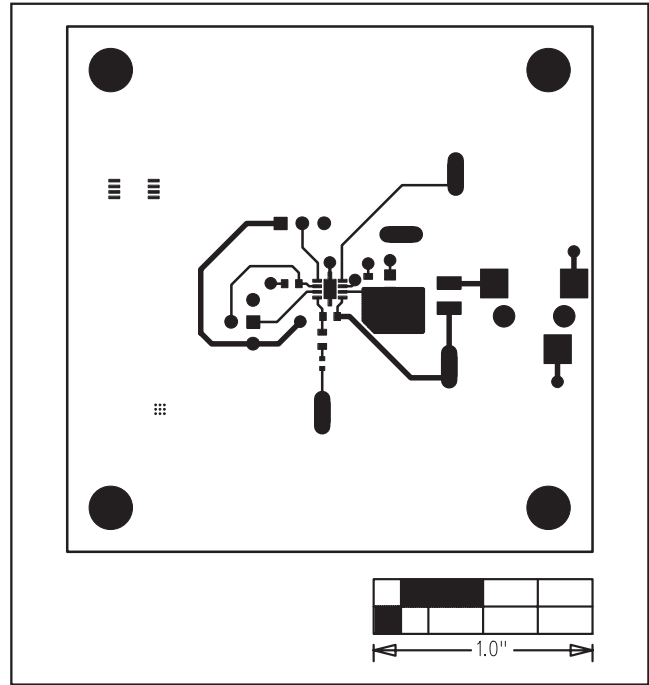


Figure 3. MAX9716 EV Kit PC Board Layout—Component Side

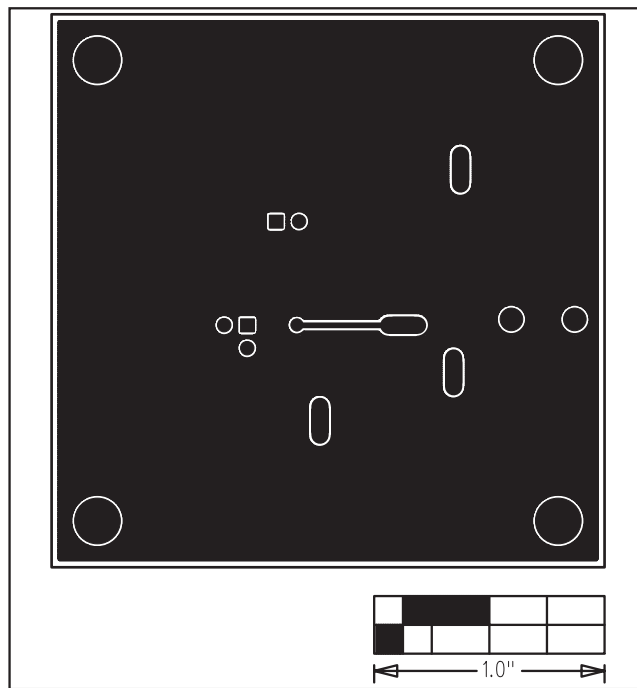


Figure 4. MAX9716 EV Kit PC Board Layout—Solder Side

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