



MAX14504 Evaluation Kit

Evaluates: MAX14504

General Description

The MAX14504 evaluation kit (EV kit) provides a proven design to evaluate the MAX14504 dual single-pole/double-throw (SPDT) audio switch. The MAX14504 features negative signal capability and passes signals from $-V_{CC}$ to $+V_{CC}$ without distortion. The MAX14504 EV kit operates from a 5.5V to 16V input voltage range and provides easy reconfiguration for setting the MAX14504 V_{CC} input voltage.

Features

- ◆ Configurable MAX14504 V_{CC} Input Voltage
- ◆ Demonstrates the MAX14504 Distortion-Free Negative Signal Throughput from $-V_{CC}$ to $+V_{CC}$
- ◆ Enable Control
- ◆ Proven PCB Layout
- ◆ Lead(Pb)-Free and RoHS Compliant
- ◆ Fully Assembled and Tested

Ordering Information

PART	TYPE
MAX14504EVKIT+	EV Kit

+Denotes lead(Pb)-free and RoHS compliant.

Component List

DESIGNATION	QTY	DESCRIPTION
C1	0	Not installed, ceramic capacitor (0805)
C2, C4	2	0.1 μ F \pm 10%, 16V X7R ceramic capacitors (0603) Murata GRM188R71C104K or TDK C1608X7R1C104K
C3	1	10 μ F \pm 20%, 6.3V X5R ceramic capacitor (0805) Murata GRM21BR60J106M or TDK C2012X5R0J106M
C5	1	3300pF \pm 10%, 50V X7R ceramic capacitor (0603) Murata GRM188R71H332K or TDK C1608X7R1H332K
GND	1	Miniature black test point
JU1	1	5-pin header
JU2	1	2-pin header
JU3, JU4	2	3-pin headers
OUT	1	3.5mm stereo headphone jack

DESIGNATION	QTY	DESCRIPTION
R1	1	100k Ω \pm 1% resistor (0603)
R2	1	115k Ω \pm 1% resistor (0603)
R3	1	78.7k Ω \pm 1% resistor (0603)
R4	1	52.3k Ω \pm 1% resistor (0603)
R5	1	41.2k Ω \pm 1% resistor (0603)
R6	1	32.4k Ω \pm 1% resistor (0603)
R7	1	0 Ω \pm 5% resistor (0805)
R8–R11	4	0 Ω \pm 5% resistors (1206)
U1	1	Dual SPDT audio switch (12 WLP) Maxim MAX14504EWC+ (Top Mark: AAH)
U2	1	Adjustable LDO regulator (8 TDFN-EP*) Maxim MAX6771TALD2+ (Top Mark: +BEG)
VCC	1	Miniature red test point
—	3	Shunts (JU1, JU3, JU4)
—	1	PCB: MAX14504 Evaluation Kit+

*EP = Exposed pad.

Component Suppliers

SUPPLIER	PHONE	WEBSITE
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
TDK Corp.	847-803-6100	www.component.tdk.com

Note: Indicate that you are using the MAX14504 when contacting these component suppliers.



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Quick Start

Required Equipment

- 5.5V to 12V DC power supply
- Audio signals or signal generator

Procedure

The MAX14504 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) Verify that shunts are installed across pins 1-4 of jumper JU1 ($V_{CC} = 3.6V$), pins 1-2 of jumpers JU3 (MAX14504 disabled), and JU4 (NO_ routed to COM_).
- 2) Verify that a shunt is not installed on jumper JU2.
- 3) Connect the power-supply ground to the GND PCB pad on the EV kit.
- 4) Connect the power-supply positive terminal to the VPOWER PCB pad on the EV kit.
- 5) Turn on the power supply and set it to 12V.
- 6) Connect the audio signal generator positive terminals to the NO1 and NO2 PCB pads.
- 7) Connect the audio signal ground connections to the GND PCB pad.
- 8) Enable the audio signals.
- 9) Analyze the audio signals at the COM1 and COM2 PCB pads.

Detailed Description of Hardware

The MAX14504 EV kit provides a proven design to evaluate the MAX14504 SPDT audio switch. The MAX14504 EV kit passes audio signals from $-V_{CC}$ to $+V_{CC}$ without distortion and frequencies $< 20Hz$ to $> 20kHz$. The audio signal can be obtained at the OUT headphone jack or the COM1, COM2, and GND PCB pads.

The MAX14504 EV kit operates from 5.5V to 16V applied at the VPOWER and GND PCB pads. A MAX6771 (U2) LDO regulator and jumpers JU1 or JU2 set the MAX14504 V_{CC} input voltage to 2.3V, 2.8V, 3.6V, 4.2V, or 5V. An independent voltage source can also be used to power the MAX14504 V_{CC} input by removing resistor R7 and applying the voltage source at the VCC and GND test points. The V_{CC} voltage range is limited between 2.3V and 5.5V.

Note that when configuring the MAX14504 V_{CC} voltage, a shunt must not be installed at jumpers JU1 and JU2 simultaneously. See Table 1 for proper jumper configuration for setting the MAX14504 V_{CC} input voltage.

Table 1. MAX14504 V_{CC} Voltage Configuration (JU1, JU2)

SHUNT POSITION		MAX14504 V_{CC} Voltage (V)
JU1	JU2	
1-2	Not installed	2.3
1-3	Not installed	2.8
1-4	Not installed	3.6
1-5	Not installed	4.2
Not installed	Installed	5
Not installed	Not installed	Resistor R7 removed and external power source applied at VCC and GND test points

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Enable Input (\overline{EN})

Jumper JU3 controls the MAX14504 enable function. Install a shunt across pins 1-2 to disable the MAX14504. When disabled, the signals applied at NC₋ and NO₋ are not passed through to the respective COM₋ outputs. Install a shunt across pins 2-3 to enable the MAX14504. The enable function can also be controlled by removing the shunt on jumper JU3 and connecting an external controller to the \overline{EN} and GND PCB pads. See Table 2 for jumper JU2 configuration.

Table 2. Enable Function (JU3)

SHUNT POSITION	\overline{EN} PIN	MAX14504 FUNCTION
1-2	Connected to VCC	MAX14504 disabled
2-3	Connected to GND	MAX14504 enabled
Not installed	Connected to an external signal	\overline{EN} driven by external controller

Control Bit (CB)

Jumper JU4 sets the logic at the MAX14504 CB input, which controls the signal path between the audio signals applied at the NO₋ and NC₋ inputs to the COM₋ outputs. Install a shunt across pins 1-2 to pass the signals applied at the NO1 and NO2 PCB pads. Install a shunt across pins 2-3 to pass the signals applied at the NC1 and NC2 PCB pads. See Table 3 for jumper JU4 configuration.

Table 3. Control Bit Function (JU4)

SHUNT POSITION	CB PIN	AUDIO SIGNAL PATH
1-2	Connected to VCC	NO1 to COM1, NO2 to COM2
2-3	Connected to GND	NC1 to COM1, NC2 to COM2
Not installed	Connected to an external signal	Determined by external control signal

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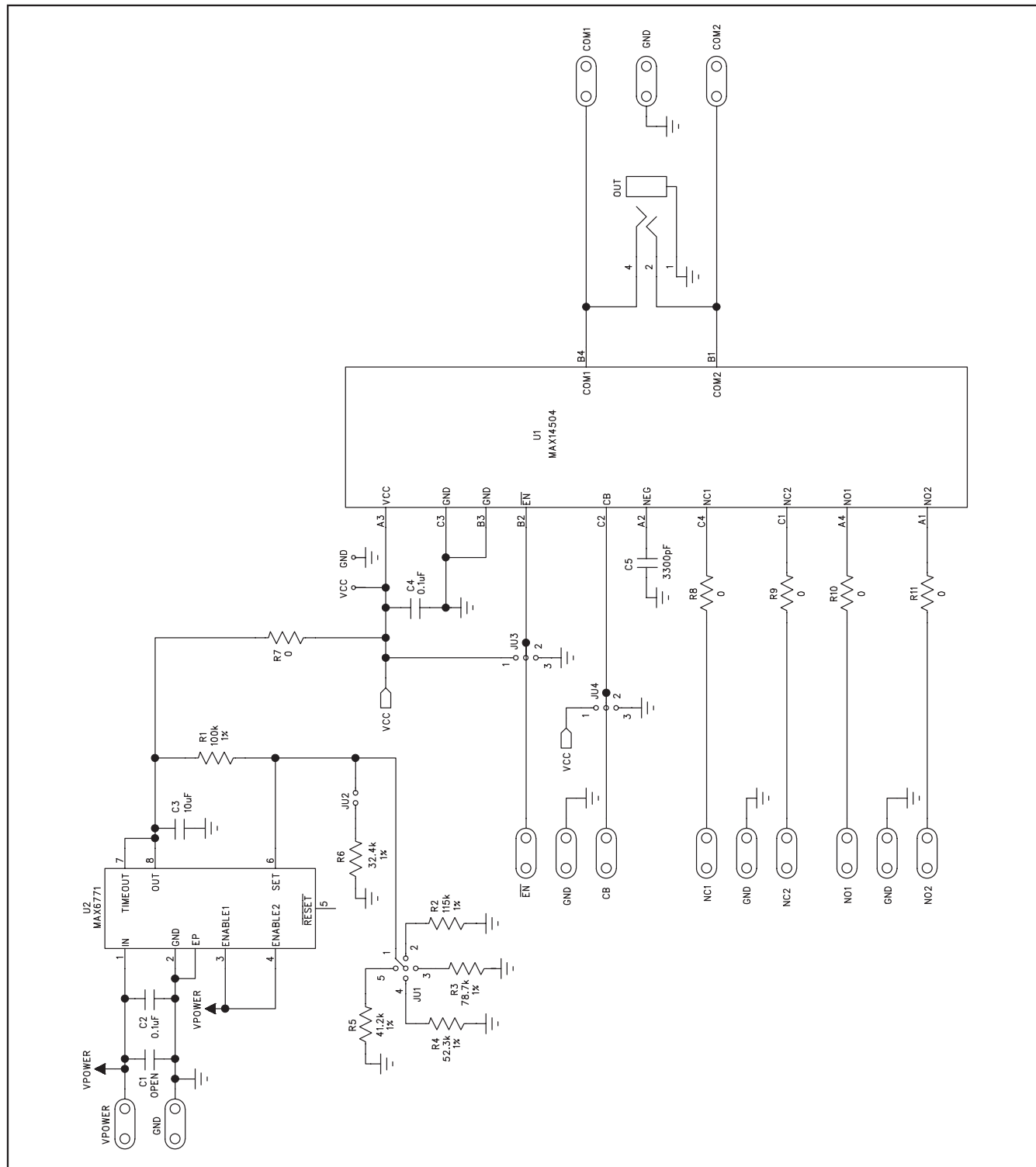


Figure 1. MAX14504 EV Kit Schematic

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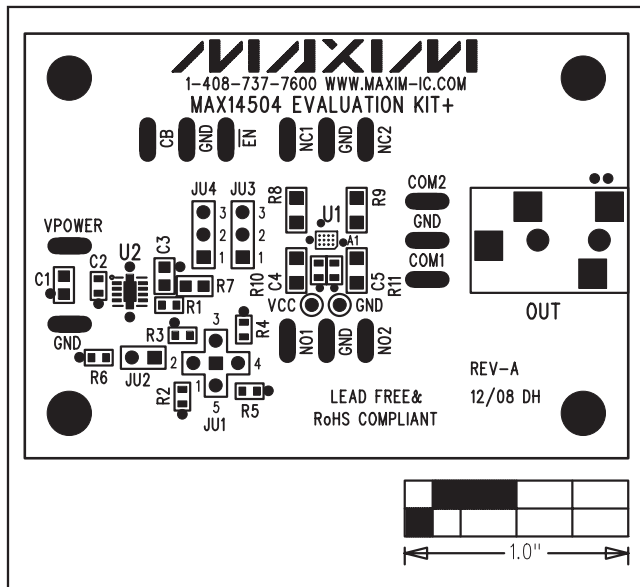


Figure 2. MAX14504 EV Kit Component Placement Guide—Component Side

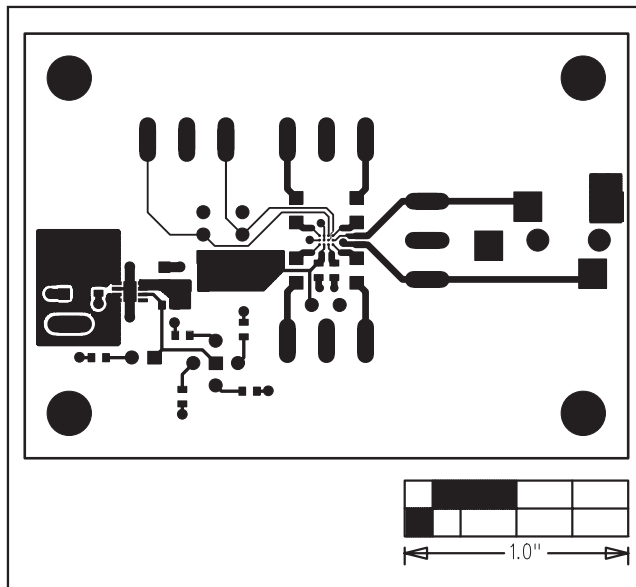


Figure 3. MAX14504 EV Kit PCB Layout—Component Guide

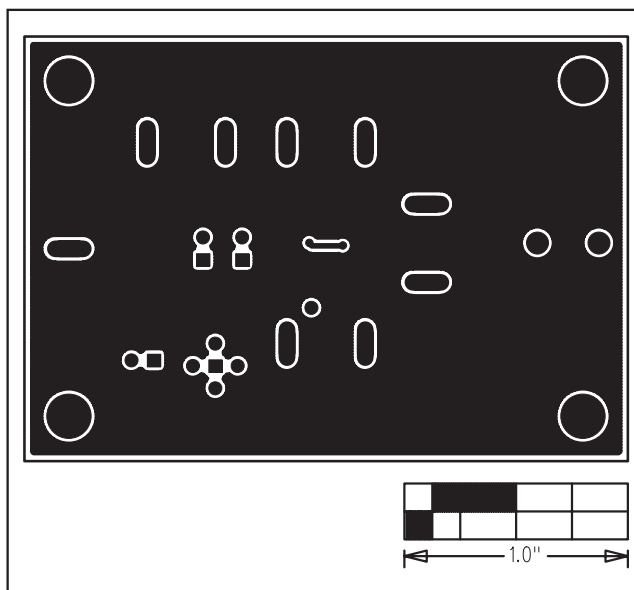


Figure 4. MAX14504 EV Kit PCB Layout—Solder Side

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