MAX98372 Evaluation System

Evaluates: MAX98372

General Description

The MAX98372 Evaluation System (EV system) evaluates the MAX98372 digital input Class D speaker amplifier with dynamic headroom tracking and automatic level control. The EV system comprises the MAX98372 development (DEV) board, Maxim's audio interface 1 (AUDINT1) board, and the MAX98372 evaluation software.

The MAX98372 DEV board is a fully assembled and tested PCB that contains the necessary circuitry and connections to evaluate the MAX98372 device. It is recommended that the DEV board be evaluated with the AUDINT1 board as an EV system. The MAX98372 requires two supply inputs, 1.14V to 1.98V (DVDD) and 5.5V to 18V (PVDD), and can deliver 19W into an 8Ω load. Additionally, the MAX98372 supports standard I²S, left-justified, and TDM digital audio interfaces.

When evaluated as an EV system, the AUDINT1 board provides the necessary logic rails and USB-to-I²S and USB-to-I²C interfaces needed to evaluate the MAX98372 DEV board with only a single external power supply. The *Simplified EV System Block Diagram* provides an image of the EV system, highlighting the key areas on each board.

Communication with the DEV board is facilitated by Windows® 7- and Windows 8-compatible software that provides a simple and intuitive graphical user interface (GUI). The MAX98372 evaluation software is only for use with the MAX98372 EV System.

Benefits and Features

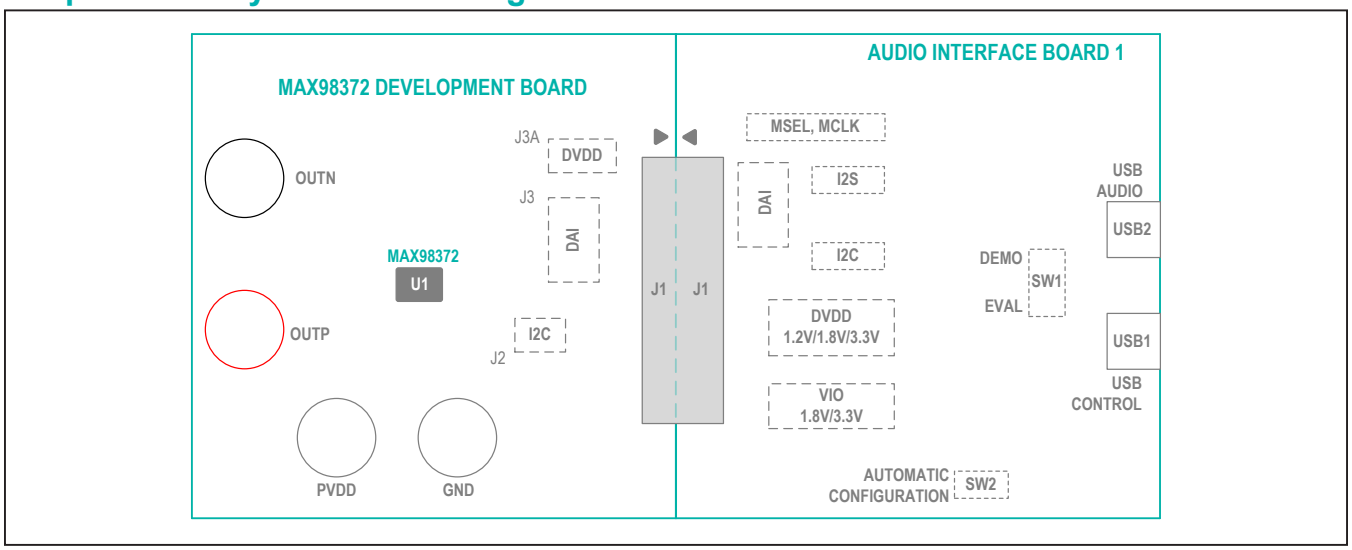
- 5.5V to 18V Single-Supply Operation (EV System)
- USB Audio Streaming (EV System)
- I²S, Left-Justified, or TDM Input
- Optional Output Filters
- Proven PCB Layout
- Fully Assembled and Tested
- Windows 7- and Windows 8-Compatible Software

EV System Contents

- MAX98372 Development Board
- Audio Interface 1 (AUDINT1) Board
- Two A-to-Mini-B USB Cables

***Ordering Information* appears at end of data sheet.**

Simplified EV System Block Diagram



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maxim integrated™

Quick Start

Required Equipment

- MAX98372EVSYS#
  - MAX98372DEV#
  - MAXAUDINT001#
- 4Ω or 8Ω speaker
- 5.5V to 18V, 2A DC power supply
- USB audio source (e.g., Windows Media® Player or iTunes®)
- Two A-to-Mini-B USB cables (provided with EV system)
- User-supplied PC with Windows 7 or Windows 8 OS with two available USB ports

Required Software

- MAX98372 evaluation software

Note: In the following sections, software-related items are identified by bolding. Text in **bold** refers to items directly from the evaluation software. Text in **bold and underlined** refers to items from the Windows operating system.

Reference Material

- Audio Interface 1 (AUDINT1) data sheet
- MAX98372 IC data sheet

Procedure

The MAX98372 and AUDINT1 boards are fully assembled and tested. Follow these steps to set up the EV system for device evaluation.

Table 1. MAX98372 Software Install Folder

FILE	DESCRIPTION
MAX98372EVSwSetupVx.x.exe	Installer for the MAX98372 evaluation software
usb_driver	USB driver folder
CDM21000.exe	USB driver installer
Device Manager	Shortcut to the computer's device manager
USB_Driver_Help.pdf	USB driver installation help file

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Software Install:

1) Contact Maxim to download the latest version of the MAX98372 evaluation software, **MAX98372EVSwSetupVx.x.zip**. Uncompress the downloaded folder to a temporary location.
2) Install the software and USB driver on your computer by running the **MAX98372EVSwSetupVx.x.exe** program. Program files are copied and icons are created in the Windows **Start | Programs | Maxim Integrated | MAX98372 | Evaluation Software** menu. During software installation, Windows may display a message indicating that this software is from an unknown publisher. This is not an error condition, and it is safe to proceed with the installation.
3) The USB driver is installed automatically at the same time as the evaluation software. If the driver needs to be manually installed, navigate to the installation directory, **Program Files (x86) | Maxim Integrated | MAX98372 | Evaluation Software | USB Driver**, and run the CDMxxxxx.exe application.

DEV Board Setup:

4) Connect the power supply between the PVDD and GND binding posts.
5) Set the power supply channel connected to PVDD to 18V, but leave the power supply turned off. Connect the 4Ω or 8Ω speaker across the OUTP and OUTN binding posts.

AUDINT1 Board Setup:

6) Set the DVDD jumper on the AUDINT1 board to the 1.8V position.
7) Set the VIO jumper on the AUDINT1 board to the 1.8V position.
8) Configure the jumper switches (I2S and I2C) with their actuators in the CONNECT (pins1-2) position.
9) Configure the SW1 switch with its actuator in the EVAL position.

Test:

10) With the audio source disabled, connect the DEV board (J1 header) to the AUDINT1 board (J1 header).
11) Connect the USB cables to the USB1 and USB2 ports on the AUDINT1 board.
12) Enable the power supply connected to PVDD.
13) Start the MAX98372 evaluation software and wait while the software connects to the EV system.

14) Once the connection is established, the status bar at the bottom of the GUI window reports that the **USB** and **MAX98372** are connected.

15) After the EV system is fully connected, configure the device by loading the **usb_audio.98372** configuration file. This file is located in the **Config_Files** folder in the **Documents | Maxim Integrated | MAX98372 Software Files** directory.

16) Open the Windows **Sound** dialog and select the **Playback** tab. A **USB Audio DAC** item, similar to Figure 1, should be listed as an available playback device.

17) Verify that the **USB Audio DAC** item is set as the default device.

18) Adjust the audio source volume to a low level.

19) Enable the audio source and verify that audio is heard through the connected speaker. Adjust the audio source volume as needed.

20) Quick start is complete.

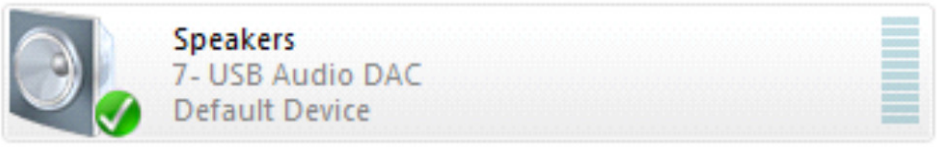

Figure 1. Playback Device

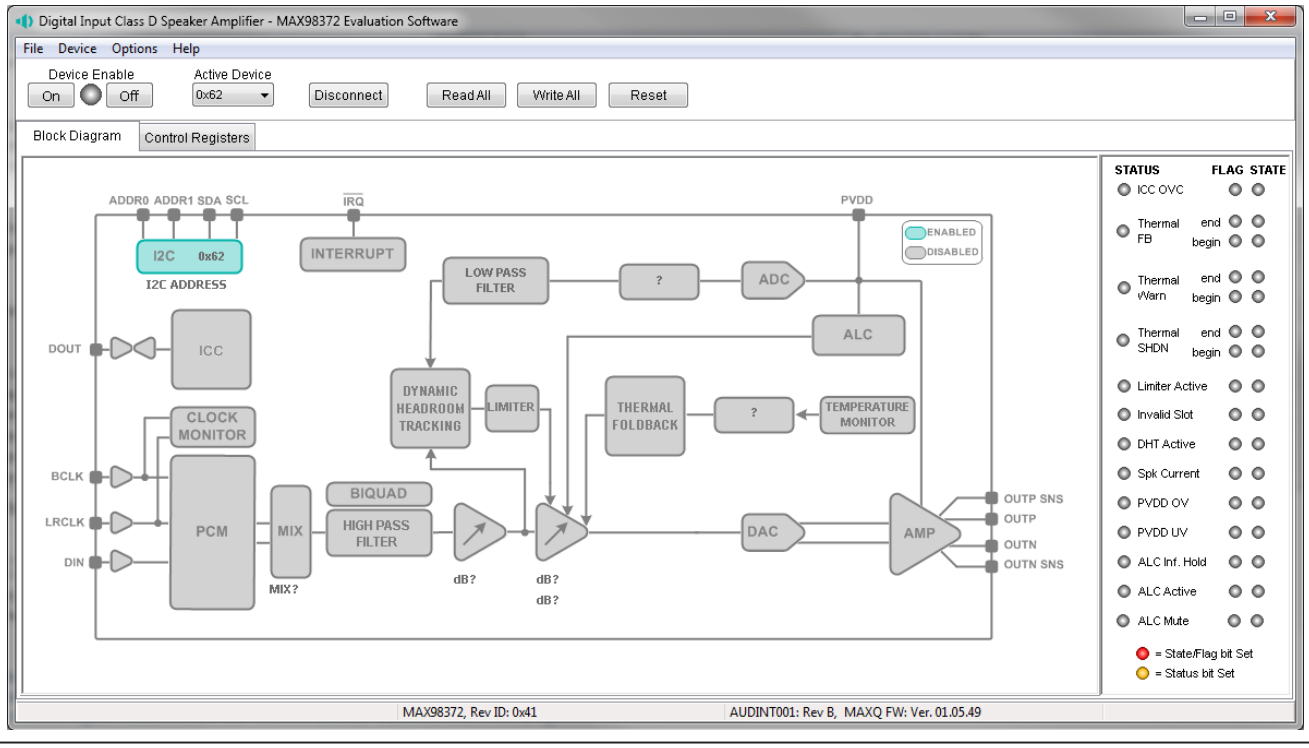

Figure 2. MAX98372 Evaluation Software—Main Window

Detailed Description of Software

The MAX98372 evaluation software is designed for the MAX98372 EV System only. The software provides an intuitive graphical user interface (GUI) for programming the MAX98372 device and includes a handful of features to aid evaluation.

The MAX98372 evaluation software main window (Figure 2) is composed of four main sections: menu bar, communication tool bar, tabbed pages, and a status bar. The menu bar provides additional features to aid evaluation, the toolbar provides basic functionality for communicating with the device, and the status bar provides information about hardware connectivity and communication status. The tabbed pages make up the bulk of the GUI and provide the controls for programming the MAX98372 device registers.

The **Block Diagram** tab provides access to all device registers through dialog windows that contain GUI controls for configuring the device. The dialog windows are opened by clicking on the dialog blocks in the block-diagram. The **Control Registers** tab provides access to the valid registers in the range from 0x01–0x51 as well as to the revision ID register 0xFF.

The MAX98372 evaluation software is compatible with Windows 7 and Windows 8. Contact Maxim to get the latest MAX98372 evaluation software. Refer to the MAX98372 IC data sheet for device register information.

Communication Tool Bar

The tool bar consists of six buttons and a drop-down combo box. These controls are always accessible, regardless of the active tabbed page. The toolbar is shown in Figure 3 and Table 2 provides details about each control.

Figure 3. Communication Tool Bar

Table 2. Tool Bar Controls

CONTROL	FUNCTION
Device Enable ON/OFF	Press ON to set the global enable bit (EN) located in register 0x50. The device is enabled when the image is highlighted and disabled when it is not. Press OFF to reset the global enable bit (EN) and disable the device. **Note:** The software is able to communicate with a disabled device as long as its I²C interface remains active.
Active Device	Provides a list of detected I²C addresses. The displayed address is the active device.
Connect To:	See the *Connect Sequence* section for additional details.
USB	Press to connect to the USB Control (USB1) interface on the AUDINT1 board.
Device	Press to search for I²C devices. Detected addresses are shown in the **Active Device** drop-down list.
Disconnect	Press to disconnect from the USB Control (USB1) interface.
Read All	Press to initiate a read of all device registers and update the **Control Registers** and **Block Diagram** tabs with the read data.
Write All	Press to initiate a write to all device registers, using the settings shown on the **Control Registers** tab.
Reset	Press to reset registers 0x10−0x66 to their power-on-reset (POR) state.

Connect Sequence

When the evaluation software starts for the first time, the program attempts to connect automatically to the EV system. It first attempts to connect to the USB control (USB1) interface on the AUDINT1 board. Once that connection is established, it searches for all the I^2C addresses associated with the MAX98372 device and populates all detected device addresses in the **Active Device** drop-down list. During this sequence, the text on the **Connect To** button automatically changes from **USB** to **Device** to **Disconnect**, and the status bar updates to reflect the current state of the hardware connection.

Once the EV system is fully connected, the button displays **Disconnect** and, when pushed, it disconnects the software from the hardware. The software can also be disconnected from the hardware by selecting **Options | Disconnect** from the menu bar.

There are two methods to reestablish a connection with the hardware. The first is by selecting **Options | Auto Connect** from the menu bar. This instructs the program to connect automatically to the EV system, just as was done when the software first started. The second method is to click the **Connect To** button until it displays **Disconnect**, which signifies that the EV system is fully connected.

Status Bar

The **Status** bar is divided into four sections. From left to right the sections report alerts/prompts, device part number and revision ID, MAXQ2000 firmware version, and state/flag interrupt count. The interrupt count feature is enabled by selecting **Device | Interrupt Tracking | Enabled** from the menu bar. Once enabled, the interrupt count is displayed in the status bar when the mouse cursor is over a visible **STATE** or **FLAG** image.

Status Panel

The **Status** panel (not to be confused with the **Status** bar) displays the **STATUS**, **STATE**, and **FLAG** values of the device's interrupts. This data is read from the Live Status_, State_, and Flag_ interrupt registers (0x01–0x06, 0x0B-0x0D).

An image is displayed in each of the **STATUS**, **FLAG**, and **STATE** columns to indicate the state of the interrupt bits in the associated interrupt registers. A highlighted image indicates that the associated bit has been set and a clear image indicates that the associated bit is not set. Click on the visible **STATE** or **FLAG** image to clear the state and flag bits. These bits can also be cleared from the **Interrupt Enables** dialog. Click on the **INTERRUPT** block to launch the **Interrupt Enables** dialog.

Note: Each interrupt source must be enabled in order for the **FLAG** column (i.e., lag bits) to be set. The interrupt enable bits are set from the **Interrupt Enables** dialog.

Block Diagram Tab

The evaluation software uses an interactive block diagram to facilitate the programming of the MAX98372 device. The block diagram also provides a visual representation of the device's functions and current configuration.

There are three types of blocks in the block diagram and they are identified by the cursor image. The cursor changes to a hand when over a block that opens a dialog window and changes to a solid black arrow when over a block that toggles a specific device setting. If the cursor does not change when over a block, then it is not an active block and is only provided for illustrative purposes.

The color of a diagram block changes depending on the enabled state of the device function(s) it controls. A disabled block is gray and an enabled block is teal. Figure 4 shows the block diagram with the MAX98372 configured for DAI input and speaker output.

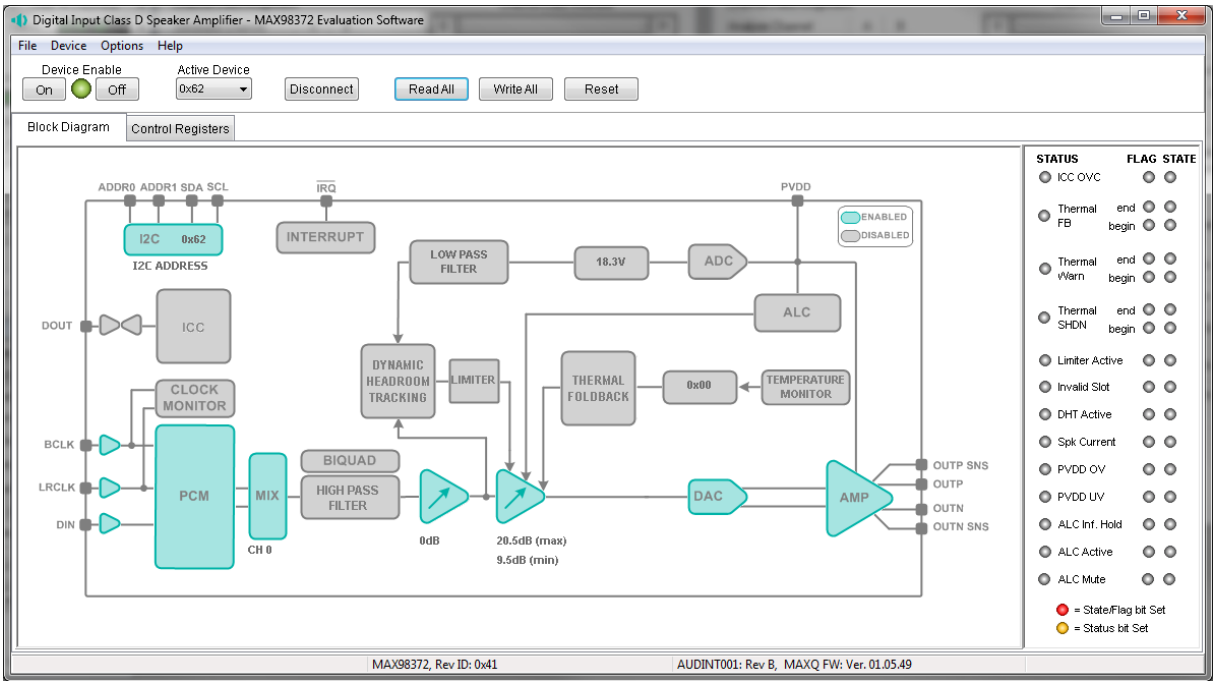

Figure 4. MAX98372 Block Diagram—USB Audio Input to Speaker Output

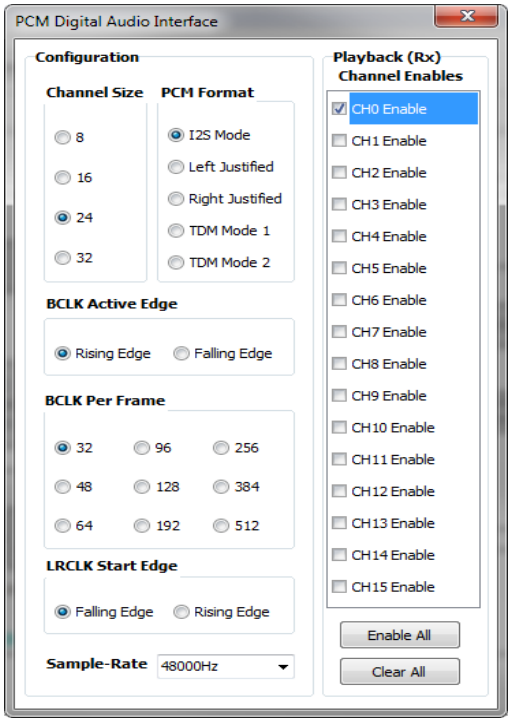

Figure 5. Typical GUI Controls

Dialog Windows

Dialog windows are associated with specific blocks in the block diagram and they contain multiple controls for configuring the registers associated with that functional block. A dialog window is opened by clicking on a dialog block. Figure 5 shows the typical GUI controls that are found on a dialog window.

Control Registers Tab

The **Control Registers** tab provides two methods for configuring the device. For example, Figure 6 shows the elements of the DAI registers.

The first configuration method involves clicking on the register's bit labels. A grayed-out bit label indicates that the bit is currently set low. A bold bit label indicates that the bit is currently set high. Clicking on a bit toggles its state and results in a write to that register. This action also updates the value displayed in the register's edit box located to the right of the bit labels. **Note:** Read-only bits cannot be clicked/toggled and only display the bit's current state. These read-only bits are updated by performing a read-all operation.

The second configuration method involves entering a hexadecimal value in the register's edit box and then pressing the Enter key. The software automatically configures the device register once the Enter key is pressed. The state of the bit labels reflect the value shown in the edit box.

All changes made on this tab are reflected on the **Block Diagram** tab and on any open dialog windows.

Menu Bar

All the menu bar items are described in Table 3. Additional information for some menu items is provided in the following sections.

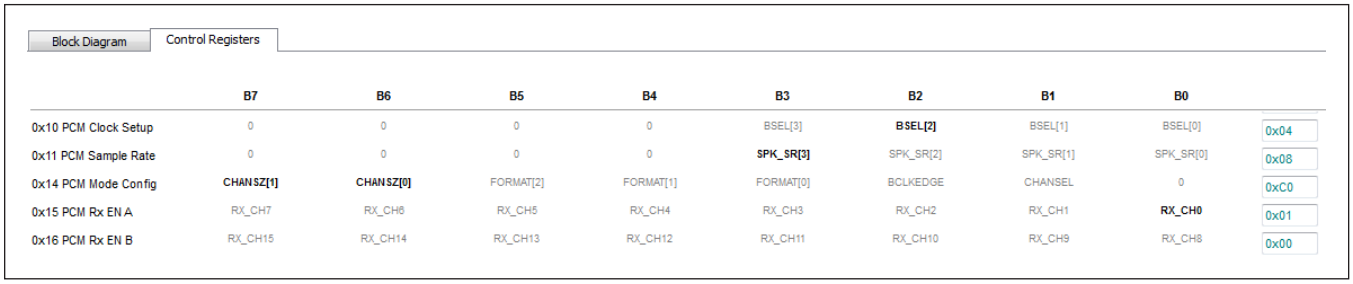

Figure 6. Control Registers Tab

Table 3. Menu Bar Items

MENU ITEM	DESCRIPTION
File	
Load Settings	Loads a configuration file (as saved by the **Save Settings** option).
Save Settings Ctrl + S	Saves a configuration file containing the current device settings.
Exit	Closes the MAX98372 software.
Device	
Read Rev ID	Reads the revision ID register (0xFF) and updates the Status Bar.
Address Selection	Allows user to select the active device address.
Reset	Resets most registers to their POR state by setting the software reset bit (RST) in register 0x51.
Read All	Performs a read from all registers and updates the GUI.
Write All	Performs a write to all writable registers, using the values shown on the **Control Registers** tab and then updates the GUI.
Interrupt Tracking	
Clear All	Clears the counters that are used to keep track of interrupt occurrences.
Enabled	Enables interrupt tracking (for troubleshooting purposes).

Table 3. Menu Bar Items (continued)

MENU ITEM	DESCRIPTION
Options	
Autoconnect	Select to have the software automatically connect to the evaluation system.
Disconnect	Press to disconnect the software from the USB1 hardware interface.
Autoread Status/State/Flag	Select to have the software automatically read the interrupt registers and update the Status panel.
Dock/Undock Status Panel	Docks or undocks the Status panel from the **Block Diagram** tab.
I2C Clock Speed	Sets I2C clock speed to either 100kHz or 400kHz.
Interface (Advanced Users) F2	Opens the **Advanced User Interface** window that provides an additional method for communicating with the device.
Help	
View Help F1	Provides details on where to find help.
About	Provides information about the MAX98372 evaluation software.

File I/O

The software's save and load features are accessed from the **File** menu. The Save feature saves the data currently displayed on the **Control Registers** tab.

A configuration file's main purpose is to capture the current state of the MAX98372's registers, as displayed on the register tab. This feature makes it easy to program a device to a saved/known state and allows for the sharing of configuration files between users. To facilitate usage, use descriptive file names when saving configuration file.

The save and load features are functional even when the hardware is not connected. This allows configuration files to be created and opened when hardware is not available. Since the configuration file is automatically generated by the software, it is not meant to be manually formatted and doing so may cause file loading issues. To open a configuration file for viewing purposes, use a plain text editor.

Select **File | Save Settings Ctrl + S** to create a configuration file. The register address and its data are saved as tab delimited values and the file is saved with a .98372 extension.

Advanced User Interface

The **Advanced User Interface** window provides a more advanced method of communicating with the hardware by providing access to the read and write commands used by the software. However, the primary method for configuring the device should be through the main software window (Figure 2). See Table 4 for information on the relevant commands for the Advanced User Interface.

The two tabs that provide the needed functionality to communicate over the I2C bus are the **Connection** and **2-wire interface** tabs. The **Connection** tab is used to connect to/disconnect from the Audio Interface 1 board and also provides some information about the USB connection.

The **2-wire interface** tab provides the controls for detecting and communicating with devices on the I2C bus. The **Hunt for active listeners** button searches the entire 8-bit I2C address range to determine if there are any accessible devices on the bus. If a device(s) is detected then the **General commands** tab can be used to read from and write to the device(s). Table 4 lists some useful commands and details on how to use those commands.

Table 4. Advanced User Interface Controls

COMMAND SELECTION	DETAILS (EXAMPLE)*
Q: SMBusQuick (addr)	**Target Device Address:** Select device address (0x62). Press **Execute**. Verifies that the target device is present on the I²C bus.
4: SMBusReadByte (addr, cmd)	**Target Device Address:** Select device address (0x62). **Command Byte:** Enter the register address (0x38). Press **Execute**. Data read from the target device's register is displayed in the **Data In** field (0x80).
1: SMBusWriteByte (addr, cmd, data8)	**Target Device Address:** Select device address (0x62). **Command Byte:** Enter the register address (0x38). **Data Out:** Enter the data byte (0x80). Press **Execute**. The data byte is written to the target device's register.
9: I²CWriteAndReadBytes (addr)	Read: **Target Device Address:** Select device address (0x62). **Data Out:** Enter the register address (0x38). **Read Count:** Set the amount of sequential register reads to perform (3). Press **Execute**. The data byte(s) read from the device is displayed in the **Data In** field (0x80 0x00 0x00).
	Write: **Target Device Address:** Select device address (0x62). **Data Out:** Enter the register address, followed by a space or comma (0x38). **Data Out:** Append the data byte(s), inserting a space or comma between bytes (0x80, 0xC0). **Read Count:** Enter zero (0). Press **Execute**. The data byte(s) are written, sequentially, starting at the specified register address.
	Read + Write: **Target Device Address:** Select device address. **Data Out:** Enter the register address, followed by a space or comma. **Data Out:** Append the data byte(s), inserting a space or comma between bytes (0x80 0x00). **Read Count:** Set the amount of sequential reads to perform (2). Press **Execute**. The data byte(s) are written, sequentially, starting at the specified register address. Then, the specified number of bytes are read from the device, starting at the specified register address.

**8-bit data format = Decimal, hex (optional 0x or $ prefix), binary 10101010*

Detailed Description of Hardware

The MAX98372 DEV board evaluates the MAX98372 audio amplifier and provides access to all inputs and outputs of the device. In addition, the EV system includes support circuitry that eases evaluation of the device.

The MAX98372 DEV board can be evaluated as a stand-alone board that is driven directly by audio test equipment, powered by multiple external supplies, and configured by an external I²C-capable controller. It is recommended to evaluate the DEV board with AUDINT1 board. This hardware combination provides an easy-to-use method for exercising the capabilities of the device, with the need for only one external supply and no additional audio equipment.

The AUDINT1 board provides on-board LDO regulators, a master clock output, and a USB-to-I²S and USB-to-I²C interface. The AUDINT1 LDO regulators power the MAX98372's DVDD supply rail. The USB-to-I²S converter accepts a USB audio stream from a USB connected computer and converts that into I²S format, allowing for DAI playback through the MAX98372 device. The USB-to-I²C interface is the bridge that allows the evaluation software to configure, monitor, and control the I²C-capable devices on the MAX98372 DEV and AUDINT1 boards.

The evaluation software provides graphical controls to provide a more intuitive method for configuring the target device (MAX98372) for evaluation. The software is compatible with both Windows 7 and Windows 8.

Power Supplies

The MAX98372 DEV board requires at least two external power supplies when evaluated as a stand-alone board. The power supplies and their ranges are listed in Table 5. The DVDD supply voltage can be connected at header J3A or the DVDD test point. Note that header J3A provides both a ground and DVDD connection and care should be taken when connecting a supply to this header.

When used with the AUDINT1 board, only one external power supply is needed. The external power supply provides the PVDD input voltage and the LDO regulators on the AUDINT1 board provide the DVDD input voltage.

Digital Audio Interface

The MAX98372 digital audio interface (DAI) is routed to interface headers J3, as well as the AUDINT1 connector, J1. The interface headers provide easy access to the device's I²S bus and the AUDINT1 connector allows for USB audio to be streamed onto the DEV board. See the *USB Audio Input* section for details on USB audio streaming and Table 9 for connector J1 pinout.

DAI Headers

The DAI headers provide access to the MAX98372's digital audio interface: BCLK, LRCLK, DIN, and DOUT. These two DAI headers facilitate evaluation with audio equipment I/O. See Table 6 for the DAI header (J3) pinout and Figure 7 for an illustration of how the MAX98372 DAI interface is routed through the DAI headers to the AUDINT1 connector.

Table 5. Power Supplies

POWER SUPPLY	RANGE (V)
V_{PVDD}	5.5 to 18
V_{DVDD}	1.14 to 1.98

Table 6. DAI Headers Pinout (J3)

SIGNAL	PIN	PIN	SIGNAL
GND	1	2	BCLK
GND	3	4	LRCLK
GND	5	6	DIN
GND	7	8	DOUT

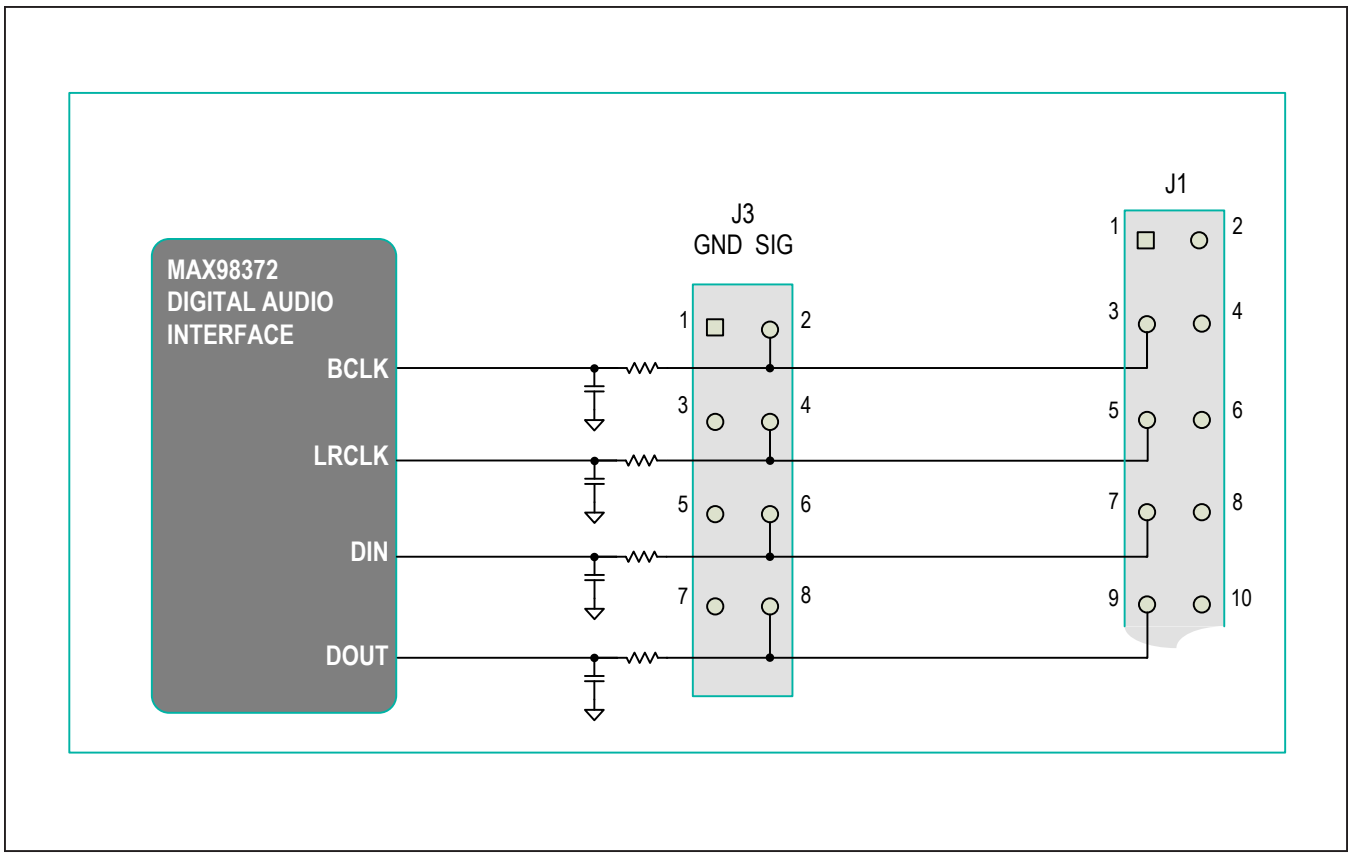

Figure 7. DAI Interface Headers

Interface Headers

The interface headers available on the MAX98372 DEV board are used to facilitate evaluation of the device. Each of the headers and their pinouts are listed in the following tables. In addition, Figure 7 shows how the MAX98372 DAI interface is routed through the DAI header (J3) to the AUDINT1 board header (J1).

The AUDINT1 header connects the DEV board to the AUIDNT1 board. These two boards together make up the MAX98372 EV System.

USB Audio Input

The AUDINT1 board's USB-to-I2S interface allows USB audio to be streamed onto the MAX98372 DEV board. This facilitates evaluation by providing a quick method for playing audio through the device. To utilize the USB streaming feature of the AUDINT1 board, make the following hardware configurations:

- Connect the USB audio source to the USB AUDIO (USB2) port on the AUDINT1 board
- Configure the I2S switch on the AUDINT board to the CONNECT position
- Configure the VIO and DVDD headers on the AUDINT1 board for device compatible logic levels.
- Ensure the AUDINT1 board is connected to the DEV board

Once the hardware is ready, use the MAX98372 evaluation software or the AUDINT1's **Automatic Configuration** button to configure and enable the device for DAI audio playback.

Speaker Output

The MAX98372 audio output is routed to the OUTP and OUTN connections on the DEV board. The DEV board is, by default, assembled to allow the MAX98372 output to connect directly to a speaker load without the need for filtering. However, component footprints are provided on the PCB to allow for filtering of the Class D amplifier output.

EMI Filter

When long speaker cables are used with the MAX98372 output, a ferrite bead plus capacitor filter can be installed to prevent excessive EMI radiation. Although it is best to choose filter components based on EMI test results, the combination of 680pF capacitors (C8, C9) and Murata BLM18SG331TN1 ferrite beads (FB1, FB2) generally work well. To remove the filter from the design, all filtering components need to be uninstalled and 0Ω resistors or wire shorts need to be installed at FB1 and FB2.

I²C Interface

The MAX98372's I²C interface is routed to header J2 and connector J1. The J1 connector is for the AUDINT1 board and connects the device's I²C interface to the MAXQ2000's I²C interface on the AUDINT1 board. This connection allows the MAX98372 evaluation software to read and write to the device. See Table 9.

Header J2 allows for an external I²C controller to connect to the device's I²C bus. See Table 7. When using an external I²C controller, and still connecting to the AUDINT1 board, ensure that the I²C switch (on the AUDINT1 board) is in the DISCONNECT position.

Device Address

The MAX98372 can be configured to respond to one of 16 I²C device addresses by tying the device's ADDR0 and ADDR1 pins to GND, SDA, SCL, or DVDD. The EV system comes with R11 and R10 populated. As a result, the MAX98372 responds to address 0x62. Follow Table 8 and install a 0Ω resistor in the appropriate location (R7–R14) to select desired I²C write address. **Note:** Install only the appropriate resistors given in each row in Table 8 at a time.

Audio Interface 1 Board

Maxim's audio interface 1 board (AUDINT1 board) facilitates the evaluation of the DEV board by providing a set of features that can be used to exercise the capabilities of the DEV board without the need for additional audio equipment. The main components of the AUDINT1 board are its LDO supply voltages and its USB-to-I²C and USB-to-I²S interfaces. The supply voltages allow the DEV board to be evaluated with minimal amount of external supplies. The USB-to-I²S converter allows any computer to be used as an audio source for the DEV board's digital audio I²S interface and the USB-to-I²C interface allows for the use of the MAX98372 evaluation software, making device configuration and monitoring a lot simpler.

The MAX98372 DEV board connects to the AUDINT1 board through connector J1. The physical connections made between the DEV board and AUDINT1 board are listed in Table 9.

Table 7. I²C Header Pinout (J2)

SIGNAL	PIN	PIN	SIGNAL
GND	1	2	SDA
GND	3	4	SCL

Table 8. I²C Address Resistors

ADDR1	ADDR0	I²C WRITE ADDRESS SELECT
R11	R10	0x62*
R14	R10	0x64
R12	R10	0x66
R13	R10	0x68
R11	R8	0x6A
R14	R8	0x6C
R12	R8	0x6E
R13	R8	0x70
R11	R7	0x72
R14	R7	0x74
R12	R7	0x76
R13	R7	0x78
R11	R9	0x7A
R14	R9	0x7C
R12	R9	0x7E
R13	R9	0x80

**Default address.*

Table 9. AUDINT1 Header Pinout (J1)

SIGNAL	PIN	PIN	SIGNAL
—	1	2	GND
BCLK	3	4	—
LRCLK	5	6	—
DIN	7	8	—
DOUT	9	10	—
—	11	12	—
DVDD*	13	14	GND
—	15	16	GND
SDA	17	18	—
SCL	19	20	—
IRQ\	21	22	RESET\
—	23	24	—
—	25	26	—

**Configured on the AUDINT1 board: DVDD (1.2V, 1.8V, 3.3V).*

Development Board Component List, Schematic, PCB

See the following links for component, schematic, and PCB information:

- MAX98372DEV# BOM
- MAX98372DEV# Schematics
- MAX98372DEV# PCB

Ordering Information

PART	TYPE
MAX98372EVSYS#	Evaluation System

#Denotes RoHS compliant.

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	10/15	Initial release	—

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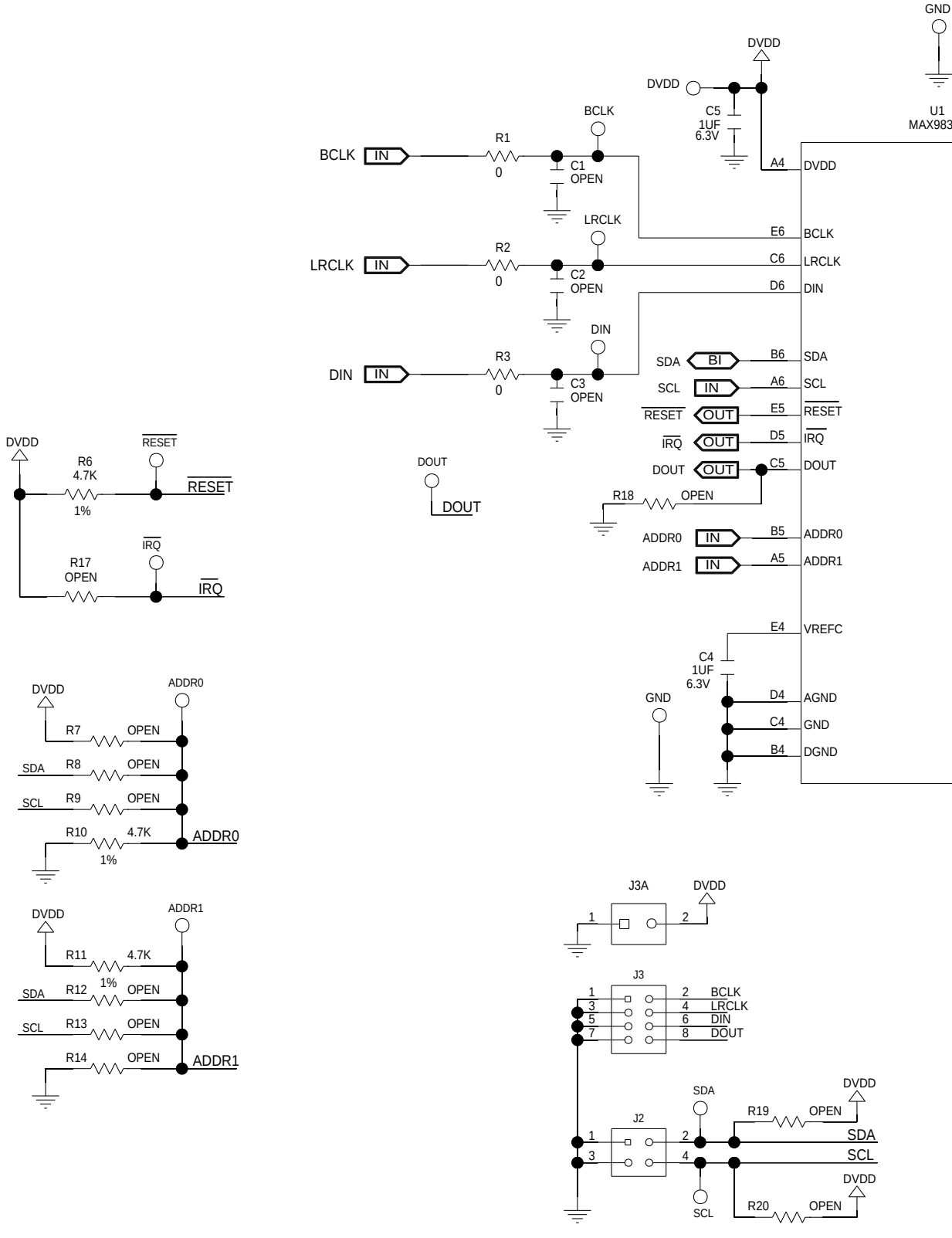
BILL OF MATERIALS (BOM) Rev 0; 10/15

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	IRQ, ADDR0, ADDR1, RESET	-	4	5002	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; WHITE; PHOSPHOR BRONZE WIRE SILVER;
2	DIN, BCLK, DOUT, LRCLK	-	4	5003	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; ORANGE; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
3	C4, C5	-	2	GRM033R60J105MEA2;C0603X5R0J105M030	MURATA/TDK	1UF	CAPACITOR; SMT (0201); CERAMIC CHIP; 1UF; 6.3V; TOL=20%; MODEL=GRM SERIES; TG=-55 DEGC TO +85 DEGC; TC=X5R
4	C6	-	1	EMZA350ADA221MHA0G	UNITED CHEMI-CON	220UF	CAPACITOR; SMT (CASE_HA0); ALUMINUM-ELECTROLYTIC; 220UF; 35V; TOL=20%; MODEL=MZA SERIES
5	C7, C16	-	2	TMK105BJ104KV-F; GRM155R61E104KA87	TAIYO YUDEN/MURATA	0.1UF	CAPACITOR; SMT (0402); CERAMIC CHIP; 0.1UF; 25V; TOL=10%; TG=-55 DEGC TO +85 DEGC; TC=X5R
6	C8, C15	-	2	GRM188R61E106MA73	MURATA	10UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 10UF; 25V; TOL=20%; TG=-55 DEGC TO +85 DEGC; TC=X5R; GRM SERIES; MURATA
7	DVDD	-	1	5010	?	5010	TESTPOINT WITH 1.80MM HOLE DIA, RED, MULTIPURPOSE
8	FB1, FB2	-	2	RC0805JR-070RL	YAGEO PHYCOMP	0	RESISTOR; 0805; 0 OHM; 5%; JUMPER; 0.125W; THICK FILM
9	GND, OUTN, OUTP, PVDD	-	4	111-2223-001	EMERSON NETWORK POWER	111-2223-001	MACHINE SCREW; THUMBSCREW; BANANA; 1/4-32IN; 11/32IN; NICKEL PLATED BRASS
10	J1	-	1	TSW-113-08-S-D-RA	SAMTEC	TSW-113-08-S-D-RA	CONNECTOR; THROUGH HOLE; DOUBLE ROW; RIGHT ANGLE; 26PINS
11	J2	-	1	PEC02DAAN	SULLINS ELECTRONIC CORP.	PEC02DAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 4PINS
12	J3	-	1	PEC04DAAN	SULLINS ELECTRONICS CORP.	PEC04DAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 8PINS
13	J3A	-	1	PEC02SAAN	SULLINS	PEC02SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 2PINS
14	R1-R5	-	5	RC0402JR-070RL; CR0402-16W-000RJT	YAGEO PHYCOMP/VENKEL LTD.	0	RESISTOR; 0402; 0 OHM; 5%; JUMPER; 0.063W; THICK FILM
15	R6, R10, R11	-	3	CRCW04024K70FK	VISHAY DALE	4.7K	RESISTOR, 0402, 4.7K OHM, 1%, 100PPM, 0.0625W, THICK FILM
16	SCL, SDA	-	2	5009	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.35IN; BOARD HOLE=0.063IN; YELLOW; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
17	TP1, TP2, TP4	-	3	5011	?	5011	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
18	TP3	-	1	5001	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
19	TP9	-	1	5000	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
20	U1	-	1	MAX98372	MAXIM	MAX98372	EVKIT PART-IC; MAX98372; WLP30 6X5; PKG. DWG. NO.: 21-100002
21	X1-X5	-	5	9020 BUSS	WEICO WIRE	MAXIMPAD	EVK KIT PARTS; MAXIM PAD; WIRE; NATURAL; SOLID; WEICO WIRE; SOFT DRAWN BUS TYPE-S; 20AWG
22	C1-C3, C9-C14	DNP	9	N/A	N/A	OPEN	CAPACITOR; 0402 PACKAGE; GENERIC
23	R7-R9, R12-R20	DNP	12	N/A	N/A	OPEN	RESISTOR; 0402 PACKAGE; GENERIC
TOTAL			68				


GND
DVDD
DVDD
C5
1UF
6.3V
U1
MAX983
BCLK
R1
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C1
OPEN
BCLK
IN
A4
DVDD
LRCLK
E6
BCLK
R2
0
C2
OPEN
LRCLK
IN
C6
LRCLK
D6
DIN
DIN
R3
0
C3
OPEN
DIN
IN
SDA
BI
B6
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SCL
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A6
SCL
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OUT
E5
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OUT
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IRQ
DOUT
OUT
C5
DOUT
R18
OPEN
DOUT
DOUT
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IN
B5
ADDR0
ADDR1
IN
A5
ADDR1
E4
VREFC
C4
1UF
6.3V
GND
D4
AGND
C4
GND
B4
DGND
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ADDR1
R11
4.7K
1%
SDA
R12
OPEN
SCL
R13
OPEN
R14
OPEN
ADDR1
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DVDD
1
2
J3
1
3
5
7
2
4
6
8
BCLK
LRCLK
DIN
DOUT
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DVDD
R19
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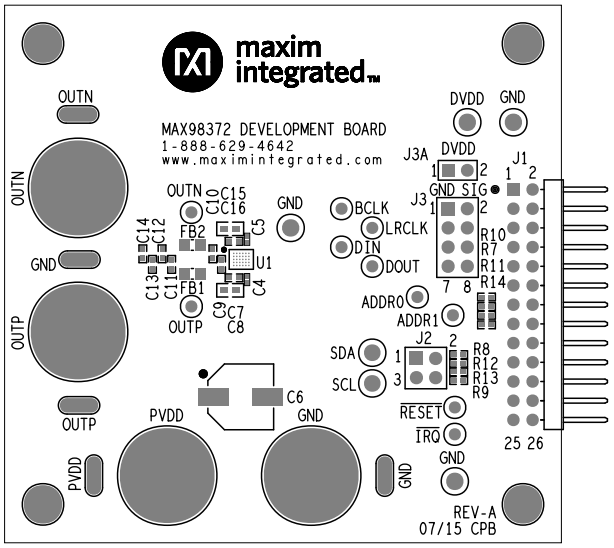
SDA
SCL
1
3
2
4
SCL
DVDD
R20
OPEN

HARDWARE NAME:MAX98372_DEV_APPS_A	
HARDWARE NUMBER:	
ENGINEER:	DESIGNER:
DATE: 07/10/2015	ODB++/GERBER: SILK_TOP



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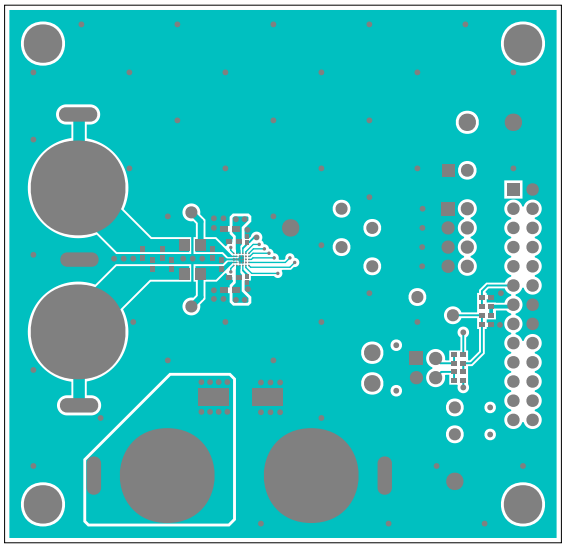
DATE: 07/10/2015	ODB++/GERBER: TOP



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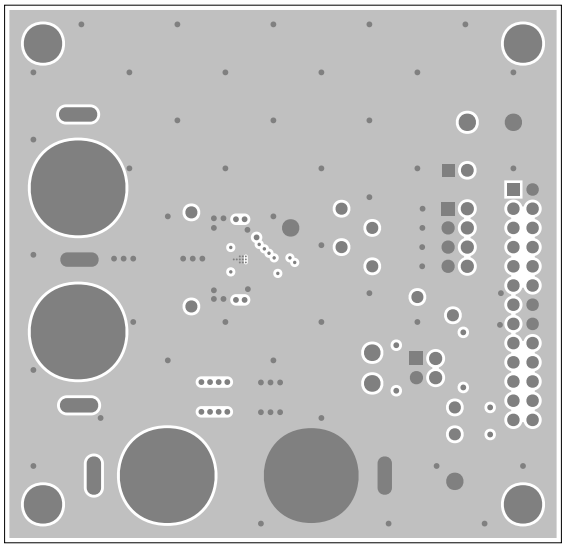

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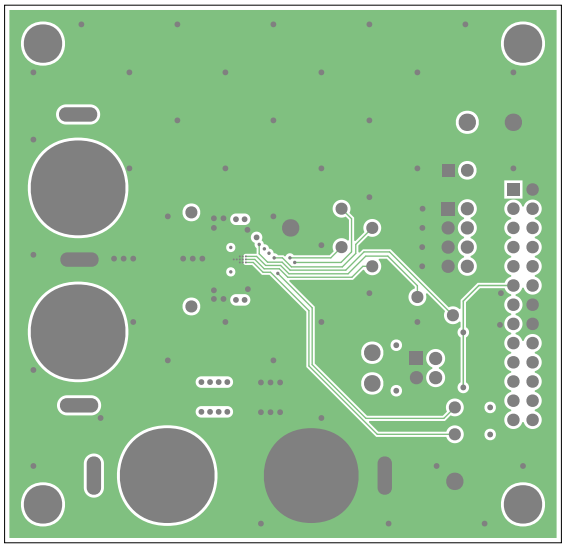

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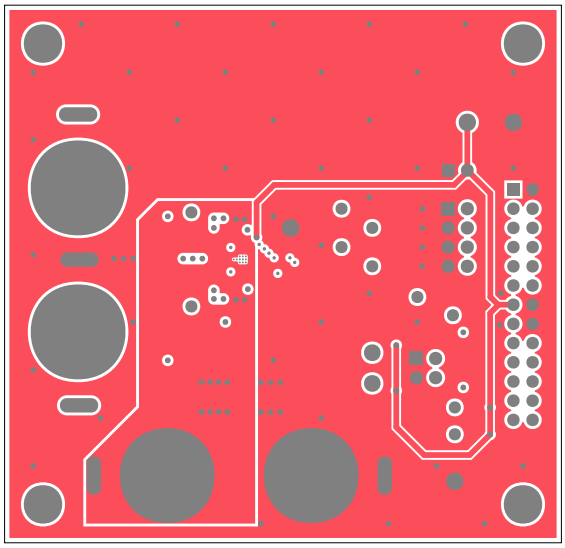
ENGINEER:	DESIGNER:
DATE: 07/10/2015	ODB++/GERBER: POWER_L4



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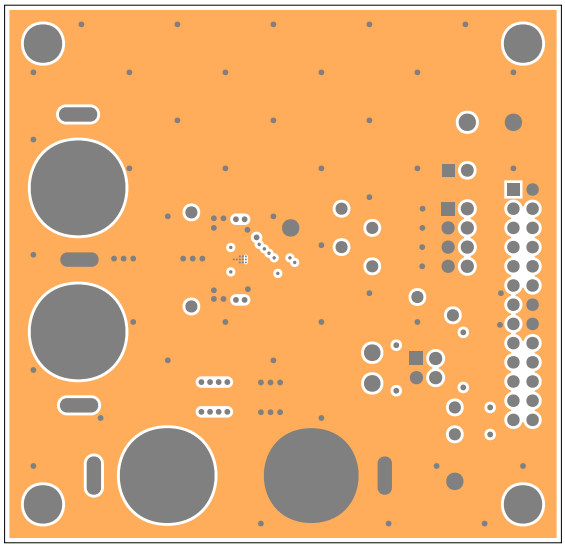
ENGINEER:	DESIGNER:
DATE: 07/10/2015	ODB++/GERBER: GND_L5



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HARDWARE NAME:MAX98372_DEV_APPS_A	
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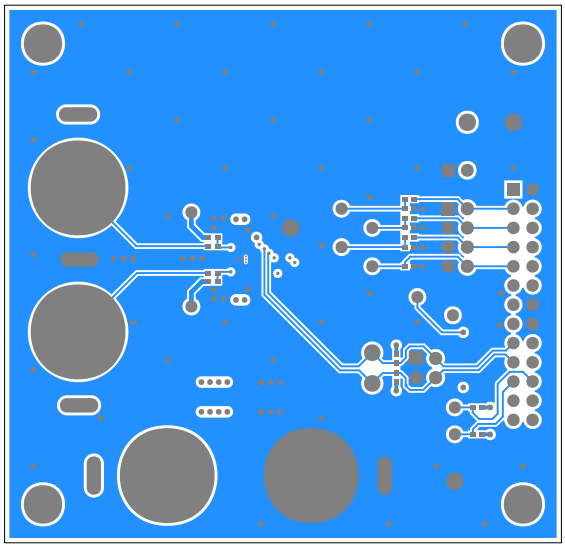
ENGINEER:	DESIGNER:
DATE: 07/10/2015	ODB++/GERBER: BOTTOM



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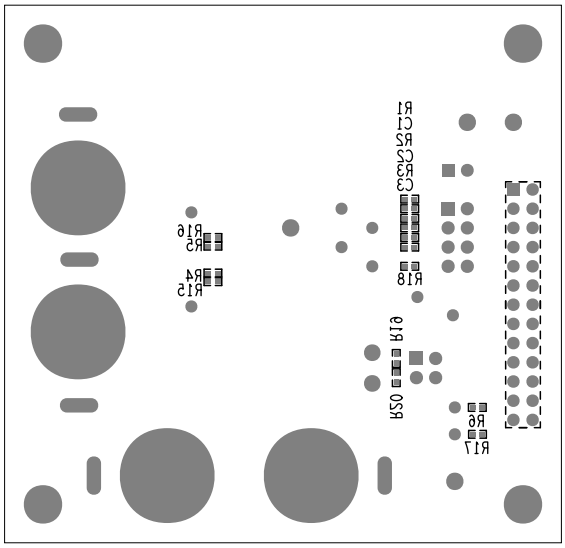
HARDWARE NUMBER:	
ENGINEER:	DESIGNER:
DATE: 07/10/2015	ODB++/GERBER: SILK_BOT



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