General Description

The Maxim Audio Interface 1 (AUDINT1) board provides both an I²C and I²S interface to facilitate the evaluation of compatible Maxim Development (DEV) boards. Maxim DEV boards that are evaluated with the AUDINT1 interface board can require custom GUI software, which is available as a download from Maxim's evkit-software web page.

The AUDINT1 board and a compatible DEV board are ordered together as an evaluation system (EV system). Ordering information for EV systems is located in the EV system data sheet.

Refer to the appropriate EV system data sheet for quick start and detailed operating instructions.

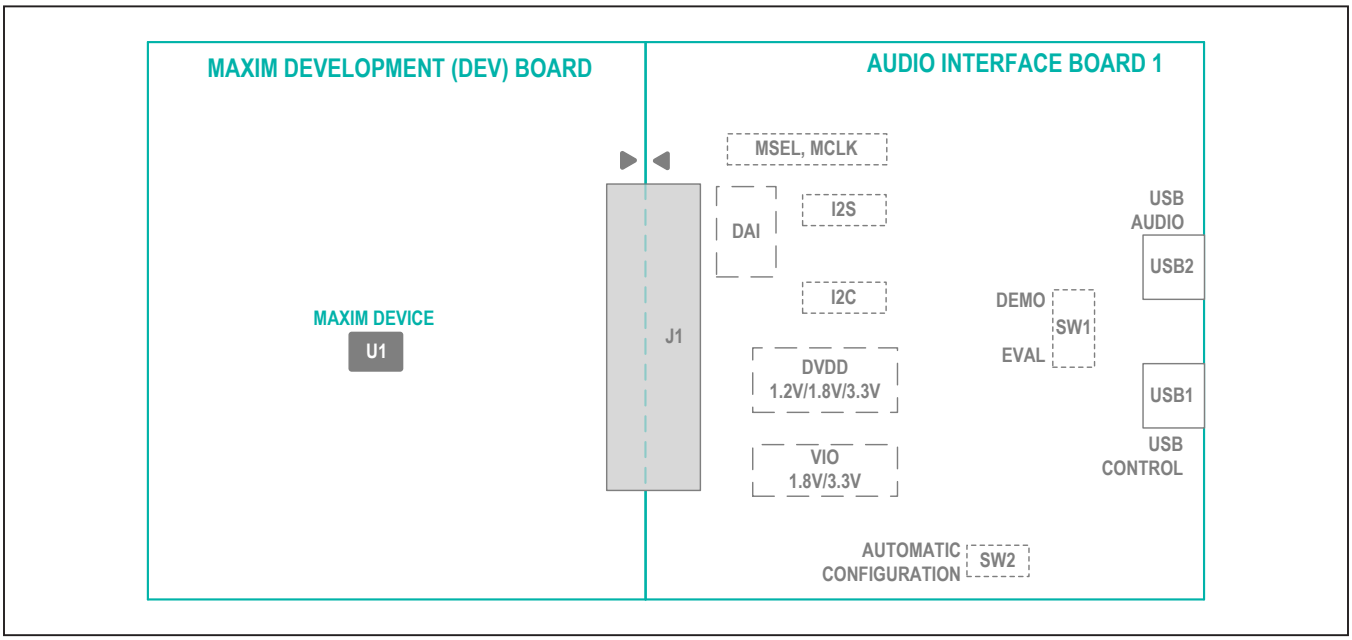
The AUDINT1 board is provided as part of selected Maxim evaluation systems (EV system) to evaluate Maxim parts only. The use of the AUDINT1 board as a development target is not supported. Refer to the MAXQ2000 evaluation kit data sheet for this purpose.

Benefits and Features

- USB Powered (+5V)
- USB-to-I²C (USB CONTROL)
- USB-to-I²S (USB AUDIO)
- On-Board Master Clock Sources
- On-Board LDOs (+1.2V, +1.8V, +3.3V)
- Compatible with Standard FTDI VCP Drivers
- Fully Assembled and Tested

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

Simplified EV System Block Diagram



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Quick Start

Required Equipment

- Device-specific DEV board
- Two A-to-mini B USB cables (provided)
- Windows XP®, Windows® 7, or Windows 8 computer with two available USB ports

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.

Procedure

The AUDINT1 board is fully assembled and tested. Follow these steps to setup the AUDINT1 board for the evaluation of a compatible DEV board:

1) Configure the AUDINT1 jumpers and switches based on the needs of the companion DEV board. See Table 2 and 3 for jumper configuration options and refer to the DEV board's data sheet for device configuration requirements.
2) Before connecting the PC to the AUDINT1 board, install the evaluation software for the device-specific DEV board. This is to ensure that the USB device driver, which is packaged with the evaluation software, gets installed on the host PC. To download the devices's evaluation software, go to **www.maximintegrated.com/evkitsoftware**. Refer to the EV system data sheet for additional details.
3) Do not proceed until the evaluation software installation is completed. This ensures that the required virtual COM port (VCP) driver is installed and the PC recognizes the AUDINT1 board as a USB device. If needed, the USB driver can be manually installed by downloading and installing the VCP driver package (release 2.10.00 or newer) directly from the FTDI website.
4) Connect a USB cable between the PC and the USB1 port (USB CONTROL) on the AUDINT1 board. Once Windows reports the device is ready to use then the USB driver has been installed successfully. The status of the USB connection can be manually checked by opening Windows' **Device Manager** and expanding the **Universal Serial Bus controllers** item. Right click on the **USB Serial Converter** item and select **Properties**. On the **Details** tab select **Hardware Ids** from the **Property** field and verify that VID_0403 and PID_6001 are shown in the **Value** field.
5) Connect a USB cable between the PC and the USB2 port (USB AUDIO) on the AUDINT1 board.
6) Open Windows' **Sound** dialog and select the **Playback** tab. A **USB Audio** item should be listed as one of the available playback devices. All audio played through this device is streamed through the AUDINT1 module to the DEV board.
7) Connect the AUDINT1 board to the DEV board. Refer to the EV system data sheet for additional quick start steps that might be needed to prepare the EV system for evaluation.

Detailed Description of Software

The AUDINT1 board is a tool that is designed to be used with compatible DEV boards, and as such, does not have its own dedicated GUI software. Refer to the appropriate EV system data sheet for further evaluation details. The EV system data sheet provides details about the associated DEV board and its use with the AUDINT1 board.

Note: A DEV board may not require PC GUI software, as would be the case for a DEV board that only utilizes the audio streaming capability of the AUDINT1 board.

Detailed Description of Hardware

The AUDINT1 board provides both an I^2C and I^2S interface to facilitate the evaluation of compatible Maxim development (DEV) boards. The AUDINT1 interface board comprises two microcontroller circuits, one for each of the available interfaces.

The multicore microcontroller (U200) provides the USB-to-I^2S interface, allowing for audio streaming onto Maxim's I^2S-compatible DEV boards. The Maxim MAXQ2000 microcontroller (U100) and the FTDI (U101) device provide the USB-to-I^2C interface, providing the communication link between an I^2C capable DEV board and its associated PC GUI software. The MAXQ2000 microcontroller provides the I^2C interface and the FTDI device provides the USB to serial interface, which is supported by standard FTDI drivers.

The AUDINT1 module operates from USB power (+5V) and does not require any external power supplies. Each of the USB ports (USB1 and USB2) is capable of powering the on-board LDOs that provide power to the connected DEV board. The available LDO output voltages are +1.2V, +1.8V, and +3.3V.

The 26-pin (2x 13) female connector (J1) on the AUDINT1 board connects to its male counterpart on a compatible DEV board. This connector includes connections for I^2S, I^2C, logic rail voltages, and ground. This connector also provides connections for six of the MAXQ2000's GPIO pins, two of which are used for interrupt (IRQ) monitoring.

Table 1. USB Power Distribution

I²S CAPABLE DEV BOARD	I²C CAPABLE DEV BOARD	USING EVALUATION SOFTWARE	MODE (SW1)	USB CONNECTIONS	FUNCTIONALITY
Yes	Yes	Yes	EVAL*, DEMO	USB1 + USB2	USB audio streaming + I²C device configuration using evaluation software
Yes	Yes	No	DEMO*	USB2	Automatic I²C device configuration + USB audio streaming
			EVAL	USB1 + USB2	
No	Yes	Yes	EVAL	USB1	I²C device configuration using evaluation software
No	Yes	No	EVAL	USB1	Automatic I²C device configuration
Yes	No	—	EVAL*, DEMO	USB2	USB audio streaming

**Recommeded mode of operation.*

Table 2. Mode Of Operation

MODE	LOGIC RAILS (+1.8V, +3.3V, +1.2V, 3V3, 2V5)	USB-TO-I²C CIRCUIT	LOGIC RAILS (VDD18, VDD33, +1.0V)	USB-TO-I²S CIRCUIT	CLOCK CIRCUITS
EVAL*	USB1		USB2		
DEMO	USB2				

**Default position.*

Mode of Operation

The AUDINT1 board can be evaluated in either demonstration (DEMO) mode or evaluation (EVAL) mode. The mode of operation is set by switch SW1, which is located between the two USB ports.

DEMO mode is for situations when a PC is not available or does not have the required evaluation software. EVAL mode is for all other situations, as listed in Table 1. For cases where the DEV board is not I²C capable, either mode can be used with a single USB connection (USB2).

DEMO Mode

In demonstration (DEMO) mode, the AUDINT1 board is intended to be evaluated with one USB connection (USB2). This mode of operation is intended for on-the-fly evaluations, where a PC may not be available or has not been setup with the required evaluation software. To utilize this mode for I²C device configuration, the MAXQ2000 requires customized firmware. The customized firmware contains device-specific instructions that automatically configure the device on power-up and/or on the pressing of the SW2 pushbutton.

Although DEMO mode is only recommended for one specific case (I²S and I²C without software), it can be set for other cases as listed in Table 1. For these other cases, custom MAXQ2000 firmware is not required.

EVAL Mode

In evaluation (EVAL) mode, the AUDINT1 board can be evaluated with one or two USB connections, depending on the needs of the companion DEV board (Table 1). The main use case for EVAL mode is when the EV system (AUDINT1 board + DEV board) is evaluated with a PC that has been setup with the appropriate device-specific evaluation software.

As shown in Table 1, there are other situations in which the EVAL mode can be utilized. It can be used, and is recommended, when only USB audio streaming is needed. This reduces the load placed on the USB2 port by isolating the unused I²C interface from the USB2 power rail. It can also be used in cases where USB audio streaming is not needed and a PC is not available or has not been setup with the device-specific evaluation software. As in DEMO mode, this case would require customized MAXQ2000 firmware to perform the automatic I²C device configuration (on power-up and/or on the pressing of the SW2 pushbutton).

Power Supply

The AUDINT1 board is powered by a host PC's USB power (+5V) and does not require any external supplies. The power distribution across the board is determined by the mode of operation, which is set by the SW1 switch (Table 1). In the recommended DEMO mode, only one

Table 3. Connector J1 Pinout

SIGNAL	PIN	PIN	SIGNAL
GND	2	1	MCLK
GPIO3	4	3	BCLK
GPIO4	6	5	LRCLK
GPIO5	8	7	DOUT
GPIO6	10	9	DIN
+3.3V	12	11	Reserved
GND	14	13	DVDD
GND	16	15	VIO
+5V	18	17	SDA
+5V	20	19	SCL
GPIO2	22	21	GPIO1
Reserved	24	23	Reserved
Reserved	26	25	Reserved

USB connection (USB2) is needed to supply the board. In the recommended EVAL modes, one or both of the USB connections (USB1 and USB2) may be needed to power the board. See Table 2 for the USB power distribution in each mode of operation.

MAXAUDINT001 Connector J1

Connector J1 is a 2-pin dual row right-angle header that connects to a compatible development (DEV) type EV kit. Although, it can be used to connect to other board types that have a compatible male connector and appropriate pin mapping. All signal and power nets intended for the device(s) on the DEV board are routed to the J1 connector. See Table 3 for a list of signals and logic-rail voltages available on the J1 connector.

Hardware Configuration

The AUDINT1 board is configured by adjusting the provided jumpers and slide switches. Table 4 and Table 5 describe the jumper and switch configuration options.

Master Clock (MCLK) Selection

The MCLK and MSEL switches are used to route one of the on-board clocks to the master clock output (MCLK) available at connector J1. An external clock can be used by setting the MCLK switch to DISCONNECTED and connecting the external clock to pin 2 of header J3 or pin 1 of connector J1.

See Table 6 to configure the master clock output to one of the available on-board clocks: 11.2896MHz, 12MHz, or 12.288MHz. In order for the on-board clock circuits to work, power needs to be supplied to the USB2 port.

I²S Audio

The AUIDNT1 board provides two methods for driving a DEV board's I²S Interface. The first method is through the I²S header (J3) and this provides the most direct connection to the DEV board. The other method involves streaming audio through the USB AUDIO (USB2) port. In both cases, the I²S signal are connected to the DEV board by connecting to the J1 header.

Digital Audio Interface Header J3

Header J3 provides direct access to the I²S interface present on the J1 connector. See Table 7 for individual pin descriptions. This header also allows for the use of an external audio source to drive the DEV board's I²S interface. When using an external audio source, configure the I²S switch with its actuator in the DISCONNECT position to prevent the multicore microcontroller (U200) from also driving the I²S bus.

USB Audio (USB2)

The multicore microcontroller (U200) and USB PHY interface (U202) make up the USB audio circuit that allows audio to be streamed from a PC connected to the USB2 port, onto a connected DEV board. The USB audio circuit

appears as a sound card to the PC and shows up as a **USB Audio** playback device in Windows' **Sound** dialog. Configure the **USB Audio** device as the default playback device (by pressing **Set Default**) to have audio from the PC streamed onto the AUDINT1 board. When audio is being streamed onto the AUDINT1 board, LEDB (located to the left of the XMOS device) turns on.

In order for the audio stream to be routed onto the connected DEV board, the I²S switch needs to be configured in the CONNECTED position (Table 5).

Note: The PCM digital audio signals are routed through a level-translator/buffer (U5 and U7) and a switch (U3) before routing to the J1 connector.

Table 4. Jumper Configuration

HEADER	SHUNT POSITION	DESCRIPTION
DVDD	+1.2V	Provides +1.2V to the digital logic rail on the J1 connector (pin 13)
	+1.8V*	Provides +1.8V to the digital logic rail on the J1 connector (pin 13)
	+3.3V	Provides +3.3V to the digital logic rail on the J1 connector (pin 13)
	GND	Grounds the digital logic rail on the J1 connector (pin 13)
VIO	+1.8V*	Provides +1.8V to the I/O logic rail on the J1 connector (pin 15)
	+3.3V	Provides +3.3V to the I/O logic rail on the J1 connector (pin 15)

**Default position.*

Table 5. Switch Configuration

SWITCH	ACTUATOR POSITION	DESCRIPTION
I²C	DISCONNECT	Disconnects the I²C interface from the J1 connector
	CONNECT*	Connects the I²C interface to the J1 connector
I²S	DISCONNECT	Disconnects the I²S interface from the J1 connector
	CONNECT*	Connects the I²S interface to the J1 connector
MCLK	DISCONNECT	Disconnects the MCLK clock output from the J1 connector
	CONNECT*	Connects the MCLK clock output to the J1 connector
MSEL	SEL*	Master clock output connected to one of the three on-board clocks (11.2896MHz, 12MHz, 12.288MHz).
	12MHz	Master clock output connected to the on-board 12MHz oscillator
SW1	DEMO	Interface board evaluated in demonstration mode
	EVAL*	Interface board evaluated in evaluation mode

**Default position.*

Table 6. Master Clock Configuration

MCLK SWITCH	MSEL SWITCH	CLOCK SOURCE
DISCONNECTED	X	On-board clock is not provided to DEV board. Use this setting if the DEV board does not require a master clock or if an external master clock is used. Connect the external master clock to pin 2 of header J3 or pin 1 of connector J1.
CONNECTED*	SEL	The on-board clock selected by the evaluation software (11.2896MHz, 12MHz, or 12.288MHz).
CONNECTED	12MHz	On-board 12MHz oscillator

**Default position.*
X = Don't care

Table 7. DAI Header (J3)

PIN*	DESIGNATOR	SIGNAL
2	M	Master Clock (MCLK)
4	B	Bit Clock (BCLK)
6	L	Left right clock (LRCLK)
8	OUT	Data Out (DOUT)
10	IN	Data In (DIN)

**All odd pins are tied to ground.*

USB Control (USB1)

The MAXQ2000 (U100) microcontroller and FTDI USB interface (U101) form the bridge between a DEV board's I2C-capable devices and its associated evaluation software, running on a Windows XP/Windows 7/Window 8 computer. The AUDINT1 board exposes the MAXQ2000's I2C and GPIO peripherals.

SMBus/I2C/2-Wire Interface

The MAXQ2000 portion of the AUDINT001 board offers bit-banged I2C at 400kHz (fast mode, default) or 100kHz (standard mode). SCL/SDA pullup resistors are provided on-board. Attainable throughput is limited by the PC and its software. The SMBus/I2C bus runs in bursts at rated speed, but there is some variable dead time between transfers, due to communication overhead. Properly written PC software can minimize this dead time, but cannot completely eliminate it.

GPIO Interface and Pushbutton Programmer

Six of the MAXQ2000's general-purpose inputs/outputs (GPIOs) are routed to the J1 header, for use by the connected DEV board. Four of the GPIOs (GPIO3–GPIO6) are routed directly to the J1 header through an on-board level translator and can be used as needed. The other two GPIOs (GPIO1 and GPIO2) are also routed through an on-board level translator, but have additional LED and pullup circuitry to facilitate their use for interrupt (IRQ) monitoring.

Figure 2. Playback Device—USB Audio

An additional MAXQ2000 GPIO is connected to a pushbutton (SW2) and is used to implement a future feature: pushbutton programming. When enabled, the pushbutton allows the MAXQ2000 microcontroller to configure the main device on the DEV board without the need for the device's evaluation software. The pushbutton instructs the microcontroller to write a preprogrammed sequence of data to the device, providing a quick method for configuring the DEV board for evaluation.

Detailed Description of Firmware

The MAXQ2000 firmware was developed using the MAXIDE assembly language development environment. At this time, the standard MAXQ2000 firmware does not support the pushbutton programming feature.

Component List, Schematics, PCB Layout Diagrams

See the following links for component list, schematics, and PCB layout:

- MAXAUDINT001 BOM
- MAXAUDINT001 schematic
- MAXAUDINT001 PCB

MAXAUDINT001 Required Driver

FILE	DECRIPTION
2.10.00 WHQL-certified (or newer)	FTDI virtual COM port (VCP) driver package

Ordering Information

PART	TYPE
MAXAUDINT001#	Audio Interface Board

#Denotes RoHS compliant.

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	8/15	Initial release	—

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at www.maximintegrated.com.

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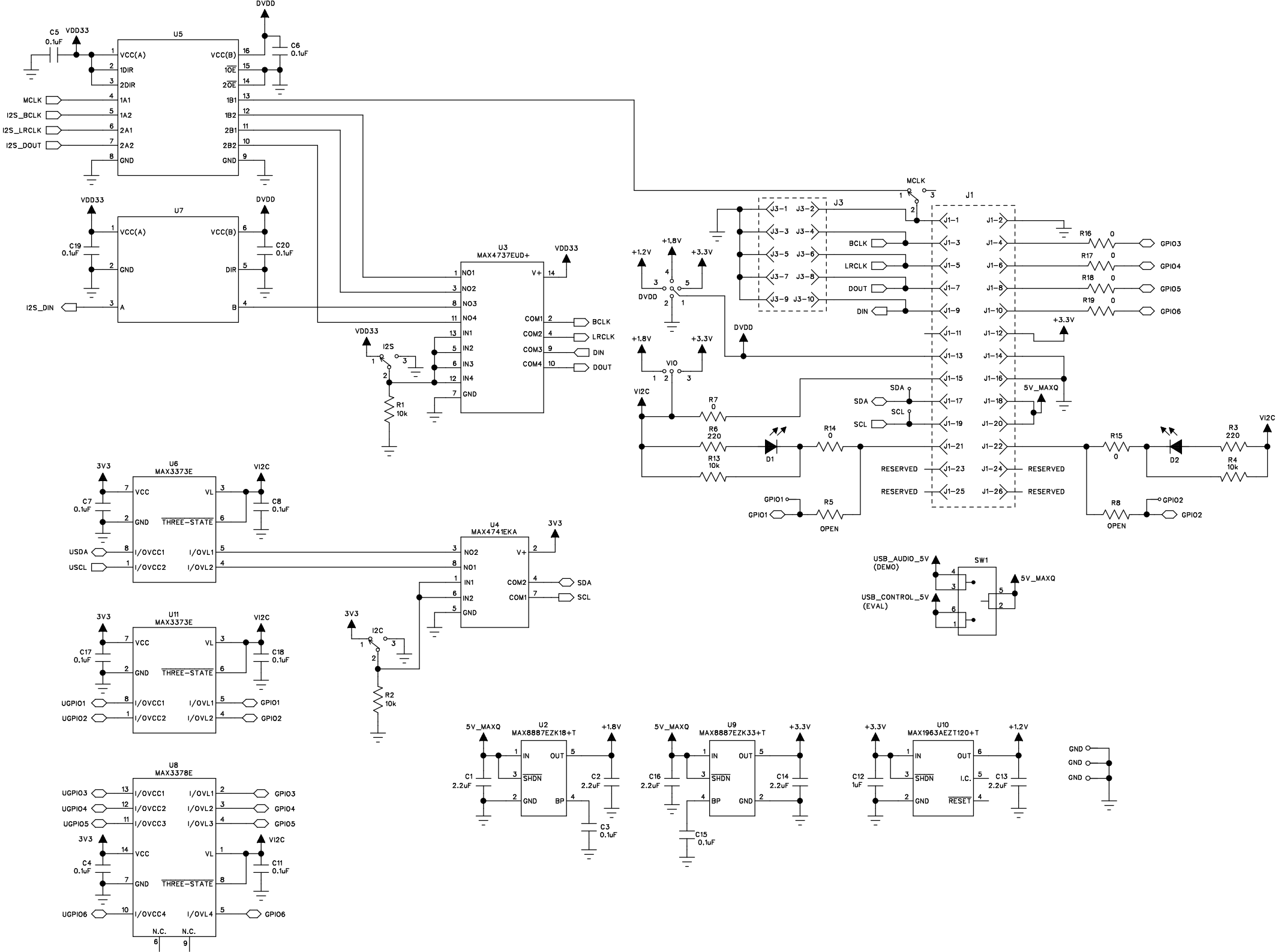
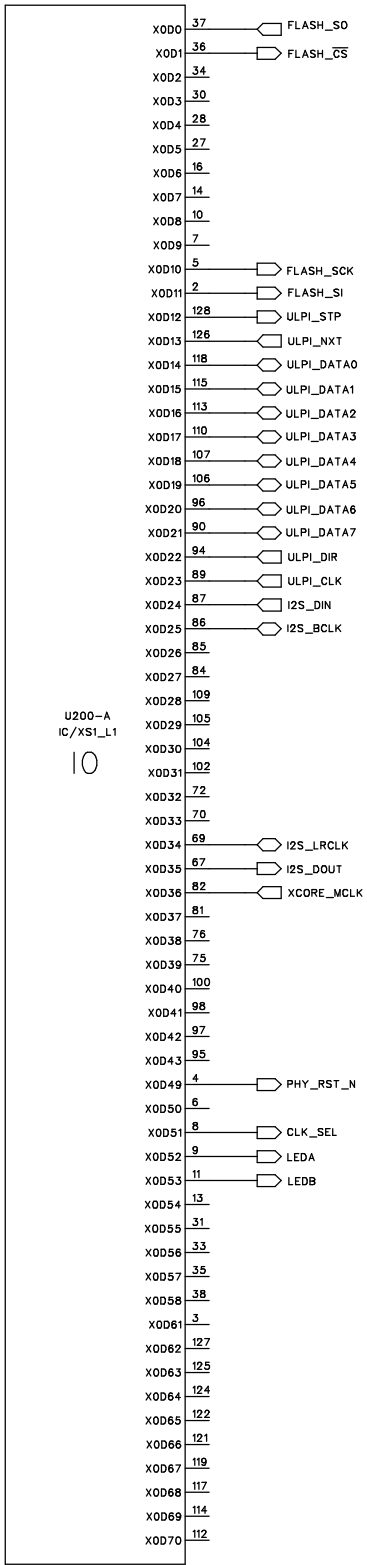
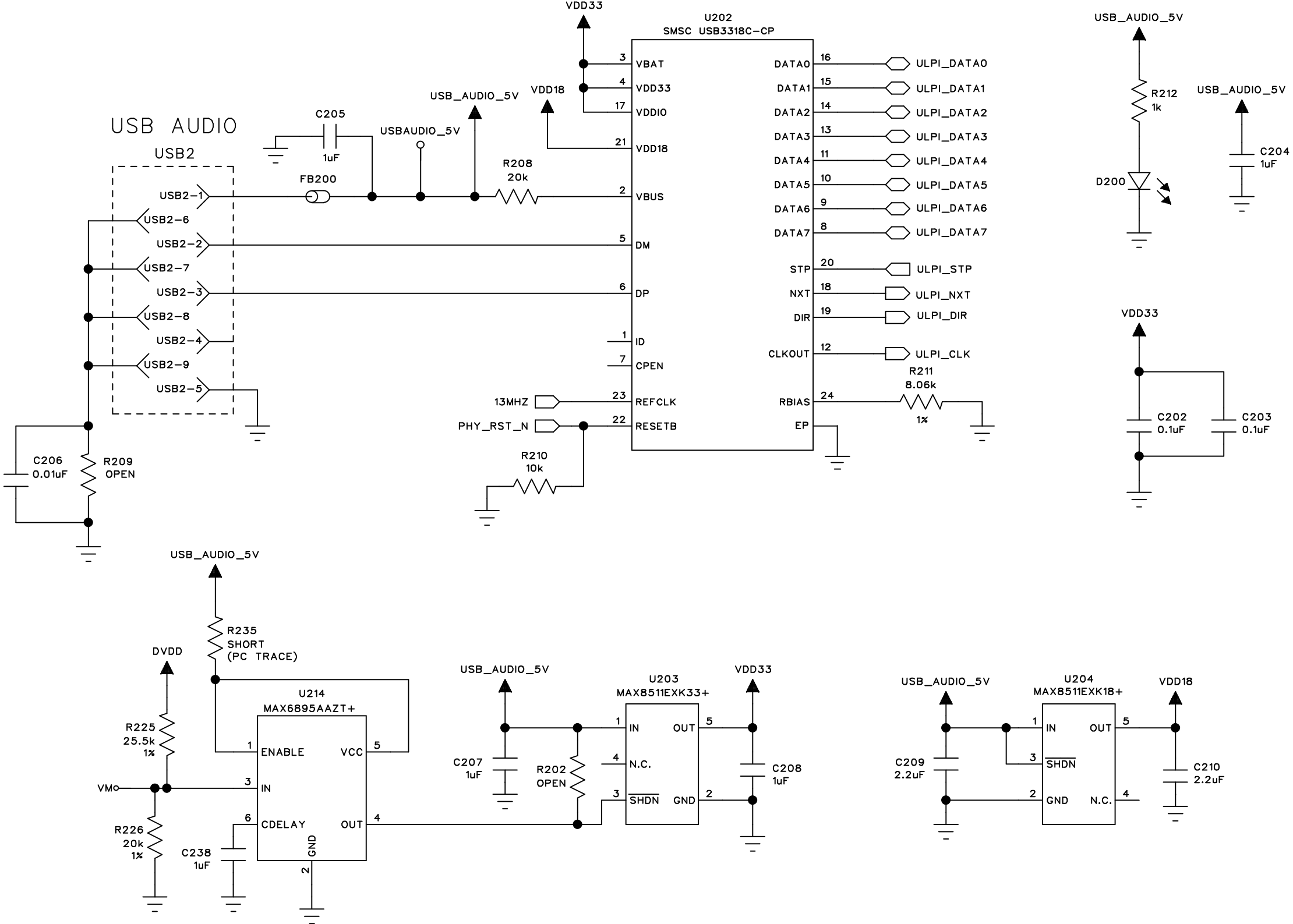
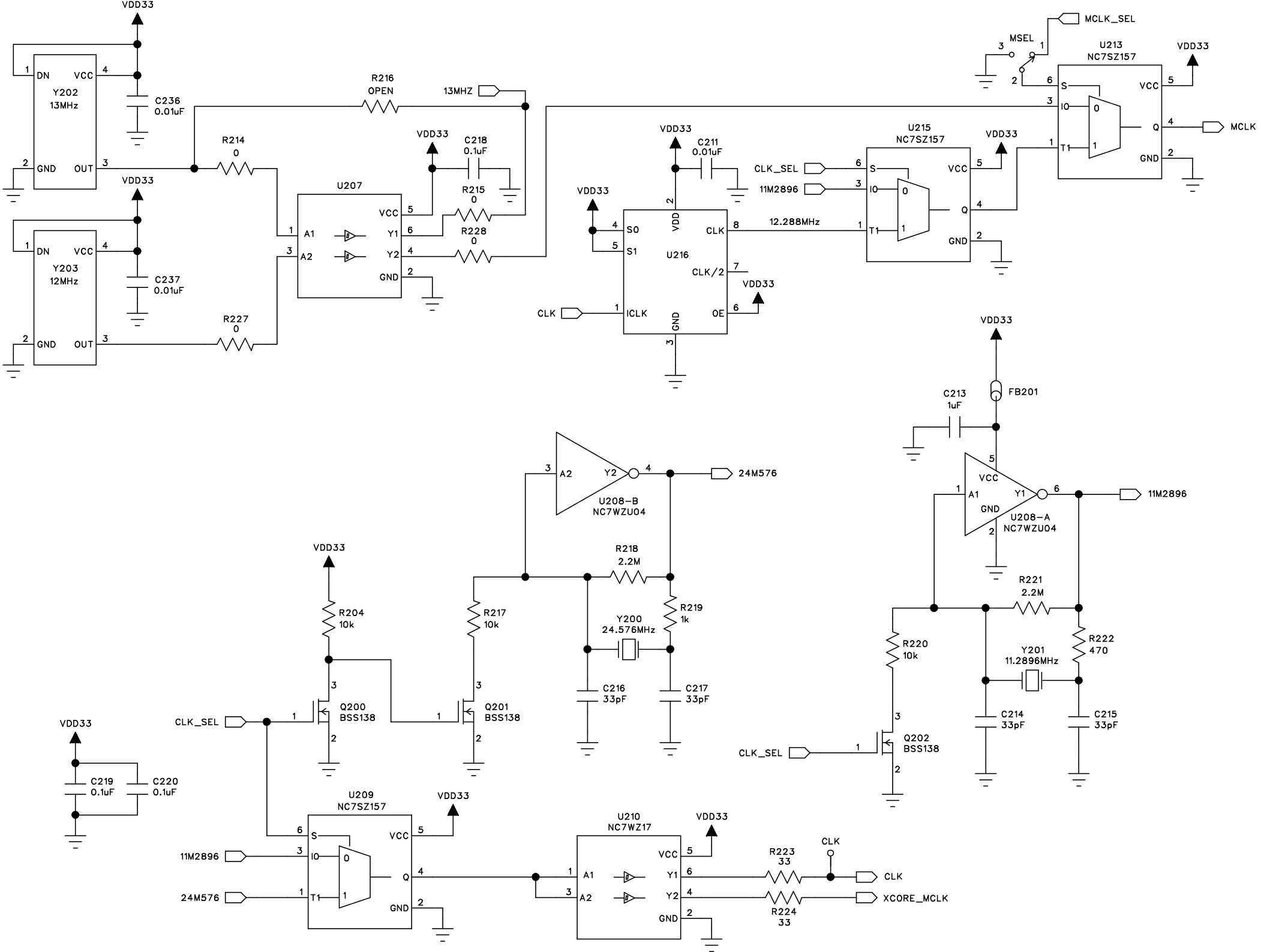
Bill of Materials (BOM) Rev 0; 8/15

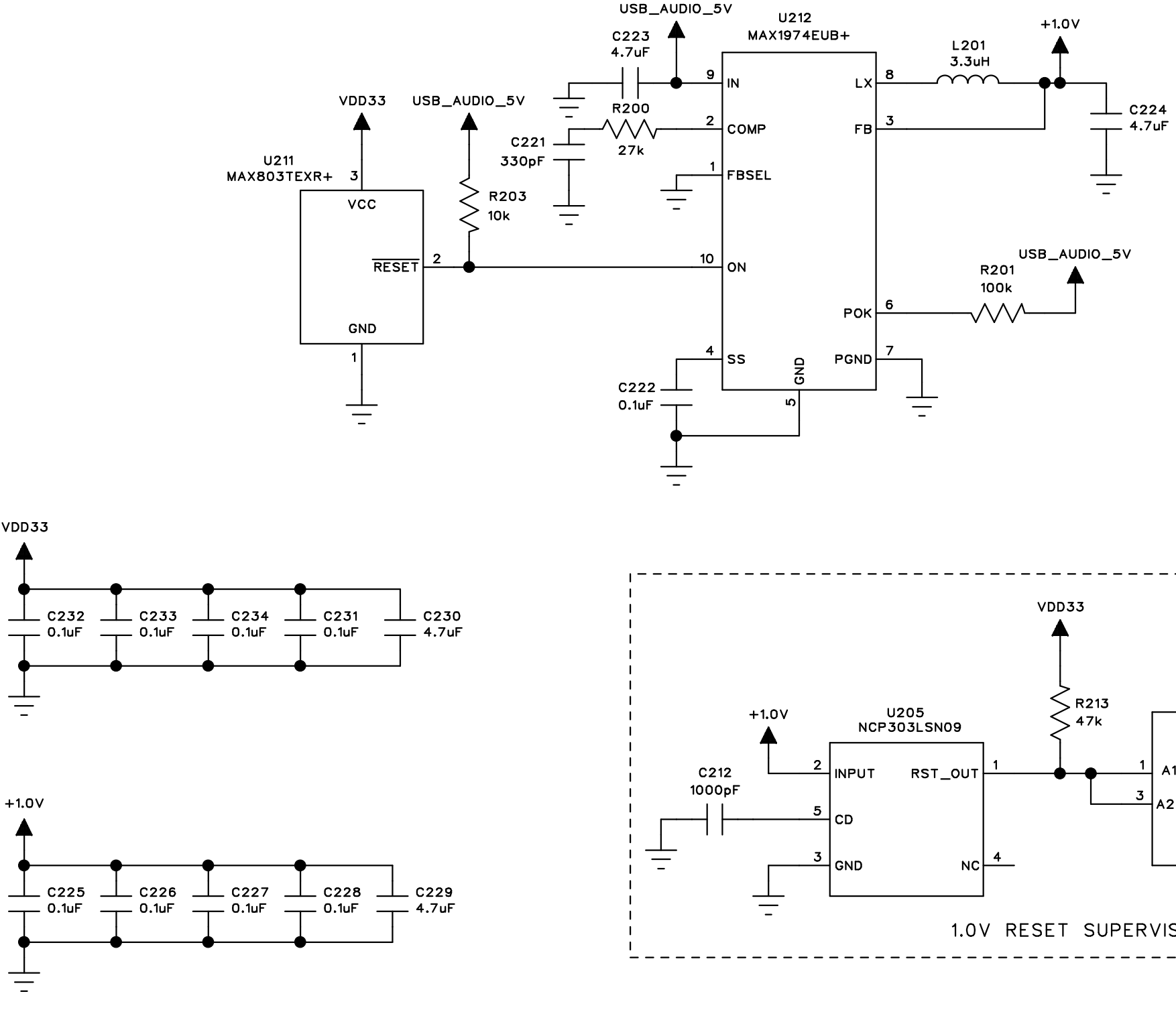
Parent	Item	Component Description	Qty	Primary Part	Alternate Part	Assembly DNI = Do Not Install	Reference Designator	Manufactuer	Manufacturer Part Number	Assembly Comments
#REF!	1	2.2uF ±10%, 6.3V X5R ceramic capacitor (0603)	7				C1, C2, C13, C14, C16, C209, C210	Murata	GRM188R60J225K	
	2	0.1uF ±10%, 16V X7R ceramic capacitor (0402)	35				C3-C8, C11, C15, C17-C20, C100, C101, C105, C107-C110, C119, C201-C203, C218-C220, C222, C225-C228, C231-C234	Murata	GRM155R71C104K	
	3	1uF ±10%, 10V X7R ceramic capacitor (0603)	5				C12, C207, C208, C213, C238	TDK	C1608X7R1A105K	
	4	8pF ±0.5pF, 50V C0H ceramic capacitor (0402)	2				C102, C103	Taiyo Yuden	UMK105CH080DV	
	5	10uF ±20%, 6.3V X5R ceramic capacitor (0805)	1				C104	TDK	C2012X5R0J106M	
	6	0.033uF ±10%, 25V X7R ceramic capacitor (0603)	1				C106	Murata	GRM188R71E333K	
	7	18pF ±5%, 50V C0G ceramic capacitor (0603)	2				C111, C112	TDK	C1608C0G1H180J	
	8	Capacitor (0402)	1			DNI	C113			
	9	1uF ±10%, 6.3V X5R ceramic capacitor (0402)	7				C115-C118, C200, C204, C205	TDK	C1005X5R0J105K	
	10	0.1uF ±10%, 25V X7R ceramic capacitor (0603)	1				C120	TDK	C1608X7R1E104K	
	11	0.01uF ±10%, 50V X7R ceramic capacitor (0603)	4				C206, C211, C236, C237	Murata	GRM188R71H103K	
	12	1000pF±10%, 50V X7R ceramic capacitor (0603)	1				C212	Murata	GRM188R71H102K	
	13	33pF ±5%, 50V C0G ceramic capacitor (0603)	4				C214-C217	Murata	GRM1885C1H330J	
	14	330pF ±5% 50V C0G ceramic capacitor (0603)	1				C221	Murata	GRM1885C1H331J	
	15	4.7uF ±10%, 10V X5R ceramic capacitor (0805)	2				C223, C224	Murata	GRM219R61A475K	
	16	4.7uF ±10%, 6.3V X5R ceramic capacitor (0603)	2				C229, C230	Murata	GRM188R60J475K	
	17	Multipurpose test point, 63mill drill (Red)	1			DNI	CLK	Keystone	5010	
	18	LED, red, 1.7V, 20mA (0603)	2				D1, D2	Stanley Electric	BR1111C-TR	
	19	LED, yellow (0603)	1				D100	Lite-On	LTST-C190YKT	
	20	LED, green (0603)	4				D101, D200, LEDA, LEDB	Lite-On	LTST-C190GKT	
	21	4-way (5-pin) header (0.1in centers)	1				DVDD	Sullins	PEC36SAAN	cut-to-fit
	22	Ferrite bead (0603)	1				FB100	Murata	BLM18PG221SN1	
	23	Ferrite bead (0603)	2				FB200, FB201	Murata	BLM18KG331SN1	
	24	Multipurpose test point, 63mil drill (Black)	3				GND (x3)	Keystone	5011	
	25	Jumper-switch, SPDT, 0.1in centers	4				I2S, I2C, MCLK, MSEL	ITW Pancon	JSC416G0	
	26	26-pin (2x13) dual row receptacle, 0.1in centers	1				J1	Samtec	SSW-113-02-S-D-RA	
	27	10-pin (2x5) dual row header, 0.1in centers	1				J3	Sullins	PEC36DAAN	cut-to-fit
	28	10-pin header 0.1in centers	1				J200	Sullins	PEC36SAAN	cut-to-fit
	29	3.3uH, 1.1A power inductor	1				L201	Sumida	CDRH3D16NP-3R3NC	
	30	N-channel enhancement mode FET (SOT-23)	3				Q200-Q202	Fairchild	BSS138	
	31	10k ohms ±5% resistor (0402)	2				R1, R2			
	32	220 ohms ±5% resistor (0603)	4				R3, R6, R108, R110			
	33	10k ohms ±5% resistor (0402)	2				R4, R13			
	34	Resistor (0402)	6			DNI	R5, R8, R16-R19			
	35	0 ohms ±5% resistor (0402)	8				R7, R14, R15, R111, R214, R215, R227, R228			
	36	1.5k ohms ±5% resistor (0402)	2				R100, R101			
	37	27 ohms ±5% resistor (0603)	2				R102, R103			
	38	1.5k ohms ±5% resistor (0603)	1				R104			
	39	470 ohms ±5% resistor (0603)	2				R105, R222			
	40	Resistor (0603)	5			DNI	R106, R107, R202, R209, R216			
	41	3.3k ohms ±1% resistor (0603)	1				R109			
	42	10k ohms ±1% resistor (0603)	2				R112			
	43	15k ohms ±1% resistor (0603)	1				R113			
	44	27k ohm ±5% resistor (0603)	1				R200			
	45	100k ohm ±5% resistor (0603)	1				R201			
	46	10k ohms ±5% resistor (0603)	6				R203, R204, R207, R210, R217, R220			
	47	47k ohms ±5% resistor (0603)	2				R205, R213			
	48	4.7 ohms ±5% resistor (0603)	1				R206			
	49	20k ohms ±5% resistor (0603)	1				R208			
	50	8.06k ohms ±1% resistor (0603)	1				R211			
	51	1k ohms ±5% resistor (0603)	4				R212, R219, R233, R234			
	52	2.2M ohms ±5% resistor (0603)	2				R218, R221			
	53	33 ohm ±5% resistor (0603)	2				R223, R224			
	54	25.5k ohm ±1% resistor (0603)	1				R225			
	55	20k ohm ±1% resistor (0603)	1				R226			
	56	Resistor (0402)	1			DNI	R235		PC-SHORT	
	57	Miniature test point (Yellow)	4			DNI	SCL, SDA, GPIO1, GPIO2	Keystone	5004	
	58	DPDT, Slide Switch	1				SW1	C&K Components	SS-22D0205-G2	
	59	Tactile Switch	1				SW2	E-Switch	TL3302AF260QJ	
	60	1.8V Low Noise Linear Regulator (5 SOT23)	1				U2	MAXIM	MAX8887EZK18+	Topmark: ADPX
	61	Low-Voltage Quad SPST Analog Switches (14 TSSOP)	1				U3	MAXIM	MAX4737EUD+	
	62	Low-Voltage Dual SPST Analog Switches (8 SOT23-8)	1				U4	MAXIM	MAX4741EKA+	
	63	4-bit dual supply translating transceiver (TSSOP16)	1				U5	NXP	74AVC4T245PW	
	64	Dual Low-Voltage Level Translator (8 SOT23-8)	2				U6, U11	MAXIM	MAX3373EEKA+	
	65	Single-bit dual-supply voltage level translator (SOT363)	1				U7	NXP	74AVC1T45GW	
	66	Quad Low-Voltage Level Translator (14 TSSOP)	1				U8	MAXIM	MAX3378EEUD+	
	67	+3.3V Low-Dropout, 300mA linear regulator (SOT23)	1				U9	MAXIM	MAX8887EZK33+	
	68	+1.2V, 300mA LDO Regulator (SOT23-6)	1				U10	MAXIM	MAX1963AEZT120+	
	69	MICROCONTROLLER (56 TQFN)	1				U100	MAXIM	MAXQ2000-RBX+	
	70	USB to serial UART interface (TQFN5x5-32L)	1				U101	FTDI	FT232BQ	
	71	EEPROM, 93C46 Type 3-Wire (SOIC-8)	1			DNI	U102	Atmel	AT93C46EN-SH-B	
	72	2.5V Low Noise Linear Regulator (5 SC70)	1				U103	MAXIM	MAX8511EXK25+	Topmark: ADV
	73	3.3V Low Noise Linear Regulator (5 SC70)	2				U104, U203	MAXIM	MAX8511EXK33+	Topmark: AEI
	74	Single CMOS Swtich Debouncer (4 SOT143)	1				U105	MAXIM	MAX6816EUS+	
	75	Single Low-Power uP Reset Circuit (6 uDFN)	1				U106	MAXIM	MAX6389LT31D3+	
	76	XMOS Processor (128 TQFP)	1				U200	XMOS	XS1-L01A-TQ128-C5	
	77	SPI flash memory, 2Mb (SOIC-8)	1				U201	Winbond	W25X20CLSNIG	
	78	USB 2.0 Transceiver, ULPI (QFN 24)	1				U202	SMSC	USB3318C-CP	
	79	1.8V Low Noise Linear Regulator (5 SC70)	1				U204	MAXIM	MAX8511EXK18+	
	80	Voltage detector (SOT23-5)	1				U205	On Semiconductor	NCP303LSN09T1G	
	81	TinyLogic UHS dual buffer (SC70-6)	1				U206	Fairchild	NC7WZ07P6X	
	82	Dual logic buffer (SC70-6)	2				U207, U210	Fairchild	NC7WZ17P6X	
	83	Dual unbuffered inverter (SC70-6)	1				U208	Fairchild	NC7WZU04P6X	
	84	2-input mulitplexer (SC70-6)	3				U209, U213, U215	Fairchild	NC7SZ157P6X	
	85	Microprocessor reset circuit (SC70-3)	1				U211	MAXIM	MAX803TEXR+	
	86	1A, Step-Down Regulator (uMAX)	1				U212	MAXIM	MAX1974EUB+	
	87	Low-power sequencing/supervisory circuit (6 SOT23)	1				U214	MAXIM	MAX6895AAZT+	
	88	Clock Divider (8-pin SOIC)	1				U216	Integrated Device Technology	ICS542MLFT	
	89	Multipurpose test point (Red)	2				USB_CONTROL_5V, USBAUDIO_5V	Keystone	5010	
	90	USB Mini AB Receptacle	2				USB1, USB2	Hirose Electric	UX60A-MB-5ST	
	91	3-pin header (0.1in centers)	1				VIO	Sullins	PEC36SAAN	
	92	Miniature test point (Red)	1			DNI	VM	Keystone	5000	
	93	6MHz crystal	1				Y100	Hong Kong X'tals	SSL60000N1HK188F0-0	
	94	CRYSTAL, 16MHz (3.2mm x 2.5mm)	1				Y101	Kyocera	CX3225SB16000D0FLJZZ	
	95	Crystal, 24.576MHz (6.0mm x 3.3mm)	1				Y200	Abracon Corp.	ABM7-24.576MHZ-D-2-Y-T	
	96	Crystal, 11.2896MHz (6.0mm x 3.3mm)	1				Y201	Abracon Corp.	ABM7-11.2896MHZ-D-2-Y-T	
	97	13Mhz Clock Oscillator (2.5mm x 2.0mm)	1				Y202	ECS Inc	ECS-2033-130-BN	
	98	12Mhz Clock Oscillator (2.5mm x 2.0mm)	1				Y203	ECS Inc	ECS-2033-120-AU	
	99	Shunt, 2 position, 0.1 center	2					Kycon	SX1100-B	See Assembly Notes Tab
	100	PCB	1				AUDIO INTERFACE BOARD 1		EPCBAUDINT1	
	101	Aluminum standoff, hex, 4-40 thread, 0.187" OD, 0.5"L	4					Keystone	2203	
	102	Machine screw, philips, 4-40, 3/8" length	4					B&F Fastener Supply	PMSSS4400038PH	
PACK-OUT	1	CABLE, USB high-speed A-to-mini B	2					Assmann Electric	AK672M/2-2-R	
			1							

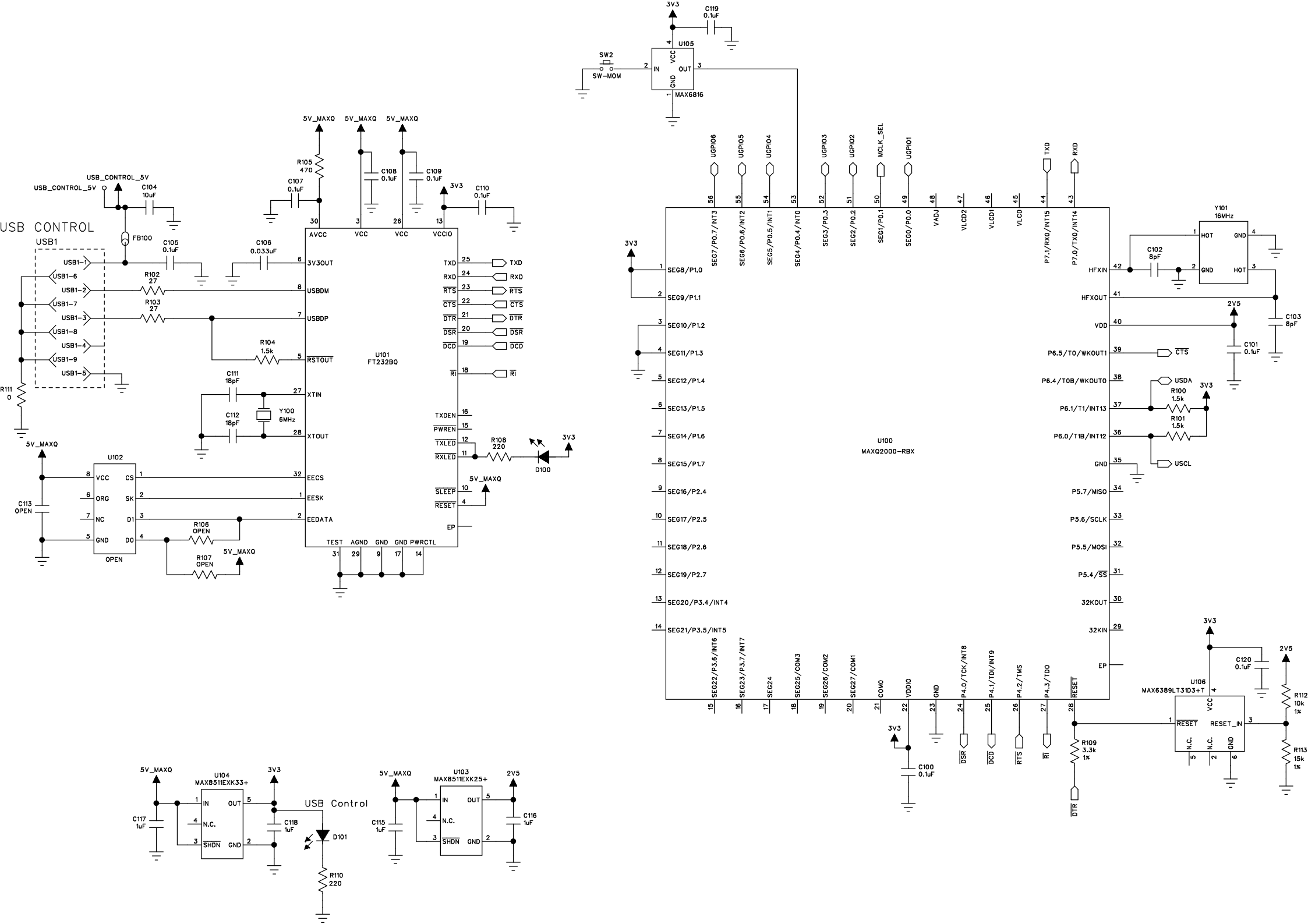

U5
VCC(A)
1DIR
2DIR
1A1
1A2
2A1
2A2
GND
VCC(B)
1OE
2OE
1B1
1B2
2B1
2B2
GND
C5 0.1uF
C6 0.1uF
VDD33
DVDD
MCLK
I2S_BCLK
I2S_LRCLK
I2S_DOUT
U7
VCC(A)
GND
A
VCC(B)
DIR
B
C19 0.1uF
C20 0.1uF
I2S_DIN
U3
MAX4737EUD+
NO1
NO2
NO3
NO4
IN1
IN2
IN3
IN4
GND
V+
COM1
COM2
COM3
COM4
BCLK
LRCLK
DIN
DOUT
I2S
R1 10k
J3
J1
J3-1 J3-2
J3-3 J3-4
J3-5 J3-6
J3-7 J3-8
J3-9 J3-10
J1-1 J1-2
J1-3 J1-4
J1-5 J1-6
J1-7 J1-8
J1-9 J1-10
J1-11 J1-12
J1-13 J1-14
J1-15 J1-16
J1-17 J1-18
J1-19 J1-20
J1-21 J1-22
J1-23 J1-24
J1-25 J1-26
+1.2V
+1.8V
+3.3V
VIO
R16 0
R17 0
R18 0
R19 0
GPIO3
GPIO4
GPIO5
GPIO6
5V_MAXQ
SDA
SCL
VI2C
R7 0
R6 220
R13 10k
R14 0
D1
D2
R3 220
R4 10k
R15 0
RESERVED
R5 OPEN
R8 OPEN
GPIO1
GPIO2
U6
MAX3373E
VCC
GND
VL
THREE-STATE
I/OVCC1
I/OVCC2
I/OVL1
I/OVL2
USDA
USCL
C7 0.1uF
C8 0.1uF
3V3
U4
MAX4741EKA
NO2
NO1
IN1
IN2
GND
V+
COM2
COM1
U11
MAX3373E
C17 0.1uF
C18 0.1uF
UGPIO1
UGPIO2
U8
MAX3378E
I/OVCC3
I/OVCC4
I/OVL3
I/OVL4
UGPIO3
UGPIO4
UGPIO5
UGPIO6
C4 0.1uF
C11 0.1uF
N.C.
R2 10k
USB_AUDIO_5V (DEMO)
USB_CONTROL_5V (EVAL)
SW1
U2
MAX8887EZK18+T
IN
OUT
SHDN
GND
BP
C1 2.2uF
C2 2.2uF
C3 0.1uF
U9
MAX8887EZK33+T
C16 2.2uF
C14 2.2uF
C15 0.1uF
U10
MAX1963AEZT120+T
I.C.
RESET
C12 1uF
C13 2.2uF
GND


U200-A
IC/XS1_L1
IO
XOD0 37 FLASH_SO
XOD1 36 FLASH_CS
XOD2 34
XOD3 30
XOD4 28
XOD5 27
XOD6 16
XOD7 14
XOD8 10
XOD9 7
XOD10 5 FLASH_SCK
XOD11 2 FLASH_SI
XOD12 128 ULPI_STP
XOD13 126 ULPI_NXT
XOD14 118 ULPI_DATA0
XOD15 115 ULPI_DATA1
XOD16 113 ULPI_DATA2
XOD17 110 ULPI_DATA3
XOD18 107 ULPI_DATA4
XOD19 106 ULPI_DATA5
XOD20 96 ULPI_DATA6
XOD21 90 ULPI_DATA7
XOD22 94 ULPI_DIR
XOD23 89 ULPI_CLK
XOD24 87 I2S_DIN
XOD25 86 I2S_BCLK
XOD26 85
XOD27 84
XOD28 109
XOD29 105
XOD30 104
XOD31 102
XOD32 72
XOD33 70
XOD34 69 I2S_LRCLK
XOD35 67 I2S_DOUT
XOD36 82 XCORE_MCLK
XOD37 81
XOD38 76
XOD39 75
XOD40 100
XOD41 98
XOD42 97
XOD43 95
XOD49 4 PHY_RST_N
XOD50 6
XOD51 8 CLK_SEL
XOD52 9 LEDA
XOD53 11 LEDB
XOD54 13
XOD55 31
XOD56 33
XOD57 35
XOD58 38
XOD61 3
XOD62 127
XOD63 125
XOD64 124
XOD65 122
XOD66 121
XOD67 119
XOD68 117
XOD69 114
XOD70 112
VDD33
VDDIO 1
VDDIO 15
VDDIO 26
VDDIO 32
VDDIO 44
VDDIO 50
VDDIO 64
VDDIO 73
VDDIO 79
VDDIO 93
VDDIO 103
VDDIO 111
VDDIO 120
OTP_VDDIO 45
OTP_VPP 46
PLL_AVDD 48
PLL_AGND 47
R206 4.7
+1.0V
C200 1uF
+1.0V
VDD 12
VDD 29
VDD 49
VDD 59
VDD 68
VDD 74
VDD 77
VDD 83
VDD 101
VDD 108
VDD 123
POWER
U200-C
IC/XS1_L1
GND 17
GND 39
GND 40
GND 41
GND 43
GND 54
GND 57
GND 60
GND 65
GND 66
GND 71
GND 78
GND 80
GND 88
GND 91
GND 92
GND 99
GND 116
EP
VDD33
+1.0V
PCU_VDDIO 22
PCU_VDD 19
PCU_GATE 23
PCU_WAKE 20
13MHZ
PCU_CLK 24
RESERVED 18
MODE0 51
MODE1 52
MODE2 53
MODE3 55
VDD33
TRST_N
R205 47k
DEBUG 42
SRST_N 21
13MHZ 25
DEBUG
RST_N
CLK
U200-B
IC/XS1_L1
CONFIG
TDO 63
TDI 62
TMS 58
TCK 61
TRST_N 56
TDO
TDI
TMS
TCK
TRST_N
J200
J200-1
J200-2
J200-3
J200-4
J200-5
J200-6
J200-7
J200-8
J200-9
J200-10
TRST_N
TDI
TMS
TCK
DEBUG
TDO
SRST_N
XSYS HEADER
LEDA
R233 1k
LEDA
LEDB
R234 1k
LEDB
U201
VDD33
C201 0.1uF
FLASH_SI
FLASH_SCK
FLASH_CS
DI 5
CLK 6
WP 3
HOLD 7
CS 1
VCC 8
DO 2
GND 4
FLASH_SO
VDD33
R207 10k
SPI BOOT FLASH


USB AUDIO
USB2
USB2-1
USB2-6
USB2-2
USB2-7
USB2-3
USB2-8
USB2-4
USB2-9
USB2-5
C205
1uF
FB200
USBAUDIO_5V
USB_AUDIO_5V
R208
20k
C206
0.01uF
R209
OPEN
VDD33
VDD18
U202
SMSC USB3318C-CP
VBAT
VDD33
VDDIO
VDD18
VBUS
DM
DP
ID
CPEN
REFCLK
RESETB
13MHZ
PHY_RST_N
R210
10k
DATA0
DATA1
DATA2
DATA3
DATA4
DATA5
DATA6
DATA7
STP
NXT
DIR
CLKOUT
RBIAS
EP
ULPI_DATA0
ULPI_DATA1
ULPI_DATA2
ULPI_DATA3
ULPI_DATA4
ULPI_DATA5
ULPI_DATA6
ULPI_DATA7
ULPI_STP
ULPI_NXT
ULPI_DIR
ULPI_CLK
R211
8.06k
1%
USB_AUDIO_5V
R212
1k
D200
C204
1uF
VDD33
C202
0.1uF
C203
0.1uF
USB_AUDIO_5V
R235
SHORT
(PC TRACE)
DVDD
R225
25.5k
1%
VMO
R226
20k
1%
C238
1uF
U214
MAX6895AAZT+
ENABLE
IN
CDELAY
VCC
OUT
GND
USB_AUDIO_5V
C207
1uF
R202
OPEN
U203
MAX8511EXK33+
IN
N.C.
SHDN
OUT
GND
VDD33
C208
1uF
USB_AUDIO_5V
C209
2.2uF
U204
MAX8511EXK18+
IN
SHDN
GND
OUT
N.C.
VDD18
C210
2.2uF

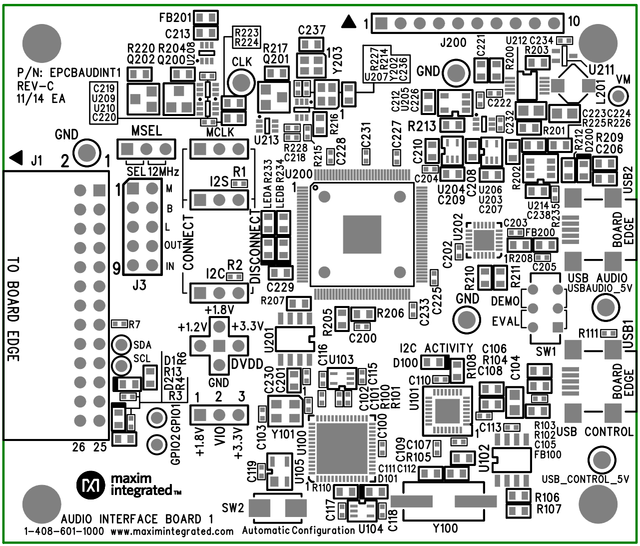

VDD33
Y202
13MHz
DN
VCC
GND
OUT
C236
0.01uF
R216
OPEN
13MHZ
R214
0
VDD33
C218
0.1uF
R215
0
U207
A1
A2
Y1
Y2
VCC
GND
R228
0
Y203
12MHz
C237
0.01uF
R227
0
VDD33
C211
0.01uF
U216
S0
S1
VDD
CLK
CLK/2
ICLK
OE
GND
CLK
12.288MHz
U215
NC7SZ157
CLK_SEL
11M2896
S
I0
T1
Q
MCLK_SEL
MSEL
U213
NC7SZ157
MCLK
U208-B
NC7WZU04
24M576
U208-A
NC7WZU04
C213
1uF
FB201
11M2896
R218
2.2M
R204
10k
R217
10k
R219
1k
Y200
24.576MHz
C216
33pF
C217
33pF
Q200
BSS138
Q201
BSS138
CLK_SEL
R221
2.2M
R220
10k
R222
470
Y201
11.2896MHz
C214
33pF
C215
33pF
Q202
BSS138
C219
0.1uF
C220
0.1uF
U209
NC7SZ157
U210
NC7WZ17
R223
33
R224
33
CLK
XCORE_MCLK

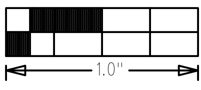

USB_AUDIO_5V
U212
MAX1974EUB+
C223
4.7uF
L201
3.3uH
+1.0V
VDD33
USB_AUDIO_5V
R200
27k
C224
4.7uF
C221
330pF
U211
MAX803TEXR+
R203
10k
VCC
RESET
GND
IN
COMP
FBSEL
ON
LX
FB
POK
SS
PGND
GND
R201
100k
C222
0.1uF
C232
0.1uF
C233
0.1uF
C234
0.1uF
C231
0.1uF
C230
4.7uF
C225
0.1uF
C226
0.1uF
C227
0.1uF
C228
0.1uF
C229
4.7uF
U205
NCP303LSN09
C212
1000pF
INPUT
CD
GND
RST_OUT
NC
R213
47k
U206
A1
A2
VCC
GND
Y1
Y2
SRST_N
TRST_N
1.0V RESET SUPERVISOR


USB CONTROL
USB1
USB_CONTROL_5V
FB100
C104 10uF
C105 0.1uF
C106 0.033uF
C107 0.1uF
R105 470
C108 0.1uF
C109 0.1uF
C110 0.1uF
3V3
5V_MAXQ
R102 27
R103 27
R104 1.5k
R111 0
C111 18pF
C112 18pF
Y100 6MHz
U101
FT232BQ
AVCC
VCC
VCCIO
3V3OUT
USBDM
USBDP
RSTOUT
XTIN
XTOUT
TXD
RXD
RTS
CTS
DTR
DSR
DCD
RI
TXDEN
PWREN
TXLED
RXLED
SLEEP
RESET
EP
TEST
AGND
GND
PWRCTL
R108 220
D100
U102
VCC
CS
ORG
SK
NC
D1
GND
DO
EECS
EESK
EEDATA
C113 OPEN
R106 OPEN
R107 OPEN
OPEN
SW2
SW-MOM
U105
MAX6816
U100
MAXQ2000-RBX
SEG7/P0.7/INT3
SEG6/P0.6/INT2
SEG5/P0.5/INT1
SEG4/P0.4/INT0
SEG3/P0.3
SEG2/P0.2
SEG1/P0.1
SEG0/P0.0
VADJ
VLCD2
VLCD1
VLCD
P7.1/RXO/INT15
P7.0/TXO/INT14
UGPIO6
UGPIO5
UGPIO4
UGPIO3
UGPIO2
MCLK_SEL
UGPIO1
TXD
RXD
SEG8/P1.0
SEG9/P1.1
SEG10/P1.2
SEG11/P1.3
SEG12/P1.4
SEG13/P1.5
SEG14/P1.6
SEG15/P1.7
SEG16/P2.4
SEG17/P2.5
SEG18/P2.6
SEG19/P2.7
SEG20/P3.4/INT4
SEG21/P3.5/INT5
SEG22/P3.6/INT6
SEG23/P3.7/INT7
SEG24
SEG25/COM3
SEG26/COM2
SEG27/COM1
COM0
VDDIO
GND
P4.0/TCK/INT8
P4.1/TDI/INT9
P4.2/TMS
P4.3/TDO
RESET
HFXIN
HFXOUT
VDD
P6.5/T0/WKOUT1
P6.4/T0B/WKOUTO
P6.1/T1/INT13
P6.0/T1B/INT12
GND
P5.7/MISO
P5.6/SCLK
P5.5/MOSI
P5.4/SS
32KOUT
32KIN
EP
Y101 16MHz
HOT
GND
C102 8pF
C103 8pF
C101 0.1uF
2V5
USDA
USCL
R100 1.5k
R101 1.5k
C100 0.1uF
R109 3.3k 1%
DSR
DCD
RTS
RI
DTR
U106
MAX6389LT31D3+T
RESET
RESET_IN
N.C.
C120 0.1uF
R112 10k 1%
R113 15k 1%
U104
MAX8511EXK33+
IN
OUT
N.C.
SHDN
C117 1uF
C118 1uF
USB Control
D101
R110 220
U103
MAX8511EXK25+
C115 1uF
C116 1uF

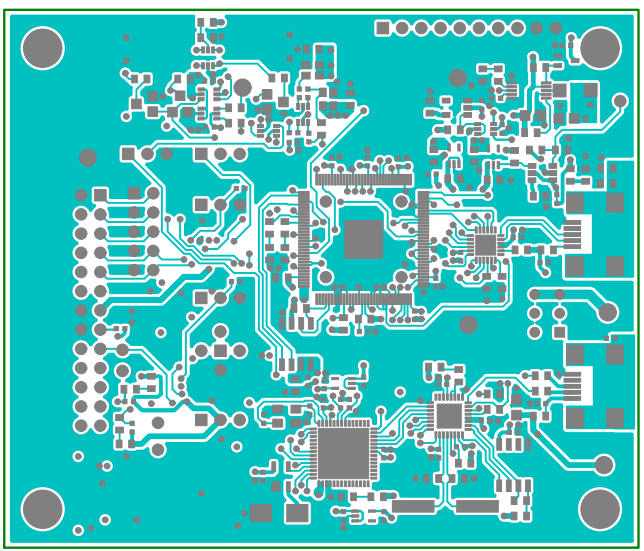
AUDIO INTERFACE BOARD 1

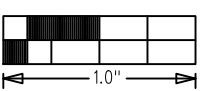
P/N: EPCBAUDINT1	REV C
PROPERTY OF maxim integrated™	
LAYER: TOP SILKSCREEN	
DATE:	ALL UNITS ARE IN 0.001"



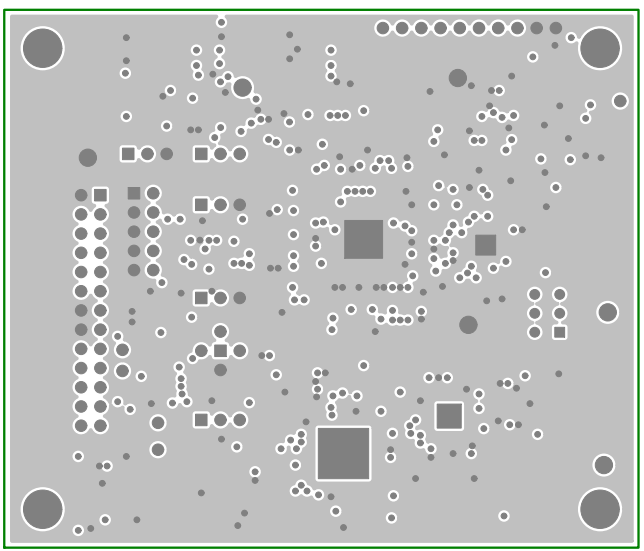


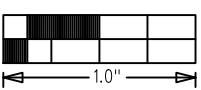
AUDIO INTERFACE BOARD 1	
P/N: EPCBAUDINT1	REV C
PROPERTY OF maxim integrated™	
LAYER COMPONENT SIDE	
DATE:	ALL UNITS ARE IN 0.001"



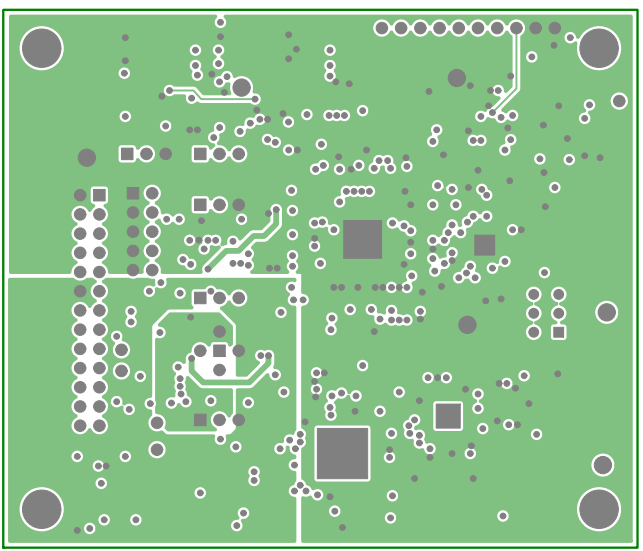


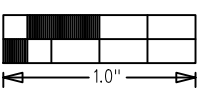
AUDIO INTERFACE BOARD 1	
P/N: EPCBAUDINT1	REV C
PROPERTY OF maxim integrated™	
LAYER LAYER 2 GND	
DATE:	ALL UNITS ARE IN 0.001"



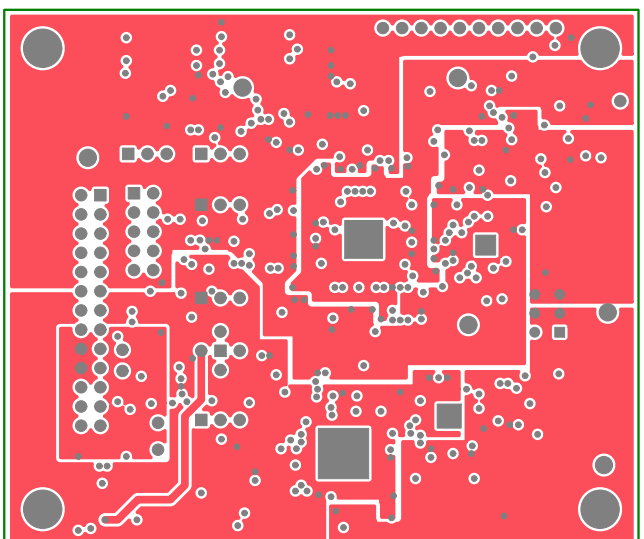


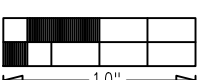
AUDIO INTERFACE BOARD 1	
P/N: EPCBAUDINT1	REV C
PROPERTY OF maxim integrated™	
LAYER LAYER 3 PWR	
DATE:	ALL UNITS ARE IN 0.001"



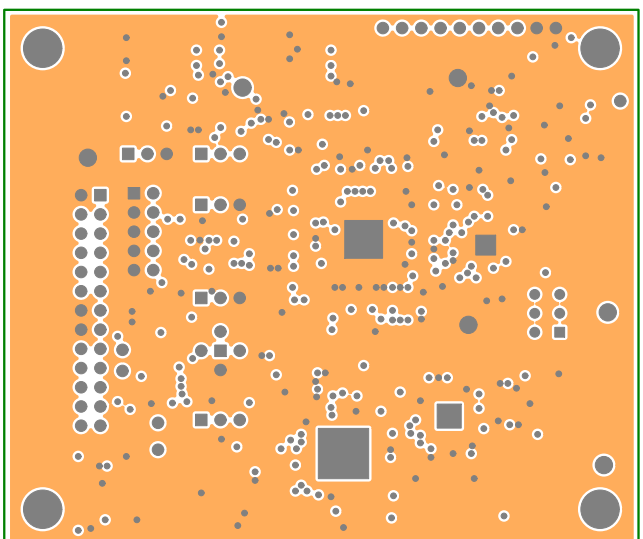


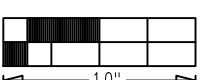
AUDIO INTERFACE BOARD 1	
P/N: EPCBAUDINT1	REV C
PROPERTY OF maxim integrated™	
LAYER LAYER 4 PWR	
DATE:	ALL UNITS ARE IN 0.001"





AUDIO INTERFACE BOARD 1	
P/N: EPCBAUDINT1	REV C
PROPERTY OF maxim integrated™	
LAYER LAYER 5 GND	
DATE:	ALL UNITS ARE IN 0.001"





AUDIO INTERFACE BOARD 1	
P/N: EPCBAUDINT1	REV C
PROPERTY OF maxim integrated™	
LAYER SOLDER SIDE	
DATE:	ALL UNITS ARE IN 0.001"