CDB4360

Evaluation Board for CS4360 Rev. B

Features

- Demonstrates recommended layout and grounding arrangements
- CS8414 receives AES/EBU, S/PDIF, and EIAJ-340 Compatible Digital Audio
- Requires only a digital signal source and power supplies for a complete Digital-to-Analog-Converter system

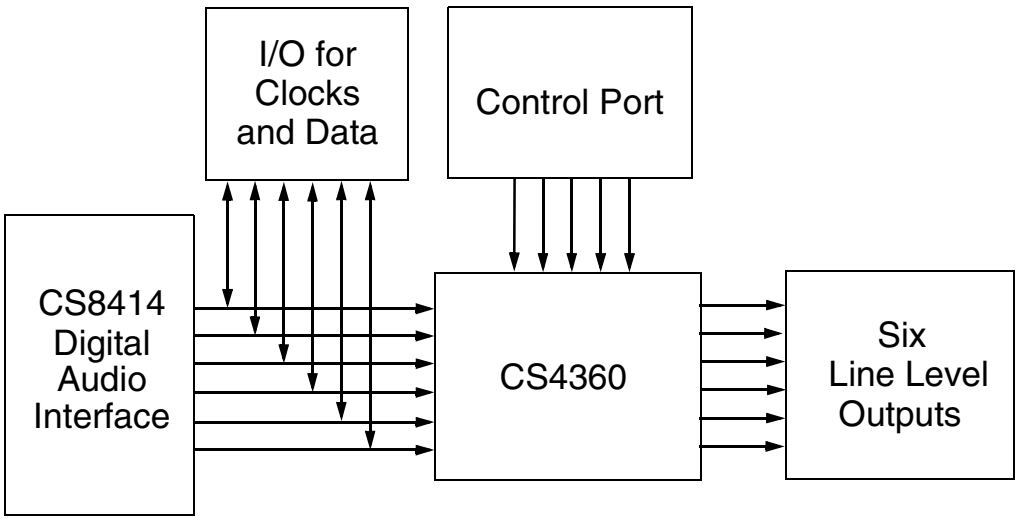
Description

The CDB4360 evaluation board is an excellent means for quickly evaluating the CS4360 24-bit, stereo D/A converter. Evaluation requires an analog signal analyzer, a digital signal source, a PC for controlling the CS4360 (for control port mode only) and a power supply. Line outputs are provided via RCA phono jacks.

The CS8414 digital audio receiver I.C. provides the system timing necessary to operate the Digital-to-Analog converter and will accept AES/EBU, S/PDIF, and EIAJ-340 compatible audio data. The evaluation board may also be configured to accept external timing and data signals for operation in a user application during system development.

ORDERING INFORMATION

CDB4360	Evaluation Board



Preliminary Product Information | This document contains information for a new product.
Cirrus Logic reserves the right to modify this product without notice.

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Contacting Cirrus Logic Support

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1. CDB4360 SYSTEM OVERVIEW

The CDB4360 evaluation board is an excellent means of quickly evaluating the CS4360. The CS8414 digital audio interface receiver provides an easy interface to digital audio signal sources including the majority of digital audio test equipment. The evaluation board also allows the user to supply clocks and data through a 10-pin header for system development.

The CDB4360 schematic has been partitioned into 8 schematics shown in Figures 2 through 9. Each partitioned schematic is represented in the system diagram shown in Figure 1. Notice that the system diagram also includes the interconnections between the partitioned schematics.

2. CS4360 DIGITAL TO ANALOG CONVERTER

A description of the CS4360 is included in the CS4360 datasheet.

3. CS8414 DIGITAL AUDIO RECEIVER

The system receives and decodes the standard S/PDIF data format using a CS8414 Digital Audio Receiver, Figure 3. The outputs of the CS8414 include a serial bit clock, serial data, left-right clock (FSYNC), and a 256 x Fs master clock. The operation of the CS8414 and a discussion of the digital audio interface are included in the CS8414 datasheet.

The evaluation board has been designed such that the input can be either optical or coax, see Figure 3. However, both inputs cannot be driven simultaneously.

The CS8414 data format is hard-wired to I^2S.

4. INPUT/OUTPUT FOR CLOCKS AND DATA

The evaluation board has been designed to allow interfacing to external systems via the 10-pin header, J24. This header allows the evaluation board to accept externally generated clocks and data. The schematic for the clock/data I/O is shown in Figure 5.

5. POWER SUPPLY CIRCUITRY

Power is supplied to the evaluation board by six binding posts (GND, +5 V, VLC, VLS, VD, and VA), see Figure 9. The +5 V input supplies power to the +5 Volt digital circuitry (VD_+5), while the VLC input supplies power to the Voltage Level Converters for the control port interface and the CS4360 VLC pin. The VLS input supplies power to the Voltage Level Converters for the serial audio port interface and the CS4360 VLS pin. VA and VD supply power to the CS4360. For ease of use, it is possible to connect VLC, VLS, VD, and VA to the same supply.

WARNING: VA and VD must be between +2.7V and +5.5V. VLC and VLS must be between +1.7 V and +5.5 V. Operation outside of this range can cause permanent damage to the device. See the CS4360 datasheet for more details.

6. GROUNDING AND POWER SUPPLY DECOUPLING

The CS4360 requires careful attention to power supply and grounding arrangements to optimize performance. Figure 2 details the power distribution used on this board. The decoupling capacitors are located as close to the CS4360 as possible. Extensive use of ground plane fill on both the analog and digital sections of the evaluation board yields large reductions in radiated noise. See Figures 10-12 for the CDB4360 PCB layout artwork.

7. CONTROL PORT SOFTWARE

The CDB4360 is shipped with Windows based software for interfacing with the CS4360 control port via the parallel connector, J28. The software can be used to communicate with the CS4360 in SPI or Two Wire mode. Note: J18-J21 must be set appropriately for control port mode operation.

8. ERRATA

CDB4360 Revision A.0

The CDB4360 revision A.0 has the following errata. The silkscreen for J18 is reversed. The right position should be labeled "CP" and the left position should be labeled "SA". The labeling is correct in the schematics.

CDB4360 Revision B.0

The CDB4360 revision B.0 has no Errata.

CONNECTOR	INPUT/OUTPUT	SIGNAL PRESENT
+5 V	Input	+ 5 Volt power
VA, VD	Input	+ 3.0 Volt to + 5.0 Volt power for the CS4360
VLC, VLS	Input	+1.8 Volt to +5.0 Volt power for the Level Shifters and the CS4360
GND	Input	Ground connection from power supply
Coax Input	Input	Digital audio interface input via coax
Optical Input	Input	Digital audio interface input via optical
J24	Input/Output	I/O for master, serial, left/right clocks and serial data
Parallel Port	Input/Output	Serial connection to PC for SPI and Two Wire mode control port signals
J17	Input/Output	I/O for SPI and Two Wire mode control port signals
AOUTAx, AOUTBx	Output	Line outputs

Table 1. System Connections

JUMPER/ SWITCH	PURPOSE	POSITION	FUNCTION SELECTED
S1 (DIP SW)	Enable/Disable the CS8414	*CLOSED OPEN	CS8414 is enabled (J24 is an output) Disabled (External Clocks and Data are input via J24)
Reset (S2)	Resets the CDB4360		
J18†	Selects Stand-Alone or Control Port mode	CP *SA	Control Port Mode selected Stand-Alone mode selected
J19, J20	Interface Format	J19 J20 LO LO *LO *HI HI LO HI HI HI HI	 Stand-Alone Mode, Left Justified format Stand-Alone Mode, I2S format Stand-Alone Mode, Right Justified, 16-bit format Stand-Alone Mode, Right Justified, 24-bit format Control Port Mode setting
J22, J21	Mode Select	J22 J21 *LO *LO LO HI HI LO HI HI HI HI	 Stand-Alone Mode, Single Speed, no De-Emphasis Stand-Alone Mode, Single Speed, De-Emphasis Stand-Alone Mode, Double Speed Stand-Alone Mode, Quad Speed Control Port Mode setting

Notes: *Default factory settings
†See Errata section

Table 2. CDB4360 Jumper and Switch settings

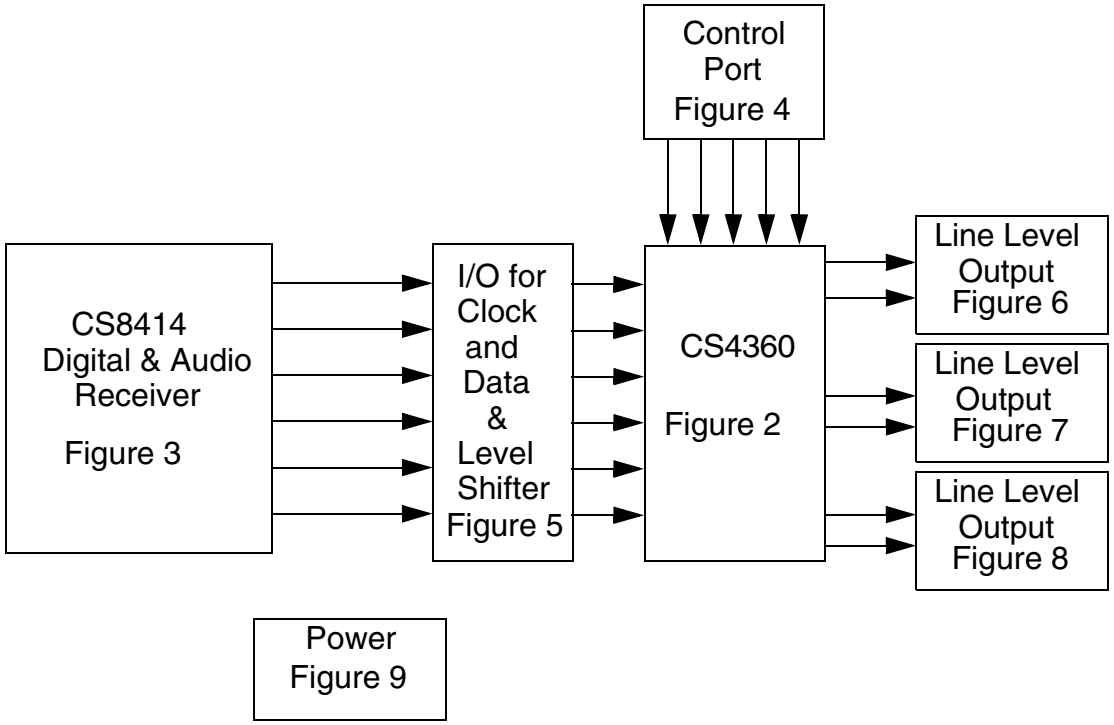

Figure 1. System Block Diagram and Signal Flow

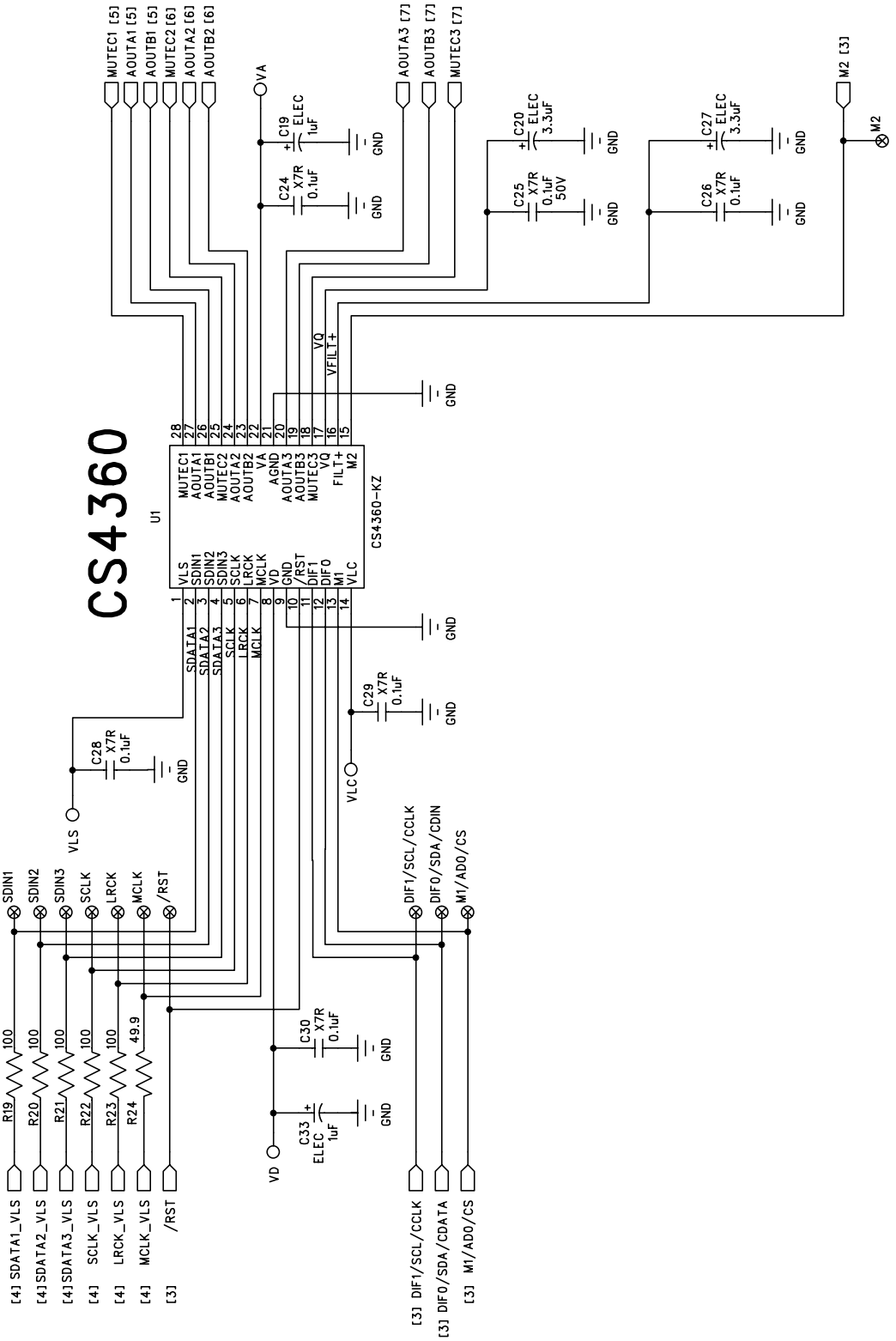

Figure 2. CS4360

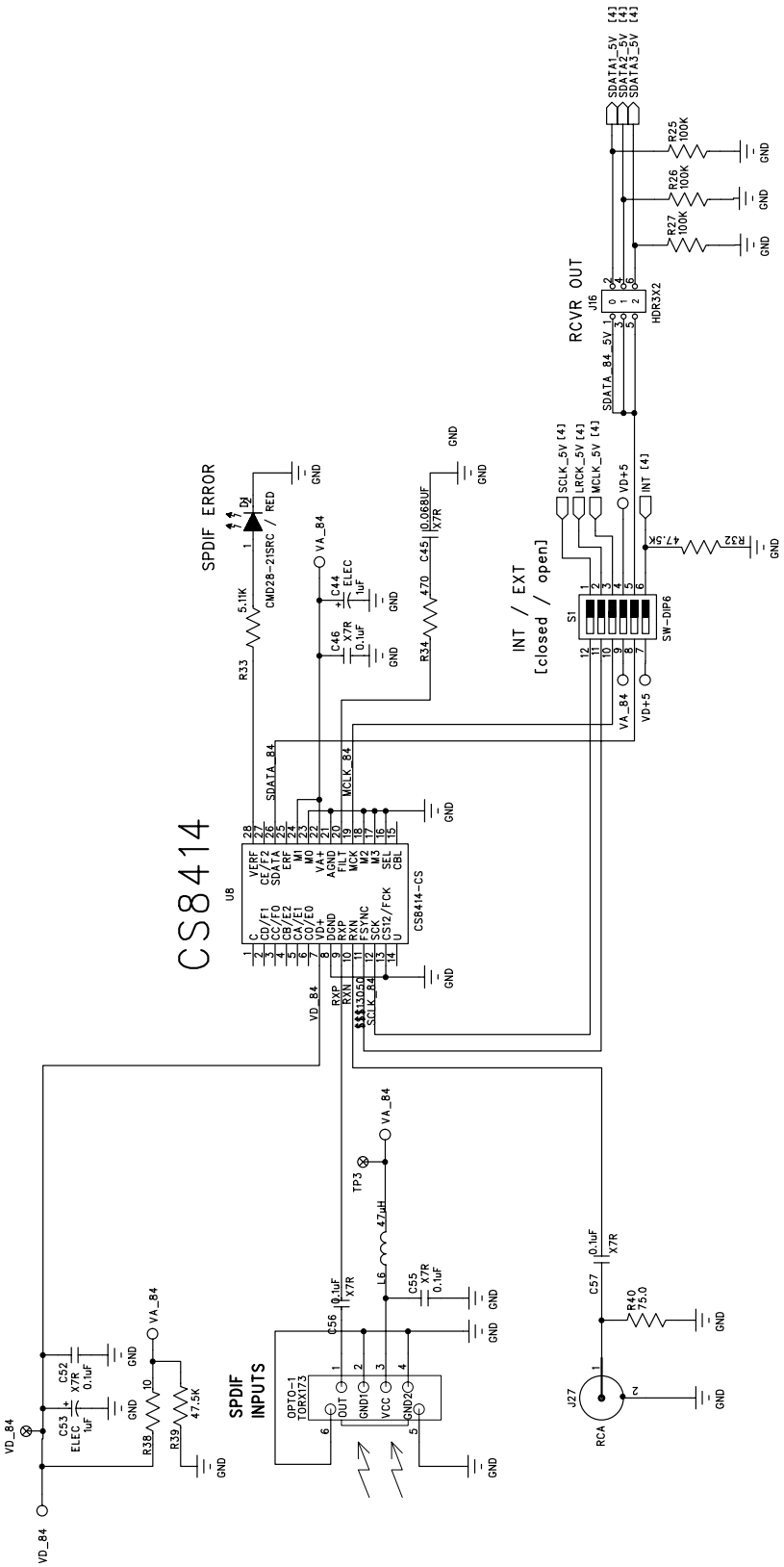

Figure 3. CS8414 - Digital Audio Receiver

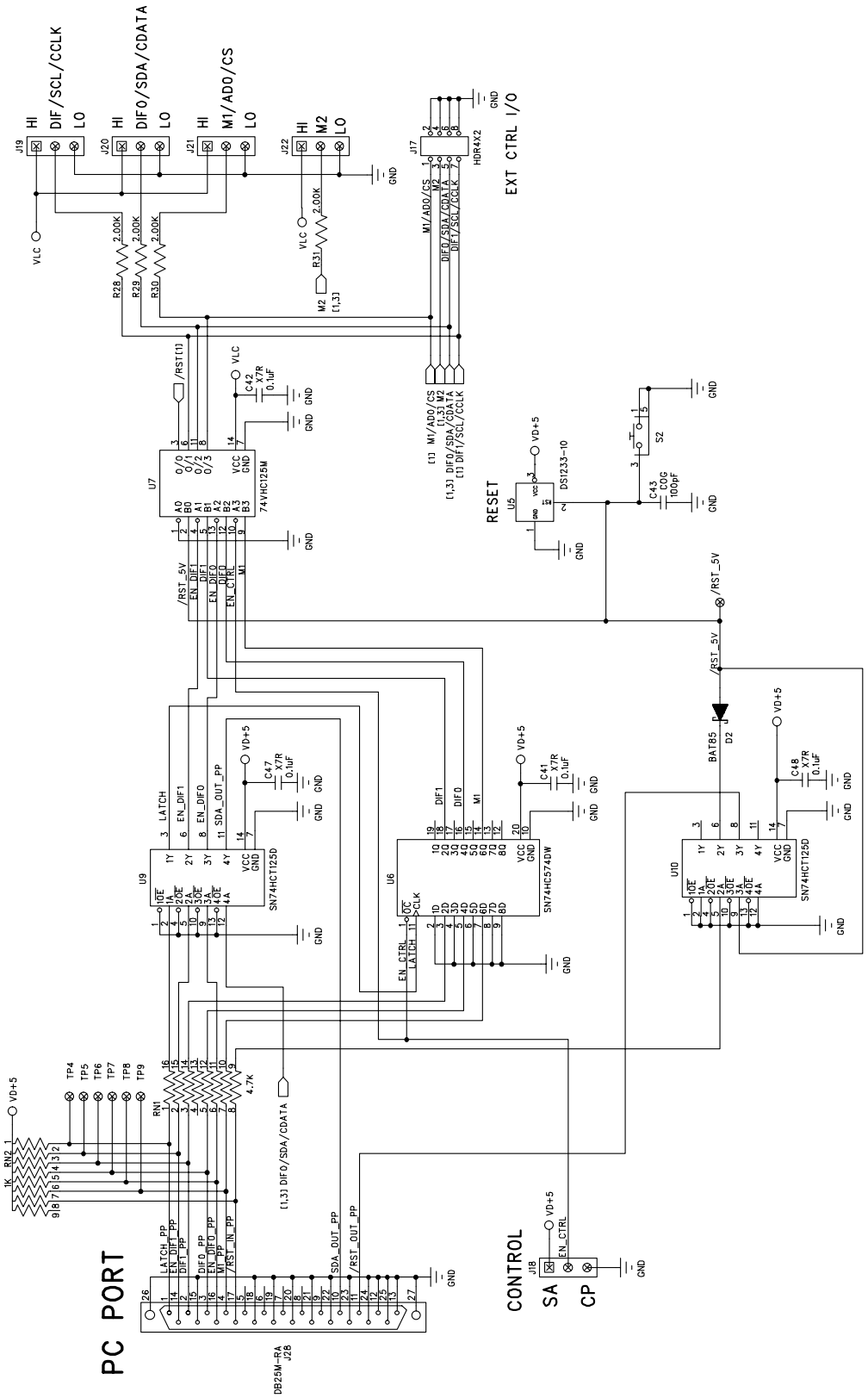

Figure 4. Control Port Interface and Level Shifters

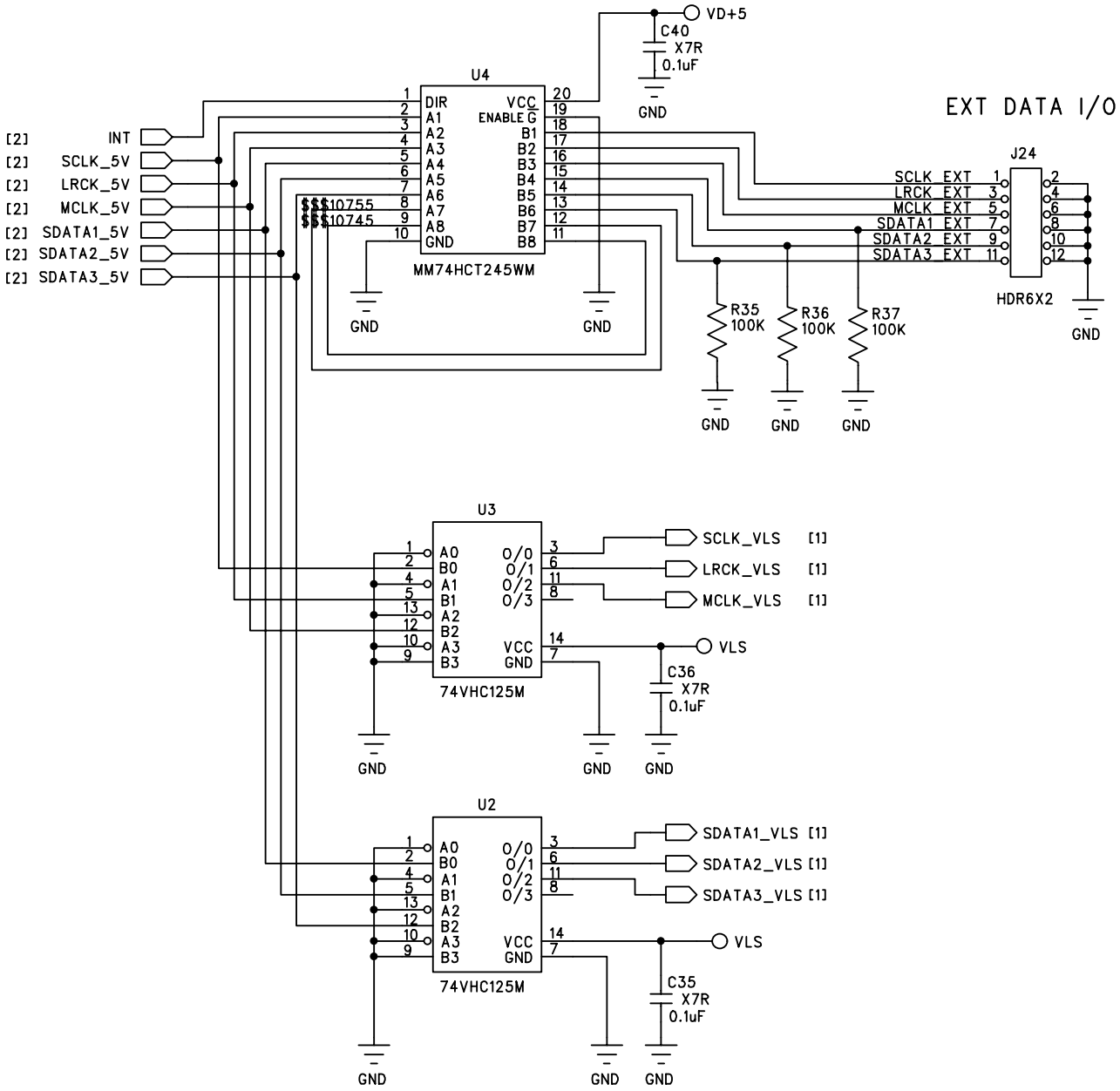

Figure 5. Digital Audio Inputs and Level Shifters

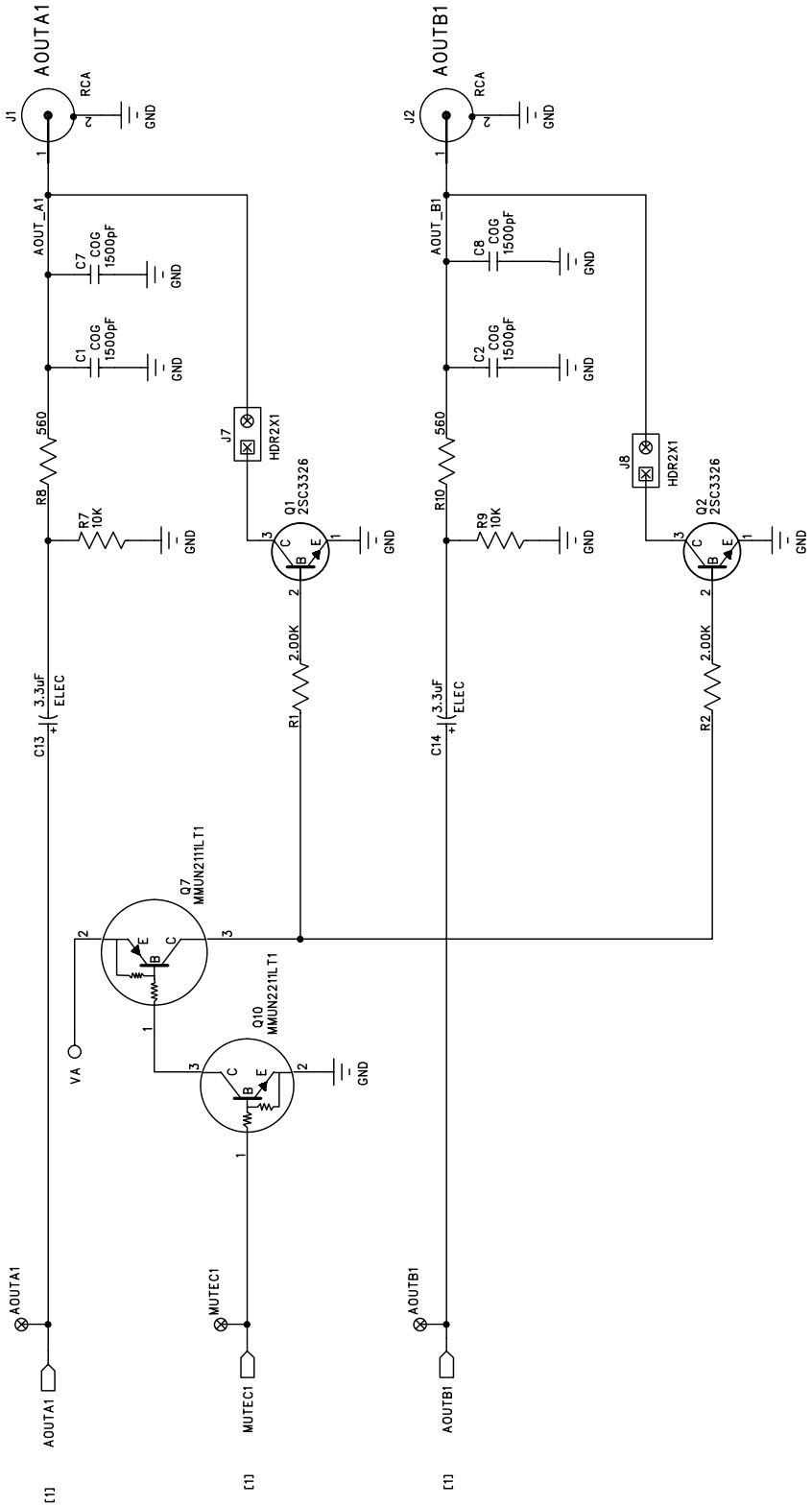

Figure 6. Line Level Outputs (AOUTA1, AOUTB1)

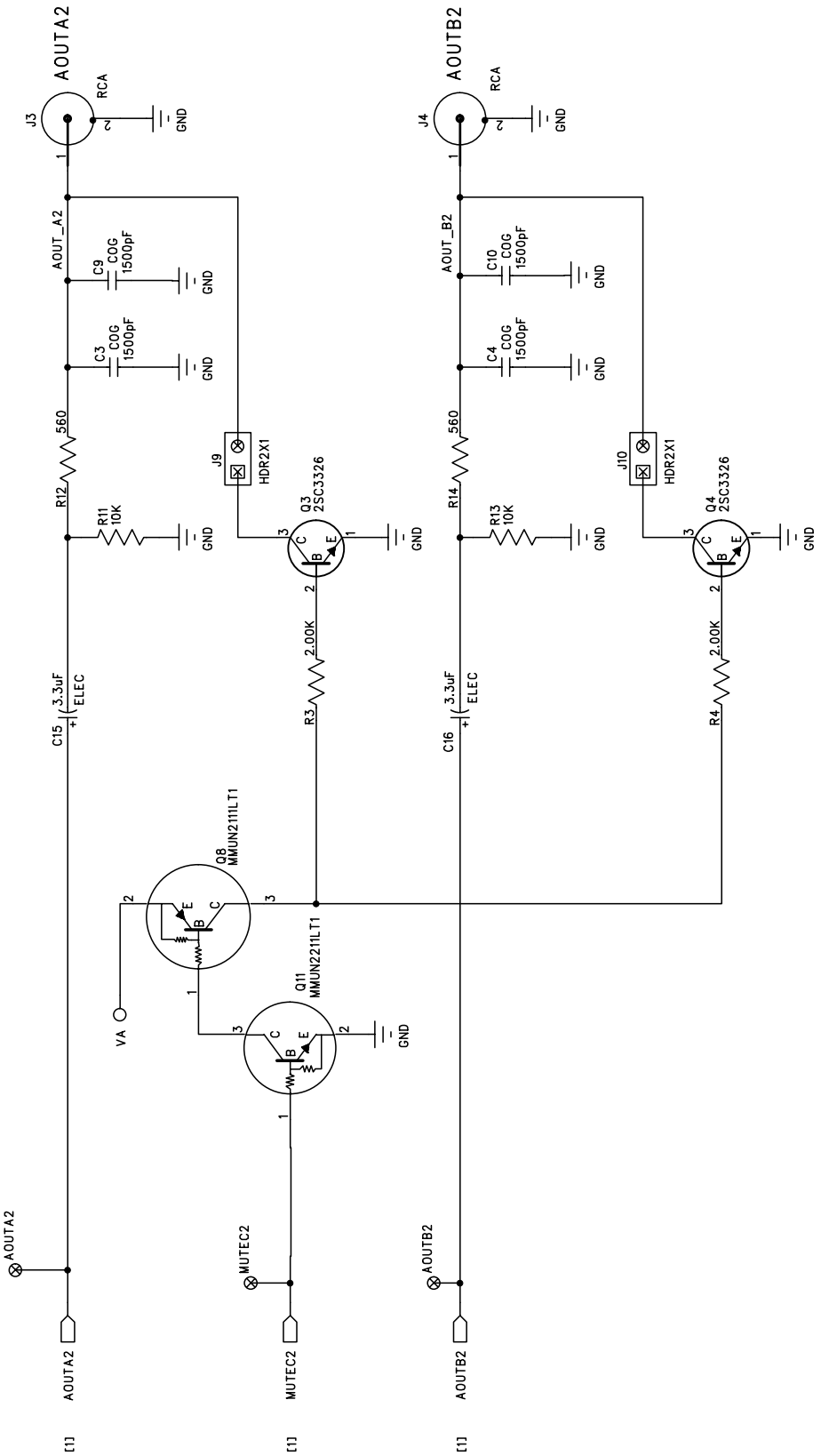

Figure 7. Line Level Outputs (AOUTA2, AOUTB2)

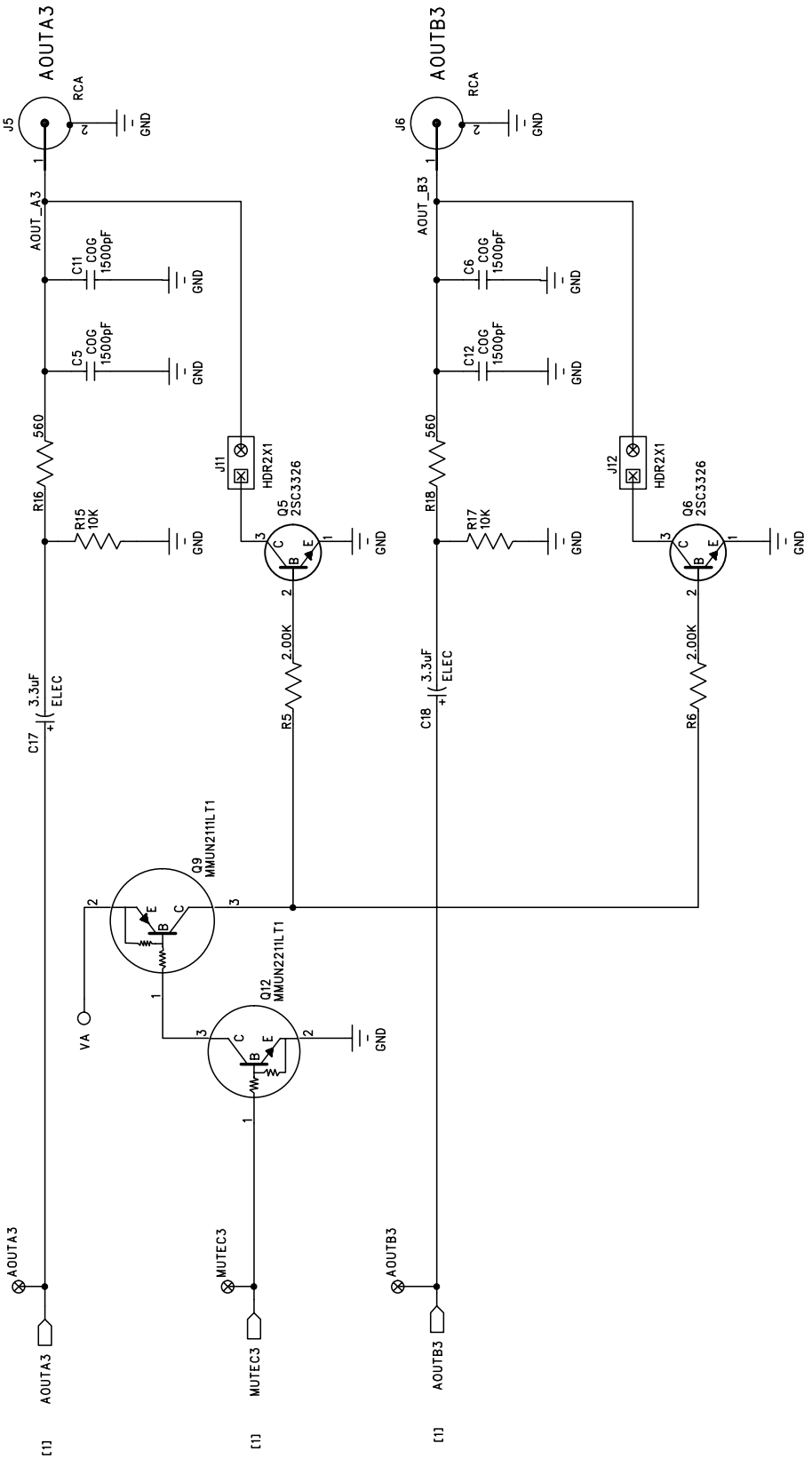

Figure 8. Line Level Outputs (AOUTA3, AOUTB3)

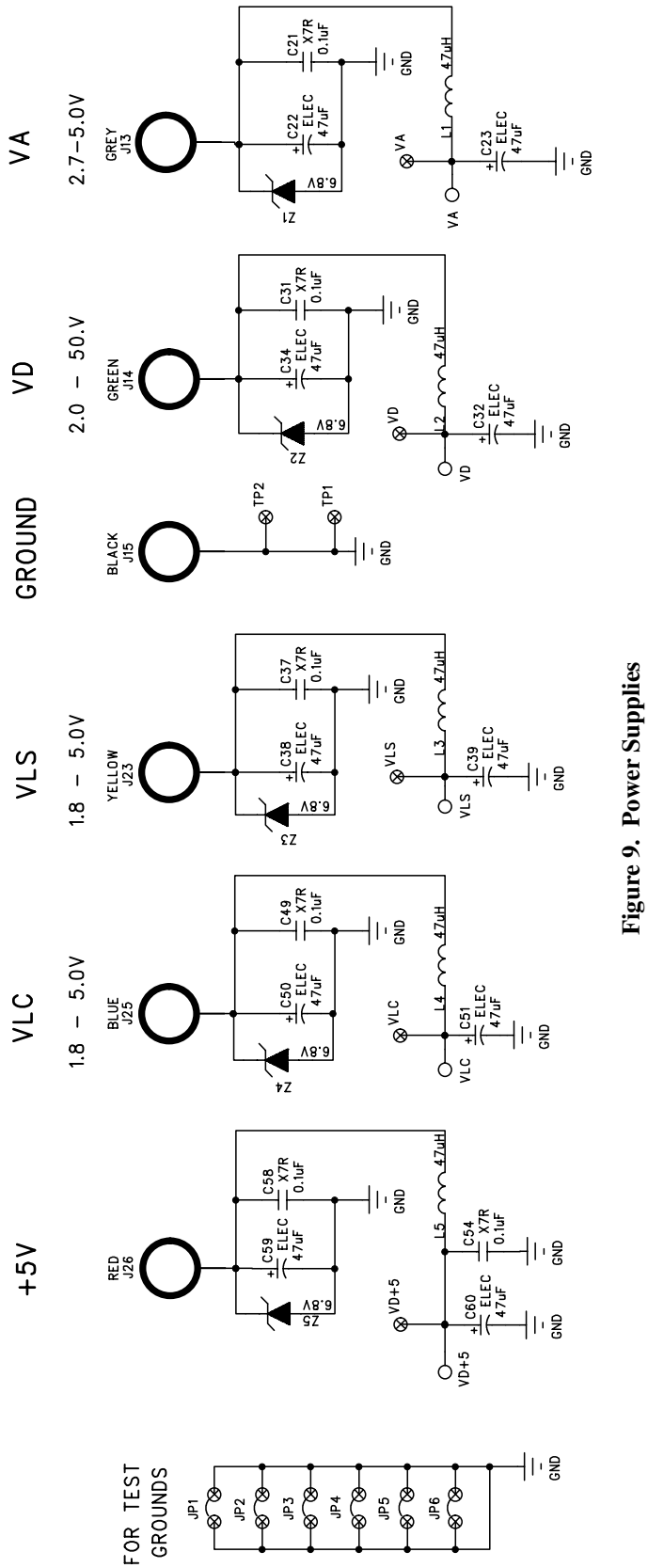

Figure 9. Power Supplies

CRYSTAL SEMICONDUCTOR
CDB4360B.0

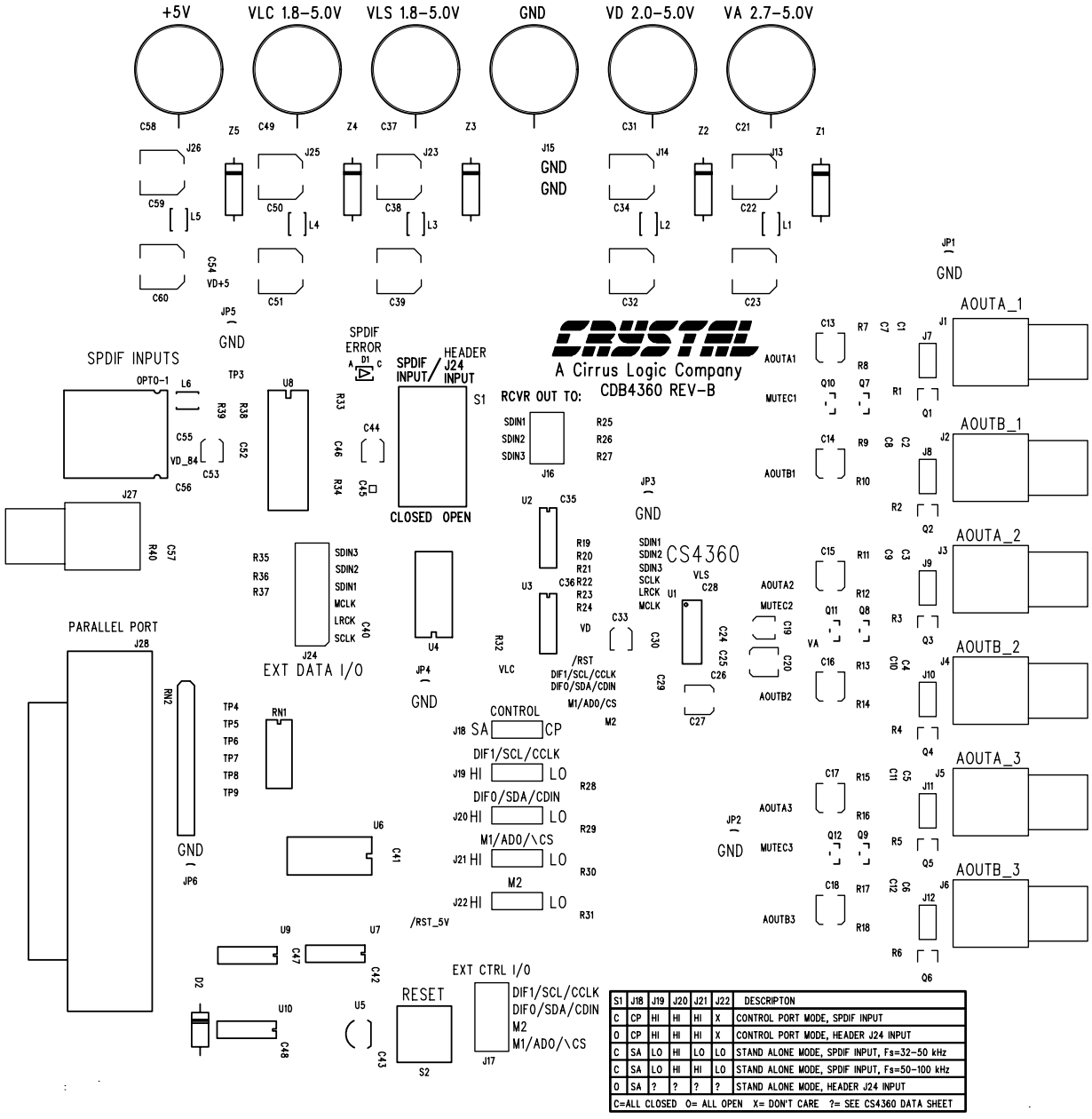

Figure 10. Silkscreen Top

CRYSTAL SEMICONDUCTOR
CDB4360B.0

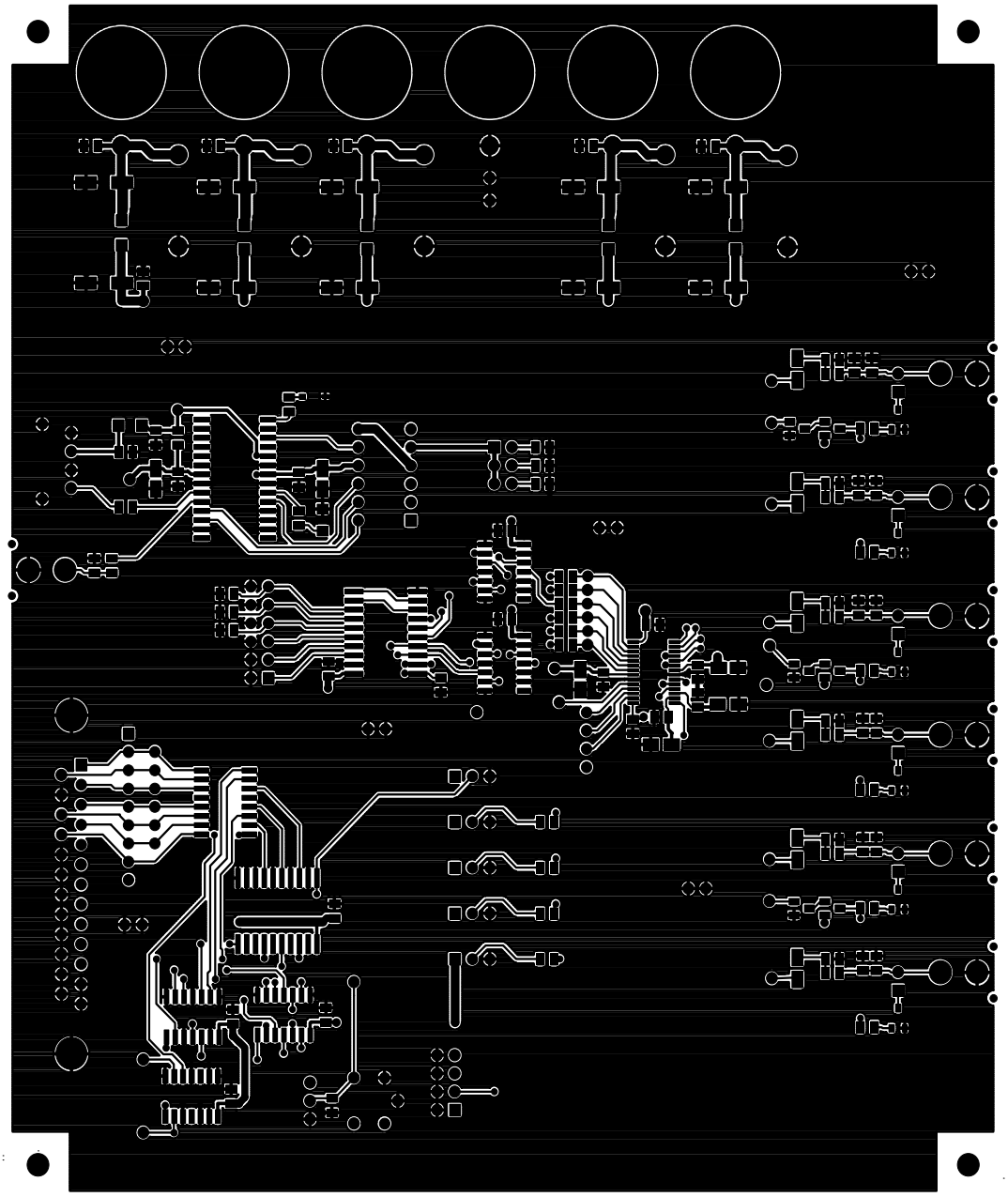

Figure 11. Top Side

CRYSTAL SEMICONDUCTOR
CDB4360B.0

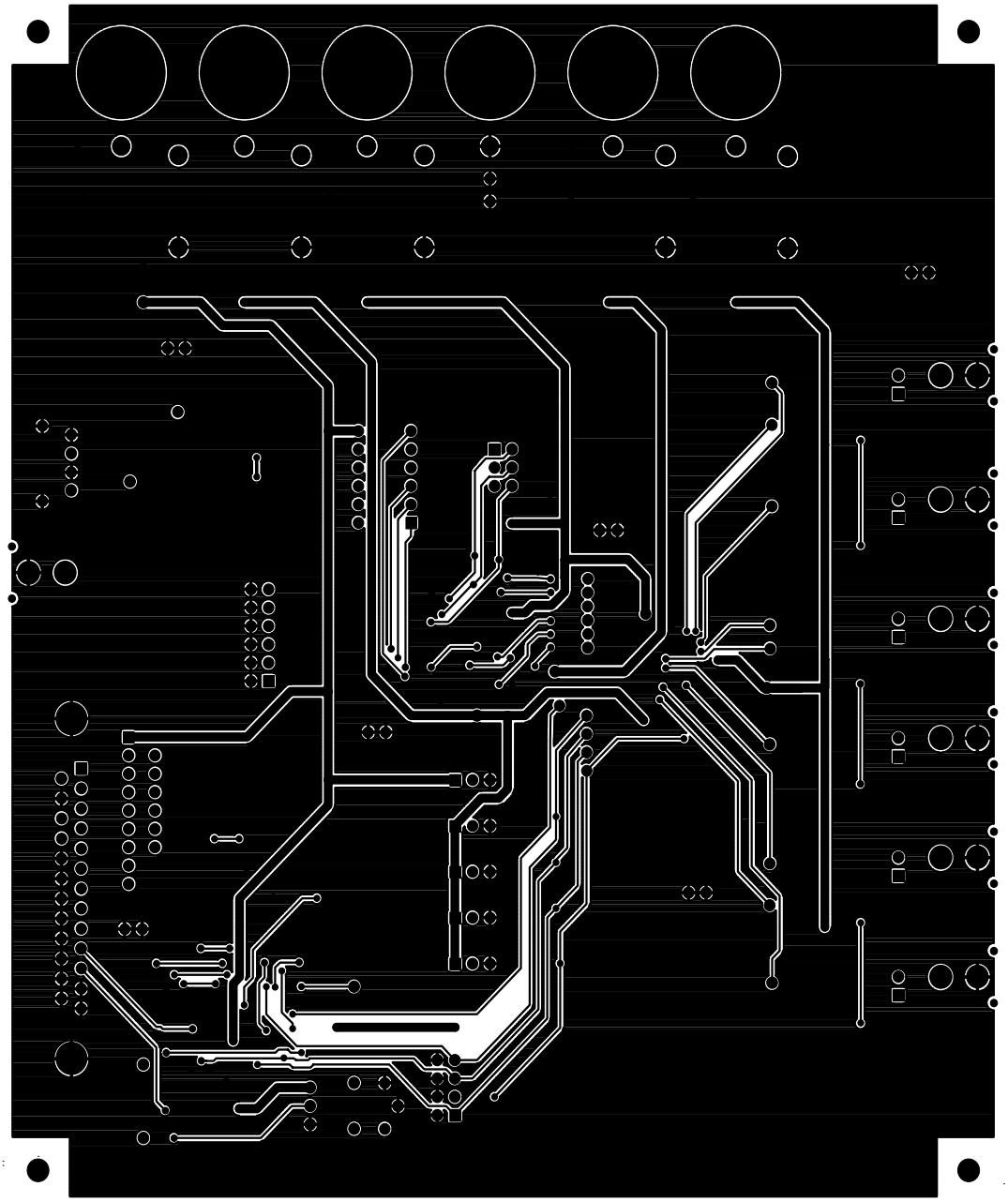

Figure 12. Bottom Side

• Notes •


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