

Application Note

CS4201/CS4202 SIX CHANNEL AUDIO DESIGN

1. INTRODUCTION

This application note describes how to create a six channel AC '97 audio sub-system on a PC motherboard that can accommodate either the CS4201 or the CS4202 audio codec.

2. CS4201/CS4202 DUAL DESIGN

Figure 1 illustrates a circuit that accommodates both CS4201 and CS4202 codecs, and Table 1 summarizes the population options. The only changes necessary are to pins 32, 33, 34, and 48. On the CS4201, pins 32-34 form the external connections to the analog 3D filter. Pin 32 is tied to a 0.01 μ F capacitor, and a 1000 pF capacitor is connected between pins 33 and 34.

The CS4202 implements 3D spatialization in software, therefore filter capacitors C9 and C10 should not be populated. For CS4202 applications not using headphone sense, pin 32 should be tied to ground through a pull-down resistor for software compatibility. See the application note AN215 for information on implementing the CS4202 with headphone sense.

The audio driver will read the state of pin 33 on the CS4202 to detect two channel vs. six channel implementation. For six channel operation, pin 33 is tied to digital ground through a pull-down resistor. For information on two channel dual CS4201/CS4202 designs, see the application note AN213.

Pin 48 of the CS4201 is used for S/PDIF, or as the second serial data output. On the CS4202, pin 48 is a dedicated S/PDIF output and the second serial data output is located on pin 34.

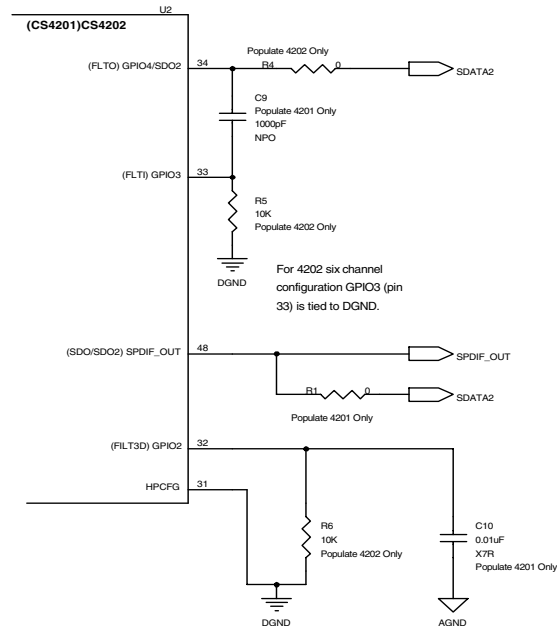


Figure 1. CS4201/CS4202 Dual Design

Codec	Populate	Don't Populate
CS4201	R1, C9, C10	R4, R5, R6
CS4202	R4, R5, R6	R1, C9, C10

2.1 Software Audio Drivers

The CS4202 requires a PW6000 (or newer) Windows WDM audio driver. This driver is compatible with the CS4201 and supports Windows 98se, ME, 2000, and XP.

3. TYPICAL APPLICATION

Figures 2, 3, and 4 in the following schematics show a typical CS4201/CS4202 six channel audio motherboard application.

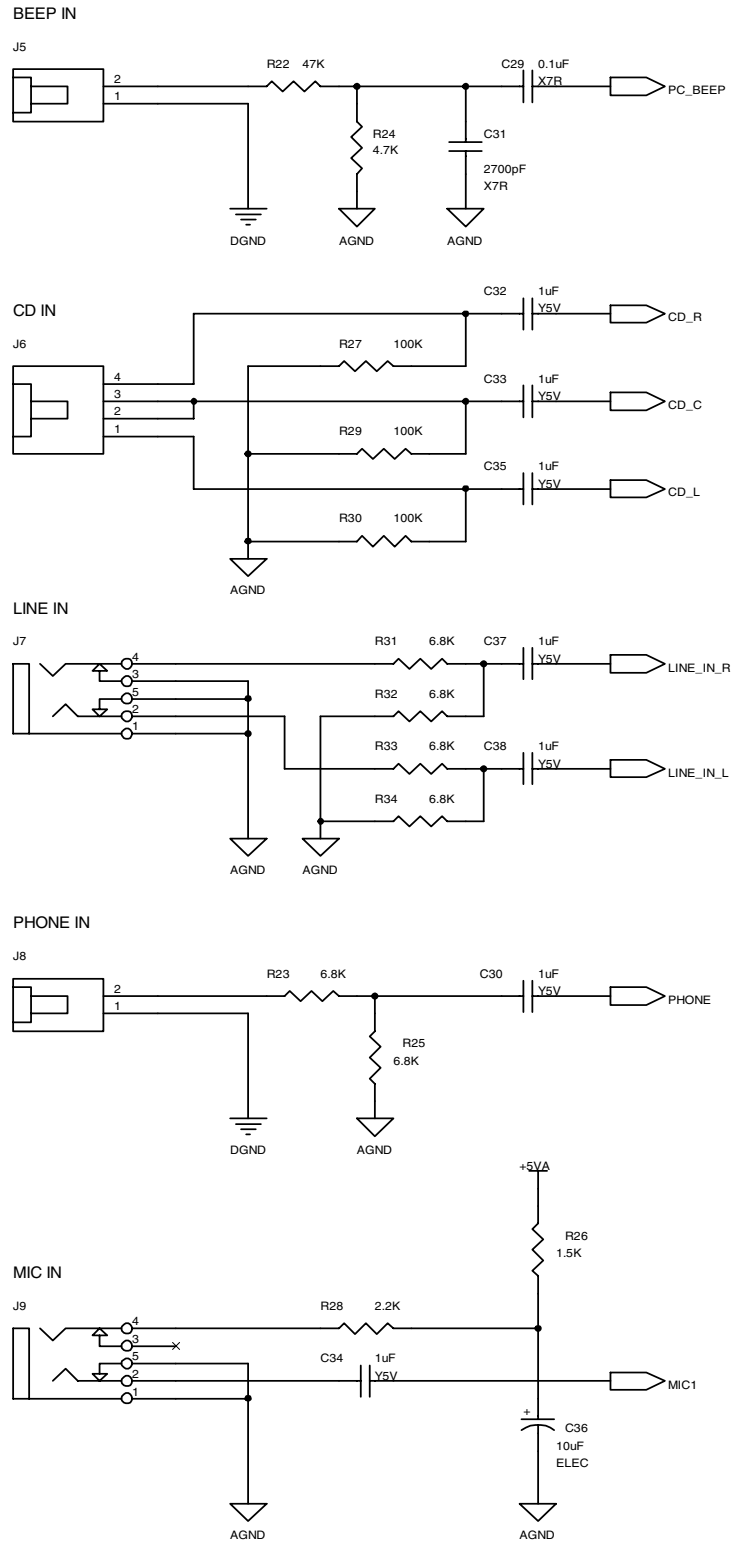


Figure 2. Audio Inputs

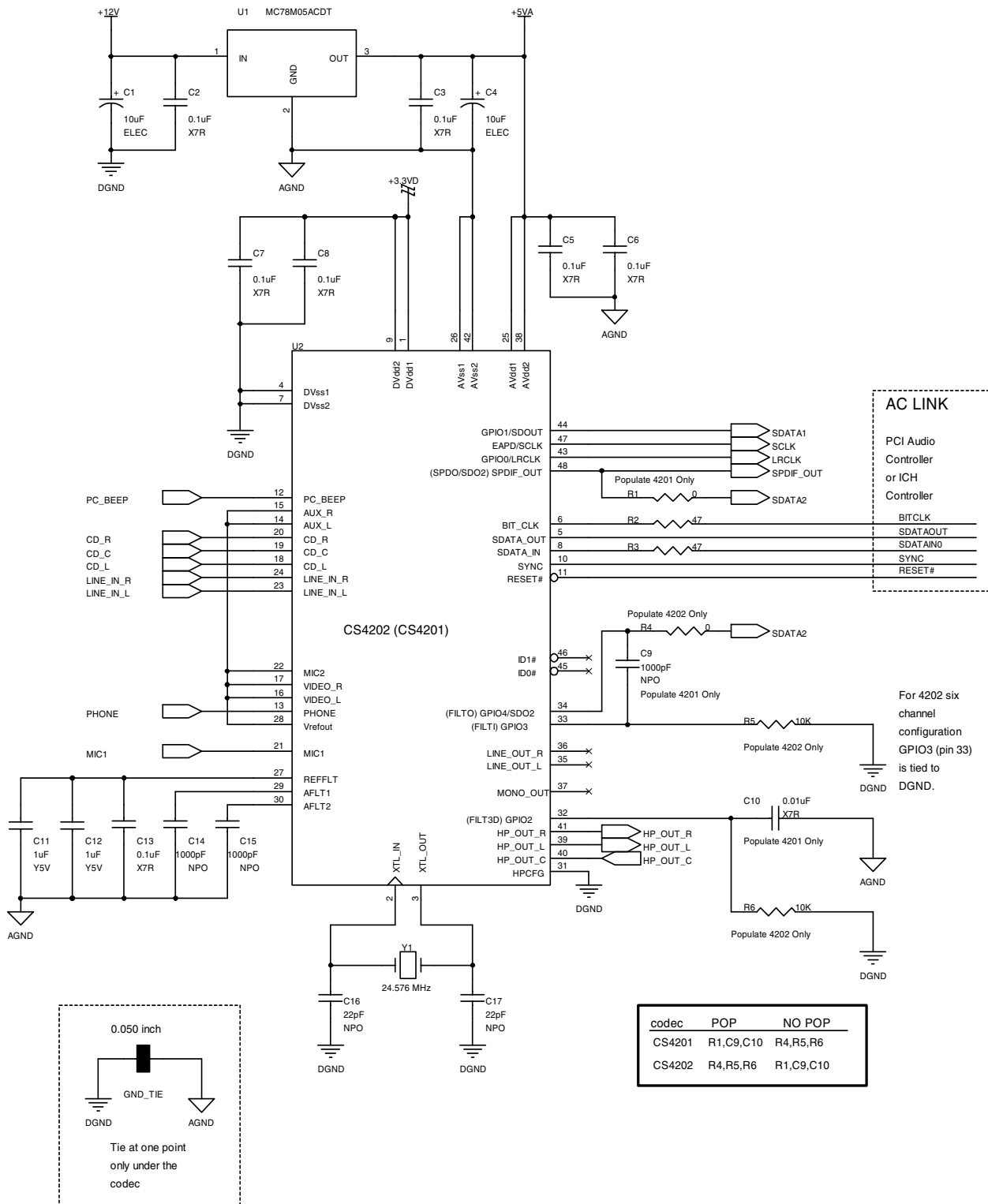


Figure 3. CS4201 / CS4202

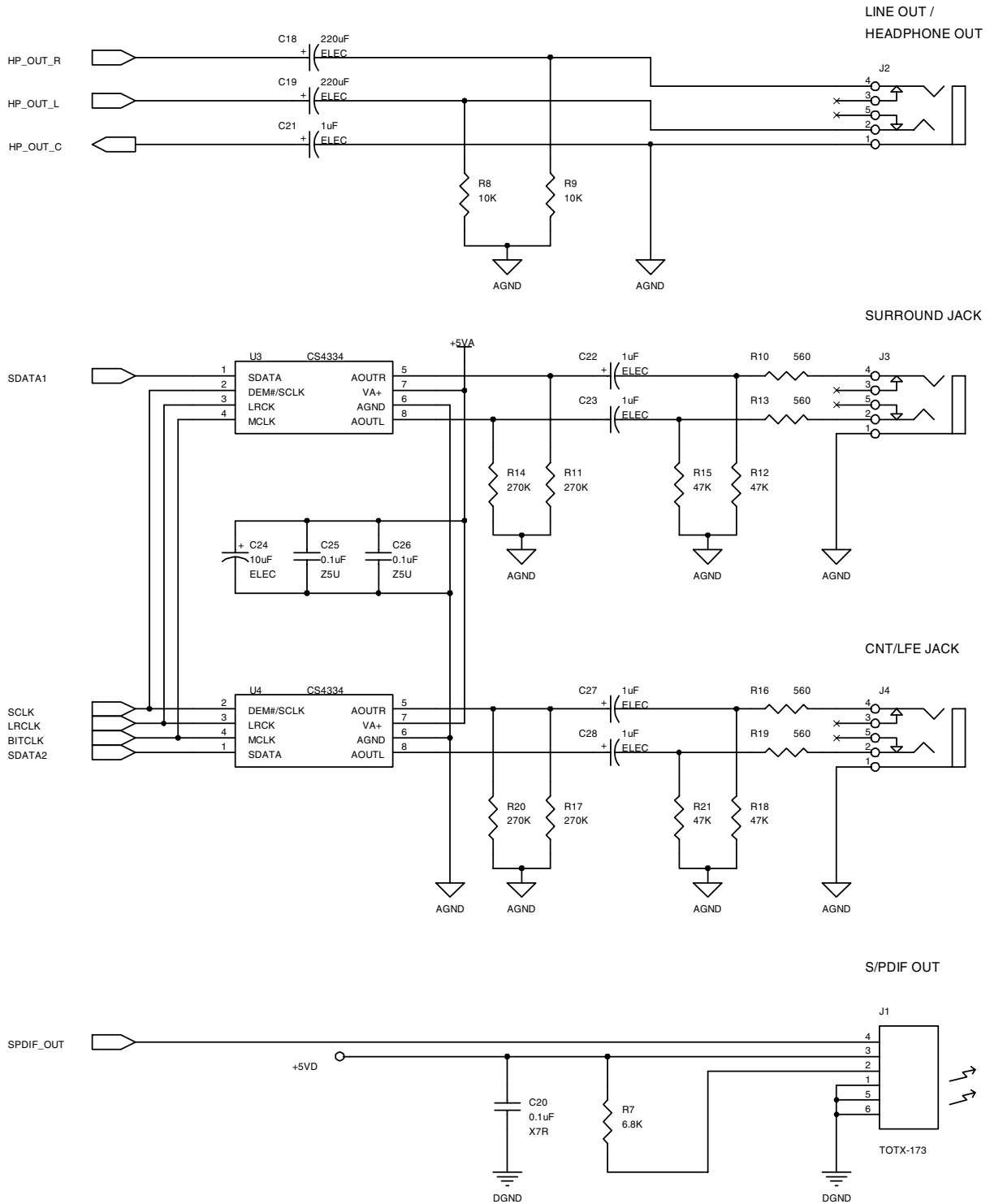
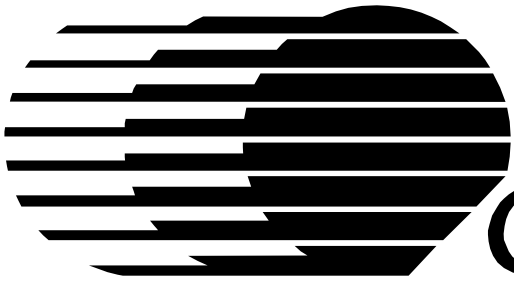


Figure 4. Analog and Digital Audio Outputs

• **Notes** •



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