Application Note

MIGRATING FROM THE CS3302 TO THE CS3302A SEISMIC DIFFERENTIAL AMPLIFIER

1. SUMMARY

This document outlines the differences in operation of the CS3302A when compared to the CS3302 and explains how to use the CS3302A device in a system designed for the CS3302. In particular, the need for external anti-alias filter resistors is addressed.

2. DESCRIPTION OF CHANGES BETWEEN CS3302 AND CS3302A

The CS3302A seismic differential amplifier is a pin-compatible upgrade for the original CS3302 device.

The main purpose of the CS3302A revision is to provide a fix for the two CS3302 errata listed in errata ER596A3 (items 1 and 2 in Table 1). In addition to this fix, further upgrades were implemented in the CS3302A. Table 1 outlines the differences between the CS3302 and CS3302A.

**Table 1: Differences Between CS3302 and CS3302A**

Item	Description
1	To achieve tighter anti-alias filter resistor tolerance, CS3302A eliminates internal anti-alias filter resistors that exist in CS3302 (specified in the CS3302 data sheet as 640 ohm ±10% depending on process parameters). This change requires the CS3302A to use external anti-alias resistors.
2	Improved relative gain accuracy production test limits. CS3302A relative gain accuracy production test limits tightened to ±0.2% maximum for all gain settings.
3	Removed unipolar power supply mode. CS3302A specified for bipolar power supply mode only.
4	Removed low power operating mode. CS3302A specified for normal power operating mode only.
5	CS3302A power supply specified operating limits tightened from ±5% to ±2%.
10	Improved typical THD performance by 1.0 dB, for gain ranges x2, x4, and x8.

Gain	THD CS3302	THD CS3302A
1		-118
2		-119
4		-119
8	-118	-119
16		-118
32		-115
64		-112

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Although the CS3302 and CS3302A are pin-compatible devices, **the CS3302A is not a drop-in replacement for the CS3302**. Due to the removal of internal anti-alias filters, the CS3302A requires external anti-alias filter resistors to achieve optimum performance.

3. Converting a CS3302 design to use CS3302A

Systems originally designed using the CS3302 device can not use CS3302A transparently. To use the CS3302A, the system designer needs to modify the system hardware by adding external 680 Ω anti-alias filter resistors to replace the removed internal anti-alias filter resistors. Alternative resistor values may be chosen to support other anti-alias RC filter configurations.

Figure 1 highlights an existing CS3302 design with a simple first-order anti-alias filter circuit constructed between the CS3302 amplifier and the CS5371A modulator using internal CS3302 resistors.
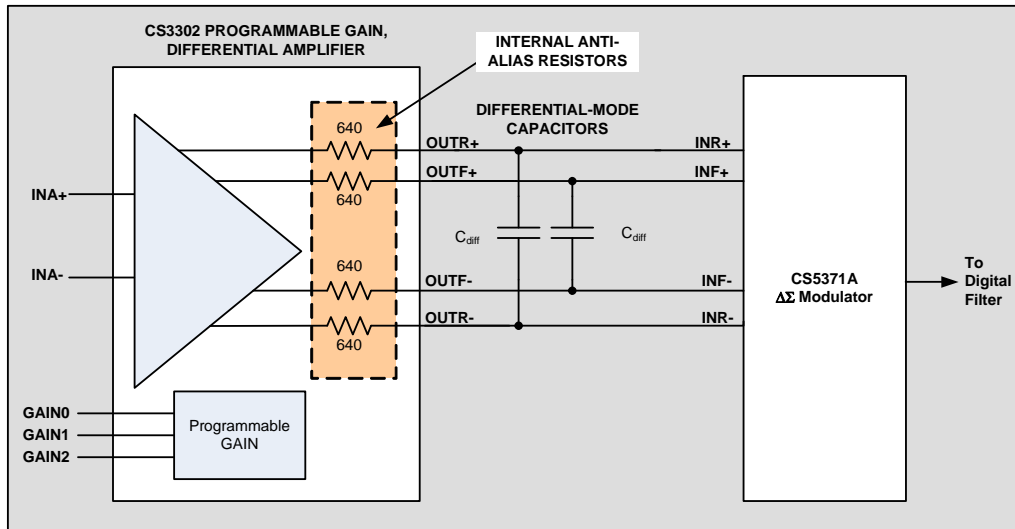
Figure 1. CS3302 with a First-order Anti-alias Filter Using Internal Resistors

To use CS3302A, the simple addition of external 680 Ω anti-alias filter resistors is required to replace the internal anti-alias filter resistors removed, as shown in Figure 2.
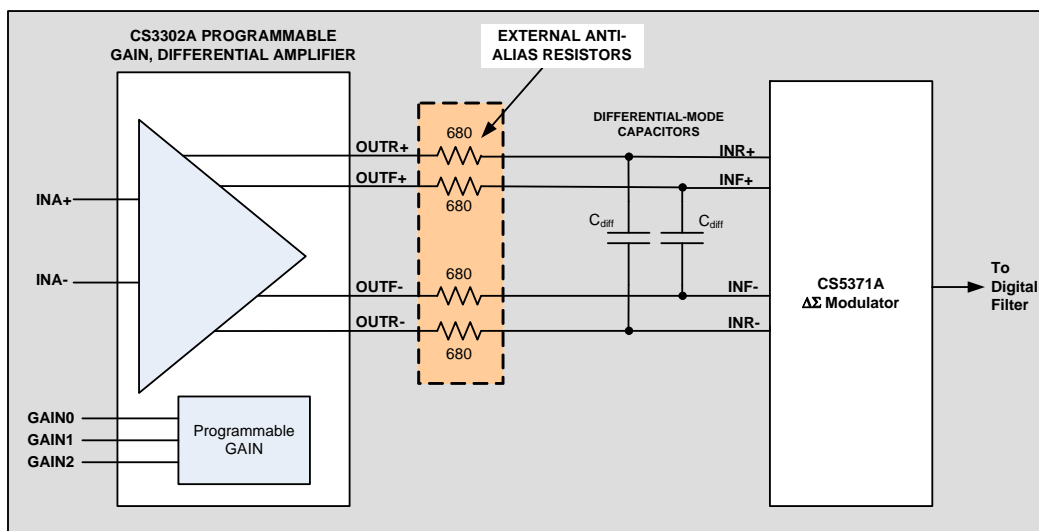
Figure 2. CS3302A with External Anti-alias Using External Resistors

NOTES

Contacting Cirrus Logic Support

For all product questions and inquiries, contact a Cirrus Logic Sales Representative.
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