NEW DIGITAL AUDIO SOLUTIONS: IS31AP2111, IS31AP2121

As a leading supplier of analog components, ISSI has been delivering innovative audio and lighting driver solutions to a variety of industrial and automotive applications. ISSI continues to grow its analog product line with the introduction of two new digital audio amplifier devices the IS31AP2111 and IS31AP2121.

Audio Challenges

There exists a myriad of audio inputs and outputs which present many challenges for the system designer. These include complex mixing and routing of various mono and stereo audio to and from speakers and microphones. Typically this is handled by various components which convert the analog audio to a digital format for digital manipulation in the DSP codec and then converted back to analog for driving the speaker as shown in Figure 1.

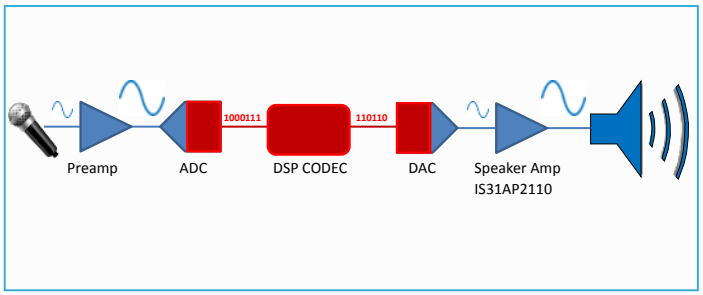

Figure 1. Digital Audio Signal Path

With the introduction of the IS31AP2111 and IS31AP2121 digital audio amplifiers this signal data path has been greatly simplified as shown in Figure 2. These devices provide advanced audio processing capabilities, such as volume control, 20 bands speaker EQ, audio mixing, 3D surround and Dynamic Range Control (DRC); functions previously performed by the DSP IC.

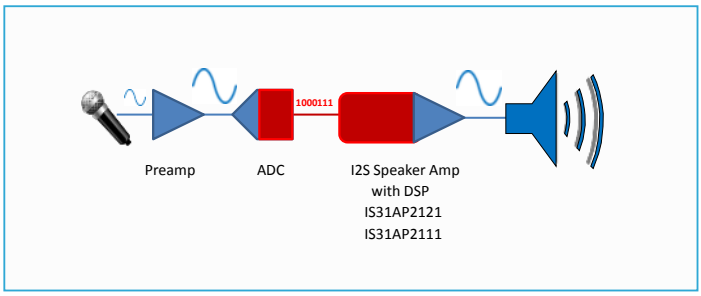

Figure 2. Simplified Digital Audio Signal Path

Digital Audio Interface

What makes these devices true "digital" audio amplifiers is they accept a digital audio stream via their I2S digital interface. The "I2S" stands for Inter-IC Sound (commonly called "I-squared-S" or "I- two-S") and it is the most common digital audio format used for audio data transfer between ICs. The I2S interface can be found in almost any application where digital audio data is being transferred from one IC to another. An I2S bus uses only three signal lines for data transfer: a frame clock, a bit clock, and a data line. By receiving digitized audio data these devices are able to perform audio enhancement functions typically performed by audio DSP devices.

Furthermore, the full digital circuit design of the IS31AP2121 and IS31AP2111 make them more tolerant to noise and PVT (Process, Voltage, and Temperature) variation than the analog Class-AB or Class-D audio amplifiers.

These new I2S audio amplifiers from ISSI will enable engineers to address their mid-range 20W audio performance challenges while simplifying their system designs.

Part Number	Input	Channels	Output Power (24V)	Vdd	Package
IS31AP2111-ZLS1-TR	Digital (I2S)	2	20W x 2	10V ~ 26V	e-TSSOP 24
IS31AP2121-LQLS1	Digital (I2S)	2, 2.1	10W x 2 (8Ω) 10W x 2 (SE, 4 Ω) + 20W (8Ω)	10V ~ 26V	e-LQFP 48

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