SmartBeat™ DA14195 Hi-Res USB Audio DAC reference design

Take the fastest route to high-end analog headphones for the consumer market

With more and better-quality audio content available both on- and offline, high-quality audio playback is essential to ensure listeners enjoy their music to the fullest. Dialog's SmartBeat™ DA14195* Hi-Res USB Audio DAC reference design offers you a simple route to high-end analog headphones that deliver high performance up to 192 kHz, 24 bit demanded by today’s consumer market.

The Dialog DA14195 Hi-Res USB Audio DAC reference design is a comprehensive solution for high-resolution audio applications. It greatly reduces time to market, cost, and complexity when developing a USB audio DAC / headphone amplifier.

Central to the design is the SmartBeat DA14195 audio processor, based on the industry-standard and highly efficient 32 bit ARM Cortex-M0 MCU and a C-programmable 32 bit Cadence HiFi 3 DSP. It supports USB Full Speed and High Speed (USB 1.1 and USB 2.0), USB Audio Class 1.0 & 2.0, USB HID, and USB firmware update. In Audio Class 2.0, both implicit and explicit feedback are supported. With its integrated step-down converter, the DA14195 can be powered from a smartphone or tablet via USB (including Type-C) or self-powered with 1.9 – 5.0 V batteries.
Choosing the DA14195 USB audio platform gives you an easy evolution into other USB audio applications such as headphones and headsets supporting Active Noise Cancellation and Beamforming.

The reference design is compliant with industry specifications including WHLK and WHCK, and USB Implementation Forum (USB-IF) specifications. It is supplied in a complete package including schematics, documentation, software libraries and stacks. Source code and sample code are available upon request, and all design files are available via our support portal: https://support.dialog-semiconductor.com.

Reference design key features
► USB 2.0 Full-Speed and Hi-Speed compliant
► USB Audio Device Class 1.0 and 2.0
► Key tone generator for acoustic feedback
► Isochronous and Asynchronous with implicit and explicit feedback
► Tri-color LED
► Programmable buttons
► 3.5 mm jack out
► High Quality audio quality up to 192 kHz and 24 bit
► Dynamic range 100 dB
► Small form factor PCB

* The DA14195 SoC supports PCM audio up to 192 kHz at 16, 24 or 32 bits. The DA7217 DAC supports 24 bit PCM audio up to 96 kHz.