SABRE HiFi

Analog Reinvented

The ES9270 is a feature-rich 32-bit, 2-channel USB audio D/A converter with headphone amplifier, PLL, Jack Detect, ADC and support for both analog and digital mics, and analog/digital mixing. It has been designed for professional applications (mixer consoles, digital audio workstations), audiophile-grade portable applications (headphones, headphone adapters and digital music players), and consumer applications (USB DACs and A/V receivers). Using the critically acclaimed ESS patented HyperStream® II QUAD DAC™ architecture and Time Domain Jitter Eliminator, the ES9270 delivers a performance level that will satisfy the most demanding audio enthusiast.

The versatile audio input port accepts PCM, DSD and DoP. The integrated SABRE DAC supports up to 32-bit 384kHz PCM, and DSD audio data via master/slave interface in synchronous and asynchronous sampling modes. Audio rates of 384kHz and DoP are supported over USB.

The integrated class-G SABRE Headphone Amp supports up to 2Vrms output. Programmable analog gain and integrated low-noise DAC reference regulator minimize noise gain at typical listening levels and reduce PCB area and BOM cost.

The Jack Detect feature automatically wakes the device, accurately measures load impedance and prevents false positives due to moisture infiltration without any support from the application processor.

Aux Mix mode allows analog signals to be seamlessly overlaid onto digital audio even during DSD & DoP playback.

ES9270 may be customized for any application with firmware-controlled behavior and both volatile and non-volatile memory options.

FEATURE	DESCRIPTION
Patented 32-bit HyperStream® II QUAD DAC™ Architecture	32-bit mobile audio DAC/HPA with high dynamic range & ultra-low distortion
+130dB SNR, +117dBA DNR, 2.0Vrms into 100kΩ -112dB THD+N, 2.0Vrms into 100kΩ -108dB THD+N, 1.0Vrms into 32Ω	Supports synchronous and asynchronous sampling modes Experience Sabre HiFi® all the way to headphones
Analog PLL	Simplifies clocking requirements and reduces PCB size and BOM cost
Versatile digital audio input port	Supports master/slave PCM (I2S, LJ 16-32-bit), DSD and DoP formats.
Customizable filter characteristics	3 preset filters, programmable filter coefficients for custom sound signature
Integrated ADCs for analog/digital mixing 102dBA DNR, -88dB THD+N 1Vrms	2 stereo PDM inputs, 1 differential analog input, 2 single-ended analog inputs Mix mode for side-tone and sound overlay on digital audio
Integrated low noise DAC reference regulator	Programmable voltage, reduced BOM cost and improved DNR
Jack Detect with moisture protection	Dual pin jack detect can wake the ES9270 automatically and prevent false positives
Programmable analog gain	Lower noise gain at real-life listening levels Eliminates external thin film resistors, reduces PCB size and BOM cost
Patented Time Domain Jitter Eliminator	Unmatched audio clarity free from input clock jitter
USB 2.0 Audio Support	Supporting PCM 384kHz Audio rates over USB

APPLICATIONS

- USB headphones, USB headphone adapters, Digital music players, Portable multimedia players
- Professional digital audio workstations and mixer consoles
- Consumer and Audiophile USB DAC headphone amplifiers and A/V receivers
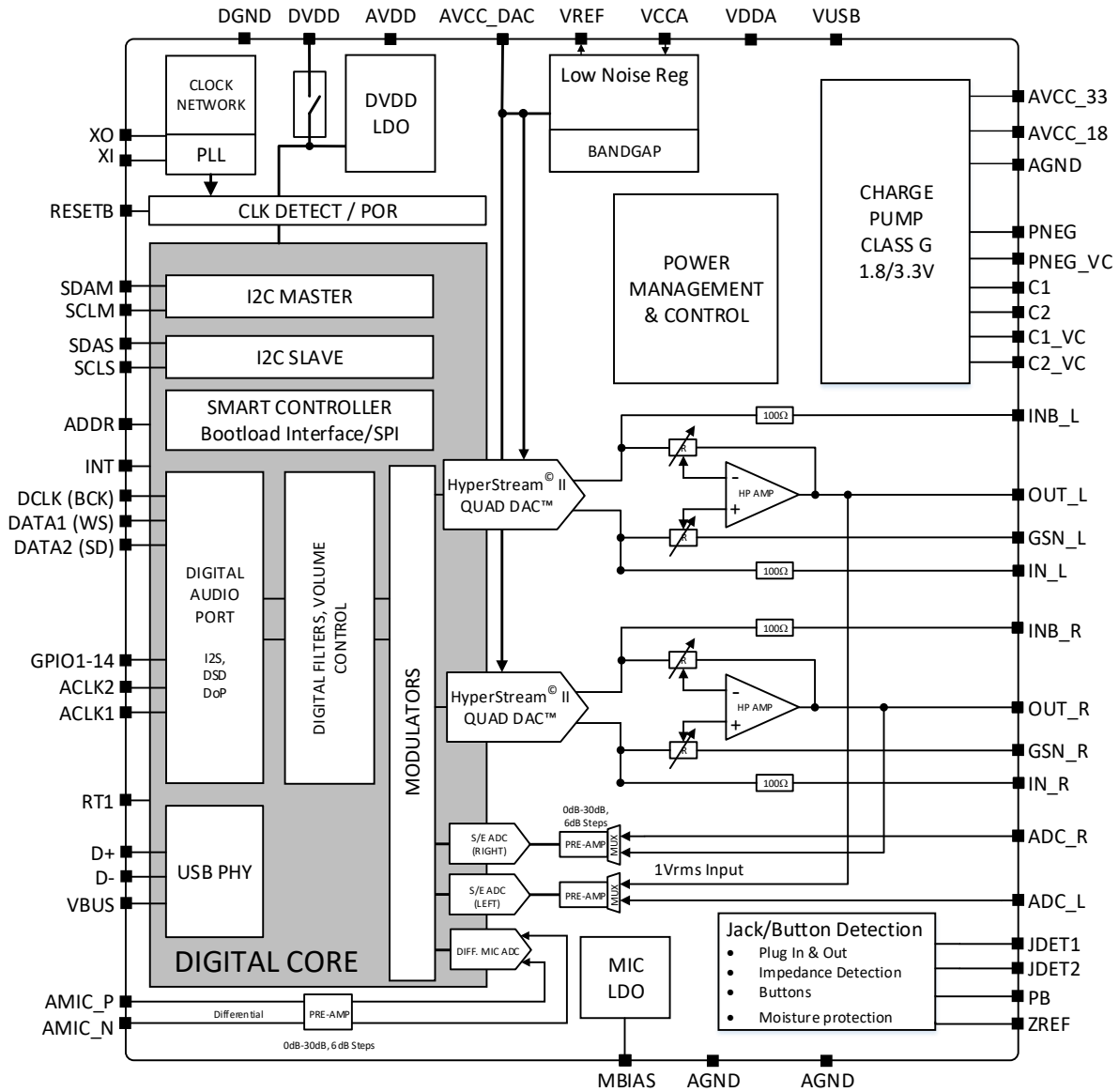
Functional Block Diagram

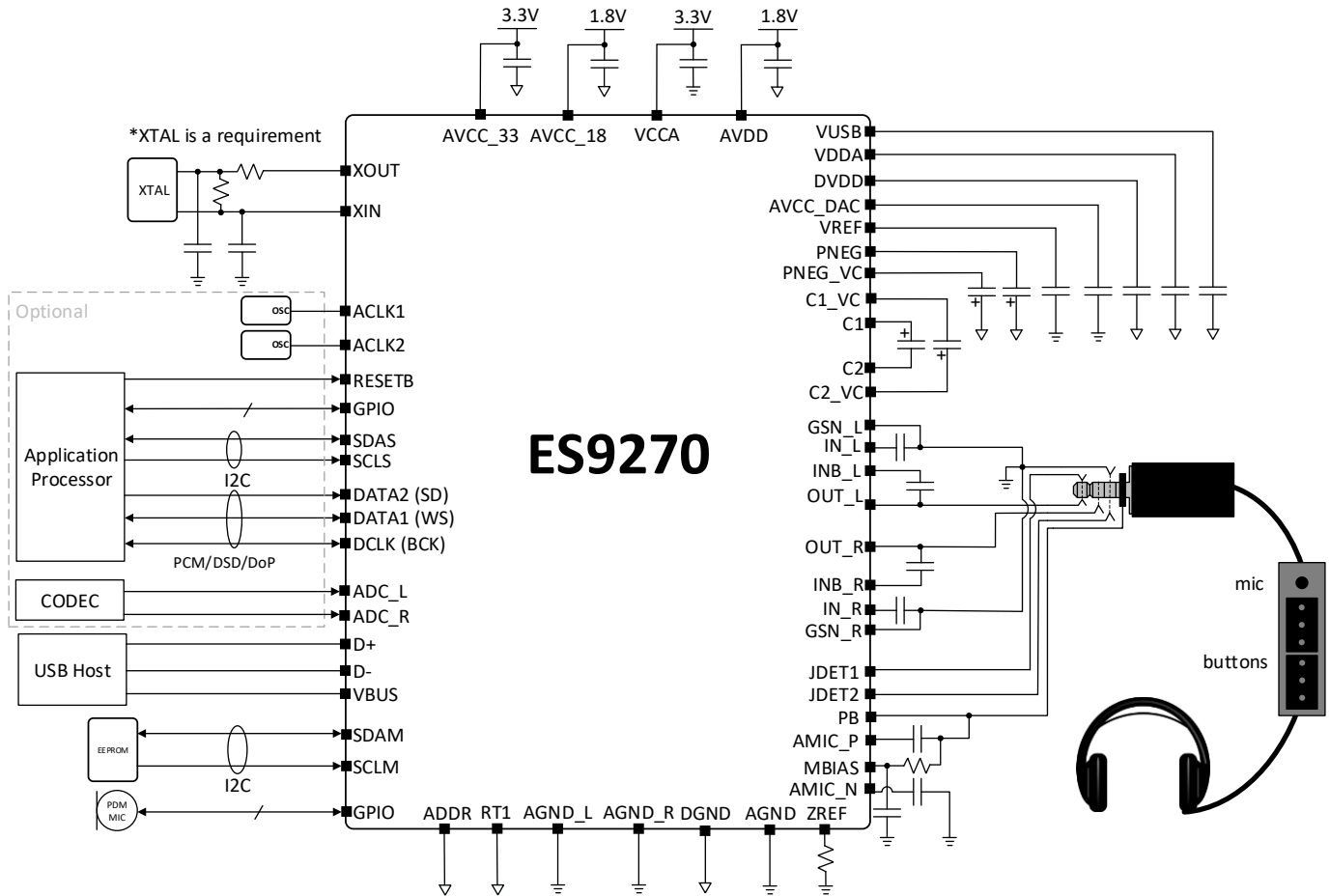Figure 1 - ES9270 Block Diagram

ES9270 Product Brief

Typical Application

Figure 2. Typical Application Diagram