

## INTRODUCING THE SABRE ES9028PRO AND ES9026PRO DACS

### Bringing Music to Life

ESS Technology introduces the ES9028PRO and ES9026PRO SABRE digital-to-analog converters (DACs). These 32-bit, 8-channel PRO series DACs are designed for the audiophile/enthusiast who demands the high quality and performance of a SABRE DAC at a more economical price point. The ES9028PRO and ES9026PRO are pin-compatible upgrades for ESS leadership products—the ES9018S and ES9016S – and feature 129 dB and 124 dB dynamic range (DNR), and -120 dB and -110 dB total harmonic distortion plus noise (THD+N). New features include: eight preset filters, full-scale auto-gain calibration, programmable volume ramp-rate, total harmonic distortion (THD) compensation, programmable soft-start time, improved DPLL lock range, additional programmable GPIOs, DSD over PCM (DoP) input capability, and clock gearing to reduce core clock frequency.

The enhanced feature set of the ES9028PRO and ES9026PRO increases the design flexibility and performance of audiophile and studio equipment.



#### Audiophile Enthusiast Performance Levels

Targeted at audiophile and studio equipment, the ES9028PRO and ES9026PRO SABRE DACs offer a seamless upgrade path from the previous generation. These new ESS DACs also feature the high-performance architecture of the PRO series to deliver a truly immersive listening experience. In addition, the PRO series features increase design flexibility and reduce design-debugging time.

#### Hardware features:

- Full-scale manual/auto-gain calibration reduces device-to-device gain error
- Programmable volume control ramp-rate with +18 dB option
- DoP to DSD decoder minimizes external processing
- Total of eight preset filters for maximum design flexibility

#### Programmable functions:

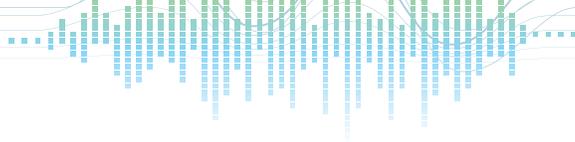
- Customizable output configuration: Mono, stereo, 8-channel output in current-mode or voltage-mode based on performance criterion
- Customizable filter characteristics: User-programmable filter allowing custom roll-off response
- Programmable THD compensation to minimize THD caused by external components

#### PRO SABRE DAC Design Advantages

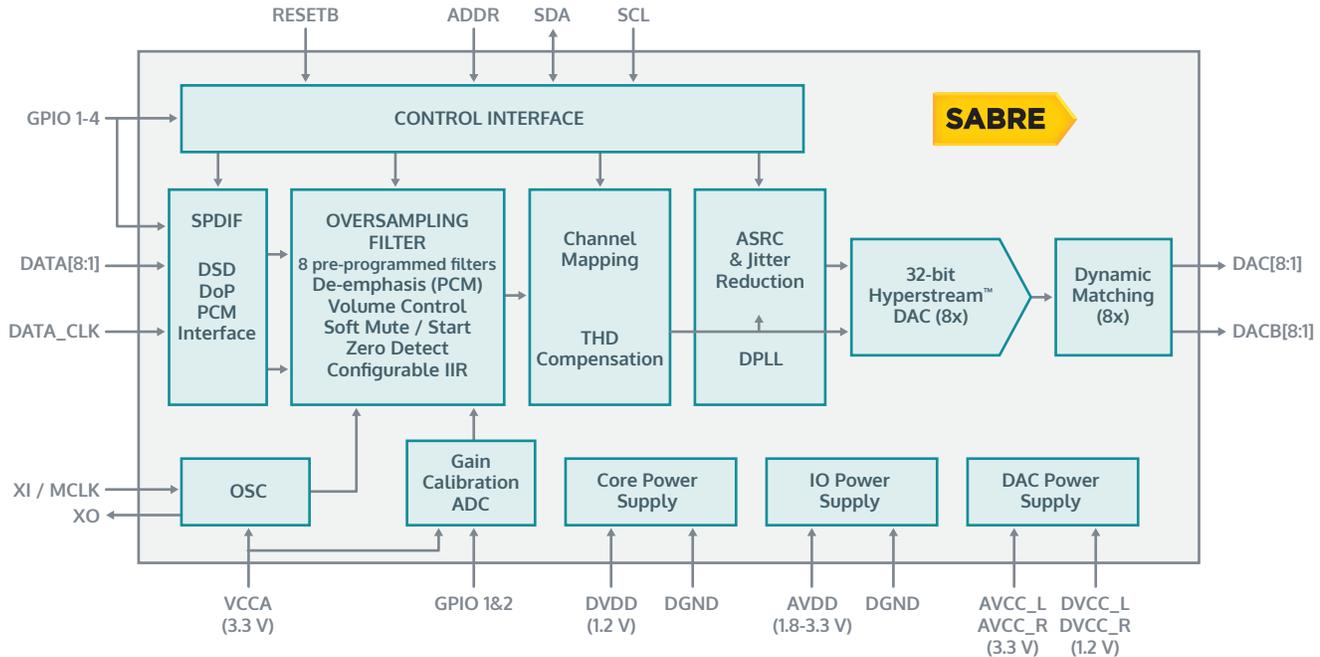
The new PRO series of SABRE DACs was created to integrate seamlessly with the existing, and future, portfolio of ESS headphone amplifiers as well as other audio building block technologies.

Significant advancements over previous generations have been made to simplify the implementation of applications software, and debugging time has been significantly reduced to speed time to market and lower overall system costs.

The new PRO series also enables designers to leverage a single software instruction across all eight of the internal DACs of the ES9028PRO and ES9026PRO, to eliminate time consuming individual implementations. The SABRE PRO DACs also enable gain calibration across all DAC channels for a consistent volume gain. The ES9028PRO SABRE DAC has 500 mW power consumption at 192 kHz sampling and 100 MHz MCLK. The power saving feature allows the user to power-down to a low-power idle mode when the audio signal is absent.



## ES9028PRO and ES9026PRO SABRE Block Diagram



### Additional Features and Benefits

Feature	Benefit
Full-scale manual/auto gain-calibration	Reduces device-to-device gain error
Eight preset and programmable filter types	Maximizes design flexibility
Clock gearing	Reduces MCLK frequency and saves power
DSD over PCM (DoP) decoding	Required for high-end audiophile equipment
Software reset	Speeds-up software and hardware debugging to improve time to market
Programmable volume control ramp-rate with +18 dB option and single volume adjustment for all 8 channels	Simplifies system software
Programmable THD compensation	Minimizes distortion caused by non-ideal PCB layout and external components
Soft-start with programmable start time	Enables the elimination of start-up pops and clicks
Full 8-to-8 channel-mapping	Simplifies PCB layout and allows rearranging of channels

### About ESS Technology

For more than three decades ESS Technology has been on the cutting edge of audio technology. A privately held fabless semiconductor company, ESS Technology designs and markets high-performance analog and HiFi audio devices for mobile, consumer, automotive, and professional audiophile systems. The company was founded in 1984 and today ESS Technology is best known for its SABRE series of high-performance audio products. For more information visit <http://www.esstech.com>.