ES9018C2M
Ultra 32-bit Stereo Mobile Audio DAC
Product Brief

Analog Reinvented

The ***ES9018C2M SABRE[32] Reference DAC*** is a high-performance 32-bit, 2-channel audio D/A converter targeted for audiophile-grade portable applications such as mobile phones and digital music players, consumer applications such as Blu-ray players, audio pre-amplifiers and A/V receivers, as well as professional applications such as recording systems, mixer consoles and digital audio workstations.

Using the critically acclaimed ESS patented 32-bit HyperStream™ DAC architecture and Time Domain Jitter Eliminator, the ***ES9018C2M SABRE[32] Reference DAC*** delivers a DNR of up to 127dB and THD+N of –120dB, a performance level that will satisfy the most demanding audio enthusiasts.

The ***ES9018C2M SABRE[32] Reference DAC***'s 32-bit HyperStream™ architecture can handle up to 32-bit, 384kHz PCM data via I²S, DSD-11.2MHz data as well as mono mode for highest performance applications. Both synchronous and ASRC (asynchronous sample rate conversion) modes are supported.

The ***ES9018C2M SABRE[32] Reference DAC*** is comes in a 25-Ball WLCSP package and consumes less than 40mW in normal operating mode (< 1mW in standby mode)

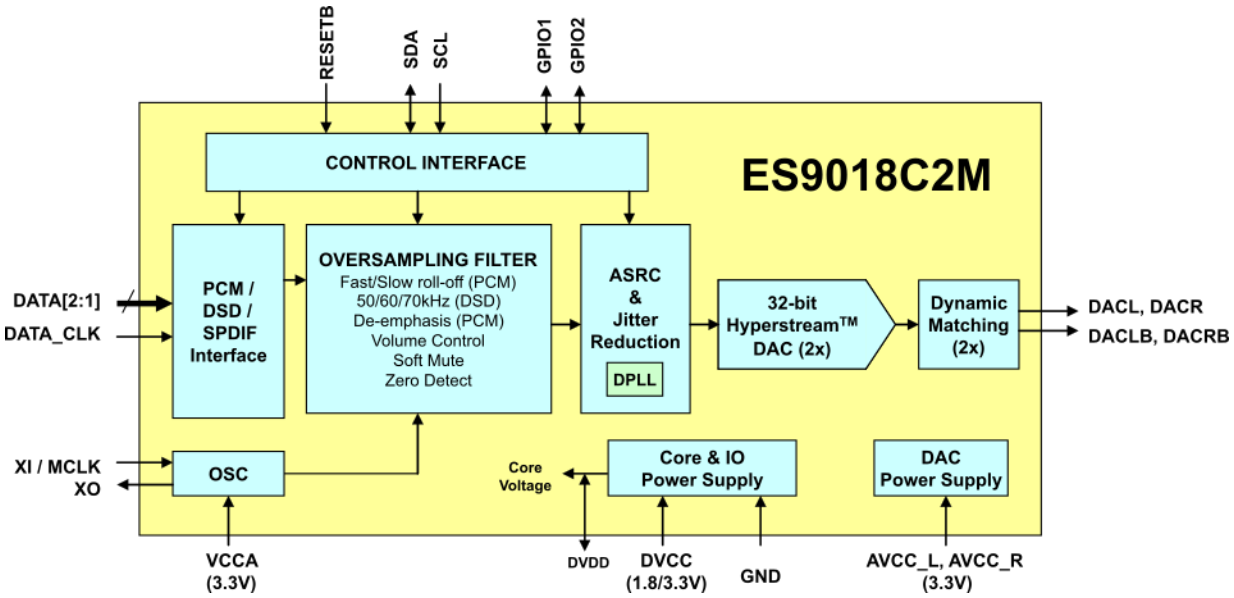
The ***ES9018C2M SABRE[32] Reference DAC*** sets a new standard for high quality audio performance, **SABRE SOUND®**, in easy-to-use form factor for today's most demanding digital audio applications.

FEATURE	DESCRIPTION
Patented 32-bit HyperStream™ DAC ○ +127dB DNR ○ –120dB THD+N	○ Industry's highest performance 32-bit audio DAC Sabre[32] DAC with unprecedented dynamic range and ultra low distortion ○ Supports both synchronous and ASRC (asynchronous sample rate converter) modes
Patented Time Domain Jitter Eliminator	○ Unmatched audio clarity free from input clock jitter
64-bit accumulator and 32-bit processing	○ Distortion free signal processing
Integrated DSP Functions	○ Click-free soft mute and volume control ○ Programmable Zero detect ○ De-emphasis for 32kHz, 44.1kHz, and 48kHz sampling
Customizable output configuration	○ Mono or stereo output in current or voltage mode based on performance criterion
I²C control	○ Allows software control of DAC features
25-Ball (2.00mm x 2.15mm) WLCSP	○ Minimizes PCB footprint
< 40mW operating, < 1mW standby power	○ Maximizes battery life
Versatile digital input	○ Supports SPDIF, PCM (I²S, LJ 16-32-bit) or DSD input
Customizable filter characteristics	○ User programmable filter allowing custom roll-off response ○ Bypassable oversampling filter

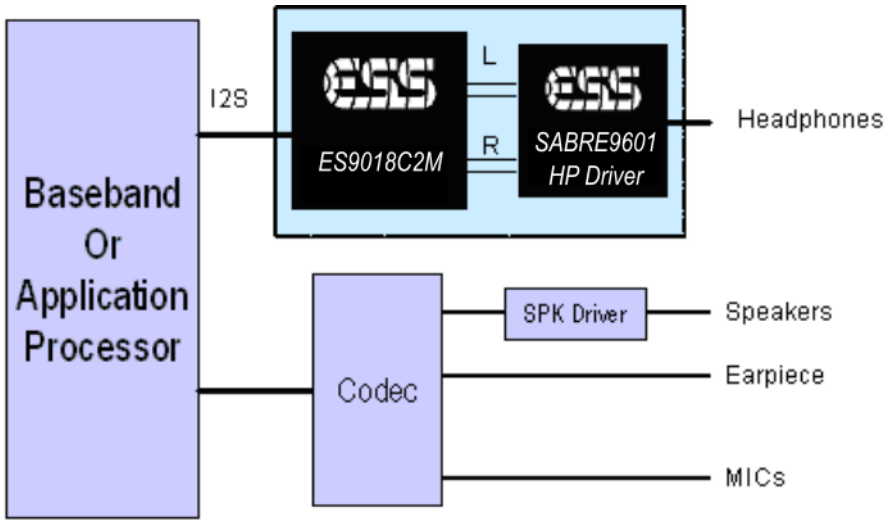
APPLICATIONS

- Mobile phones / Tablets / Digital music players / Portable multimedia players
- Blu-ray / SACD / DVD-Audio player
- Audio preamplifier and A/V receiver
- Professional audio recording systems / Mixing consoles / Digital audio workstation

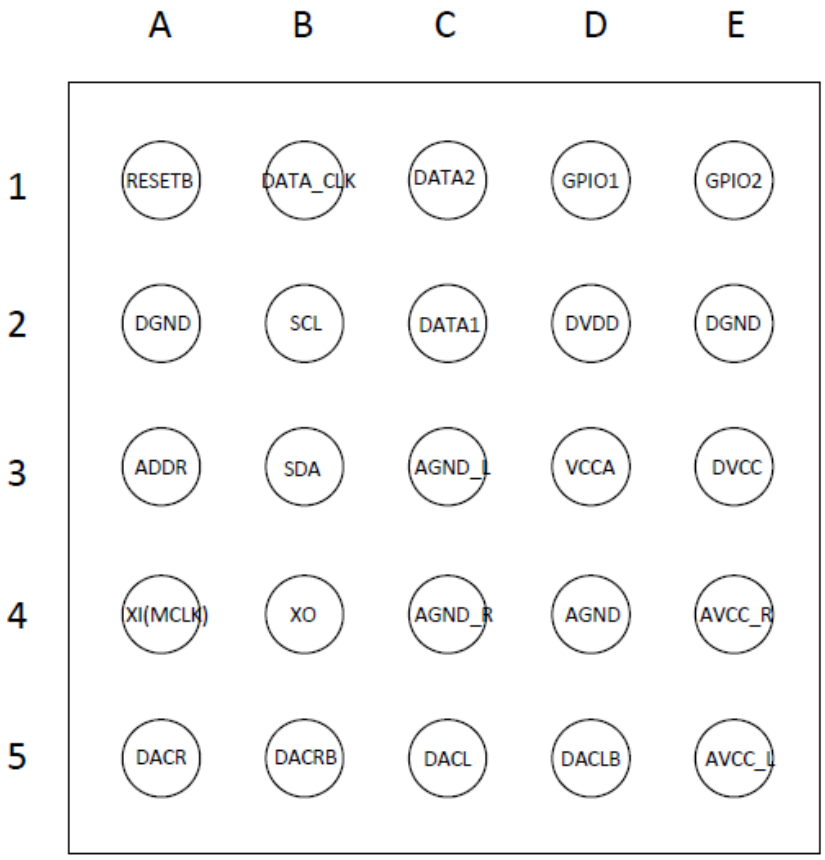
FUNCTIONAL BLOCK DIAGRAM



TYPICAL APPLICATION DIAGRAM



PIN LAYOUT: BOTTOM VIEW



Bottom View (Bumps facing up)

PIN DESCRIPTIONS

Pin	Name	Pin Type	Reset State	Pin Description
A1	RESETB	I	Tri-stated	Master Reset / Power Down (active low)
A2	DGND	Ground	Ground	Digital Ground
A3	ADDR	I	Tri-stated	I²C Address Select
A4	XI (MCLK)	AI	Floating	XTAL / MCLK Input
A5	DACR	AO	Driven to ground	Differential Positive Analog Output Right
B1	DATA_CLK	I/O	Tri-stated	Master mode off: Input for PCM Bit Clock or DSD Bit Clock or SPDIF Input 1. Master mode on: Output for PCM Bit Clock
B2	SCL	I	Tri-stated	I²C Serial Clock Input
B3	SDA	I/O	Tri-stated	I²C Serial Data Input/Output
B4	XO	AO	Floating	XTAL Out
B5	DACRB	AO	Driven to ground	Differential Negative Analog Output Right
C1	DATA2	I	Tri-stated	DSD Data2 (R) or PCM Data CH1/CH2 or SPDIF Input 2
C2	DATA1	I	Tri-stated	Master mode off: Input for DSD Data1 (L) or PCM Frame Clock or SPDIF Input 3. Master mode on: Output for PCM Frame Clock
C3	AGND_L	I/O	Tri-stated	Analog Ground for Left Channel
C4	AGND_R	Ground	Ground	Analog Ground for Right Channel
C5	DACL	AO	Driven to ground	Differential Positive Analog Output Left
D1	GPIO1	I/O	Tri-stated	GPIO1
D2	DVDD	Power	Power	Digital Core Voltage, nominally +1.2V, generated by a regulator from DVCC. DVDD needs to be externally supplied for high XI / MCLK frequency. Please refer to the section about DVDD supply on page 8.
D3	VCCA	Power	Power	Analog +3.3V for OSC
D4	AGND	Ground	Ground	Analog Ground
D5	DACLB	AO	Driven to ground	Differential Negative Analog Output Left
E1	GPIO2	I/O	Tri-stated	GPIO2
E2	DGND	Ground	Ground	Digital Ground
E3	DVCC	Power	Power	Digital +1.8V to +3.3V
E4	AVCC_R	Power	Power	Analog AVCC for Right Channel
E5	AVCC_R	Power	Power	Analog AVCC for Left Channel

ORDERING INFORMATION

Part Number	Description	Package
ES9018C2M	Sabre[32] Reference 32-bit Low Power Stereo Audio DAC	25-pin WLCSP

Revision History

Rev.	Date	Notes
0.1	Sept 9, 2022	Initial release