XVF3610 VOICE PROCESSOR

HIGH PERFORMANCE, LOW BOM

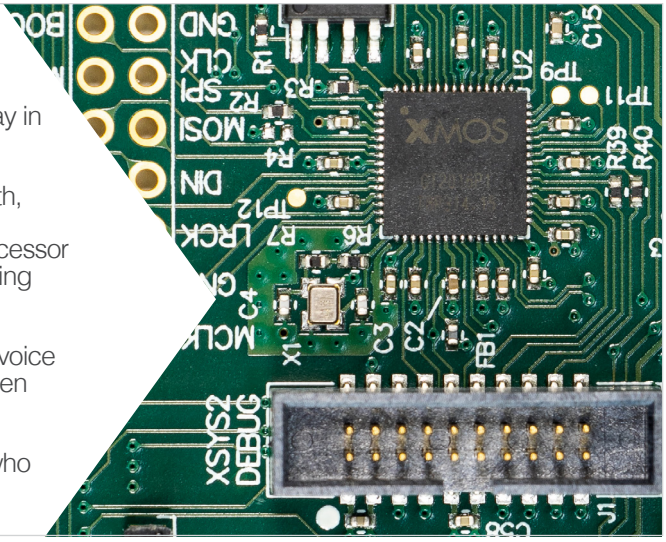
"VOICE IS THE NEXT-TECH DISRUPTION. NOTHING IS AS FAST OR NATURAL."
DAVE ISBITSKI, CHIEF ALEXA EVANGELIST, AMAZON

From doorbells to smart TVs, our devices are getting smarter. Virtual Assistants and voice-control have opened the door to a natural conversation with technology; voice is transforming the way in which we access and enjoy content.

To address the demands of this rapid far-field voice market growth, manufacturers need an eBOM-efficient, high-performance voice processor. Requiring just 2 microphones, our XVF3610 voice processor enables far-field voice capture with close range precision, delivering powerful performance in a cost efficient package.

With purpose-designed algorithms, XVF3610 will capture a clear voice stream from across the room, even in noisy environments and when content is streaming through the device.

The XVF3610 is for designers of voice-enabled smart products, who need high performance at a low BOM.



FEATURE HIGHLIGHTS

The XVF3610 offers two firmware variants: XVF3610-UA supports USB accessory devices and XVF3610-INT is designed to enable built-in solutions. Both contain our purpose-designed algorithms.

ACOUSTIC ECHO CANCELLATION (AEC)

Stereo acoustic echo cancellation enables the XVF3610 to detect voice signals even when high-volume audio is playing through the product, enabling barge-in across content. The echo canceller constantly adapts to the room, modeling changes such as people moving, to remove the echoes from the speakers from the microphone input.

INTERFERENCE CANCELLER (IC)

The interference canceller works intelligently to scan the soundscape of the room. It removes static point noise (e.g. from household appliances) and 'ignores' any audio playing from another device. This enables the XVF3610 to capture a clear voice command across a noisy acoustic environment.

NOISE SUPPRESSION

Noise Suppression removes stationary and non-stationary diffuse noise sources, for example air-conditioning and road noise, from the received signal. This enables accurate, consistent voice detection.

AUTOMATIC DELAY ESTIMATION CONTROL (ADEC)

Automatic Delay Estimation Control dynamically monitors reference signal latency and adjusts this to maintain optimal AEC performance in situations where the audio output delay is unknown, such as TVs and STBs.

AUTOMATIC GAIN CONTROL (AGC)

Automatic Gain Control tunes the output channel level for optimum results, whether that's for an Automatic Speech Recognition Service (ASR) or communications applications.

SYSTEM CONTROL AND PARAMETERISATION

Parameterisation of XVF3610 algorithm control, system configuration and GPIO in real-time from host interface, or read from flash memory for default start-up behaviour.

APPLICATIONS

XVF3610-UA

TV / SET-TOP BOX ACCESSORY

XVF3610-INT / BUILT-IN

AUDIO VISUAL PRODUCTS

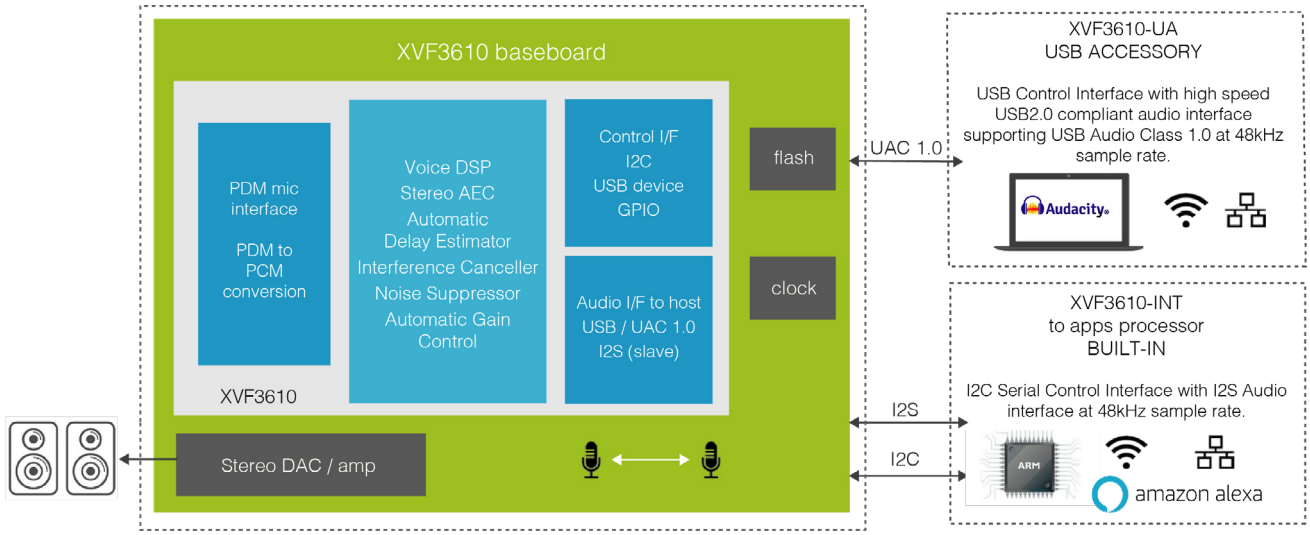
SMART HOME APPLIANCES

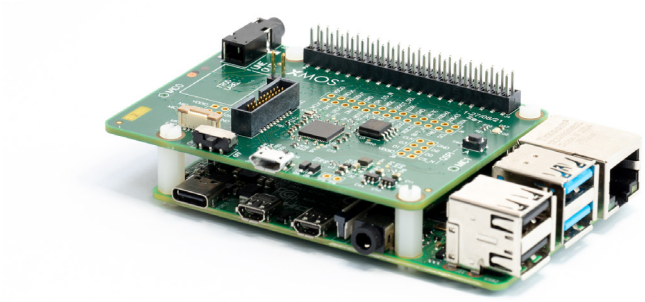
HEALTH AND FITNESS

CONFERENCE CALLING

XMOS
Bringing technology to life

DEV KIT BLOCK DIAGRAM





Shown assembled with RPi (not supplied) for full AST system demonstration.

VOICE PROCESSOR

PACKAGE
60-Pin QFN 7mm x 7mm, 0.4mm pitch
QF60A - 1.8V IO
QF60B - 3.3V IO

VOICE PROCESSING
Full duplex stereo acoustic echo cancellation (225ms tail length)

Automatic Delay Estimator (+/- 150ms delay adjustment)

Interference Canceller

Noise Suppression

Automatic Gain Control

MICROPHONE INTERFACE
2-channel digital PDM microphone interface

Dual microphone array, 71mm spacing

AUDIO INTERFACE
High speed USB2.0 compliant device supports

USB Audio Class 1.0 at 16/48kHZ sample rate

I2S audio interface, 16/48kHz

GPIO
4 x General Purpose Inputs, (XVF3610-UA has optional single pin interrupt capability via USB-HID)

4 x General Purpose Outputs

CONTROL INTERFACE
USB Control Interface

I2C Control Interface

TYPICAL POWER CONSUMPTION
USB: 300mW

I2S: 300mW

VOICE PROCESSOR	USB ACCESSORY	BUILT-IN
XVF3610-QF60A-C (1v8)	DEV KIT: XK-VOICE-L71	DEV KIT: XK-VOICE-L71
XVF3610-QF60B-C (3v3)	FIRMWARE: XVF3610-UA	FIRMWARE: XVF3610-INT

The XVF3610 replaces the XVF3510, which should no longer be used for new designs.

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