XVF3000/3100 VOICE PROCESSOR

FAR-FIELD VOICE CAPTURE FOR SMART TVS AND CONFERENCE CALLING APPLICATIONS

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

Technology is woven through the fabric of our everyday life. It's in our homes, cities, vehicles and workspaces. Voice is a fast and intuitive experience, that takes us from command to response (question to answer) quickly and easily.

Capturing a clear voice command from a distance requires complex digital signal processing (DSP). Accuracy of voice capture and clarity are critical. Our ears automatically tune out background noise to focus on and amplify the sound we want to hear, but a microphone captures the whole soundscape – including all the surrounding, unwanted noise such as conversation, traffic noise, appliances, air-conditioning, birdsong and dogs barking.

The XVF3000 4-mic mono echo cancellation series includes algorithms that are purpose-designed for challenging acoustic environments. Available as circular and linear topologies, the series is designed to suit any application. Adaptive beamforming, echo cancellation, de-reverberation and noise suppression algorithms work together to 'clean up' the voice signal for automatic speech recognition systems and optimise them for the human ear in conferencing calling solutions.

Embed the XVF3000 series into new and existing products to give your customers a far field voice experience that delivers close range precision.

FEATURE HIGHLIGHTS

There are two voice processors in this series: the XVF3000 voice processor and the XVF3100 variant which includes the Sensory TrulyHandsfree™ wakeword. Microphone interfacing, voice processing and control allow you to parameterise the system for best results based on your individual product acoustics.

ACOUSTIC ECHO CANCELLATION (AEC)

Acoustic Echo Cancellation removes echo from the microphone audio input and enables the XVF3000 series to detect voice signals even when high-volume audio is playing through the product, enabling barge-in across the audio stream.

NOISE SUPRESSION

Noise Suppression nulls stationary and non-stationary diffuse noise sources, for example air-conditioning and road noise where the frequency characteristics don't change over time. This enables accurate, consistent voice detection.

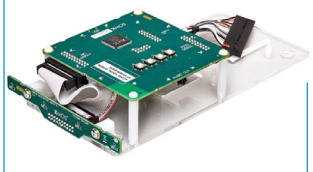
ADAPTIVE BEAMFORMER

The adaptive beamformer identifies the 'Direction of Arrival' and isolates the voice of interest. This can be read to the host processor or, in a conference calling application, converted into LEDs to indicate who is speaking.

AUTOMATIC GAIN CONTROL (AGC)

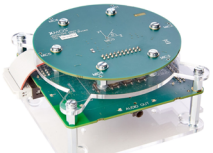
The Automatic Gain Control tunes the output channels for best results, whether that's for an Automatic Speech Recognition Service (ASR) or communications.

DEV KITS



XK-VF3000-L33-AVS

XK-VF3100-L33



XK-VF3100-C43

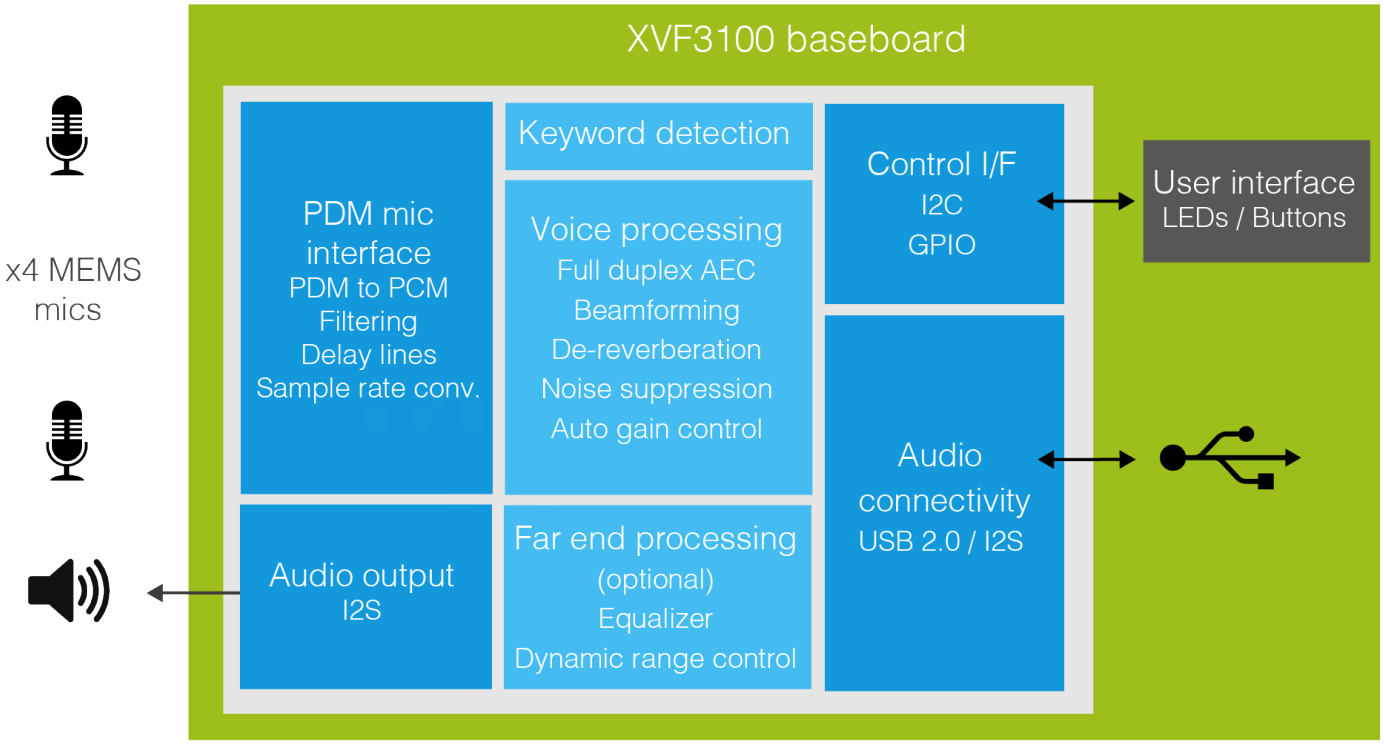
APPLICATIONS

SMART SPEAKERS

CONFERENCE CALLING

XMOS
Bringing technology to life

DEV KIT BLOCK DIAGRAM



VOICE PROCESSOR | XVF3000-TQ128-CA

PACKAGE
128-Pin TQFP, 0.4mm pitch

VOICE PROCESSING
Acoustic Echo Cancellation with barge-in
Adaptive Beamformer
Noise Suppression
Automatic Gain Control

MICROPHONE INTERFACE
4x digital PDM microphone interface
100mm linear mic array, 33mm inter-mic spacing
90mm linear mic array, 43mm inter-mic spacing

HOST INTERFACE OPTIONS
High speed USB2.0 compliant device supports USB Audio Class 1.0; 16kHz or 48kHz sample rate
I2S audio interface; 16kHz or 48kHz sample rate

AUDIO OUTPUT OPTIONS
I2S output to DAC; 16kHz or 48kHz PCM

CONTROL INTERFACE
USB Control Interface
I2C Control Interface

VOICE PROCESSOR
XVF3000-TQ128-CA
XVF-3100-TQ128-CA
with Sensory TrulyHandsfree™ wakeword

DEV KIT FOR AMAZON ALEXA VOICE SERVICE
XK-VF3000-L33-AVS

DEV KIT FOR OTHER SOLUTIONS
XK-VF3100-L33 (linear)
XK-VF3100-C43 (circular)

xmos.ai/vocalfusion-conference-calling/

XMOS
Bringing technology to life