XMOS®

xCORE VocalFusion™ Speaker

FAR-FIELD VOICE CAPTURE FOR VOICE ENABLED SMART SPEAKERS

VOCALFUSION SPEAKER FEATURES

- **XVF3100/3000 processor**
  - Programmable voice processor for far-field handsfree communication
    - 4 microphone adaptive beamformer supporting linear and circular arrays
    - Full duplex AEC with barge-in support (up to 50dB att.)
    - Noise suppression (up to 15dB att.)
    - Speaker independent keyword trigger detection (XVF3100 only)
    - 128 pin TQFP package 0.4mm pitch

- **Host interface options**
  - High speed USB2.0 compliant device
    - Multichannel USB Audio Class 1.0 16kHz or 48kHz sample rate
    - Control interface
  - Optional I2S interface
    - 16kHz or 48kHz sample rate
    - I2C control interface

- **Audio output options**
  - I2S output to DAC, 16kHz or 48kHz PCM

- **System control options**
  - Industry's most flexible GPIO
 - Extensive general purpose libraries

xCORE VocalFusion™ Speaker provides far field voice capture and processing (including beamforming, echo cancellation, de-reverberation and noise suppression) combined with Sensory TrulyHandsfree™ technology and XMOS' flexible IO to deliver superior handsfree voice interface solutions for home and conferencing applications.

Based on the XVF3000 series of voice processors, VocalFusion Speaker offers direct interfacing to four PDM (Pulse Density Modulation) microphones in either linear or circular arrays and can be easily integrated with an applications processor or host PC via either USB for audio and control or a combination of I2S and I2C.

Voice sources are isolated from unwanted noise using advance DSP techniques including adaptive beamforming, full-duplex echo cancellation and noise suppression. Keyword trigger detection, delivered by Sensory, enables users to activate devices simply by speaking instead of having to physically touch the device. Making VocalFusion Speaker the ideal voice interface solution for smart speaker applications.

Getting started with the XVF3000 series couldn't be easier with application specific evaluation boards supported by a range of tools to customize, debug and test your application.

FUNCTIONAL BLOCK DIAGRAM
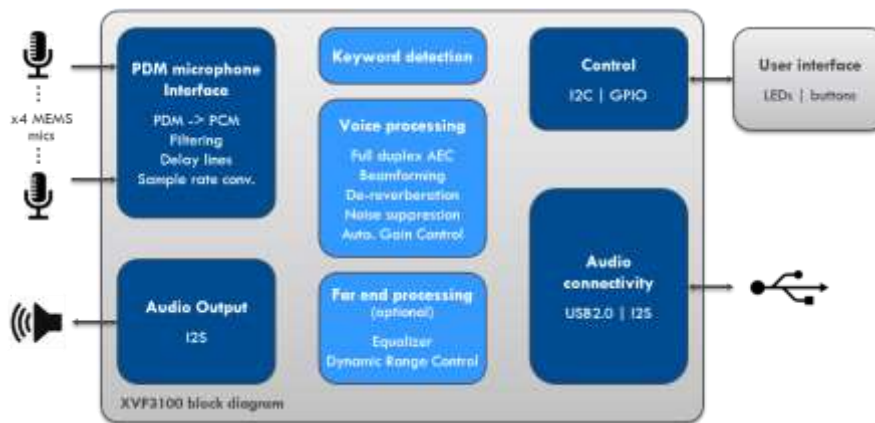
VOCAL FUSION SPEAKER DEVELOPMENT KITS

Features

- XVF3100 processor BaseBoard
- Circular or linear array of x4 PDM MEMS microphones
  - Circular:
    - 90mm diameter, 43mm radius mic spacing
    - Ideal for 'centre of the room' applications
  - Linear:
    - 100mm long, 33mm inter-mic spacing
    - Ideal for 'edge of the room' applications
- USB device (micro-B) for easy interfacing to a PC
  - Optional I2S and I2C interfaces
- Audio output via 3.5mm headphone jack
- xTAG interface for JTAG debug

DEVELOPING WITH XVF3000 PROCESSORS

The xTIMEcomposer™ tool suite provides everything you need to write, debug and test applications for the XVF3000 series. A rich set of optimisation parameters are available to ensure that the best results are achieved for the individual acoustics of the end product. These parameters include adjustment to noise attenuation and gain control as well as numerous optimisations for echo cancellation.

For more information and to download xTIMEcomposer go to www.xmos.com/tools.

ORDERING INFORMATION

For a list of XMOS distributors, please visit www.xmos.com/support/distributors.

Part number	Contents
XK-VF3100-C43	xCORE XVF31000 VocalFusion BaseBoard, 90mm circular microphone array, xTAG debugger, USB cable x2, ribbon cable
XK-VF3100-L33	xCORE xVF3100 VocalFusion BaseBoard, 100mm linear microphone array, xTAG debugger, USB cable x2, ribbon cable