OVERVIEW

NXP’s MCU-based AVS solution provides OEMs with a fully integrated, self-contained, software and hardware solution that includes both the MCU and an NXP smart audio amplifier with speaker protection. It comes with all far-field audio processing algorithms including noise suppression, echo cancellation, beamforming and barge-in capabilities, to enable use in acoustically difficult environments. Also included is the Amazon Alexa client application and a machine learning inference engine for Alexa wake word identification.

This cost-effective, easy to use AVS implementation facilitates the demand for ubiquitous voice control embedded in a diverse variety of products across home, commercial and industrial applications. It eliminates the need to deploy dedicated stand-alone voice control devices such as smart speakers or smart displays.

TARGET APPLICATIONS

The i.MX RT MCU-based solution for AVS enables designers to integrate Alexa into a wide variety of smart home, smart appliance, smart retail and smart industrial products.

- Smart switches, smart lighting, shade, and fan controls
- Smart plugs and outlets
- Smart appliances
- Set top boxes and residential gateways
- Alarm/access panels and thermostats
- Garage door openers
- Room air conditioners
- POS terminals
- Bluetooth® beacons
- Electronic shelf labels
- Industrial automation
- Hands-free process control
**i.MX106A AUDIO CROSSOVER PROCESSOR OVERVIEW**

The i.MX RT106A is a solution-specific member of the i.MX RT1060 family of crossover processors, targeting cloud-based embedded voice applications. It features NXP's advanced implementation of the Arm® Cortex®-M7 core, which operates at speeds up to 600 MHz to provide high CPU performance and best real-time response. i.MX RT106A-based solution enables system designers to easily and inexpensively add voice control capabilities to a wide variety of smart appliances, smart home, smart retail, and smart industry devices. The i.MX RT106A processor is licensed to run NXP’s turnkey voice assistant software solutions, which may include:

- Far-field audio front end softDSP
- Acoustic echo cancellation
- Ambient noise reduction
- Beamforming
- Barge-in
- Playback processing
- Codecs
- Wake word inference engine
- Media player/streamer
- MQTT, IwIP, TLS
- Discovery and onboarding
- All drivers, including Wi-Fi® and Bluetooth
- Supported by MCUXpresso SDK, IDE and Config Tools

**SOLUTION HARDWARE BLOCK DIAGRAM**

**SOLUTION SOFTWARE BLOCK DIAGRAM**