EdgeReady MCU Based Solution for Alexa for IOT
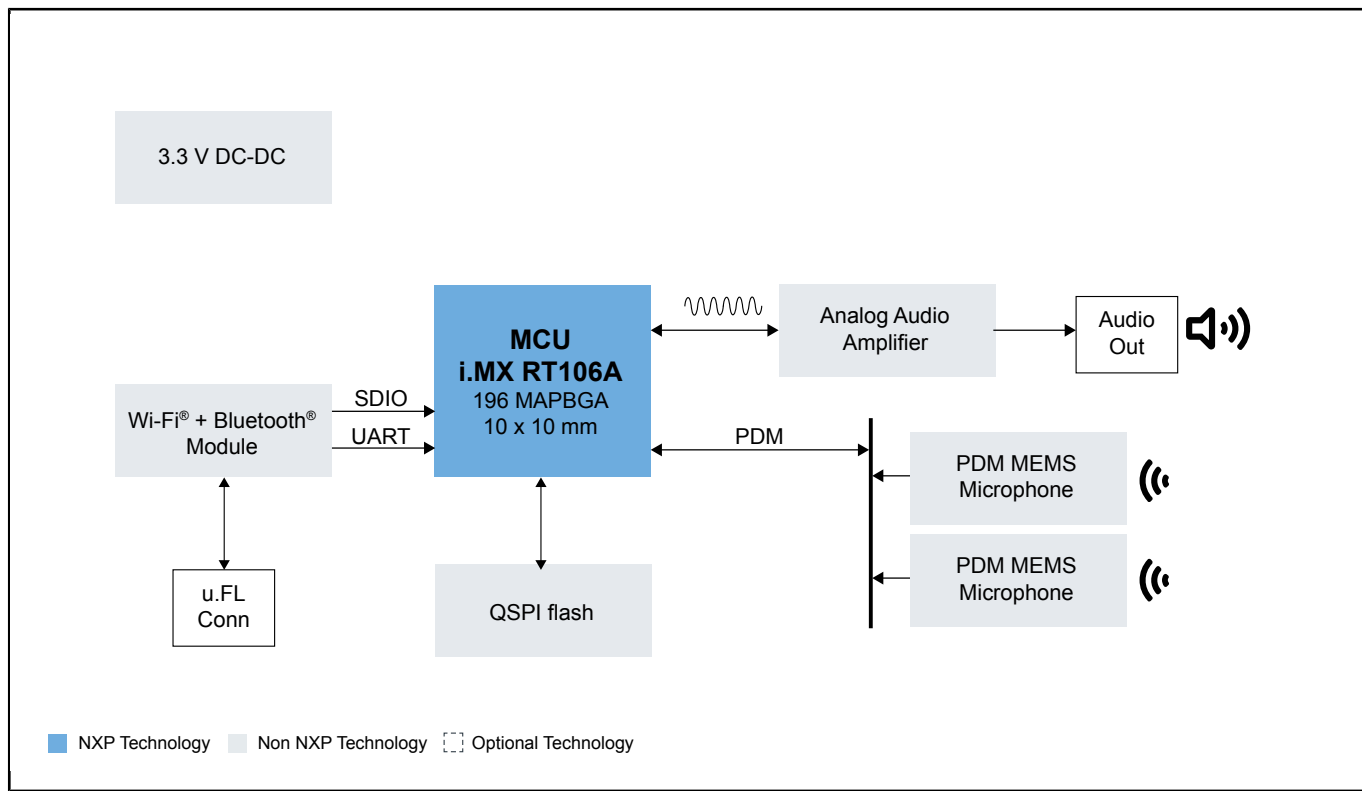
MCU-VOICE-CONTROL-AVS

Not Recommended for New Designs
This page contains information on a product that is not recommended for new designs.
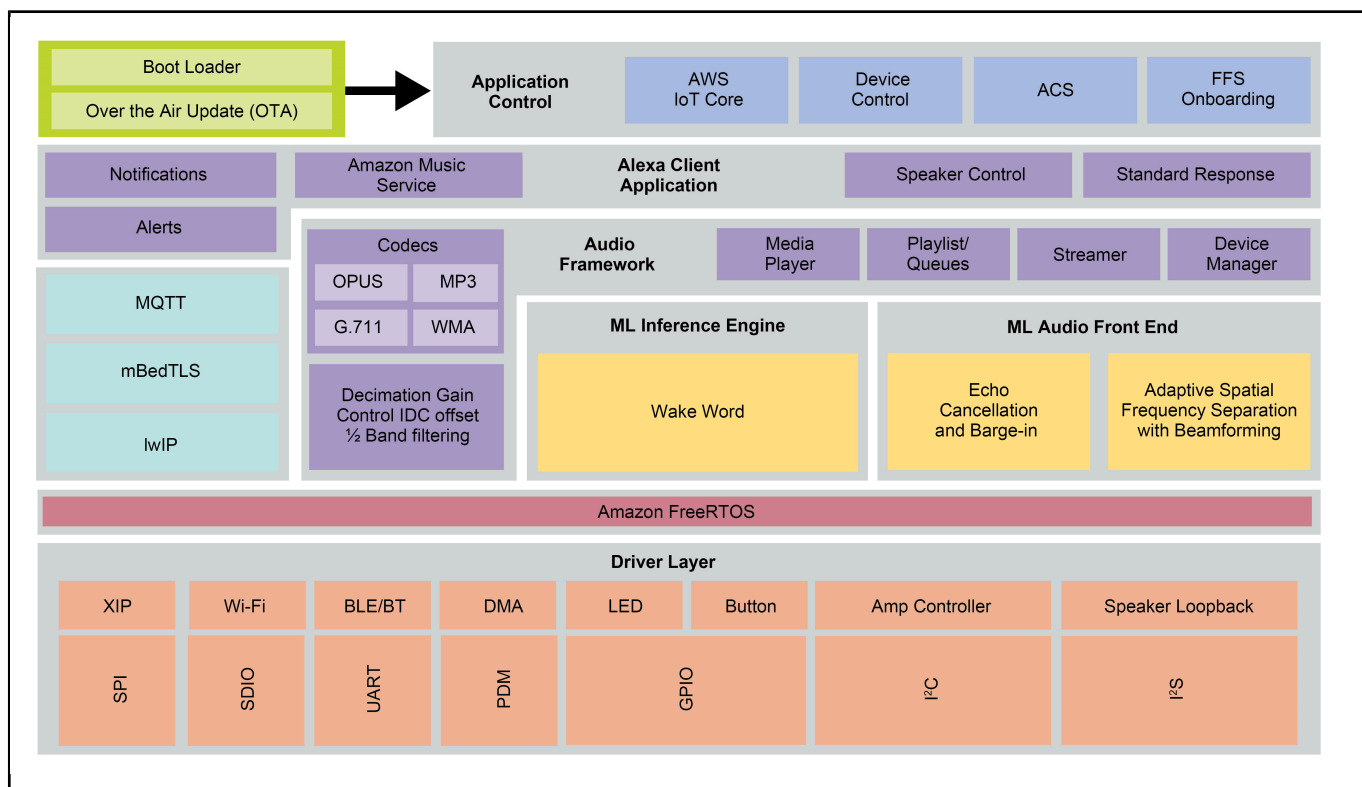
Last Updated: Jun 12, 2023

NXP EdgeReady MCU-based solution for Amazon's Alexa Voice Service (AVS) integration for AWS IoT Core (aka Alexa for IoT, or AFI), leverages the i.MX RT crossover MCU, enabling developers to quickly and easily add Alexa voice assistant capabilities to their products. Part of the EdgeVerse edge computing platform, This i.MX RT106A based turnkey solution consists of a hardware reference design integrated with Amazon qualified software, built on Amazon Common Software (ACS) and FreeRTOS for easy integration with AVS and AWS IoT. Out-of-the-box the solution development kit, SLN-ALEXA-IOT, delivers an experience similar to an Amazon Echo™ speaker, and is easily connected to the user's Wi-Fi network and Alexa account using Amazon's Frustration Free Setup (FFS).

Retune DSP is now part of NXP. [Find out more](#).

i.MX RT Hardware Block Diagram

3.3 V DC-DC

MCU i.MX RT106A
196 MAPBGA
10 x 10 mm

Wi-Fi® + Bluetooth® Module

SDIO
UART

Analog Audio Amplifier

Audio Out

PDM

PDM MEMS Microphone

PDM MEMS Microphone

u.FL Conn

QSPI flash

■ NXP Technology   ■ Non NXP Technology   ⌐ ⌐ Optional Technology

i.MX RT Software Block Diagram

Boot Loader

Over the Air Update (OTA)

Application Control

| AWS IoT Core | Device Control | ACS | FFS Onboarding |

Notifications

Amazon Music Service

Alexa Client Application

Speaker Control

Standard Response

Alerts

Codecs

OPUS | MP3

G.711 | WMA

Audio Framework

Media Player | Playlist/ Queues | Streamer | Device Manager

MQTT

mBedTLS

lwIP

Decimation Gain Control IDC offset ½ Band filtering

ML Inference Engine

Wake Word

ML Audio Front End

Echo Cancellation and Barge-in | Adaptive Spatial Frequency Separation with Beamforming

Amazon FreeRTOS

Driver Layer

| XIP | Wi-Fi | BLE/BT | DMA | LED | Button | Amp Controller | Speaker Loopback |

| SPI | SDIO | UART | PDM | GPIO | I²C | I²S |

View additional information for EdgeReady MCU Based Solution for Alexa for IOT.

---

www.nxp.com