

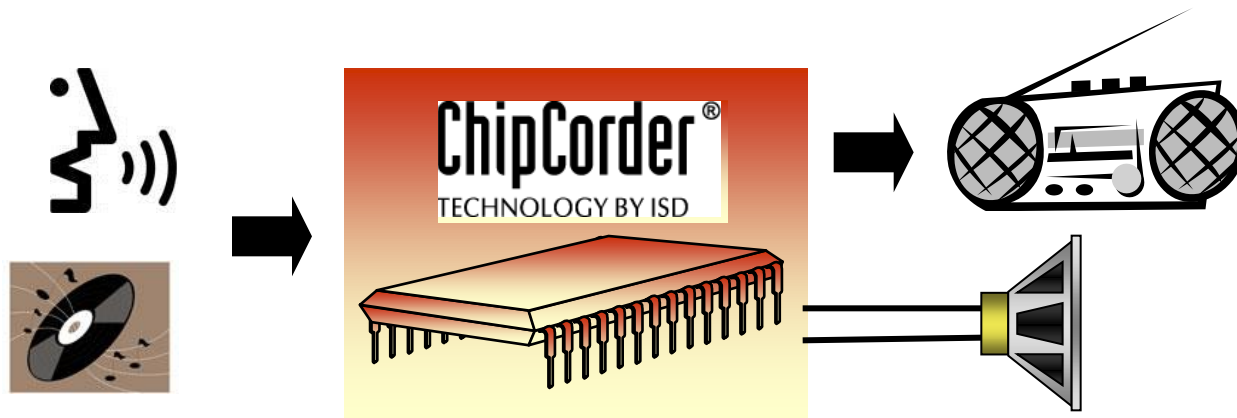
ChipCorder



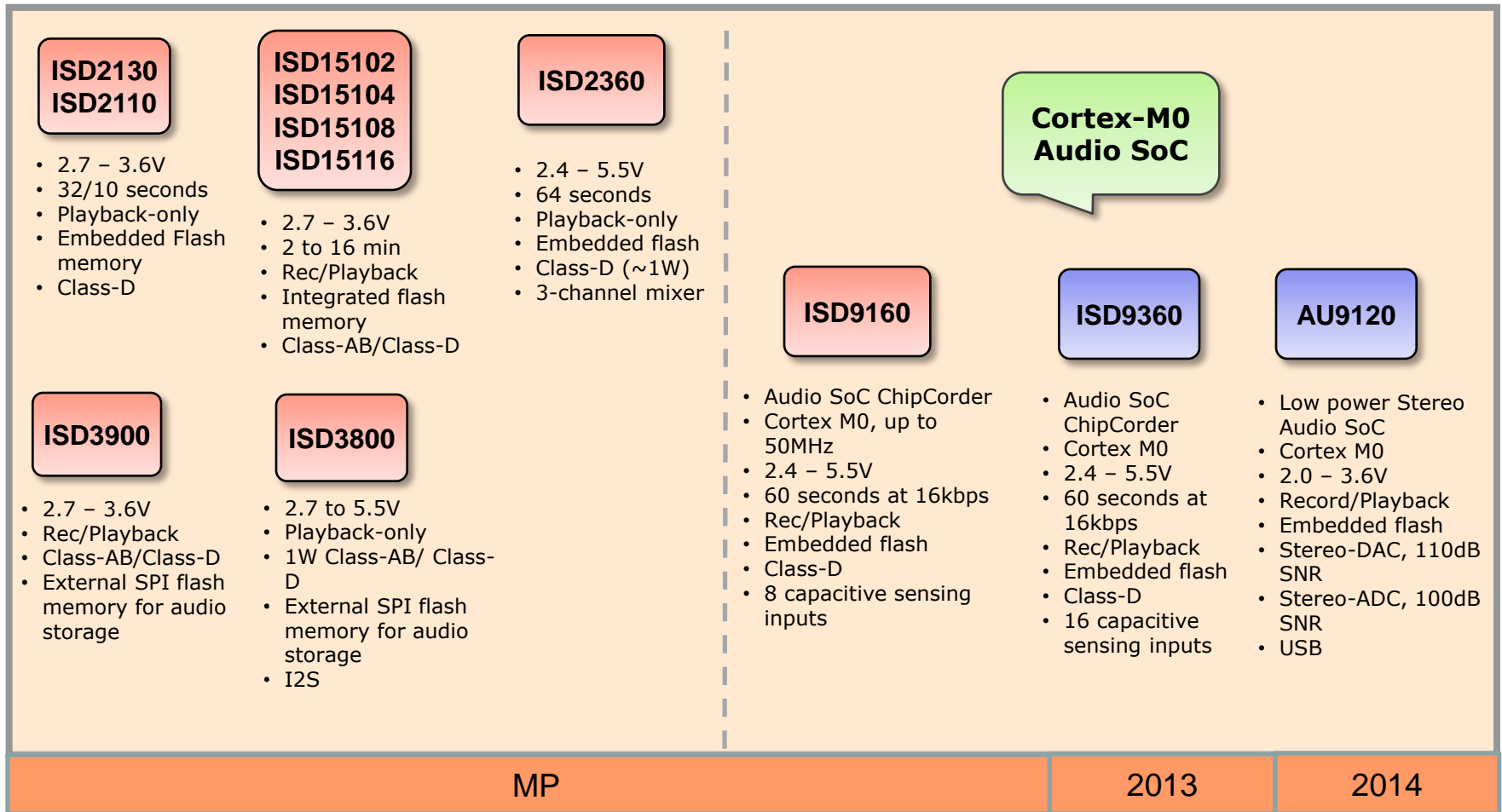
ChipCorder Introduction

- **What is ChipCorder?**

- A voice/audio re-producer – **Audio/voice feedback**
- A highly integrated voice/audio SOC – **Low BOM cost and Time-To-Market**
- Non-volatile storage – **Fast time programming and it memorizes**



Digital ChipCorder Product Portfolio



 In Production

 In Design

ChipCorder - AEC-Q100 for Automotive

ISD15C00

- 2.7 – 3.6V
- Record/Playback
- Class-AB/Class-D
- External SPI flash memory for audio storage

ISD15D00

- 2.7 to 5.5V
- Playback-only
- ~1W Class-AB/Class-D
- External SPI flash memory for audio storage

 In Production

Analog MSL ChipCorder Product Portfolio

ISD4004
ISD4003
ISD4002

- 2.7 – 3.6V
- 2 – 16 Min
- Record/Playback
- Multi-message
- SPI
- AUX

ISD5116
ISD5108
ISD5104
ISD5102

- 2.7 – 3.6V
- 2 – 16 Min
- Record/Playback
- Multi-message
- I2C
- Class-AB, AUX, ANA

ISD17240
ISD17120
ISD1760
ISD1730

- 2.4 – 5.5V
- 20-480 sec
- Record/Playback
- Multi-message
- SPI/Trigger input
- Class-D

ISD1810
ISD1806

- 2.7 – 4.5V
- 8/10 sec
- Record/Playback
- Single-message
- Trigger input
- Class-AB

ISD18A04

- 2.4 – 5.5V
- 4 sec
- Record/Playback
- Single-message
- Trigger input
- Class-AB

ISD18B24
ISD18B12

- 2.4 – 5.5V
- 12/24 sec
- Record/Playback
- Single-message
- Trigger input
- Class-AB

ISD1620B
ISD1616B
ISD1612B
ISD1610B

- 2.4 – 5.5V
- 7-40 sec
- Record/Playback
- Single-message
- Trigger input
- Class-D

ISD1964
ISD1948
ISD1932
ISD1916

- 2.4 – 5.5V
- 16 - 64 sec
- Record/Playback
- Multi-message
- Trigger/Address input
- Class-D

 In Production

ChipCorder - Audio Interface



Wall oven



Cook top



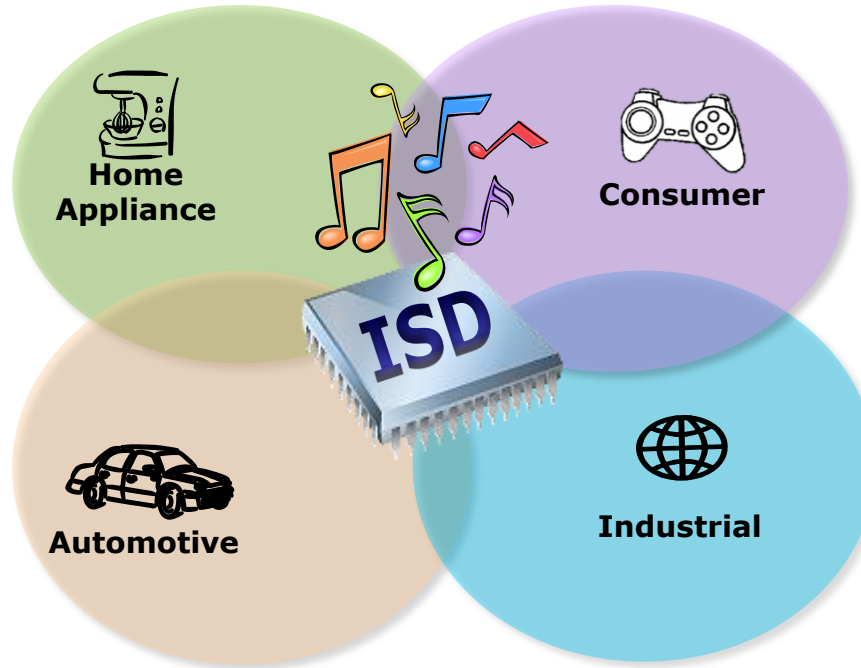
Gaming headset



Greeting card



Refrigerator



Baby Monitor



Glucose meter



Audio/voice alerts



HMI



Smoke/CO detector



Security panel



Intercom, entrance control

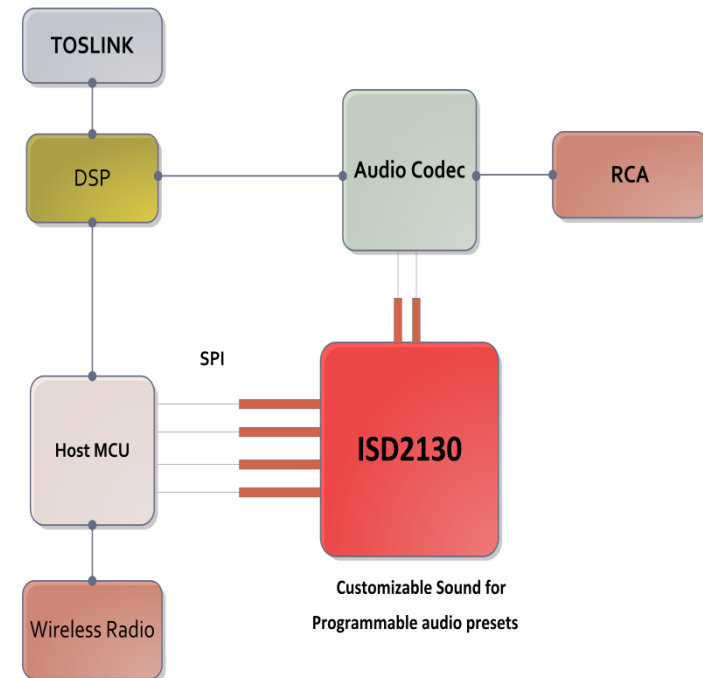
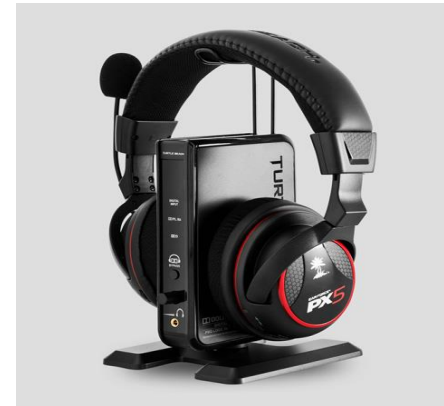
Wireless Gaming Headphones

■ Application Requirement

- Low cost, low power single Chip audio storage device up to 30s for preset game settings, volume control, Low battery warning, Bluetooth pairing, PS3 mode, Xbox mode etc...

■ Why selected ISD

- Multiple language without changing firmware.
- Extremely low current consumption when the device is not active < 1u amp
- Excellent Audio quality
- Excellent field support
- Nuvoton ChipCorder not only provides versatility for reprogramming and highest audio quality, but also provides helpful audio guidance storage



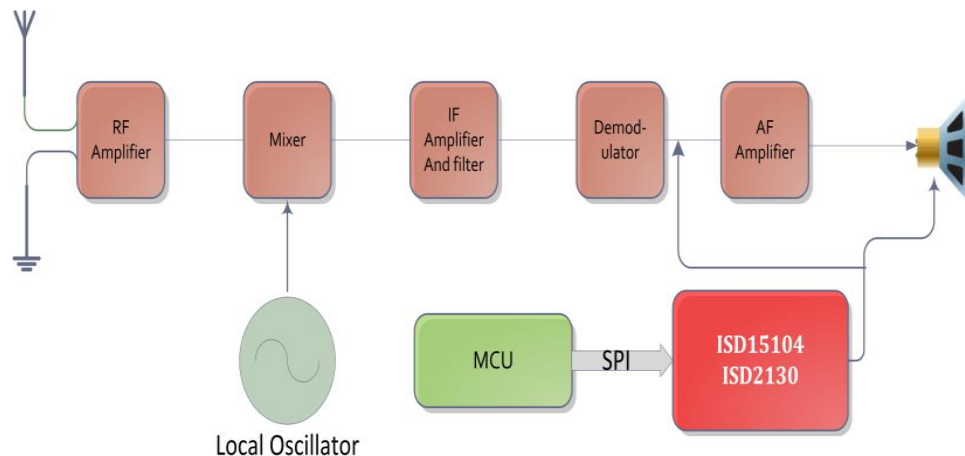
Two-Way Radio

■ Application Requirement

- Business Two Way Radio is to improve productivity – efficient communication with on-the-go workforce like restaurants, retail/department stores, warehouses, fire fighters, hospitals, etc...
- Voice guidance for system setup and user manual – save employee training cost
- Real time recoding for message replay

■ Why ISD

- ChipCorder provides excellent audio quality
- Multiple language without changing firmware.
- Single Chip with integrated PWM driver
- Quickly provided with demo boards



Smoke & Carbon Monoxide Alarm with Voice & Location

■ Application Requirement

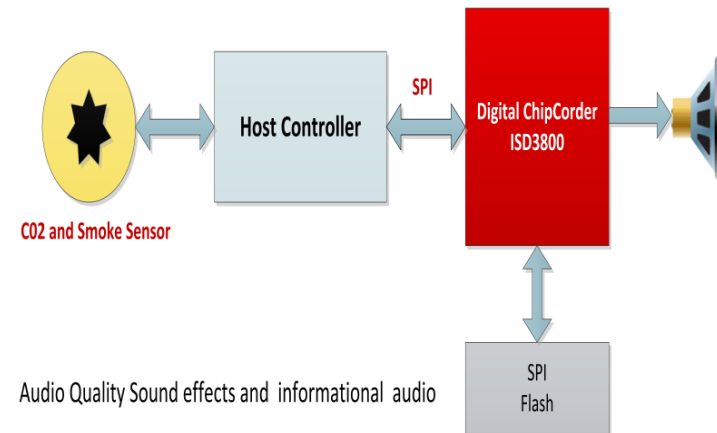
- The Combination Smoke & Carbon Monoxide Alarm with Voice & Location is easy to program with 11 pre-programmed home locations. The voice alarm not only tells you what part of the home is in danger, but whether the danger is smoke or carbon monoxide.



■ Why Selected ISD

- IS3800 can store up to 64 Min of audio for Multiple language without changing firmware.
- Excellent Audio quality
- One Watt speaker driver for loudness.
- Nuvoton ChipCorder not only provides versatility for reprogramming and highest audio quality, but also provides **helpful audio guidance storage**.
- Extremely low current consumption when the device is not active < 1u amp

Combination Smoke & Carbon Monoxide Alarm



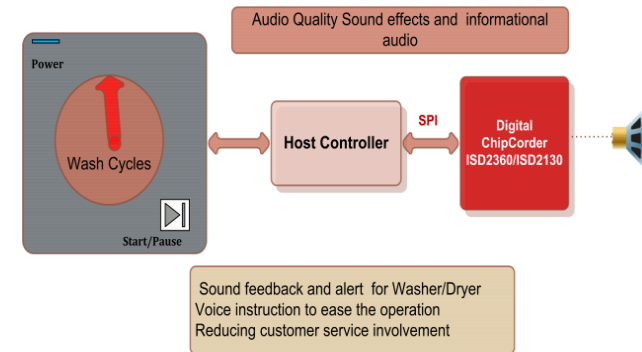
Washer/Dryer

■ Application Requirement

- Audio quality sound alerts for laundry cycles, power-up and power-down
- Sound logo make brand name not only visually, but also acoustically distinctive, and thus more quickly recognizable

■ Why selected ISD

- Enable customers to differentiate products with “audio trademark”
- Single-chip audio grade storage device
- Easy to use development kit and excellent field support
- In circuit re programmability (Flash memory for multi language)
- Simple SPI commands to play sound effects



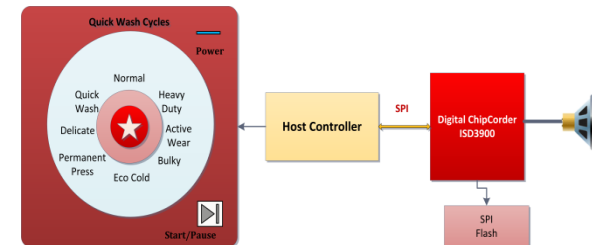
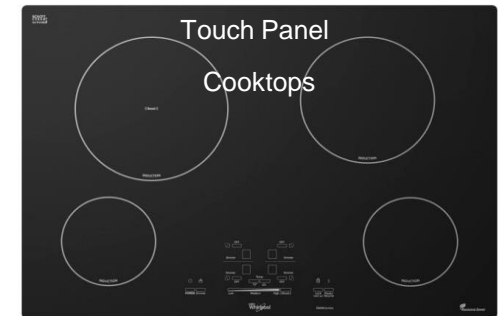
Cooktops

■ Application Requirement

- Audio quality sound alerts.
- Multi language reprogramming to address different markets such as South America, Europe.

■ Why selected ISD

- ISD3900/ISD3800 supports external SPI flash which enables customer to change voice prompts language without changing firmware. Same MCU code is used for different languages across all product platforms.
- Audio storage up to 64 Minutes
- VPE, easy to use click and configure Voice prompt editor.



Sound feedback and alert for Washer/Dryer
Voice instruction to ease the operation
Reducing customer service involvement

Audio Quality Sound effects and informational audio

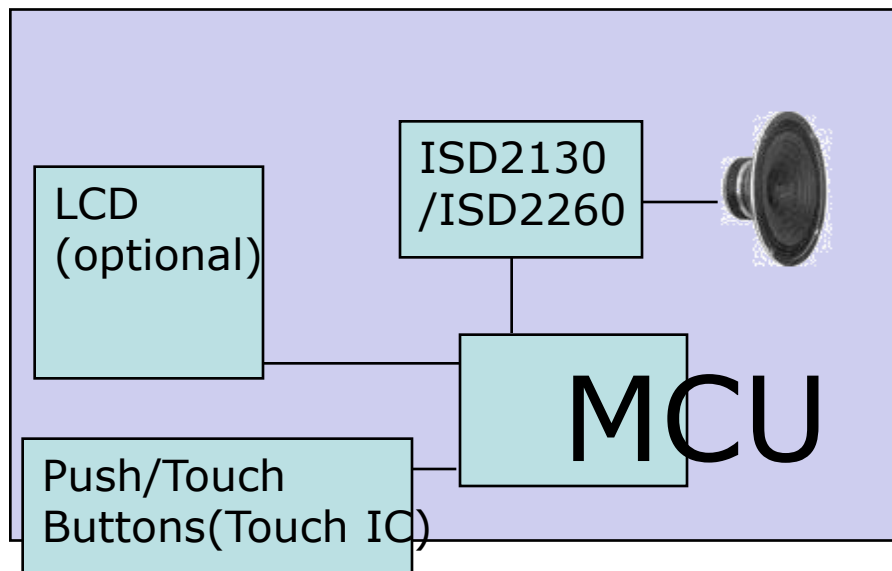
Rice Cooker, Pressure Cooker, Kettle

■ Application Requirement

- Single chip 30/60 seconds playback
- Up to 1 watt loud speaker driver

■ Why ISD

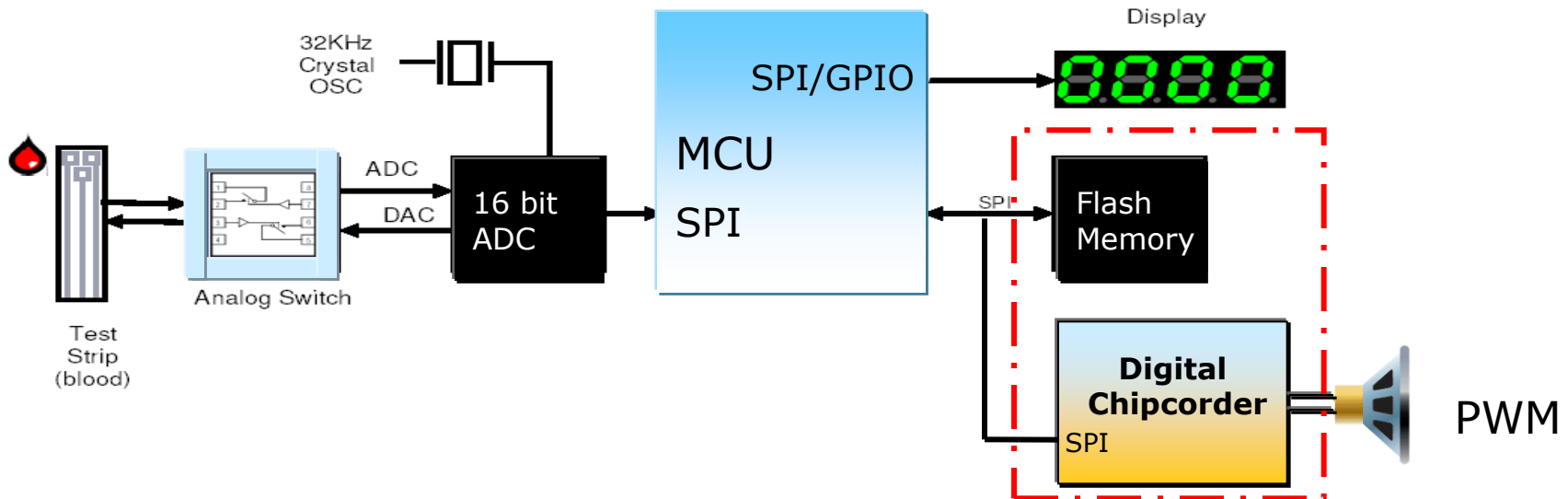
- Easy and fast programming – embedded flash memory
- Better audio quality and performance



Digital ChipCorder Applications

Talking Glucose Meter

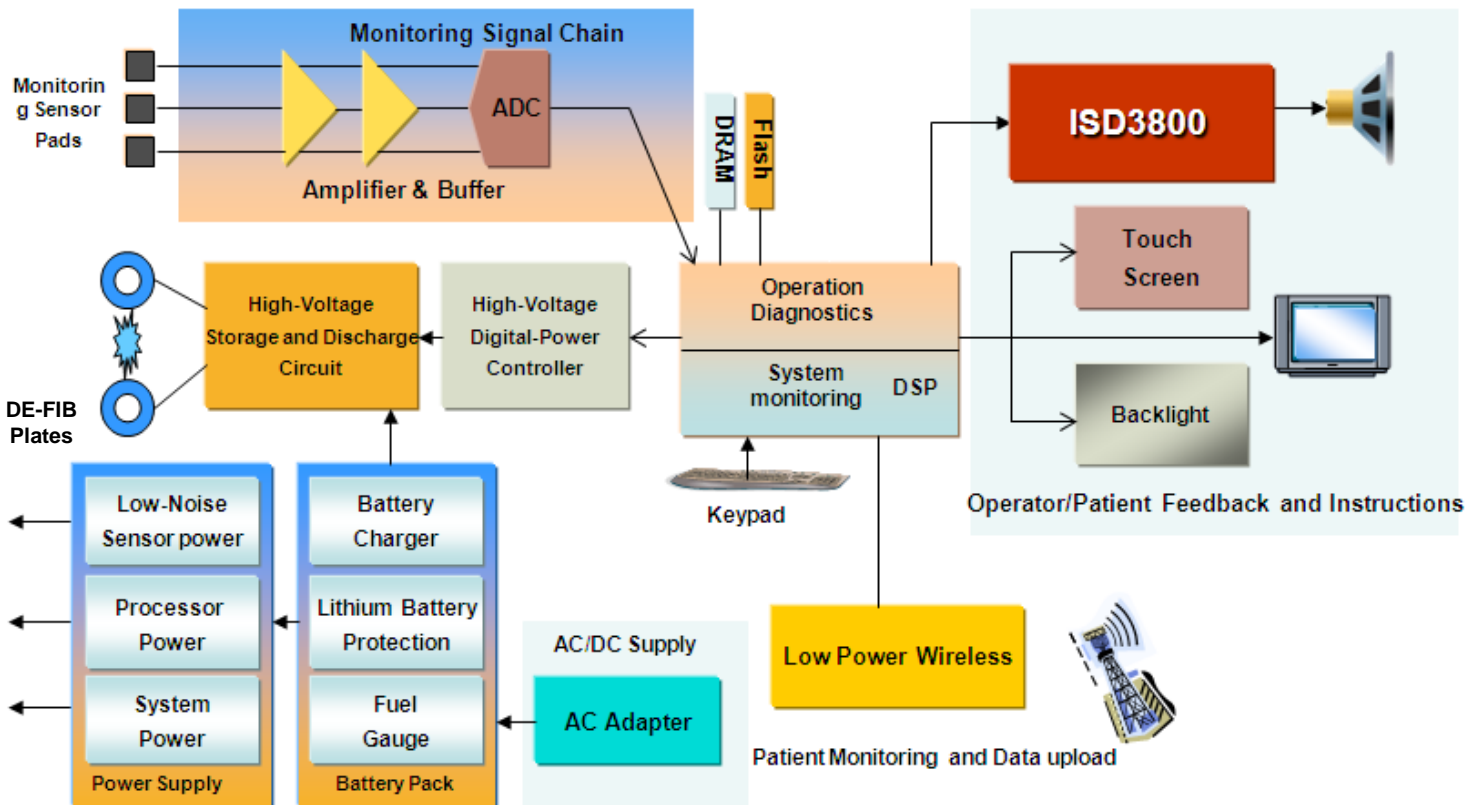
Add Voice capability with Digital ChipCorder for multi-languages with In-System-Programming (ISP) capability



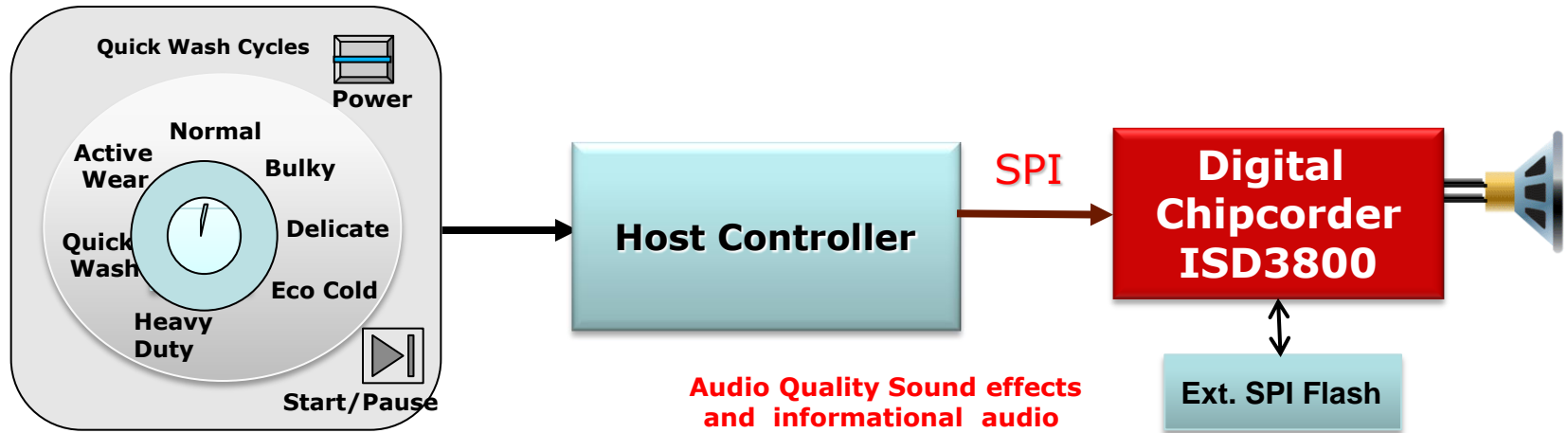
Digital ChipCorder Applications

AED Playback-only

ISD3800 will replace, Codec, Power Amp (1W), Audio amps, dedicated processor and off loads CPU time by as much as 20%-40%

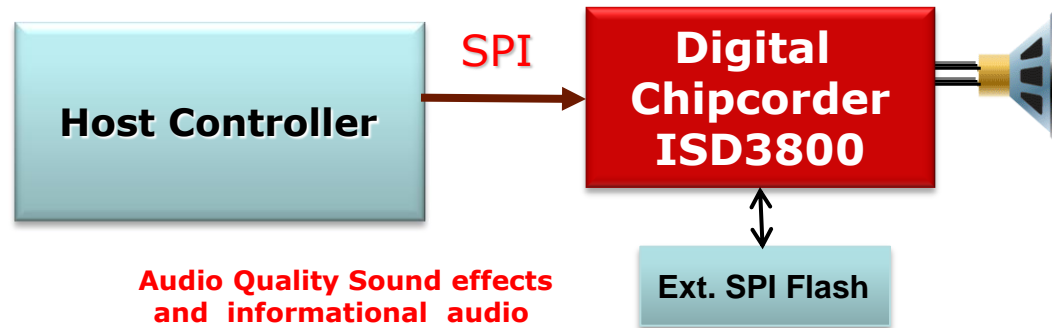


ChipCorder for Washer



- Sound feedback and alert
- Voice instruction to ease the operation
- Reducing customer service involvement

ChipCorder for Refrigerators



- Voice alert to remind user to close the door, if the door has been left open for long time
- Voice alert to remind user to replace the water filter and provide ordering phone number
- Commercial refrigerator can play corporate audio logo for promotion when user opens the door

Development Tools

Part Number	Feature	Availability
ISD-ES_Mini_USB	USB Programmer for Digital ChipCorder demo board – ISD2100, ISD15C00/ISD3900, ISD15D00/ISD3800	Now
ISD-DEMO2100_Q	ISD2100 demo board with interface to ISD-ES_Mini_USB	Now
ISD-ES2100_MINI_PROG_Q	ISD2100 QFN single socket programmer board	Now
ISD-DEMO3800	ISD3800 demo board with interface to ISD-ES_Mini_USB	Now
ISD-DEMO3900	ISD3900 demo board with interface to ISD_ES_Mini_USB	Now
ISD-DEMO2360_Q	ISD2360 demo board with interface to ISD-ES_Mini_USB	Now
VPE	Voice Prompt Editor, a software tool for Digital ChipCorder project development.	Now

ISD-ES_Mini_USB



USB Programmer

ISD-DEMO2100_Q



SPEAKER

ISD-DEMO3800



ISD-DEMO3900

