Audio ADC Overview

Audio Portfolio

Texas Instruments' complete line of audio products feature over 2000 devices within our DAC, ADC, CODEC, AMP, Line driver, Interface, USB Audio, and other product families.

ADC

HW / SW Controlled

1.8-3.3-5V Power

Audio PLL

Energy Sense

#ADC	1-4
SNR	92-123dB
PWR	17-600mW

Packages: 5.3 - 144mm^2

1K: $0.80 - $8.55

AMP

Stereo/Mono
Class AB & D w/Boost

Analog Input

Low Power options w/ PurePath™

Inputs	1-6
Output Power	0.35-400W

Packages: 2 - 517mm^2

1K: $0.26 - $10.75

CODEC

Power and Performance Optimized

Integrated Amplifiers

Integrated DSP

#ADC/DAC	0-6 / 1-8
ADC/DAC SNR	72-112dB
PWR	6.7mw +

Packages: 7.8 - 170mm^2

1K: $1.23 - $19.25

DAC

Current Output, Voltage Output, 2VRMS Output, Delta Sigma
Integrated Amplifiers

DSP integration

#DAC	1-8
SNR	92-127dB
THD (%)	0.0004-0.04

Packages: 6.4 - 144mm^2

1K: $0.89 - $11.18

Smart AMP

Low and Mid Power Amplifiers with Smart Speaker Protection

Integrated IV Sense, Excursion and Temp sensing options

Output	7.5 – 50W
PSRR	75 dB
Inputs	Analog/Dig.

Packages: 7.5 - 76mm^2

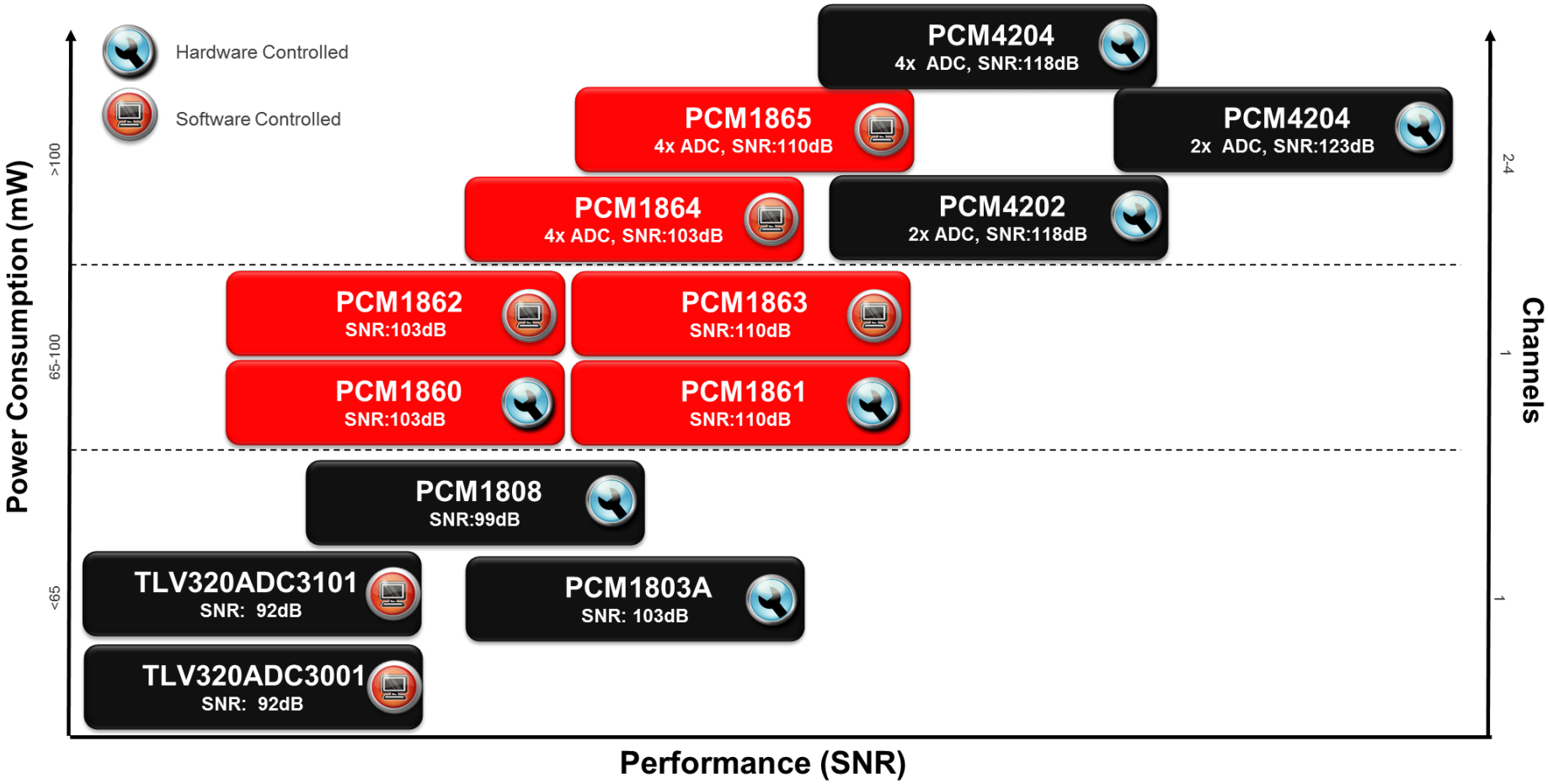
1K: $1.39 - $3.75

Audio ADC Features

- **Power and Performance Optimized Solutions**
  - **<65mW operation**
  - **Up to 123dB Signal to Noise Ratio**
- **Mono, Stereo, Multiple ADC**
  - **From 1 to 4 ADC instances**
- **Flexible inputs/outputs**
  - **Up to 8 inputs / 2 outputs**
- **Designed for European EcoDesign Directive**
  - **EnergySense for sleep/resume**
- **Numerous Integrated features**
  - **PGA, Clipping Suppression, PLL**
- **Multiple packaging options**
  - **as small as 16mm2**
  - **TQFP & TSSOP**

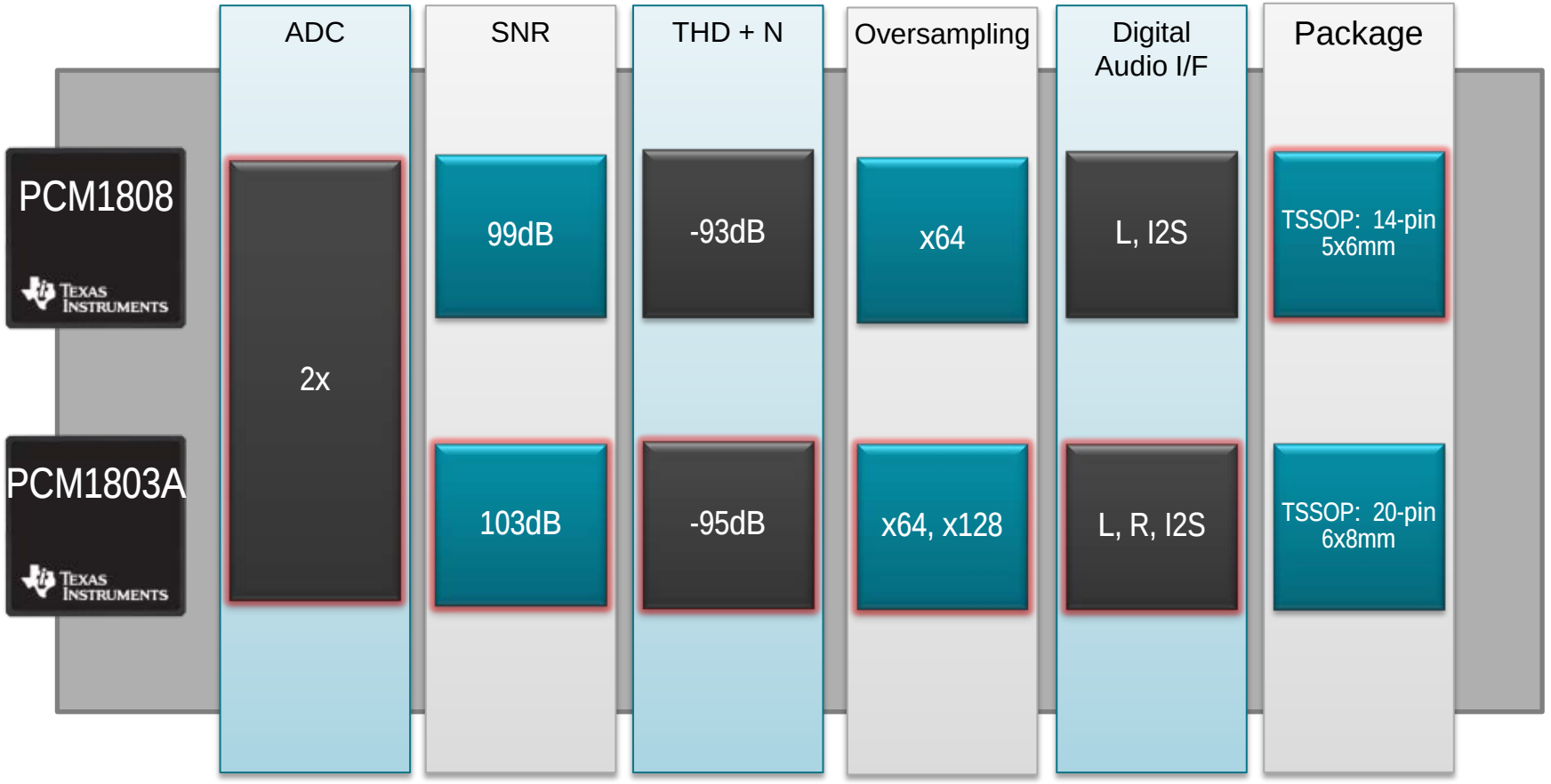
EXISTING NEW ROADMAP

Audio ADCs



Additional ADC solutions are available. These are our most popular!

PCM180x Series



PCM180x

24-bit, 96-kHz Stereo ADC

Features

- 2x 24-bit Sigma Delta ADCs
  - SNR: Up to 103dB / THD + N: up to -95dB
- Single-Ended analog voltage input
- Integrated decimation, anti-aliasing low-pass and high-pass filters
- System clock halt
- Slave/Master audio interface capable

Benefits

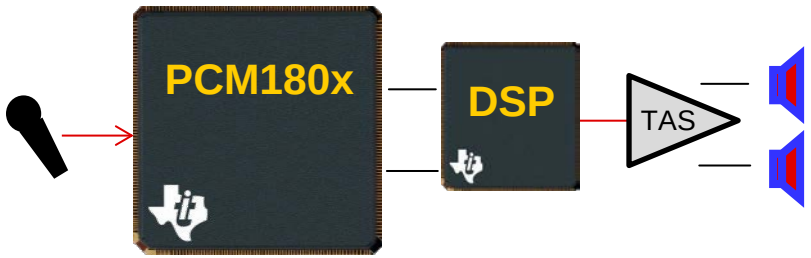
- High performance audio
- Helps remove the dc component of the input signal
- Power-down / Reset Functions
- Suitable for multiple applications

Applications

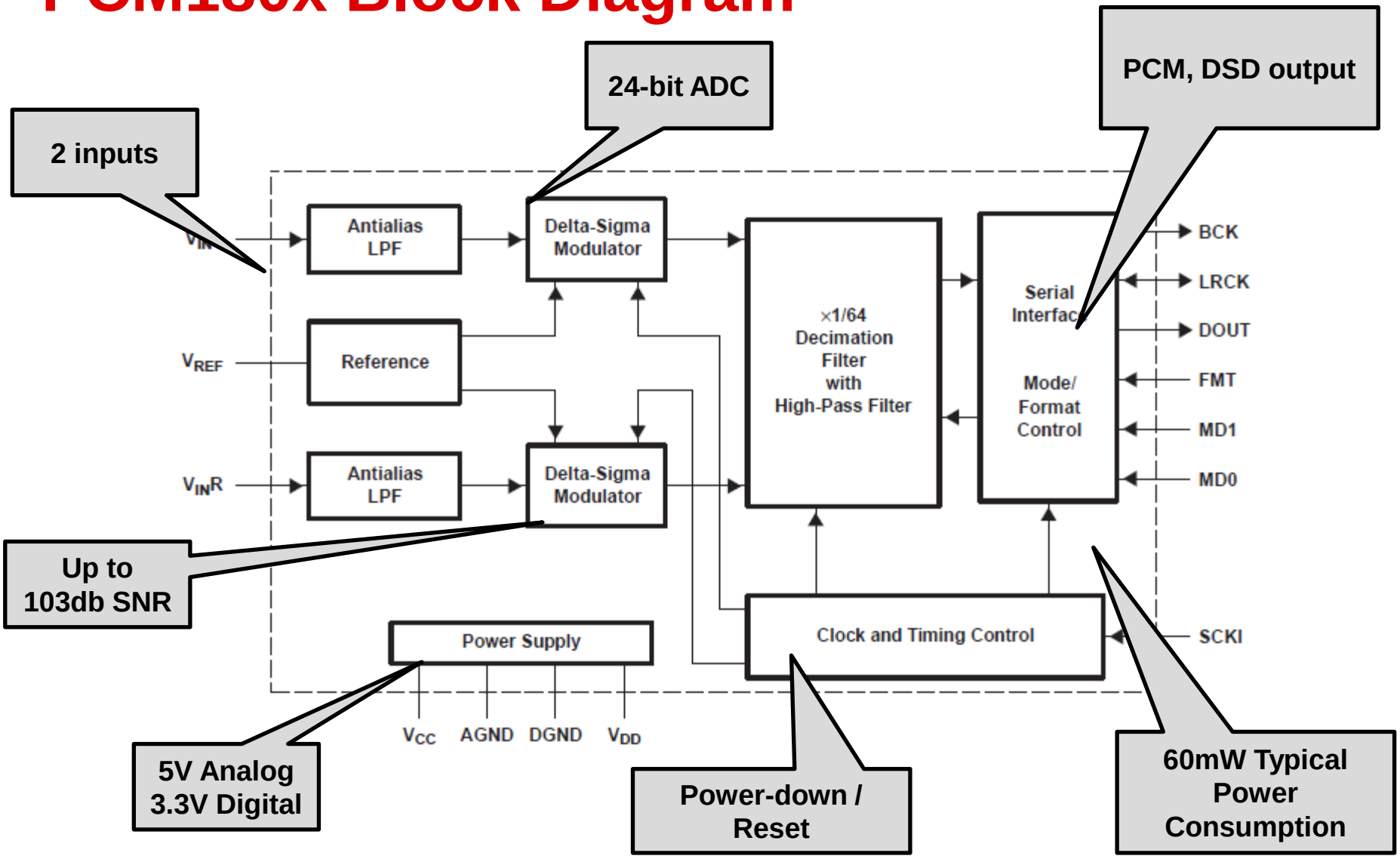
AV Amplifier/Receiver

Musical Instruments

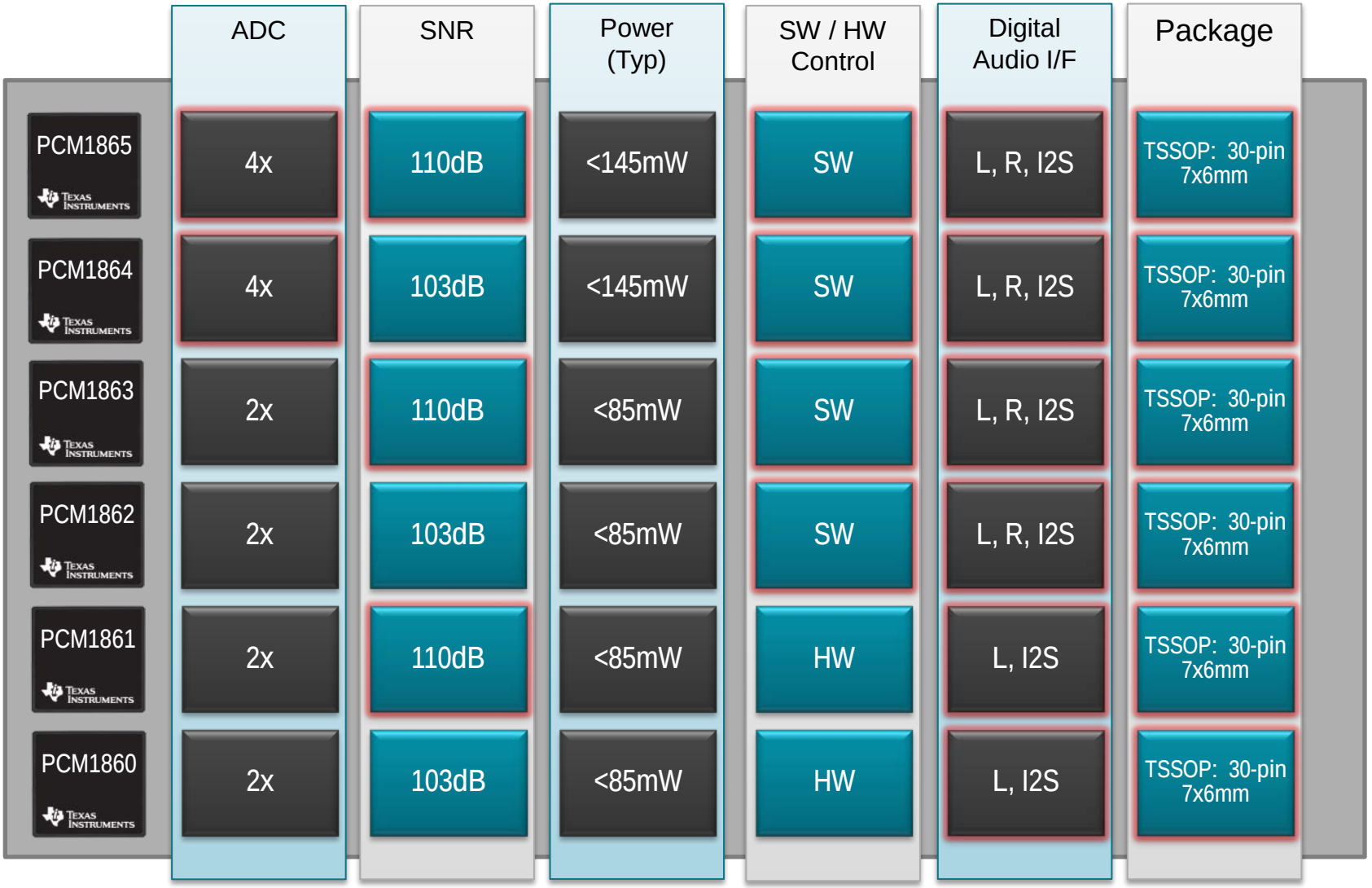
Television



PCM180x Block Diagram



PCM186x Series



PCM186x

Highly Integrated, High Performance ADC

Features

- 4x Stereo Analog Mux
  - Integrated Mic Input and Line input PGA (PCM1862/3)
  - Mic into 2VRMS direct inputs option
- EnergySense, Autopowerdown & Wakeup
- XTAL, MCLK or BCK clock source for slave or master mode
- Integrated PLL provides audio master clocks for entire system
- Up to 110db Dynamic Range in p/p packages
- Footprint compatible

Benefits

- No need for external mux's
- Integrated Signal Conditioning

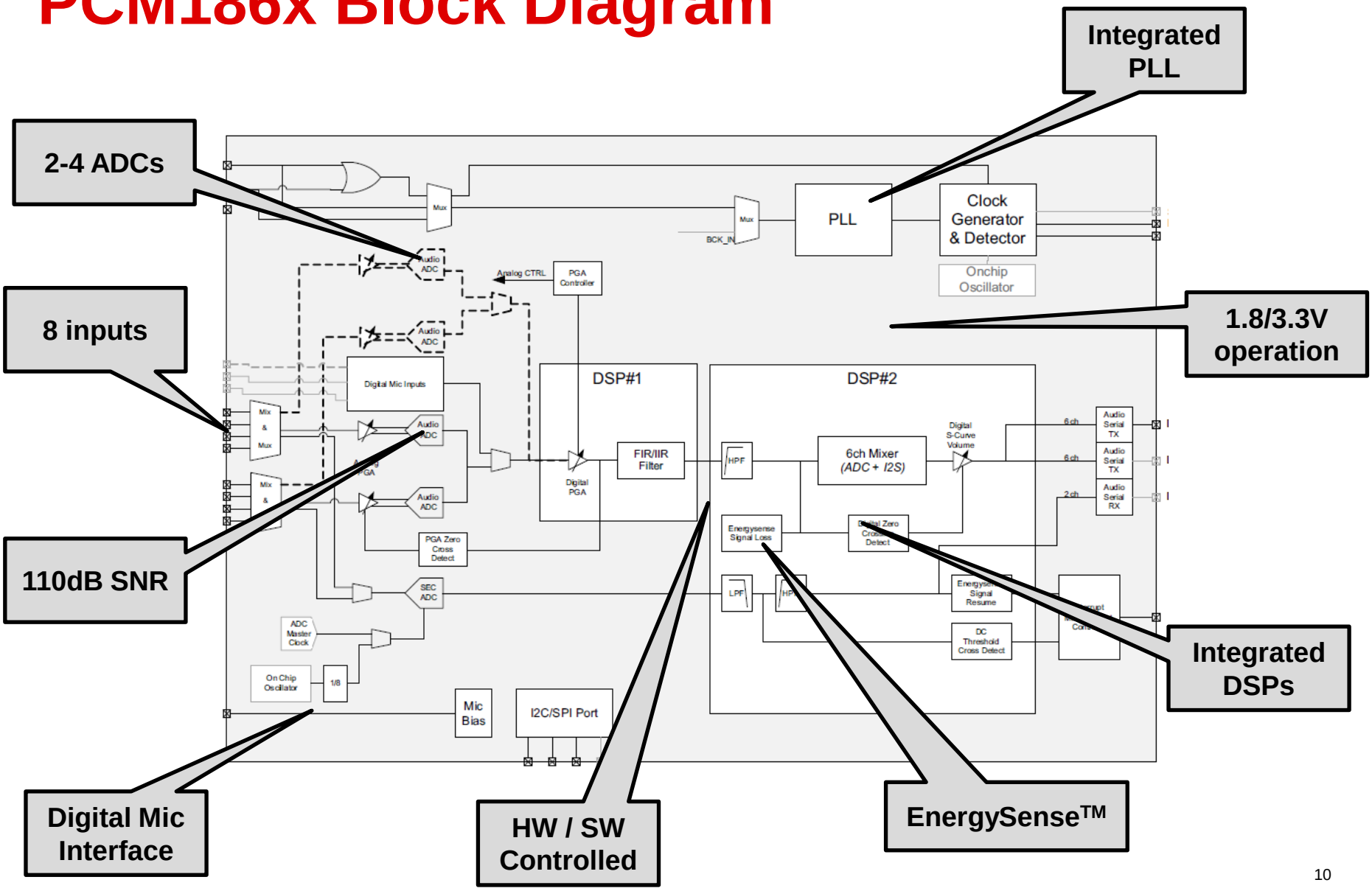
- Monitor inputs when in shutdown. GPIO interrupt output to wake system host and amplifiers.
- No need to layout high speed clocks on the PCB (e.g. 24.567MHz).
- Drop in a Bluetooth Modules into a design easily, even those without MCLK!
- Single PCB design, multiple product spins

Applications

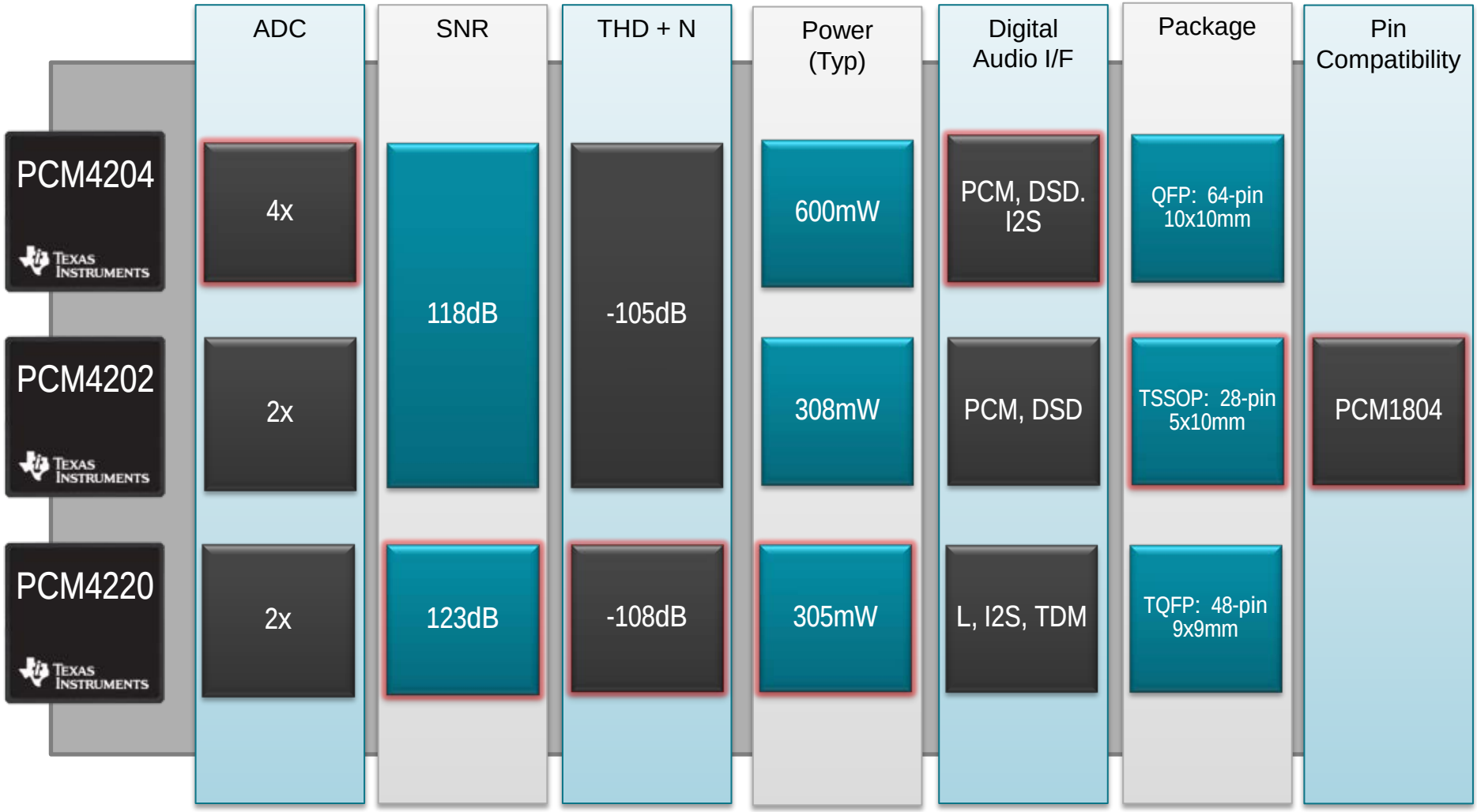
- Mini/Micro Component Systems
- iPod Dock & PC Speaker
- Automotive Head units

Device	# of Channels	SNR	H/W or S/W Control
PCM1860	2	103dB	H/W
PCM1861	2	110dB	H/W
PCM1862	2	103dB	S/W
PCM1863	2	110dB	S/W
PCM1864	4	103dB	S/W
PCM1865	4	110dB	S/W

PCM186x Block Diagram



PCM42x Series



PCM420x Series

High Performance ADC Family

Features

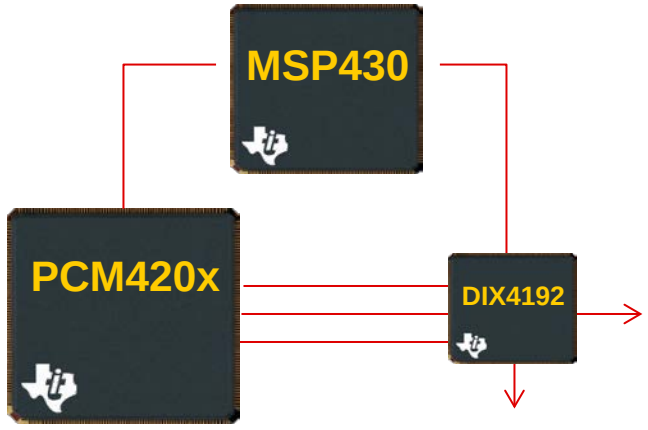
- 2 or 4 1-bit Delta-Sigma ADCs
- 118dB SNR DACs
- DSD & PCM outputs
- Pin Compatibility w/ 1804 (PCM4202)

Benefits

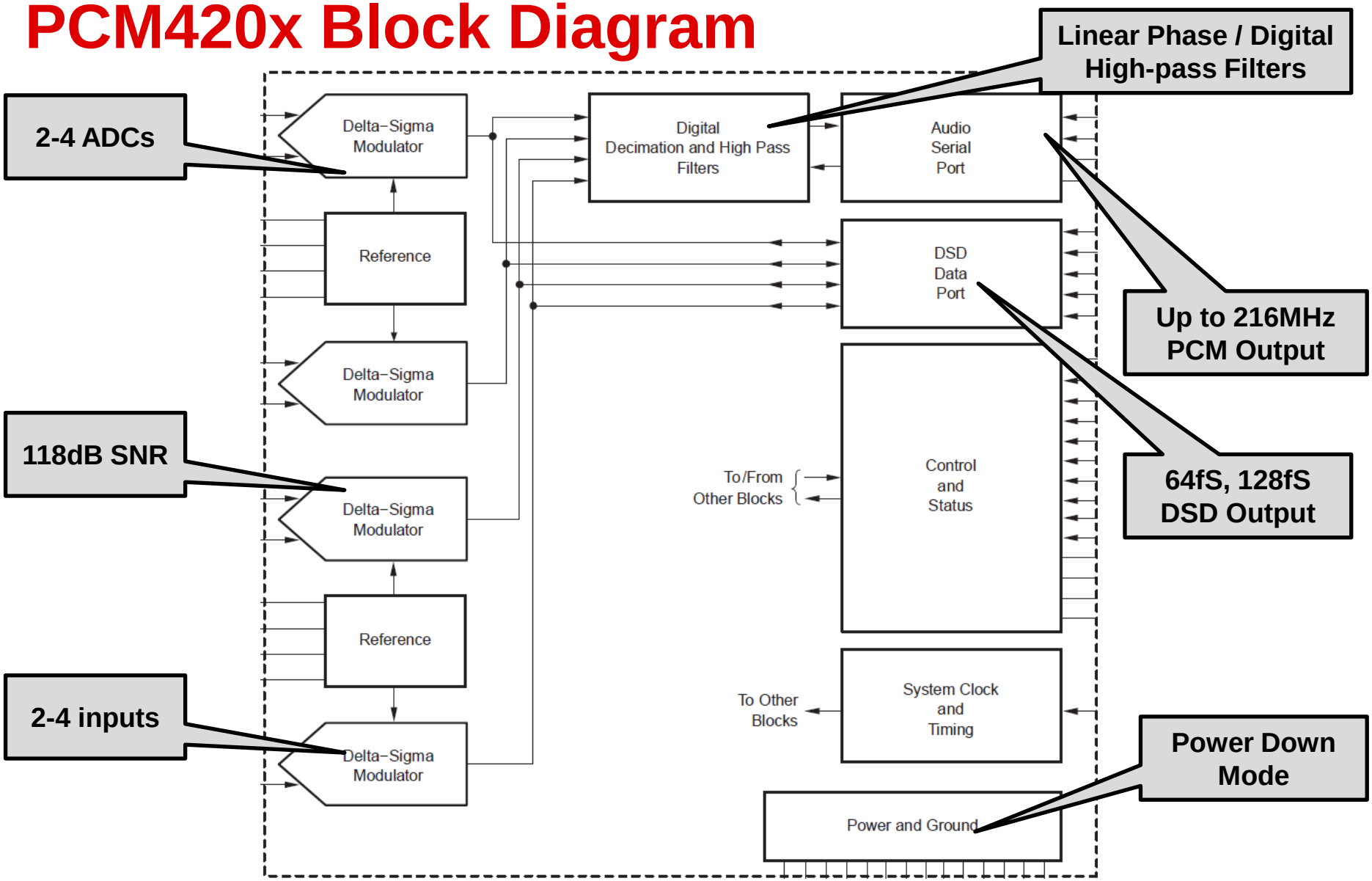
- Solutions to fit enhanced requirements
- Highest performance ADCs
- Compatibility with high performance audio applications
- Easy migration path

Applications

- Digital Mixing Consoles
- Digital Audio Recorders
- Broadcast Studio Equipment
- Audio Processors
- Synths and Keyboards



PCM420x Block Diagram



PCM4220

High Performance / Low Power ADC

Features

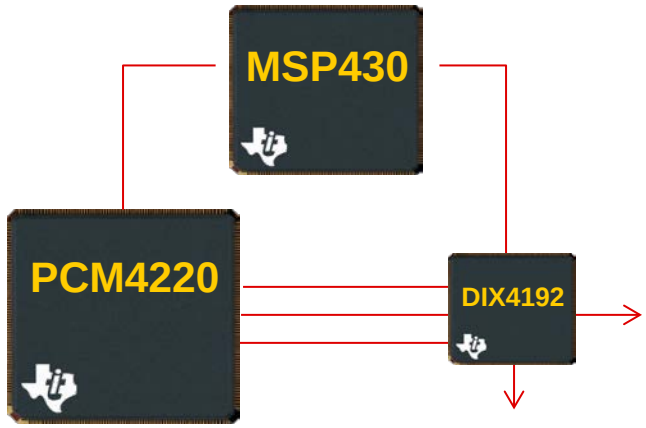
- 2x Delta-Sigma ADCs with 123dB SNR
- TDM Functionality
- Only 305mW Power Dissipation
- H/W Selectable Digital Filters

Benefits

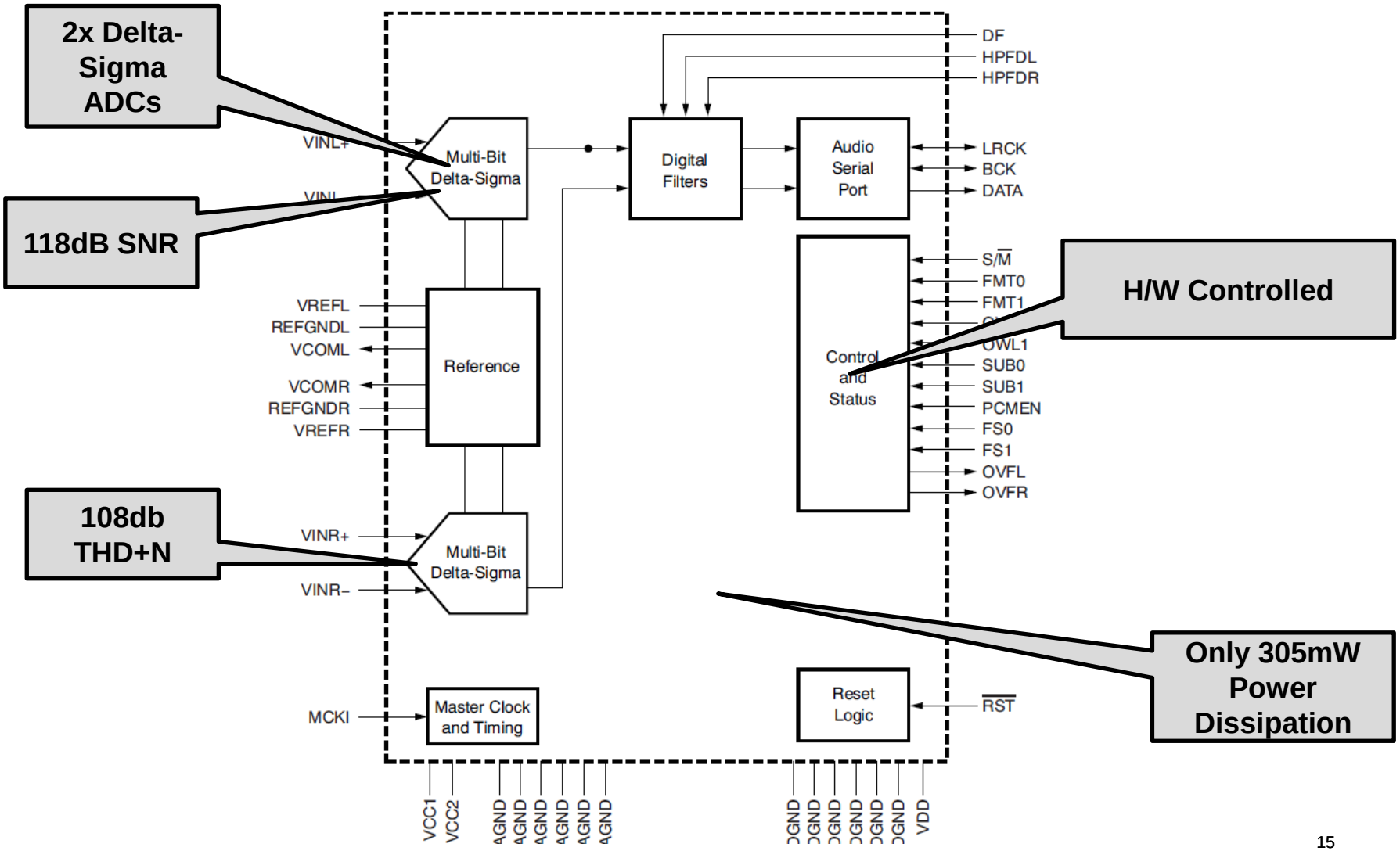
- Highest SNR ADC performace
- Easy to connect multiple instances of PCM4220
- High Performance/Low power
- Configurable for either highly linear or low latency filters

Applications

- Digital Mixing Consoles
- Digital Audio Recorders
- Broadcast Studio Equipment
- Audio Processors
- Synths and Keyboards



PCM4220 Block Diagram



R-E-D TODAY!

Research

www.ti.com/audio - Learn about all our audio products

Parametric Search – Intuitive comparison tool

Audio Selection Tool – Let us help narrow your options

Technical Documents – Datasheets, package info, etc

Evaluate

EVM & Development Kits – Low cost, easy to use

PurePath Software – No Hassle, free software

Training videos – 24/7, anytime, anywhere

End Equipment Block Diagrams – TI Companion devices

Design

Audio Reference Designs –schematics, gerbers, etc.

Free Samples – Try before you buy (qty limits)

Models & Tools – IBIS, symbols, calculators and more

E2E Forum – Get support from TI experts & community

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