

SEE
THE **FUTURE.**
CREATE YOUR OWN.

**TURNKEY
SOLUTION FOR
A/V RECEIVER
BASED ON TI PA
DSP**



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Agenda

- ◆ **Performance Audio DSP**
- ◆ **3 Parts of Total Solution**
- ◆ **User Interface**
- ◆ **Q&A**

Aureus™ 32/64b DSP family

Cost



DA605, DA607

**Low-Mid end cost
driven systems**

Single DSP for
decoders, post
processing & custom
features like room
correction

Cooler Features *First*
MultEQ Multi-Listener Room-EQ
ProLogic II x
High Speed Encode

Ease of Use
Complete S/W system
Easy to add features
Extensible Framework
Best-in-Class Tools
C/C++ Efficiency

Low BOM
Minimal off chip Req't
SW image in device ROM
Flexible peripherals

Performance



DA601, DA610

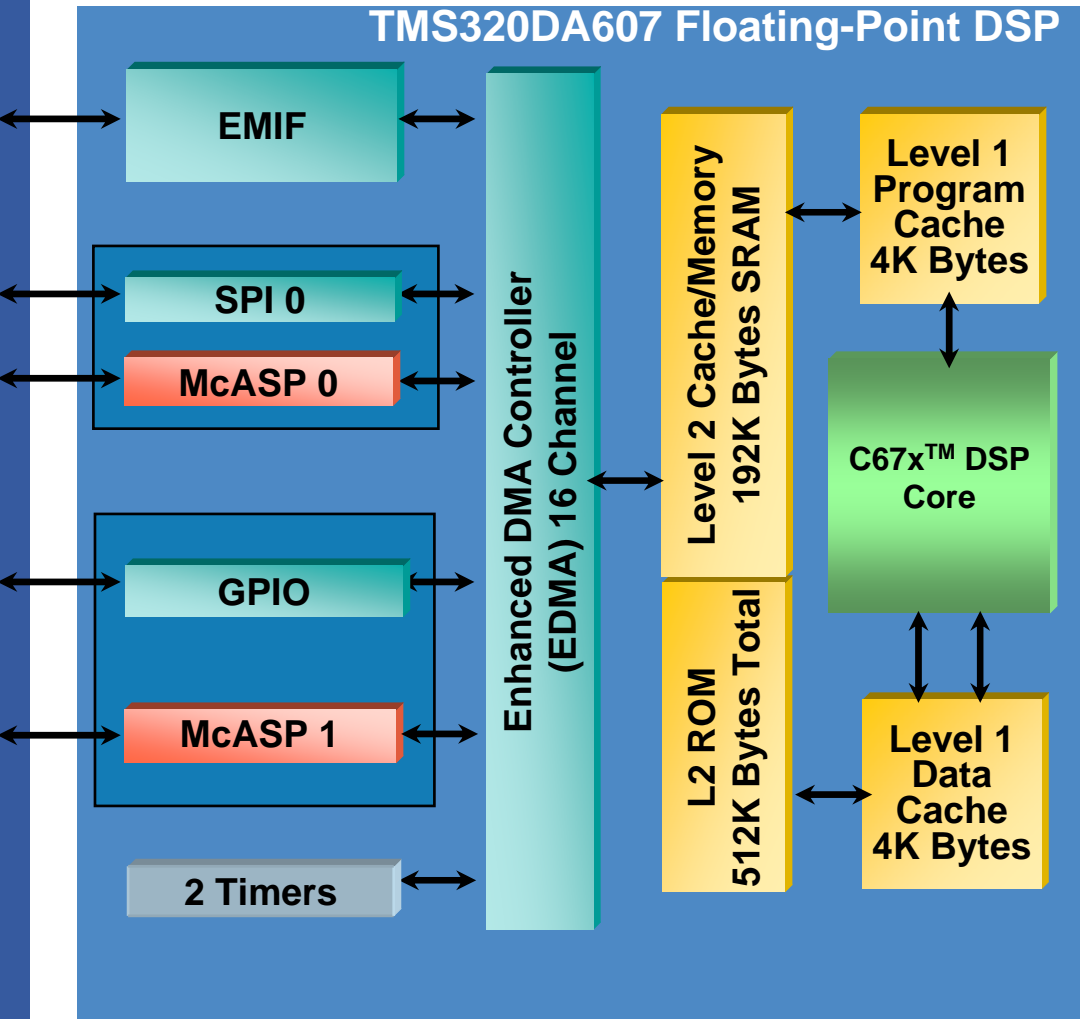
**Mid-High end
performance
driven systems**

Dual Zone,
advanced room
correction, speaker
virtualization

TI C67x Floating-point DSP

- ◆ **C6000 family : TI's highest performance DSP family**
 - **C62x: first family, 16-bit native, up to 2400MIPS(300MHz)**
 - **C67x: floating-point C6x, 32/64-bit, up to 2400MIPS(300MHz)**
 - **C64x: high-end fixed-point, 32x16-bit native, up to 8000MIPS(1GHz)**
- ◆ **C67x Floating-point VelociTI DSP**
 - **Up to 2000MIPS/1500MFLOPS performance**
 - **32/64-bit single/double-precision DSP**
 - **VelociTI: maximum parallelism with good code density. (8 instructions/cycle)**
 - **C-compiler friendly architecture: easy to write efficient code**
- ◆ **Why Floating-point?**
 - **Higher precision/dynamic range : less MIPS requirement and higher quality**
 - **Easy to write code while maintaining output quality**
 - **Faster time-to-market**

TMS320DA607 Block Diagram



200 MHz DSP core

- | 200MHz /1600 MIPS/1200 MFLOPS
- | 32/64-bit native processing

Large on-chip memory

- | Large ROM houses industry standard algorithms
- | Increased RAM eliminates the need for costly external RAM

16-channel EDMA

Two new Multichannel Audio Serial Ports (McASP)

- | Up to 10 stereo channels of IIS
- | Up to 4 different clock rates
- | Compatible with S/PDIF transmit protocol

8-bit EMIF

1 SPI

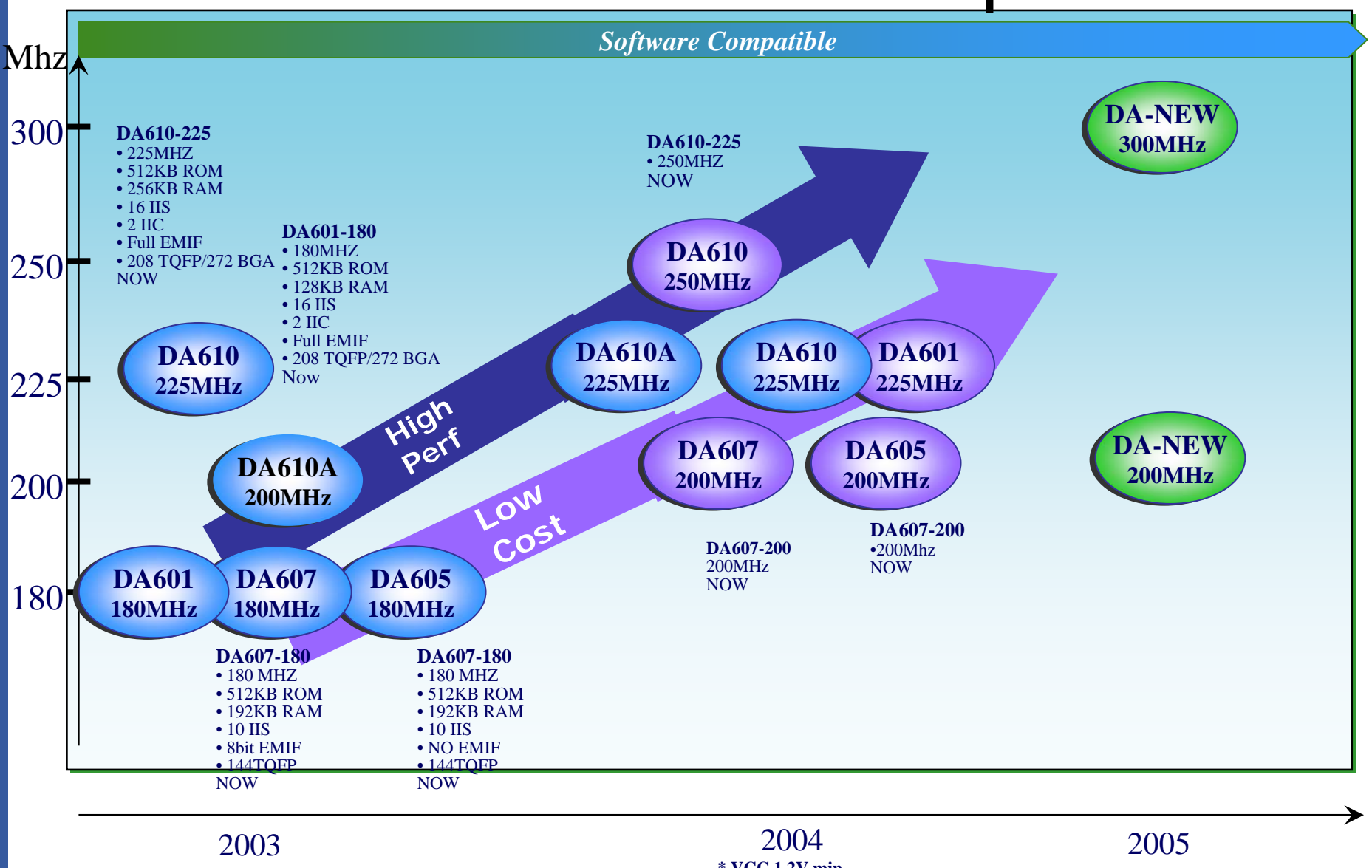
DA6xx Device Matrix

	DA610	DA601	DA607	DA605
Cpu Clk	225/250(1.26V)Mhz	225Mhz	200Mhz	200Mhz
EMIF Clk	100Mhz	100Mhz	100Mhz	N/A
EMIF bus width	32/16(QFP)	32/16(QFP)	8	0
ROM	512KB	512KB	512KB	512KB
RAM	256KB	128KB	192KB	192KB
Mem Arch	L1/L2	L1/L2	L1/L2	L1
McASP	2 (w/ DIT)	2 (w/ DIT)	2 (w/ DIT)	2 (w/ DIT)
McASP Data Pins	16	16	10	10
HPI	1	1	0	0
McBSP	2	2	1 (SPI)	1 (SPI)
I2C	2	2	0	0
GPIO	2	2	2	2
GPIO Pins	32	32	24	24
Timer	2	2	2	2
Timer Pins	4	4	0	0
Voltage	1.14-1.32v	1.14-1.32v	1.14-1.32v	1.14-1.32v
Temperature	Ta=0 to 70C Tj=95C	Ta=0 to 70C Tj=95C	Ta=0 to 70C Tj=95C	Ta=0 to 70C Tj=95C
Package	272PBGA/208TQFP	272PBGA/208TQFP	144TQFP	144TQFP
TMX Sample	N/A	N/A	Now	Now
TMS MP	Now	Now	Now	Now

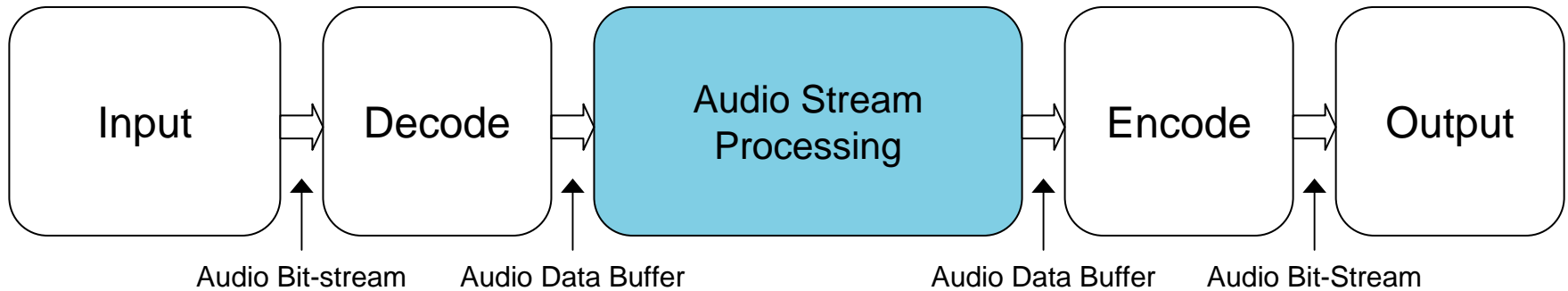
DA6xx MIPS for Algorithms

Algorithms	DA610	DA601	DA607	DA605
◀ Decoder ▶				
AC3	39MHz	39MHz	39MHz	39MHz
DTS	35MHz	35MHz	35MHz	35MHz
DTS-ES	39MHz	41MHz	40MHz	40MHz
DD-EX	42MHz	50MHz	42MHz	42MHz
DTS96/24	74MHz	78MHz	74MHz	74MHz
MP3	17MHz	21MHz	17MHz	N/A
AAC (LC)	34MHz	38MHz	35MHz	35MHz
WMA	17MHz	21MHz	17MHz	N/A
HDCD	50MHz	60MHz	70MHz	N/A
MLP	40MHz	48MHz	60MHz	N/A
◀ Post Processor ▶				
Dolby PL IIx	30MHz	30MHz	30MHz	30MHz
DH	75MHz	80MHz	90MHz	N/A
DVS	75MHz	80MHz	90MHz	N/A
DTS Neo:6	35MHz	42MHz	35MHz	35MHz
THX Ultra 2	26MHz	39MHz	52MHz	N/A
Up-Sample(96kHz)	15MHz	18MHz	21MHz	N/A
Down-Sample(192kHz)	21MHz	26MHz	32MHz	N/A

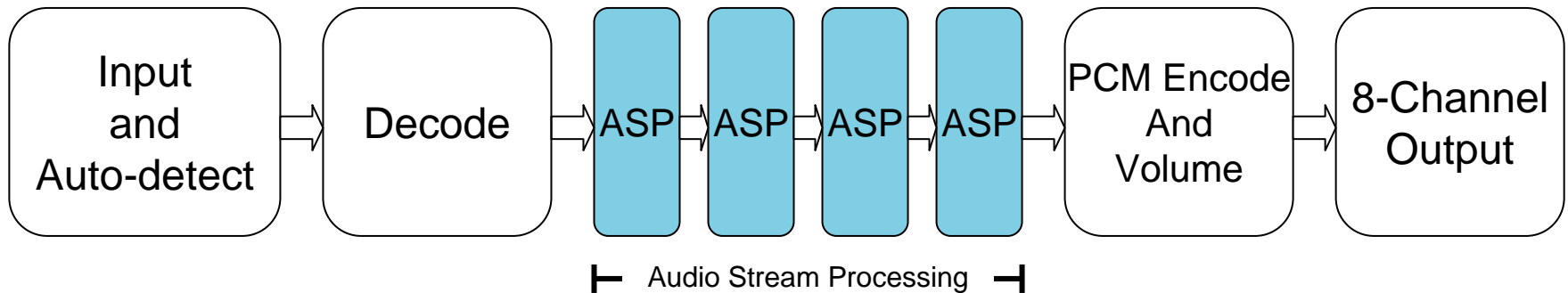
Silicon Roadmap



PA Block Diagrams

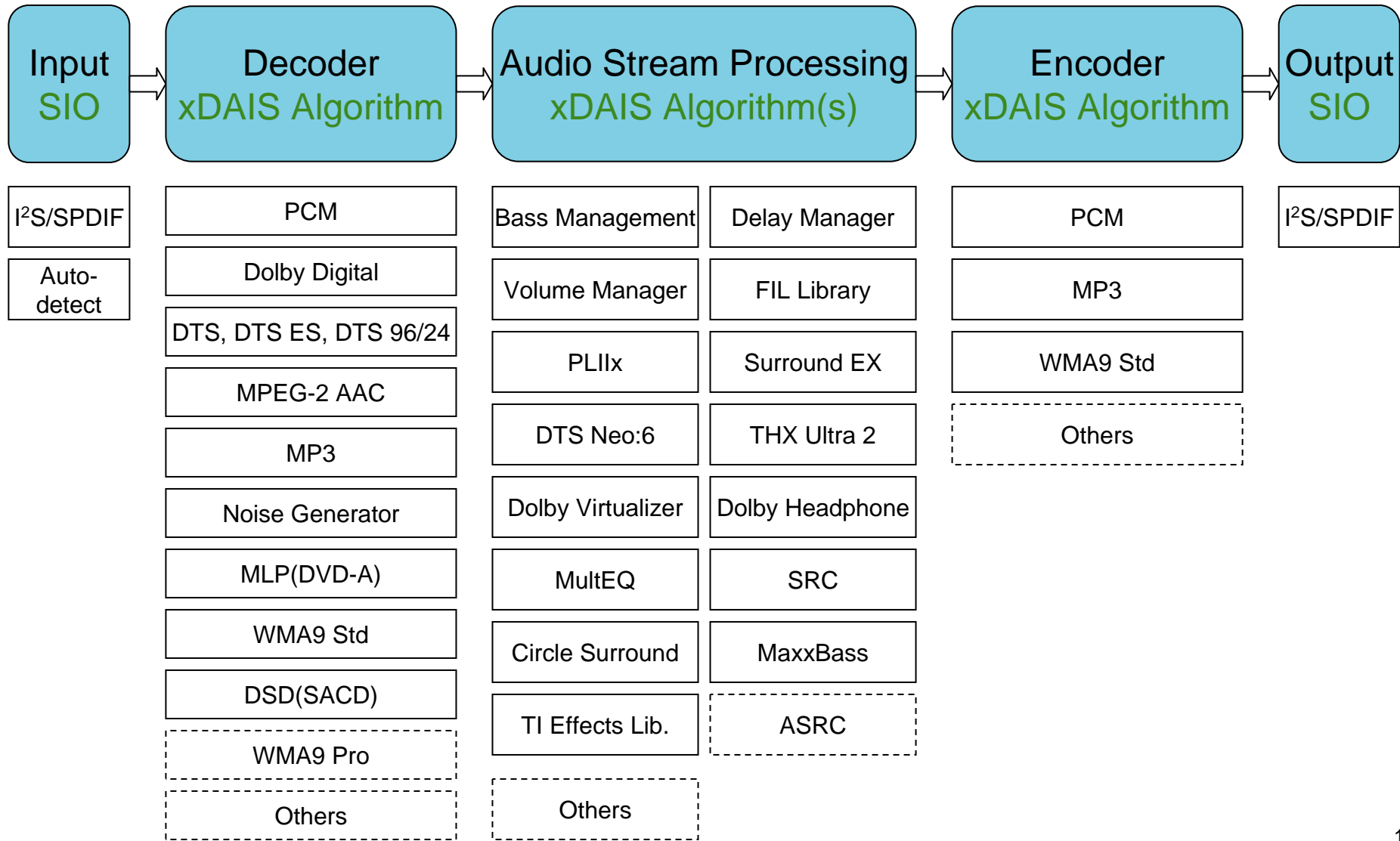


Performance Audio Stream



A/V Receiver Components

PA/F Components



Audio Processing Part

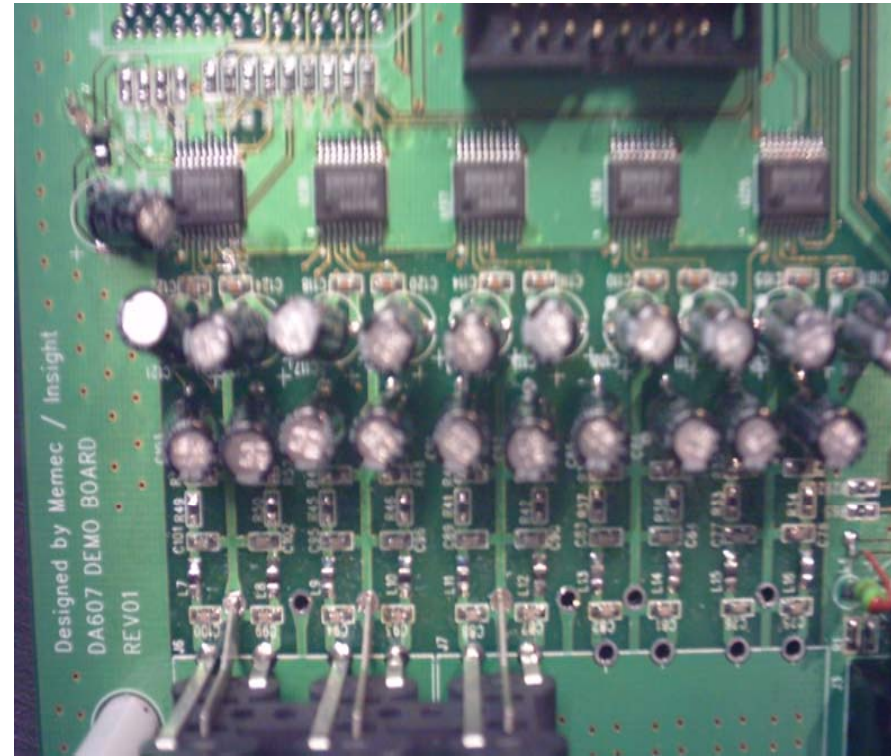
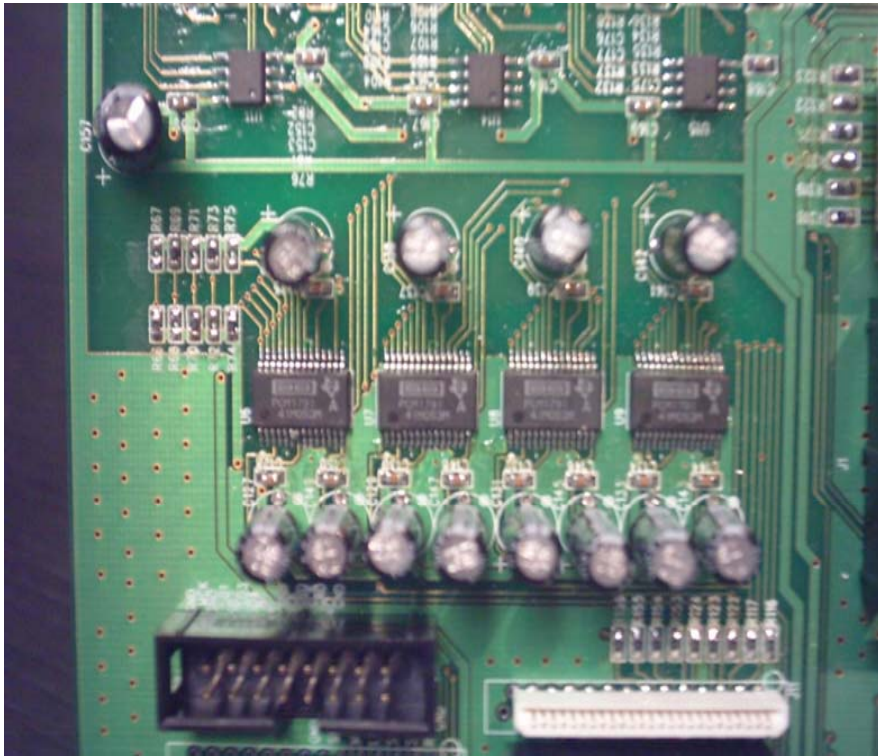
- ◆ Audio DSP : DA605/607/601/610
 - 605 : Dolby Digital EX, DTS ES, DTS 96/24
 - 607 : 605 + Dolby Headphone, Dolby Virtual Speaker, MultiEQ
 - 610/601 : 607 + MultiEQ-XT, THX, Multi-Room
 - H/W Design & S/W program Support

- ◆ ADC/DAC : PCM1802/4, PCM1754/1791
 - PCM1802: 24/96, SNR-105dB
 - PCM1804: 24/192, SNR-111dB
 - PCM1754: 24/192, SNR-106dB
 - PCM1791: 24/192, SNR-113dB

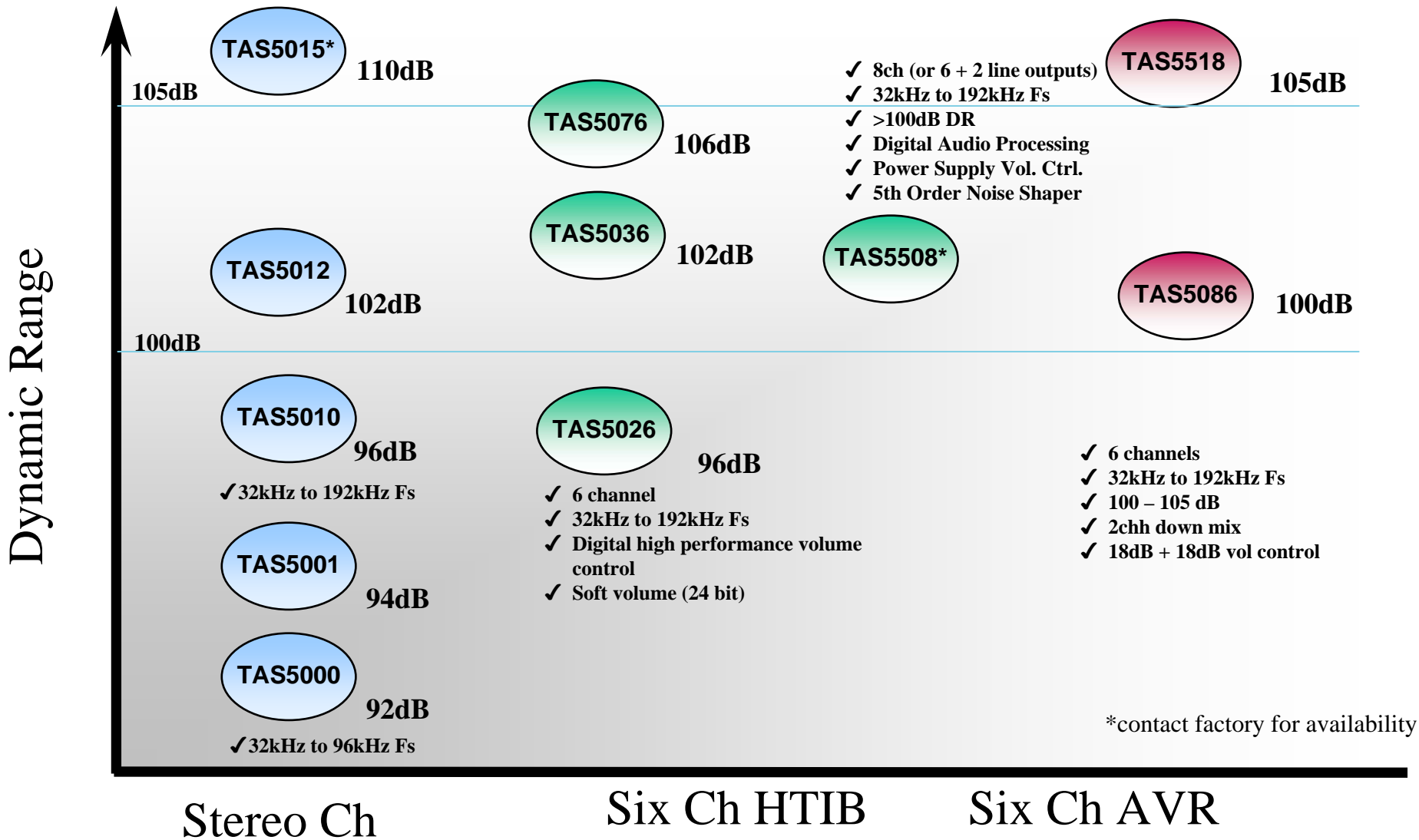


Audio AMP. Part

- ◆ PWM Processor & Power Stage
- ◆ H/W Design & S/W program Support

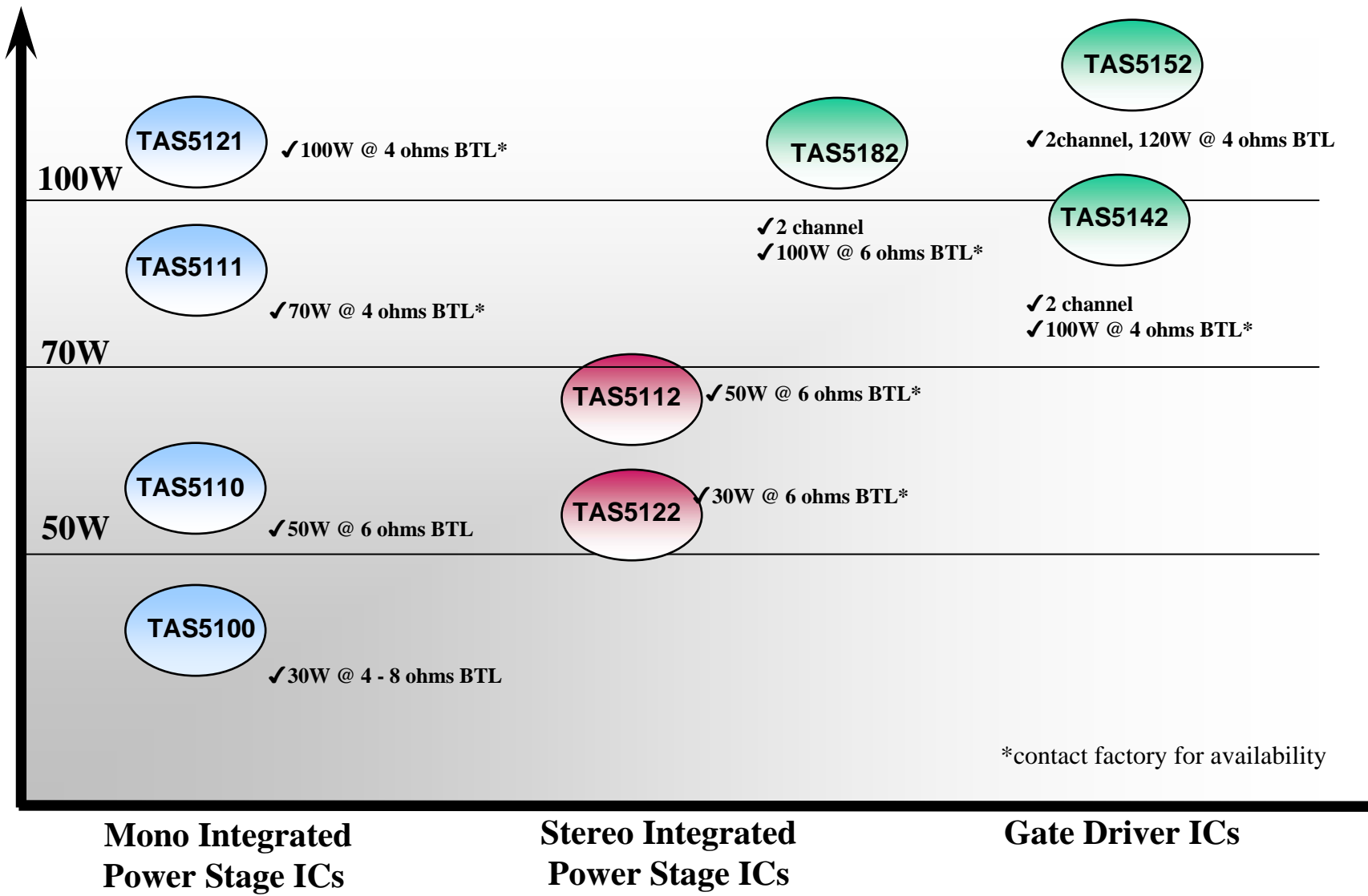


TAS50xx Digital Amplifier PWM ICs

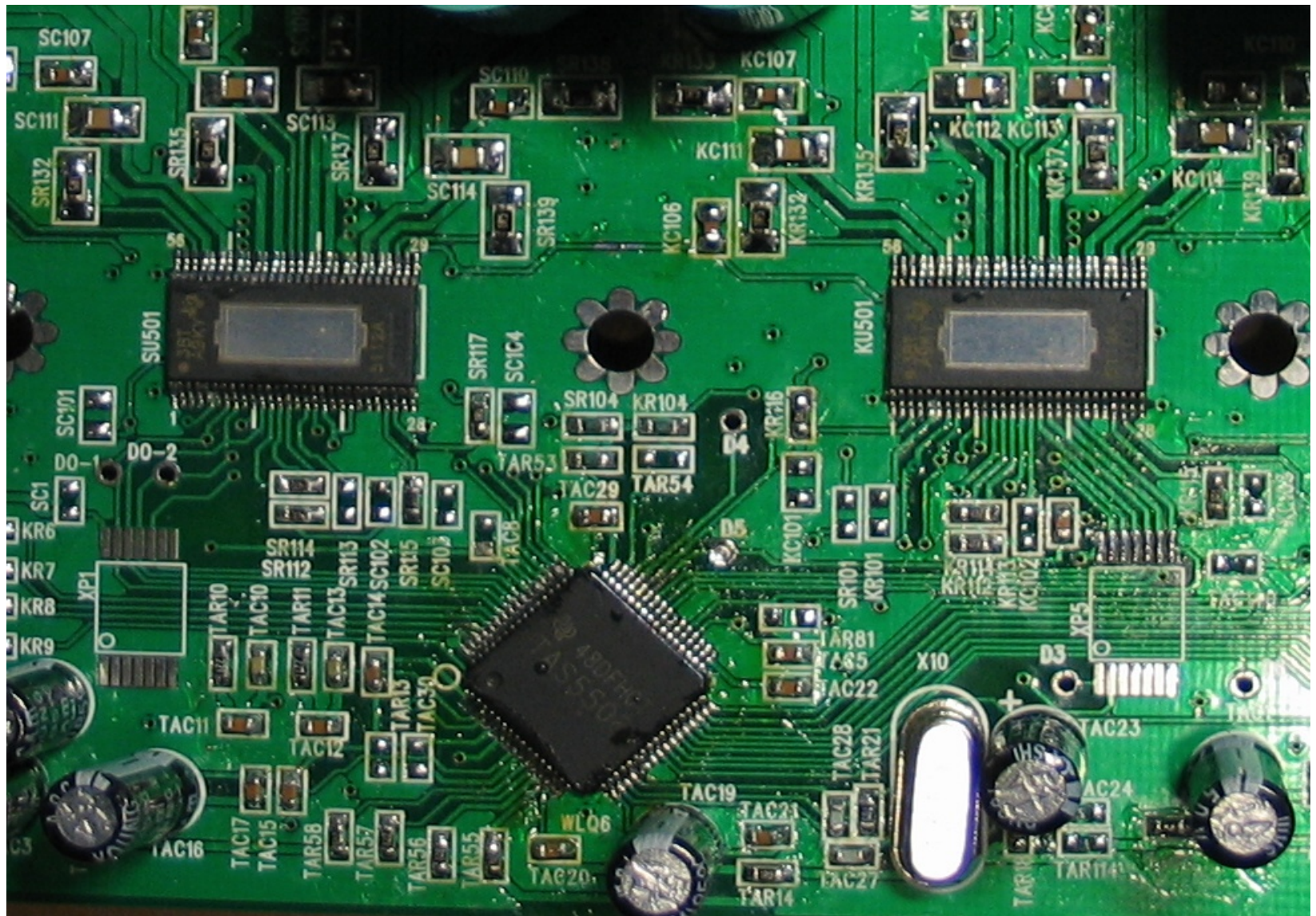


TAS51xx Digital Amplifier Power Stage ICs

Power & Integration



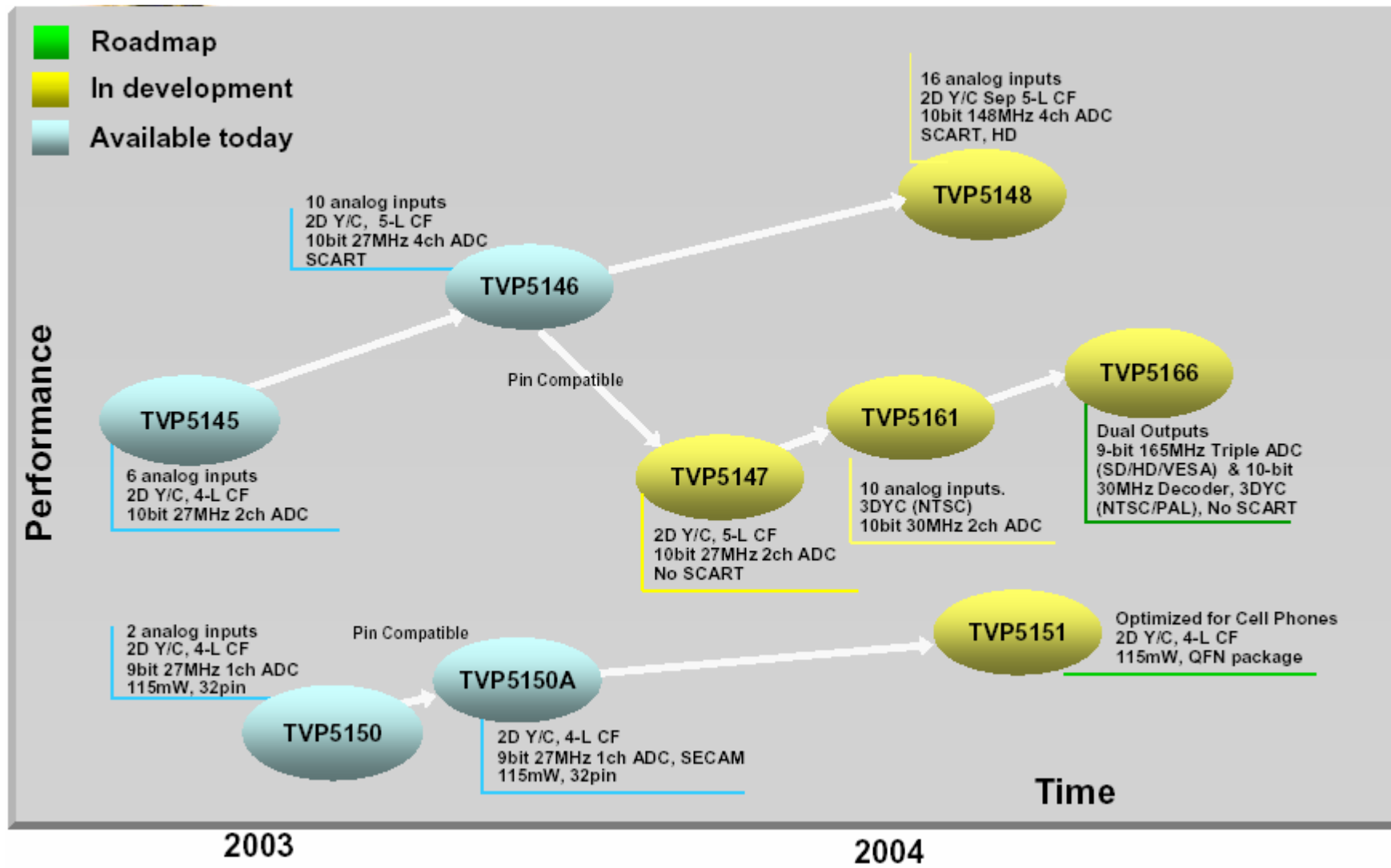
*contact factory for availability



Video Part

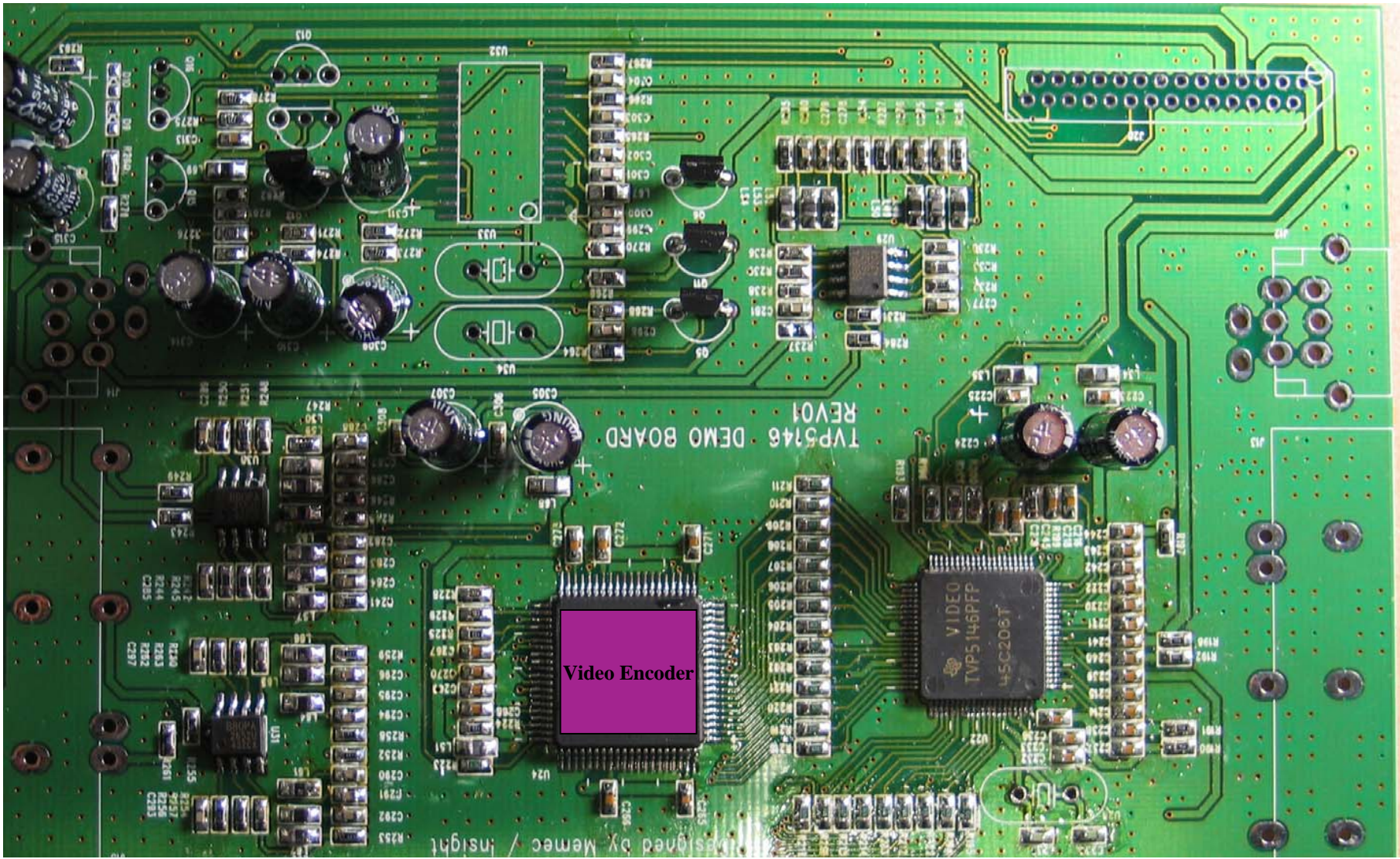
- ◆ Video Decoder/Encoder : TVP5146/7 for Up-conversion
- ◆ OSD (On Screen Display) Function : H/W Design and S/W Program Support.

Video Decoder Roadmap



TVP5146 Video Decoder

- ◆ Inputs
 - Composite, S-Video, YPbPr
- ◆ Outputs
 - 8/10-bit 4:2:2 YCbCr
 - 16/20-bit 4:2:2 YCbCr
 - 8/10-bit ITU-R BT.656
- ◆ Four 2x Oversampling 11-bit ADCs
- ◆ High Quality & Performance
- ◆ Full SCART Support
- ◆ RGB Character Overlay
 - CVBS, SV, YPbPr, RGB
- ◆ Adaptive 5-Line Comb Filter
 - Best performance in competitive benchmarks
- ◆ Automatic video standard detection and switching



Video Encoder

User Interface

- ◆ Display

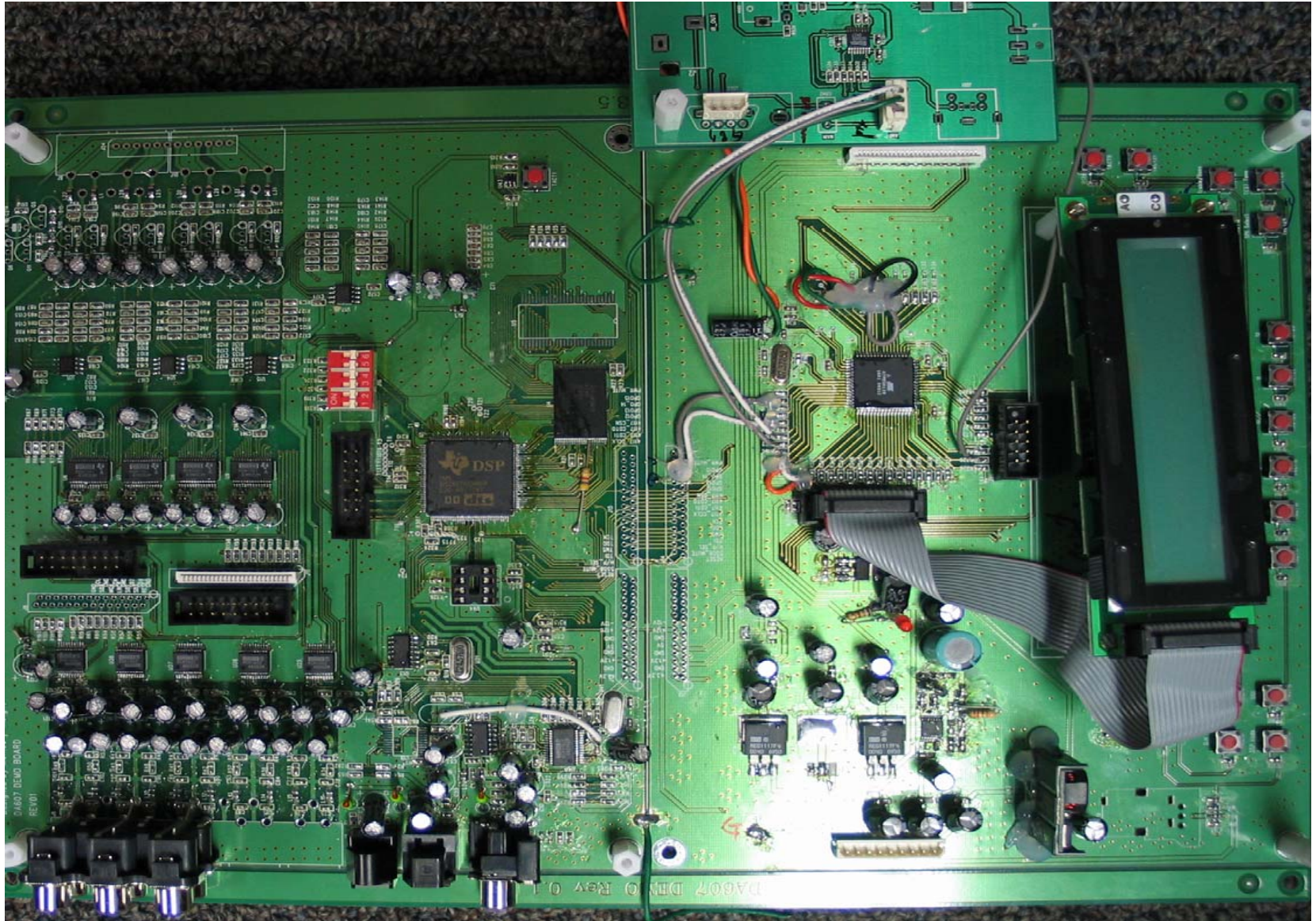
- Character Type LCD => It will be grade-up to Graphic LCD
- OSD (On Screen Display)

- ◆ Key

- Extensible 20 Keys
- Rotary Key

- ◆ Remote Controller

- ◆ PC Interface via RS232C



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◆ Questions?

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support and partners.



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