

Innovative Audio Processing Solutions

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Minds in Motion



MSAV Mission

- To provide audio solutions for Home Entertainment A/V products
 - Primary focus areas: Flat Panel TV and iPod/MP3-player Docking Station
- Bring value to our customers, by:
 1. Enabling differentiate features
 2. Substantially reducing 'time to market'
 3. Reducing cost and system complexity

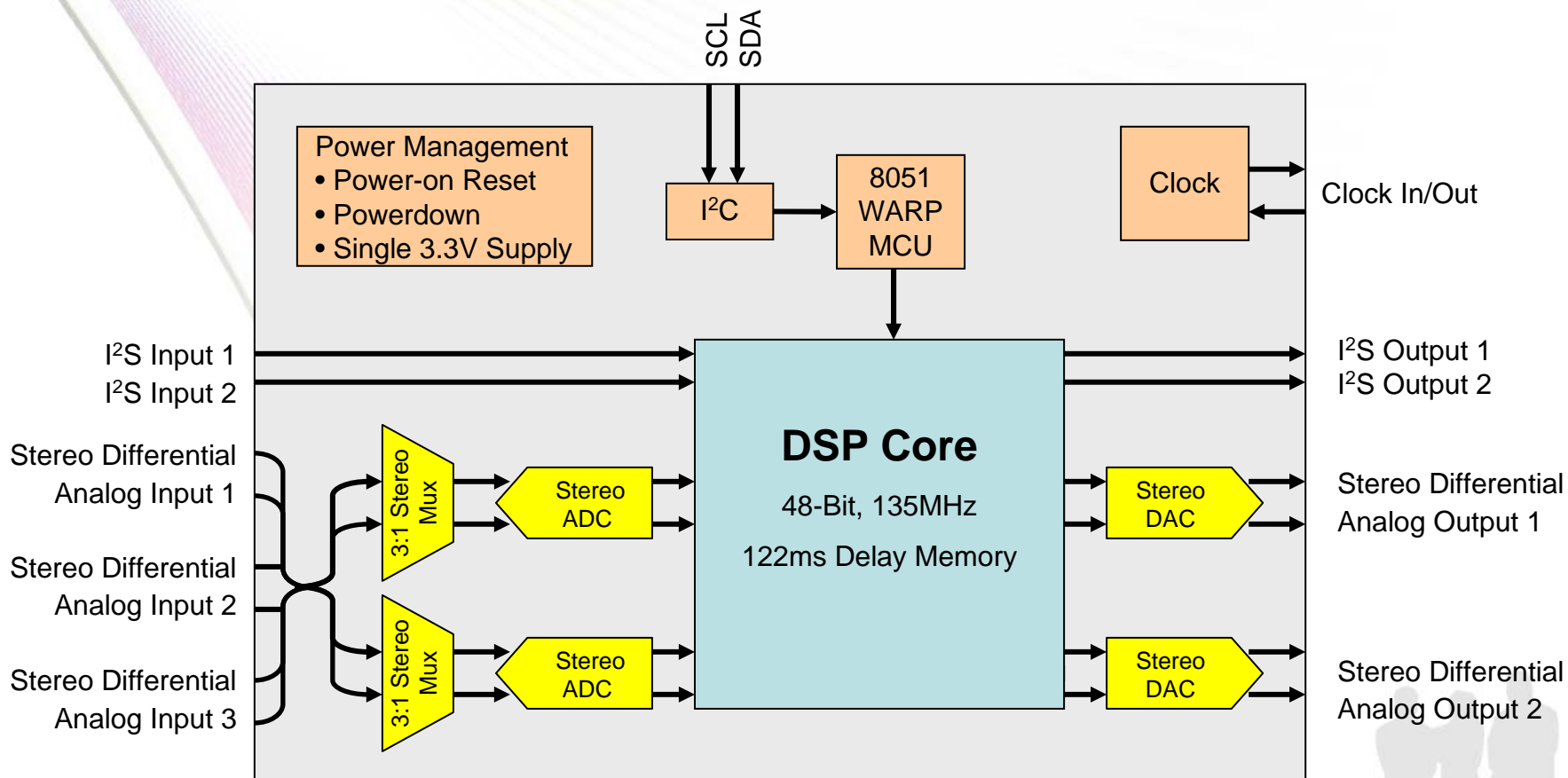
How ?

Provide a '1-2-3 Audio Solution Package'

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TAS3204 Block Diagram



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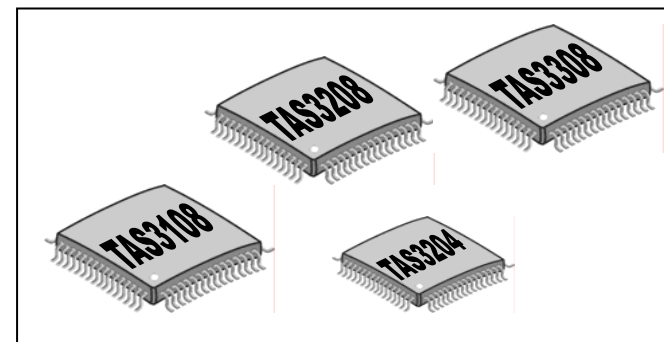
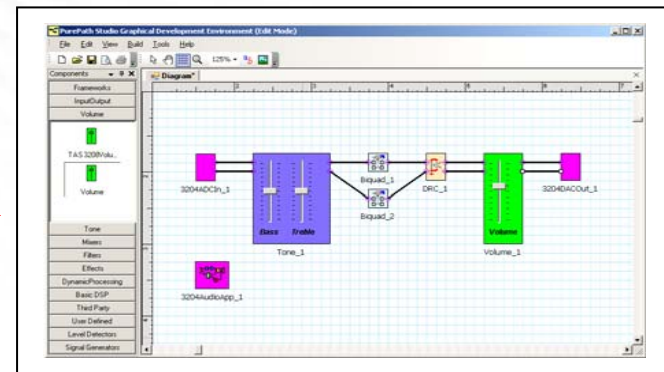
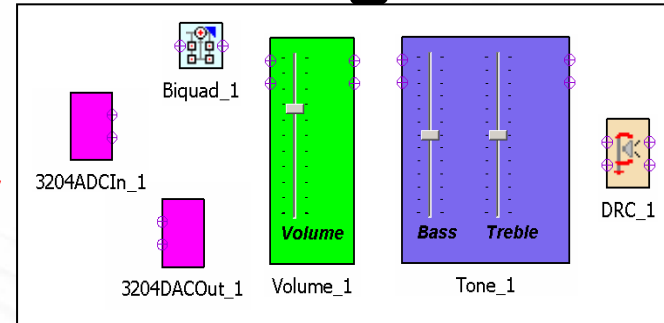


1-2-3 Audio Solution Package

1. Software Component Library

2. Graphical User Interface

3. Audio SoC Devices



Value Proposition

1. Differentiated features through easy implementation of:
 - Speaker EQ (make 'small' speakers sound 'big')
 - Sound-enhancements (i.e., rock/pop/classic/etc. presets)
 - Advanced 3rd party algorithms (Like SRS TrueSurround etc.)
2. Reduced time-to-market
 - Reuse of Audio Solution HW platform from product to product
 - Easy customization through SW tweaks
 - No need for DSP programming knowledge
3. Reduced cost and system complexity
 - Fewer component due to SoC architecture
 - Short development time reduces engineering investment

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Software Component Overview

- A Software Component is a graphical block that contains:
 - All of the necessary DSP software for the audio processing function.
 - Easily configurable properties such as default conditions and trackbar values.
 - GUI interface
 - Concise documentation and help files

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TI PurePath™ Studio

- Powerful, drag-and-drop graphical development environment
- Simplifies development and decreases time to market for products utilizing the TAS3208 and TAS3204
- Features a code editor with contextual help facilities, a simulator for debugging code and other tools
- Quickly integrate pre-optimized software components and third-party algorithms
- Modular audio software components library
- GUIs for customizing and tuning components

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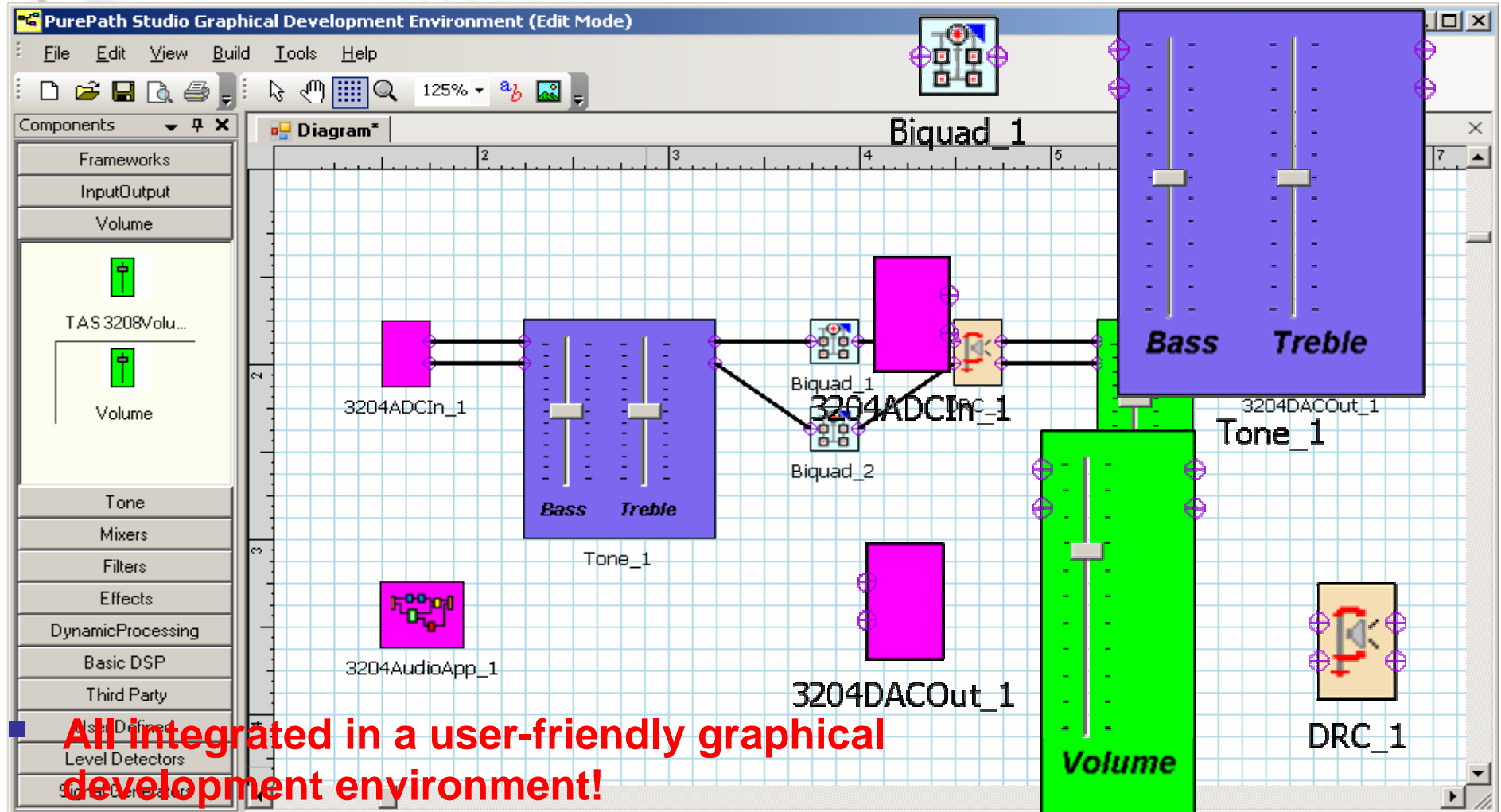
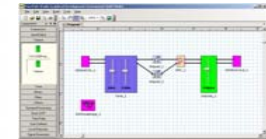
TAS320x S/W Development Tools

- Graphical Development Environment (GDE)
 - Graphical drag & drop interface for Quick Prototyping
 - Generates complete code for 8051 and DSP
- Modular Audio Software Components Library
- GUIs for Customizing and Tuning Components
- 8051 IDE – Classical Development Tools
 - Complete 8051 S/W Development Tool From KEIL
 - C-Compiler, Assembler, Linker
- DSP IDE – Classical Development Tools
 - Context-Sensitive Text Editor
 - Assembler
 - Simulator
 - Debugger
- Command Tool for Monitoring / Debugging
- Component Publisher

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Graphical User Interface



All integrated in a user-friendly graphical development environment!

Software package is PurePath Studio

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GDE Component – Volume Control

The screenshot displays the TAS3108 Graphical Development Environment (GDE) in Edit Mode. The main workspace shows a circuit diagram with a central green Volume Control component labeled 'Volume_1'. This component is connected to two external components, 'SAPIIn_1' on the left and 'SAPOut_1' on the right, via two parallel signal paths. The Volume Control component has a vertical slider and is highlighted with a green border. The interface includes a 'Component Library' on the left with categories like Frameworks, InputOutput, and Volume. A 'Properties' window on the right shows design parameters for 'Volume_1', including FillColor (LightGreen), LabelText (Volume_1), Channels (2), IICAddress (181), IICLength (4), DSPDataBlockSt (32), VolumeMin (-111.5), VolumeMax (24.0), and VolumeStep (0.5). A 'Resources' window at the bottom right shows usage statistics: Delay Pointers (0, 0.00% used), DSP Code (44, 1.42% used), DSP Coef (5, 0.49% used), and DSP Data (20, 1.96% used). An 'Output' window at the bottom center shows the message: 'Generating code ... assembling ... building image ... done. Only one Framework component is allowed.' Overlaid text 'View and Modify Parameters' with an arrow points to the Properties window, and 'Monitor Resource Usage' with an arrow points to the Resources window.

Component Library

DAP(1)

- DAP is a fixed-point computational engine consisting of an arithmetic unit and separate DATA/COEF memory blocks.
- The architecture is optimized for programming digital audio processing blocks.
- Read/read/write single-cycle memory access.
- Separate control for writing to delay memory.
- 2816 DSP Cycles per sample available for processing(the maximum frequency of the DSP clock is 135MHz)

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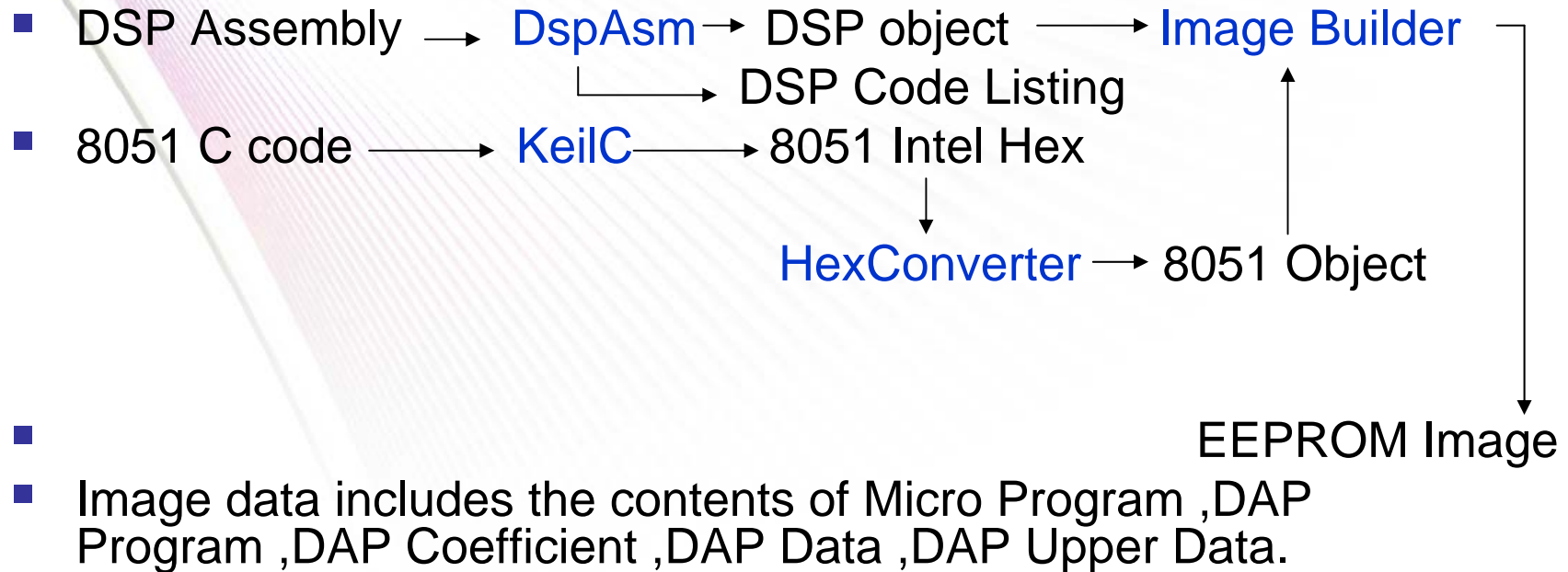
DAP(2)

- 48-bit Data Path with 76-bit Accumulator
- Hardware single-cycle multiplier(28-bit x 48-bit)
- 76-bit add block
- Multiply-accumulate
- Approximate LOG2 and ALOG2 functions
- Bimodal Clip
- Shift right, Shift left
- Absolute Value
- Negation.....
- TI DSP Assembler

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Programming Tools



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TI Developer Conference

19 - 26 June 2007 • Beijing • Shanghai • Shenzhen • Taipei

Thanks!

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