

Wireless Multimedia Player Solution

Benefits

- Reduce time-to-market and minimize risk with complete turnkey DSP media solution
- Streamline system design costs with optimum price-performance ratio
- Differentiate product with a small footprint, low MIPS utilization and highly optimized media codecs
- Future proof designs by leveraging support for current and emerging media formats



Target Applications

- Mobile phones
- Personal digital assistants
- Personal video players

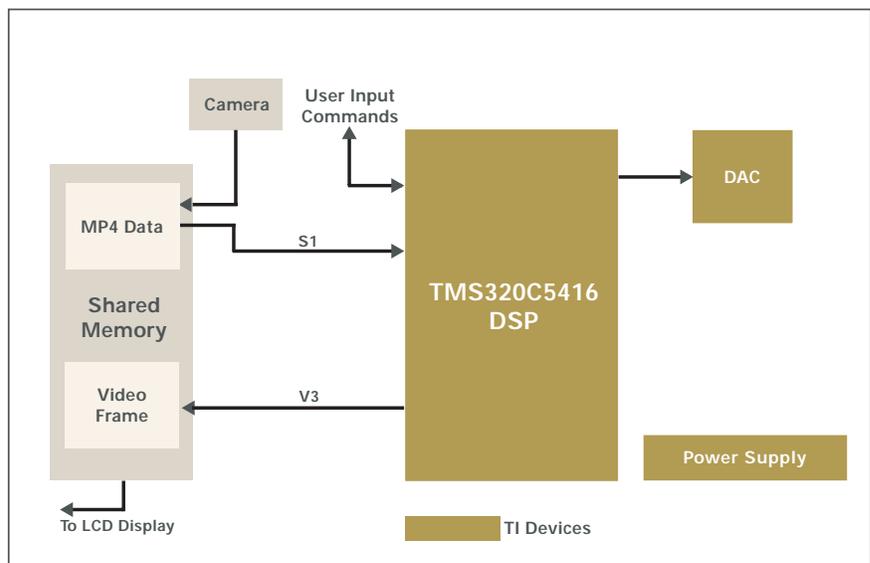
Solutions for video/imaging products based on TI DSPs provide developers the flexibility to design a wide range of products. By leveraging the DSP programmability, power efficiency, processing power, video specific peripherals, small packaging and support for all major multimedia codecs, developers can design differentiated products with customized features.

For developers of wireless multimedia players Sasken has developed a TI DSP-based solution to reduce time-to-market and minimize risk. Sasken's Strawberry product brings a range of multimedia application solutions that enable developers to design next generation wireless handsets and PDAs optimized on the TI TMS320C5000™ DSP platform.

The Strawberry range of applications consists of an advanced 3G-324M Videophone Terminal, a flexible Media Application Suite and a versatile MMS client. The feature-rich 3G-324M Videophone is a versatile application that enables real-time, two-way voice and video communication. This versatile Media Application Suite add-on for phones and PDAs allows your customers to play back varying media file formats and capture and display video and images, eliminating the need for multiple devices such as MP3 players and cameras. The Strawberry MMS Client is a comprehensive, feature-rich messaging application that enables users to send and receive MMS messages containing video in addition to text, audio and images. It has been designed to incorporate future extensions of MMS, making it easy for you to keep pace with changing technologies.

Strawberry solutions are optimized for high-performance applications and require minimum customization, as they are readily available. They are designed for easy integration into mobile devices that are cost and resource sensitive. Low footprint and MIPS requirements help reduce total costs. In addition, Strawberry provides the support you need – helping you every step of the way until your product is ready for launch.

System Example: Multimedia Player on the C5416 DSP



Wireless Multimedia Player based upon the TMS320VC5416 DSP

Functional Description

| Hardware |
|--|
| <ul style="list-style-type: none">TMS320VC5416 DSP Processor, 128KW SARAM, 160MIPS handles video image and audio compression |
| <ul style="list-style-type: none">TLV320AIC23B is a low-power, highly integrated stereo codec with integrated headphones amplifier |
| <ul style="list-style-type: none">Memory: |
| <ul style="list-style-type: none">- DARAM 64 Kwords |
| <ul style="list-style-type: none">- SARAM 64 Kwords |
| <ul style="list-style-type: none">- SRAM 230 Kwords (external) |
| <ul style="list-style-type: none">Image capture |
| Software performance of the video player |
| |
| MPEG-4 Simple Profile Video @ 10 fps QCIF |
| <ul style="list-style-type: none">52 MIPS for video decoder (with program in internal memory) with following specs: |
| <ul style="list-style-type: none">Compliant to MPEG-4 simple profile@level 0/1 |
| <ul style="list-style-type: none">Error detection techniques |
| <ul style="list-style-type: none">Deblocking |
| <ul style="list-style-type: none">Color conversion (YUV420->RGR565) |
| Memory usage of video decoder |
| <ul style="list-style-type: none">DARAM: Video decoder - 46 kwords (30 kwords persistent & 16 kwords scratch) |
| <ul style="list-style-type: none">SARAM: Video decoder - 30 kwords (10 kwords persistent & 20 kwords scratch) |
| <ul style="list-style-type: none">SRAM: Video decoder - 112 kwords (external) |

Component Selection

- TMS320VC5416 DSP or TMS320C5910 DSP can be used for reduced system cost
- TLV320AIC23B is a low-power, highly integrated stereo codec with integrated headphones amplifier
- Memory:
 - DARAM 64 Kwords (16 bit)
 - SARAM 64 kwords
 - SRAM 230 Kwords
- LCD Display
- Image Capture

Getting Started – Development Tools

Tools

Sasken's Multimedia Player is a complete, turnkey software solution and hence there are no hardware blocks shown in the diagram.

- Application Manager:** Application manager interacts with the user interface of the multimedia player, manages the commands from the user interface and controls the media processing blocks.
- Data Source:** Data source reads the data from the memory and passes the data to the next block which is the MP4 file format de-multiplexer.
- MP4 File Format De-multiplexer:** MP4 File Format De-multiplexer separates the audio and video information contained in the file and passes the individual streams to the audio and video decoder. This block also manages the decoding process to provide audio & video output in a synchronized manner. Depending on the stream input, the right type audio and video decoders are initialized for further stream processing.
- MPEG-4 Simple Profile Video Decoder:** Highly optimized MPEG-4 Simple Profile Video Decoder decodes the video streams and provides the RGB formatted video stream for final rendering on to the screen, in a timely manner so that audio and video synchronization is maintained.
- MPEG-4 AAC LC Audio Decoder:** Highly optimized MPEG-4 AAC LC Audio Decoder decodes the audio streams and provides PCM samples of audio for playing back on the audio output device.
- GSM AMR Speech Decoder:** In case of the AMR speech streams, AMR speech decoder is used to decode the streams instead of the MPEG-4 AAC LC Audio Decoder.
- Audio & Video Output:** Audio & Video Output units interface with the audio and video output hardware blocks and provide the necessary interfaces to the rest of the blocks.

Documentation

Complete technical documentation is available from Sasken.

Contact Information for Questions/Support

To purchase this solution or for more information: sales@sasken.com

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