EISC

We build a new
millenium technology...

GMX-1000

Preliminary Information

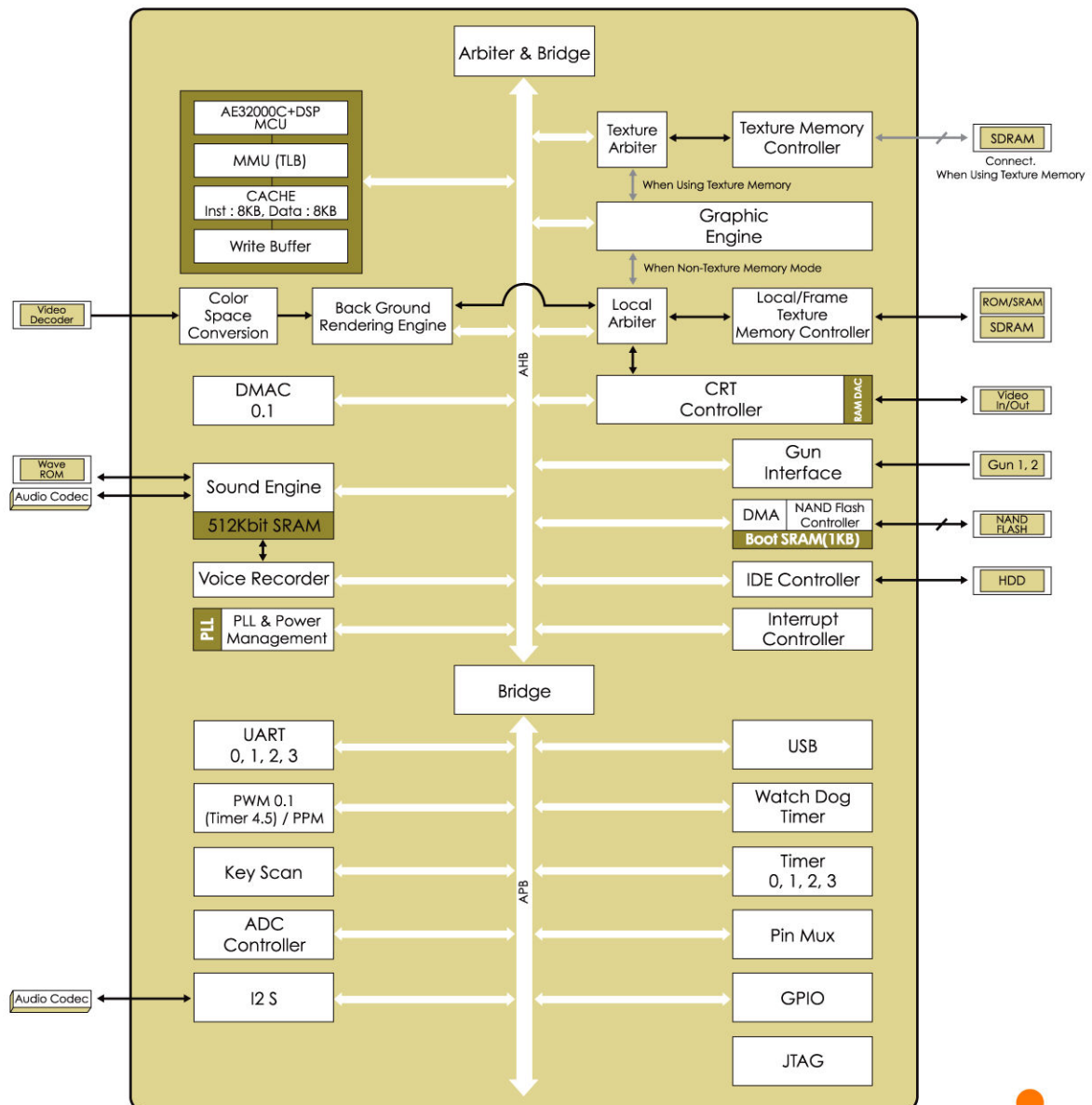## 32bit EISC Microcontroller

Description

GMX-1000 is the new adchips' multimedia processor. GMX-1000 is a super integrated SoC (System On a Chip) aimed at providing high performance multimedia functionality and low power consumption for Personal Multimedia Digital Assistance.

GMX-1000 incorporated 32bit CPU processor with integrated DSP support, 2D Graphic engine, Sound engine, CRT controller Video Decoder Interface Module and I/O peripheral components. GMX-1000 can reduce system cost significantly through eliminating not only system control CPU, but also graphic IC, Sound IC and Video Encoder as well as USB. GMX-1000 helps system designer reduce its engineering effort and time in developing a new system by adding only memory and I/O devices such as LCD panel, HDD and etc.

Therefore GMX-1000 is the best solution for multimedia PDA, multimedia storage device, portable karaoke, MP3 juke box, portable and arcade game and etc.

GMX-1000 BLOCK DIAGRAM

adc
advanced digital chips inc.

Preliminary Information

Features

- 32bit EISC(AE32000C) Processor Core
  - Based On EISC Instruction Set Architecture
  - High Performance Integer Processing Core with DSP Capabilities
  - 5-Stage Pipelining, Harvard Architecture, 16 General Purpose
  - Registers (GPR) and 9 Special Purpose Registers (SPR)
  - Support AMBA Protocol - AHB, APB
  - Maximum Operation Frequency : 130MHz
- On-Chip Cache Controller
  - Separated On-Chip Instruction / Data Cache
  - 4-way Set Associative, 8K byte Inst. Cache, 8K byte Data Cache
- On-Chip Memory Management Unit
  - Memory Protection Capabilities Based on Memory Bank and Sub-banking Scheme
  - Separated On-Chip Instruction/Data TLB, 4-Way Set Associative, 128Entry
- DSP function
  - Add/Subtract, Saturated Add/Subtract, Clamp, Shift/Rotate, Repeat/Convert, Compare
  - Address Unit - Next Address, Reverse Address, Auto Address
  - 32bit X 32bit = 64bit signed / unsigned multiply
  - 32bit X 32bit = 64bit signed multiply and accumulate (MAC) and etc.
- Graphic Engine Specification
  - Designed Based on Open GL's Double buffer Architecture
  - Supports 16/8/4bit color mode. (Internally 24bpp processing)
  - Supports Tile Addressing / Font Addressing modes
  - Texture Mapping (Zoom In / Out, Rotate, Iteration, Clipping)
  - Shading / Alpha Blending / Transparency / Dithering (2X2, 4X4)
  - Supports Non-Texture Memory Mode
- CRT Controller
  - Support VGA TFT LCD and NTSC/PAL Display Moniter
  - Supports display resolution up to 1024 X 1024
  - Supports External Sync. Detection
  - Horizontal and Vertical double scan control
  - Support internal video display mode(local mode) and external video & overlay mode(remote mode)
  - VESA DPMS support for green PC applications
- Video Decoder Interface Module
  - Supports Interace / Non-Interace Mode
  - Color Space Conversion
  - R/G/B Gain Control
  - X/Y Down Scaling Mode & Display Position Control
- Video Encoder
  - Support CVBS Analog Output for TV
  - Support NTSC/PAL Display Mode
- USB v1.1 Device Controller
- IDE Controller for HDD Interface

- Sound Engine Specification
  - Maximum 64 Polyphongy, 32Ch, 2Port, Stereo 16bit
  - SC-88 Map Compatible Sound Set (546 sounds + 15 drum sets)
  - Sampling Rate 22KHz ~ 44.1KHz, SC-88 Full-Set 44.1KHz : 64Mbit
  - Reverberation, Chorus, Delay, TVF Effect, Parameter EQ
  - Professional Stereo MIC Echo Process (Delay, Mix, Reverberation, Chorus, Harmonizer Function)
  - Supports 8/16bit PCM, 8bit μ-law Wave Format
  - 2 Port MPU-401
  - 2Ch. Input, 4Ch. Output, Audio Codec I/F
- Voice recorder
- Local Memory
  - Supports shared memory for Local and Frame Memory (Also, Texture Memory Can be Shared)
  - Supports 7 Local/Frame Memory Banks
  - Supports External Wait Signal to Expand the Bus Cycle
  - 64M byte Address Space per each Bank
  - Supports SDRAM and SRAM
  - Supports 8/16bit External Memory Bus
- Texture Memory
  - Maximum 64M byte Address Space
  - Support SDRAM
  - 16bit Fixed Memory Bus
- NAND Type Flash Memory interface
  - Supports DMA for Nand Flash Memory only
  - Supports Boot Loader Using NAND Flash Memory
- Peripheral functions
  - 2 Ch. GDMA
  - Key Pad Interface (5 X 5)
  - Programmable Priority Interrupt Controller
  - 4 Ch. 16bit Counter for timer
  - Watch dog Timer
  - 4 Ch. UART with 16 X 8bit FIFO
  - GPIO
  - 1 Ch. I2S
  - 2 Ch. PWM (2 Channel Timer)
  - 1 Ch. PPM
  - 2 Ch. Gun interface
- Integration
  - Embedded 4 Channel DAC
  - Embedded 4 Channel ADC
  - Embedded PLL
  - JTAG (Boundary Scan Test)
- Process
  - 0.18μm CMOS VLSI
  - 1.8V Core Voltage and 3.3V I/O Voltage Operation
  - 272 FBGA Package

Application Areas

Portable Multimedia and Consumer Electronic Products, Karaoke System, Game Machine, etc.

For More Information Contact:

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