adStar

High-Performance 32-bit EISC Microcontroller

with 512KB Flash and 8 or 16MB SDRAM

Preliminary Information

Description

adStar is designed to provide a cost effective and high performance microcontroller solution as LCD display applications, and general application. adStar integrated microprocessor combines a 32bit advanced EISC processor core and SDRAM with several peripheral functions such as timer, serial Interface, USB, flash memory controller, etc. The on-chip cache SRAM provides one-cycle access to code and data to speed program execution.

Features

High Performance Processor Core
-32bit EISC Core MCU
-Harvard architecture
- 5-Stage Pipelining
- 1 Cycle 32bit MAC
- 8KBytes I-Cache, 8KBytes D-Cache
- Up to 100MIPS throughput with 100MHz Clock

Additional Embedded Memory
- 32KBytes SRAM (30KBytes Data/2KBytes Instruction)
- Optional 8/16MBytes SDRAM, 512KBytes NOR FLASH

External Memory Interface
- 8 or 16-bit data, up to 18-bit addressing

SRAM Controller

NAND Flash Interface
- Supports SLC and MLC (24-bit ECC) type

Boot Mode
- ROM booting mode
- NAND booting mode
- Flash booting mode

JTAG Interface
- Boundary-scan capabilities
- Extensive On-chip Debug Support
- Programming of Fuses through the JTAG Interface

LCD Controller
- RGB 888 or 565 output
- Supports up to 800x600 resolution display mode

USB Full-Speed Device/Host Compatible
-Supports Full-speed Data Rate 12Mbps

Copy Protection
- 24-bit key-protected only-one programmable bits

JPEG software decoding

MP3 software decoding

SD-Card Interface
- Supports single/quad

Sound Mixer
- 2ch. I2S
- 2ch. Digital Modulator

10-bit ADC
- 4-ch. ADC for Analog Input

Other Peripheral Functions
- 4-ch. 16-bit Timer/PWM/Capture
- 32-bit Watchdog timer
- Interrupt controller
- Dedicated 1-ch. PWM
- 5-ch. UART (1-ch. with IrDA support)
- 2-ch. Master/Slave SPI
- TWI(Two Wired Interface)
- 75 or 69 Port I/O (muxed with other interfaces)
- POR(Power On Reset)
- LDO
- PLL0(for system), PLL1(for LCD)

Operating Voltage : 3.0V to 3.6V

Operating Temperature : - 40 ℃ / +80℃

Package
- 128ETQFP (14 x 14)

Ordering Number

	FLASH	SDRAM
adStar-D8M	-	8MB
adStar-D8MF512	512KB	8MB
adStar-D16M	-	16MB
adStar-D16MF512	512KB	16MB

Applications

- LCD Display Applications, Motion control, Sign-pad, Printer, POP Monitor, Access Controller

EISC
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Instruction Highlights

What is EISC ISA?
ADChips's patented EISC (Extendable instruction Set Computer)ISA is a compress RISC typed instruction set that can reduce the program size and the frequency of the memory access efficiently for optimizing energy consumption.

AE32000C ISA
AE32000 stands for 32-bit advanced EISC ISA family. In the revision C, various SIMD-typed DSP instructions are added for accelerating DSP instructions are added for accelerating DSP applications.

32bit Data Processing
AE32000C processors have 32-bit data processing units such as 32bit ALU, barrel shifter, multiplier and MAC (multiply and accumulator) and so on.

4G memory space
AE32000C processors can access up to 4G memory space.

Various Cond. Branches
14 type conditional branches bring more compactor control sequences and less energy consumption.

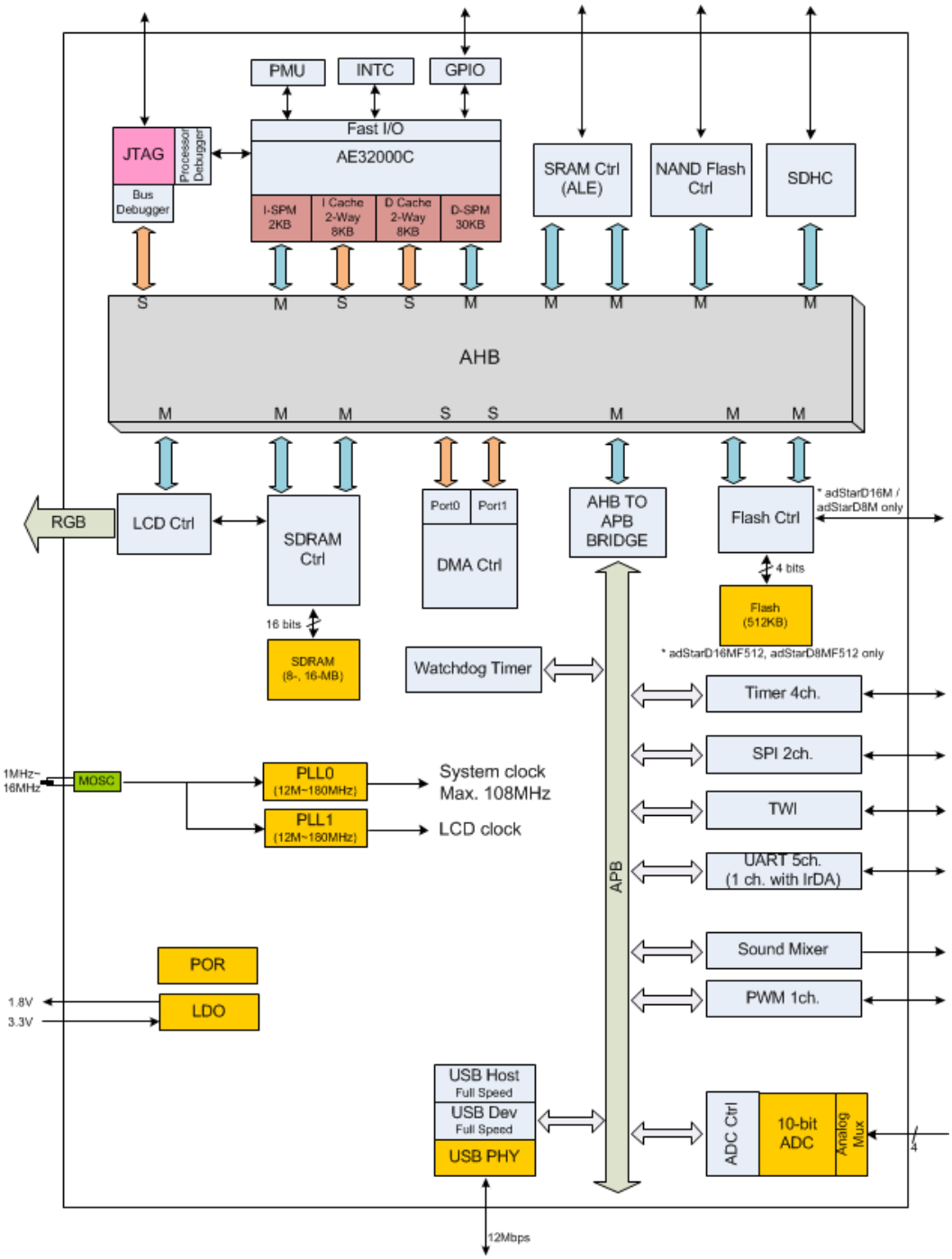
Multiple PUSH/POP
AE32000C processor support multiple PUSH and POP instruction for efficient context switching.

3 Processing mode
AE32000C supports supervisor mode, user mode and hypervisor mode for advanced resource protection.

SIMD-DSP extension
AE32000C supports SIMD-DSP instructions such as 32bit MAC with 80bit accumulator, 8bit and 16bit SIMD MAC, sum-of-products operation, saturated add/subtract, min/max, average and so on.

Rich Registers
16 x 32bit GPRs
9 x 32bit SPRs
3 Stack Pointers

Why EISC?
EISC offers energy efficiency for Your SoC in any applications



EISC
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