

AVR[®] 32 AP 32-BIT MCU/DSP

AP7000





,GPS

20-

21 -

70 -80

MP3,

()



21 -

AVR32

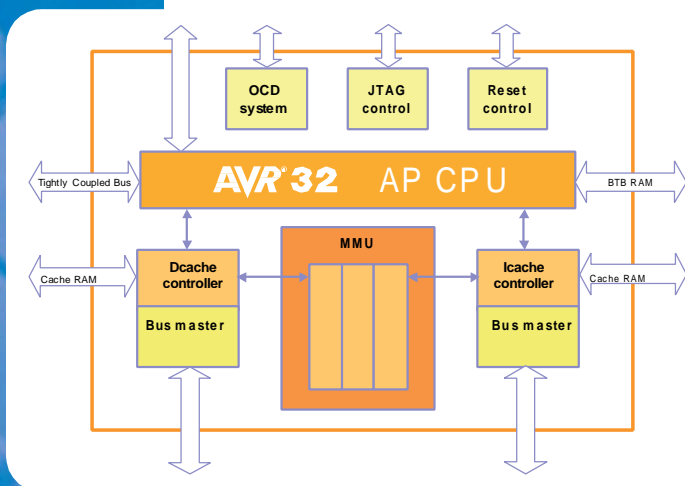
Atmel

AVR32

3

21- . 32- RISC

AVR32



18

AVR32, ATMEL

AVR32

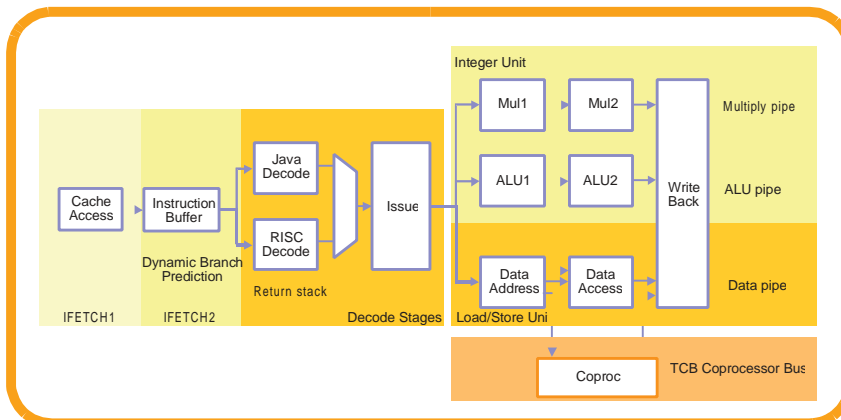
/

AVR32
 100 , 320x240 MPEG4 30
 260
 AVR32 -
 Atmel, Intellectual Property.

“Традиционно разработчики повышают производительность процессоров, заставляя их работать быстрее. Это реальная проблема для портативных устройств, так как увеличение тактовой частоты линейно повышает энергопотребление и соответственно сокращает время автономной работы. Наш подход к разработке AVR32 заключался в том, чтобы процессор мог делать как можно больше и реально уменьшить тактовую частоту. На самом деле достаточно сложно вкратце объяснить, как же процессор может быть более мощным на более низкой частоте, но, тем не менее, это именно то, что мы сделали”

Øyvind Strøm, PhD
 AVR32

AVR32 AP 7- AVR32
 3 -
 {
 / },



AVR32

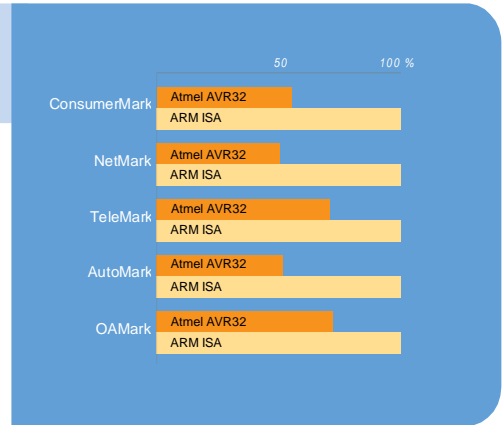
32-

AVR32 AP

EEMBC®

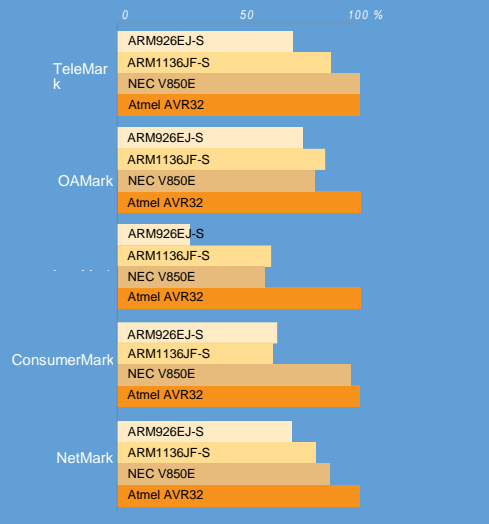
32-

EEMBC AVR32
5%-20%
ARM® Thumb®
AVR32
30-50%
AVR32
ARM Instruction Set Architecture
(ISA)
EEMBC
ISA.
AVR32 ARM
IAR AVR32 2.09
ARM's ADS 1.2



EEMBC

AVR32



EEMBC

AVR32 AP

ARM9™, ARM11™ NEC
V850E EEMBC TeleMark™,
OAMark™, AutoMark™, ConsumerMark™
NetMark™. ConsumerMark

ARM11 35%

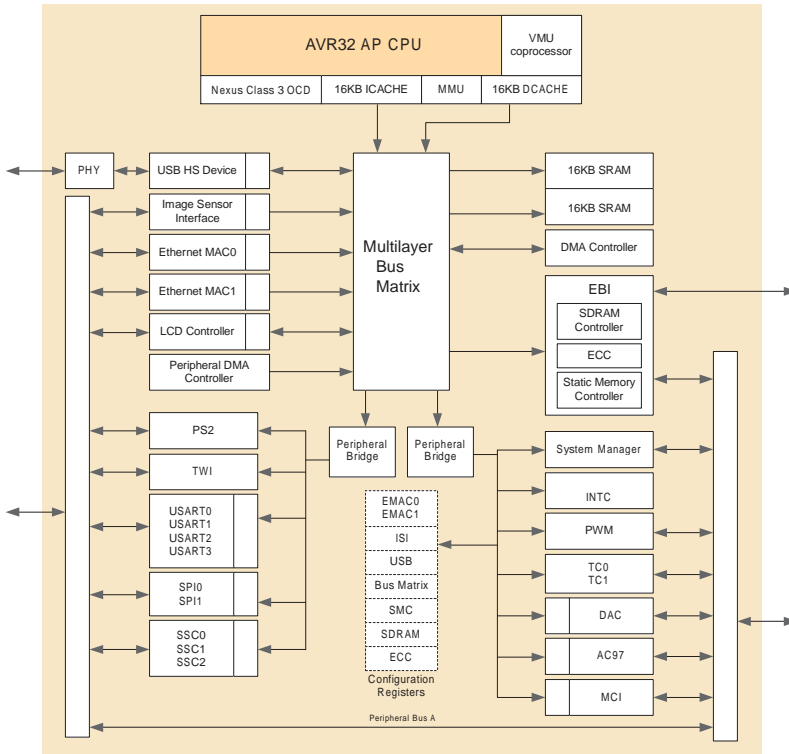
EEMBC

ARM926EJ Freescale i.MX21
GCC 3.3.2, ARM1136JF - Freescale i.MX31 GCC
3.4.3, NEC V850E – NEC V850E Green Hills
multi 2000 4.0.1.
EEMBC (www.eembc.org).

AP7000 – AVR32

, set top boxes,

, PDA,



- 10x
- YUV<->RGB
- LCD-controller
 - 640x320 and 320x240 TFT/STN
 - 2048x2048 TFT
- VGA and CMOS-
- 16-bit stereo audio-DAC
- I2S/AC'97
- USB 2.0 480 Mbps PHY
- Ethernet MACB (optional)
- True-IDE Hard-drives
- CF/SD/MMC
- IrDA, 3xSPI, I2C, 3xSSC,

AVR 32 AP7000

•	•
-	-
-	- SIMD DSP
•	- 186 RISC
-	- 7-
	-

AT32AP7000

2006.

	AT32AP7000	AT32AP7001	AT32AP7002	AT32AP7003	AT32AP7004
USART, I2C, SPI and SSC ports	Yes	Yes	Yes	Yes	Yes
SD/MMC	Yes	Yes	Yes	Yes	Yes
EBI (SRAM, SDRAM, NF...)	Yes	Yes	Yes	Yes	Yes
Ethernet MAC	2	1	0	2	1
USB High Speed	Yes	Yes	Yes	Yes	Yes
Camera Interface	Yes	Yes	Yes	No	No
LCD Controller	Yes	Yes	Yes	No	Yes
Audio (DAC, I2S, AC97)	Yes	Yes	Yes	No	No
Package	256-pin BGA	208-pin QFP	180-pin BGA	208-pin BGA	193-pin BGA

AP7000



3x8-

AP7000

AVR32

- MPEG4

YUV,
RGB.

(DMA)

100
AP7000

Ethernet 480

DMA,

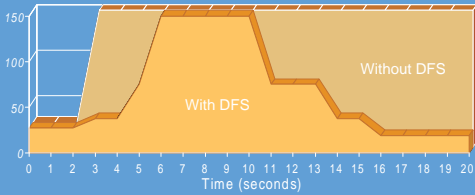
USB

100%

DMA,

(EBI),

CPU Frequency (MHz)



Example: Decode and display MPEG4 video

AP7000

. AP7000

4



AP7000

Ethernet
30

100 /

120

60

MPEG4,

Linux

250

Mpeg4 320x240,



AP7000,

IAR

SIMD

DSP

AVR32

C/C++ Java®

GNU GCC IAR® Embedded

. GNU (GDB)

Workbench™.

Atmel

/ ++

Eclipse®



STK1000

AP7000

Linux 2.6,

Atmel,



AVR JTAG-ICE mkII

AVR32

STK1000 GCC, IAR

JTAG-ICE

2 Ethernet

\$499.

VGA USB.

PCI-

SD

JTAG.

AP7000

Vitra Opella

Ashling.



256

Linux,

- MPEG4 - 75 MHz
 - 30 / (320x240) MPEG-4
 - 3x ARM926
- MPEG2 (DVD) < 75 MHz
 - PAL/NTSC (720x576)
- Audio
 - MP3 audio at 15 MHz CPU
 - AAC ~25 MHz CPU
 - (VMU)
 - (YUV<->RGB24) -

www.ashling.com





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Literature Requests

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