Cirrus Logic Announces New ARM9-Based Embedded Processor Family

Press Presentation February 2004
Cirrus provides the most comprehensive selection of ARM9-based embedded processors, with a wide variety of performance options, integrated features and price points.
Cirrus Customers Applications
General Purpose

- Industrial PDA & eBooks
- Internet appliance
- Smartphone
- GPS Systems
- Industrial

Smartphone/ GSM PDA
Industrial PDA
Textile machinery controller
Electronic voting terminals
Amusement system controller
Telematic navigation systems
Marine radar
Internet appliance

www.cirrus.com
Cirrus Customer Application
Digital Entertainment

- Digital Audio Receiver
- Car Audio
- Home Audio Jukebox
- Internet Radio
- Portable audio jukebox
- Gameboy MP3
- CD/MP3 Players

Radio play & record system
Portable audio/video jukebox
Apartment video-on-demand controller
Car digital audio with MP3 jukebox
Home multi-zone audio for
distribution and playback
Digital audio receiver
Agenda

- New ARM9 Family
- The Cirrus Advantage
- Entry Level ARM9
- High End ARM9

Expansion of ARM9 Family by 10 New Parts
Cirrus’ Embedded Processor Family

Performance

Commercial and Industrial Grades
Linux and WinCE.NET BSP

1999 2000 2001 2002 2003 2004 2005

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We have solutions from below $10 to over $25 with our new ARM9 Family

- **New** High End ARM9
  - Highly integrated EP9312 plus
  - PCMCIA interface & 2D Graphics Engine

- **Flagship ARM9 IC**
  - Universal System on Chip

- **8 x New** ARM9 price-performance-integration points

- **New** Entry Level ARM9
  - 166MHz core / 66MHz bus
  - 10/100 Ethernet and USB 2.0

[www.cirrus.com](http://www.cirrus.com)
Agenda

• New ARM9 Family

• The Cirrus Advantage

• Entry Level ARM9

• High End ARM9

Proven Volume Exp.
MaverickKey™
Third Party Solutions Providers
Cirrus: A Proven High Volume Supplier in the Embedded World

• **Embedded Processor Specifications**
  – Commercial and Industrial grades across the family

• **Embedded Processor Software**
  – Linux 2.4.21 provided for each development kit
  – Windows CE .NET 4.2 BSP provided for each development kit

• **ARM Processor Volume**
  – Shipped over 34M ARM Processors
  – Strong relationship with ARM
    • One of the first ARM licensees
MaverickKey™: Securing Designs

- MaverickKey technology provided across the entire family
- Two methods for use:
  - To secure designs
    - For large customers, Cirrus assigns custom serialization ranges
    - Design will not operate unless the MaverickKey is in the right range – cannot be broken
  - To secure digital content (DRM)
    - Cirrus has the unbreakable unique ID necessary for Microsoft’s next generation DRM
    - Used as the unique ID for multiple DRM algorithms
Cirrus Solution Partners

Tools
- ARM
- EPI
- Green Hills Software
- ARROW
- Red Hat
- IAR Systems
- OCDemon

OS
- Linux
- eCos
- Wind River
- Microsoft Windows CE

Software
- EMSOFT
- LYNUXWORKS
- Symbian
- Emszed
- SQ Squared
- Media Player
- SWELL SOFTWARE
- nMGUI
- Ortena Networks
- Mojo Designs

Hardware
- Accelent Systems
- Aeronix
- Paragon Innovations
- Insight
- Visiontek
- TechSOL
- WIND RIVER

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Agenda

- New ARM9 Family
- The Cirrus Advantage
  - Entry Level ARM9
  - High End ARM9
- New EP9301 with low cost Development Board
Entry-Level ARM9 SOC Processor - EP9301

- **ARM920T processor**
  - 166MHz core / 66MHz bus
  - 16K-I 16K-D caches
  - MMU enabling Linux, WinCE.NET®

- **Entry level feature set**
  - 1/10/100 Ethernet MAC
  - 12-bit, 5-input ADC
  - 2 Port USB 2.0 Full speed host
  - SPI port
  - 2 UARTs
    - With soft modem support
    - Overload with slow IrDA or HDLC
  - Stereo I²S or AC’97
  - 16-bit memory interface controller
    - SDRAM, ROM, Flash, SRAM
  - 12 channel DMA

- **Timers, flexible interrupts, and GPIOs**
- **208-LQFP package**
  - Commercial & Industrial grades
Super Low Cost Evaluation Kit
(EDB9301)

• Full Featured
  – EP9301 Processor Board
  – Connectors for Ethernet, Serial, I²S Audio
  – User can populate USB connectors
  – 4” x 6” form factor

• Plus Software
  – WinCE .net 4.2 image in flash
  – Kernel port of Linux 2.4.21
  – WinCE .net 4.2 BSP
  – Evaluation disks for tools from ARM, IAR, and Microsoft’s Platform Builder

Available Now!

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Agenda

• New ARM9 Family
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New EP9315 with feature rich Development Board
The Best ARM9 from Cirrus - EP9315

- ARM920T processor
  - 200MHz core / 100MHz bus, 16K-I 16K-D
  - MaverickCrunch™ math coprocessor

- Even higher I/O integration
  - PCMCIA interface
    - 3 Port USB 2.0 Full speed host
    - 1/10/100 Ethernet MAC
    - 3 UARTs including IrDA, HDLC
    - I²S (up to 6 channels), SPI, AC'97
    - EIDE interface, 2 devices
    - Memory interface controller
    - 12 channel DMA
    - LCD, touch screen, and keypad controllers
      - Display to CRT, LCD, NTSC, PAL
      - High speed channel to display buffer
  - 2D Graphics Engine

- Timers, flexible interrupts and GPIOs

- 352-BGA package
  - Pin-compatible with EP9312
  - Commercial & Industrial grades
Feature Rich Evaluation Kit
(EDB9315)

- Full Software Suite
  - WinCE.net image in flash
    - Kernel port of Linux 2.4.21
    - WinCE.net 4.2 BSP
    - Evaluation disks for tools from ARM and IAR
  - Evaluation disks for Microsoft’s Platform Builder tools

- Amazing Features
  - EP9315 Processor Board
  - Touch-enabled TFT screen
  - Keyboard, power supply, cables
  - Connector for PCMCIA, 2 IDE devices, Ethernet, USB, I²S, PS2, Serial, Television, CRT, and Keypad

$2745

Available Now!

www.cirrus.com
## Cirrus’ ARM9 Family Overview

<table>
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<tr>
<th>Device</th>
<th>Ethernet MAC</th>
<th>PCMCIA</th>
<th>IDE</th>
<th>USB hosts</th>
<th>Display</th>
<th>Graphics Accel.</th>
<th>Touch/ADC</th>
<th>Keypad</th>
<th>UARTs</th>
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<tbody>
<tr>
<td>EP9301</td>
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<td>5 ADC</td>
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<td>v</td>
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<td>8x8</td>
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</tbody>
</table>

All devices feature MaverickKey™, ARM920T core, SRAM/DRAM/ROM/Flash mem. intfc., I²S audio, JTAG, timers, GPIO. All devices except the EP9301 also feature MaverickCrunch™.