Apple A4 vs. SEC S5PC110A01

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Young Choi
A4 and S5PC110A01

• A4 Processor
  • Main processor for the Apple iPad
  • 1GHz ARM Cortex A8 core (alleged)

• S5PC110A01
  • Applications processor for the Samsung Wave S8500 smart phone
  • 1GHz ARM Cortex A8 45nm core (announced by Samsung)
  • Cache size:
    • L1 I$ = 32KB
    • L1 D$ = 32KB
    • L2 = 512KB
  • Graphics engine: POWERVR SGX 3D engine from Imagination Technologies
A4 vs. S5PC110A01 - Die Photos

Apple A4 Processor
Chip Size = 53 mm²

SEC S5PC110A01 Processor
Chip Size = 62 mm²
ARM Core Comparison

ARM Core of Apple A4 Processor
Rotated 90 degree CCW from die photo

ARM Core of SEC S5PC110A01 Processor
Samsung opens the door to PC-level performance on mobile devices with 1 GHz low-power application processors

September 22, 2000 : Samsung Electronics Co., Ltd., a world leader in advanced semiconductor solutions, today introduced two new 1 GHz ARM® CORTEX™-A8 based application processors, the SSPC110 and SSPV210, for advanced mobile devices at the sixth annual Samsung Mobile Solutions Forum held at the Westin Taipei Hotel. The SSPC110 is targeted for small form-factor connected devices such as multimedia intensive smartphones, while the SSPV210 is aimed at portable computing devices such as netbooks that demand high performance and design flexibility.

"More and more, user-generated content is currently accessed via the PC will be spread to mobile devices," said Dr. Kwang Hyun Kim, senior vice president, strategic marketing team, System LSI Division, Samsung Electronics. "PC-level performance with lower power consumption will become mainstream requirements for advanced mobile devices. Samsung developed SSPC110 and SSPV210 application processors to satisfy these conflicting requirements to enable a new level of user experience not previously possible."

Both the SSPC110 and SSPV210 ensure longer battery life for mobile devices running on standard size batteries through a variety of low power technologies, including the use of a 45 nanometer (nm) Low Power fabrication process and intricate low power architectures. Each of these application processors comes with 32K data and 32K instruction caches, and is equipped with a 512 K L2 cache. With the 1 GHz clock speed and large size L2 cache, these processors enable real-time applications such as web browsing and user interface (UI) to run smoothly with a fast response time.
Summary

• Initial investigation revealed that the ARM core used in the Apple A4 processor and the Samsung S5PC110A1 processor are identical.

• This furthers TechInsights’ earlier finding that the A4 processor was based on the ARM Cortex A8 core with a minor correction: L2 Cache: 640KB -> 512KB.

• TechInsights believes that the next Android based smart phone from Samsung, Galaxy S, will use the same applications processor, S5PC110A1.