Embedded Computing Conference
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Computer-On-Modules scalability with AMD products

Zeljko Loncaric
Marketing Engineer
Overview

- Computer-On-Module Concept
- Why AMD® Fusion G-Series?
- AMD® Fusion G-Series Platform Architecture
- AMD® Fusion technology on ETX, XTX and COM Express for a perfect form-fit-function setup
- Outlook – AMD on Qseven
- AMD® Fusion G-Series Processor Overview
- AMD® Fusion G-Series Performance Overview
- AMD COM Positioning
Module Concept

- Concept
  - CPU board with standard PC core functions
  - Baseboard with customer specific functions and size

- Customer benefits
  - Reduced development costs
  - Faster time to market
  - Fast reaction on market trends
  - Scalable product range
  - Investment security by technology upgrade
  - Engineering resources can be focussed on system functions
  - Second source philosophy
Positioning Qseven / COM Express

- Qseven Arm
- Qseven x86 (Full custom design)
- COM Express
- Standard Board
- **Size (Volume)**
  - COM Express
    - 95x125x18mm³ = 145,8cm³
  - Qseven
    - 70x70x11,9mm = 58,3cm³

- **Max. Power consumption**
  - 147 Watt vs. 12 Watt

- **Main Power**
  - 12 Volt vs. 5 Volt
  - Easier design for battery operation

- **Ruggedness**
  - Equal specification
Why AMD® Fusion G Series?

- Excellent performance-per-watt ratio - also for dual core CPUs
- Low cost
- Fills the market gap with low power consumption and high graphic performance
- For Digital Signage, Gaming, Automation, Medical

Implemented for all major COM standards
AMD G-Series Platform

- **Fast x86 platform with**
  - Fast computing performance
  - Excellent software support
  - Low power consumption
  - Rich interface selection – including DisplayPort
  - Native PCI Bus support

- **Extreme graphics performance**
  - Integrated high end Radeon graphics
  - Increasing graphic performance compare to CPU
  - Flexible task allocation on the CPU and GPU
AMD G-Series Platform (eOntario)

AMD Embedded G-Series Platform Architecture

- 14x USB 2.0
- 2x USB 1.1
- HD Audio
- Integrated Ethernet MAC (A55E)
- Dual DVI / HDMI™ or DisplayPort
- LVDS
- VGA
- 64-bit
- 4x1
- 4x1
- 4x1
- 6x SATA 6GB/s w/RAID (A55E)
- Gen 2
- 33MHz PCI (A55E)

1. Capable of driving a total of two independent displays in a variety of combinations.
AMD eOntario COM Express Type II
conga-BAF Feature Set

- **Highlights**
  - Hudson-E1 Fusion Controller Hub
  - DDR3 SODIMM memory up to 8 GByte
  - High Performance Video DirectX®11 graphics with UVD 3.0
    - Integrated Radeon Graphics Core
  - Multiple Video Output
    - 2x24bit LVDS, VGA, 2x HDMI or DisplayPort
  - 4x Serial ATA® 3.0
  - 1x EIDE (UDMA-66/100)
AMD eOntario XTX Module
conga-XAF Feature Set

**Highlights**

- Hudson-E1 Fusion Controller Hub
- DDR3 SODIMM memory up to 4 GByte
- High Performance Video DirectX® 11 graphics with UVD 3.0
  - Integrated Radeon Graphics Core
- Multiple Video Output
  - 2x24bit LVDS, VGA, 1x HDMI or DisplayPort
- 2x Serial ATA® 3.0
- 2x EIDE UDMA-66/100 via PCIe to PATA controller
  - No legacy support, OS driver required
AMD eOntario ETX Module
conga-EAF Feature Set

- **Highlights**
  - ETX Revision 3.02 compliant
    - 2x Serial ATA® 3.0 connectors
  - Hudson-E1 Fusion Controller Hub
  - DDR3 SODIMM memory up to 4 GByte
  - High Performance Video DirectX®11 graphics with UVD 3.0
    - Integrated Radeon Graphics Core
  - Multiple Video Output
    - 2x24bit LVDS, VGA, 1x HDMI or DisplayPort
  - 2x EIDE UDMA-66/100 via PCIe to PATA controller
    - No legacy support, OS driver required
  - Native PCI support
  - Transparent high-performance PCI to ISA Bridge
Compact and low cost COM

- Coming now
- Qseven COMs featuring AMD embedded G-Series
  - Dual & Single core versions
  - Low Power CPU
  - Soldered RAM 2 GByte
  - Supporting DisplayPort
  - On board SSD up to 32 GByte
  - Gigabit Ethernet
  - 4 PCI Express lanes
  - 8 USB
  - 2 SATA

Compact size
- 7 x 7 cm (2¾” x 2¾”)
Power Efficient Processors

- **AMD G-T56N**
  - AMD eOntario 1.6 GHz Dual Core (L2 cache 2x 512kB, 18 W)

- **AMD G-T48N**
  - AMD eOntario 1.4 GHz Dual Core (L2 cache 2x 512kB, 18W)

- **AMD G-T40N**
  - AMD eOntario 1.0 GHz Dual Core (L2 cache 2x 512kB, 9W)

- **AMD G-T52R**
  - AMD eOntario 1.5 GHz Single Core (L2 cache 512kB, 18W)

- **AMD G-T44R**
  - AMD eOntario 1.2 GHz Single Core (L2 cache 512kB, 9W)
Low Power Efficient Processors

- AMD Embedded G-Series Low Power Processors

- AMD G-T40E
  1.0 GHz Dual Core (L1 cache 64KB, L2 cache 512kB x2, 6.4 W)

- AMD G-T40R
  1.0 GHz Single Core (L1 cache 64KB, L2 cache 512kB, 5.5W)
Overall Performance Comparison

Relative Performance

- Intel Core i5-520M 2.4GHz 2C
- AMD G-T56N 1.6GHz 2C
- AMD G-T48N 1.4GHz 2C
- AMD Athlon™ Neo X2 L325/780E 1.5GHz 2C
- AMD Sempron™ 210U/780E 1.5GHz 1C
- AMD G-T44R 1.2GHz 1C
- Intel Atom D510 1.67GHz 2C

Performance benchmarks are the geometric mean of compiled data from the overall benchmark scores from the listed tests. The geometric mean of scores is normalized to the Intel Atom D510 processor.

Performance Benchmark Suite
- POVRay 3.7 Beta 23 Pixels-per-second
- BAPCO® SYSmark® 2007 Preview Rating test, v1.02.396
- Futuremark Corporation 3DMark™06, Professional Edition v1.1.0
Graphics Performance Comparison

The scores are normalized to the Intel Atom D510 processor.

Performance Benchmark
- Futuremark Corporation 3DMark™ 06, Professional Edition v1.1.0