AIoT SoC Platform

SEMIFIVE SoC Platforms can quickly turn your critical IPs or winning specifications into fully functioning SoC at a fraction of risk, time, and effort. The AIoT SoC Platform offers the best solution to build custom IoT and edge processing devices, enabled with silicon-proven design components on Samsung 14nm process and extensive hardware/software environments to instantly get your chip ready for systems.
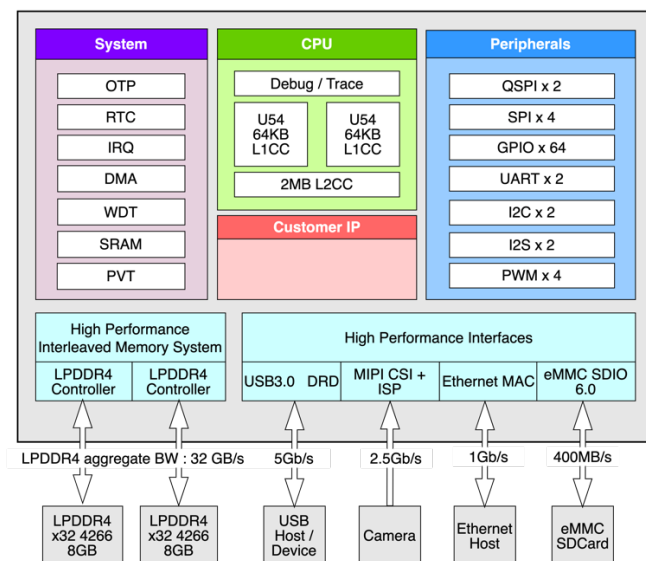
Highlights

- Optimized for high performance, power efficient AIoT applications
- Built using Samsung Foundry's mass production proven 14nm FinFET process technology
- Complete solution with:
  - Package design and implementation
  - Evaluation board
  - Software and drivers

Target Applications

- Consumer (e.g., wearables)
- Surveillance and Smart Security
- Smart home incl Voice processing with AI
- Industrial IoT (incl smart factory)
- Drone
- Robotics

Block diagram

Key features

Process node	• Samsung Foundry 14nm
Die size	• 3.7 x 3.7mm2 (Estimated, excluding customer IPs)
Target operating frequency	• 900 MHz
CPU core	• Dual Core SiFive U54 RISC-V (up to 1GHz) • Include Debug & Trace
Memory interface	• 2 channel LPDDR4 (4GB ~ 16GB) • Up-to 4266MHz
I/O Interfaces	• USB 3.0 DRD • SNOR Flash memory with XIP support • Off-chip component (SPI/I2C) • MIPI Camera I/F • I2S Audio I/F • SD Card & eMMC memory • Timer includes PWM • UART • GPIO
NPU	• 1.0 TOPS for DL Inference Acceleration (Optional)
Multimedia	• 8M-pixel ISP
Low power features	• Clock & Power gating controlled by S/W • Under 5uA @ Always On block
System controller	• RTC • Interrupt Controller • DMA • Watch-dog Timer • PVT (Power, Voltage & Temperature) monitoring
Software	• Yocto-based Linux build system • Boot process and Linux device driver • Reference Linux BSP for the evaluation Board • DDR tuning S/W • Debug solutions (GDB/TRACE32)

SoC Platform Engagement Models

Max Efficiency Model
By reusing the platform architecture and feature subblock tailored for this domain, customers can focus on their differentiation and maximize efficiency of SoC development. Perfect for SoC prototyping or high-value applications that require super-fast time-to-market speed.

Max Flexibility Model
SEMIFIVE Platform technology offers flexibility to configure the platform architecture to your application's special requirements. SEMIFIVE can also develop new subblock design to add features necessary for the application. It's the best way to explore the trade-offs between time and cost.