

## EcoXiP™ Non-Volatile Memory System Accelerating Memory for eExecute-in-Place

### Performance and Power Benchmark Comparisons

Internet of things (IoT) and embedded devices such as wearables, medical monitors, Point-of-Sale controllers, and other connected embedded systems must be designed to handle more intelligent local data processing.

Higher levels of functionality, new wireless protocol stacks and advanced software mean these devices need more program memory than can be implemented economically on-chip using embedded Flash or SRAM memory, and less than what is offered by the smallest DRAM devices. To hit performance targets, system designers currently must invest in memory solutions that are expensive, power-hungry and performance limiting.

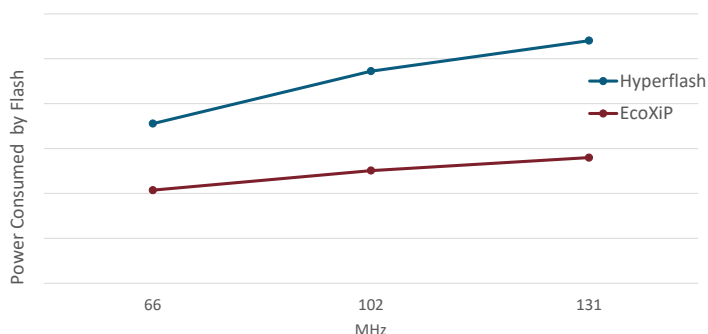
Adesto's new EcoXiP non-volatile memory replaces expensive, energy-inefficient architectures, making power and performance trade-offs unnecessary in a wide range of connected devices. EcoXiP *more than doubles processor performance, lowers system power consumption and reduces system cost.*



### EcoXiP: Features and Benefits

- **Optimized high-speed, octal DDR interface dramatically reduces latency and delivers superior CPU performance**
- **Concurrent Read/Write capability reduces system cost; eliminates the need for additional Flash devices to handle over-the-air updates or data logging**
- **Densities from 32 to 128M enable designers to change memory capacity without the expense of SOC redesign**
- **Designers can use less embedded Flash or no embedded Flash – enables scaling to 28nm and finer geometries, leading to faster, lower-power, lower-cost SOCs**
- **Best standby power: configurable strength IO pins and a range of power management features lead to improved device and system power consumption**

### EcoXiP vs HyperFlash™ Power (CoreMark®)



Power was measured on the NXP RT1050 while running CoreMark®. CPU performance was equivalent with the two Flash devices.

### CoreMark® Performance on NXP RT1050\*

EcoXiP Delivers Higher Performance than Std. Quad Flash

5% "Miss Rate"

SCK	131MHz	102MHz	66MHz
Standard Quad SDR	NA	1364	1116
EcoXiP Octal DDR	1912	1848	1701

10% "Miss Rate"

SCK	131MHz	102MHz	66MHz
Standard Quad SDR	NA	888	687
EcoXiP Octal DDR	1416	1348	1192

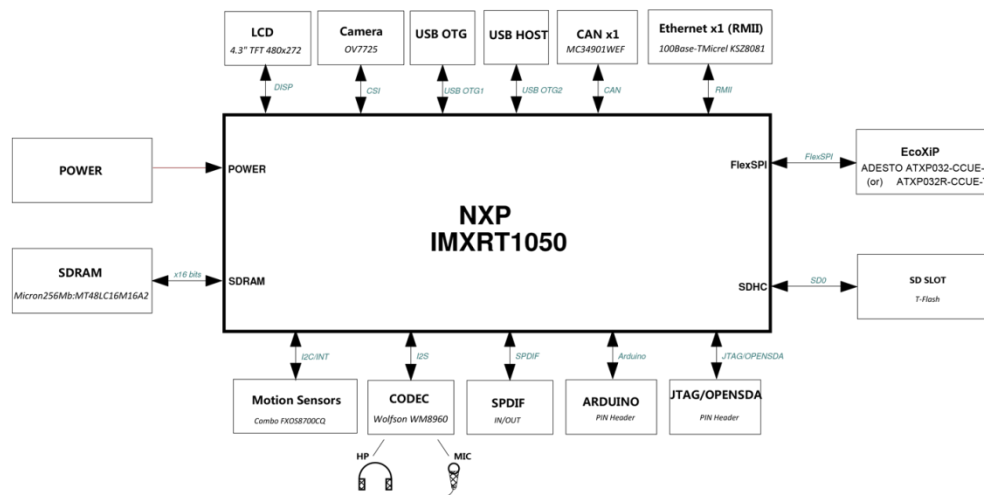
\*RT1050 M7 CPU runs at 600MHz.

## Key Specifications

- Memory Array: 32, 64, 128Mbit of Serial Flash
- Interface: High-speed QPI (7 pin)/ Octal (11 pin), Single Data Rate and Dual Data Rate
- Read Bandwidth: 133MBs/266MBs
- Power Supply: 1.65V-1.95V
- Standby Supply Current: <35µA
- Deep Power Down Supply Current: <4µA
- Ultra Deep Power Down Supply Current: <200nA
- Program/Erase Supply Current: 15mA
- 8-pin DDR – 1.8V Supply Current: 1mA + 142µA/MHz\*
- 4-pin DDR – 1.8V Supply Current: 1mA + 91µA/MHz\*
- 4-pin SDR – 1.8V Supply Current: 1mA + 65µA/MHz\*

\*KGD Read @ 1pf load

## Block Diagram



**Adesto Technologies** is a leading supplier of value-added semiconductor solutions for code and data storage. Its product portfolio includes DataFlash®, Fusion Serial Flash, EcoXiP, Mavriq™ and Moneta™ serial memory products. Adesto is based in Santa Clara, California (USA). For more information, visit <http://www.adestotech.com>.



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