High-performance, low-power octal flash

EcoXiP ATXP Series

New IoT device design ideas may outgrow the embedded flash in your current MCU. Instead of paying a premium to increase the embedded flash, designers are looking to low power, high data rate external flash to expand code and data storage. Dialog's EcoXiP™ flash uses an improved SPI protocol and high-speed bus to deliver a faster data rate and consume less power.

Blazingly Fast
Dialog's EcoXiP octal flash delivers a 300 MB/s data rate for instant-on performance, UI graphics and data intense AI on the edge applications. Execute directly out of EcoXiP to reduce boot time and free the design from dependence on power hungry DRAM.

Lowest Power
No need to sacrifice performance in power-conscious designs. Dialog's EcoXiP uses intelligent power management and a high-efficiency read operation to reduce latency and enable 40% higher CPU performance - all while cutting power consumption by up to 50% compared with other octal flash solutions.

Improve System Performance with Read While Write (RWW)
Program and erase times can choke system performance. EcoXiP employs Read While Write (RWW) to remove system bottlenecks by allowing read operations even while logging data or implementing system updates in the background.

High Efficiency eXecute in Place (XiP)
System designs aiming to overcome the embedded memory hurdle are migrating to a flash-based XiP architecture. EcoXiP uses an improved SPI protocol for easier instruction fetches and better power efficiency than other quad and octal flash solutions. EcoXiP prevails over the prohibitive cost and power consumption drawbacks of volatile embedded SRAM and DRAM.

Up to
150MHZ
300MB/s

200nA
power down

Up to
128Mb
flash

EcoXip, Better CoreMark® score than quad and octal

Dialog EcoXiP
- Performance
- Efficiency

Hi-speed Octal
- Performance
- Efficiency

Quad
- Performance
- Efficiency

Performance
CoreMark® test on NXP's i.MXRT1050 with 8 instruction cache invalidations every ms to simulate task switching & interrupt handling.

Efficiency
CoreMark® score / power consumption

dialog SEMICONDUCTOR

Technical Specifications

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Superior xSPI protocol for easier instruction fetch	• Reduces average latency • Enables 40% higher CPU performance
Optimized for eXecute in Place (XIP)	• Supports boot code applications • Instant-on performance
Fast data rate; 150MHz frequency and Octal xSPI with DDR	• Up tp 300 MB/s data rate
Power management and automatic ultra-deep power-down	• 200nA typical
Low read current	• Up to 50% power savings versus standard octal
Small page erase	• Reduced system power and faster datalogging performance
Active Status Interrupt	• Reduce MCU overhead and save power associated with checking status during memory erase and programming cycles
Read While Write (RWW)	• Remove system bottlenecks • Eliminate multiple flash; reduce system cost • Continue normal system operations even while logging data or implementing system updates
Security register	• 256 byte OTP
JESD251 and JESD2160	• Full compatibility with SFDP and xSPI specifications

Applications

- AI on the edge
- Instant-on modules
- Building automation datalogging
- Smart speakers
- UI graphics
- Virtual assistants
- Wearables
- OTA intensive applications
- Medical devices
- Audio subsystems

EcoXiP Products

Density	Part Number	Speed	Ultra-Deep Power-Down	RWW	Datasheet
128Mbit	ATXP128	150MHz	•		Download
64Mbit	ATXP064B	133MHz	•	•	Download
32Mbit	ATXP032	150MHz	•		Download

EcoXiP Block Diagram
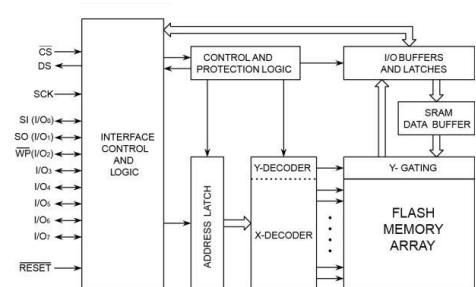
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