Achieving Higher-Density Code Storage with Flash Memory

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Continuous Growth in Code Storage Flash

Serial Flash is the code storage product of the future – 3V, 1.8V and 1.2V

Code storage market grew continuously and has extended to higher densities
512Mb and lower densities are supported by NOR – mainly Serial
1Gb and higher densities are supported by SLC NAND
1.2V & 1.5V Serial Flash Save Power

1.8V*4mA=7.2mW

1.2V*4mA=4.8mW

7.2mW - 4.8mW = 2.4mW

2.4/7.2 = 33%

33% Power Saving

1. Simplifies power domain design
   - Reduces SoC cost and System level BOM cost
2. High speed read operation and ultra low stand-by power
   - Extends battery usage time
3. Reduces noise coupling
   - Flexible PCB design - Ideal for compact design

Saves Battery Power, Increases usage time!
W25N Serial NAND Flash Memory

Seamless transition to SLC NAND with standard SPI interface

- Same package and same pin-out, lower cost per bit
- Built-in features: ECC, Bad Block Management - offload external controller
- Continuous Read - Improves system efficiency
Code Storage
- NOR Technology
- Small Density
- High Reliability

Data Storage
- NAND Technology
- Large Density
- High P/E Speed

“Small 8-pin Packages”
“Concurrent Operations”
“Flexible Density Combinations”

“Software Die Select”
“Continuous Read”
“Compatible SPI protocols”

Ideal for compact design.
Winbond Security Memory

1) Authentication
- Flash + Authentication
- HW crypto engine for multi-layered authentication in flash memory
- Remote device health monitoring
- Scalable capacity

2) Tamper Resistance
- Tamper resistant with anti-replay, roll-back and anti-sniffing protection
- Secure data storage, RAM shadowing
- Scalable capacity

3) Smart Card Technology
- Secure code storage, Authenticated XiP
- CC EAL5+ with anti tampering, side-channel and fault injection protection
- Scalable capacity

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Future of Code Storage Memories

- Serial NOR Flash from 512Kb through 256Mb densities will continue to be used for IoT, Computer, Consumer and all common applications.
- Serial SLC NAND Flash in the SPI interface is getting very popular and will continue to be used in high density code storage applications from 512Mb through 8Gb densities for the foreseeable future.
- High density code storage applications include Automotive, Industrial, Storage, Networking, STB and Industrial-IoT applications. Some of these applications could also use SLC ONFi NAND Flash for legacy reasons.
- For density flexibility and space constrained applications, SpiStack products will be used with NAND for data storage and NOR for code storage combined - in a single package.
- For enhanced security, Serial Secure Flash will be used in all types of applications for many years into the future.
Thank You!!

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