Navigating the sea of flash disks

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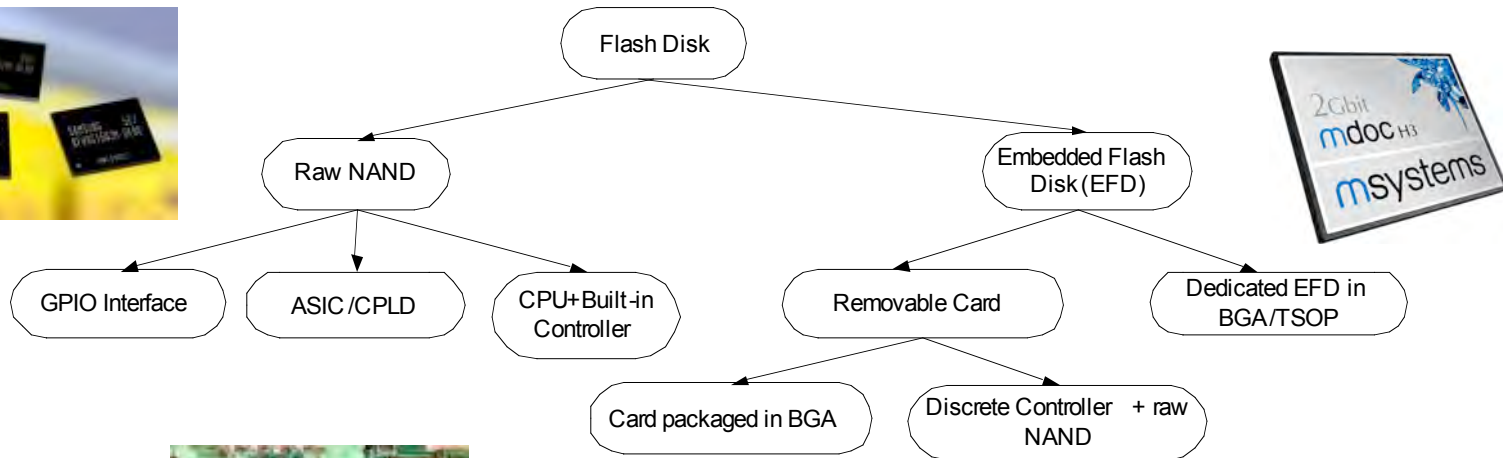
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Asking the right questions

- What electrical interface should I be using?

- Which flash disk can also replace the traditional boot flash in order to save board real estate and costs?

- Can I get scalability and a migration path to different densities?

- What are my package options?

- Do I need multiple memory types packaged in a single device?

- Is card grade reliability good enough?

- Does the performance suit my application needs?

- What do I need from a host driver?

- What are my customization options?

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Mapping the Territory

Flash Disk

Raw NAND

Embedded Flash Disk (EFD)

GPIO Interface

ASIC /CPLD

CPU+ Built -in Controller

Removable Card

Dedicated EFD in BGA/TSOP

Card packaged in BGA

Discrete Controller + raw NAND

Interpreting data sheet specifications

- Operational features not specified - lack of JEDEC or other de facto definition for parameters that define how flash is really used

- Performance – sustained read and write transfer rates

  - Meaningless without the exact test scenario

  - Do they include file system, operating system (OS) and application overhead?

  - Are they based on access times applicable to your CPU?

  - Can the performance be achieved only with DMA and IRQ support?

  - Do they assume transfer sizes (single sector or multi-sector) that match the usage scenario?

- Current and power

  - RMS values do not tell the whole story

  - What is more important: deep power-down values or the energy (not just current) required to complete a sector read/write operation?

Summary

- Comparing flash disk options requires more than data sheet parameters

- Before making a final selection, present your requirements and usage scenario to the flash disk vendor

- Evaluate actual hardware from multiple vendors to find the right solution for your application

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Thank You