

Purpose-Built SSD and Applications

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General SSD Requirements

- Commercial/Consumer
 - Performance/Price
- Enterprise
 - High IOPs; Endurance; Predictable performance
- Industrial
 - Environment Tolerance; Data retention
- Military
 - Extreme Environment Tolerance; Extreme data retention

Why the Purpose-Built SSD?

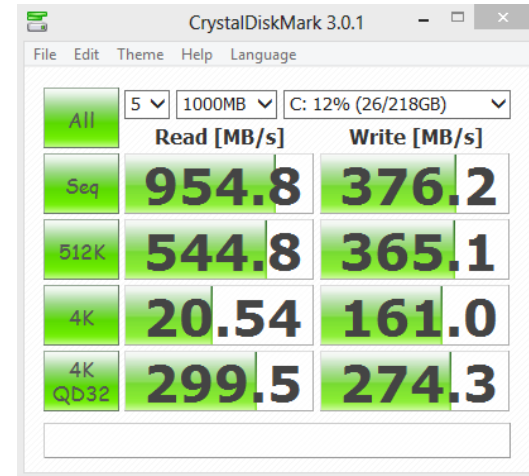
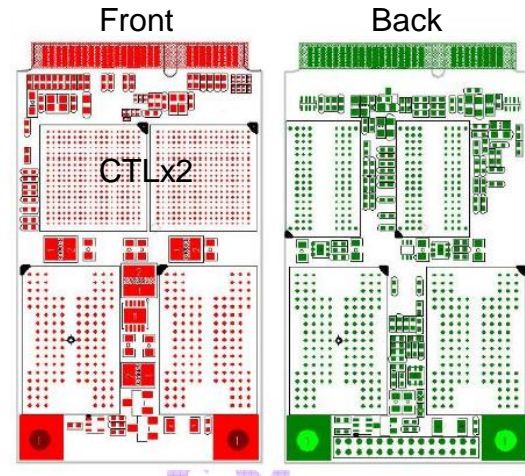
- Commodity SSDs just can't address some requirements in specific application.
- Commodity means “Me-too”. No product difference.
- End-to-end ability make purpose-built SSD possible. It brings unique benefit to the end product.

Case 1: Double-Speed mSATA

- Requirement: Build a extreme performance mSATA SSD in Ultrabook
- Why not using a PCIe SSD?
 - Time to Market – Double Speed mSATA in 4Q/2012
 - Only minor design modification.
 - Performance is competitive vs. Single Chip PCIe SSD today.
- RAID-0 mSATA: *A purpose-built* consumer SSD

Case 1: What We Have Done?

- A Purpose-Built mSATA SSD with
 - Dual SATA interface in one mSATA connector.
 - Dual Flash controller
 - A 2-into-1 compact design.
 - Deliver high performance in consumer market in 4Q/2012.



CrystalDiskMark 3.0.1

File Edit Theme Help Language

5 1000MB C: 12% (26/218GB)

	Read [MB/s]	Write [MB/s]
All	954.8	376.2
Seq	954.8	376.2
512K	544.8	365.1
4K	20.54	161.0
4K Qb32	299.5	274.3

Case 2: SSD in Automotive App

- Solution: First BGA industrial SSD (uSSD)
- Why not using eMMC?
 - eMMC is good to the car navigation system and the car entertainment system.
 - eMMC performance is still limited now.
 - SATA technology is ready and mature. Power consumption is not the most concern in a car system.

Case 2: SSD in Auto Driving Cars

- Application Summary
 - Concurrent sensors/radar inputs - IOPs requirement for dynamic traffic reaction
 - Real-time Interactive computing.
 - Small finger print and SMT: 16x20x1.4mm.



Case 3: SSD in Thunderbolt

- Requirement: High bandwidth with strict power requirement.
- Our design:
 - First high performance Thunderbolt single drive.
 - Dual SSD controller
 - Adaptive data flow rate control to prevent overheat.
 - DC power awareness performance tuning. – meet power requirement.



Phison Product Portfolio



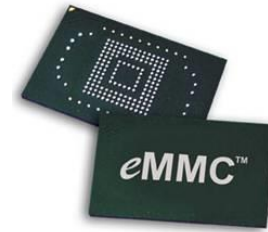
USB Flash Drive



SD & microSD



CF



eMMC

End to End Capability: Controllers / Firmware / Products



PATA/SATA
Flash Module



SSD



uSSD



Smart Card
microSD

Phison SSD Controller Family

PS3107: *Economy* SATA2 SSD

- ❑ Low cost & low density
- ❑ Module and Embedded applications



PS3108: *Mainstream* SATA3 SSD

- ❑ High performance & high density
- ❑ Main storage applications



PS3109: *Embedded* SATA3 SSD

- ❑ High performance on low density SSDs
- ❑ Perfect for cache SSD/module



PS3110: *Performance* SATA3 SSD

- ❑ High performance & high density, 540MB/540MB performance
- ❑ Support both MLC and TLC flash



Coming Soon

PS5006: *Future* PCIe SSD

- ❑ PCIe gen2 x4 = 2GB bandwidth, Read: 1.8GB/s, Write: 1.3GB/s
- ❑ Support both MLC and TLC flash



Coming Soon

- Broad flash management expertise is required in purpose-built SSD.
- End-to-end in-house technology makes purpose-built SSD possible.
- Purpose-built SSD can bring unique value to the end product.
- There are still a lot of purpose-built SSD applications deployed in embedded space.



Thank You

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