

## PRODUCT BRIEF

# SF-1000 Evaluation 2.5" SATA SSD and Reference Design

### Features

- Completely functional SSD with an industry standard 2.5" form factor based on the SandForce SF-1500 SSD Processor
- Includes SandForce DuraClass™ technology for best-in-class performance, endurance, and power efficiency
- "Plug and play" 3Gb/s SATA v2.6 interface with 32-command NCQ support
- Supports enterprise-class electrical and functional requirements with super-capacitor for catastrophic power-fail data protection
- Full range of features are supported including temperature sensor, firmware and boot code upgradability, LED indicators, power supply monitors, and RS-232 debug port
- Connector-less probing system for subsystem verification and manufacturing tests
- Turnkey solution ready for OEM customization and quick product deployment through desired CM
- Lowest BOM cost for any enterprise SSD

### Overview

The SandForce™ SF-1000 Evaluation 2.5" SATA SSD and Reference Design brings today's critical enterprise storage needs — performance, reliability and price — together in one package like never before. Utilizing the SandForce SF-1500 SSD Processor, the reference design delivers the exclusive DuraClass™ technology to achieve industry-leading performance from all types of Flash memory, giving drive manufacturers the flexibility to minimize costs without compromising performance or reliability. The SandForce SSD processor's intelligent block management and wear leveling extends the overall endurance of MLC based SSDs to exceed an enterprise-class 5-year lifespan. Further enterprise-class features are built into the reference design, including super-capacitor support for power failure data protection, support for up to 16 Flash memory devices, AES-128 encryption, superior ECC algorithms, and unique RAISE™ technology for maximum data security and integrity.

### SSD Processor Expertise

SandForce has revolutionized Flash controller technology to establish a new class of SSD with combines reliability, performance, and power efficiency using commodity NAND Flash memory. Its state-of-the-art SSD Processor ensures the SSD will operate at its maximum potential.

### Target Applications

The SF-1000 Evaluation 2.5" SATA SSD and Reference Design targets enterprise workstation and server

storage systems with 2.5" (SFF) drive bays. The use of DuraClass technology enabled by the SandForce SSD processor allows for best-in-class reliability and performance.

### Cost Effectiveness

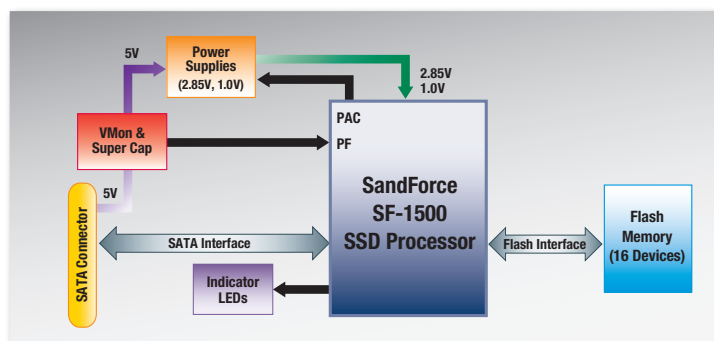
The SandForce SSD processor enables commodity Flash memory to be used in enterprise applications. The reference design provides the greatest flexibility in sourcing NAND Flash memory parts. Even with highly cost effective MLC memory devices, advanced wear leveling and performance optimization enables the SF-1000 2.5" SATA Reference Design to target the demanding enterprise market without compromise.

### Standards

The SF-1000 SSD 2.5" Reference Design is architected to enable drive-makers to meet the latest national, international and industry standards including RoHS, UL, FCC Class A/B and others to speed design and testing phases to minimize time to market worldwide.

### Sample Kit

- Fully functional 2.5" SATA SSD
- Royalty-free licensable schematics and layout info
- Design and production test guidelines and documentation
- Firmware upgrade tool



SF-1000 Evaluation 2.5" SATA SSD Block Diagram

## SF-1000 Evaluation 2.5" SATA SSD and Reference Design

<b>SandForce SSD Processor:</b>	SF-1500 Enterprise Series	
<b>DuraClass™ Technology:</b>	DuraWrite™ extends the endurance of SSDs Intelligent Block Management and Wear Leveling Intelligent Read Disturb Management Intelligent “Recycling” for advanced free space management RAISE™ (Redundant Array of Independent Silicon Elements) Intelligent Data Retention optimization Best-in-Class ECC protection for longest data retention and drive life	
<b>Host Interface:</b>	SATA 2.6 Compliant, 3Gb/s and 1.5Gb/s support Native Command Queuing (up to 32 commands) SMART Command Transport	
<b>Form Factor:</b>	2.5"	
<b>Performance (sustained):</b>	<b>Sequential Read &amp; Write Transfer:</b> 260MB/s (@128K blocks) <b>Random Read &amp; Write IOPS:</b> 30,000 (@4K blocks)	
<b>Power Consumption:</b>	<b>Typical:</b> 1.97W	
<b>Security:</b>	<b>Data Encryption:</b> 128-bit AES-compliant, User Selectable Encryption Key	
<b>Protection:</b>	<b>ECC Recovery:</b> Up to 24 bytes correctable per 512-byte sector <b>Unrecoverable Read Errors:</b> Less than 1 sector per 10 <sup>17</sup> bits read <b>Power Failure Protection:</b> Super-capacitor circuit	
<b>MTBF:</b>	TBD	
<b>Operating Temperature:</b>	0°C to 70°C	
<b>Voltage:</b>	5V	
<b>Additional Features:</b>	<ul style="list-style-type: none"> <li>• RS-232 Debug Port</li> <li>• ACTIVITY and FAULT LED indicators</li> <li>• On-board temperature sensor</li> </ul>	<ul style="list-style-type: none"> <li>• Serial EEPROM for optional custom boot code</li> <li>• Midplane activity signal</li> <li>• SSD staggered “link up” control support</li> </ul>

### Ordering Information

Part Number:	Capacity:	Memory Type:
SF-D1560TS6SAA	64 GB*	Samsung SLC 50nm TSOP
SF-D1560TM1SAA	128 GB*	Samsung MLC 50nm TSOP
SF-D1560TS1MBA	128 GB*	Micron SLC 34nm TSOP
SF-D1560TM2MBA	256 GB*	Micron MLC 34nm TSOP
SF-D1560TM2MCA	256 GB*	Micron MLC 34nm LGA
SF-D1560TM2TBA	256 GB*	Toshiba MLC 43nm LGA

\* 1GB=1 billion bytes



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