



6Gb/s SAS Enterprise 2.5" SSDs

Optimus® Product Family of SAS SSDs

Outstanding performance for a variety of mixed-use, read-intensive and write-intensive applications.

Optimus Eco™ and Optimus Ascend™/Mixed-Use Application Workloads

- On-Line Transaction Processing (OLTP) Databases
- Financial Transactions
- E-Commerce
- E-Mail/Messaging
- Virtual Desktop
- Collaboration

Optimus Eco (2TB)/Read-Intensive Application Workloads

- Web Servers
- Media Streaming
- Virtual Tape Libraries (VTL)
- Video on Demand (VOD)
- Web-based Applications
- File Servers

Optimus Ultra™ and Optimus Extreme™/ Write-Intensive Application Workloads

- High Performance Computing (HPC)
- Oil and Gas
- Life Sciences
- Aerospace
- Engineering
- Media Editing
- Analytics
- Indexing
- Database Logging

Through a combination of unique and innovative IP, and the use of enterprise Multi-Level Cell (eMLC) flash, SanDisk's newest generation of 19nm eMLC SSDs feature a native SAS 6Gb/s interface, outstanding performance metrics, and a comprehensive set of high-end features making them ideal to integrate with existing infrastructure for a wide variety of enterprise environments such as servers, external storage arrays, and storage area networks (SAN) where performance and high-availability are required.

Available in capacities of 100GB - 2TB*, Optimus SSDs provide random read/write performance up to 95K/40K IOPS and sequential read/write data transfer rates of up to 550/540 MB/s**. The Optimus SSD portfolio has been designed to offer a range of performance and capacity solutions for a variety of applications that include mixed-use, read-intensive and write-intensive workloads. Optimus SSDs range from 1 - 45 full random drive writes per day (DWPD)****. Optimus SSDs have a 5 year warranty****.

Guardian Technology™ Platform

The product family of Optimus SAS SSDs is powered by SanDisk's proprietary Guardian Technology Platform, a comprehensive suite of enterprise features comprised of FlashGuard™, DataGuard™ and EverGuard™ technologies.

FlashGuard Technology combines Aggregated Flash Management, which treats all flash elements as a single system, and Advanced Signal Processing, which dynamically adjusts flash parameters throughout the life of the SSD, to reliably extract significantly more life from commercial-grade MLC flash, making it suitable for mixed-use, read-intensive and write-intensive application workloads.

DataGuard Technology features full data path protection, safeguarding user data from corruption along all data paths in the SSD.

EverGuard Technology protects against loss of user data in the event of unexpected power interruptions using a 3rd generation backup power circuit design and high-reliability discrete capacitors. Optimus SAS SSDs are designed for I/O intensive, mission-critical, 24/7 applications.

SanDisk®

Optimus® Product Family of 2.5" SAS SSDs

| | Optimus Eco™ | Optimus Ascend™ | Optimus Ultra™ | Optimus Extreme™ |
|--------------------------------|--|---|---|---|
| Performance | | | | |
| Interface | 6Gb/s SAS | | | |
| Interface Ports | Dual | | | |
| Sequential Read/Write (MB/s)** | Up to 530/530 MB/s ¹ per port/ 1 GB/s Read/ 800 MB/s Write in Active/Active operation | 200GB: Up to 550/380 MB/s ¹ per port/ 400GB - 1.6TB: Up to 550/540 MB/s ¹ / 1 GB/s Read/800 MB/s Write in Active/Active operation | 150GB: Up to 550/380 MB/s ¹ per port/ 300GB - 1.2TB: Up to 550/540 MB/s ¹ / 1 GB/s Read/800 MB/s Write in Active/Active operation | 100GB: Up to 550/380 MB/s ¹ per port/ 200GB - 800GB: Up to 550/540 MB/s ¹ / 1 GB/s Read/800 MB/s Write in Active/Active operation |
| Random Read/Write (IOPS) | Up to 90K/35K ² | Up to 95K/40K ² | Up to 95K/40K ² | Up to 95K/40K ² |
| Capacity | | | | |
| 19nm eMLC User Capacity* | 400GB - 2TB | 200GB-1.6TB | 150GB-1.2TB | 100GB-800GB |
| Reliability | | | | |
| Sector Sizes | 512, 520, 528 byte | | | |
| Data Reliability (BER) | 1 unrecoverable error in 10 ¹⁷ bits read | | | |
| MTBF*** | 2.5M hours | | | |
| Data Fail Recovery | F.R.A.M.E. (Flexible Redundant Array of Memory Elements) | | | |
| Power Fail Recovery | EverGuard: Backup Power Circuitry | | | |
| Data Path Protection | DataGuard Technology | | | |
| Warranty**** | The lesser of 5 years or maximum endurance used | | | |
| Endurance | | | | |
| DWPD (Random Workload)**** | 3 DWPD ⁴ | 10 DWPD | 25 DWPD | 45 DWPD |
| Power | | | | |
| Vcc | 5V, - 5%/+10% | | | |
| Active (Typ) | 7W | | | |
| Environmental | | | | |
| Shock | 1000 g half-sine, 0.5 msec, 3 shocks along each axis, X, Y, Z, in each direction | | | |
| Vibration | 2.17 g rms, 7-800 Hz | | | |
| Operating Temperature | 0° C to 70° C (internal) ⁵ | | | |
| Storage Temperature | -40° C to 90° C | | | |
| Humidity | 5% to 95%, non-condensing, relative humidity | | | |
| Altitude | 5486.4 m [18,000 ft] | | | |
| Mechanical | | | | |
| Length | 100.20 mm | | | |
| Width | 69.85 mm | | | |
| Height | 9.5 mm/15 mm ³ | | | |

- (1) Based on a 128KB transfer rate, using Oakgate SVF exerciser
 (2) Based on 4KB transfer rate using Oakgate SVG exerciser
 (3) Height applies to 1.6TB Optimus Ascend, 1.2TB Optimus Ultra, and 800GB Optimus Extreme
 (4) Optimus Eco 480GB, 920GB, and 2TB endurance specified as 1DWPD for random workloads
 (5) As measured by the internal sensor

| Optimus Eco - Ordering Information | | Optimus Ascend - Ordering Information | |
|--------------------------------------|--------------------|--|--------------------|
| Capacity & Part Number | | | |
| (400GB) - | SDLKODDR-400G-5Cxx | (200GB) - | SDLKOEEM-200G-5Cxx |
| (480GB) - | SDLKODDR-480G-5Cxx | (400GB) - | SDLKODDM-400G-5Cxx |
| (800GB) - | SDLKOCDD-800G-5Cxx | (800GB) - | SDLKOCDD-800G-5Cxx |
| (920GB) - | SDLKOCDD-920G-5Cxx | (1.6TB) - | SDLLOCDD-016T-5Cxx |
| (1.6TB) - | SDLLOCDD-016T-5Cxx | | |
| (2TB) - | SDLLOCDD-020T-5Cxx | | |
| Optimus Ultra - Ordering Information | | Optimus Extreme - Ordering Information | |
| (150GB) - | SDLKOE9W-150G-5Cxx | (100GB) - | SDLKOE9W-100G-5Cxx |
| (300GB) - | SDLKOD9W-300G-5Cxx | (200GB) - | SDLKOD9W-200G-5Cxx |
| (600GB) - | SDLKOC9W-600G-5Cxx | (400GB) - | SDLKOC9W-400G-5Cxx |
| (1.2TB) - | SDLLOC9W-012T-5Cxx | (800GB) - | SDLLOC9W-800G-5Cxx |

xx - Pack Out Option:
 Generic/Sample: A1 10 Pack: O2 Bulk Pack: O3

Specifications subject to change without notice.
¹ 1 GB = 1,000,000,000 bytes. Actual user capacity less.
^{**} Up to stated speed. Based on internal testing; performance may vary depending upon drive capacity, host device, OS and application. 1 megabyte (MB) = 1 million bytes.
^{***} MTBF - Mean Time Between Failures based on parts stress analysis.
^{****} Warranty/DWPD - The lesser of 5 years from the date of manufacture of the product or the date on which the product's relevant endurance thresholds set forth in the product specifications are reached.

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For more information, please visit:

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SanDisk®

At SanDisk, we're expanding the possibilities of data storage. For more than 25 years, SanDisk's ideas have helped transform the industry, delivering next generation storage solutions for consumers and businesses around the globe.

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