

# SanDisk® X600 3D NAND SATA SSD (Solid State Drive)

A RELIABLE AND DURABLE STORAGE SOLUTION FOR  
IoT EMBEDDED AND INDUSTRIAL APPLICATIONS

## A Robust and Reliable Solution

The SanDisk® X600 3D NAND SATA SSD combines Western Digital's advanced 64-layer 3D NAND technology with a proven SSD platform to deliver the reliability, durability, capacity, and performance required for IoT embedded systems.

The SanDisk X600 3D NAND SATA SSD features nCache™ 2.0 and DataGuard™ Client technologies with high-endurance Western Digital™ 3D NAND. This combination enhances endurance and enables seamless recovery from unexpected events. Moreover, using SMART attributes, the SanDisk X600 3D NAND SATA SSD monitors and analyzes its health and alerts the system for any major or maintenance events.

The SanDisk X600 3D NAND SATA SSD provides leading-edge performance, with sequential read/write speeds up to 560/530MB/s. This means quick boot-up and application loading, leading to more customers served, reduced downtime and optimized operation.

With on-the-fly hardware-based encryption, the SanDisk X600 3D NAND SATA SSD (X600 SED models only) provides complete end-to-end encryption to the storage, system and infrastructure. It supports password protection, AES-256-bit encryption, TCG-OPAL 2.01 standard and PSID.

## Quality and Consistency from NAND to SSD

SanDisk X600 SSDs are rigorously validated from NAND to device. Products go through over 500 mixed OEM test suites, stress testing with multiple patterns at the drive level, and endurance testing including RDT and 4-corners lab tests. OEM customers are further supported by a stable roadmap, 2-year availability, consistent supply and fast access to samples.

Western Digital has a dedicated support team, design-in tools, application validation, SSD design-in documentation, joint sales support, and an automated integration and validation lab for a quick turn-around time in case of failure analysis.

## A Versatile Storage Solution for a Variety of Embedded Applications

With multiple form factors and a variety of capacities, the SanDisk X600 3D NAND SATA SSD is an ideal solution for a wide range of embedded platforms. The 2.5"/7mm cased form factor can work as a drop-in replacement for HDDs while the M.2 2280 can deliver up to 2TB in a thin, single-sided form factor. With capacities from 128GB through 2TB the SanDisk X600 3D NAND SATA SSD can be successfully designed into a broad set of edge devices, including:

- **Interactive kiosks, ATMs and Point-of-Sales (POS)** in the banking, travel, retail, hospitality and healthcare industries that require high-volume transaction processing
- **Industrial applications** such as network equipment, industrial machinery, medical equipment, or embedded PC that need the durability and endurance that this SSD delivers
- **Media and entertainment applications** such as vehicle and airplane infotainment systems, video-on-demand and video surveillance that require high capacity and reliability



SATA	SAS	PCIe
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### X600 KEY FEATURES

**WESTERN DIGITAL 3D NAND DELIVERS CAPACITIES UP TO 2TB FOR A MULTITUDE OF EMBEDDED APPLICATIONS**

**ACTIVE POWER DRAW UP TO 25% LESS POWER THAN THE PREVIOUS 2D GENERATION\***

**2.5"/7MM CASSED OR M.2 2280 FORM FACTORS PROVIDE NEEDED SPACE SAVINGS AND DESIGN FLEXIBILITY**

**LEADING EDGE SATA PERFORMANCE UP TO 560MB/S SEQUENTIAL READ**

\*Compared against 512GB capacity during sequential reads.

# SanDisk X600 3D NAND SATA SSD Product Features and Specifications

Specifications are subject to change

<b>Form Factor</b>	2.5"/7mm cased, M.2 2280				
<b>Interface<sup>1,2</sup></b>	SATA 6 Gb/s				
<b>Size &amp; Weight</b>	2.5"/7mm cased:	128GB - 1TB:	7.00mm x 69.85mm x 100.2mm @ 37.4g 2TB: 7.00mm x 69.85mm x 100.2mm @ 59.7g		
	M.2 2280:	128GB - 1TB:	2.23mm x 22.00mm x 80.0mm @ 7 ± 1g 2TB: 2.38mm x 22.00mm x 80.0mm @ 7 ± 1g		
<b>Performance [4KB QD32]<sup>2,3</sup></b>	128GB	256GB	512GB	1TB	2TB
<b>Sequential Read up to (MB/s)</b>	530	550	560	560	560
<b>Sequential Write up to (MB/s)</b>	490	525	530	530	530
<b>Random Read up to (IOPS)</b>	82K	95K	95K	95K	95K
<b>Random Write up to (IOPS)</b>	74K	81K	84K	84K	84K
<b>Endurance (TBW)<sup>4</sup></b>	72	100	200	400	500
<b>Power<sup>5</sup></b>	128GB	250GB	500GB	1TB	2TB
<b>Avg. Active Power (mW)</b>	52	52	52	60	60
<b>Max Read Operating (mW)</b>	2050	2200	2050	2550	2650
<b>Max Write Operating (mW)</b>	1700	2250	3350	3750	3800
<b>Slumber (mW)</b>	52	56	56	56	56
<b>Reliability</b>					
<b>MTTF<sup>6</sup></b>	Up to 1.75M hours				
<b>Environmental</b>					
<b>Operating Temperatures</b>	0°C to 70°C				
<b>Non-operating Temperatures</b>	-55°C to 85°C				
<b>Operating Vibration</b>	5.0 gRMS, 10 - 2000 Hz				
<b>Non-operating Vibration</b>	4.9 gRMS, 7 - 800 Hz				
<b>Shock</b>	1,500 G @ 0.5 msec half sine				
<b>Certifications</b>	FCC, UL, TUV, KC, BSMI, VCCI, Morocco				
<b>Limited Warranty<sup>7</sup></b>	3 years				

<sup>1</sup> Backwards compatible to SATA 3 Gb/s and SATA 1.5 Gb/s.

<sup>2</sup> As used for storage capacity, one megabyte (MB) = one million bytes, one gigabyte (GB) = one billion bytes, and one terabyte (TB) = one trillion bytes. Total accessible capacity varies depending on operating environment. As used for buffer or cache, one megabyte (MB) = 1,048,576 bytes. As used for transfer rate or interface, megabyte per second (MB/s) = one million bytes per second, and gigabit per second (Gb/s) = one billion bits per second. Effective maximum SATA 6 Gb/s transfer rate calculated according to the Serial ATA specification published by the SATA-IO organization as of the date of this specification sheet. Visit [www.sata-io.org](http://www.sata-io.org) for details.

<sup>3</sup> Measured using CrystalDiskMark, 1000MB LBA range, on Laptop Asus N550J HM86 Express chipset, Windows 8.1 Pro with Intel IRST version 14.8.16.1063, secondary drive with Intel® Core™ i7-4700HQ 2.4GHz, 8GB DDR3 1600MHz RAM.

<sup>4</sup> TBW (terabytes written) values calculated using JEDEC client workload (JESD219) and vary by product capacity.

<sup>5</sup> Power measurements at 25°C. Based on firmware version with DIPM enabled. Measured using MobileMark® 2014 on Lenovo T560, Intel® Core™ i5-6200U 2.30GHz Processor, DDR3L 4GB 1600MHz RAM, Windows 10 with Intel Driver IRST 14.8.0.1042.

<sup>6</sup> MTTF = Mean Time To Failure based on internal testing using Telcordia stress part testing.

<sup>7</sup> See <http://www.sandisk.com/wug> for regional specific warranty details.

# SanDisk®

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	Capacity	Form Factor	SKU
<b>X600</b>	128GB	2.5"/7mm cased	SD9SB8W-128G
<b>X600</b>	256GB	2.5"/7mm cased	SD9SB8W-256G
<b>X600</b>	512GB	2.5"/7mm cased	SD9SB8W-512G
<b>X600</b>	1TB	2.5"/7mm cased	SD9SB8W-1T00
<b>X600</b>	2TB	2.5"/7mm cased	SD9SB8W-2T00
<b>X600</b>	128GB	M.2 2280	SD9SN8W-128G
<b>X600</b>	256GB	M.2 2280	SD9SN8W-256G
<b>X600</b>	512GB	M.2 2280	SD9SN8W-512G
<b>X600</b>	1TB	M.2 2280	SD9SN8W-1T00
<b>X600</b>	2TB	M.2 2280	SD9SN8W-2T00
<b>X600 SED</b>	128GB	2.5"/7mm cased	SD9TB8W-128G
<b>X600 SED</b>	256GB	2.5"/7mm cased	SD9TB8W-256G
<b>X600 SED</b>	512GB	2.5"/7mm cased	SD9TB8W-512G
<b>X600 SED</b>	1TB	2.5"/7mm cased	SD9TB8W-1T00
<b>X600 SED</b>	2TB	2.5"/7mm cased	SD9TB8W-2T00
<b>X600 SED</b>	128GB	M.2 2280	SD9TN8W-128G
<b>X600 SED</b>	256GB	M.2 2280	SD9TN8W-256G
<b>X600 SED</b>	512GB	M.2 2280	SD9TN8W-512G
<b>X600 SED</b>	1TB	M.2 2280	SD9TN8W-1T00
<b>X600 SED</b>	2TB	M.2 2280	SD9TN8W-2T00

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