

## MAXIMIZE HP DESKTOP PERFORMANCE WITH SAMSUNG SSDS AND DDR4 MEMORY

HP desktops optimized with Samsung's latest Solid State Drives (SSDs) and low-power DDR4 technology offer higher levels of performance and increased productivity.

### Ultra-Fast PCIe Takes Storage to New Heights

PCIe SSDs, featuring Samsung's second generation V-NAND technology, dramatically increase performance, resulting in reduced boot times, faster application loading and seamless multi-tasking, while significantly decreasing power usage. Available in HP's desktops, significant performance gains over hard disk drives are now achieved by switching to solid state.

### Higher Performance with HP Turbo Drive

With the PCIe 3.0 interface, the HP Turbo Drive reads sequentially at 2,150MB/s (megabytes per second)—approximately 4X faster than current SATA SSDs. This allows the drive to read 250GB of data, the equivalent of 50 5GB HD movies, in only two minutes. The four lanes of the PCIe 3.0 interface support data transfer from the drive to the CPU at up to 32 Gbps (gigabits per second).

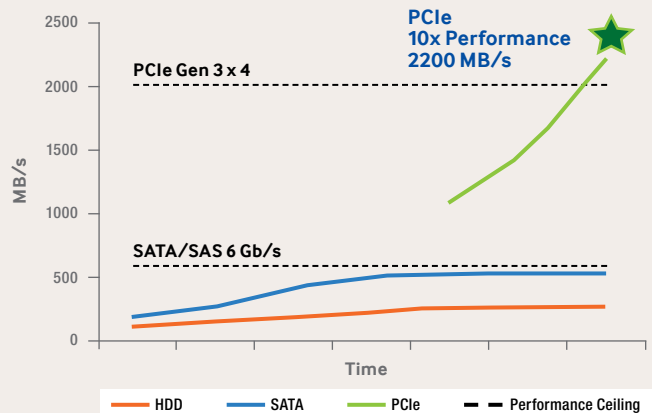
### Ultra-Small Form Factor & Popular Densities

The HP Turbo Drive delivers its leading-edge performance within an M.2 form factor, measuring only about one seventh of a 2.5 inch SSD, and weighing less than 10 grams. Densities include 128GB, 256GB and 512GB.

### Samsung's 3D Vertical NAND Maximizes SATA SSD Performance & Endurance

Even with the legacy SATA interface, Samsung SATA SSDs powered by 3D V-NAND technology offer more speed, endurance and power efficiency than other SATA SSDs designed with Planar NAND. 3D V-NAND stacks the cells vertically, as opposed to horizontally, increasing the space between cells and greatly reducing cell-to-cell interference, resulting in higher endurance. This also allows for higher NAND densities while at the same time consuming less space on the board, resulting in lower power consumption.

DATA TRANSFER PERFORMANCE BY INTERFACE OVER TIME



## SAMSUNG'S INDUSTRY-LEADING PCIe SOLID STATE DRIVES AND DDR4 MEMORY ARE POWERING HP DESKTOPS

### HP 3D SSD DRIVE (SATA) VS. HP TURBO DRIVE (PCIe)

Key Features	HP 3D SSD Drive (SATA)	HP Turbo Drive (PCIe)
Capacity	128GB, 256GB, 512GB	
MTBF	1.5 Million Hours	
Host Interface	SATA Gen 3.0 – 6 Gbps AHCI	PCI-Express Gen 3.0 x 4 – 32 Gbps AHCI
Peak Read Sequential Performance	Up to 540 MB/s	Up to 2150 MB/s
Peak Write Sequential Performance	Up to 500 MB/s	Up to 1500 MB/s
Peak Read Random Performance	Up to 97K IOPs	Up to 90K IOPs
Peak Write Random Performance	Up to 90K IOPs	Up to 70K IOPs
Form Factor	M.2 2280 *	
Dimensions	22 x 80 x 4 mm	
Weight	10 grams	

\* SATA also available in 2.5 inch form factor.

### Samsung SSDs & Samsung DDR4 – A Powerful Combination

Samsung SSDs paired with Samsung DDR4 memory offer significantly more performance at a lower operating cost. Samsung's DDR4, the latest innovation in DRAM technology, delivers more performance than DDR3, at higher densities, while also reducing power and increasing reliability.

Samsung's portfolio is vertically integrated in all areas: NAND, DRAM, controller and firmware, resulting in the highest quality memory and SSD solutions.

### DDR3 VERSUS DDR4

Key Features	DDR3	DDR4	Comparison
Speed	800 – 1866 Mbps	2133 – 3200 Mbps	<b>1.7X</b>
Voltage	1.35 – 1.5V	1.2V	<b>-20%</b>
Power Savings	Baseline	35% Less (Operating)	<b>&gt;30%</b>
DIMM Capacity	4 – 64GB	8 – 128GB*	<b>2X</b>

\* Common desktop densities are 4GB, 8GB and 16GB.

