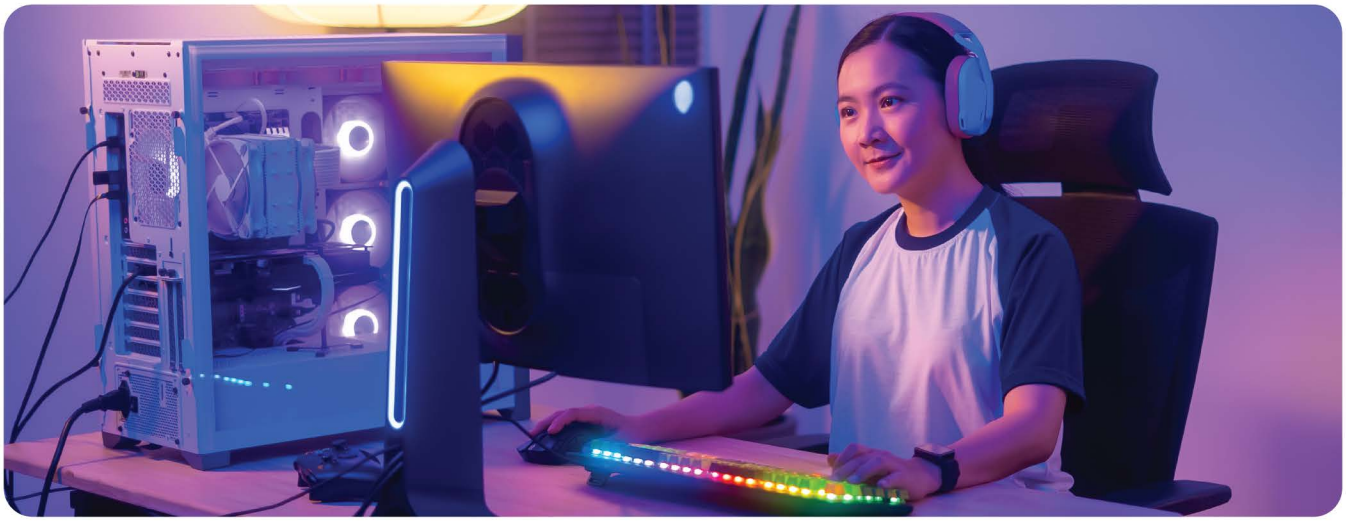
TOSHIBA

# Level Up Your Drive Performance.

Designed for home media computers and gaming PCs, the Toshiba X300 Performance Hard Drive offers the massive capacity for your gaming library to grow and the high performance to take your game to the next level.



# X300

## Performance Internal Hard Drive

Whether you're a PC gamer, video editor, or graphic designer, the X300 hard drive offers the capacity and performance that give you a competitive edge. With up to 20TB[1] of capacity, store your growing game libraries and HD content – so you can keep all your creations without worrying about running out of space.

The last thing gamers and content creators want is lag - the X300 hard drive delivers a fast 7200 RPM spin speed and up to 512 MB cache size for a responsive experience when loading games or large multimedia files. Plus, Toshiba's cache technology optimizes cache allocation during read/write cycles to help deliver quick access to your content.

The X300 Performance Hard Drive works hard so you can play harder.


Image does not represent actual product.

TOSHIBA

# X300

## Performance Internal Hard Drive


Product image may represent a design model.

### Application[12]

- Powerful desktop workstations
- All-in-one PCs
- Gaming computers
- Home media computers

**Powerful**
Designed for gaming & high end desktop PCs

**Responsive**
Toshiba's cache technology delivers real-time drive performance

**Massive Capacity**
Store your growing gaming libraries & HD content

**High Performance**
7,200 RPM with large cache size

**Reliable**
Ramp loading technology & built-in shock sensors to help protect your content

**Peace of Mind**
Toshiba Two-year limited warranty[6]

# TOSHIBA | X300 Specifications

| Capacity[1] | 20TB | 18TB | 16TB |
|---|---|---|---|
| **Model Number** (Retail Packaging) | HDWR62AXZSTA | HDWR51JXZSTA | HDWR51GXZSTA |
| **Model Number** (Bulk) | HDWR62AUZSVA | HDWR51JUZSVA | HDWR51GUZSVA |
| **Basic Specifications** | | | |
| **Interface** | SATA 6.0 Gbit/s | SATA 6.0 Gbit/s | SATA 6.0 Gbit/s |
| **Form Factor**[2] | 3.5-inch | 3.5-inch | 3.5-inch |
| **Advanced Format** (AF) | Yes | Yes | Yes |
| **RoHS Compatible**[3] | Yes | Yes | Yes |
| **Sector Size** | 512e | 512e | 512e |
| **Features** | | | |
| **Native Command Queuing** (NCQ) | Yes | Yes | Yes |
| **Shock Sensors** | Yes | Yes | Yes |
| **Toshiba Cache Technology** | Yes | Yes | Yes |
| **Ramp Loading Technology** | Yes | Yes | Yes |
| **Recording Technology**[13] | CMR | CMR | CMR |
| **Performances** | | | |
| **Rotational Speed** [RPM] | 7,200 | 7,200 | 7,200 |
| **Cache Size** [MB] | 512 | 512 | 512 |
| **Reliability** | | | |
| **Maximum Workload Rate** [TB/Year][4,8] | 55 | 55 | 55 |
| **MTTF** [Hours][5] | 600,000 | 600,000 | 600,000 |
| **Unrecoverable Error Rate** | 1 per $10^{15}$ | 1 per $10^{14}$ | 1 per $10^{14}$ |
| **Load/Unload Cycles** | 300,000 | 300,000 | 300,000 |
| **Limited Warranty** [Years][6] | 2 | 2 | 2 |
| **Power Management** | | | |
| **Supply Voltage** | 5 VDC +10 % / -7 %<br>12 VDC ± 10 % | 5 VDC +10 % / -7 %<br>12 VDC ± 10 % | 5 VDC +10 % / -7 %<br>12 VDC ± 10 % |
| **Power Consumption** (Operating) [W][9] | 8.02 | 7.48 | 7.48 |
| **Power Consumption** (Active Idle-A) [W][10] | 4.41 | 4.14 | 4.14 |
| **Environmental** | | | |
| **Temperature** (Operating) [˚C] | 5 to 60 (surface) | 5 to 60 (surface) | 5 to 60 (surface) |
| **Temperature** (Non-Operating) [˚C] | -40 to 70 | -40 to 70 | -40 to 70 |
| **Vibration** (Operating) [m/s²] | 7.35 {0.75 G} (5 to 300 Hz)<br>2.45 {0.25 G} (300 to 500 Hz) | 7.35 {0.75 G} (5 to 300 Hz)<br>2.45 {0.25 G} (300 to 500 Hz) | 7.35 {0.75 G} (5 to 300 Hz)<br>2.45 {0.25 G} (300 to 500 Hz) |
| **Vibration** (Non-Operating) [m/s²] | 29.4 {3.0 G} (5 to 500 Hz) | 29.4 {3.0 G} (5 to 500 Hz) | 29.4 {3.0 G} (5 to 500 Hz) |
| **Shock** (Operating) [m/s²] | 490 {50 G} (2 ms duration) | 686 {70 G} (2 ms duration) | 686 {70 G} (2 ms duration) |
| **Shock** (Non-Operating) [m/s²] | 1,960 {200 G} (2 ms duration) | 2,450 {250 G} (2 ms duration) | 2,450 {250 G} (2 ms duration) |
| **Acoustics Idle Mode** [dB] | 20 | 20 | 20 |
| **Physical** | | | |
| **Height** [mm Max.] | 26.1 | 26.1 | 26.1 |
| **Length** [mm Max.] | 147.0 | 147.0 | 147.0 |
| **Width** [mm Max.] | 101.85 | 101.85 | 101.85 |
| **Weight** [g Max.] | 720 | 720 | 720 |
| **Bottom Holes Type**[7] | TYPE1 | TYPE1 | TYPE1 |

# TOSHIBA | X300 Specifications

| Capacity[1] | 14TB | 12TB | 10TB |
|---|---|---|---|
| **Model Number** (Retail Packaging) | HDWR51EXZSTA | HDWR51CXZSTA | HDWR71AXZSTA |
| **Model Number** (Bulk) | HDWR51EUZSVA | HDWR51CUZSVA | HDWR71AUZSVA |
| **Basic Specifications** | | | |
| **Interface** | SATA 6.0 Gbit/s | SATA 6.0 Gbit/s | SATA 6.0 Gbit/s |
| **Form Factor**[2] | 3.5-inch | 3.5-inch | 3.5-inch |
| **Advanced Format** (AF) | Yes | Yes | Yes |
| **RoHS Compatible**[3] | Yes | Yes | Yes |
| **Sector Size** | 512e | 512e | 512e |
| **Features** | | | |
| **Native Command Queuing** (NCQ) | Yes | Yes | Yes |
| **Shock Sensors** | Yes | Yes | Yes |
| **Toshiba Cache Technology** | Yes | Yes | Yes |
| **Ramp Loading Technology** | Yes | Yes | Yes |
| **Recording Technology**[13] | CMR | CMR | CMR |
| **Performances** | | | |
| **Rotational Speed** [RPM] | 7,200 | 7,200 | 7,200 |
| **Cache Size** [MB] | 512 | 512 | 512 |
| **Reliability** | | | |
| **Maximum Workload Rate** [TB/Year][4,8] | 55 | 55 | 55 |
| **MTTF** [Hours][5] | 600,000 | 600,000 | 600,000 |
| **Unrecoverable Error Rate** | 1 per $10^{14}$ | 1 per $10^{14}$ | 1 per $10^{15}$ |
| **Load/Unload Cycles** | 300,000 | 300,000 | 600,000 |
| **Limited Warranty** [Years][6] | 2 | 2 | 2 |
| **Power Management** | | | |
| **Supply Voltage** | 5 VDC +10 % / -7 %<br>12 VDC ± 10 % | 5 VDC +10 % / -7 %<br>12 VDC ± 10 % | 5 VDC +10 % / -7 %<br>12 VDC ± 10 % |
| **Power Consumption** (Operating) [W][9] | 7.38 | 6.85 | 9.07 |
| **Power Consumption** (Active Idle-A) [W][10] | 3.77 | 3.30 | 5.74 |
| **Environmental** | | | |
| **Temperature** (Operating) [˚C] | 5 to 60 (surface) | 5 to 60 (surface) | 5 to 60 (surface) |
| **Temperature** (Non-Operating) [˚C] | -40 to 70 | -40 to 70 | -40 to 70 |
| **Vibration** (Operating) [m/s²] | 7.35 {0.75 G} (5 to 300 Hz)<br>2.45 {0.25 G} (300 to 500 Hz) | 7.35 {0.75 G} (5 to 300 Hz)<br>2.45 {0.25 G} (300 to 500 Hz) | 7.35 {0.75 G} (5 to 300 Hz)<br>2.45 {0.25 G} (300 to 500 Hz) |
| **Vibration** (Non-Operating) [m/s²] | 29.4 {3.0 G} (5 to 500 Hz) | 29.4 {3.0 G} (5 to 500 Hz) | 29.4 {3.0 G} (5 to 500 Hz) |
| **Shock** (Operating) [m/s²] | 686 {70 G} (2 ms duration) | 686 {70 G} (2 ms duration) | 686 {70 G} (2 ms duration) |
| **Shock** (Non-Operating) [m/s²] | 2,450 {250 G} (2 ms duration) | 2,450 {250 G} (2 ms duration) | 2,450 {250 G} (2 ms duration) |
| **Acoustics Idle Mode** [dB] | 20 | 20 | 34 |
| **Physical** | | | |
| **Height** [mm Max.] | 26.1 | 26.1 | 26.1 |
| **Length** [mm Max.] | 147.0 | 147.0 | 147.0 |
| **Width** [mm Max.] | 101.85 | 101.85 | 101.85 |
| **Weight** [g Max.] | 705 | 690 | 755 |
| **Bottom Holes Type**[7] | TYPE1 | TYPE1 | TYPE1 |

# TOSHIBA | X300 Specifications

| Capacity[1] | 8TB | 6TB | 4TB |
|---|---|---|---|
| **Model Number** (Retail Packaging) | HDWR780XZSTA | HDWR760XZSTA | HDWR740XZSTA |
| **Model Number** (Bulk) | HDWR780UZSVA | HDWR760UZSVA | HDWR740UZSVA |
| **Basic Specifications** | | | |
| **Interface** | SATA 6.0 Gbit/s | SATA 6.0 Gbit/s | SATA 6.0 Gbit/s |
| **Form Factor**[2] | 3.5-inch | 3.5-inch | 3.5-inch |
| **Advanced Format** (AF) | Yes | Yes | Yes |
| **RoHS Compatible**[3] | Yes | Yes | Yes |
| **Sector Size** | 512e | 512e | 512e |
| **Features** | | | |
| **Native Command Queuing** (NCQ) | Yes | Yes | Yes |
| **Shock Sensors** | Yes | Yes | Yes |
| **Toshiba Cache Technology** | Yes | Yes | Yes |
| **Ramp Loading Technology** | Yes | Yes | Yes |
| **Recording Technology**[13] | CMR | CMR | CMR |
| **Performances** | | | |
| **Rotational Speed** [RPM] | 7,200 | 7,200 | 7,200 |
| **Cache Size** [MB] | 512 | 512 | 512 |
| **Reliability** | | | |
| **Maximum Workload Rate** [TB/Year][4,8] | 55 | 55 | 55 |
| **MTTF** [Hours][5] | 600,000 | 600,000 | 600,000 |
| **Unrecoverable Error Rate** | 1 per $10^{15}$ | 1 per $10^{15}$ | 1 per $10^{15}$ |
| **Load/Unload Cycles** | 600,000 | 600,000 | 600,000 |
| **Limited Warranty** [Years][6] | 2 | 2 | 2 |
| **Power Management** | | | |
| **Supply Voltage** | 5 VDC +10 % / -7 %<br>12 VDC ± 10 % | 5 VDC +10 % / -7 %<br>12 VDC ± 10 % | 5 VDC +10 % / -7 %<br>12 VDC ± 10 % |
| **Power Consumption** (Operating) [W][9] | 9.07 | 8.19 | 7.43 |
| **Power Consumption** (Active Idle-A) [W][10] | 5.74 | 4.92 | 4.14 |
| **Environmental** | | | |
| **Temperature** (Operating) [˚C] | 5 to 60 (surface) | 5 to 60 (surface) | 5 to 60 (surface) |
| **Temperature** (Non-Operating) [˚C] | -40 to 70 | -40 to 70 | -40 to 70 |
| **Vibration** (Operating) [m/s²] | 7.35 {0.75 G} (5 to 300 Hz)<br>2.45 {0.25 G} (300 to 500 Hz) | 7.35 {0.75 G} (5 to 300 Hz)<br>2.45 {0.25 G} (300 to 500 Hz) | 7.35 {0.75 G} (5 to 300 Hz)<br>2.45 {0.25 G} (300 to 500 Hz) |
| **Vibration** (Non-Operating) [m/s²] | 29.4 {3.0 G} (5 to 500 Hz) | 29.4 {3.0 G} (5 to 500 Hz) | 29.4 {3.0 G} (5 to 500 Hz) |
| **Shock** (Operating) [m/s²] | 686 {70 G} (2 ms duration) | 686 {70 G} (2 ms duration) | 686 {70 G} (2 ms duration) |
| **Shock** (Non-Operating) [m/s²] | 2,450 {250 G} (2 ms duration) | 2,450 {250 G} (2 ms duration) | 2,450 {250 G} (2 ms duration) |
| **Acoustics Idle Mode** [dB] | 34 | 34 | 34 |
| **Physical** | | | |
| **Height** [mm Max.] | 26.1 | 26.1 | 26.1 |
| **Length** [mm Max.] | 147.0 | 147.0 | 147.0 |
| **Width** [mm Max.] | 101.85 | 101.85 | 101.85 |
| **Weight** [g Max.] | 755 | 730 | 710 |
| **Bottom Holes Type**[7] | TYPE1 | TYPE1 | TYPE1 |

TOSHIBA

# Toshiba Consumer Internal Hard Drives.

## A drive for every storage application.


Image does not represent actual product.

To see our full line of consumer HDD storage products, visit:

**storage.toshiba.com/consumer-hdd**

[1] One Gigabyte (1GB) means $10^9$ = 1,000,000,000 bytes and One Terabyte (1TB) means $10^{12}$ = 1,000,000,000,000 bytes using powers of 10. A computer operating system, however, reports storage capacity using powers of 2 for the definition of 1GB= $2^{30}$ = 1,073,741,824 bytes and 1TB = $2^{40}$ = 1,099,511,627,776 bytes, and therefore shows less storage capacity. Available storage capacity (including examples of various media files) will vary based on file size, formatting, settings, software and operating system and other factors.
[2] 2.5-inch and 3.5-inch mean the form factor of HDDs. They do not indicate drive's physical size.
[3] Toshiba Storage & Electronic Devices Solutions Company defines "RoHS-Compatible" products as products that either (i) contain no more than a maximum concentration value of 0.1% by weight in Homogeneous Materials for lead, mercury, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs) and of 0.01% by weight in Homogeneous Materials for cadmium; or (ii) fall within any of the application exemptions set forth in the Annex to the RoHS Directive (Directive 2011/65/EC of the European Parliament and of the Council of 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment). "Homogeneous Material" means a material of uniform composition that cannot be mechanically disjointed (meaning separated, in principle, by mechanical actions such as unscrewing, cutting, crushing, grinding and/or abrasive processes) into different materials. Examples of "Homogeneous Materials" would be individual types of plastics, ceramics, glass, metals, alloys, paper, board, resins and coatings.
[4] Annual Workload Rating: HDDs keep track of various drive usage such as power on hours, lifetime writes and lifetime reads from the host computer. With this data we calculate an Annualized Workload Rate, under 40 deg. C ambient environments, Annualized Workload Rate = (Lifetime Writes + Lifetime Reads) * (8760 / Lifetime Power On Hours) in case Power On time is 8760h or longer. Otherwise (i.e. Power On time is shorter than 8760h), Annualized Workload Rate = (Lifetime Writes + Lifetime Reads) Each drive is designed to perform up to the Annualized Workload Rate stated, after which the drive may be expected to decline. The Annualized Workload Rate in no way alters the warranty policy for such drive. Workload is defined as the amount of data written, read or verified by commands from host system.
[5] MTTF (Mean Time to Failure) is not a guarantee or estimate of product life; it is a statistical value related to mean failure rates for a large number of products which may not accurately reflect actual operation. Actual operating life of the product may be different from the MTTF. MTTF (Mean Time to Failure) of the HDDs during its life time is 1.0 million hours and AFR(Annualized Failure Rate) is 0.88%, or 1.2 million hours and AFR is 0.73%, or 2.5 million hours and AFR is 0.35% (depending on HDD models). This assumes power-on hours are 24 x 7 in normal usage (8760 h/year power on hours, up to 180TB/year, or up to 300TB/year, or up to 550TB/year total data transfers (depending on HDD models), and average HDA surface temperature:40°C or less). Use at case HDA surface temperature above 40°C may degrade product reliability and reduce warranty period.
[6] Standard limited warranty applies. The warranty brochure can be viewed online at http://storage.toshiba.com/consumer-hdd/warranty-info.
[7] Location of bottom mounting hole is different from product. For more information, please see the following page. https://toshiba.semicon-storage.com/us/design-support/faq/storage-holes.html
[8] Drive life may vary depending on usage and workload. See also MTTF and Annual Workload Rating for more detail.
[9] Operating watt is measured using 80 % random read/write and 20 % performance idle.
[10] Idle is active idle.
[11] Product prices, specifications, configurations, colors, components, features, and availability are subject to change without notice.
[12] Compatibility may vary depending on user's hardware configuration and operating system.
[13] CMR is Conventional Magnetic Recording Technology.



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