# TOSHIBA
## Leading Innovation ≫≫

# TOSHIBA DELIVERS SOLID STATE DRIVE TO CREATE FULLY FLEXIBLE ENTERPRISE STORAGE SOLUTIONS

*New Enterprise-Class Solid State Drive Helps Businesses Tackle Data Tidal Wave with Extended Storage Capabilities*

**14 December, 2010, Neuss** – Toshiba Europe, Storage Device Division (SDD) today announced an extension of its pioneering enterprise product portfolio with the launch of a 400GB[1] 2.5-inch (6.4cm) enterprise-class Solid State Drive (eSSD). The MK4001GRZB eSSD will sit alongside Toshiba's industry leading Hard Disk Drive (HDD) technology to provide customers with a full range of enterprise storage products, including those for tiered storage systems. Implementing a combined solution that delivers the capacity of a traditional HDD together with advantages of an SSD, can now provide the optimal storage environment, with higher speed read-write and silent operation capabilities.

The tidal wave of enterprise data continues to grow at an astonishing rate, with IDC predicting that an influx of consumer technologies will place increasing strain on enterprise storage networks so that data volumes will be 44 times the size they were in 2009 by 2020[2]. Businesses are struggling to balance this surge in data volumes with the requirement for effective, high-level storage capabilities. With its new eSSDs, Toshiba has applied its industry-leading expertise as a pioneer of cutting edge NAND flash technology to provide the flexible storage capabilities required for the full range of applications in constant use by today's enterprises.

The launch of the MK4001GRZB eSSD establishes Toshiba as the only manufacturer in the market today with the ability to deliver customers with a complete, 'one stop shop' storage solution range combining the benefits of eSSD with traditional HDD technology.

---

[1] One Gigabyte (1GB) means 109 = 1,000,000,000 bytes and one Terabyte (TB) means 1012 = 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 = 230 = 1,073,741,824 bytes and 1TB = 240 = 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, such as Microsoft Operating System and/or pre-installed software applications, or media content. Actual formatted capacity may vary.
[2] IDC, 2010 Digital Universe Study: http://gigaom.files.wordpress.com/2010/05/2010-digital-universe-iview_5-4-10.pdf

The MK4001GRZB uses the latest 32 nanometer (nm) enterprise grade single-level cell (SLC) NAND flash memory from Toshiba and 6 Gb/sec Serial Attached SCSI (SAS) interface. The eSSD is available in three levels of capacity, 100/200/400GB and is designed for use in demanding enterprise environments, such as servers running multimedia applications, direct-attached storage and network-attached storage. It is equipped with a quicker read-write capability, operating with a sustained read throughput of 510MB/s and a write throughput of 230MB/s. The MK4001GRZB also delivers industry-leading IOPS performance of 90K IOPS (read) / 17K IOPS (write).

Customers benefit from sleek, seamless operation combined with high-level storage capabilities. The small form factor (SFF) eSSD is fully compatible with current SFF HDD configured systems, making it easy for customers to take advantage of combined SSD and HDD storage solutions that deliver the most appropriate fusion of each technology's cost and performance advantages in order to match their requirements.

The ability to combine conventional HDD technology with SSD capabilities means that Toshiba's enterprise customers can now benefit from an industry-leading storage performance with greater energy efficiency and cost savings by bringing together the capabilities of both technologies.

Martin Larsson, Vice President of Toshiba Europe Storage Device Division, said: "By applying years of engineering expertise, Toshiba is able to deliver powerful, energy-efficient and cost-effective storage offerings to our customers. Through investment in time and resources dedicated to developing our own NAND technology supply and delivering innovation through our specialist in-house SoC and firmware design teams, we are now in the position to provide our integration partners flexible, industry-leading storage allowing them to handle the tidal wave of data in the world of business today."

In conjunction with the launch of the MK4001GRZB SSD, Toshiba also announced the launch of the MK2001TRKB HDD and MK2002TSKB, a 3.5-inch (8.9cm) HDD. The MK2001TRKB 3.5-inch HDD is available in a 6GB/sec SAS model and the

MK2002TSKB as a 3GB/sec Serial ATA (SATA) model. Engineered to meet the always-on data storage demands of the enterprise environment, customers will benefit from these drives 24/7 operational functionality which utilises features directly applicable to the business user such as Error Correction (ECC). The HDD is also equipped with Rotational Vibration (RV) compensation technology required in multi-drive storage systems.

Samples of the MKxx01GRZB eSSD and the MKxx02TSKB will be available for customer qualification in the first quarter of 2011. Volume production of the MKxx01TRKB will begin in Q1 2011. For more information on the Toshiba line of industry-leading enterprise solid state and large and small form factor hard drives, visit www.storage.toshiba.eu.

**Product specifications:**

| | | MK4001 GRZB | MK2001GRZB | MK1001GRZB |
|---|---|---|---|---|
| External Dimensions (W x D x H mm) | | 69.85 x 100.0 x 15.0 | | |
| Weight (g) | | 152 | | |
| NAND Technology | | 32nm SLC | | |
| User Capacity | (GB) | 400 | 200 | 100 |
| Sector Size | (B) | 512, 520, 528 | | |
| Interface | | SAS 6Gbps, Dual port | | |
| Seq. Read (Sustain) | (MB/s) | 510 | | |
| Seq. Write (Sustain) | (MB/s) | 230 | | |
| 4KB Ran. Read (Sustain) | (IOPS) | 90,000 | | |
| 4KB Ran. Write (Sustain) | (IOPS) | 17,000 | | |
| Product Life | (Year) | 5 | | |
| Total storage capacity of data written [4kB Random] (PB) | | No limit within product life | | 8 |
| Power consumption (ave.) | (W) | 6.5W (+12V/+5V) | | |
| Vibration | Operating | 9.8 m/s$^2$ | | |
| | Non-operating | 49 m/s$^2$ | | |
| Shock resistance | Operating | 9,800 m/s$^2$ (1000G, 0.5ms,1/2sine) | | |
| | Non-operating | 9,800 m/s$^2$ (1000G, 0.5ms,1/2sine) | | |
| Temperature | Operating | 0～55℃ | | |

| Temperature | Non-operating | -40～70℃ |
|---|---|---|

Note: Toshiba defines a megabyte (MB) as 1,000,000 bytes, a gigabyte (GB) as 1,000,000,000 bytes, a terabyte (TB) as 1,000,000,000,000 bytes and a petabyte (PB) as 1,000,000,000,000,000 bytes.

| | | MK2001TRKB | MK1001TRKB | MK2002TSKB | MK1002TSKB |
|---|---|---|---|---|---|
| Capacity (Formatted) | | 2TB | 1TB | 2TB | 1TB |
| Number of platters | | 4 | 2 | 4 | 2 |
| Number of heads | | 8 | 4 | 8 | 4 |
| Average seek time | Read | 8.5 ms | | 8.5 ms | |
| | Write | 9.5 ms | | 9.5 ms | |
| Interface | | SAS-2.0 | | Serial ATA 2.6 | |
| Interface transfer rate | | 1.5Gbps, 3.0Gbps, 6.0Gbps | | 1.5Gbps, 3.0Gbps | |
| Rotational speed | | 7,200 rpm | | | |
| Buffer memory | | 16 MB FIFO ring buffer | | 64 MB FIFO ring buffer | |
| External Dimensions (WxDxH; mm) | | 101.6×147×26.1 | | | |
| Weight | | 800g max. | | | |
| Energy consumption efficiency | | 0.0035 | 0.0070 | 0.0035 | 0.0070 |
| classification | | C | B | C | B |
| Power consumption | Idle B | 7.0 W typ. | | | |
| | Ready(Idle A) | 9.0 W typ. | | | |
| | Idle C | 6.0 W typ. | | - | |
| Acoustic | Ready | 30 dB | | | |
| Vibration | Operating | $7.35 \text{m/s}^2$, 0.75G(5-300Hz) $2.45 \text{m/s}^2$, 0.25G(300-500Hz) | | | |
| | Non-operating | $49 \text{m/s}^2$, 5.0G(5-500Hz) | | | |
| Shock resistance | Operating | $686 \text{m/s}^2$ (70G, 2ms duration) | | | |
| | Non-operating | $2,940 \text{m/s}^2$ (300G, 2ms duration) | | | |

Note: Toshiba defines a megabyte (MB) as 1,000,000 bytes, a gigabyte (GB) as 1,000,000,000 bytes, a terabyte (TB) as 1,000,000,000,000 bytes and a petabyte (PB) as 1,000,000,000,000,000 bytes.

### About Toshiba Europe Storage Device Division

Toshiba Europe Storage Device Division (SDD) has remained at the forefront of the storage industry for over 30 years and markets high quality hard disk drives to original equipment manufacturers (OEMs), system integrators and distributors within the EMEA region. As the only full-range supplier of 3.5-inch (8.9cm), 2.5-inch (6.4cm) and 1.8-inch (4.6cm) HDDs in the world, Toshiba sets many of today's industry standards for HDD technology. Throughout its history, Toshiba SDD has revolutionized the design and development of small form factor

storage devices and its HDDs can be found inside the worlds leading GPS navigation systems, portable media players and entertainment systems. The company also pioneered the development of automotive-grade HDDs and to date, leads in the automotive HDD

segment with a 75% market share world wide. In addition, Toshiba Storage Device Division offers an extensive range of advanced technology drives such as high durability 24/7, extended temperature and Solid State Drive development for the industrial and enterprise sector applications as well as portable external hard disk drives.

## About Toshiba

Toshiba is a world leader and innovator in pioneering high technology, a diversified manufacturer and marketer of advanced electronic and electrical products spanning information & communications systems; digital consumer products; electronic devices and components; power systems, including nuclear energy; industrial and social infrastructure systems; and home appliances. Toshiba was founded in 1875, and today operates a global network of more than 740 companies, with 204,000 employees worldwide and annual sales surpassing 6.3 trillion yen (US$68 billion). Visit Toshiba's web site at www.toshiba.co.jp/index.htm.

**Media contacts:**

Susan Nowack / Carolin Palmes
Toshiba Europe GmbH, Storage Device Division
www.storage.toshiba.eu
Email: sdd-press@toshiba-teg.com

Chrissie McGoldrick / Katie Swan
Speed
Telephone: +44 (0) 20 7842 3200
Email: toshiba@speedcommunications.com