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TOSHIBA INTRODUCES ENTERPRISE-CLASS SOLID STATE DRIVE FAMILY

High Performance SSDs Complement New Nearline Drives as Toshiba Offers Complete Storage Solution Set for Enterprise Environments

IRVINE, Calif., December 13, 2010–Extending its position in the enterprise storage market, Toshiba Storage Device Division announces its new family of enterprise-class solid state drives (SSDs). Developed to meet the market's demand for higher performance and lower power consumption, the new MKx001GRZB series combines Toshiba hard disk drive (HDD) expertise and its leadership as the inventor of NAND flash technology. The 2.5-inch small form factor drives use the latest 32 nanometer (nm) enterprise grade single-level cell (eSLC) NAND flash memory from Toshiba and 6Gb/sec Serial Attached SCSI (SAS) interface. Samples will be available for customer qualification in the first quarter of 2011 and volume production will begin in the first half of 2011.

"Toshiba offers the industry's most comprehensive range of storage technologies and the resulting synergies distinguish us as a world-class total storage provider," said Joel Hagberg, vice president of enterprise marketing at Toshiba Storage Device Division. "Toshiba stands alone in the market as the only SSD supplier that is vertically integrated for NAND flash and has deep enterprise HDD expertise. We possess one of the world's largest and most advanced NAND flash fabs, our own controller and firmware design teams, critical interface technologies, and established relationships with every major enterprise server and storage OEM. As a result, Toshiba is uniquely positioned to engineer solid state drives that deliver the performance, endurance, and reliability required for business critical applications."

Available in capacities of 100GB[1], 200GB[1], and 400GB[1], the MKx001GRZB family of SSD drives is designed for ease of integration into new or existing tier-0 enterprise storage

systems and designs, including servers, direct-attached storage, and network-attached storage. The drives deliver performance that outpaces competing enterprise-class SSDs, with random sustained 90,000 read and 17,000 write IOPS[2] and sequential sustained 510MB/sec read and 230MB/sec write throughput. Combined with a low power requirement of only 6.5 Watts at operation, the Toshiba SSD family also delivers an industry-leading power efficiency rating of 13,800 IOPS/Watt.

"The performance and energy benefits of SSDs can outweigh the cost difference compared to HDDs, and many organizations will want to use solid state technology for applications that require extremely fast data access," said Joseph Unsworth, research director, Gartner. "However, the total share of the enterprise market that uses SSDs will remain relatively small until at least 2013. Storage suppliers who stand to gain the most from this technology shift will be those who can offer customers a unified product line that includes both SSD and HDD technologies combined with support and services capability."

The Toshiba enterprise SSD lineup forms the pinnacle of a tiered storage architecture that enables organizations to effectively tune the performance, capacity, endurance, and reliability of their storage environments. For data storage that requires high reliability and high capacity – but not the very rapid access to data provided by SSDs – Toshiba has also released the new MKx001TRKB and MKx002TSKB series HDDs. The cost-effective nearline models feature a top storage capacity of 2TB[1] in a traditional 3.5-inch form factor and leading-edge 6Gb/sec SAS[3] and 3Gb/sec Serial ATA (SATA)[4] interfaces. Intended for 24 x 7 operation, the MKx001TRKB and MKx002TSKB series drives also include features that are critical to business operations such as Error Correction (ECC), Rotational Vibration (RV) compensation technology for multi-drive systems, and enhanced power condition state technology.

For more information on the Toshiba line of industry-leading enterprise-class small form factor SSDs and HDDs, visit www.toshibastorage.com.

Product specifications:

Model number	**MK4001GRZB**	**MK2001GRZB**	**MK1001GRZB**
User capacity[1]	400GB	200GB	100GB
Physical capacity[1]	512GB	256GB	128GB
Sector size (bytes)	512, 520, 528		
Form factor	2.5" 15mmH		

NAND technology	32nm SLC	
Interface	6Gb/sec SAS (dual port)	
Sequential read (MB/s, Q=4)	510	
Sequential write (MB/s, Q=4)	230	
4KB random read (IOPS, Q=16)	90,000	
4KB random write (IOPS, Q=16)	17,000	
Product life (Years)	5	
Total storage capacity of data written [4KB random]	No limit within product life	8PB[1]
External dimensions (WxDxH mm)	69.85 x 100.0 x 15.0	
Weight (g)	152	
Power consumption (W):	6.5 W (+12V/+5V)	
Vibration:		
Operating	9.8 m/s^2 (1G)	
Non-Operating	49 m/s^2 (5G)	
Shock resistance:		
Operating	9,800 m/s^2 (1000G, 0.5ms, ½ sine)	
Non-Operating	9,800 m/s^2 (1000G, 0.5ms, ½ sine)	
Temperature:		
Operating	0～55℃	
Non-Operating	-40～70℃	

About Toshiba Storage
Toshiba is a one-of-a-kind global storage company, offering hard disk drives (HDDs), optical disk drives (ODDs), solid state drives (SSDs) and NAND flash memories – technologies that drive a wide range of consumer electronics, computer and automotive applications, as well as enterprise solutions for the global marketplace. Toshiba leads in the development, design and manufacture of mobile, retail and enterprise hard disk drives. In North America, the Storage Device Division of Toshiba markets high-quality storage peripherals to original equipment manufacturers, original design manufacturers, value-added resellers, value-added dealers, systems integrators, distributors and retailers worldwide. Inherent in the Toshiba storage family are the high-quality engineering and manufacturing capabilities that have established Toshiba products as innovation leaders worldwide. For more information, visit www.toshibastorage.com.

About Toshiba America Information Systems Inc. (TAIS)
Headquartered in Irvine, Calif., TAIS is comprised of four business units: Digital Products Division, Imaging Systems Division, Storage Device Division and Telecommunication Systems Division. Together, these divisions provide mobile products and solutions, including industry-leading portable computers; televisions, TV/DVD Combination products, Blu-ray Disc and DVD products and portable devices; imaging products for the security, medical and manufacturing markets; storage products for automotive, computer and consumer electronics applications; and telephony equipment and associated applications.

TAIS provides sales, marketing and services for its wide range of products in the United States and Latin America. TAIS is an independent operating company owned by Toshiba America, Inc., a subsidiary of Toshiba Corporation. Toshiba is a world leader and innovator in pioneering high technology, a diversified manufacturer and marketer of advanced electronic and electrical products spanning information and 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). For more information on Toshiba leading innovations, visit the company's web site at www.toshiba.com.

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1. One Gigabyte (1GB) means 10^9 = 1,000,000,000 bytes, one Terabyte (TB) means 10^{12} = 1,000,000,000,000 bytes, and one Petabyte means 10^{15} = 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, 1TB = 2^{40} = 1,099,511,627,776 bytes, and 1PB = 2^{50} = 1,125,899,906,842,624 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. 4K random read/write I/O performance.

3. Volume production will start in the first quarter of 2011.

4. Samples will be available in the first quarter of 2011.