Glasses-Free 3D REGZA™ GL1 Series

Glasses-free 3D REGZA GL1 series LCD TV

Toshiba has unveiled the world's first[*1] liquid crystal display (LCD) TVs offering comprehensive three-dimensional (3D) capabilities without the need for dedicated glasses. The new glasses-free 3D REGZA GL1 series consists of two models with screen sizes specifically designed for personal use: the 20-inch 20GL1 and the 12-inch 12GL1.

Both models incorporate an integral imaging system[*2] and a perpendicular lenticular sheet[*3] to display smooth, natural images, together with our image processing technology to produce nine parallax images[*4] from the original content and create 3D images. The result is precise rendering of high-quality 3D images from various viewing angles within the viewing zone.

The 20GL1 is equipped with a high-definition (HD) light-emitting diode (LED) backlit LCD panel specifically designed for 3D capability without the need for dedicated glasses, which has approximately four times the pixels of a standard full HD panel. It also incorporates the CELL REGZA Engine designed for 3D capability without dedicated glasses, which is based on the Cell Broadband Engine™[*5], to deliver superior multimedia processing. The result of this combination is stunningly sharp, dynamic 3D images[*6].

(*1) As of December 2010, for digital HD LCD TVs in consumer markets (as researched by Toshiba)

(*2) A system that controls the tracks of beams of light so that the light emitted from an object at several angles is more faithfully reproduced. The angle of viewing is characterized by smooth, continuous image displays.

(*3) A lenticular sheet is an array of lenses that transmits images in a horizontal plane. The sheet is semicircular in profile.

REGZA™ ZG1 Series Digital HD 3D LCD TV

REGZA 47ZG1 digital HD 3D LCD TV

Toshiba has developed the REGZA ZG1 series digital HD LCD TV equipped with a function to convert 2D images into 3D images, comprising three models (55V/47V/42V types).

The ZG1 series calculates the colors and histograms in the four corners of the screen using our original 3D image conversion algorithm, and distinguishes the features of the input image. It then converts 2D images into 3D images by comparing the features of the images learned from about 1 400 sample images with the features of the input image to allocate the depth feel.

The ZG1 series incorporates a function providing smooth movie displays, in which the frame rate is increased by four times from the usual 60 frames per second to 240 frames per second by increasing the movement range of detection by a factor of about 30 compared with the conventional Z8000 series.

(*4) In order to create 3D content, the GL1 series adopts a parallax system that can display optimized high-quality 3D images whatever the position and angle to the screen of the viewer. Such images are called parallax images. Nine images from nine directions are referred to as nine parallax images.

(*5) The Cell Broadband Engine, jointly developed by IBM, the Sony Group, and Toshiba, is a breakthrough design featuring a central processing core based on IBM's Power Architecture technology and eight synergistic processing elements (SPEs). The Cell Broadband Engine brings a previously unseen level of broadband processing power to digital products.
Cell Broadband Engine is a trademark of Sony Computer Entertainment Inc.

(*6) 3D images shown on the product's display may differ from the actual images viewed.

CELL REGZA™ 55X2 Technology with 3D Mode

In 2009, Toshiba created a major sensation in the market by commercializing the CELL REGZA 55X1 as a flagship model of the REGZA series with overwhelming performance and functions.

Then, in 2010, we commercialized the CELL REGZA 55X2 as an advanced model allowing 3D content to be viewed with shutter glasses while inheriting and improving the functions of the 55X1 model.

The 55X2 has a 4× speed Mega LED panel™ that provides a peak brightness of $1\,000$ cd/m^2 and a dynamic contrast ratio of $9\,000\,000$:1 by using an LED backlight area controlling technology that partitions the LED backlight into 512 areas.

In 3D mode, the 55X2 controls the brightness locally for each picture output alternately for the left and right eye. This makes it possible for the 55X2 to enhance the contrast of each picture for the left and right eye and reproduce sharp pictures. By turning the LED backlight on and off in synchronicity with the timing of the LCD, the 55X2 effectively reduces the crosstalk phenomenon in which a picture has double vision in 3D mode.
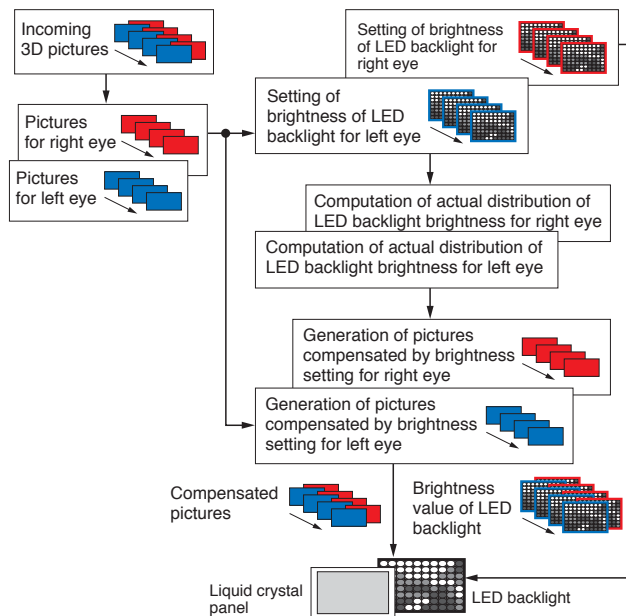
Local dimming technology for LED backlight in 3D mode

WX800U Digital HD 3D LED TV for United States Market

55WX800U digital HD 3D LED TV for United States market

Toshiba has introduced the WX800U Cinema Series™ 3D LED TV comprising two models (55V/46V types) for the United States market.

The WX800U further boosts picture quality compared with current TVs by employing not only a 240 Hz frame rate full HD LED panel with the backlight scanning technology but also a 3D super-resolution technology for use with 3D pictures of less than full HD.

The WX800U also has enhanced NET TV™ features with Yahoo!® TV Widgets, Netflix®, and various Internet services. A built-in wireless network module improves the usability of these features.

This model is characterized by its thin and elegant design, with a thickness of only 1.15 inches and a fully flush surface of high-quality glass as well as a floating stand.

Yahoo! is a registered trademark of Yahoo! Inc.

Netflix is a registered trademark of Netflix, Inc.

REGZA™ F1 Series Digital HD 3D LCD TV

REGZA 46F1 digital HD 3D LCD TV

Toshiba has developed the REGZA F1 series digital HD LCD TV with a slim, minimalistic design, consisting of two models (55V/46V types).

The F1 series incorporates the "Resolution+™ 5" super-resolution technology for 3D images for the first time(∗) in the industry. Thanks to this technique, clear 3D images with a conspicuous stereoscopic effect are generated not only by restoring the pixels in the vertical direction to 3D images in the case of less than full HD ($1\,920 \times 1\,080$ pixels) images, but also by portraying ultra-high-density images by means of image superimposition at locations whose edge part is approximate.

In collaboration with the renowned northern European designer Jacob Jensen, we pursued a slim, minimalistic design and attained a sophisticated appearance by combining the extremely thin display of 29 mm in depth with a stand featuring an attractive hairline finish.

(∗) As of July 2010, for domestic digital HD LCD TVs (as researched by Toshiba)

REGZA Blu-ray™ RD Series
Toshiba Blu-ray Disc™ & HDD Recorder

RD-X10 REGZA Blu-ray™ recorder

Toshiba has developed a new series of Blu-ray Disc™ & HDD recorders for the Japanese market, consisting of the RD-X10, RD-BZ800, RD-BZ700, and RD-BR600 models.

These new models inherit the abundant editing functions of the existing Toshiba RD series.

They are capable of playing back Blu-ray 3D™ discs and 3D videos when connected to a 3D HD TV, and of recording for a prolonged time by connecting a USB HDD.

The RD-X10, the flagship model, offers high-quality audio output by means of a dedicated HDMI™ output for audio use as well as 7.1 channel analog audio output.

HDD: hard disk drive
USB: universal serial bus

Blu-ray Disc™, Blu-ray™, and Blu-ray 3D™ are trademarks of the Blu-ray Disc Association.

HDMI is a trademark or registered trademark of HDMI Licensing, LLC in the United States and other countries.

400 Gbyte Enterprise-Class SSD

Expanding its position in the enterprise storage market, Toshiba has announced 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 our HDD expertise and its leadership as the inventor of NAND flash technology. These 2.5-inch small-form-factor drives incorporate the latest 32 nm enterprise-grade single-level cell (SLC) NAND flash memory from Toshiba and a 6 Gbits/s Serial Attached SCSI (SAS) interface.

MK4001GRZB 400 Gbyte enterprise-class SSD

Available in capacities of 100 Gbytes, 200 Gbytes, and 400 Gbytes, the MKx001GRZB family of SSD drives is designed for ease of integration into new or existing tier-0 storage of tiered 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 input/output operations per second (IOPS) and sequential sustained 510 Mbytes/s read and 230 Mbytes/s write throughput. This realizes read speeds more than three times faster than for our current enterprise HDD. Combined with a low power requirement of only 6.5 W in operation, our SSD family also delivers an industry-leading power efficiency rating of 13 800 IOPS/W.

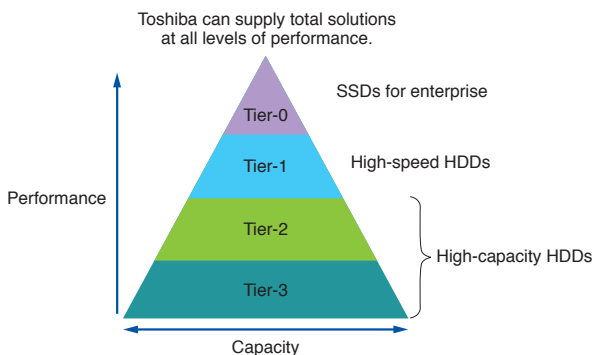SCSI: Small Computer System Interface

Image of storage layers for enterprise market

2.5-inch HDD with 640 Gbyte Capacity and 7 200 rpm Rotation Speed

MK6461GSY 2.5-inch HDD with 640 Gbyte capacity and 7 200 rpm rotation speed

Toshiba has announced a new series of 7 200 rpm 2.5-inch HDDs offering a capacity of up to 640 Gbytes.

The MK6461GSY model has a higher data transfer rate than the conventional model and is targeted at high-performance notebook PCs, gaming laptops, and mobile workstations as well as all-in-one and slimline desktop PCs. Using our extensive experience in the mobile computing market, the MK6461GSY series offers greater power efficiency and durability compared with 3.5-inch drives.

Leveraging the MK6461GSY platform, the MK5061GSYB model as the second member of the series is a high-durability model targeted at demanding 24 hours/day support applications such as network routers, network switches, blade servers, and point-of-sale terminals.

The third member of the series, designed to the TCG Opal Specification, provides industry-standard, government-grade security features for organizations wanting to secure data at rest for compliance with data privacy policies.

This new HDD family provides extremely quiet operation—the seek acoustics are the same as in idle mode. Halogen-free(＊) and power-efficient, the new models also deliver lower heat generation and power consumption during operation.

rpm: revolutions per minute
TCG: Trusted Computing Group

(＊) Products are considered "halogen-free" when each homogeneous material in the product has a maximum bromine or chlorine concentration of 900 parts per million in terms of weight percentage. Group VIIA halogens (fluorine, iodine, and astatine) are not restricted in the industry-standard ENV0199 description. Toshiba also restricts concentrations of red phosphorus and antimony trioxide in its halogen-free HDD products.

Commercialization of Optical Disc Player Module Supporting Blu-ray Disc™

TS-SR29A Blu-ray Disc™ optical disc player module
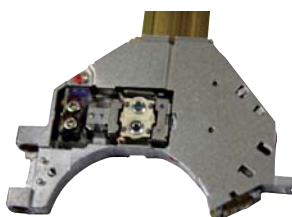
AC3s optical pickup unit

Toshiba has developed the TS-SR29A optical disc player module that supports Blu-ray Disc™, for use in digital HD LCD TVs (REGZA™ series).

The main features of this optical disc player module are as follows:
- It has a thickness of 15.5 mm suitable for thin-type TVs with a built-in optical disc drive supporting Blu-ray Disc™, achieved by the compact arrangement of its parts.
- The HDMI™ interface is supported by the addition of signal processing parts for audiovisual (AV) data to the PC usage module.
- Quietness is improved for AV usage (an improvement of about 10 dBA compared with our PC usage specification).
- Stable supply and quality improvement have been realized by developing the original AC3s optical pickup unit as the key component of the system.

We will apply this module not only to AV usage but also to 3D players, Blu-ray Disc™ writers, BDXL™ products, and so on as the specifications of Blu-ray Disc™ continue to expand widely in the future.

Blu-ray Disc™, Blu-ray™, and BDXL™ are trademarks of the Blu-ray Disc Association.

HDMI is a trademark or registered trademark of HDMI Licensing, LLC in the United States and other countries.

Portégé™ R700/R705 Thinnest and Lightest 13.3-inch Full-Performance Ultraportable Notebook PC

Portégé R700

Toshiba has developed the Portégé R700/R705 thin and light mobile notebook PC with a standard-voltage central processing unit (CPU) and DVD drive. Focusing on enhanced user-friendliness in comparison with the existing series, we newly developed the chassis and system board to actualize not only a thin display and light weight but also high performance, while enlarging the size of the LCD from 12.1 to 13.3 inches. We employed a thin magnesium chassis with a honeycomb rib structure that offers strong resistance to oblique stress. A lightweight system board was realized by downsizing the board and optimizing the placement of its components, utilizing our high-density board mounting technology acquired in the process of developing mobile notebook PCs equipped with a DVD drive. To deal with heat from the CPU, we adopted a new air-cooling technology that was jointly developed with Intel Corporation. The cooling efficiency is improved by directly spraying air from the cooling fan to the heat-generating area and the use of a heat-releasing fan in the exhaust ventilation area of the chassis.

Thanks to these technologies, we have created the extremely thin and light 13.3-inch mobile notebook PC equipped with a DVD drive(*).

The Portégé R700/R705 series is a mobile notebook PC that combines the "Thin and Light" design concept of "differentiation at a glance" with uncompromising performance.

(*) dynabook RX3/T9M models for the Japanese market

Honeycomb rib structure

libretto™ W100 mini-notebook PC

libretto W100 mini-notebook PC

The libretto W100, developed as one of the Toshiba notebook PC 25th anniversary models, is the world's first(*) dual touch-screen Windows® PC. The libretto W100 is a new-concept mini-notebook PC equipped with two 7-inch wide super video graphics array (WSVGA: 1 024 × 600 pixels) LCDs that offer a display equivalent to a 9.3-inch (1 024 × 1 200 pixels) LCD, and yet it is

only approximately 699 g in weight thanks to Toshiba's original high-density packaging technology.

A feature of the dual touch-screen and our original display control technology is that when the direction of the main unit is changed, the motion is detected by an acceleration sensor and the length and width of the screen display are automatically changed. The user can also select a simple type or a split type software keyboard on the screen to suit their needs. This means that the libretto W100 can be used like a notebook PC by displaying the software keyboard on one screen, or like a book to read contents by holding it in the lengthwise direction. The two screens fold up into a compact form, allowing the PC to be easily carried around.

With its Intel's dual-core CPU, the libretto W100 offers comfortable and carefree operation thanks to its outstanding processing performance and advanced power-saving function.

(∗) As of August 2010 (as researched by Toshiba)

Windows is either a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.

Web browser   Software keyboard

(a) Lengthwise screen viewed in the horizontal direction

Book content

(b) Lengthwise screen viewed in the vertical direction

Effective usages of dual screen

Toshiba DX All-in-One PC

Toshiba DX

The Toshiba DX, developed as a 25th anniversary model of the Toshiba notebook PC business, inherits the slim and stylish TV design and adds AV technologies that represent the fruit of Toshiba's research and development in this field over the past 25 years.

The 21.5-inch full HD LCD and SpursEngine™ high-performance stream processor offer high-performance media streaming capabilities. The speakers developed in collaboration with Onkyo Corporation offer rich virtual surround sound, and an HDMI™ input port allows the Toshiba DX to also be used as a gaming display.

HDMI is a trademark or registered trademark of HDMI Licensing, LLC in the United States and other countries.

Satellite A660 3D Model Stereoscopic 3D Display-Enabled Premium PC

Satellite A660 3D model

The Satellite A660 3D model and its base models are equipped with full entertainment features such as high-quality harman/kardon™ speakers. In order to support NVIDIA® 3D Vision™ stereoscopic 3D technology, Toshiba doubled the frame rate of the LCD to 120 Hz and upgraded the graphics processing unit (GPU) to sustain 3D graphics performance.

On the Satellite A660 3D model, users can enjoy 3D game titles and Blu-ray 3D™ titles available on the market. In September 2010 we introduced a new application named Toshiba Video Player 3D, allowing users to enjoy beautiful stereoscopic 3D videos generated in real time from 2D video sources utilizing our original algorithms.

Various 3D contents on the PC can also be output and displayed on a stereoscopic 3D-capable TV through the HDMI™ interface.

harman/kardon is a trademark of Harman International Industries, Incorporated.

NVIDIA and NVIDIA 3D Vision are trademarks and/or registered trademarks of NVIDIA Corporation in the U.S. and other countries.

Blu-ray Disc™, Blu-ray™, and Blu-ray 3D™ are trademarks of the Blu-ray Disc Association.

HDMI is a trademark or registered trademark of HDMI Licensing, LLC in the United States and other countries.

Satellite L630/L635 Family-Friendly Notebook PC

Satellite L630/L635 family-friendly notebook PC

    The Satellite L630/L635 family-friendly notebook PC has been custom-designed as a PC suitable for use by children based on the 13.3-inch standard class Satellite L630/L635 series PC.

    This PC has three special features in consideration of young users.

    The first feature is user-friendly one-touch keys such as an Internet key, audio control key, camera key, and so on instead of standard function keys.

    The second feature is a wipeable keyboard. The keyboard is protected by a silicon rubber cover with keyboard icons, making it easy to wipe if it is soiled by dirty fingers, etc.

    The third feature of the L630/L635 series is industrial design. The textured finish conceals fingerprints, and the impact resistance is improved by the addition of silicon rubber pads on the four corners.

Toshiba Netbook PC NB520/550D Series

Toshiba netbook PC NB520

    The Toshiba NB520 and NB550D series are the first netbook PCs[*1] equipped with harman/kardon™ stereo speakers in the world[*2].

    Toshiba's "Sleep and Music" technology allows users to play music stored in a mobile audio player via the PC's speakers simply by connecting the player to the PC's microphone jack, even when the PC is switched off[*3]. The unique design featuring catchy colors and a surface with a soft rubber feeling and a dimpled texture give this PC the image of an active device that can be used anywhere.

(*1) A netbook PC refers to a small, simple, and affordable PC mainly used for Internet services.

(*2) As of November 2010 (as researched by Toshiba)

(*3) The state of being switched off includes the states of sleep, stand-by, and hibernation.

harman/kardon is a trademark of Harman International Industries, Incorporated.

"Toshiba Places" Content and Service Platform

Screenshot of Toshiba Places

Toshiba Places is a cloud-based platform that is accessible via a standard Web browser on PCs and via a dedicated user interface on TVs. Just as in a shopping mall, users can visit different "Places" to access offerings from a variety of selected partners, with a user experience and a choice of contents and services appropriate to their device.

In addition to Music Place, which was launched in January 2011 for PCs, users can enjoy a variety of contents and services such as the new Video Place, News Place, Game Place, App Place, and Services Place using a single login. In addition, Social Place allows the sharing of photos and video contents between different users and devices.

These Places are being made available in an increasing number of European countries and product categories during 2011 with the first launches in April.

Access to Toshiba Places is not limited to Toshiba customers only, but to everybody. At the start of the rollout, Toshiba Places includes the following Places:

Video Place (for TV and PC)
Music Place (for TV and PC)
Social Place (for TV and PC)
News Place (for TV)
TV Place (for TV)
Game Place (for PC)
App Place (for PC)
Services Place (for PC).

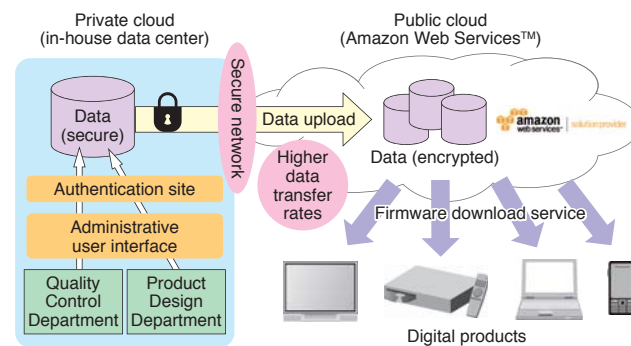## Firmware Download Service with Cloud

Toshiba has developed a firmware download service for digital products deployed worldwide.
This service has the following features:
- management of firmware types and versions
- support for workflow of design and quality control departments
- monitoring of falsifications of data
- monitoring of delivery results
- extension of computer resources to meet peak requirements.

Our firmware download service has the characteristics of a hybrid cloud, with both the scalability of a public cloud (Amazon Web Services™) and the safety of a private cloud (an in-house data center). This service can be applied to various products, thus realizing savings in the cost of firmware maintenance activities.

Amazon Web Services is a trademark of Amazon Web Services, LLC.

Toshiba Corporation is a solutions provider for Amazon.com, Inc.

Outline of firmware download service

CT-4100 Card Payment Terminal and PADCT-4100 PIN Entry Device

CT-4100

PADCT-4100

CT-4100 card payment terminal and PADCT-4100 PIN entry device

Toshiba TEC Corporation has developed the CT-4100 card payment terminal and the PADCT-4100 personal identification number (PIN) entry device, offering advanced design with miniaturization, user-friendliness, enhanced security, and ecology-consciousness.

The main features of the system are as follows:
- A 4.3-inch color LCD and touch panel are adopted without a numerical keypad for the first time(*) in the retail industry.
- A minimal footprint 40% smaller than that of conventional models in the retail industry has been achieved.
- A higher security mechanism protecting credit cards and PIN information has been realized by enhancing the tamper alarm function. The PADCT-4100 PIN entry device has acquired certification under the PCI PTS (Payment Card Industry PIN Transaction Security) V2.1 card security standard.
- The eco-conscious terminal reduces power consumption by 30% and the length of various sales payment slips by 40% compared with conventional models.
- China Union Pay cards are supported.

(∗) As of February 2010, for card payment terminals (as researched by Toshiba TEC Corporation)

Ubiquitous Printing Solution for Offices
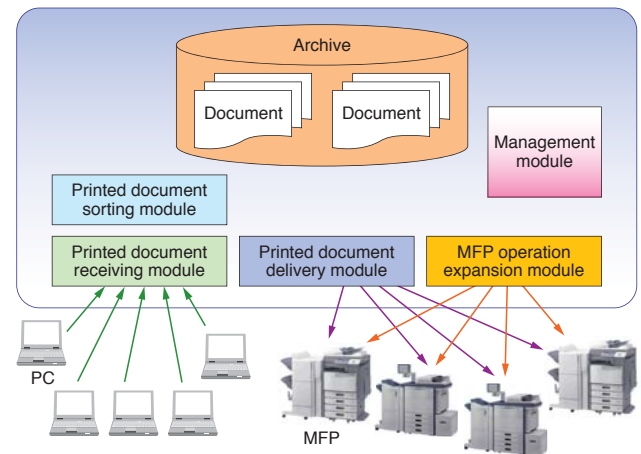
Ubiquitous printing solution for offices

Toshiba TEC Corporation has developed a ubiquitous printing solution that provides office workers with more effective printing services in the office.

The main features of this solution are as follows:
- It is possible to print from a PC to any multifunctional peripheral (MFP) in the office.
- A sequence of operations from authentication to printing is easily realized in combination with the e-BRIDGE ID Gate card authentication option developed by us.
- Expandability according to type of usage is possible by dividing the module configuration of applications for each service.