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TOSHIBA AMERICA INFORMATION SYSTEMS
STORAGE DEVICE DIVISION
IRVINE, CALIFORNIA

SD-C2712
DVD-ROM MOBILE DRIVE
USER MANUAL

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INTRODUCTION – SD-C2712

General Features

100ms Average Access Time (DVD)
RPC2 Compliant
Drawer Type Manual Load/ Electrical Release
DVD-R, DVD-RW, DVD-RAM, CD-R and CD-RW Compatible

Drive Speed
    DVD   8X
    DVD-R/RW   4X
    CD-ROM   24X
    DVD-RAM   2X

BUS Interface   ATAPI

Types of Disc Formats Supported –

DVD-ROM

        DVD-5 (single-sided, single layered)
        DVD-9 (singled-sided, double layered)
        DVD-10 (double-sided, single layered)
        DVD-18 (double-sided, double layered
DVD-R (Ver 1.0 & 2.1)
DVD-RW (Ver. 1.0 & 1.1)
DVD+R/RW
DVD-RAM (Ver 2.1)

CD   CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video-CD), Multi-session (Photo-CD Disc, CD-Extra, Portfolio, CD-R, CD-RW), CD-R (read), CD-RW (read)

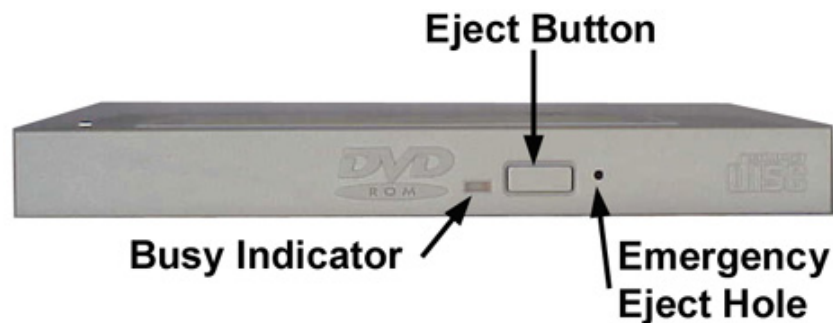## Front Panel

Figure 1.SD-C2712 DVD-ROM Drive Front Panel

Figure 1.SD-C2712 DVD-ROM Front Panel

Eject Button   The EJECT button is used to open the disc tray so you can install or remove a disc

Busy Indicator   When you install a disc into the DVD-ROM drive, the BUSY light flashes slowly as it attempts to locate the disc. One of the following will occur:
- BUSY light goes out. The DVD-ROM drive is ready to read data from the disc.
- BUSY light flashes slowly. The disc may be dirty.
- BUSY light remains ON. The DVD-ROM is accessing data.
- BUSY light remains ON indefinitely. The DVD-ROM is experiencing an error.

Emergency Eject Hole   The emergency eject hole is to be used only when the DVD tray will not open when EJECT button is pressed.

DVD Tray   Insert DVD Disc in tray

SETUP – SD-C2712

Toshiba recommends that only trained professionals install this DVD-ROM drive into your laptop/notebook.

Installation Notes

- The SD-C2712 DVD-ROM drive has no jumpers that need to be set
- Mounting orientation: 15° (horizontally), 15° vertically (volume control in down position), 30° (drive with volume control in up position).
- When mounting drive use 4 M2-PO.4 tapping holes located on the left and right sides of drive.
- When mounting drive, the tightening torque of the four screws must be even. Recommended screw tightening torque is 2Nm
- For clearance around the front bezel, it is recommended that a clearance of more than 0.8mm should be left in all directions.

Software Driver

Toshiba's SD-C2712 drive does not require any unique device drivers for Windows '98/2000/XP/NT. After installing your drive and re-booting, your system should recognize your drive. Win '98/2000/XP/NT Operating Systems support all Toshiba's ATAPI drives natively. If you prefer using DOS, download the ATAPI driver from our web site.

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USING THE DVD-ROM Drive – SD-C2712

Drive Operation

Inserting Media – Horizontally or Vertically

To insert a DVD in a DVD-ROM drive that is mounted horizontally, perform the following steps:

Figure 1.Inserting Disc

1. Open the drive's loading tray by pressing the Eject Button and pulling out the tray.
2. Place media disc into drive's loading tray, and lightly press down on the inner portion of the disc.
3. Gently close the disc tray.

Removing Media

To remove media disc from the drive, perform the following steps:

1. Open the loading tray by pressing the Eject Button, and pulling tray out.
2. Grasp disc by it's outer edge, and lift out of loading tray.
3. Gently close the loading tray.

Usage Guidelines

- Keep the disc tray closed when not using the DVD-ROM drive
- Do not press down on the disc tray when opening or closing it.
- Do not place objects on the disc tray
- Never use a damaged, broken, or deformed disc
- Do not press the Eject button while the drive is playing a DVD movie or accessing a disc. To stop a DVD movie, click Stop button in the DVD player application program
-

NOTE: High-speed drives spin the disc at a high rotational speed. If a disc has printing on only half of the disc, or if there is a slight imbalance in the disc, the imbalance is greatly magnified by the high speed, causing the drive to vibrate or produce a fan-like noise. These effects are inherent in the high-speed technology and do not indicate a problem with the drive.

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Regional Coding

Region Protection Coding (RPC) of DVD Discs: this feature is supported on DVD Players and is used with DVD-Video Discs (i.e. movies). Currently, the motion picture industry has divided the world into different regional "zones." These regions or "zones" correlate to the regional markets into which the motion picture industry releases movies. Simply put, RPC Codes are placed on Movie Discs marketed throughout the world based on the region of the world where they are being sold. These RPC codes help to control and prevent the pirating of new release movies into other motion picture market regions prior to their true release dates within those markets.

The SD-C2712 DVD-ROM/CD-RW drive supports the current RPC phase 2 industry specifications. This means that when the DVD-ROM drive ships from the factory it is set to the region for which the Operating System was intended. In other words the drive is set to support the Region 1 (North America) Operating System and will only play Region 1 (North America) DVD-Video movie discs.

Emergency Ejection

⚠️ **CAUTION: The following procedure is intended only as a last resort when pressing the eject button fails to open the Loading Tray.**

1. Turn computer power OFF by properly shutting down system.
2. Insert a solid bar (i.e. large paper clip) into Emergency Eject hole and push in as shown in the picture below.
3. Loading tray will open/eject.

Figure 2.Using Emergency Eject

Handling Media

DVD media is sensitive to dust and fingerprints. Carefully handle media by its edges only. If a DVD movie skips or hangs during playback, clean the media. Most DVD video playback issues are media-related and can be remedied by proper handling and care of media.

Cleaning Media

Try to avoid touching the read area (underside) of the disc as dirt and smears will degrade the disc accessing speed.
If the disc becomes dirty wipe it with a damp soft cloth. Avoid cleaning in a circular motion, but rather from the inner side outward.

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TROUBLESHOOTING – SD-C2712

Problem	Solution
Disc tray cannot be opened	• Check that there is power to drive. • Use Emergency Eject instructions to open tray.
Drive is not recognized by system	• Is the drive connected properly? Are all cables plugged in properly (e.g. Power Cable, Interface Cable and Audio Cables). • Is the software driver loaded? On a step-by-step (F8) Boot of the system is the DVD-ROM drive recognized? (BIOS / DOS reports "device driver not found" or "no valid drivers selected."). If not, Contact Technical Support. • Has the DVD-ROM drive software driver been corrupted by a virus. Run a Virus Scan program and repair if possible. Contact Technical Support if the Virus renders the DVD-ROM drive software drivers not useable.
Drive is not recognized by system during Boot process, but is recognized by the Operating System (i.e. XP, Win2000, Win98, Win NT, etc.)	• Is the DVD-ROM drive software driver loaded? On a step-by-step (F8) Boot of the system is the DVD-ROM drive recognized? (BIOS / DOS reports "device driver not found" or "no valid DVD drivers selected."). If not, Contact Technical Support. • Has the Windows DVD-ROM drive software driver program been corrupted by a virus. Run a Virus Scan program and repair if possible. Contact Technical Support if the Virus renders the software drivers not useable.
BUSY Indicator LED flashes slowly	• The disc may be dirty Clean it with a soft damp cloth. Avoid cleaning the disc using a circular motion. The disc should be wiped in a radial direction. That is, from the inner side outward. • The laser lens may have become cloudy or blocked by particulate matter. Please contact Technical Support.
BUSY Indicator LED is constantly ON	• Possible Hardware Problem. Please contact Technical Support.
DVD-ROM can not play a DVD in the drive or certain types of CD media (i.e. CD-plus, etc.)	• Is the DVD-ROM drive driver loaded • Is the DVD disc the correct format for the type of system that you are using? (i.e. on a PC an ISO9660 IBM compatible PC format as opposed to Apple/Mac HFS disc or UNIX disc formats which will not function). • Do you have the correct software applications program/drivers installed to run a DVD disc? • Has the Windows DVD-ROM drive software driver program been corrupted by a virus. Run a Virus Scan program and repair if possible. Contact Technical Support if the Virus renders the software drivers not useable.

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SPECIFICATIONS –SD-C2712

General

Interface: ATAPI

Compatible DVD-ROM Standard - Read:

DVD: DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18)
                  DVD-R (ver 1.0 & 2.0, read)
                  DVD-RW (ver 1.1, read)
                  DVD-RAM (ver 1.0 & 2.1, read)

CD-ROM: CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD,
                  CD-I, CD-I Bridge (Photo-CD, Video-CD), Multi-session (Photo CD Disc, CD-Extra,
                  CD-R, CD-RW), CD-RW (read), CD-R (read)

Note: All DVD/CD formats, except CD-Red Book (audio), require additional application specific software and/or hardware. The drive is capable of reading these data formats. However, in order to run applications that use these formats, you must first have the required software and/or hardware.

Performance

Data Disc Capacities
    DVD-ROM   4.377GB (DVD-5)
                               7.959GB (DVD-9)
                               8.754GB (DVD-10)
                               15.917GB (DVD-18)
    DVD-R (Ver 1)   3.679GB
    DVD-R (Ver 2.0)   4.377GB
    DVD-RW   4.377GB
    DVD+R   4.377GB
    DVD+RW   4.377GB
    DVD-RAM (Ver 2.1)   4.377GB
    CD (mode 1)   688.5MB
    CD (mode 2)   748.8MB

User Data Blocks
    DVD: 2,048 Byte/block
    CD (mode 1)   2048 Byte/block
    CD (mode 2)   2,336 Byte/block

Transfer Rate

DVD (Single)	4,463 - 10,816 Kbytes/s
DVD (Dual)	3,380 - 8,112 Kbytes/s
DVD-R/-RW	2,298 - 5,408 Kbytes/s
DVD+R/+RW	2,298 - 5,408 Kbytes/s
DVD-RAM (Ver 2.1)	2,704 Kbytes/s
CD (mode 1)	1,552 - 3,600 Kbytes/s
CD (mode 2)	1,761 - 4,104 Kbytes/s

Rotational Speed

DVD single layer:	4,670rpm (3.3X – 8X)
DVD dual layer:	3,792rpm (2.5X – 6X)
DVD-R (Ver 1.0)	2,560rpm (1.7X – 4X)
DVD-R (Ver .1.2)	2,224rpm (1.7X – 4X)
DVD-RW:	2,224rpm (1.7X – 4X)
DVD+R/+RW	2,224rpm (1.7X – 4X)
DVD-RAM (ver 2.1):	1,380 - 3,300rpm (2X)
CD-ROM, CD-R, CD-RW	5,100rpm (10.3X – 24X)
CD-DA, Video-CD	1,700rpm (3.3X – 8X)
CD-DA Transfer:	2,200 - 5,10rpm (10X)

IDE Interface	16.7 Mbytes/s
Transfer Rates	16.7 Multi-word DMA
	33.3 Ultra DMA

Random Access Time

DVD	100ms (3.3X – 8X)
CD-ROM	110ms (10.3X – 24X)
DVD-RAM	140ms (2X)

Data Buffer	256Kbytes

Reliability

MTBF	60,000 hours

User Error Rates (with up to 5 retries and layered ECC on)

DVD Hard Error Rate:	10^{-15} max
CD Hard Error Rate: mode 1	10^{-15} max
CD Hard Error Rate: mode 2	10^{-12} max
Seek Error Rate (allowing 10 retries)	10^{-6} max

Environmental

Ambient Temperature
    Operating   5° to 50° C (41° to 122° F)
    Storage   -20° to 65° C (4° to 149° F)
    Shipping   -40° to 65° C (-40° to 149° F)

Relative Humidity
    Operating   8% to 80%
    Storage/Shipping   5% to 95% (wet bulb 40° C max)

Acoustical Noise   40dB

Power

DC Voltage and Current Requirements   +5V ±5% (Operating), 8% (start-up)

Physical

    Height   0.5" (12.7mm)
    Width   5.04" (128mm)
    Depth   4.96" (126.1mm)
    Weight   6.0oz (0.17kg)

Connectors

IDE Interface Connector   50 Pin I/F ATAPI Standard

Regulatory

The SD-C2712 DVD Writeable drive has been certified by the following regulatory agencies:

- UL 1950
- CSA C22.2 No. 950
- TUV (EN60950I)
- CE standard
- DHHS 21 CFR Sub-Chapter J
- FDA CFR21, EN60825

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Drive Connectors –SD-C2712

Figure 1.SD-C2712 DVD Writeable Drive Rear Panel – Connector

ATAPI Connector   A 50-pin ATAPI interface connector is found at the rear of the SD-C2712 DVD-ROM drive. Connecting cable should use Japan Aviation Electronics Industry Limited KX14-50Series L or equivalent connector.

Table 1.Interface Pin Assignments

PIN NO.	I/O	SIGNAL NAME	PIN NO.	I/O	SIGNAL NAME
1	O	Audio L-CH	2	O	Audio R-CH
3		Audio Ground	4		Digital Ground
5	I	/RESET	6	I/O	DD8
7	I/O	DD7	8	I/O	DD9
9	I/O	DD6	10	I/O	DD10
11	I/O	DD5	12	I/O	DD11
13	I/O	DD4	14	I/O	DD12
15	I/O	DD3	16	I/O	DD13
17	I/O	DD2	18	I/O	DD14
19	I/O	DD1	20	I/O	DD15
21	I/O	DD0	22	O	DMARQ
23		Ground	24	I	/DIOR: / HDMARDT: HSTROBE
25	I	/DIOW:STOP	26		Ground
27	O	IORDY: / DDMARDY: DSTROBE	28	I	/DMACK
29	O	INTRQ	30	O	/IOCS16
31	I	DA1	32	I/O	/PDIAG
33	I	DA0	34	I	DA2
35	I	/CS1FX	36	I	/CS3FX
37	I/O	/DASP	38	I	+5V (Motor)
39	I	+5V (Motor)	40	I	+5V (Motor)
41	I	+5V (Logic)	42	I	+5V (Logic)
43		Ground	44		Ground
45		Ground	46		Ground
47	I	CSEL	48		Ground
49	I	Vendor Unique*	50	I	Vendor Unique*
*Vender Unique, don't connect pins					