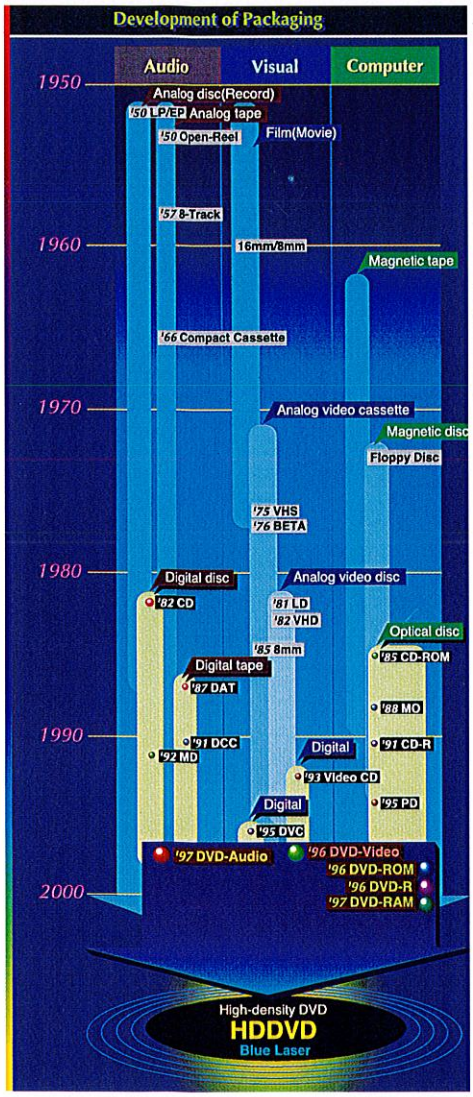
DVD

The DVD is an important basic technology that provides a springboard for the further development of multimedia. Because it offers high picture and sound quality and fast access to information, the DVD is serving to combine its two current markets of home entertainment and computers into one market for information devices. Toshiba's DVD format has gained acceptance in a number of industries, and has become a de facto worldwide standard.



DVD Development and Prospects

Following the advent of digital computers and digital audio, the age of digital video is now beginning. The DVD was developed as the first multimedia disc with a unified format incorporating video, audio and computer data.

Created in response to motion picture and computer industry requirements, the DVD offers a single interchange format for video, audio and computer applications, as well as compatibility with read only, write once and read/write discs. In addition, the following features are available for video applications:

- MPEG2 digital video compression for high quality pictures;
- 5.1 channel digital surround audio, the same as that used in theater systems;
- Maximum 8 soundtrack languages and 32 subtitle languages; and
- Multistories, multiangles and multiaspects.

More than just a successor to existing media such as laser discs and CD-ROMs, the DVD also provides the potential to create new applications that take advantage of its low-cost data storage and superior interactive functions. In the near future, the use of blue lasers is expected to realize larger capacity, enabling further developments.

DVD High-Density Optical Disc

Toshiba has taken the lead in systematically creating a worldwide industry standard for the DVD, a high-density optical disc for motion picture and computer applications.

Capacity is 4.7 gigabytes on each side of the disc, which is 120mm in diameter with an effective thickness of 0.6mm, half that of a CD. That capacity is sufficient to store almost 95 percent of all available movie software titles on a single side of the disc. In addition, the discs have a maximum capacity of 17 gigabytes when bonded together as a double-sided dual-layer disc. Video signals are digitally compressed using the MPEG2 format and audio signals are band compressed using the Dolby AC-3, MPEG2 layer 2 and PCM formats. Features include surround audio available in eight languages, subtitles available in 32 languages and interactive functions for video software.

The DVD file management system is designed to conform to the UDF-Bridge (Micro UDF+ISO9660) format. Toshiba also developed the world's first DVD-ROM drive for computer applications, demonstrated at COMDEX in fall 1995.

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DVD Specifications (as of December 1995)

Items	Specifications
Disc diameter	120mm
Disc thickness	1.2mm (Bonding two 0.6mm-thickness discs)
Minimum pit length	0.4μm
Track pitch	0.74μm
Recording modulation	8-16
Error correction code	RS-PC (Reed-Solomon Product Code)
User data capacity	4.7GB/8.5GB/9.4GB/17GB
Logical format (File management system)	UDF-Bridge (Micro UDF+ISO9660)
Readout wave length	650nm/635nm
Numerical aperture of objective lens	0.6