

## **Memory cards in our life**

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### **Анотація**

Карти пам'яті дуже важливі у наш час. З їх допомогою ми можемо зберігати та переносити фотографії, музику та документи. А у наш час цифрового життя, вони є просто незамінними.

### **Ключові слова**

Карта пам'яті, смарт-медіа, персональний комп'ютер, компактний носій, міні-карта, флеш-карта

### **Abstract**

Memory cards are very important in our time. With their help, we can save and transfer photos, music and documents. And nowadays digital life, they are simply irreplaceable.

### **Keywords**

Memory card, Smart Media, PC, Compact Flash, Miniature Card, SD

A flash memory card (sometimes called a *storage card*) is a small storage device that uses nonvolatile semiconductor memory to store data on portable or remote computing devices. Such data includes text, pictures, audio and video. Most current products use flash memory, although other memory technologies are being developed, including devices that combine dynamic random access memory (DRAM) with flash memory.

PC Cards (PCMCIA) were the first commercial memory card formats (type I cards) to come out, but are now mainly used in industrial applications and to connect I/O devices such as modems. Since 1994, a number of memory card formats smaller than the PC Card arrived; the first one was Compact Flash later Smart Media and Miniature Card. The desire for smaller cards for cell-phones, PDAs, and compact digital cameras drove a trend that left the previous generation of "compact" cards looking big. In digital cameras Smart Media and CompactFlash had been very successful. In 2001, SM alone captured 50% of the digital camera market and CF had captured the professional digital camera market. By 2005 however, SD/MMC had nearly taken over Smart Media's spot, though not to the same level and with stiff competition coming from Memory Stick variants, as well CompactFlash. In industrial and embedded fields, even the venerable PC card

(PCMCIA) memory cards still manage to maintain a niche, while in mobile phones and PDAs, the memory card has become smaller.

There are a number of flash memory card types on the market, roughly divided between consumer devices and enterprise storage devices.

These devices include the Secure Digital card (SD card) and its smaller variant, the micro SD card; Secure Digital High Capacity (SDHC) card; CompactFlash card (CF card); Smart Media; Memory Stick; Multi Media Card (MMC); xD-Picture card; and USB card.

The above types of memory cards are usually associated with consumer devices, such as digital cameras, smartphones and tablets. The cards come in varying sizes, and storage capacities typically correspond directly to their price.

Most types of memory cards available have constantly powered, nonvolatile memory, particularly NAND flash. Nonvolatile memory safeguards data in the event of a power outage, software bug or other disruption, and also eliminates the need to periodically refresh data on the memory card. Because memory cards use solid-state media, they involve no moving parts and are less likely to suffer mechanical difficulties.

Earlier removable storage media, such as the PC card, smart card and similar cards used for computer gaming systems, are also considered memory cards. However, the newer types of memory cards are smaller, require less power, have higher storage capacities and are portable among a greater number of devices. Because of these features, memory cards are influencing the production of an increasing number of small, lightweight and low-power devices.

Memory cards offer a number of advantages over a hard disk drive (HDD): they are much smaller and lighter, extremely portable, silent, allow more immediate access and are less prone to mechanical damage. However, an HDD still offers a compelling advantage: Although flash prices are coming down, a typical memory card still costs more (and has a lower storage capacity) than a high-capacity HDD.

Here are brief descriptions of the major consumer-oriented flash memory cards, including when they were introduced and their use cases.

**SD card:** Postage stamp-sized device widely used in a variety of handheld devices, including digital cameras, smartphones and tablets. SD cards secure digital data by encrypting it on the device. SanDisk offers the highest capacity SD card at 512 gigabytes (GB).

**Micro SD:** In 2005, SanDisk and Motorola teamed up to introduce the original micro SD product, then known as Trans Flash, as a 128 GB removable card for mobile phones. In June 2016, SanDisk (now part of Western Digital Corp.) launched a suite of 256 GB micro SD cards, including Ultra micro SDHC and micro SDXC UHS-I cards geared for Android-based devices.

**CompactFlash drive technology:** The forerunner to the SD card, the original CF cards were designed on the Parallel Advanced Technology Attachment standard and were no larger than a matchbook. CF cards

included a microcontroller and were used as flash memory storage for high-resolution photography. CF and SD cards lack built-in USB computer device connectivity.

**Multi Media Card:** Developed in 1997 by SanDisk and Siemens, MMCs were originally designed to use NAND flash memory technology from Toshiba. However, MMCs are less common with the arrival of SD card technology. Most computer hardware vendors no longer provide ports for inserting an MMC device. A new development is embedded MMC, or eMMC, in which the flash card is integrated on the computer motherboard along with controller software to use the eMMC as a bootable system drive. MMCs weigh approximately two grams.

**SDHC card:** This card has the same form factor as an SD card, with specifications that define SDHC card capacities from 4 GB to 32 GB. These devices were developed to tackle high-definition video and high-resolution images. Although SD cards will work in an SDHC device, an SDHC card will not function in an SD card-based digital camera or card reader.

**Memory stick:** Sony developed its Memory Stick technology as a removable flash storage device to transfer photos and high-definition video.

**USB drive:** This portable plug-and-play flash storage device is inserted into a computer's standard USB port. USB drives ushered in the demise of floppy disks and, to some extent, the reduced use of compact disks.

**XD-Picture card:** A card format designed for use only with Olympus digital cameras.

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