35 Years of NAND Flash Memory

In 1987, KIOXIA invented NAND flash memory - a technology that has had a far-reaching impact on the entire world.



YEARS OF INNOVATION

Look How Far We've Come -Flash Facts

IN THE 90'S

TODAY

Flash **Market Size** in 2021¹

\$70B

Market Growth

From the 90's to today, the market size for flash memory continues to grow

\$ PER GIGABYTE²

\$10,000 per GB



~.20 per GB

50,000x decrease

DIE DENSITY²

4Mb



1.33Tb

333,000x increase

MUSIC STORAGE³

1/16 of a song could be stored on a 4Mb NAND die



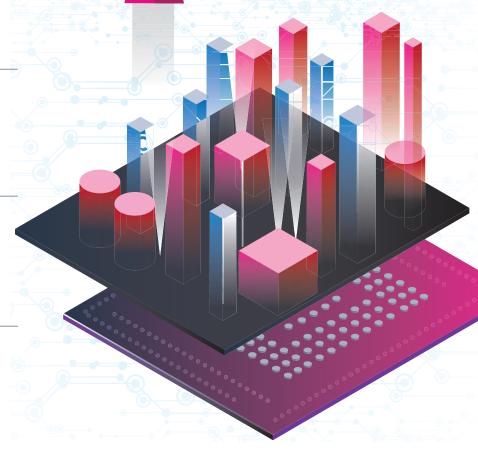
20,000 songs on a 1.33Tb NAND die

PHOTO STORAGE³

of a photo could be stored on a 4Mb NAND die

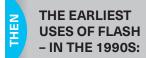


39,000 photos on a 1.33Tb NAND die



The Evolution of Applications – From Then to Now

Some of the first flash applications are almost unrecognizable today. And, many new applications have been born that would not have been possible without KIOXIA's invention.

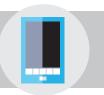












Digital telephone answering machines

Barcode Scanners

Digital Cameras

MP3 **Players**

Personal Digital **Assistants**











FLASH APPLICATIONS TODAY:

Smartphones

Tablets and Notebooks

Automotive

Smart Homes/ **Buildings/Cities**

SSDs



Cloud/Edge Computing



Gaming/ AR/VR



Wearables & Digital Health



Industrial



Automation

Security/ Surveillance

...and so much more

KIOXIA

KIOXIA delivers flash-based products for next-generation storage applications. Having invented NAND flash 35 years ago, KIOXIA is now one of the world's largest flash memory suppliers - and continues to move the technology forward.

[3] Based on KIOXIA calculations. Assuming 8MB per song and 4.2MB per photo.

In every mention of a KIOXIA product: Definition of capacity - KIOXIA Corporation defines a megabyte (MB) as 1,000,000 bytes, a gigabyte (GB) as 1,000,000,000 bytes and a terabyte (TB) as 1,000,000,000 bytes. A computer operating system, however, reports storage capacity using powers of 2 for the definition of 1Gb = 230 bits = 1,073,741,824 bits, 1GB = 230 bytes = 1,073,741,824 bytes and 1TB = 240 bytes = 1,073,741,824 bits, 1GB = 230 bytes = 1,0