

SLC NAND: Reliable, High-Performing, Low-Density NAND

KIOXIA delivers flash-based products for next-generation storage applications. Having invented NAND flash over 30 years ago, KIOXIA is now one of the world's largest flash memory suppliers – and continues to move the technology forward.

What is SLC NAND?

Single-level cell (SLC) NAND flash memory is the original NAND architecture. A 1-bit-per-cell, non-volatile memory, SLC provides the high endurance that makes it ideally suited for a variety of consumer and industrial applications where longevity of supply is important.

KIOXIA's SLC NAND product family includes two interface options: PARALLEL and SERIAL.



PARALLEL INTERFACE:

Available as raw SLC NAND or as BENAND™ (Built-in ECC NAND). BENAND is SLC NAND with an internal hardware error correction code (ECC) engine, which removes the burden of ECC from the host processor.

SLC NAND: Parallel Interface

Key Features:

- Three generation support (43nm*/32nm/24nm)
- 8bit ECC required (24nm)
- Supply voltage 1.8V/3.3V
- Industrial temp and C-temp
- TSOP and BGA packages
- Wide density range (1Gb – 256Gb)

Products:

- 24nm 1Gb – 16Gb
- 24nm 32Gb – 256Gb
- 32nm
- 43nm* EOL Announced

BENAND™ (Built-in ECC NAND)

Key Features:

- No ECC required (internal)
- Supply voltage 1.8V/3.3V
- Industrial temp and C-temp
- TSOP and BGA packages

Products:

- 1Gb – 8Gb (24nm)

SERIAL INTERFACE:

KIOXIA's Serial NAND is SLC NAND with a serial peripheral interface (SPI). SPI is an industry standard inter-chip interface that is used in NOR flash and supported by most microprocessors and microcontrollers.

Serial Interface NAND

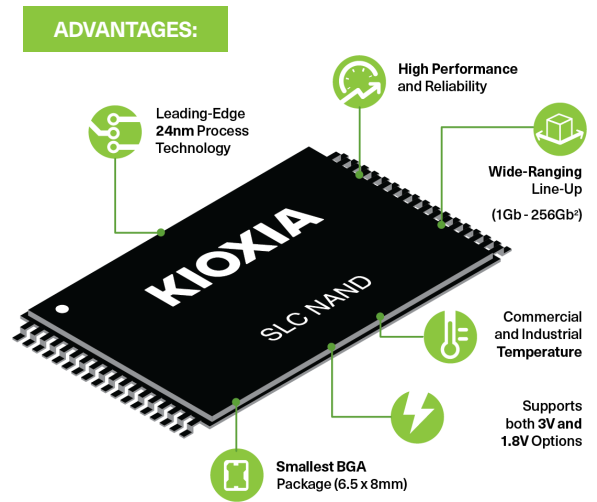
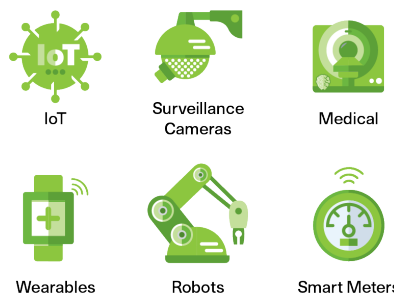
Key Features:

- 24nm SLC NAND with SPI interface
- Cost-effective alternative to SPI NOR
- Low pin count
- Quad SPI mode
- Internal ECC capability
- Industrial temp
- Fast interface speed (up to 133MHz)

Products:

- 1Gb – 8Gb WSON8

APPLICATIONS:



KEY FEATURES:

SLC's main advantages over MLC, TLC and QLC include: ability to read and write data at high speeds, support high-write/erase cycle endurance, and offer I-temp availability.

Supply Situation

- Lead-time: stock to 12 weeks

Design Recommendation

- 24nm

Write/Erase Cycles¹

- SLC NAND ≈ 50K
- Serial NAND ≈ 100k

Product Inquiries

- Contact your local KIOXIA Sales Representative or franchised distributor

WHAT'S NEW:

- SLC/BENAND/Serial NAND roadmap extended
- 43nm SLC announced EOL: Last Time Buy 12/31/2020 Last Time Ship 12/31/2021

SLC NAND

Part Number (24nm)*	Capacity (bit)	VCC (V)	Page Size (bit)	Block Size (bit)	Operating Tem (°C)	Package	Number of Pins
TC58NVG0S3HTA00	1G	2.7 to 3.6	(2048+128)x8	(128K+8K)x8	0 to 70	TSOP	48
TC58NVG0S3HBAI4	1G	2.7 to 3.6	(2048+128)x8	(128K+8K)x8	-40 to 85	FBGA	63
TC58NVG0S3HBAI6	1G	2.7 to 3.6	(2048+128)x8	(128K+8K)x8	-40 to 85	FBGA	67
TC58NVG0S3HTA10	1G	2.7 to 3.6	(2048+128)x8	(128K+8K)x8	-40 to 85	TSOP	48
TC58NYG0S3HBAI4	1G	1.7 to 1.95	(2048+128)x8	(128K+8K)x8	-40 to 85	FBGA	63
TC58NYG0S3HBAI6	1G	1.7 to 1.95	(2048+128)x8	(128K+8K)x8	-40 to 85	FBGA	67
TC58NVG1S3HTA00	2G	2.7 to 3.6	(2048+128)x8	(128K+8K)x8	0 to 70	TSOP	48
TC58NVG1S3HBAI4	2G	2.7 to 3.6	(2048+128)x8	(128K+8K)x8	-40 to 85	FBGA	63
TC58NVG1S3HBAI6	2G	2.7 to 3.6	(2048+128)x8	(128K+8K)x8	-40 to 85	FBGA	67
TC58NVG1S3HTA10	2G	2.7 to 3.6	(2048+128)x8	(128K+8K)x8	-40 to 85	TSOP	48
TC58NYG1S3HBAI4	2G	1.70 to 1.95	(2048+128)x8	(128K+8K)x8	-40 to 85	FBGA	63
TC58NYG1S3HBAI6	2G	1.70 to 1.95	(2048+128)x8	(128K+8K)x8	-40 to 85	FBGA	67
TC58NVG2S0HTA00	4G	2.7 to 3.6	(4096+256)x8	(256K+16K)x8	0 to 70	TSOP	48
TC58NVG2S0HBAI4	4G	2.7 to 3.6	(4096+256)x8	(256K+16K)x8	-40 to 85	FBGA	63
TC58NVG2S0HBAI6	4G	2.7 to 3.6	(4096+256)x8	(256K+16K)x8	-40 to 85	FBGA	67
TC58NVG2S0HTA10	4G	2.7 to 3.6	(4096+256)x8	(256K+16K)x8	-40 to 85	TSOP	48
TC58NYG2S0HBAI4	4G	1.7 to 1.95	(4096+256)x8	(256K+16K)x8	-40 to 85	FBGA	63
TC58NYG2S0HBAI6	4G	1.7 to 1.95	(4096+256)x8	(256K+16K)x8	-40 to 85	FBGA	67
TH58NVG2S3HTA00	4G (2Gx2)	2.7 to 3.6	(2048+128)x8	(256K+16K)x8	0 to 70	TSOP	48
TH58NVG2S3HTA10	4G (2G x2)	2.7 to 3.6	(2048+128)x8	(128K+8K)x8	-40 to 85	TSOP	48
TH58NVG2S3HBAI6	4G (2Gx2)	2.7 to 3.6	(2048+128)x8	(128K+8K)x8	-40 to 85	FBGA	67
TH58NVG2S3HBAI4	4G (2Gx2)	2.7 to 3.6	(2048+128)x8	(128K+8K)x8	-40 to 85	FBGA	63
TH58NVG3S0HTA00	8G (4Gx2)	2.7 to 3.6	(4096+256)x8	(256K+16K)x8	0 to 70	TSOP	48
TH58NVG3S0HBAI6	8G (4Gx2)	2.7 to 3.6	(4096+256)x8	(256K+16K)x8	-40 to 85	FBGA	67
TH58NVG3S0HTA10	8G (4Gx2)	2.7 to 3.6	(4096+256)x8	(256K+16K)x8	-40 to 85	TSOP	48
TH58NVG4S0HTA20	16G (4Gx4)	2.7 to 3.6	(4096+256)x8	(256K+16K)x8	0 to 70	TSOP	48
TH58NVG4S0HTAK0	16G (4G x4)	2.7 to 3.6	(4096+256)x8	(256K+16K)x8	-40 to 85	TSOP	48

* For 32nm and 43nm product information, please contact KIOXIA. Last Time Buy for 43nm parts is 12/31/2020. Last Time Ship is 12/31/2021

BENAND™ (Built-in ECC NAND)

Part Number (24nm)*	Capacity (bit)	VCC (V)	Page Size (bit)	Block Size (bit)	Operating Tem (°C)	Package	Number of Pins
TC58BVG0S3HTA00	1G	2.7 to 3.6	(2048+64)x8	(128K+4K)x8	0 to 70	TSOP	48
TC58BVG0S3HBAI4	1G	2.7 to 3.6	(2048+64)x8	(128K+4K)x8	-40 to 85	FBGA	63
TC58BVG0S3HBAI6	1G	2.7 to 3.6	(2048+64)x8	(128K+4K)x8	-40 to 85	FBGA	67
TC58BVG0S3HTA10	1G	2.7 to 3.6	(2048+64)x8	(128K+4K)x8	-40 to 85	TSOP	48
TC58BYG0S3HBAI4	1G	1.7 to 1.95	(2048+64)x8	(128K+4K)x8	-40 to 85	FBGA	63
TC58BYG0S3HBAI6	1G	1.7 to 1.95	(2048+64)x8	(128K+4K)x8	-40 to 85	FBGA	67
TC58BVG1S3HTA00	2G	2.7 to 3.6	(2048+64)x8	(128K+4K)x8	0 to 70	TSOP	48
TC58BVG1S3HBAI4	2G	2.7 to 3.6	(2048+64)x8	(128K+4K)x8	-40 to 85	FBGA	63
TC58BVG1S3HBAI6	2G	2.7 to 3.6	(2048+64)x8	(128K+4K)x8	-40 to 85	FBGA	67
TC58BVG1S3HTA10	2G	2.7 to 3.6	(2048+64)x8	(128K+4K)x8	-40 to 85	TSOP	48
TC58BYG1S3HBAI4	2G	1.7 to 1.95	(2048+64)x8	(128K+4K)x8	-40 to 85	FBGA	63
TC58BYG1S3HBAI6	2G	1.7 to 1.95	(2048+64)x8	(128K+4K)x8	-40 to 85	FBGA	67
TC58BVG2S0HTA00	4G	2.7 to 3.6	(4096+128)x8	(256K+8K)x8	0 to 70	TSOP	48
TC58BVG2S0HBAI4	4G	2.7 to 3.6	(4096+128)x8	(256K+8K)x8	-40 to 85	FBGA	63
TC58BVG2S0HBAI6	4G	2.7 to 3.6	(4096+128)x8	(256K+8K)x8	-40 to 85	FBGA	67
TC58BVG2S0HTA10	4G	2.7 to 3.6	(4096+128)x8	(256K+8K)x8	-40 to 85	TSOP	48
TC58BYG2S0HBAI4	4G	1.7 to 1.95	(4096+128)x8	(256K+8K)x8	-40 to 85	FBGA	63
TC58BYG2S0HBAI6	4G	1.7 to 1.95	(4096+128)x8	(256K+8K)x8	-40 to 85	FBGA	67
TH58BVG3S0HTA00	8G (4Gx2)	2.7 to 3.6	(4096+128)x8	(256K+8K)x8	0 to 70	TSOP	48
TH58BVG3S0HTA10	8G (4Gx2)	2.7 to 3.6	(4096+128)x8	(256K+8K)x8	-40 to 85	TSOP	48

* For 32nm and 43nm product information, please contact KIOXIA. Last Time Buy for 43nm parts is 12/31/2020. Last Time Ship is 12/31/2021

Serial Interface NAND

Part Number (24nm – 2nd Gen)	Capacity (bit)	VCC (V)	Page Size (bit)	Block Size (bit)	Operating Tem (°C)	Package	Number of Pins
TC58CVG0S3HRAIJ	1G	2.7 to 3.6	(2048+64)x8	(128K+4K)x8	-40 to 85	WSON8	8
TC58CYG0S3HRAIJ	1G	1.70 to 1.95	(2048+64)x8	(128K+4K)x8	-40 to 85	WSON8	8
TC58CVG1S3HRAIJ	2G	2.7 to 3.6	(2048+64)x8	(128K+4K)x8	-40 to 85	WSON8	8
TC58CYG1S3HRAIJ	2G	1.70 to 1.95	(2048+64)x8	(128K+4K)x8	-40 to 85	WSON8	8
TC58CVG2S0HRAIJ	4G	2.7 to 3.6	(4096+128)x8	(256K+8K)x8	-40 to 85	WSON8	8
TC58CYG2S0HRAIJ	4G	1.70 to 1.95	(4096+128)x8	(256K+8K)x8	-40 to 85	WSON8	8
TH58CVG3S0HRAIJ	8G	2.7 to 3.6	(4096+128)x8	(256K+8K)x8	-40 to 85	WSON8	8
TH58CYG3S0HRAIJ	8G	1.70 to 1.95	(4096+128)x8	(256K+8K)x8	-40 to 85	WSON8	8

*Last Time Buy for 1st Gen Serial NAND parts was issued on 04/30/2020. Last Time Ship is 07/31/2021.

¹ Read and write speed may vary depending on the host device, read and write conditions, and file size.

² Product density is identified based on the density of memory chip(s) within the Product, not the amount of memory capacity available for data storage by the end user. Consumer-usable capacity will be less due to overhead data areas, formatting, bad blocks, and other constraints, and may also vary based on the host device and application.

Definition of capacity: KIOXIA defines a megabyte (MB) as 1,000,000 bytes, a gigabyte (GB) as 1,000,000,000 bytes and a terabyte (TB) as 1,000,000,000,000 bytes. A computer operating system, however, reports storage capacity using powers of 2 for the definition of 1GB = 2³⁰ = 1,073,741,824 bytes and therefore shows less storage capacity. Available storage capacity (including examples of various media files) will vary based on file size, formatting, settings, software and operating system, such as Microsoft Operating System and/or pre-installed software applications, or media content. Actual formatted capacity may vary.