SiliconMotion

FerriSSD®
Single-Chip SSD

FerriSSD®

20mm

16mm

Host I/F: SATA/PCIE Flash Management

NAND Flash stack
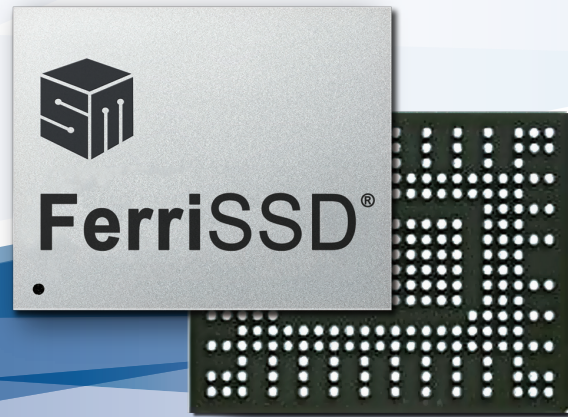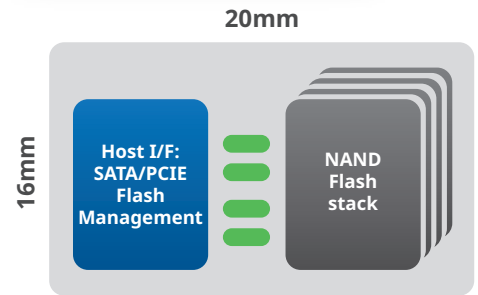
FerriSSD® Single-Chip SSD

The FerriSSD is the ideal boot BGA-SSD for a wide range of embedded applications that features SATA/PCIe interface with blazing speed and unsurpassed reliability. Armed with SMI proprietary technologies and programmable firmware, the FerriSSD is the ultimate non-volatile storage solution that is easy to design and manufacture.

Why FerriSSD®

Lower total cost of ownership & Easy to use
· Small footprint & Plug and Play: Only requires format/fdisk prior to use
· Rugged & Reliable: No moving parts
· Cost saving w/ low density FerriSSD: HDD are typically > 500GB capacity

Eliminate down time
· IntelligentScan™/DataRefresh™ : Supports self-scanning w/ proactive data protection
· IntelligentLog™ : Enables self-monitoring, analysis and AER (Advance Error Warning)
· Field programmable firmware available

Full design service from design to after sales support
· SSD life simulation and validation
· Fixed BOM and firmware from ordering part number
· Dedicated technical support team

Market Segments & Applications

For industrial, commercial and automotive applications that require high-performance, customized single-chip SSDs for small footprint equipment operating in demanding environments

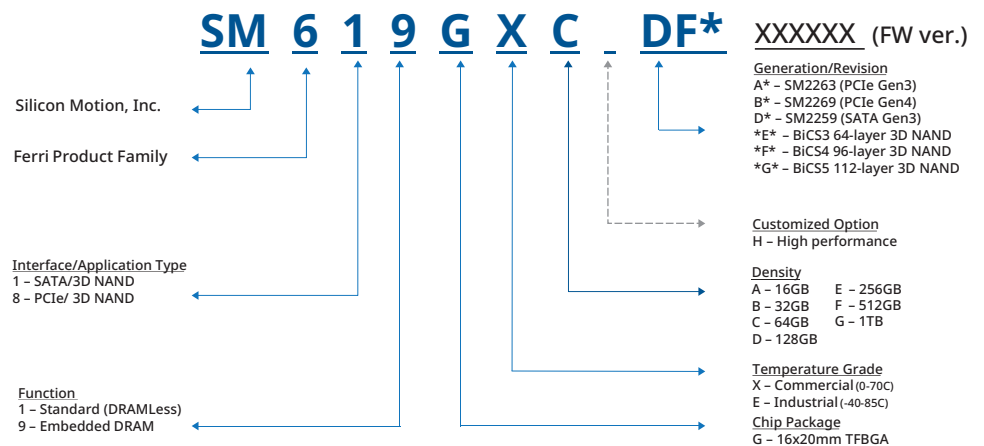|				
Infotainment / Telematics	ADAS / Autonomous	Server	Thin Client	Medical Device
Factory Automation / HMI	Video Arcade Gaming	Surveillance	POS	Kiosk
Multifunction printer	Test Instruments	Telecom	Industrial Handheld Device	ARM

Product & Technical Inquiry: **Ferri@siliconmotion.com**

FerriSSD®
BGA SSD Solutions

Specifications

Host Interface	SATA Gen3 PCIe Gen3x2; Gen4 available Q1'23
Density	SLCmode: 10/20/40/80/160GB; 320GB in Q1'23 TLCmode: 32/64/120/240/480GB; 960GB in Q1'23
Form Factor	20mm x 16mm BGA
Green Product	RoHs compliant / Halogen free
Temperature Support	Commercial Temp (0°C to 70°C) Industrial Temp (-40°C to 85°C)

P/N Decoder

SM 6 1 9 G X C - DF* XXXXXX (FW ver.)

Silicon Motion, Inc.

Ferri Product Family

Interface/Application Type
1 – SATA/3D NAND
8 – PCIe/ 3D NAND

Function
1 – Standard (DRAMLess)
9 – Embedded DRAM

Generation/Revision
A* – SM2263 (PCIe Gen3)
B* – SM2269 (PCIe Gen4)
D* – SM2259 (SATA Gen3)
E – BiCS3 64-layer 3D NAND
F – BiCS4 96-layer 3D NAND
G – BiCS5 112-layer 3D NAND

Customized Option
H – High performance

Density
A – 16GB   E – 256GB
B – 32GB   F – 512GB
C – 64GB   G – 1TB
D – 128GB

Temperature Grade
X – Commercial (0-70C)
E – Industrial (-40-85C)

Chip Package
G – 16x20mm TFBGA

Marketing Collateral

Product Brief
Ferri Full DK / Info available

Design Documentations
· Datasheet
· Application notes
· Design kit with layout guidelines
· QA reports

Whitepaper
Please go to Silicon Motion web site to download the whitepapers:
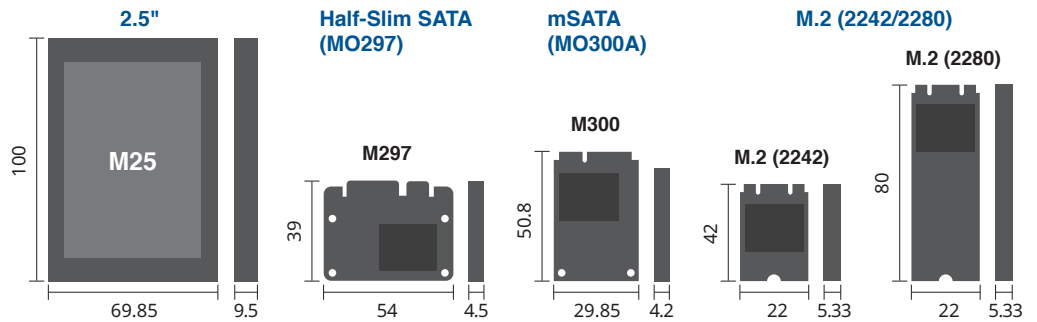https://www.siliconmotion.com/product/Ferri-Embedded-Storage.html
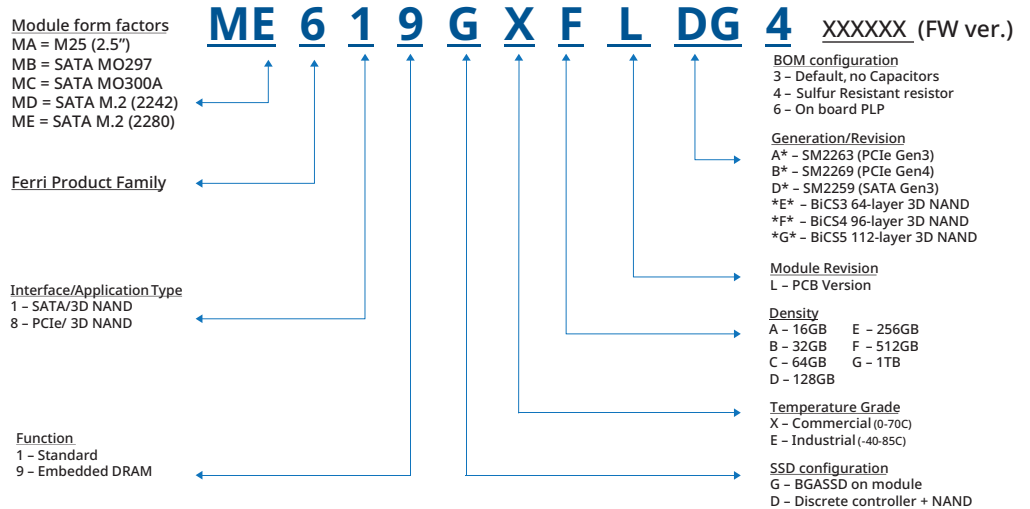
FerriSSD®
Module Solutions

Why FerriSSD® Module

By combining industry proven Silicon Motion controller technology with advanced firmware features, FerriSSD modules enable faster time to market in an industry standard module form factors available in both SATA/PCIe interface. Designed for mission critical applications such as server boot drives, industrial computing platforms, and telecommunication devices, all FerriSSD modules are strictly screened and validated for each designed application to ensure the best reliability and durability in the market. In addition, adopting FerriSSD® Modules will enable upgradability and replaceability of storage system as well as enhance the overall performance, eliminate potential downtime, and reduce the total cost of ownership.

Form Factors and Dimensions

2.5"
M25
100
69.85
9.5

Half-Slim SATA (MO297)
M297
39
54
4.5

mSATA (MO300A)
M300
50.8
29.85
4.2

M.2 (2242/2280)

M.2 (2280)
80
22
5.33

M.2 (2242)
42
22
5.33

P/N Decoder

ME 6 1 9 G X F L DG 4 XXXXXX (FW ver.)

Module form factors
MA = M25 (2.5")
MB = SATA MO297
MC = SATA MO300A
MD = SATA M.2 (2242)
ME = SATA M.2 (2280)

Ferri Product Family

Interface/Application Type
1 – SATA/3D NAND
8 – PCIe/ 3D NAND

Function
1 – Standard
9 – Embedded DRAM

BOM configuration
3 – Default, no Capacitors
4 – Sulfur Resistant resistor
6 – On board PLP

Generation/Revision
A* – SM2263 (PCIe Gen3)
B* – SM2269 (PCIe Gen4)
D* – SM2259 (SATA Gen3)
E – BiCS3 64-layer 3D NAND
F – BiCS4 96-layer 3D NAND
G – BiCS5 112-layer 3D NAND

Module Revision
L – PCB Version

Density
A – 16GB   E – 256GB
B – 32GB   F – 512GB
C – 64GB   G – 1TB
D – 128GB

Temperature Grade
X – Commercial (0-70C)
E – Industrial (-40-85C)

SSD configuration
G – BGASSD on module
D – Discrete controller + NAND

Frequently Asked Questions

Questions	Answers
What is the lead time?	• 12 to 16 weeks without forecast • 2 to 8 weeks with forecast
What form factors are available?	• BGA SSD: 16x20x1.8mm TFBGA • Module: 2.5", MO297, MO300A, M.2 2242, M,2 2280
Is a NDA required to obtain a datasheet?	• Yes, the customer needs to sign either a unilateral or bilateral NDA.
Is the firmware preloaded?	• Yes, the firmware is preloaded - a plug & play device.
Can SMI customize the firmware?	• Yes, customers have to provide detail specifications and NRE may be applied depending on the complexity of the customization.
How is the density upgrade feasibility?	• FerriSSD are pin-pin compatible and customers can easily upgrade density by drop-in replacement.
What is the maintenance?	• Maintenance is free for the life of the intended product.
Is the technical paper available?	• Yes, it's upon request.

Keywords

Keywords	Definitions
SLCmode™ / TLCmode™	Single-level-cell mode / Triple-level-cell NAND flash
IntelligentScan™ w/ DataRefresh™	Self scanning capability with preventative data refresh algorithm to ensure data robustness in all harsh operation environments
IntelligentLog™	S.M.A.R.T with Telemetry logging & AER (Asynchronous Event Request) advance warning
Data Retention	The length of time data remains in the SSD after the last write. FerriSSD Data Retention surpasses JESD47G complaint (JEDEC standard)

Ordering Information

FerriSSD Selection Guide-Ax series PCIe Chip
https://www.siliconmotion.com/download/3bk/a/FerriSSD_Selection_Guide_Ax_series_PCIe_Chip.pdf

FerriSSD Selection Guide-Ax series PCIe Module
https://www.siliconmotion.com/download/3k3/a/FerriSSD_Selection_Guide_Ax_series_PCIe_Module.pdf

FerriSSD Selection Guide-Dx series SATA Chip
https://www.siliconmotion.com/download/3Xl/a/FerriSSD_Selection_Guide-Dx_series_SATA_Chip.pdf

FerriSSD Selection Guide-Dx series SATA Module
https://www.siliconmotion.com/download/3k4/a/FerriSSD_Selection_Guide_Dx_series_SATA_Module.pdf

For more information about FerriSSD®, please go to www.siliconmotion.com or send e-mail to **ferri@siliconmotion.com**

www.siliconmotion.com

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