



LEADING INDUSTRIAL  
**NAND STORAGE**  
SOLUTIONS PROVIDER

[www.flexxon.com](http://www.flexxon.com)

# ABOUT US

**FLEXXON**, the world's leader in designs, manufactures, and markets Industrial NAND Flash Storage Solution products with 100% focus on niche markets. We apply our profound knowledge to serve and support tailored specifically for Cybersecurity, Industrial, Medical and Automotive (CIMA) applications and customers globally who desire the highest level of reliability, endurance and wide operating temperature ranges.

At **FLEXXON**, our mission is to be your preferred & reliable partner for Flash Storage and Memory Solution provider. We guarantee the highest standard of quality and product reliability.



Full Product Qualification Test from Component, System to Production



Full Reliability Test includes Mechanical Test, Environmental Test, Packaging and Printing Test.



CYBERSECURITY



INDUSTRIAL

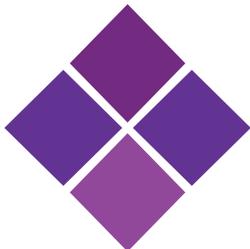


MEDICAL



AUTOMOTIVE

# WHY FLEXXON



Long Product Life



Fixed BOM



Industrial Grade



Support HMLV (High-Mixed Low Volume)



Special Capacity and Customize Memory Solution



Strong Technical Support

# INDUSTRIAL APPLICATIONS



## Industrial Grade

Industrial Grade	Temperature	
	Automotive AEC - Q100 Grade 2	-40° C ~ +105° C
	Automotive AEC - Q100 Grade 3	-40° C ~ +85° C
	Diamond	-40° C ~ +85° C
	Gold	-25° C ~ +85° C
	Silver	0° C ~ 70° C
	Commercial	0° C ~ 70° C

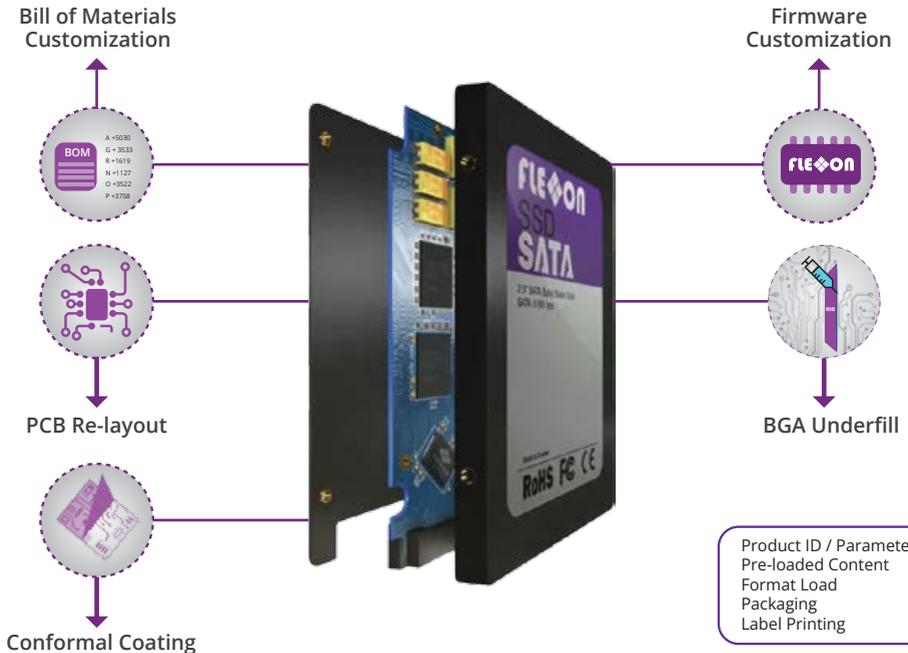
# FLEXXON PRODUCT FEATURE

Interface	SATA	PATA	PCIe	USB	eMMC	Memory card
Industrial Wide Temperature	❖	❖	❖	❖	❖	❖
Vibration & Shock Resistance	❖	❖	❖	❖	❖	❖
EMI & ESD Safe	❖	❖	❖	❖	❖	❖
S.M.A.R.T	❖	❖	❖	❖	❖	❖
AES Security	❖	✗	❖	❖	✗	✗
Power Loss Protection	❖	○	❖	○	○	○
Pseudo SLC	❖	❖	❖	❖	❖	❖

Standard    
 Not Available    
 Firmware Algorithm (Optional)

## Customization Services

We are open to all other customization services which are not listed in here.



# SATA SSD

## SERIES OVERVIEW

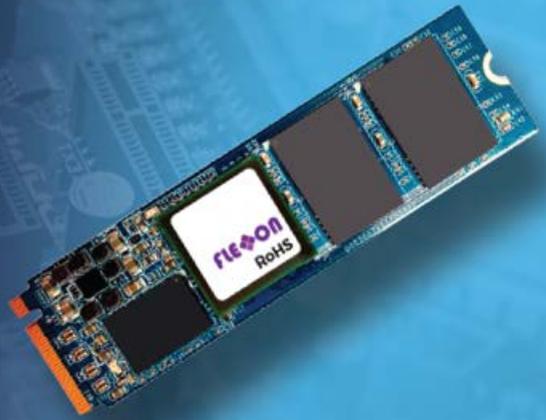


	INSPIRE	ACHIEVER	XTREME	XTREME II	XCEL	GALAXY
<b>Feature</b>	High Endurance & Wide Compatibility with 3D NAND Suitable for Multi-Tasking Applications Supports Hardware PLP	High Performance & High Density Suitable for Main Storage Applications	High Performance & DRAM-less design Perfect for Embedded Applications	High Performance & DRAM-less design with latest technology. Perfect for embedded Applications	Ultra High Density & Ultimate Performance	Enhanced Reliability & Security Design for Military Application
<b>Interface</b>	SATA III	SATA III	SATA III	SATA III	SATA III	SATA III
<b>Form Factor</b>	2.5", M.2 2242/2260/2280, mSATA	1.8", 2.5" Half Slim, mSATA, M.2 2242/2260/2280, CFast, SATA DOM	2.5", Half Slim, mSATA, mSATA mini, M.2 2242/2260/2280, CFast, uSSD, SATA DOM	2.5", M.2 280	2.5", M.2 2280	2.5"
<b>Flash Type</b>	3D TLC, 3D pSLC	SLC, MLC, pSLC	SLC, MLC, pSLC, 3D TLC, 3D pSLC	3D TLC	3D TLC, 3D QLC	SLC, MLC
<b>Capacity</b>	3D TLC: 64GB – 2TB 3D pSLC: 16GB–256GB	SLC: 4GB – 128GB MLC: 8GB – 512GB pSLC: 4GB–256GB	SLC: 8GB – 128GB MLC: 4GB – 512GB pSLC: 2GB – 256GB 3D TLC: 16GB – 1TB 3D pSLC: 32GB – 128GB	3D TLC: 120GB–2TB	3D TLC: 128GB – 8TB 3D QLC: 16TB	SLC: 32GB – 512GB MLC: 64GB – 1TB
<b>Max. Performance</b>	Read: 550 MB/s Write: 520 MB/s	Read: 510 MB/s Write: 450 MB/s	Read: 550 MB/s Write: 500 MB/s	Read: 550 MB/s Write: 515 MB/s	Read: 550 MB/s Write: 530 MB/s	Read: 520 MB/s Write: 440 MB/s
<b>Grade</b>	Industrial	Industrial	Industrial / Commercial	Industrial* / Commercial	Industrial / Commercial	Military



# PCIe SSD

## SERIES OVERVIEW



	DEX	DEX PRO	HIX	REX	VEX
<b>Feature</b>	DRAM-Less design with High Speed & Compatibility Suitable for Main Storage & Client Applications	DRAM design with high Speed & Compatibility Suitable for Industrial & Client Applications	Ultimate Performance & Density Perfect for Enterprise Applications	PCIe Gen 4 solution with Super High Performance	PCIe Gen 4 solution with Extreme Performance
<b>Interface</b>	PCIe Gen 3x4, NVMe 1.3	PCIe Gen 3x4, NVMe 1.3	PCIe Gen 3x4, NVMe 1.3	PCIe Gen 4x4, NVMe 1.3	PCIe Gen 4x4, NVMe 1.4
<b>Form Factor</b>	M.2 2280	M.2 2280	U.2, M.2 2280, M.2 22110	M.2 2280	M.2 2280
<b>Flash Type</b>	3D NAND	3D NAND	3D NAND	3D NAND	3D NAND
<b>Capacity</b>	128GB ~ 1TB	128GB ~ 1TB	128GB ~ 8TB	500GB ~ 2TB	500GB ~ 2TB
<b>Max. Performance</b>	Read: 1860 MB/s Write: 1374 MB/s	Read: 1378 MB/s Write: 1850 MB/s	Read: 3200 MB/s Write: 3000 MB/s	Read: 5000 MB/s Write: 4400 MB/s	Read: 7000 MB/s Write: 6850 MB/s
<b>Grade</b>	Industrial	Industrial	Industrial / Commercial	Commercial	Commercial



# PCIe Enterprise SSD SERIES OVERVIEW



**FLEXON** Enterprise SSD is built with the latest 96L/112L 3D TLC NAND and professional enterprise controller. It delivers superior performance with sequential Read/Write performance up to 7500MB/s, 6000MB/s and random R/W speeds up to 1800K/480K IOPS respectively.

Moreover, **FLEXON** Enterprise NVMe SSD provides significantly high capacity up to 15.36TB which is an ideal solution for data center and enterprise applications



	EMP-I	EMP-I PRO
<b>Feature</b>	Suitable for Read & Write balance applications Good Endurance and Performance	Suitable for Write focus application High Endurance Better Performance
<b>Interface</b>	PCIe Gen 4x4, NVMe 1.4	PCIe Gen 3x4, NVMe 1.3
<b>Form Factor</b>	U.2, AIC	U.2
<b>Flash Type</b>	3D NAND	3D NAND
<b>Capacity</b>	3840GB ~ 15.36TB	3200GB ~ 12.80TB
<b>Max. Performance</b>	Read: 7500 MB/s Write: 6000 MB/s	Read: 7500 MB/s Write: 6000 MB/s
<b>DWP (5 years)</b>	1	3
<b>Grade</b>	Enterprise 0-70C	Enterprise 0-70C



xFlush



RAM SEC



Power Loss Protection



SmartRefresh



RAID ECC + LDPC



End-to-end Data Protection

# PATA SERIES OVERVIEW



FLEXON's Parallel ATA (PATA) is suitable for embedded systems or legacy platforms available in various form factors such as 2.5" SSD, PATA DOM (40pin & 44pin) and Compact Flash (CF) card, supports latest CF 6.0 version and Ultra DMA mode up to 7, wide compatibility and high reliability. Designed to satisfy specific application requirements for rigorous industrial environments it extends high performance, power loss management and AES encryption.



	CLASSIC	CLASSIC II		LEGACY II	LEGACY III
<b>Feature</b>	Suitable for Embedded Applications	High IOPS Performance, High Capacity & High Reliability Supports AES Encryption		Best for Rigorous Applications Cost-effective SLC solution Supports small capacity	High Compatibility & High Performance Supports Power Loss Protection
<b>Compliance</b>	Ultra DMA Mode 4	Ultra DMA Mode 6	CF Spec Ver. 6.1 Ultra DMA Mode 6	CF Spec Ver. 4.1 Ultra DMA Mode 6	CF Spec Ver. 6.x Ultra DMA Mode 7
<b>Form Factor</b>	PATA DOM	2.5" PATA SSD	CF Card	CF Card	CF Card
<b>Flash Type</b>	SLC	SLC, MLC, pSLC		SLC	SLC, MLC, pSLC
<b>Capacity</b>	128MB ~ 4GB	SLC: 1GB ~ 128GB MLC: 4GB ~ 1TB pSLC: 8GB ~ 128GB	SLC: 1GB ~ 64GB MLC: 4GB ~ 512GB pSLC: 8GB ~ 128GB	SLC: 128MB ~ 8GB	SLC: 4GB ~ 32GB MLC: 8GB ~ 128GB pSLC: 4GB ~ 64GB
<b>Max. Performance</b>	Read: 43MB/s Write: 28MB/s	Read: 86 MB/s Write: 75 MB/s	Read: 86 MB/s Write: 75 MB/s	Read: 51MB/s Write: 40MB/s	Read: 106MB/s Write: 80MB/s
<b>Grade</b>	Industrial	Industrial	Industrial	Industrial	Industrial

PATA DOM



CF Card



# MEMORY CARD

## SERIES OVERVIEW



	FxAdv II	FxMav	FxPro I HighIOPS	FxPro I	FxPrem II	FxPro III	SD Express	eSD
<b>Feature</b>	Advanced High IOPS Solution with 3D NAND	Advanced High IOPS and High Capacity 3D NAND	High IOPS Solution with 2D NAND	High Performance with 2D NAND	High Capacity 2D NAND Solution	Extreme Performance UHS-II Solution	SD Express Card	Embedded SD JEDEC 100Ball BGA
<b>Interface</b>	SD 6.1	SD 6.1	SD 6.1	SD 3.0/6.1	SD 3.0	SD 6.1	SD 7.1	SD 2.0/ SD 3.0
<b>Speed Class</b>	Up to Class 10, U3, V30, A2	Up to Class 10, U3, V30, A2	Up to Class 10, U3, V30, A1	Up to Class 10, U3, V30	Up to Class 10, U3, V30	Up to Class 10, U3, V90, A1	Up to U3, V30, A1	up to Class 10, U1, V10
<b>UHS mode</b>	UHS-I	UHS-I	UHS-I	UHS-I	UHS-I	UHS-II	UHS-I, PCIe Gen 3x1	UHS-I
<b>Flash Type</b>	3D TLC, 3D pSLC	3D QLC	SLC, MLC, pSLC	SLC, MLC, pSLC	SLC, MLC, pSLC	3D TLC, 3D pSLC	3D QLC	SLC, MLC, pSLC
<b>Capacity</b>	3D TLC: 64GB-512GB 3D pSLC: 16GB ~ 128GB	3D QLC: 128GB ~ 1TB	SLC: 512MB ~ 16GB MLC: 4GB ~ 32GB pSLC: 2GB ~ 16GB	SLC: 128MB ~ 16GB MLC: 1GB ~ 128GB pSLC: 2GB ~ 64GB	SLC: 4GB ~ 32GB MLC: 8GB ~ 256GB pSLC: 4GB ~ 128GB	3D TLC: 64GB ~ 256GB 3D pSLC: 32GB ~ 256GB	3D QLC: 256GB ~ 512GB	SLC: 512MB ~ 16GB MLC: 8GB ~ 64GB pSLC: 4GB ~ 32GB
<b>Max. Performance</b>	Read: 95 MB/s Write: 90 MB/s	Read: 100 MB/s Write: 90 MB/s	Read: 95 MB/s Write: 90 MB/s	Read: 95 MB/s Write: 90 MB/s	Read: 95 MB/s Write: 80 MB/s	Read: 290 MB/s Write: 260 MB/s	Read: 900 MB/s Write: 770 MB/s	Read: 95 MB/s Write: 80 MB/s
<b>Grade</b>	Industrial/Commercial	Commercial	Industrial/Commercial	Industrial/Commercial	Industrial	Commercial	Commercial	Industrial
<b>Function</b>	<u>Industrial Grade</u>							
	Support Smart Tool (SD Life Monitor Tool)   Supports Auto-Read Refreshment   Support Power Loss Management							



# USB SERIES OVERVIEW



**FLEXION** Industrial USB flash drives offer USB 3.2 Gen 1 and USB 2.0 and are designed with high-quality 2D and 3D NAND technology. It is implemented with flash block management, superior wear-leveling, and a powerful ECC engine to increase data reliability and endurance, fulfill commercial and industrial applications. The industrial-grade USB flash drives provide high performance both in sequential and random read/write, cater to specific requirements. Besides, FLEXION provides security solutions to achieve different level data protection to prevent data breach into these SLC flash drives & MLC USB Flash. It is equipped with a hardware encryption engine and security software embedded to safeguard the data in the USB drive.



	FxU2 III	FxAce II	FxAce		FxAIp	FxReg	
<b>Feature</b>	Standard Performance Supports 3D NAND	High Reliability Solution with 3D NAND High IOPS Solution	High Reliability Solution with 3D NAND High IOPS Solution		High Compatibility & Reliability Supports High IOPS & AES	Wide Compatibility Solution with 3D NAND	
<b>Interface</b>	USB 2.0	USB 3.2 GEN 1	USB 3.1 GEN 1	USB 2.0	USB 2.0 & USB 3.1 Gen 1	USB 3.1 GEN 1	USB 2.0 & USB 3.1 Gen 1
<b>Form Factor</b>	Pen Drive	Pen Drive	Pen Drive	USB DOM (10- pin)	USB DOM (10-pin & 20-pin)	Pen Drive	USB DOM (10-pin & 20-pin)
<b>Flash Type</b>	3D TLC	3D TLC	3D TLC, 3D pSLC		SLC, MLC	3D TLC	MLC, 3D TLC
<b>Capacity</b>	3D TLC: 16GB ~ 64GB	3D TLC: 128GB ~ 256GB	3D TLC: 32GB ~ 512 GB 3D pSLC: 8GB ~ 128GB	3D TLC: 32GB ~ 256GB 3D pSLC: 8GB ~ 64GB	SLC: 1GB ~ 32GB MLC: 4GB ~ 128GB	3D TLC: 64GB ~ 256GB	MLC: 16GB - 256GB 3D TLC: 64GB ~ 512GB
<b>Max. Performance</b>	Read: 30 MB/s Read: 20 MB/s	Read: 120 MB/s Read: 60 MB/s	Read: 220 MB/s Read: 100 MB/s	Read: 30 MB/s Read: 24 MB/s	Read: 200 MB/s Read: 150 MB/s	Read: 102 MB/s Read: 86 MB/s	Read: 102 MB/s Read: 86 MB/s
<b>Grade</b>	Commercial	Commercial	Industrial	Industrial	Industrial	Industrial	Industrial



# eMMC

## INTELLIGENT TECHNOLOGY



### Pre-loaded data integrity in reflow process:

Data integrity refers to the reliability and accuracy of data. The eMMC pre-loaded data might get corrupted during soldering. Flexion eMMC uses pSLC blocks only during soldering process to ensure no data loss during reflow.



### Auto Read Refresh:

Auto Read Refresh could monitor the bit errors in every read operation. This is important for read-intensive applications. In order to prevent data damage, refresh operation will be triggered when the bit errors are approaching the threshold.



### Static and Dynamic Wear Leveling:

Flexion eMMC supports static and dynamic wear leveling. The static wear levelling is able to shift cold data (system data that seldom updated) to the block of the maximum erase count in the data area. The dynamic wear leveling shifts hot data (updated user data) to the block of the minimum erase count in the data area. This could reduce the risk of read disturb and sustains data integrity.



### Power Loss Protection:

Flexion eMMC supports pSLC Area Backup Technology. Partial NAND is enabled as pSLC to backup data. The pSLC area is non-volatile storage which can provide higher read/write performance, endurance and data reliability.

Flexion eMMC supports UECC handling. If sudden power loss happened, uncorrectable ECC could be found in a programmed page. Flexion eMMC will scan the whole system blocks. Once ECC Uncorrectable or higher ECC error bit is found, those pages will be discarded and move other valid data to a health block.

Flexion eMMC also supports power off notification to provide sufficient time for the device to backup all the cache data.

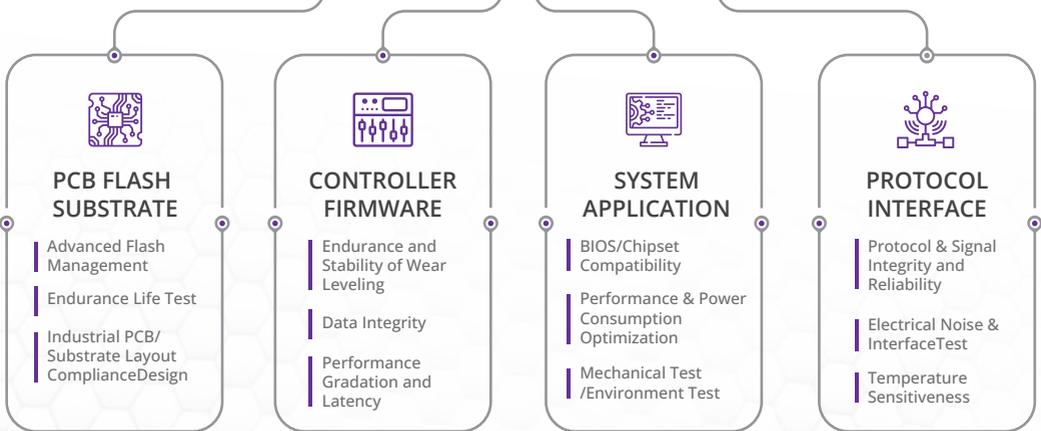


	ECON II	XTRA VII	XTRA VIII	XTRA III	AXO
<b>Interface</b>	eMMC 5.1	eMMC 5.1	eMMC 5.1	eMMC 5.0	eMMC 5.1
<b>Flash Type</b>	MLC, 3D TLC	MLC, pSLC, 3D TLC, 3D pSLC	3D TLC, 3D pSLC	MLC	3D TLC
<b>Pin Count</b>	153-ball	153-ball	153-ball	100-ball	100-ball/153-ball
<b>Capacity</b>	MLC: 4GB ~ 16GB 3D TLC: 32GB ~ 128GB	MLC: 8GB pSLC: 4GB 3D TLC: 16GB~128GB 3D pSLC: 8GB~32GB	3D TLC: 32GB~128GB 3D pSLC: 8GB~32GB	MLC: 4GB~16GB	3D TLC: 64GB~512GB
<b>Max. Performance</b>	Read: 270 MB/s Write: 120 MB/s	Read: 320 MB/s Write: 255 MB/s	Read: 320 MB/s Write: 260 MB/s	Read: 250 MB/s Write: 25 MB/s	Read: 300 MB/s Write: 200 MB/s
<b>Grade</b>	Commercial	Industrial Gold & Diamond	Automotive Grade 3 & Automotive Grade 2	Industrial Diamond	Industrial & Automotive

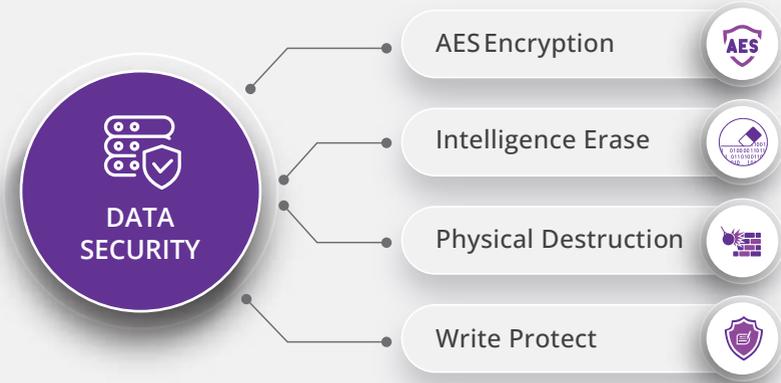


# INDUSTRIAL QUALITY SOLUTIONS

## IQS INDUSTRIAL QUALITY SOLUTIONS



# FLEXXON SSD DATA SECURITY TECHNOLOGY



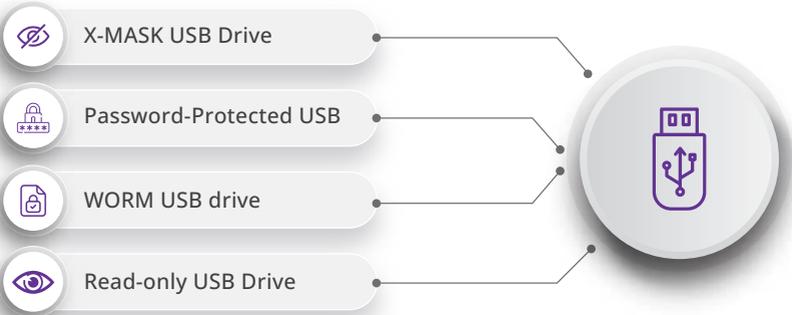
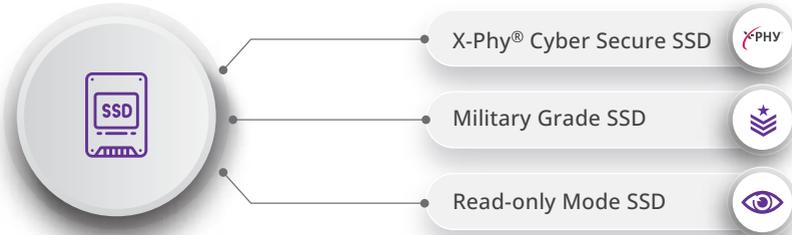
# SSD DATA PROTECTION TECHNOLOGY

- 01** **xFlush**  
Avoid data loss at SPOR
- 02** **INTELLIGENTFlush**  
Avoid pair-page effect of flash
- 03** **Power Loss Protection**  
With super cap/tantalum cap
- 04** **RAID ECC + LDPC**  
Advanced error correction to fight against errors caused by NAND.
- 05** **SRAM SEC**  
Single bit error correct in SRAM.
- 06** **End to End Data Protection**  
Data is defensive in the path of data transfer.
- 07** **SmartRefresh**  
ECC scan to against read disturb.

# SD/microSD DATA RELIABILITY TECHNOLOGY

- Power Loss Management**  
UECC may occur during power interrupted writes, due to pair page issue of MLC. FW moves the valid data before UECC page to new block, minimizing data loss.
- Advanced Wear Leveling**  
For special or customized OS, it could optimize wear leveling, and extend the life span.
- Auto-Read Refresh Management**  
Reduce the chances of uncorrectable errors, resulting from repeated reads.

# SECURITY PRODUCT PORTFOLIO



# FLEXXON Security SSD Overview



	X-PHY	ROM SSD
<b>Feature</b>	Ultra Cyber Secure Solution	Supports Write Protect
<b>Interface</b>	PCIe Gen 3x4, NVMe 1.3	SATA III
<b>Form Factor</b>	M.2 2280, U.2	2.5", M.2 2280, mSATA, Half Slim
<b>Flash Type</b>	3D NAND	3D TLC
<b>Capacity</b>	Up to 4TB	3D TLC: 64GB ~ 1TB
<b>Max. Performance</b>	Read: 3500 MB/s Write: 3000 MB/s	Read: 550 MB/s Write: 500 MB/s
<b>Grade</b>	Commercial	Industrial / Commercial

# FLEXXON Security Memory Card Overview



	X-Mask Card	WORM Card	ROM Card
<b>Feature</b>	Invisible Data	Write Once Read Many	Supports Write Protect
<b>Interface</b>	SD 3.0	SD 6.1	SD 3.0
<b>Form Factor</b>	SD/ microSD	SD/ microSD	SD/ microSD
<b>Flash Type</b>	MLC, pSLC	MLC	MLC, pSLC
<b>Capacity</b>	MLC: 4GB ~ 256GB pSLC: 4GB ~ 128GB	MLC: 4GB ~ 256GB	MLC: 4GB ~ 256GB pSLC: 4GB ~ 128GB
<b>Max. Performance</b>	Read: 95 MB/s Write: 80 MB/s	Read: 80 MB/s Write: 70 MB/s	Read: 95 MB/s Write: 80 MB/s
<b>Grade</b>	Industrial	Industrial	Industrial

# FLEXXON Security USB Overview



	X-MASK USB	WORM USB	SEC I USB	ROM USB
<b>Feature</b>	Invisible Data	Write Once Read Many	Read Only Mode	Supports Write Protect
<b>Interface</b>	USB 2.0	USB 2.0	USB 3.1 GEN 1	USB 2.0
<b>Form Factor</b>	Pen drive	Pen drive	Pen drive	Pen drive
<b>Flash Type</b>	MLC	MLC	3D TLC, 3D pSLC	MLC
<b>Capacity</b>	MLC: 8GB-32GB	MLC: 8GB ~ 32GB	3D TLC: 128GB ~ 512GB 3D pSLC: 4GB ~ 64GB	MLC: 8GB-32GB
<b>Max. Performance</b>	Read: 27MB/s Write: 20 MB/s	Read: 33 MB/s Write: 12 MB/s	Read: 220 MB/s Write: 100 MB/s	Read: 27 MB/s Write: 20 MB/s
<b>Grade</b>	Industrial	Industrial	Industrial	Industrial

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