SMART FLASH SOLUTIONS

EMBEDDED AND
REMOVABLE STORAGE
PRODUCTS

SMART®
Modular Technologies
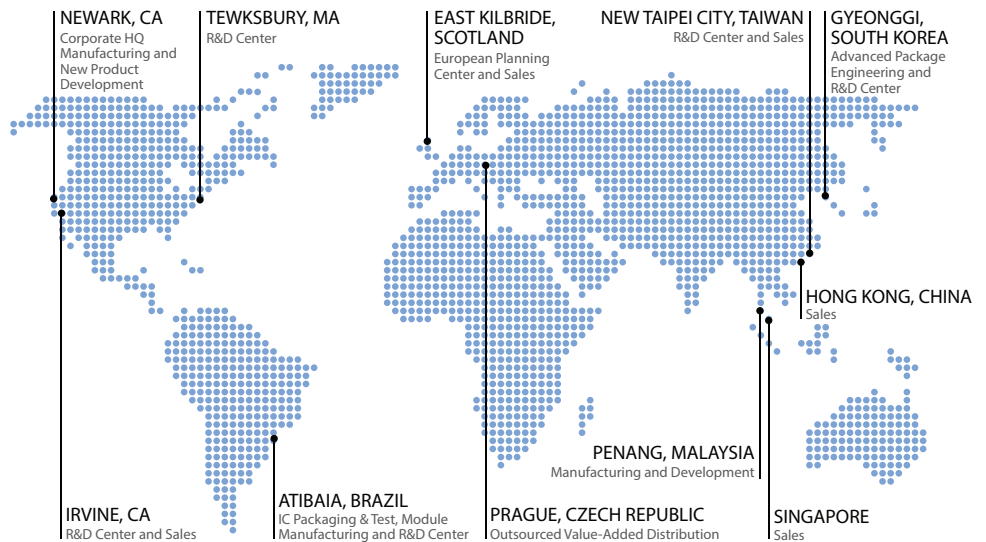
SMART MODULAR TECHNOLOGIES

INDUSTRY EXPERIENCE
DESIGN EXPERTISE
GLOBAL MANUFACTURING

SMART Modular Technologies is a global leader in specialty memory solutions serving the electronics industry for over 25 years. SMART Modular delivers solutions to a broad customer base, including OEMs that compete in the computing, networking, communications, storage, mobile and industrial markets.

Focused on providing extensive customer-specific design capabilities, technical support and value-added testing services, SMART collaborates closely with their global OEM customers throughout their design process and across multiple projects to create memory solutions for demanding applications with differentiated requirements. Taking innovations from the design stage through manufacturing and supply, SMART Modular has developed a comprehensive product line comprised of DRAM and Flash memory technologies across various form factors.

GLOBAL FOOTPRINT

DESIGN
MANUFACTURING
TEST
LOGISTICS
SALES

NEWARK, CA
Corporate HQ
Manufacturing and
New Product
Development

TEWKSBURY, MA
R&D Center

EAST KILBRIDE, SCOTLAND
European Planning
Center and Sales

NEW TAIPEI CITY, TAIWAN
R&D Center and Sales

GYEONGGI, SOUTH KOREA
Advanced Package
Engineering and
R&D Center

HONG KONG, CHINA
Sales

PENANG, MALAYSIA
Manufacturing and Development

IRVINE, CA
R&D Center and Sales

ATIBAIA, BRAZIL
IC Packaging & Test, Module
Manufacturing and R&D Center

PRAGUE, CZECH REPUBLIC
Outsourced Value-Added Distribution
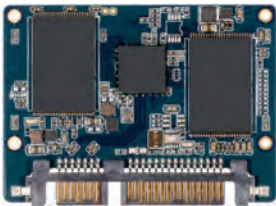
SINGAPORE
Sales

SMART Modular Technologies designs and manufactures industrial-grade flash storage products with industry standard interfaces in a variety of form factors and capacities. Offering high performance, exceptional reliability, and endurance in a very small package, these products are ideal for OEMs designing, networking, telecommunications, mobile and embedded, automotive, GPS, and industrial computing appliances. SMART provides consistent quality and long product life cycles. Most products are available in Commercial and Industrial operating temperature ranges. Strong relationships with numerous suppliers of flash and controller ICs allow SMART to offer a wide range of cost-effective products to its customers.

Embedded Storage Solutions

Slim SATA

DENSITIES FROM 8GB UP TO 256GB

• Networking • Industrial
• Telecom   • Storage

SMART's Slim SATA, N200 and XL+ are JEDEC MO-297A standard embedded SSDs. Slim SATA is ideally suited for use in a wide variety of OEM storage applications that require multiple supply chains, design interoperability, rapid time to market, and long product life cycles. The X10 product is SMART's latest product, which has enterprise class features, including NAND RAID protection.

Slim SATA SSD		
Slim SATA N200 TLC	32GB to 256GB	C-temp SVSLM6256GNT51* I-temp SVSLM6128GNTI51*
Slim SATA XL+ SLC (I-temp)	8GB to 64GB	SH9MST6D64GJSI01*

* Part number noted is that of highest density available

mSATA

DENSITIES FROM 8GB UP TO 960GB

• Networking • Industrial
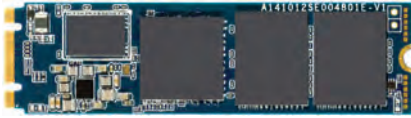• Telecom   • Storage
• Servers

SMART's mSATA, N200, Q400, and XL+ are JEDEC MO-300A standard embedded SSDs. Providing high performance in a small form factor, mSATA is ideally suited for use in a wide variety of OEM storage applications that require multiple supply chains, design interoperability, rapid time to market, and long product life cycles.

mSATA SSD		
mSATA Q400 TLC	120GB to 960GB	C-temp ST9MST6960GQT51*
mSATA N200 TLC	32GB to 960GB	C-temp SVMST61024NT51* I-temp SVMST61024NTI51*
mSATA XL+ SLC	8GB to 64GB	SH9MT6D256GJI01*
mSATA XL+ pSLC	64GB	SH9MST6D064GJPI21*

* Part number noted is that of highest density available

M.2 SATA MODULE

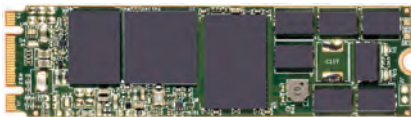- Networking
- Telecom
- Servers
- Industrial
- Storage

Utilizing an industry standard M.2 SATA interface and connector, XL+, N200, Q400/ Q400-S, R800, and S1800 offer best-in-class sequential and random read/write performance in transaction intensive applications. M.2 SATA can be easily integrated into a host system without any special BIOS modifications or additional device drivers. SafeDATA™ Technology is a safeguard data against data corruption during power loss.

M.2 SATA Modules		
M.2 2280 R800 TLC	240GB to 1760GB	C-temp SVM2S861920RT51* I-temp SVM2S861920RTI51*
M.2 2280 Q400 TLC	120GB to 960GB	C-temp ST9M2S86D960GQT51* I-temp ST9M2S86D960GQTI51*
M.2 2280 Q400-S TLC	120GB to 480GB	C-temp ST9M2S86Q480GQT51*
M.2 2280 N200 TLC	32GB to 960GB	C-temp SVM2SH61024NT51 I-temp SVM2SH61024NTI51
M.2 2242 N200 TLC	32GB to 512GB	C-temp SVM2S46512GNT51* I-temp SVM2SH6512GNTI51*
M.2 2242 XL+ SLC	8GB to 64GB	SH9M2S46D064GJS01*

* Part number noted is that of highest density available

M.2 2280 S1800

- Networking
- Telecom
- Servers
- Industrial
- Storage

Utilizing a PCIe Base 3.1 interface, M.2 PCIe modules are easily integrated into a host system without any special BIOS modifications or additional device drivers. The SMART Modular M.2 PCIe module is specifically applicable foe OEM markets, such as server, storage cache/ accelerators, networking, and data communications which require reliable internal storage with a small footprint.

M.2 SATA Module		
M.2 2280 S1800	240GB to 1920GB	C-temp SVM2P8B1920ST51* I-temp SVM2P8B960GSTI51*

* Part number noted is that of highest density available

eUSB

- Networking
- Medical
- Telecom
- Industrial

SMART's industrial-grade embedded USB (eUSB) flash drives feature sustained read speeds of up to 33 MB/s, write speeds up to 21 MB/s and seek time of typically 500 uS. eUSB Plus integrates SMART's industrial grade eMMC product and a USB bridge chip to create a cost-effective eUSB solution.

eUSB		
Standard Connector	4GB to 32GB	SHEU52LO32GQDUx*
2mm Connector	1GB to 32GB	SHEU52M032GQDUx*

x = Commercial (x=C), Industrial (x=I)
* Part number noted is that of highest density available

Removable Flash Solutions

PCIe U.2 SSD

- Networking
- Medical
- Industrial
- Telecom

DENSITIES FROM 240GB UP TO 3840GB

Utilizing PCIe Base 3.1 interface, PCIe U.2 modules are easily integrated into a host system without any special BIOS modifications or additional device drivers. The SMART Modular PCIe U.2 module is specifically applicable foe OEM markets, such as server, storage cache/accelerators, networking, and data communications which require reliable internal storage with a small footprint.

PCIe NVMe SSDs		
NVMe, S1800	240GB to 3840GB	SVU2PB3840ST51*

* Part number noted is that of highest density available

2.5″ SATA SSD

- Networking
- Medical
- Industrial
- Telecom

DENSITIES FROM 32GB UP TO 7680GB

SMARTs N200 2.5″ SATA solid state drive provides an economic yet highly reliable mass storage in an 2.5″ SATA form factor. Available in commercial and industrial temperature ranges.

2.5″ SATA SSDs		
2.5″ SATA R800 TLC	240GB to 7680GB	C-temp SVSAT67680RT51* I-temp SVSAT63840RTI51*
2.5″ SATA N200 TLC	32GB to 1TB	C-temp SVSAT61024NT51* I-temp SVSAT61024NTI51*

* Part number noted is that of highest density available

CF CARD

- Networking
- Embedded Designs
- Telecom

DENSITIES FROM 128MB UP TO 64GB

SMART's CF Cards are high-capacity, low-power memory cards that act like hard drives but are reliable, fast and portable. These cards also support self monitoring analysis and reporting technology (S.M.A.R.T.) attributes to help reduce unexpected field failures.

Flash Card Products		
CF Card XL SLC	128MB to 8GB	SS9FD08GH3BAxS01*
CF Card XL+ SLC	512MB to 64GB	SG9CF64GHYDD*

* Part number noted is that of highest density available

SD CARD

- Automotive
- Industrial
- Networking
- Telecom

SMART's industrial SD cards are robust and reliable solutions for solid state storage needs. Not to be confused with consumer grade cards, SMART's SD cards are designed, built and tested to far higher standards of reliability and endurance.

SD Card		
SD XL+ TLC	16GB to 256GB	C-temp SV9SDEGPHJETC51* I-temp SV9SDEGPHJETI51*
SD XL+ SLC	512MB to 2GB	SH9SD032GSNIDSC02*
SD XL+ MLC	32GB to 128GB	SH9SD128GSPNCMC01*
SD XL MLC	8GB to 64GB	SH9SD064GPHEDMy21*
SD pSLC	4GB to 32GB	SH9SD032GPHEDUy21*

* Part number noted is that of highest density available   Commercial (y=C), Industrial (y=I), Extended (y=E)

microSD

- Automotive
- Industrial
- Networking
- Telecom

SMART's industrial microSD cards are robust and reliable solutions for solid state storage needs. Not to be confused with consumer grade cards, SMART's microSD cards are designed, built and tested to far higher standards of reliability and endurance.

microSD Card		
microSD TLC	16GB - 256GB	C-temp SV9UDEGPHJETC51*
microSD SLC	1GB to 4GB	SS9UD004GPHE8Sy31*
microSD MLC	8GB to 64GB	SS9UD064GPHECMy21*
microSD pSLC	4GB to 32GB	SS9UD032GPHECUy21*

* Part number noted is that of highest density available   Commercial (y=C), Industrial (y=I), Extended (y=E)

USB MEMORY KEY

- Networking
- Embedded Designs
- Telecom

SMART's Enterprise USB Memory Key address the need for enhanced reliability and are designed with the industry's best-in-class read and write speeds, providing reliable operation over the product life cycle.

USB Key		
USB 3.0 Memory Key TLC	16GB to 256GB	SVJ33EGRSJ3C01*
USB Memory Key SLC	1GB to 16GB	SG9MK16GQDU*

* Part number noted is that of highest density available

APPLICATIONS

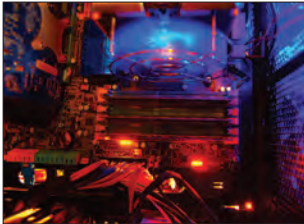## Auto

Memory for auto electronics and connected cars include feature-rich infotainment systems and applications that require secured, data storage.

Industrial

Industrial applications need replacement storage solutions with extended life cycles and guarantees of a long-term supply. Key features include reliability, security, and performance.

Computing

Computing applications have unique, wide-ranging needs that span multiple architectures, configurations, densities, speeds, and packages required by big data processing.

Networking

Requiring small to standard form factors, networking applications have strict footprint and thermal specifications and require solutions with low latency as well as high performance and signal integrity.

Communications

Communications applications typically require small to standard form factors, reduced voltage, high performance, and reliability.

Printers

Printers require compatible, certified memory in a range of speeds, densities, form factors and technologies that offer high quality and performance.

Defense

Key defense needs for memory require rugged and durable designs with proven reliability in extreme conditions (shock, vibration, dust, humidity, and temperature), and low power operation.
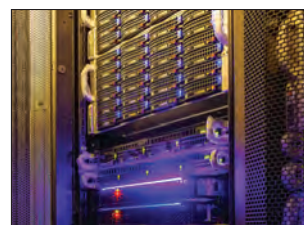
Servers

Server applications need reliable, high-density memory modules with low power consumption at industrial-grade quality.

Gaming

Gaming applications typically require memory with small to standard form factors, reduced voltage demands, high performance, and high reliability.

Storage

Secure storage memory requires data protection and encryption capabilities that are available in a range of speeds, densities, form factors, and technologies.

CUSTOM PRODUCTS

SMART has a long history of partnering with customers to satisfy their specific design needs. With extensive industry and design expertise and global manufacturing capabilities, SMART offers a unique combination of advantages that can support customers' unique designs from conception to manufacturing and test. This allows SMART to efficiently and reliably tailor products to meet particular customer needs. For more information, please email customers@smartm.com.

SERVICES

SMART built its reputation by providing proven technology and quality products to the most demanding OEMs around the world. SMART backs these products with outstanding services and expertise in design, manufacturing, test, and logistical support. OEMs can be confident that SMART products will perform to the highest degree of reliability and compatibility, as well as meet all system requirements and OEM specifications. More information on SMART can be obtained at www.smartm.com.

Key Competitive Advantages
- Inventory management of volatile commodity parts
- Established strategic alliances with major semiconductor manufacturers
- Broad custom design and packaging capabilities
- Value-added engineering
- Custom testing capabilities
- Comprehensive pre- and post-sale technical support
- Conformal coating, stacking and component underfill for enhanced ruggedization

SMART Modular Technologies excels in designing, manufacturing, testing, and rapidly delivering both standard and custom modular technologies to OEMs around the world.

Design

SMART views design as the customer's path to market advantage. By working in partnership with its customers, SMART is able to deliver the most technically advanced products available.

Test

SMART's test procedures are designed to enable customer confidence in dock-to-stock operation. Formalized, precise operational controls, SPC, and strong quality audit procedures allow SMART's OEM customers to eliminate incoming test with confidence. SMART's Enterprise Grade test option provides unmatched reliability.

Manufacturing

SMART offers localized, cost-efficient manufacturing services from consigned to turnkey manufacturing, all backed by 100% test using the industry's most advanced testing equipment.

Logistics

SMART sets itself apart from the competition through logistic services tailored to meet specific customers' needs. Services offered include procurement, inventory control, retail and bulk packaging, and drop-ship delivery.

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