Products

Industrial grade Solid-State Storage

SolidGear provides high reliable, long life time flash memory storage for industrial usage and technical support.

We have variety of line up to meet your requirements such like use for OS Boot or Data transfer, type of fixed device or removable, and operating temperature of standard or industrial.

Customization to achieve compatibility with an existing systems is also available. Please call us for details.
SolidGear's storage has two solutions; one is with SLC (Single Level Cell) NAND flash memory for higher reliability and endurance,
the other is with MLC (Multiple Level Cell) NAND flash memory for higher cost performance for cost sensitive applications.

We provide low capacity cards from 128Mbyte which are no longer available in retail market. SolidGear has won its customers' reputation in technical support at presales and post sales.

- **Industrial grade SD Card**
- **Industrial grade microSD Card**
- **CompactFlash**
- **CFAST**
- **eMMC**
- **PCIe/NVMe SSD**

- **SATA SSD**

(*) Please note that there are cases we may not accept requests.

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Industrial Grade SD Card

- SolidGear's industrial grade SD Card is dedicatedly designed and manufactured for industrial applications which require different features than consumer applications such like DSC and DVC.
- SolidGear provides SLC (Single Level Cell) products suitable for applications that need higher endurance and/or quality, as well as MLC(Multiple Level Cell) products with fixed BOM (Bill of Material) as high cost vs. performance solution for cost sensitive applications.
- SolidGear's products maintain tractability and are tested 100% before shipment.
- SolidGear is a general member of SD Card Association (SDA).

Industrial & Embedded Solutions SD Card

Key Features

- Built-in ECC engine
- Power Loss Protection
- Auto Read Refresh
- Data Randomizer function
- High Performance for small size and random write
- Wear Leveling algorithm
- Support SMART tool for remaining lifespan check
- Support Customized Label design
- Pre-recording the image data before shipping
- Fixed BOM (Same NAND Flash, Controller and Firmware)
- Support the normal case, w/o lock switch and rigid case

Specifications

2D NAND (Page Mode)

Series name	TPSG-xxxM/xxxG Series		
Flash Type	2D SLC	2D SLC Mode	2D MLC
Capacity	128MB ~ 8GB	2GB ~ 16GB	4GB ~ 32GB
SD Spec.	SD3.01		
Interface	DS / HS / UHS-I / SPI		
	128MB : Class-2		

Speed Class		256MB : Class-4 512MB ~ 2GB : Class-6 4GB ~ 8GB : Class-10	2GB : Class-6 4GB ~ 16GB : Class-10	Class-10
Performance (MB/s) (Typ.) (4K Random)	Read	13	13	13
	Write	5	5	5
Performance (MB/s) (Typ.) (Sequential)	Read	65	95	95
	Write	50	80	50
Endurance (cycles)		60,000	20,000	3,000
Operating Voltage (V)		2.7 ~ 3.6		
Operating temperature (℃)		-25 ~ +85		
Storage temperature (℃)		-40 ~ +85		
Environment Spec.		RoHS / CE / FCC / UL		

2D NAND (Block Mode)

Series name		TPSG-xxxM/xxxG Series		
Flash Type		2D SLC	2D SLC Mode	2D MLC
Capacity		128MB ~ 32GB	2GB ~ 64GB	4GB ~ 128GB
SD Spec.		SD3.01		
Interface		DS / HS / UHS-I / SPI		
Speed Class		128MB : Class-2 256MB : Class-4 512MB ~ 2GB : Class-6 4GB ~ 32GB : Class-10	2GB : Class-6 4GB ~ 64GB : Class-10	Class-10
Performance (MB/s) (Typ.) (Sequential)	Read	65	95	95
	Write	55	90	90
Endurance (cycles)		60,000	20,000	3,000
Operating Voltage (V)		2.7 ~ 3.6		
Operating temperature (℃)		-25 ~ +85		
Storage temperature (℃)		-40 ~ +85		
Environment Spec.		RoHS / CE / FCC / UL		

3D NAND

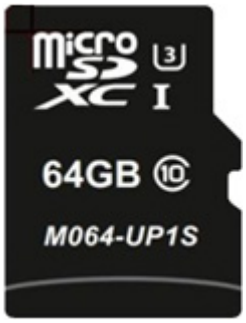
Series name	TPSG-xxxM/xxxG Series	
Flash Type	3D SLC Mode	3D TLC
Capacity	16GB ~ 128GB	64GB ~ 256GB
SD Spec.	SD6.1	
Interface	DS / HS / UHS-I / SPI	
Speed Class	Class-10	

Application Speed Class		A2	
Video Speed Class		V30	
Performance (MB/s) (Typ.) (Sequential)	Read	95	
	Write	85	
Endurance (cycles)		30,000	3,000
Operating Voltage (V)		2.7 ~ 3.6	
Operating temperature (℃)		-25 ~ +85	
Storage temperature (℃)		-40 ~ +85	
Environment Spec.		RoHS / CE / FCC / UL	

microSD card for enterprise OEM and industrial market

- SolidGear provides high quality microSD cards for enterprise and industrial market.
  SolidGear's products maintain traceability and are 100% tested before shipment, which gives a customer confidence on the products. Line up includes SLC and MLC NAND flash memory products and extended temperature products.

Industrial & Embedded Solutions MicroSD Card



Key Features

- Built-in ECC engine
- Power Loss Protection
- Auto Read Refresh
- Wear Leveling algorithm
- Pre-recording the image data before shipping
- Fixed BOM (Same NAND Flash, Controller and Firmware)
- Support SMART tool for remaining lifespan check

Specifications

2D NAND (Page Mode)

Series name	TPSG-Mxxx Series		
Flash Type	2D SLC	2D SLC Mode	2D MLC
Capacity	128MB ~ 2GB	2GB ~ 16GB	4GB ~ 32GB
SD Spec.	SD3.01		
Interface	DS / HS / UHS-I / SPI		

Speed Class		128MB : Class-2 256MB : Class-4 512MB ~ 2GB : Class-6	2GB : Class-6 4GB ~ 16GB : Class-10	Class-10
Performance (MB/s) (Typ.) (4K Random)	Read	13	13	13
	Write	5	5	5
Performance (MB/s) (Typ.) (Sequential)	Read	20	95	95
	Write	20	85	50
Endurance (cycles)		60,000	20,000	3,000
Operating Voltage (V)		2.7 ~ 3.6		
Operating temperature (℃)		-25 ~ +85		
Storage temperature (℃)		-40 ~ +85		
Environment Spec.		RoHS / CE / FCC / UL		

2D NAND (Block Mode)

Series name		TPSG-Mxxx Series		
Flash Type		2D SLC	2D SLC Mode	2D MLC
Capacity		128MB ~ 2GB	2GB ~ 32GB	4GB ~ 64GB
SD Spec.		SD3.01		
Interface		DS / HS / UHS-I / SPI		
Speed Class		128MB : Class-2 256MB : Class-4 512MB ~ 2GB : Class-6 4GB : Class-10	2GB : Class-6 4GB ~ 16GB : Class-10	Class-10
Performance (MB/s) (Typ.) (Sequential)	Read	35	95	95
	Write	20	90	90
Endurance (cycles)		60,000	20,000	3,000
Operating Voltage (V)		2.7 ~ 3.6		
Operating temperature (℃)		-25 ~ +85		
Storage temperature (℃)		-40 ~ +85		
Environment Spec.		RoHS / CE / FCC / UL		

3D NAND

Series name	TPSG-Mxxx Series	
Flash Type	3D SLC Mode	3D TLC
Capacity	16GB ~ 128GB	16GB ~ 256GB
SD Spec.	SD6.1	
Interface	DS / HS / UHS-I / SPI	
Speed Class	Class-10	

Application Speed Class		A2	
Video Speed Class		V30	
Performance (MB/s) (Typ.) (Sequential)	Read	95	
	Write	85	
Endurance (cycles)		30,000	3,000
Operating Voltage (V)		2.7 ~ 3.6	
Operating temperature (℃)		-25 ~ +85	
Storage temperature (℃)		-40 ~ +85	
Environment Spec.		RoHS / CE / FCC / UL	

CompactFlash

CompactFlash is one of the most popular memory cards used in industrial market.
CompactFlash has suitable features for industrial applications such like industrial standard interface, PATA (IDE mode) and PCMICA mode, two peace connector that gives CompactFlash ruggedness for shock and vibration.

Industrial & Embedded Solutions CompactFlash Card

Key Features

- SLC NAND Flash
- Hardware ECC algorithm
- Corresponding for Read Disturbance
- Data Randomizer function
- High Performance for small size and random write
- Power loss protection
- Wear Leveling algorithm
- Fit the customer’s CIS or CHS size and Label design
- Pre-recording the image data before shipping
- Fixed BOM (Same NAND Flash, Controller and Firmware)
- Support SMART tool for remaining lifespan check
- Support Vendor commands

Specifications

Series name	SGCF Series
Flash Type	2D SLC
Transfer mode	Ultra DMA 4

Interface		PCMCIA 2.1 / CF 4.1	
Channel		Single (1GB, 2GB)	Dual (4GB, 8GB)
Performance (MB/s) (Max.)	Read	20	40
	Write	10	30
Power Consumption (mA) (Typ.)	Sleep	1.2	1.7
	Read	70	125
	Write	60	120
Operating Voltage (V)		3.3 / 5.0	
Operating temperature (℃)		-40 ~ 85℃	
Dimensions (mm)		42.8 x 36.4 x 3.3	
Environment Spec.		RoHS / CE / FCC	

CFAST

CFAST is a standard adopted by CompactFlash Association (CFA) which has SATA interface.

Industrial & Embedded Solutions CFast Card

Key Features

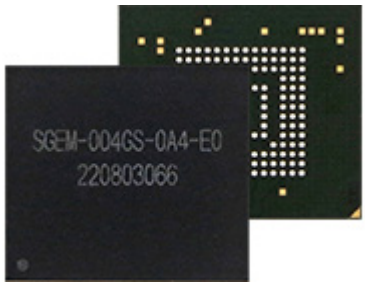
- Built-in ECC engine
- Power Loss Protection
- Corresponding for Read Disturbance
- Wear Leveling algorithm
- Support Trim and NCQ
- Support DEVSLP and DIPM/HIPM mode
- Pre-recording the image data before shipping
- Fixed BOM (Same NAND Flash, Controller and Firmware)
- Support SMART tool for remaining lifespan check
- Support Customized Label design

Specifications

Series name	SGCS Series			
Flash Type	2D SLC Mode	2D MLC	3D SLC Mode	3D TLC
Capacity	8GB ~ 128GB	8GB ~ 256GB	20GB ~ 160GB	64GB ~ 1TB
Interface	SATAIII (Rev3.0)			

Performance (MB/s) (Max.)	Read	530	530	530	420
	Write	360	210	510	320
Power Consumption (mA) (Typ.)	Idle	110	110	165	275
	Read	130	115	295	445
	Write	230	260	275	455
Endurance (cycles)		20,000	3,000	30,000	3,000
Operating Voltage (V)		3.3			
Operating temperature (℃)		0 ~ 70 / -40 ~ 85			
Storage temperature (℃)		-55 ~ 95		-40 ~ 85	
Dimensions (mm)		42.8 x 36.4 x 3.3			
Environment Spec.		RoHS / CE / FCC			

Industrial & Embedded Solutions eMMC



Key Features

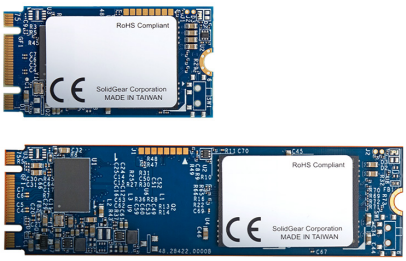
- 100 and 153-ball BGA Package
- Complies with JEDEC eMMC V4.5 and v5.1 Standard
- Power Loss Protection
- Wear Leveling algorithm
- Enhanced user data area
- Support Firmware update
- Support secure erase and trim commands
- Support secure bad block erase command
- Support Multiple partition
- Fixed BOM (Same NAND Flash, Controller and Firmware)
- Support SMART tool for remaining lifespan check

Specifications

Series name		SGE			
Flash Type		2D SLC Mode	2D MLC	2D SLC Mode	2D MLC
Capacity		2 ~ 4	8	2 ~ 16	8 ~ 32
Interface		HS200 / HS400 JEDEC 5.0			
Performance (MB/s) (Max.)	Read	280	280	245	245
	Write	105	85	140	140
	Sleep	0.07	0.07	0.12	0.12

Power Consumption (mA) (Vccq / Vcc) (Typ.)	Read	165 / 80	165 / 80	200 / 40	200 / 40
	Write	90 / 50	90 / 50	115 / 70	105 / 125
Package (Ball)		FBGA (153)			
Operating Voltage (V)		Vcc : 3.3V、 Vccq : 1.8 / 3.3			
Operating temperature (℃)		-25 ~ +85		-40 ~ +85	
Storage temperature (℃)		-40 ~ +85			
Dimensions (mm)		FBGA (153) : 11.5 x 13.0 x 1.0			
Functions		Wear Leveling / SMART / Field Firmware Update / Security Erase / Trim Command / Produc on State Awareness / Power off Notification for sleep			
Environment Spec.		RoHS			

Industrial Solutions PCIe/NVMe SSD



Key Features

- Power Loss Protection
- Wear Leveling function
- Bad Block Management
- Supports Trim and NCQ

Specifications

【 PCIe Gen3 x 2 】

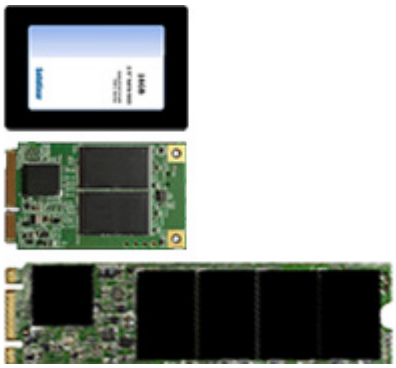
Series name		SGPD Series				
Flash Type		3D-TLC				
Capacity		120GB	240GB	480GB	960GB	1920GB
Performance (MB/s) (Max.)	Seq. Read	1,130	1,630	1,615	1,605	1,440
	Seq. Write	535	1,035	1,270	1,355	1,365
Power Consumption (mA) (Max.)	Active	400	545	595	615	685
	Idle	135	140	140	140	140
Operating temperature (℃)		- 40 ~ + 85℃				
Interface		PCIe Gen3 x 2 / NVMe 1.3				
Form factor		M.2 Type 2242				M.2 Type 2280
Environment Spec.		RoHS / CE / FCC				

【 PCIe Gen3 x 4 】

Series name	SGPD Series

Flash Type		3D-TLC			
Capacity		240GB	480GB	960GB	1920GB
Performance (MB/s) (Max.)	Seq. Read	2,725	3,525	3,530	2,505
	Seq. Write	1,125	2,135	2,745	2,260
Power Consumption (mA) (Max.)	Active	1,010	1,250	1,370	1,315
	Idle	320	325	325	315
Operating temperature (℃)		- 40 ~ + 85℃			
Interface		PCIe Gen3 x 4 / NVMe 1.3			
Form factor		M.2 Type 2280			
Environment Spec.		RoHS / CE / FCC			

Industrial Solutions SATA SSD



Key Features

- Power Loss Protection
- Wear Leveling function
- Bad Block Management
- Supports Trim and NCQ
- Supports DEVSLP and DIPM/HIPM mode
- Supports Customized Label design
- Supports SMART tool for remaining lifespan check

Specifications

2.5inch

Series name		SGD5 Series			
Flash Type		SLC	2D SLC Mode	2D MLC	3D TLC
Capacity		8GB ~ 256GB	8GB ~ 512GB	8GB ~ 2TB	32GB ~ 8TB
Performance (MB/s) (Typ.) (Sequential)	Read	520	530	520	520
	Write	360	450	350	510
Power Consumption (mA) (Typ.)	Read	186	351	708	984
	Write	220	457	1,155	1,140
TBW (TB)		13,636	9,091	5,237	21,818
External DRAM		Option	Option	Option	Option
Channels		2 / 4	1 / 2 / 4	1 / 2 / 4	1 / 2 / 4
Capacitor		Option	Option	Option	Option

Security function	Option	-	Option	Option
Operating Voltage (V)	5.0 ± 5%			
Operating temperature (℃)	0 ~ +70 / -40 ~ +85			
Storage temperature (℃)	-55 ~ +95			
Interface	SATA3.0 (6Gbps)			
Environment Spec.	RoHS / CE / FCC			

mSATA

Series name		SGDM Series			
Flash Type		SLC	2D SLC Mode	2D MLC	3D TLC
Capacity		4GB ~ 64GB	8GB ~ 256GB	8GB ~ 1TB	32GB ~ 1TB
Performance (MB/s) (Typ.) (Sequential)	Read	525	560	520	555
	Write	345	460	445	335
Power Consumption (mA) (Typ.)	Read	442	466	437	436
	Write	473	865	1,031	589
TBW (TB)		3,750	4,545	2,663	2,697
External DRAM		Option	Option	Option	Option
Channels		2 / 4	1 / 2 / 4	1 / 2 / 4	1 / 2 / 4
Security function		-	-	Option	Option
Operating Voltage (V)		3.3 ± 5%			
Operating temperature (℃)		0 ~ +70 / -40 ~ +85			
Storage temperature (℃)		-55 ~ +95			
Interface		SATA3.0 (6Gbps)			
Environment Spec.		RoHS / CE / FCC			

m.2

Series name		SGDD Series			
Flash Type		SLC	2D SLC Mode	2D MLC	3D TLC
Capacity		8GB ~ 256GB	8GB ~ 512GB	8GB ~ 1TB	32GB ~ 2TB
Performance (MB/s) (Typ.) (Sequential)	Read	520	530	530	560
	Write	360	450	450	510
Power Consumption (mA) (Typ.)	Read	560	355	525	624
	Write	670	370	1,390	799
TBW (TB)		13,636	9,091	2,663	2,662
External DRAM		Option	Option	Option	Option
Channels		2 / 4	1 / 2 / 4	1 / 2 / 4	1 / 2 / 4

Security function	Option	-	Option	Option
Operating Voltage (V)	3.3 ± 5%			
Operating temperature (℃)	0 ~ +70 / -40 ~ +85			
Storage temperature (℃)	-55 ~ +95			
Interface	SATA3.0 (6Gbps)			
Environment Spec.	RoHS / CE / FCC			

SD/eMMC Bus Analyzer / Media Tester

A host tester is a verification tester designed for software developers and QA engineers of memory card compatible devices. It can mainly be used for verifying the card access firmware of the host device in accordance with the test specification.
The test program built into the application software analyzes the bus communication between the host and memory card and judges whether or not the access conforms to the specification. It provides significant reduction of verification test and debugging times, compared to analyses performed using a conventional logic analyzer.

A card tester is a verification tester designed for card developers and QA engineers. A card tester can measure card performance. A user can issue any SD command with any sequence by using access library to check error handling.

	SGDK350A	SGDK320A	SGDK330B	SGDK400
Tester Type	Media Tester	Analyzer Host Tester Emulator	Analyzer	Analyzer
SD I/F	UHS-I	UHS-I	UHS-I	UHS-II
eMMC I/F	HS200	HS200	HS400	-

SD Host Tester / SD/eMMC Analyzer / SD/eMMC Media Tester

SGDK330B (SD/eMMC Analyzer)

SGDK330B has SD Analyzer and eMMC Analyzer Functions. SGDK330B supports SDR104 and eMMC

HS400(ver5.1).

> For details, refer to **SGDK330B SD/eMMC Analyzer** .

SGDK330A (SD/eMMC Analyzer)

SGDK330A has SD Analyzer and eMMC Analyzer Functions. SGDK330A supports SDR104 and eMMC ver4.51.

SGDK320A (SD Host Tester)

SGDK320A has SD Emulator, SD Host Tester, SD Analyzer and eMMC Analyzer functions. This product is designed for Host product compliant to "SD Memory Card Physical Layer Specification Version 3.01" standard. This product covers the test contents of Test Specification Version 3.00 and Supplement Note. This product supports SDR104 and eMMC ver4.51 (Analyzer).

> For details, refer to **SGDK320A SD Host Tester (PDF 502KB)** .

SGDK400 (UHS-II Analyzer)

SGDK400 is Analyzer for UHS-II Analyzer protocol.

> For details, refer to **Brochure SGDK400 (PDF 454KB)**.

SGDK320A/330A/330B/400 support page is here. Please contact us if you want to access this page.

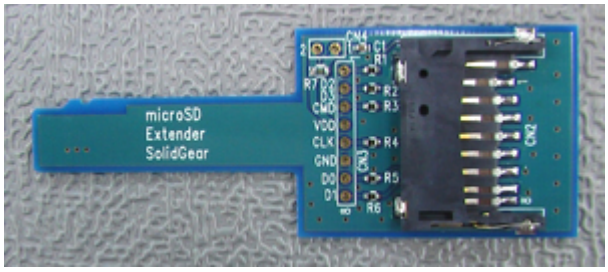
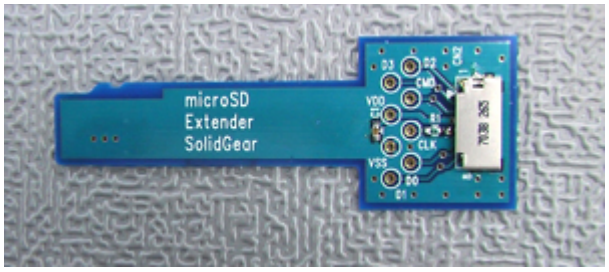
SGDK350A (SD Card / eMMC Media Tester)

"SD Memory Card Physical Layer Specification Version 3.01" standard,
and the UHS-I interface(SDR12,25,50,104,DDR50)and eMMC Version 5.1. Application software can measure Speed Class from 2 to 10 for SDSD, SDHC and SDXC. It has also function of general measuring performance(sequential and random access). Accessing library to issue any SD Command with any sequence is provided.

> For details, refer to **Brochure SGDK350A. (PDF 348KB)**.

MicroSD card Bus Extender

Bus Extender is a bus extension device for observing the waveform of the bus signals between MicroSD card compatible devices (such as mobile terminals) and the MicroSD card using a logic analyzer.

	
Enlarge	**Enlarge**
Standard SD card (TYPE A)	**MicroSD card (TYPE B)**