# FORESEE SATAIII 2.5 inch SSD S58A Datasheet

**Version: A3**

**2020.07**

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## Revision History

| *Revision Number* | *Description* | *Revision Date* |
|---|---|---|
| A3 | Add TBW info | 2020.07 |
| A2 | Add 2TB capacity. | 2020.02 |
| A1 | Update capacity. | 2019.11 |
| A0 | Initial release. | 2019.10 |

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# 1. General Description

The FORESEE SSD (Solid State Drive) fully consists of semiconductor devices using NAND Flash Memory which provide high reliability and high performance for a storage media. The SSD doesn't have any moving parts such as platter (disk) and head media, which provides a better solution in a notebook PC, Tablet PC and industrial PC for a storage device providing higher performance, reduced latencies, and a low power consumption in a small form factor. SSD has the same host interface with Hard Disk Drives and has a same physical dimension.

**●Capacity**

– 128GB/256GB/512GB/1TB/2TB is available

**●Form Factor**

– 2.5 inch

**●Performance**

• 128GB

– Read: Up to 550MB/s

– Write: Up to 520MB/s

**●Power Consumption**

– Active read: 1480mW (2TB)

– Active write: 1525mW (2TB)

**●Temperature**

– Operating : 0°C to 70°C

– Non-Operating: -40°C to 85°C

**●Host interface**

– Serial ATA interface of 6.0Gbps

• 256GB
– Read: Up to 550MB/s
– Write: Up to 520MB/s
• 512B
– Read: Up to 550MB/s
– Write: Up to 520MB/s
• 1TB
– Read: Up to 550MB/s
– Write: Up to 520MB/s
• 2TB
– Read: Up to 560MB/s
– Write: Up to 520MB/s

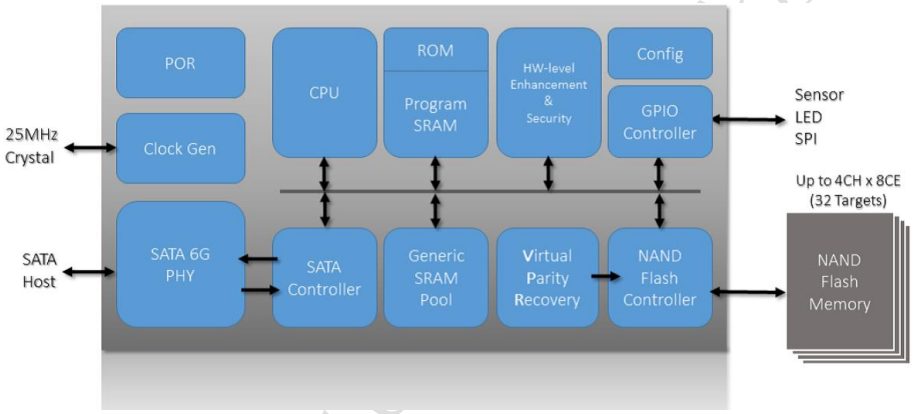
– Complies with ATA/ATAPI-8
– Supports NCQ
– Supports TRIM

**●Shock**
– Shock : 1500G, duration 0.5ms, Half Sine Wave
– Vibration : 7~800Hz, 3.08Grms, 30min/axis(X,Y,Z)
* Applicable only for cased product

**●MTBF**
– 1,500,000 Hours

**●Weight**
– 128GB/256GB/512GB/1TB/2TB
– Max 45g

**●SSD Functional Block Diagram**

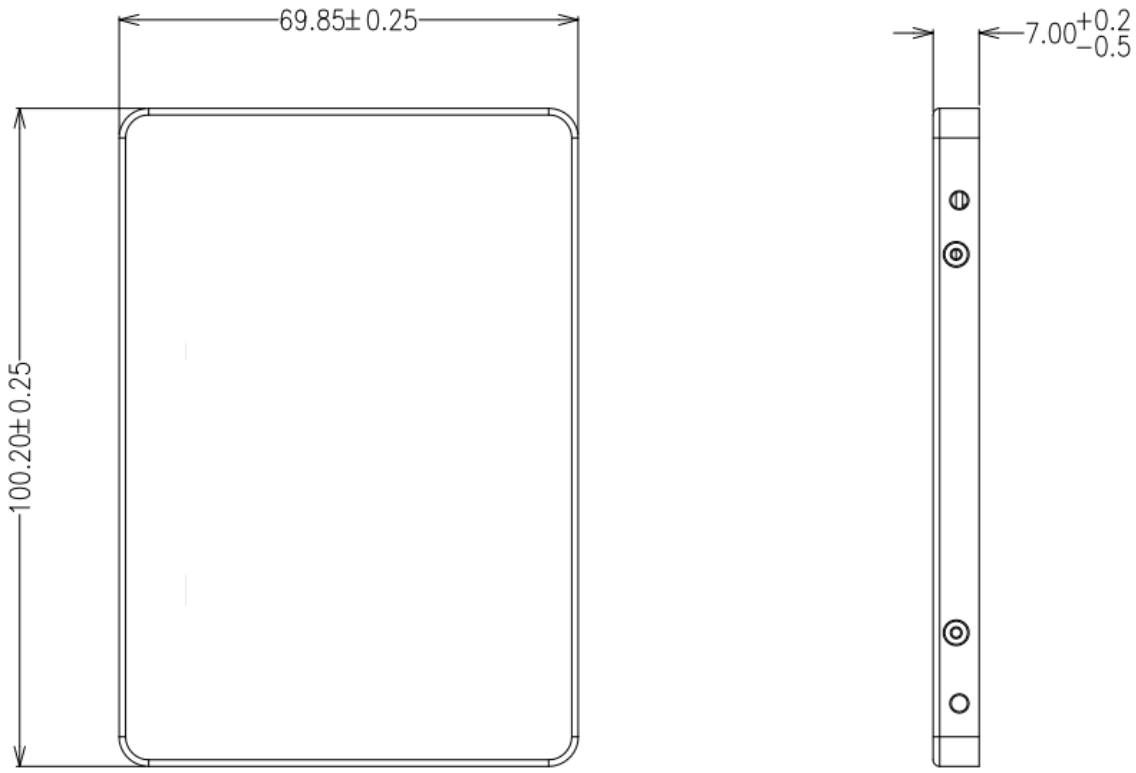



# 2. Mechanical Specification

## 2.1 2.5 inch SSD physical dimensions and Weight

| Capacity | Height (mm) | Width (mm) | Length (mm) | Weight (gram) |
|---|---|---|---|---|
| 128GB/256GB/512GB/1TB/2TB | 7.00 +0.2/-0.5 | 69.85 ± 0.25 | Max 100.45 | Max 45g |

**[Figure 1-1] SSD Functional Block Diagram**




**[Figure 2-1] 2.5 inch SSD Physical dimension**



# 3.Product Specifications

## 3.1 System Interface and Configuration

Burst read/write rate is 600 MB/sec (6.0 Gb/sec).

## 3.2 System Performance

| SATA 6Gb/s host interface | | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Unit** | **128GB** | **256GB** | **512GB** | **1TB** | **2TB** |
| Sequential Read (Max) | MB/S | 550 | 550 | 550 | 550 | 560 |
| Sequential Write (Max) | MB/S | 520 | 520 | 520 | 520 | 520 |
| Random Read (4K) QD=32 (Max) | IOPS | 46080 | 81920 | 97280 | 99840 | 91904 |
| Random Write (4K) QD=32 (Max) | IOPS | 62720 | 74240 | 76800 | 76800 | 73984 |

* Actual performance may vary depending on use conditions and environment

* Note

1. Performance measured using CrystalDiskMark 5.1.0 x64
2. Write cache enabled
3. 1MB/sec = 1,048,576 bytes/sec was used in sequential performance

-System: Intel Z170 Chipset, Intel Core i5-6600K@3.5GHz, 4GB DDR4

-OS: Windows 7 x64

## 3.3 Drive Capacity

| **Nominal Capacity** | **128GB** | **256GB** | **512GB** | **1TB** | **2TB** |
|---|---|---|---|---|---|
| Unformatted Capacity | 119.24GB | 238.47GB | 476.94GB | 953.87GB | 1907.73GB |
| User-Addressable Sectors | 250069680 | 500118192 | 1000215216 | 2000409264 | 4000797360 |
| Bytes per Sector | 512 Bytes | | | | |

NOTE:

1 Megabyte (MB) = 1 Million bytes; 1 Gigabyte (GB) =1 Billion bytes

*Actual usable capacity may be less (due to formatting, partitioning, operating system, applications or otherwise)

## 3.4 Supply Voltage

| **Item** | **Requirements** |
|---|---|
| Allowable voltage | 5.0V ± 5% |
| Allowable noise/ripple | 100mV p-p or less |

## 3.5 System Power Consumption

| Input Voltage 5.0V±5% | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **128GB** | **256GB** | **512GB** | **1TB** | **2TB** |
| Sequential Read | 1130 mW | 1260 mW | 1285 mW | 1320 mW | 1480 mW |
| Sequential Write | 1155 mW | 1365 mW | 1380 mW | 1335 mW | 1525 mW |
| Random Read | 920 mW | 1180 mW | 1165 mW | 1160 mW | 1050 mW |
| Random Write | 945 mW | 1235 mW | 1295 mW | 1315 mW | 900 mW |

| | | | | | |
|---|---|---|---|---|---|
| Idle | 550 mW | 600 mW | 600 mW | 600 mW | 600 mW |

CPU : Intel Core i5-6600K

DRAM : 4GB DDR4

Chipset : Intel Z170

OS : Windows 7 x64

Test Tool : CrystalDiskMark 5.1.0 x64

## 3.6 System Reliability

| Capacity | MTBF |
|---|---|
| 128GB | 1,500,000 Hours |
| 256GB | |
| 512GB | |
| 1TB | |
| 2TB | |

MTBF is Mean Time Between Failure. As same word, annual failure ratio is 0.4%.

## 3.7 Endurance

| TBW | | | | |
|---|---|---|---|---|
| **128GB** | **256GB** | **512GB** | **1TB** | **2TB** |
| 250TB | 500TB | 1000TB | 2000TB | 4000TB |

Notes:

1-TBW (Terabytes Written) is a measurement of SSDs' expected lifespan, which represents the amount of data written to the device. To calculate the TBW of a SSD, the following equation is applied:

TBW = [(NAND Endurance) x (SSD Capacity)] / WAF

NAND Endurance: NAND endurance refers to the P/E (Program/Erase) cycle of a NAND flash.

SSD Capacity: The SSD capacity is the specific capacity in total of a SSD.

WAF: Write Amplification Factor (WAF) is a numerical value representing the ratio between the amount of data that a SSD controller needs to write and the amount of data that the host's flash controller writes. A better WAF, which is near 1, guarantees better endurance and lower frequency of data written to flash memory.

2-The above TBW values are calculated based on WAF=1.

3-TBW may differ according to flash configuration and platform.

4-The endurance of SSD could be estimated based on user behavior, NAND endurance cycles, and write amplification factor. It is not guaranteed by flash vendor.

## 3.8 Environmental Specifications

| **Features** | Operating | Non-Operating |
|---|---|---|
| **Temperature** | 0°C to 70°C | -40°C to 85°C |
| **Humidity** | 5% to 95%, non-condensing | |
| **Vibration** | 7~800Hz, 3.08Grms, 30min/axis(X,Y,Z) | |

| | |
|---|---|
| **Shock** | 1500G, duration 0.5ms, Half Sine Wave |

Notes:

1-Temperature is measured by SMART Temperature .Proper airflow recommended.

2-Humidity is measured in non-condensing.

3-Test condition for shock: 0.5ms duration with half sine wave.

4-Test condition for vibration: 10Hz to 2,000Hz, 15mins/axis on 3axis.

# 4. Electrical Interface Specification

## 4.1 2.5 inch Pin Assignments

| | No. | Plug connector pin definition | |
|---|---|---|---|
| Signal | S1 | GND | 2nd mate |
| | S2 | A+ | Differential signal A from Phy |
| | S3 | A- | |
| | S4 | GND | 2nd mate |
| | S5 | B- | Differential signal B from Phy |
| | S6 | B+ | |
| | S7 | GND | 2nd mate |
| Key and spacing separate signal and power segments | | | |
| Power | P1 | V33 | 3.3V power(Unused) |
| | P2 | V33 | 3.3V power(Unused) |
| | P3 | V33 | 3.3V power, pre-charge, 2nd mate (Unused) |
| | P4 | GND | 1st mate |
| | P5 | GND | 2nd mate |
| | P6 | GND | 2nd mate |
| | P7 | V5 | 5V power, pre-charge, 2nd mate |
| | P8 | V5 | 5V power |
| | P9 | V5 | 5V power |
| | P10 | GND | 2nd mate |
| | P11 | DAS/DSS | Device Activity Signal/Disable Staggered Spinup |
| | P12 | GND | 1st mate |
| | P13 | V12 | 12V power, pre-charge, mate(Unused) |
| | P14 | V12 | 12V power (Unused) |
| | P15 | V12 | 12V power(Unused) |

**Table 4-1: 2.5 inch Connector Pin Assignment**

# 5. Command Descriptions

## 5.1 Supported ATA Commands

This table with the following paragraphs summarizes the ATA command set.

Table 5 ATA Command List

| Command Name | Code | PARAMETERS USED | | | | | |
|---|---|---|---|---|---|---|---|
| | | SC | SN | CY | DR | HD | FT |
| CHECK POWER MODE | E5h | X | X | X | O | X | X |
| EXECUTE DIAGNOSTICS | 90h | X | X | X | O | X | X |
| FLUSH CACHE | E7h | X | X | X | O | O | X |
| IDENTIFY DEVICE | ECh | X | X | X | O | X | X |
| IDLE | E3h | O | X | X | O | X | X |
| IDLE IMMEDIATE | E1h | X | X | X | O | X | X |
| INITIALIZE DEVICE PARAMETERS | 91h | O | X | X | O | O | X |
| READ DMA | C8h | O | O | O | O | O | X |
| READ DMA EXT | 25h | O | O | O | O | O | X |
| READ FPDMA QUEUED | 60h | O | O | O | O | O | X |
| READ LOG DMA EXT | 47h | O | O | O | O | O | X |
| READ LOG EXT | 2Fh | O | O | O | O | O | X |
| READ MULTIPLE | C4h | O | O | O | O | O | X |
| READ SECTOR(S) | 20h or 21h | O | O | O | O | O | X |
| READ VERIFY SECTOR(S) | 40h or 41h | O | O | O | O | O | X |
| RECALIBRATE | 10h | X | X | X | O | X | X |
| SECURITY DISABLE PASSWORD | F6h | X | X | X | O | X | X |
| SECURITY ERASE PREPARE | F3h | X | X | X | O | X | X |
| SECURITY ERASE UNIT | F4h | X | X | X | O | X | X |
| SECURITY FREEZE LOCK | F5h | X | X | X | O | X | X |
| SECURITY SET PASSWORD | F1h | X | X | X | O | X | X |
| SECURITY UNLOCK | F2h | X | X | X | O | X | X |
| SEEK | 7xh | X | X | O | O | O | X |
| SET FEATURES | EFh | O | X | X | O | X | O |
| SET MULTIPLE MODE | C6h | O | X | X | O | X | X |
| SLEEP | E6h | X | X | X | O | X | X |
| SMART | B0h | X | X | O | O | X | O |
| STANDBY | E2h | X | X | X | O | X | X |
| STANDBY IMMEDIATE | E0h | X | X | X | O | X | X |
| WRITE DMA | CAh | O | O | O | O | O | X |
| WRITE DMA EXT | 35h | O | O | O | O | O | X |
| WRITE FPDMA QUEUED | 61h | O | O | O | O | O | X |
| WRITE LOG DMA EXT | 57h | O | O | O | O | O | X |
| WRITE LOG EXT | 3Fh | O | O | O | O | O | X |
| WRITE MULTIPLE | C5h | O | O | O | O | O | X |
| WRITE SECTOR(S) | 30h or 31h | O | O | O | O | O | X |

**Note:**

**O = Valid, X = Don't care**

**SC = Sector Count Register**

**SN = Sector Number Register**

**CY = Cylinder Low/High Register**

**DR = DEVICE SELECT Bit (DEVICE/HEAD Register Bit 4)**

**HD = HEAD SELECT Bit (DEVICE/HEAD Register Bit 3-0)**

**FT = Features Register**

## 5.2 SMART Attributes

The following table defines the vendor specific data in byte 2 to 361 of the 512-byte SMART data.

**SMART Data Vendor-specific Attributes**

| Attribute ID (hex) | Attribute Name |
|---|---|
| 05 | New Bad Block Count |
| 09 | Power On Hours |
| 0C | Power Cycle Count |
| A7 | Average Erase Count |
| A8 | SATA PHY Error Count |
| A9 | Bad Block Count |
| AB | Program Fail Count |
| AC | Erase Fail Count |
| AD | Erase Count |
| AF | Bad Cluster Count |
| B1 | Read Retry Count |
| B4 | Spare Block Count Left |
| BB | Uncorrectable Error Count |
| C0 | Unexpected Power Loss Count |
| C2 | Temperature |
| C7 | UltraDMA CRC Error Count |
| CE | Minimum Erase Count |
| CF | Maximum Erase Count |
| D0 | Average Erase Count |
| D1 | SLC Minimum Erase Count |
| D2 | SLC Maximum Erase Count |
| D3 | SLC Average Erase Count |
| E7 | SSD Life Left |
| F1 | Total LBA written |
| F2 | Total LBA read |

# 6. Identify Device Data

## 6.1 ATA Command Description：IDENTIFY DEVICE(ECh)

This commands read out 512Bytes of drive parameter information. Parameter Information consists of the arrangement and value as shown in the following table. This command enables the host to receive the Identify Drive Information from the device.

Table 6 IDENTIFY DEVICE (ECh) information default value

| Word | Value | F/V | Description |
|---|---|---|---|
| 0 | 0040h | | General configuration bit-significant information:<br>F 15 0 = ATA device<br>X 14-8 Retired<br>F 7 1 = removable media device<br>X 6 Obsolete<br>X 5-3 Retired<br>F 2 Reserved<br>X 1 Retired<br>F 0 Reserved |
| 1 | XXXXh | X | Number of logical cylinders |
| 2 | C837h | V | Specific configuration |
| 3 | 00XXh | X | Number of logical heads |
| 4-5 | XXXXh | X | Retired |
| 6 | XXXXh | X | Number of logical sector per logical track |
| 7-8 | XXXXh | V | Reserved for assignment by the CompactFlash_ Association |
| 9 | 000Eh | X | Retired |
| 10-19 | XXXXh | F | Serial number (20 ASCII characters) |
| 20-21 | XXXXh | X | Retired |
| 22 | 003Fh | X | Obsolete |

Table 6 IDENTIFY DEVICE (ECh) information default value

| Word | Value | F/V | Description |
|---|---|---|---|
| 23-26 | XXXXh | F | Firmware revision (8 ASCII characters) |
| 27-46 | XXXXh | F | Model number (40 ASCII characters) |
| 47 | 8000h | F<br>F<br>F | 15-8 80h<br>7-0 00h = Reserved<br>01h = Maximum number of 1 sectors on READ/WRITE MULTIPLE commands |
| 48 | 4000h | F | Reserved |
| 49 | 2F00h | <br>F<br>F<br><br>F<br>F<br><br>F<br>F<br>X | Capabilities<br>15-14 Reserved for the IDENTIFY PACKET DEVICE command.<br>13 1 = Standby timer values as specified in this standard are supported<br>0 = Standby timer values shall be managed by the device<br>12 Reserved for the IDENTIFY PACKET DEVICE command.<br>11 1 = IORDY supported<br>0 = IORDY may be supported<br>10 1 = IORDY may be disabled<br>9 1 = LBA supported<br>8 1 = DMA supported.<br>7-0 Retired |
| 50 | 4000h | <br>F<br>F<br>F<br>X<br>F | Capabilities<br>15 Shall be cleared to zero.<br>14 Shall be set to one.<br>13-2 Reserved.<br>1 Obsolete<br>0 Shall be set to one to indicate a device specific Standby timer value minimum. |
| 51-52 | 0000h | X | Obsolete |
| 53 | 0007h | F<br>F<br><br>F<br><br>X | 15-3 Reserved<br>2 1 = the fields reported in word 88 are valid<br>0 = the fields reported in word 88 are not valid<br>1 1 = the fields reported in words 70:64 are valid<br>0 = the fields reported in words 70:64 are not valid<br>0 1 = the fields reported in words 58:54 are valid<br>0 = the fields reported in words 58:54 are not valid |
| 54-58 | XXXXh | X | Obsolete |
| 59 | 0000h | F<br>V<br>V | 15-9 Reserved<br>8 1 = Multiple sector setting is valid<br>7-0 xxh = Setting for number of sectors that shall be transferred per interrupt on R/W Multiple command |
| 60-61 | XXXXh | F | Total number of user addressable sectors |
| 62 | 0000h | X | Obsolete |
| 63 | 0007h | F<br>V<br><br>V | 15-11 Reserved<br>10 1 = Multiword DMA mode 2 is selected<br>0 = Multiword DMA mode 2 is not selected<br>9 1 = Multiword DMA mode 1 is selected<br>0 = Multiword DMA mode 1 is not selected |

Table 6 IDENTIFY DEVICE (ECh) information default value

| Word | Value | F/V | Description |
|---|---|---|---|
| | | V | 8 1 = Multiword DMA mode 0 is selected<br>0 = Multiword DMA mode 0 is not selected |
| | | F | 7-3 Reserved |
| | | F | 2 1 = Multiword DMA mode 2 and below are supported |
| | | F | 1 1 = Multiword DMA mode 1 and below are supported |
| | | F | 0 1 = Multiword DMA mode 0 is supported |
| 64 | 0003h | F | 15-8 Reserved |
| | | F | 7-0 Advanced PIO modes supported |
| 65 | 0078h | F | Minimum Multiword DMA transfer cycle time per word |
| 66 | 0078h | F | Manufacturer's recommended Multiword DMA transfer cycle time |
| 67 | 0078h | F | Minimum PIO transfer cycle time without flow control |
| 68 | 0078h | F | Minimum PIO transfer cycle time with IORDY flow control |
| 69-74 | 0000h | F | Reserved (for future command overlap and queuing) |
| 75 | 0000h | F | Queue depth<br>15:5 Reserved<br>4:0 Maximum queue depth - 1 |
| 76 | xh | F | Serial ATA Capabilities<br>15:13 Reserved for Serial ATA<br>12 1 = Supports NCQ priority information<br>11 1 = Supports Unload while NCQ commands are outstanding<br>10 1 = Supports the SATA Phy Event Counters log<br>9 1 = Supports receipt of host initiated power management requests<br>8 1 = Supports the NCQ feature set<br>7:4 Reserved for Serial ATA<br>3 1 = Supports SATA Gen3 Signaling Speed (6.0Gb/s)<br>2 1 = Supports SATA Gen2 Signaling Speed (3.0Gb/s)<br>1 1 = Supports SATA Gen1 Signaling Speed (1.5Gb/s)<br>0 Shall be cleared to zero |
| 77 | | | Reserved |
| 78 | xh | | Serial ATA features supported<br>15:7 Reserved for Serial ATA<br>6 1 = Device supports Software Settings Preservation<br>5 Reserved for Serial ATA<br>4 1 = Device supports in-order data delivery |

Table 6 IDENTIFY DEVICE (ECh) information default value

| Word | Value | F/V | Description |
|---|---|---|---|
| | | | 3 1 = Device supports initiating power management<br>2 1 = Device supports DMA Setup auto-activation<br>1 1 = Device supports non-zero buffer offsets<br>0 Shall be cleared to zero |
| 79 | xh | | Serial ATA features enabled<br>15:7 Reserved for Serial ATA<br>6 1 = Software Settings Preservation enabled<br>5 Reserved for Serial ATA<br>4 1 = In-order data delivery enabled<br>3 1 = Device initiated power management enabled<br>2 1 = DMA Setup auto-activation enabled<br>1 1 = Non-zero buffer offsets enabled<br>F 0 Shall be cleared to zero |
| 80 | 01FEh | | Major version number 0000h or FFFFh = device does not report version<br>F 15 Reserved<br>F 14 Reserved for ATA/ATAPI-14<br>F 13 Reserved for ATA/ATAPI-13<br>F 12 Reserved for ATA/ATAPI-12<br>F 11 Reserved for ATA/ATAPI-11<br>F 10 Reserved for ATA/ATAPI-10<br>F 9 Reserved for ATA/ATAPI-9<br>F 8 Reserved for ATA/ATAPI-8<br>F 7 1 = supports ATA/ATAPI-7<br>F 6 1 = supports ATA/ATAPI-6<br>F 5 1 = supports ATA/ATAPI-5<br>F 4 1 = supports ATA/ATAPI-4<br>F 3 Obsolete<br>X 2 Obsolete<br>X 1 Obsolete<br>F 0 Reserved |
| 81 | 0021h | F | Minor version number |
| 82 | 0068h | | Command set supported.<br>X 15 Obsolete<br>F 14 1 = NOP command supported<br>F 13 1 = READ BUFFER command supported<br>F 12 1 = WRITE BUFFER command supported<br>X 11 Obsolete<br>F 10 1 = Host Protected Area feature set supported<br>F 9 1 = DEVICE RESET command supported<br>F 8 1 = SERVICE interrupt supported |

Table 6 IDENTIFY DEVICE (ECh) information default value

| Word | Value | F/V | Description |
|---|---|---|---|
| | | F | 7 1 = release interrupt supported |
| | | F | 6 1 = look-ahead supported |
| | | F | 5 1 = write cache supported |
| | | F | 4 Shall be cleared to zero to indicate that the PACKET Command feature set is not supported. |
| | | F | 3 1 = mandatory Power Management feature set supported |
| | | F | 2 1 = Removable Media feature set supported |
| | | F | 1 1 = Security Mode feature set supported |
| | | F | 0 1 = SMART feature set supported |
| 83 | 5000h | | Command sets supported. |
| | | F | 15 Shall be cleared to zero |
| | | F | 14 Shall be set to one |
| | | F | 13-9 Reserved |
| | | F | 8 1 = SET MAX security extension supported |
| | | F | 7 Reserved |
| | | F | 6 1 = SET FEATURES subcommand required to spinup after power-up |
| | | F | 5 1 = Power-Up In Standby feature set supported |
| | | F | 4 1 = Removable Media Status Notification feature set supported |
| | | F | 3 1 = Advanced Power Management feature set supported |
| | | F | 2 1 = CFA feature set supported |
| | | F | 1 1 = READ/WRITE DMA QUEUED supported |
| | | F | 0 1 = DOWNLOAD MICROCODE command supported |
| 84 | 4000h | | Command set/feature supported extension. |
| | | F | 15 Shall be cleared to zero |
| | | F | 14 Shall be set to one |
| | | F | 13-2 Reserved |
| | | F | 1 1 = SMART self-test supported |
| | | F | 0 1 = SMART error logging supported |
| 85 | 0008h | | Command set/feature enabled. |
| | | X | 15 Obsolete |
| | | F | 14 1 = NOP command enabled |
| | | F | 13 1 = READ BUFFER command enabled |
| | | F | 12 1 = WRITE BUFFER command enabled |
| | | X | 11 Obsolete |
| | | V | 10 1 = Host Protected Area feature set enabled |
| | | F | 9 1 = DEVICE RESET command enabled |
| | | V | 8 1 = SERVICE interrupt enabled |
| | | V | 7 1 = release interrupt enabled |
| | | V | 6 1 = look-ahead enabled |
| | | V | 5 1 = write cache enabled |
| | | F | 4 Shall be cleared to zero to indicate that the PACKET Command feature set is not supported. |
| | | F | 3 1 = Power Management feature set enabled |
| | | F | 2 1 = Removable Media feature set enabled |
| | | V | 1 1 = Security Mode feature set enabled |
| | | V | 0 1 = SMART feature set enabled |
| 86 | 5000h | | Command set/feature enabled. |
| | | F | 15-9 Reserved |
| | | F | 8 1 = SET MAX security extension enabled by SET MAX SET PASSWORD |

Table 6 IDENTIFY DEVICE (ECh) information default value

| Word | Value | F/V | Description |
|---|---|---|---|
| | | F | 7 See Address Offset Reserved Area Boot, INCITS TR27:2001 |
| | | F | 6 1 = SET FEATURES subcommand required to spin-up after power-up |
| | | V | 5 1 = Power-Up In Standby feature set enabled |
| | | V | 4 1 = Removable Media Status Notification feature set enabled |
| | | V | 3-1 1 = Advanced Power Management feature set enabled |
| | | F | 0 1 = DOWNLOAD MICROCODE command supported |
| 87 | 4000h | | Command set/feature default. |
| | | F | 15 Shall be cleared to zero |
| | | F | 14 Shall be set to one |
| | | F | 13-2 Reserved |
| | | F | 1 1 = SMART self-test supported |
| | | F | 0 1 = SMART error logging supported |
| 88 | xh | | 15-14 Reserved |
| | | V | 13 1 = Ultra DMA mode 5 is selected |
| | | | 0 = Ultra DMA mode 5 is not selected |
| | | V | 12 1 = Ultra DMA mode 4 is selected |
| | | | 0 = Ultra DMA mode 4 is not selected |
| | | V | 11 1 = Ultra DMA mode 3 is selected |
| | | | 0 = Ultra DMA mode 3 is not selected |
| | | V | 10 1 = Ultra DMA mode 2 is selected |
| | | | 0 = Ultra DMA mode 2 is not selected |
| | | V | 9 1 = Ultra DMA mode 1 is selected |
| | | | 0 = Ultra DMA mode 1 is not selected |
| | | F | 8 1 = Ultra DMA mode 0 is selected |
| | | F | 0 = Ultra DMA mode 0 is not selected |
| | | F | 7-6 Reserved |
| | | F | 5 1 = Ultra DMA mode 5 and below are supported |
| | | F | 4 1 = Ultra DMA mode 4 and below are supported |
| | | F | 3 1 = Ultra DMA mode 3 and below are supported |
| | | | 2 1 = Ultra DMA mode 2 and below are supported |
| | | | 1 1 = Ultra DMA mode 1 and below are supported |
| | | | 0 1 = Ultra DMA mode 0 is supported |
| 89 | 0000h | F | Time required for security erase unit completion |
| 90 | 0000h | F | Time required for Enhanced security erase completion |
| 91 | 0000h | V | Current advanced power management value |
| 92 | 0000h | V | Master Password Revision Code |
| 93 | 0000h | X | Hardware reset result |
| 94-126 | 0000h | V | Reserved |
| 127 | 0000h | | Removable Media Status Notification feature set support |
| | | F | 15-2 Reserved |
| | | F | 1-0 00 = Removable Media Status Notification feature set not supported |
| | | | 01 = Removable Media Status Notification feature supported |
| | | | 10 = Reserved |
| | | | 11 = Reserved |

Table 6 IDENTIFY DEVICE (ECh) information default value

| | | | |
|---|---|---|---|
| 128 | 0001h | | Security status |
| | | F | 15-9 Reserved |
| | | V | 8 Security level 0 = High, 1 = Maximum |
| | | F | 7-6 Reserved |
| | | F | 5 1 = Enhanced security erase supported |
| | | V | 4 1 = Security count expired |
| | | V | 3 1 = Security frozen |
| | | V | 2 1 = Security locked |
| | | V | 1 1 = Security enabled |
| | | F | 0 1 = Security supported |
| 129-159 | 0000h | X | Vendor specific |
| 160-254 | 0000h | X | Reserved |
| 255 | 0000h | X | Integrity word<br>15-8 Checksum<br>7-0 Signature |

Note:
F/V = Fixed/variable content
F = the content of the word is fixed and does not change. For removable media devices, these values may change when media is removed or changed.
V = the contents of the word is variable and may change depending on the state of the device or the commands executed by the device.
X = the content of the word may be fixed or variable.

## 6.2 ATA Command Description：SET FEATURES(EFh)

This command set parameter to Features register and set drive's operation. For transfer mode, parameter is set to Sector Count Register. This command is used by the host to establish or select certain features.

Table 7 Features Register value and available operating mode

| Value | Function |
|---|---|
| 02h | Enable write cache |
| 03h | Set transfer mode based on value in Sector Count register. |
| 55h | Disable read look-ahead feature |
| 82h | Disable write cache |
| 90h | Disable use of SATA feature |
| AAh | Enable read look-ahead feature |

# 7. Product Line up

## 7.1 SATA3 2.5 inch

| Type | Capacity | MODEL | Part Number |
|---|---|---|---|
| SATA3 2.5 inch SSD | 128GB | S58AS128G | FSCSCLC-128G |
| SATA3 2.5 inch SSD | 256GB | S58AS256G | FSCSCLC-256G<br>FSCSCOC-256G |
| SATA3 2.5 inch SSD | 512GB | S58AS512G | FSCSCLC-512G<br>FSCSCOC-512G |
| SATA3 2.5 inch SSD | 1TB | S58AS001T | FSCSCOC-001T |
| SATA3 2.5 inch SSD | 2TB | S58AS002T | FSCSCOC-002T |

# 8 Contact information

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