Myung SSD
2.5 Inch SATA II (3Gbps)

S200 Product Specification

Sep / 2012
Rev. 0.1

MYUNG INFO.TECH.
Myung Information Technologies Co., Ltd.

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1. Revision History

Revision	Date	Description	Remark
0.1	Sep 18, 2012	- Initial issue	Preliminary

2. General Description

Since Myung SSD is composed of semiconductor chips, it is resistive on a external shock and does not produce any heat or noise. Since it does not have any moving parts, it is designed to minimize total electricity consumption. It is strongly resistive on dusts and other small particles. We are adopting latest technology of wear-leveling and which increased endurance of our product. Embedded error correction code(ECC) engine of the products also guaranty integrity of data stored on the SSD. Myung SSD has an exceeding reading and writing speed and it is fully compatible with other storage devices in a gaming systems, laptops and PCs.

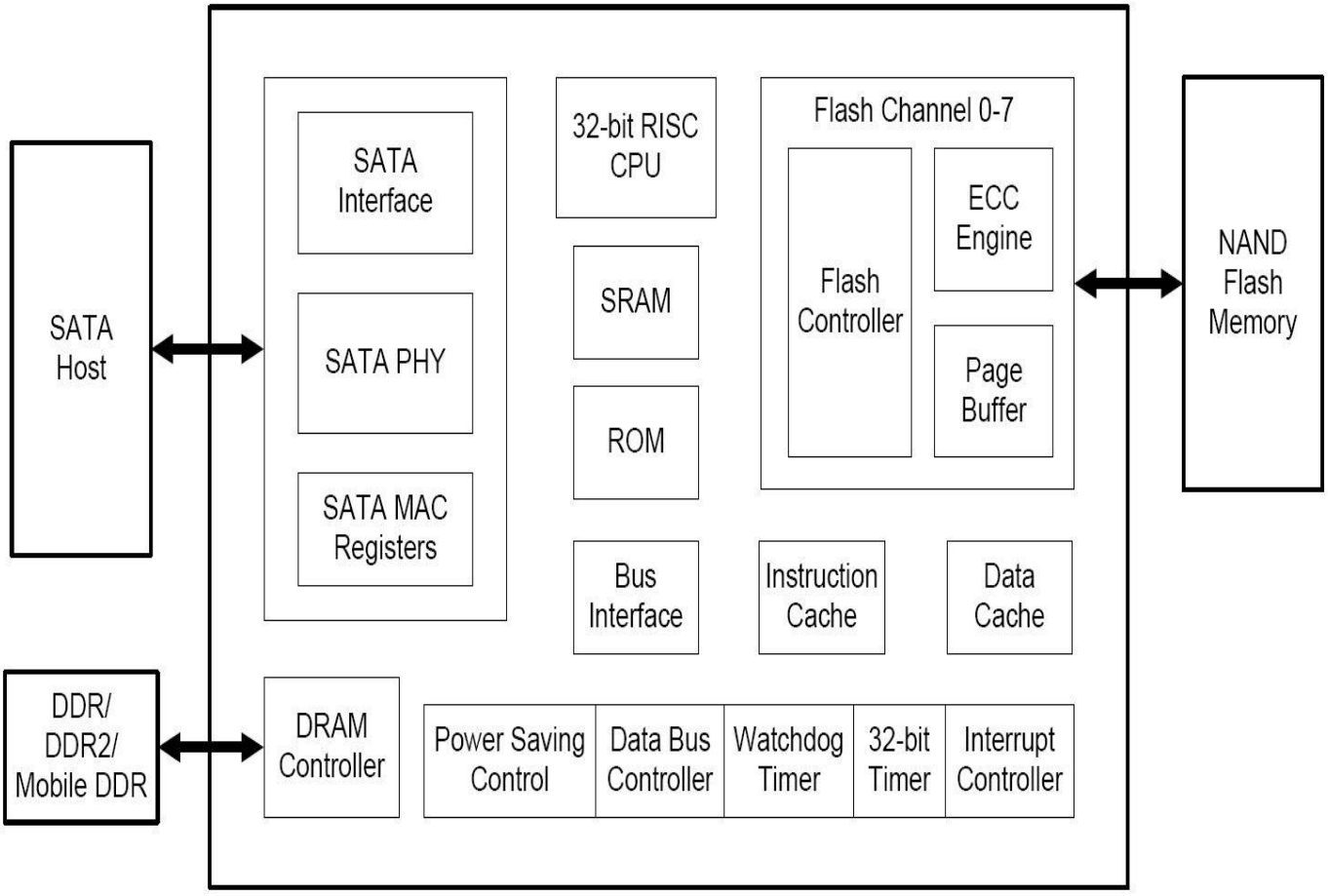
3. Features

- SATA 1.5 Gbps / 3.0 Gbps interface rate
- Compliant with Serial ATA Revision 2.6 specification
- Supports Native Command Queuing up to 32 commands
- Supports TRIM Command based on ATA-8
- Supports partial and slumber mode
- Supports PIO Mode 0~4
- Supports Multi-Word DMA Mode 0~2
- Supports Ultra DMA Mode up to 6
- Uses NAND flash memory
  - Multi Level Cell (MLC)
- Enhanced hardware BCH ECC engine
  - 12/24/40-bit per 1KB
- Supports Software/hardware write protect option
- Flash Management Features
  - Bad block management
  - wear-leveling algorithm

3. Features

- Power Management Features
  - Early weak block retirement option
- Data shaping for higher data reliability
- SMART Features
- Security Features
  - Multiple data security zones
- Storage Capacity
  - 16GB / 32GB / 64GB / 128 GB / 256GB / 512GB
- Temperature
  - Commercial : 0°C ~ 70°C
  - Industrial : - 40°C ~ 85°C
- Ordering Information
  - S200-016G : SATA 16GB
  - S200-032G : SATA 32GB
  - S200-064G : SATA 64GB
  - S200-128G : SATA 128GB
  - S200-256G : SATA 256GB
  - S200-512G : SATA 512GB

4. Block Diagram



5. Specification

Mechanical Specifications

Form Factor	2.5 Inch	
Dimensions (mm)	Length	100.2
	Width	69.8
	Height	9.5
Connector	SATA 7+15 pins combo connector	

Weight of Capacities

Capacity	**16GB**	**32 GB**	**64 GB**	**128 GB**	**256 GB**	**512 GB**
Weight	71 g	73 g	77 g	77 g	77 g	77 g

Electrical Specifications

Parameter	**Symbol**	**MIN**	**TYP**	**MAX**	**UNIT**
Voltage Input	VCC	4.0	5.0	5.25	V

Power Consumption

Capacity	**Idle (typical)**	**Active (typical)**
16 GB	Max 130mA	Max 320mA
32 GB		
64 GB		
128 GB		
256 GB		
512 GB		

User Addressable Sectors

Capacity	Total User Addressable Sectors
16 GB	30,916,608
32 GB	61,865,984
64 GB	123,731,968
128 GB	247,463,936
256 GB	494,927,872
512 GB	989,855,744

Performance of Capacities

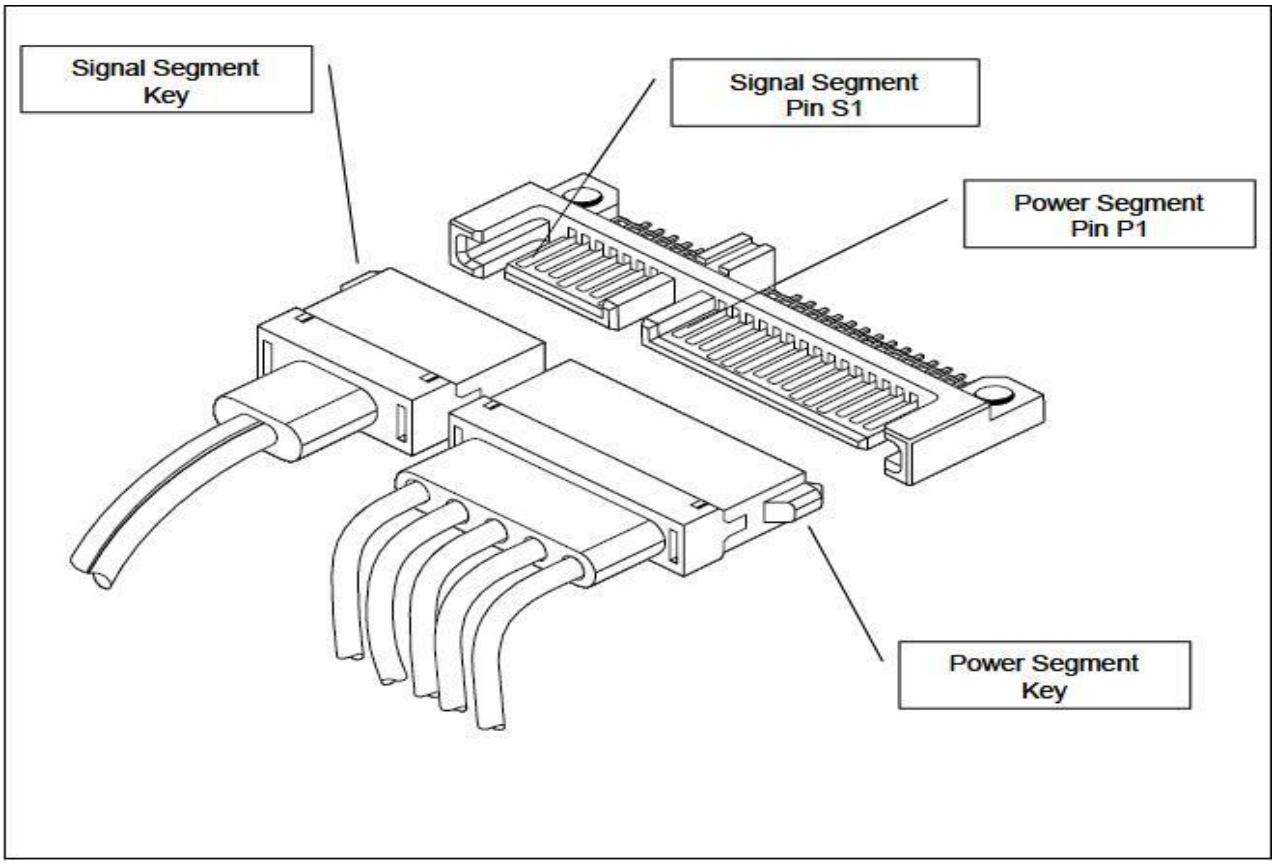
Model Number	Capacity	Sequential Read	Sequential Write	Memory Type
S200-016G	16 GB	110 MB/s	25 MB/s	MLC
S200-032G	32 GB	200 MB/s	60 MB/s	MLC
S200-064G	64 GB	200 MB/s	120 MB/s	MLC
S200-128G	128 GB	260 MB/s	150 MB/s	MLC
S200-256G	256 GB	260 MB/s	150 MB/s	MLC
S200-512G	512 GB	260 MB/s	150 MB/s	MLC

6. Reliability Characteristics

Temperature	
Operating (Commercial type)	0°C ~ 70°C
Operating (Industrial type)	-40°C ~ 85°C
Non-operation	- 40°C ~ 95 °C
Humidity	
Operating	60°C, 93%R.H
Altitude	
Non-Operating	80,000 feet
Random Vibration	
Non-Operating	15Hz ~ 2,000Hz
Shock	
Non-Operating	1,500g / 0.5ms

7. SATA Connector Descriptions

7-1 Connector locations



7-2 SATA Pin out Data

Segment	Pin No.	Signal Name	Signal Description
Signal segment	S1	GND	2nd mate
	S2	A+	Differential signal pair A From phy
	S3	A-	
	S4	GND	2nd mate
	S5	B-	Differential signal pair B From phy
	S6	B+	
	S7	GND	2nd mate

7-3 SATA Pin out Power

Power segment	P1	V33	3.3V POWER (Not used)
	P2	V33	3.3V POWER (Not used)
	P3	V33	3.3V power, pre-charge, 2nd mate
	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	Reserved	-
	P12	GND	1st mate
	P13	V12	12V power, pre-charged, 2nd mate
	P14	V12	12V (Not used)
	P15	V12	12V (Not used)

▶ Note
- All pins are in a single row, with a 1.27 mm (.050”) pitch.
- There are total of 7pins in the signal segment and 15pins in the power segment.

8. Supports ATA Command

COMMAND NAME	COMMAND CODE (HEX)
General Feature Set	
1. Execute Drive Diagnostic	90h
2. Flush Cache	E7h
3. Identify Device	ECh
4. Read DMA	C8h
5. Read Multiple	C4h
6. Read Sector(s)	20h
7. Read Verify Sector(s)	40h/41h
8. Set Feature	EFh
9. Set Multiple Mode	C6h
10. Write DMA	CAh
11. Write Multiple	C5h
12. Write Sector(s)	30h
13. NOP	00h
14. Read Buffer	E4h
15. Write Buffer	E8h
Power Management Feature Set	
16. Check Power Mode	E5h/98h
17. Idle	E3h/97h
18. Idle Immediate	E1h/95h
19. Sleep	E6h/99h
20. Standby	E2h/96h
21. Standby Immediate	E0h/94h
Security Mode Feature Set	
22. Security Set Password	F1h
23. Security Unlock	F2h
24. Security Erase Prepare	F3h
25. Security Erase Unit	F4h
26. Security Freeze Lock	F5h
27. Security Disable Password	F6h
SMART Feature Set	
28. SMART Disable Operations	B0h
29. SMART Enable/Disable Auto save	B0h
30. SMART Enable Operations	B0h
31. SMART Return Status	B0h
32. SMART Execute Off-Line Immediate	B0h
33. SMART Read Data	B0h

COMMAND NAME	COMMAND CODE (HEX)
Host Protected Area Feature Set	
34. Read Native Max Address	F8h
35. Set Max Address	F9h
36. Set Max Set Password	F9h
37. Set Max Lock	F9h
38. Set Max Freeze Lock	F9h
39. Set Max Unlock	F9h
48-bit Address Feature Set	
40. Flush Cache Ext	EAh
41. Read Sector(s)	24h
42. Read DMA Ext	25h
43. Read Multiple Ext	29h
44. Read Native Max Address Ext	27h
45. Read Verify Sector(s) Ext	42h
46. Set Max Address Ext	37h
47. Write DMA Ext	35h
48. Write DMA FUA Ext	3Dh
49. Write Multiple Ext	39h
50. Write Multiple FUA Ext	CEh
51. Write Sector(s) Ext	34h
NCQ Feature Set	
52. Read FPDMA Queued	60h
53. Write FPDMA Queued	61h

9. SMART Command

9-1 SMART subcommand sets

In order to select a subcommand the host must write the subcommand code to the device's Features Register before issuing the SMART Function Set command. The subcommands are listed below.

Command	Command Code (Hex)
SMART Read Data	D0h
SMART Read Attribute Threshold	D1h
SMART Enable/Disable Auto save	D2h
SMART Save Attribute Values	D3h
SMART Execute OFF-LINE Immediate	D4h
Reserved	D5h
Reserved	D6h
SMART Enable Operations	D8h
SMART Disable Operations	D9h
SMART Return Status	DAh

9-2 SMART Data Structure (READ DATA (D0h))

If the reserved size is below a threshold, status can be read from the Cylinder Register using the Return Status command (DAh).

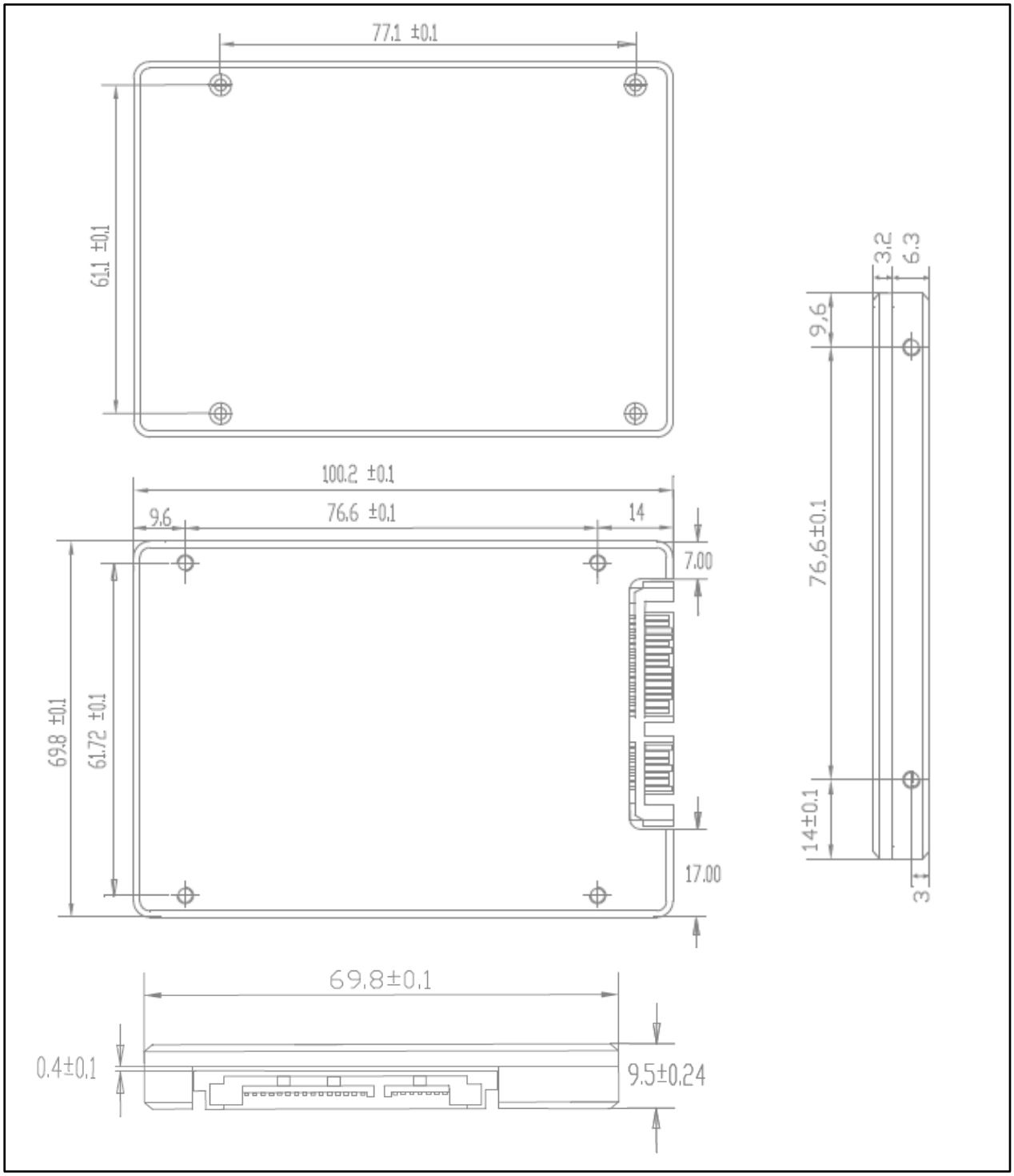
Byte	Description
0 ~1	Revision code
2~361	Vendor Specific
362	Off-line data collection status
363	Self-test execution status byte
364 ~ 365	Total time in seconds to complete off-line data collection activity
366	Vendor Specific
367	Off-line data collection capability
368 ~ 369	SMART capability
370	Error logging capability 7-1 Reserved 0 1=Device error logging supported
371	Vendor Specific
372	Short self-test routine recommended polling time (in minutes)
373	Extended self-test routine recommended polling time (in minutes)
374	Conveyance self-test routine recommended polling time (in minutes)
375 ~ 385	Reserved
386 ~ 395	Firmware Version / Date Code
396 ~ 397	Number of initial invalid block (396 = MSB, 397 = LSB)
398 ~ 399	Reserved
407 ~ 415	Vendor Specific
416	Reserved
418 ~ 419	Number of spare block
420 ~ 445	Reserved
511	Data structure checksum

10. Identify Device Parameters

Word	Value	Description
0	044Ah	General configuration
1	XXXXh	Default number of cylinders
2	0000h	Reserved
3	00XXh	Default number of heads
4	0000h	Obsolete
5	0240h	Obsolete
6	XXXXh	Default number of sectors per track
7 ~ 8	XXXXh	Number of sectors per card (Word7=MSW, Word8=LSW)
9	0000h	Obsolete
10 ~ 19	XXXXh	Serial number in ASCII (Right justified)
20	0002h	Obsolete
21	0002h	Obsolete
22	0000h	Obsolete
23 ~ 26	XXXXh	Firmware revision in ASCII (Big Endian Byte Order in Word)
27 ~ 46	XXXXh	Model number in ASCII (Big Endian Byte Order in Word)
47	8001h	Maximum number of sectors on Read/Write Multiple command
48	0000h	Reserved
49	0F00h	Capabilities
50	4000h	Capabilities
51	0200h	PIO data transfer cycle timing mode
52	0000h	Obsolete
53	0007h	Field validity
54	XXXXh	Current number of cylinders
55	XXXXh	Current number of heads
56	XXXXh	Current sectors per track
57 ~ 58	XXXXh	Current capacity in sectors (LBAs) (Word57=LSW, Word58=MSW)
59	0100h	Multiple sector setting
60 ~ 61	XXXXh	Total number of sectors addressable in LBA Mode
62	0000h	Reserved
63	0007h	Multi-word DMA transfer
64	0003h	Advanced PIO modes supported

65	0078h	Minimum Multiword DMA transfer cycle time per word
66	0078h	Recommended Multiword DMA transfer cycle time
67	0078h	Minimum PIO transfer cycle time without flow control
68	0078h	Minimum PIO transfer cycle time with IORDY flow control
69 ~ 74	0000h	Reserved
75	001Fh	Queue depth
76	00060h	Serial ATA capabilities - Support Serial ATA Gen1 - Support Serial ATA Gen2
77	0000h	Reserved
78	0008h	Device supports initiating interface power management
79	000h	Reserved
80	0080h	Major Version Number (ATAPI-7)
81	0000h	Minor Version Number
82	742Bh	Command sets supported 0
83	5500h	Command sets supported 1
84	4002h	Command sets supported 2
85 ~ 87	XXXXh	Command sets / feature Enabled
88	007Fh	Ultra DMA mode supported and selected
89	0003h	Time required for Security erase unit completion
90	0000h	Time required for Enhanced security erase unit completion
91	0000h	Current Advanced power management value
92	FFFEh	Master Password Revision Code
93 ~ 99	0000h	Reserved
100 ~ 103	XXXXh	Maximum user LBA for 48-bit Address feature set
104 ~ 127	0000h	Reserved
128	0001h	Security status
129 ~ 159	0000h	Vendor unique bytes
160	0000h	Power requirement description
161	0000h	Reserved
162	0000h	Key management schemes supported
163	0000h	CF Advanced True IDE Timing Mode Capability and Setting
164 ~ 216	0000h	Reserved
217	0100h	Non-rotating media (SSD)
218 ~ 255	0000h	Reserved

11. Mechanical Specifications



➢Note : All Dimensions are in Millimeters.

12. Ordering Information

S	200	-	128G
1	2		3

1. Series Type

Series Type	Content
S	**Myung SSD 'S' Series**

2. Form factor

Form factor	Content
200	2.5 inch SATA

3. Capacity

Capacity	Content
016G	16 Gbyte
032G	32 Gbyte
064G	64 Gbyte
128G	128 Gbyte
256G	256 Gbyte
512G	512 Gbyte

13. Contact

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Thanks you.