

Myung Solid State Drive
2.5" PATA MITS Series

Product Specification

Sep / 2012
Rev. 0.3



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

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1. Revision History

- Rev. 0.1 (2011.04.29) : Initial issue
- Rev. 0.2 (2012.05.17) : Image Design & Specification Modified.
Add capacity information and Block Diagram.
- Rev. 0.3 (2012.09.18) : Datasheet Reconfirm

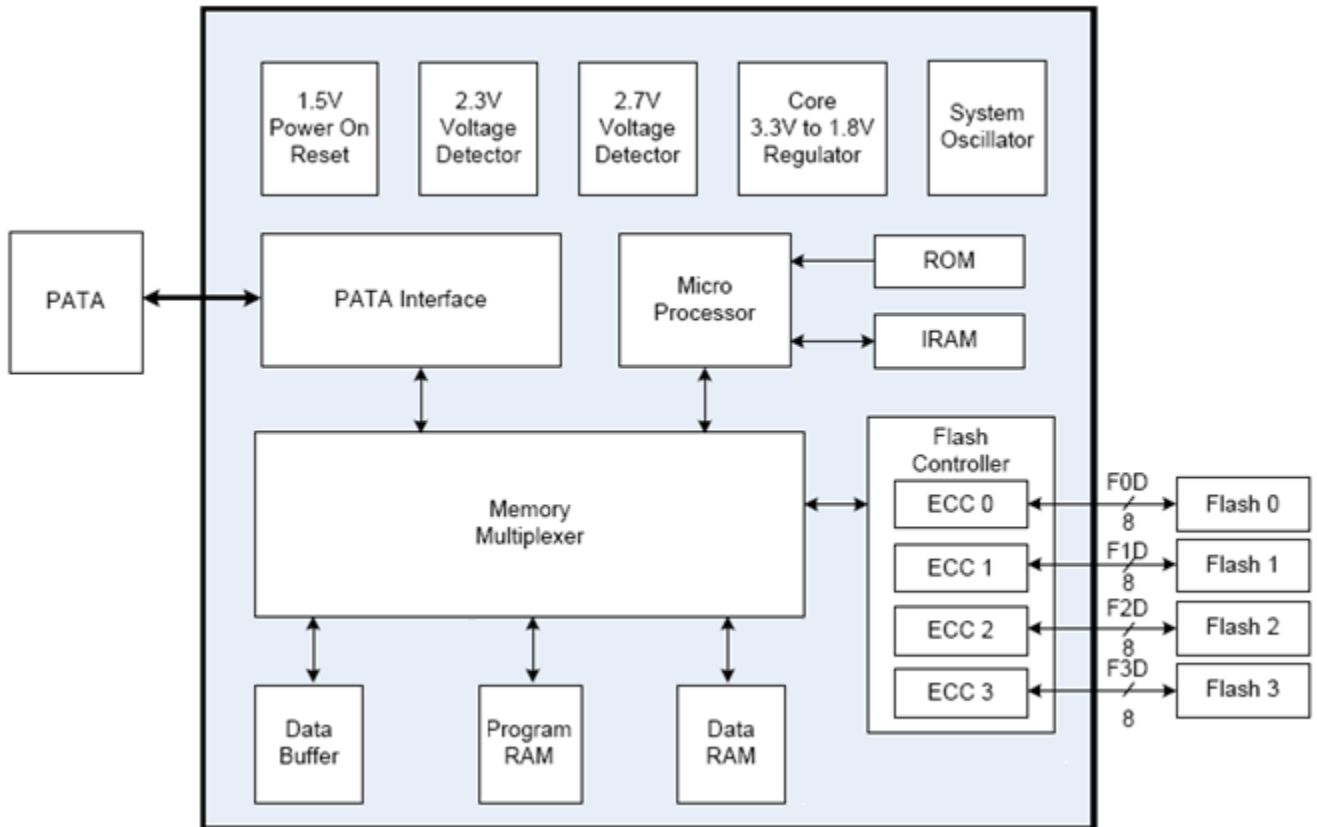
2. General Description

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

- **Compliant with ATA/ATAPI-7 specification.**
- **Transfer mode**
 - ATA/ATAPI PIO Mode 0, 1, 2, 3, 4
 - ATA/ATAPI Multi-Word DMA Mode 0, 1, 2
 - ATA/ATAPI Ultra DMA Mode 0, 1, 2, 3, 4, 5, 6
- **Uses NAND flash memory**
 - Multi Level Cell (MLC) components
- **Advanced 8/15-bit hardware BCH ECC engine**
- **Flash Management Features**
 - Bad block management
 - wear-leveling algorithm
- **Power Management Features**
- **SMART Features**
- **Security Features**
- **Host Protected Area Features**
- **EDO mode supported**
- **Storage Capacity**
 - 16GB / 32GB / 64GB
- **Temperature**
 - Industrial : - 40°C ~ 85°C
 - Storage : -50°C ~ 95°C
- **Ordering Information**
 - MITS2016GA2-S : 2.5" PATA SLC 16GB
 - MITS2032GA2-S : 2.5" PATA SLC 32GB
 - MITS2064GA2-S : 2.5" PATA SLC 64GB

4. Block Diagram



5. Specifications

Mechanical Specifications

Form Factor	2.5 Inch	
Dimensions (mm)	Length	100.2
	Width	69.8
	Height	9.5
Connector	2x20 pins connector	

Electrical Specifications

Parameter	Symbol	MIN	TYP	MAX	UNIT
Voltage Input	VCC	4.75	5.0	5.25	V

Weight of Capacities

Capacity	16GB	32GB	64GB
Weight	73g	74g	75g

Performance of Capacities

Model Number	Capacity	Sequential Read	Sequential Write	Memory Type & Tech
MITS2016GA2-S	16GB	Max 91MB/s	Max 22MB/s	SLC
MITS2032GA2-S	32GB	Max 95MB/s	Max 30MB/s	SLC
MITS2064GA2-S	64GB	Max 91MB/s	Max 60MB/s	SLC

User Addressable Sectors

Unformatted Capacity	Total User Addressable Sectors in LBA Mode
16GB	29,892,608
32GB	60,825,600
64GB	125,313,024

Power Consumption

Capacity	Idle	Active Read	Active Write
16GB	25mA	170mA	240mA
32GB	25mA	170mA	240mA
64GB	25mA	170mA	240mA

6. Reliability Characteristics

Temperature	
Storage Temperature	-65°C ~ 150°C
Operating	-40°C ~ 85°C
Non-operation	- 50°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. Connector Descriptions

7-1 Connector locations

43	41	39	37	35	33	31	29	27	25	23	21	19	17	15	13	11	09	07	05	03	01	45	47
44	42	40	38	36	34	32	30	28	26	24	22		18	16	14	12	10	08	06	04	02	46	48

Master : Short
Slave : Open

7-2 Signal Assignments

Signal	Pin Number		Signal
RESET-	1	2	Ground
DD7	3	4	DD8
DD6	5	6	DD9
DD5	7	8	DD10
DD4	9	10	DD11
DD3	11	12	DD12
DD2	13	14	DD13
DD1	15	16	DD14
DD0	17	18	DD15
Ground	19	20	(keypin)
DMARQ	21	22	Ground
DIOW-	23	24	Ground
DIOR-	25	26	Ground
IORDY	27	28	CSEL
DMACK-	29	30	Ground
INTRQ	31	32	Obsolete
DA1	33	34	PDIAG-
DA0	35	36	DA2
CS0-	37	38	CS1-
DASP-	39	40	Ground
+5V	41	42	+5V
Ground	43	44	NC
NC	45	46	NC
NC	47	48	NC

8. Supports Command List

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 Autosave	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
CFA Feature Set	
40. CFA Request Extended Error Code	03h
41. CFA Write Sectors Without Erase	38h
42. CFA Erase Sectors	C0h
43. CFA Writer Multiple Without Erase	CDh
44. CFA Translate Sector	87h
45. Set Features Enable/Disable 8-bit Transfer	EFh

9. SMART

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.

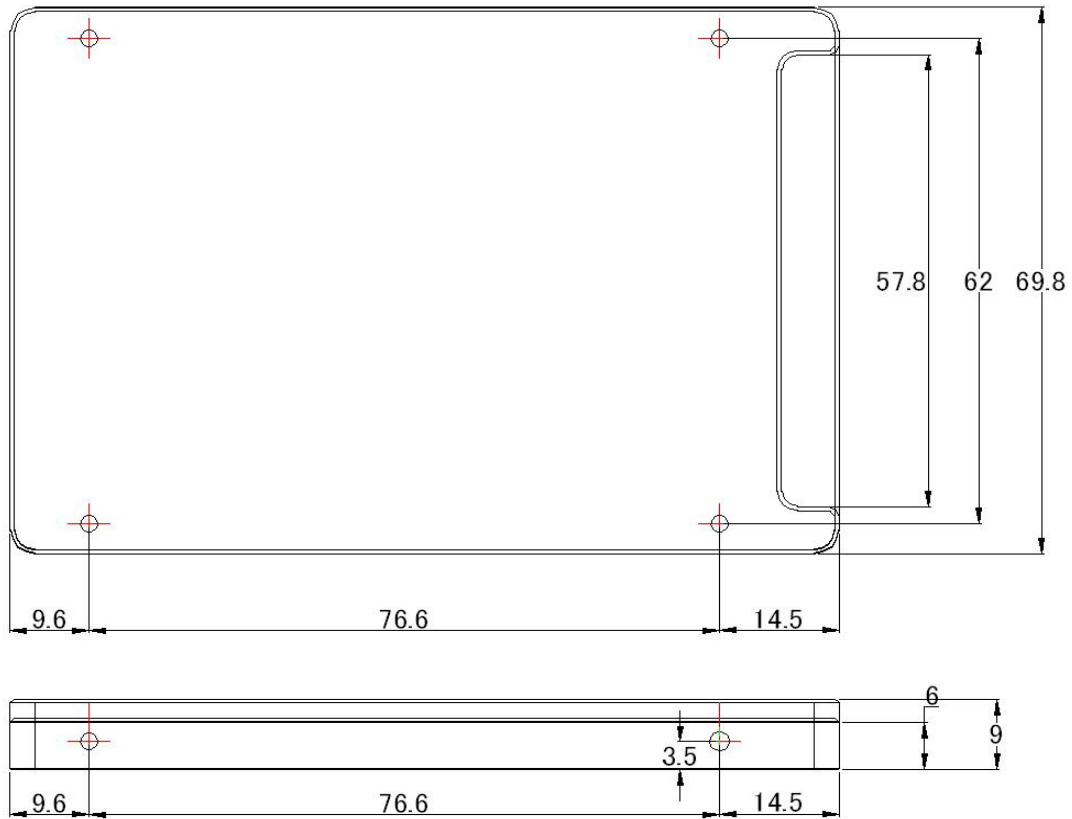
Command	Command Code (Hex)
SMART Read Data	D0h
SMART Read Attribute Threshold	D1h
SMART Enable/Disable Auto save	D2h
SMART Save Attribute Values	D3h
SMART Execute OFF-LINE Immediate	D4h
SMART Read Log	D5h
SMART Write Log	D6h
SMART Enable Operations	D8h
SMART Disable Operations	D9h
SMART Return Status	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	Number of run time bad block (398 = MSB, 399 = LSB)
400	Number of spare block
511	Data structure checksum

10. Mechanical Specifications



➤Note : All Dimensions are in Millimeters.

11. Ordering Information

MIT S 2 016G A 2 - S

1 2 3 4 5 6 7

1. MIT : Myung Info. Tech

2. S : SSD

3. Form factor

Form factor	Content
2	2.5 Inch Drive

4. Capacity

Capacity	Content
016G	16Gbyte
032G	32Gbyte
064G	64Gbyte

5. BusArchitecture

Interface	Content
A	PATA

6. Product Generation

Generation	Content
2	SMI

7. Product Memory Type

Memory	Content
S	SLC

Sample)

MITS2032GA2-S

Product Spec

Form factor : 2.5 Inch PATA

Capacity : 32 GB

Interface : PATA

Controller : SMI

Memory : SLC

12. Contact

Myung Information Technologies Co., Ltd.

Headquarters : 82-43-218-8400

644-5 Gakri Ochang Cheongwon Chungbuk Korea

Customer service : 82-2-3273-9700

82-2-1577-1377

102 Terminal Electronic Market 40-696 Hangangro 3Ga Yongsangu Seoul Korea

Home page : <http://www.myung.co.kr>

<http://www.my-ssd.com>

Thanks you.

