



2.5 inch SATA SSD

ISSS332

16GB 、 32GB 、 64GB 、 128GB 、 256GB
、 512GB 、 1TB

Product Datasheet

Version 7.0





Revision History

Revision	Date	Description	Editor
1.0	Feb.2016	Initial release	Sway Lin
2.0	Apr.2016	Modify SLC data & Product Dimensions Update	Sway Lin
3.0	Apr.2016	Add A+SLC	Sway Lin
4.0	May.2017	Modify performance Datasheet format	Sway Lin
5.0	May.2017	Add Special Feature Specification	Sway Lin
6.0	Aug.2017	Add TBW	Sway Lin
7.0	Nov.2017	Modify page 14	Sway Lin



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Key Features:

- **Capacity:**
 - MLC : 16GB, 32GB, 64GB, 128GB, 256GB, 512GB, 1TB
Endurance: 3,000 P/E cycles
 - SLC : 4GB, 8GB, 16GB
Endurance: 60,000 P/E cycles
 - A+SLC(3D MLC) : 128GB, 256GB
Endurance: 30,000 P/E cycles
- **NAND Flash:** 2D MLC, SLC, 3D MLC
- **Form Factor:** 2.5 inch SATA
- **Compatibility:**
 - Serial ATA 6Gb/s interface
 - Complies with ATA-8 Standard
 - Complies ATA Revision 3.1
 - S.M.A.R.T feature supported
 - NCQ Command set supported
- **Performance**
 - Sequential Read: Up to 560MB/s
 - Sequential Write: Up to 440MB/s
 - Random 4K Read: Up to 70,000
 - Random 4K Write: Up to 72,000
- **Power Consumption:** (Typical@1TB)
 - Idle: 0.38W
 - Partial: 0.38W
 - Slumber: 0.06W
 - SR/SW: 1.71W / 3.35W
 - RR/RW: 1.55W / 2.21W
- **Temperature:**
 - Operation: -10°C ~ 80°C(Commercial)
 - Operation: -40°C ~ 90°C(Industrial)
 - Non-operation: -55°C ~ 95°C
- **Reliability**
 - Shock: 1500G/0.5ms
 - Vibration 20G Peak, 10~2000Hz
 - MTBF: 1,500,000 hours



1.0 General Description

Taking the advantages of NAND flash memory, Solid State Drive (SSD) provides better solutions on durability, performance, and power efficiency over traditional hard disk drives. Employing static wear-leveling technology to maximize SSD lifetime, the SSD solutions are your best choice on wide-ranged mobile computing devices and industrial electronic products. With standard SATA form factor or customized module form factor, The 2.5" ADATA SSD ISSS332 offers capacities up to 1TB using Synchronous MLC NAND type flash memories.

2.0 Mechanical Specification

”All product specifications not covered in this document (electrical performance, appearance, etc.) are in accordance with ADATA’s defined norms and standards. “

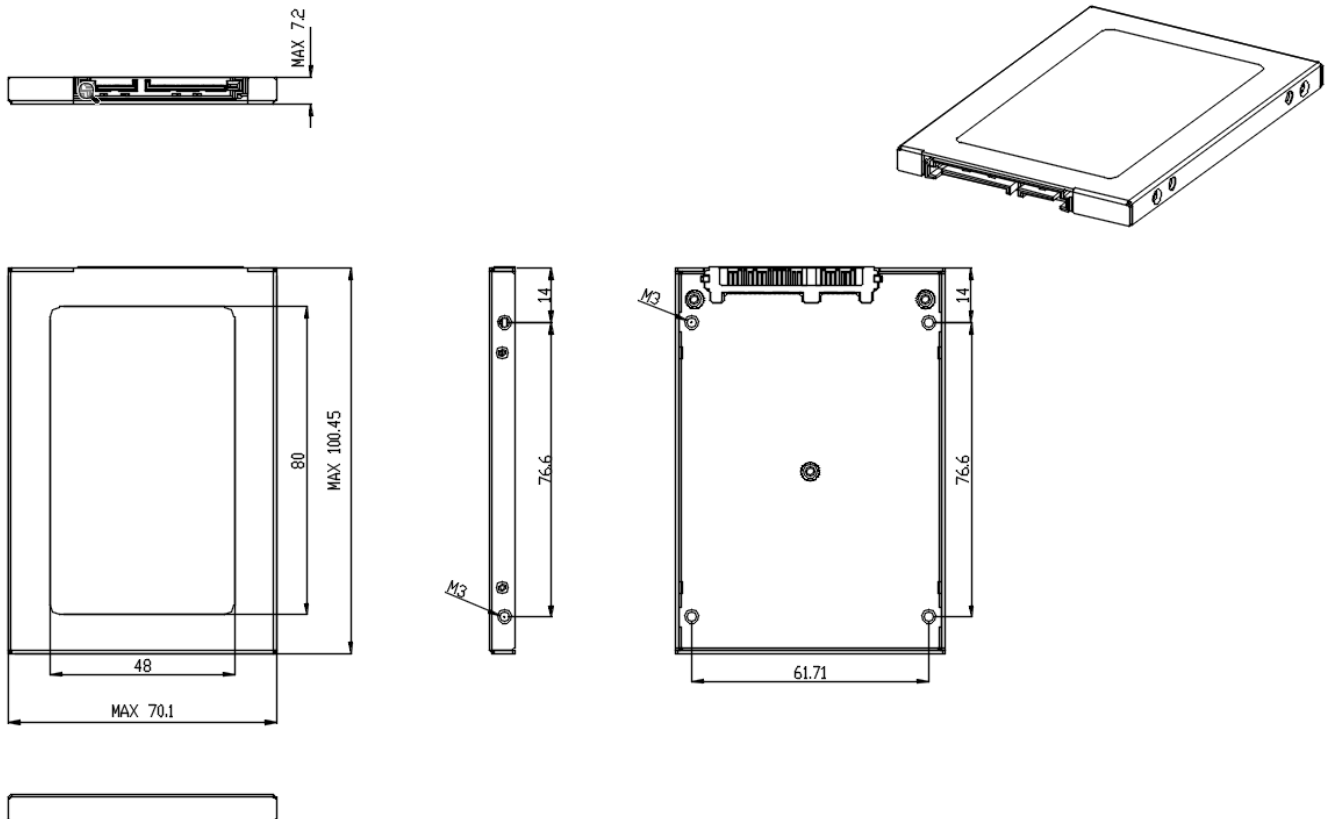
2.1 Physical Dimensions and Weight

Table 2-1 Dimensions and Weight

Model	Length(mm)	Width(mm)	Height(mm)	Weight(gram)
ISSS332-PLP	Max 100.45	Max 70.1	Max 7.2	Max 55.84

2.2 Product Dimensions

Figure 2-1 Product Dimensions of 2.5 inch





3.0 Product Specification

3.1 Interface and configuration

- Compliant with Serial ATA International Organization: Serial ATA Revision 3.1
- Compliant SSD Alliance compliance program.
- Support ATA-8 Command Set
- Support 1-port 1.5/3.0/6.0 Gbps SATA I/II/III interface.

3.2 Capacity

Table 3-2 User Addressable Sectors

Model	ISSS332				
Unformatted Capacity	4GB	8GB	16GB	32GB	64GB
Total User Addressable Sectors (LBA Mode)	7,835,184	15,649,200	31,277,232	62,521,344	125,045,424
Model	ISSS332				
Unformatted Capacity	128GB	256GB	512GB	1TB	
Total User Addressable Sectors (LBA Mode)	250,069,680	500,118,192	1,000,215,216	2,000,409,264	

Total useable capacity may be less (due to formatting, flash management, and other functions).
1GB=1,000,000,000 bytes; 1sector = 512bytes.

3.3 Performance

3.3.1 Read/Write & ATTO Performance

Table 3-3-1 Read/Write Performance (ATTO)

MLC Flash type	16GB	32GB	64GB	128GB	256GB	512GB	1TB	Unit
Sequential Read	112	279	554	559	560	560	563	MB/s
Sequential Write	19	49	96	186	376	442	444	MB/s

SLC Flash type	4GB	8GB	16GB	Unit
Sequential Read	39	248	493	MB/s
Sequential Write	20	66	132	MB/s

A+SLC Flash type	128GB	256GB	Unit
Sequential Read	560	560	MB/s
Sequential Write	485	450	MB/s

-Seq. Read & Write speed test by ATTO

-The system conditions and test environment may affect test result

3.3.2 Read/Write & CDM Performance

Table 3-3-2 Read/Write Performance (CDM)

MLC Flash type	16GB	32GB	64GB	128GB	256GB	512GB	1TB	Unit
Sequential Q32 Read	111	274	509	521	523	521	506	MB/s
Sequential Q32 Write	19	48	97	187	372	449	444	MB/s
4K-QD32 Read	42	106	205	284	291	288	290	MB/s
4K-QD32 Write	19	49	94	188	290	242	298	MB/s

SLC Flash type	4GB	8GB	16GB	Unit
Sequential Q32 Read	39	245	471	MB/s
Sequential Q32 Write	20	66	132	MB/s
4K-QD32 Read	31	132	255	MB/s
4K-QD32 Write	20	71	134	MB/s

A+SLC Flash type	128GB	256GB	Unit
Sequential Q32 Read	504	504	MB/s
Sequential Q32 Write	456	453	MB/s
4K-QD32 Read	262	288	MB/s
4K-QD32 Write	331	310	MB/s

-Seq. Read & Write speed test by Crystal Disk Mark 3.0.1

3.3.3 IOPS Performance

Table 3-3-3 Read/Write & IOPS Performance

MLC Flash type	16GB	32GB	64GB	128GB	256GB	512GB	1TB	Unit
4K Random Read	10.4K	25.9K	50.0K	66.6K	66.1K	65.7K	70.8K	IOPS
4K Random Write	4.5K	11.7K	23.1K	45.8K	60.4K	56.9K	72.1K	IOPS

SLC Flash type	4GB	8GB	16GB	Unit
4K Random Read	7.6K	32.1K	62.1K	IOPS
4K Random Write	0.7K	2.4K	30.5K	IOPS

A+SLC Flash type	128GB	256GB	Unit
4K Random Read	64.1K	70.2K	IOPS
4K Random Write	80.8K	75.9K	IOPS

-Seq. Read & Write speed test by IOMeter 2010 with "00" pattern (Queue depth of 32; Measurements are performed on 10% capacity of LBA range. Write cache enable)

-IOPS Test Utility: IOMeter 2010 (Queue depth of 32; Measurements are performed on 10% capacity of LBA range. Write cache enable)

-The system conditions and test environment may affect test result

3.3.4 Read/Write & AS-SSD Performance

Table 3-3-4 Read/Write Performance (AS-SSD)

MLC Flash type	16GB	32GB	64GB	128GB	256GB	512GB	1TB	Unit
Sequential Read	105	258	469	502	496	503	503	MB/s
Sequential Write	18	47	91	180	360	419	422	MB/s
4K-64 Thrd Read	39	97	187	268	275	275	265	MB/s
4K-64 Thrd Write	16	42	77	161	282	267	255	MB/s

SLC Flash type	4GB	8GB	16GB	Unit
Sequential Read	37	230	436	MB/s
Sequential Write	19	50	108	MB/s
4K-64 Thrd Read	28	121	236	MB/s
4K-64 Thrd Write	14	61	123	MB/s

A+SLC Flash type	128GB	256GB	Unit
Sequential Read	503	502	MB/s
Sequential Write	448	423	MB/s
4K-64 Thrd Read	244	265	MB/s
4K-64 Thrd Write	276	264	MB/s

-Seq. Read & Write speed test by AS-SSD with Random pattern

3.4 Electrical

3.4.1 Operating Voltage

Table 3-4-1 Operating Voltage

Operating Voltage	
Input Power	DC 5V ± 5%
Maximum Ripple	100mV p-p or less

3.4.2 Power Consumption (Typical)

Table 3-4-2 Power Consumption (Typical)

MLC Flash type	16GB	512GB	1TB	Unit
Idle	0.40	0.41	0.38	w
Partial	0.39	0.10	0.38	w
Slumber	0.05	0.04	0.06	w
Sequential Read	0.71	1.47	1.71	w
Sequential Write	0.73	3.11	3.35	w
Random Read	0.69	1.38	1.55	w
Random Write	0.72	2.01	2.21	w

SLC Flash type	4GB	16GB	Unit
Idle	0.34	0.41	w
Partial	0.11	0.11	w
Slumber	0.03	0.03	w
Sequential Read	0.66	1.38	w
Sequential Write	0.68	1.39	w
Random Read	0.66	1.42	w
Random Write	0.68	1.36	w

A+SLC Flash type	256GB	Unit
Idle	0.5	w
Partial	0.5	w
Slumber	0.04	w
Sequential Read	1.2	w
Sequential Write	1.08	w
Random Read	1.54	w
Random Write	0.91	w

3.5 Environmental Conditions

Table 3-5 Temperature, Humidity, Shock, Vibration

Feature	Operating(Commercial)	Operating(Industrial)	Non-Operating
Temperature	-10°C to 80°C	-40°C to 90°C	-40°C to 90°C
Humidity	5%~95% RH, non-condensing		
Vibration	20G Peak, 80~2000Hz		
Shock	1500G, duration 0.5ms, Half Sine Wave		

3.6 Reliability

Table 3-6-1 Reliability Specification

Parameter	Value
Mean Time Between Failures (MTBF) The MTBF statistics were calculated by Part Count Method, not relevant to individual units	1,500,000 hours

3.7 Endurance

Endurance for the SSD can be predicted based on the operating workload. The tables as below shows the drive lifetime for each SSD capacity based JESD219 Client workload.

Table 3-7-1 Tera Byte Written

MLC	16GB	32GB	64GB	128GB	256GB	512GB	1TB	Unit
TBW	21	43	86	172	345	690	1381	TB
SLC	4GB	8GB	16GB					Unit
TBW	104	222	445					TB

A+ SLC SSD is high capacity and endurance product. The tables as below shows the drive lifetime for each SSD capacity based JESD219 Enterprise workload.

Table 3-7-2 Tera Byte Written

A+SLC	128GB	256GB						Unit
TBW	512	1030						TB



4.0 Supported Command Sets

4.1 ATA Feature Command Sets

ADATA ISSS332 supports all the mandatory ATA commands defined in ATA-8 specification. The supported command sets are listed as below.

Table 4-1 Supported ATA Command Table

Command Name	Code	Protocol
General Feature Set		
Execute Device Diagnostic	90h	Execute device diagnostic
Flush Cache	E7h	Non-data
Identify Device	ECh	PIO data-in
Initialize Drive Parameters	91h	Non-data
Read DMA	C8h	DMA
Read Log Ext	2Fh	PIO data-in
Read Multiple	C4h	PIO data-in
Read Sector(s)	20h	PIO data-in
Read Verify Sector(s)	40h or 41h	Non-data
Set Feature	EFh	Non-data
Set Multiple Mode	C6h	Non-data
Write DMA	CAh	DMA
Write Multiple	C5h	PIO data-out
Write Sector(s)	30h	PIO data-out
NOP	00h	Non-data
Read Buffer	E4h	PIO data-in
Write Buffer	E8h	PIO data-out
Power Management Feature Set		
Check Power Mode	E5h or 98h	Non-data
Idle	E3h or 97h	Non-data
Idle Immediate	E1h or 95h	Non-data
Sleep	E6h or 99h	Non-data
Standby	E2h or 96h	Non-data
Standby Immediate	E0h or 94h	Non-data

Security Mode Feature Set		
Security Set Password	F1h	PIO data-out
Security Unlock	F2h	PIO data-out
Security Erase Prepare	F3h	Non-data
Security Erase Unit	F4h	PIO data-out
Security Freeze Lock	F5h	Non-data
Security Disable Password	F6h	PIO data-out
SMART Feature Set		
SMART Disable Operations	B0h	Non-data
SMART Enable/Disable Autosave	B0h	Non-data
SMART Enable Operations	B0h	Non-data
SMART Execute OFF-LINE Immediate	B0h	Non-data
SMART Read Log	B0h	PIO data-in
SMART Read Data	B0h	PIO data-in
SMART Read Threshold	B0h	PIO data-in
SMART Return Status	B0h	Non-data
SMART Save Attribute Values	B0h	Non-data
SMART Write Log	B0h	PIO data-out
Host Protected Area Feature Set		
Read Native Max Address	F8h	Non-data
Set Max Address	F9h	Non-data
Set Max Set Password	F9h	PIO data-out
Set Max Lock	F9h	Non-data
Set Max Freeze Lock	F9h	Non-data
Set Max Unlock	F9h	PIO data-out
48-bit Address Feature Set		
Flush Cache Ext	EAh	Non-data
Read Sector(s) Ext	24h	PIO data-in
Read DMA Ext	25h	DMA
Read Multiple Ext	29h	PIO data-in
Read Native Max Address Ext	27h	Non-data
Read Verify Sector(s) Ext	42h	Non-data
Set Max Address Ext	37h	Non-data
Write DMA Ext	35h	DMA
Write Multiple Ext	39h	PIO data-out
Write Sector(s) Ext	34h	PIO data-out

NCQ Feature Set		
Read FPDMA Queued	60h	DMA Queued
Write FPDMA Queued	61h	DMA Queued
Others		
Data Set Management	06h	DMA
Seek	70h	Non-data

4.2 Identify Device

ADATA ISSS332 responds to ATA IDENTIFY DEVICE command with a pre-defined string of information on features, hardware and firmware revision information.

Table 4-2 IDENTIFY DEVICE Table

Word	F / V	Default Value	Description
0	F	0040h	General configuration
1	X	XXXXh	Default number of cylinders
2	V	0000h	Reserved
3	X	00XXh	Default number of heads
4	X	0000h	Obsolete
5	X	0240h	Obsolete
6	F	XXXXh	Default number of sectors per track
7 - 8	V	XXXXh	Number of sectors per card (Word 7 = MSW, Word 8 = LSW)
9	X	0000h	Obsolete
10 - 19	F	XXXXh	Serial number in ASCII (Right justified)
20	X	0002h	Obsolete
21	X	0002h	Obsolete
22	X	0000h	Obsolete
23 - 26	F	XXXXh	Firmware revision in ASCII Big Endian Byte Order in Word
27 - 46	F	XXXXh	Model number in ASCII (Left justified) Big Endian Byte Order in Word
47	F	8001h	Maximum number of sectors on Read/Write Multiple command
48	F	0000h	Reserved
49	F	0F00h	Capabilities
50	F	4000h	Capabilities

51	F	0200h	PIO data transfer cycle timing mode
52	X	0000h	Obsolete
53	F	0007h	Field validity
54	X	XXXXh	Current numbers of cylinders
55	X	XXXXh	Current numbers of heads
56	X	XXXXh	Current sectors per track
57 - 58	X	XXXXh	Current capacity in sectors (LBAs) (Word 57 = LSW , Word 58 = MSW)
59	F	0101h	Multiple sector setting
60 - 61	F	XXXXh	Total number of user addressable logical sectors for 28-bit commands (DWord)
62	X	0000h	Reserved
63	F	0207h	Multiword DMA transfer Supports MDMA mode 0, 1 and 2
64	F	0003h	Advanced PIO modes supported
65	F	0078h	Minimum Multiword DMA transfer cycle time per word
66	F	0078h	Recommended Multiword DMA transfer cycle time
67	F	0078h	Minimum PIO transfer cycle time without flow control
68	F	0078h	Minimum PIO transfer cycle time with IORDY flow control
69	F	4000h	Additional supported
70 - 74	F	0000h	Reserved
75	F	001Fh	Queue depth
76	F	070Eh	Serial ATA capabilities <ul style="list-style-type: none"> • Supports Serial ATA Gen3 • Supports Serial ATA Gen2 • Supports Serial ATA Gen1 • Supports Phy event counters log • Supports receipt of host initiated power management requests • Supports Native Command Queuing
77	F	0080h	Serial ATA additional capability <ul style="list-style-type: none"> • DevSleep_to_ReducedPwerState
78	F	0148h	Serial ATA features supported <ul style="list-style-type: none"> • Supports Device Sleep • Supports software settings preservation • Device supports initiating power management

79	V	0040h	Reserved
80	F	03F0h	Major version number (ACS-2)
81	F	0000h	Minor version number
82	F	742Bh	Command sets supported 0
83	F	7500h	Command sets supported 1
84	F	4023h	Command sets supported 2
85 - 87	V	XXXXh	Command set/feature enabled
88	V	007Fh	Ultra DMA mode supported and selected
89	F	0003h	Time required for a Normal Erase mode Security Erase Unit command
90	F	0001h	Time required for an Enhanced Erase mode Security Erase Unit command
91	V	0000h	Current advanced power management value
92	V	FFFEh	Master password identifier
93 - 99	V	0000h	Reserved
100 - 103	V	XXXXh	Maximum user LBA for 48-bit address feature set
104	V	0000h	Reserved
105	F	0100h	Maximum number of 512-byte blocks per Data Set Management command
106 - 127	V	0000h	Reserved
128	V	0001h	Security status
129 - 159	X	XXXXh	Vendor specific
160	F	0000h	Power requirement description
161	X	0000h	Reserved
162	F	0000h	Key management schemes supported
163	F	0000h	CF Advanced True IDE Timing mode capability and setting
164 - 168	V	0000h	Reserved
169	F	0001h	Data Set Management supported
170 - 216	V	XXXXh	Reserved
217	F	0001h	Non-rotating media (SSD)
218 - 221	X	0000h	Reserved
222	F	107Fh	Transport major revision (SATA Rev 3.1)
223 - 254	X	0000h	Reserved
255	X	XXXXh	Integrity word

Notes:

1. F = content (byte) is fixed and does not change.
2. V = content (byte) is variable and may change depending on the state of the device or the commands executed by the device.
3. X = content (byte) is vendor specific and may be fixed or variable.

4.3 S.M.A.R.T. Feature Set

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology; often written as SMART) is a monitoring system for HDDs and SSDs to detect and report on various indicators of reliability and drive status. Host can monitor the healthy condition of SSD drive by analyzing S.M.A.R.T. data and inform user to take action if necessary. ISSS332 supports specific S.M.A.R.T. for industrial and server application including drive life monitoring, wear leveling, total data read/write on host/flash interface. By leveraging S.M.A.R.T., user can easily not only monitor drive status but also understand the workload to help evaluating the reliability.

Table 4-3-1 S.M.A.R.T. Feature Register Values

Value	Command	Value	Command
D0h	Read Data	D5h	Read Log
D1h	Read Attribute Threshold	D6h	Write Log
D2h	Enable/Disable Autosave	D8h	Enable SMART operations
D3h	Save Attribute Values	D9h	Disable SMART operations
D4h	Execute Off-Line Immediate	DAh	Return Status

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

4.3.1 SMART Data Structure

The following 512byte make up the device SMART data structure. Users can obtain the data using Read Data command (D0h).

Table 4-3-2 S.M.A.R.T. Data Structure

Byte	F / V	Description
0 – 1	X	Revision code
2 – 361	X	SMART attribute & value [Table 4-3-3]
362	V	Off-line data collection status
363	X	Self-test execution status byte
364 – 365	V	Total time in seconds to complete off-line data collection activity
366	X	Vendor specific
367	F	Off-line data collection capability
368 – 369	F	SMART capability
370	F	Error logging capability Bit 7-1 : Reserved Bit 0 = 1 : Device error logging supported
371	X	Vendor specific
372	F	Short self-test routine recommended polling time (in minutes)
373	F	Extended self-test routine recommended polling time (in minutes)
374	F	Conveyance self-test routine recommended polling time (in minutes)
375 – 385	R	Reserved
386 – 395	F	Firmware version
396 – 399	F	Reserved
400 – 405	F	“SM2246”
406 – 510	X	Vendor specific
511	V	Data structure checksum

Notes:

F = content (byte) is fixed and does not change.

V = content (byte) is variable and may change depending on the state of the device or commands executed by the device.

X = content (byte) is vendor specific and may be fixed or variable.

R = content (byte) is reserved and shall be zero.



4.3.2 SMART Attribute

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

Table 4-3-3 S.M.A.R.T. Attribute

Attribute ID (hex)	Raw Attribute Value							Attribute Name
	MSB	00	00	00	00	00	00	
01	MSB	00	00	00	00	00	00	Read error rate
05	LSB	MSB	00	00	00	00	00	Reallocated sectors count
09	LSB	-	-	MSB	00	00	00	Power-on hours
0C	LSB	-	-	MSB	00	00	00	Power cycle count
A0	LSB	-	-	MSB	00	00	00	Uncorrectable sector count when read/write
A1	LSB	MSB	00	00	00	00	00	Number of valid spare block
A3	LSB	MSB	00	00	00	00	00	Number of initial invalid block
A4	LSB	-	-	MSB	00	00	00	Total erase count
A5	LSB	-	-	MSB	00	00	00	Maximum erase count
A6	LSB	-	-	MSB	00	00	00	Minimum erase count
A7	LSB	-	-	MSB	00	00	00	Average erase count
A8	LSB	-	-	MSB	00	00	00	Max. erase count of Spec.
A9	LSB	-	-	MSB	00	00	00	Remain Life(percentage)
AF	LSB	-	-	MSB	00	00	00	Program fail count in worst die
B0	LSB	MSB	00	00	00	00	00	Erase fail count in worst die
B1	LSB	-	-	MSB	00	00	00	Total wear level count
B2	LSB	MSB	00	00	00	00	00	Runtime invalid block count
B5	LSB	-	-	MSB	00	00	00	Total program fail count
B6	LSB	MSB	00	00	00	00	00	Total erase fail count
C0	LSB	MSB	00	00	00	00	00	Power-off retract count
C2	MSB	00	00	00	00	00	00	Controlled temperature
C3	LSB	-	-	MSB	00	00	00	Hardware ECC recovered
C4	LSB	-	-	MSB	00	00	00	Reallocation event count
C5	LSB			MSB	00	00	00	Current pending sector count
C6	LSB	-	-	MSB	00	00	00	Uncorrectable error count off-line
C7	LSB	MSB	00	00	00	00	00	Ultra DMA CRC error count
E8	LSB	MSB	00	00	00	00	00	Available reserved space
F1	LSB	-	-	-		-	MSB	Host written LBAs (each write unit = 32MB)
F2	LSB	-	-	-		-	MSB	Host read LBAs (each read unit = 32MB)
F5	LSB	-	-	-		-	MSB	Total data written to flash (each write unit = 32MB)

5.0 Special Feature Specification

5.1 PLP (Power Loss Protection) Function

During a normal system shutdown, the operating system would issue STANDBY IMMEDIATE or FLUSH CACHE command to signal SSD drive to flush all system and user data in cache to NAND Flash to prepare for system shutdown, therefore preserving the data after the power is shutoff.

However, during an unintentional shutdown, the data in cache may not be able to be flushed to NAND Flash in time before power disappeared. It is very important for SSD drive to implement intelligent protection schemes to preserve data integrity in the case of unexpected power loss. An intelligent hardware architecture showing in the following picture that is to combine sensitive voltage monitors with banks of power-retaining capacitors. ADATA's PLP supplies its SSDs with enough power to continue buffered read-write operations until completion. When a power loss occurs, the power monitor circuit detects the power drop and instructs the controller to back up all data in the buffer before the power drains from the capacitor banks. Using this method, all important data is saved without corruption.

By implementing PLP function including HW and FW, voltage detection circuit will detect the voltage drop and deliver the alarm to SSD FW. This process guarantees the integrity of all data and also gets rid of the risk of data and FW lost.

Figure 5-1 PLP architecture

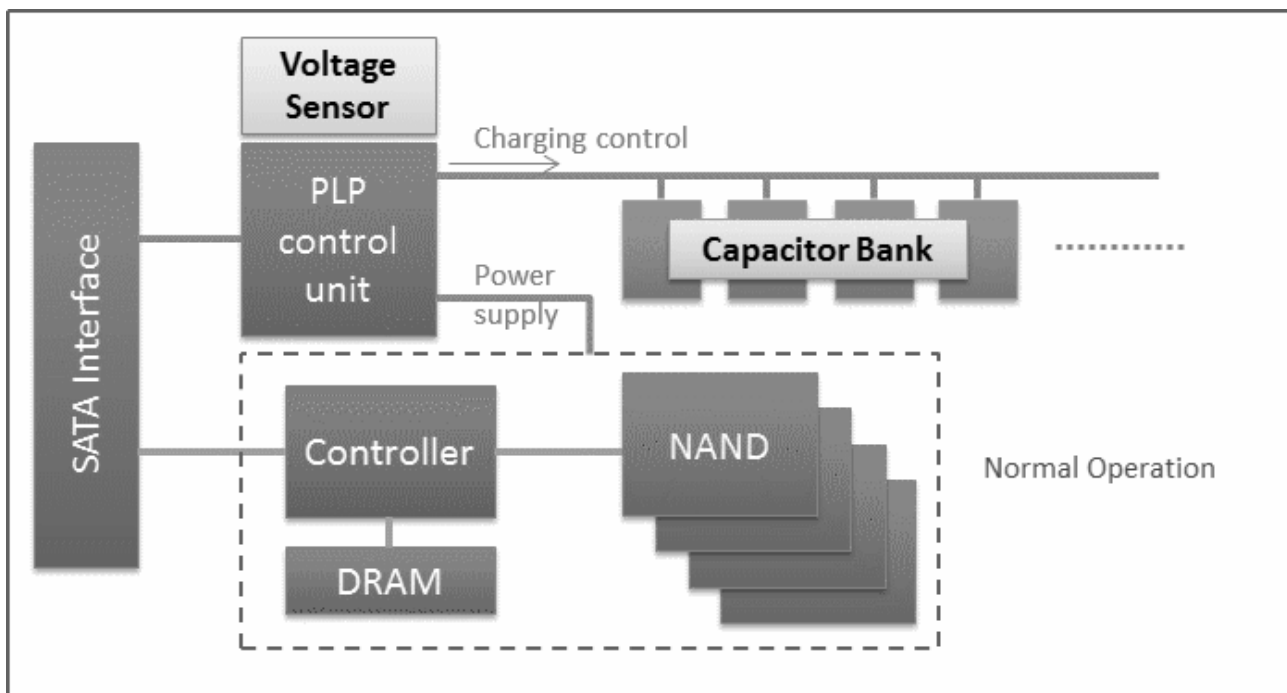
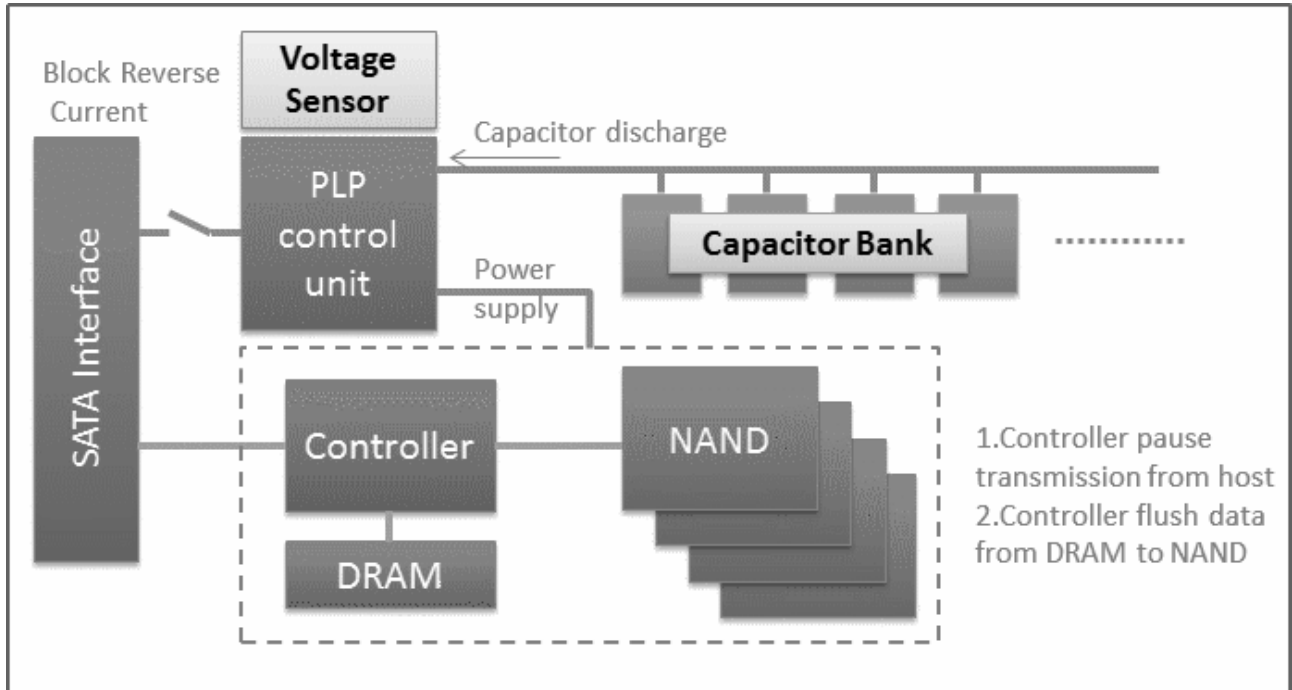


Figure 5-2 PLP Operation



6.0 Pin Assignment and Descriptions

6.1 7+15Pin SATA Interface

■ SATA Interface

Table 6-1 SATA Interface

Signals	S1	GND	System Ground
	S2	Rx+	Differential signals pair Receive
	S3	Rx-	
	S4	GND	System Ground
	S5	Tx-	Differential signals pair Transmit
	S6	Tx+	
	S7	GND	System Ground
Power	P1	V33	NC
	P2	V33	NC
	P3	DEVSLP	Device Sleep Signal Pin
	P4	GND	System Ground
	P5	GND	System Ground
	P6	GND	System Ground
	P7	V5/PC	+5V Power supply, 2 nd Pre-charge
	P8	V5	+5V Power supply
	P9	V5	+5V Power supply
	P10	GND	System Ground
	P11	DAS	Reserved
	P12	GND	System Ground
	P13	V12/PC	NC
	P14	V12	NC
P15	V12	NC	



7.0 Product Line up

Table 7-0 Product Line up

Part Number	Capacity	Type	Remark
ISSS332-004GX ^{note} P	4GB	2.5 inch SATA	
ISSS332-008GX ^{note} P	8GB	2.5 inch SATA	
ISSS332-016GX ^{note} P	16GB	2.5 inch SATA	
ISSS332-032GX ^{note} P	32GB	2.5 inch SATA	
ISSS332-064GX ^{note} P	64GB	2.5 inch SATA	
ISSS332-128GX ^{note} P	128GB	2.5 inch SATA	
ISSS332-256GX ^{note} P	256GB	2.5 inch SATA	
ISSS332-512GX ^{note} P	512GB	2.5 inch SATA	
ISSS332-001TX ^{note} P	1TB	2.5 inch SATA	

Notes:

OP. Temperature:

M : MLC, Normal, -10~80°C

T : MLC, Industrial, -40~90°C

F : SLC, Normal, -10~80°C

W : SLC, Industrial, -40~90°C

J : A+SLC, Normal, -10~80°C

K : A+SLC, Industrial, -40~90°C

8.0 Package Specifications

Figure 8-1 Package

