



Industrial 2.5" SATA SSD Specification

(ACHI EVER SERIES, SLC)

Version 1.0

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1.1. Introduction

FLEXXON's ACHIEVER 2.5" SSD has SATA III interface, and is fully compliant with standard 2.5-inch Form Factor. It supports high performance, high reliability and low power management. It is suitable for heavy-loading or multi-tasking applications.

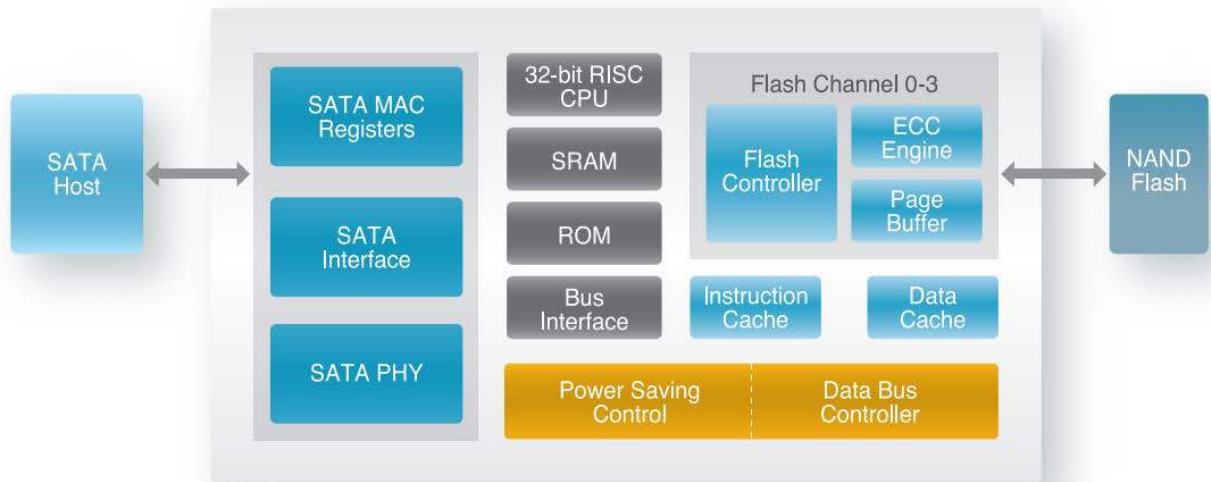


Figure 1-1 ACHIEVER 2.5" SSD Controller Block Diagram

1.2. Product Overview

- ❖ **Flash**
 - SLC
- ❖ **Capacity**
 - 4GB up to 128GB
- ❖ **SATA Interface**
 - Compliant with SATA Revision 3.1
 - Compatible with SATA 1.5Gbps, 3Gbps and 6Gbps interface
- ❖ **ECC Scheme**
 - Up to 66 bits error in 1K Byte data
- ❖ **UART Function**
- ❖ **GPIO**
- ❖ **Support SMART and TRIM commands**
- ❖ **Low Power Management**
- ❖ **Internal data shaping technique increase data endurance**
- ❖ **Global Wear Leveling Algorithm**
- ❖ **Temperature Range**
 - Operation (Silver) : 0°C ~ 70°C
 - Operation (Diamond) : -40°C ~ 85°C
 - Storage: -55°C ~ 95°C
- ❖ **RoHS Compliant**

2.1. Performance

Table 2-1 Performance of ACHIEVER 2.5" SSD

Capacity	Sequential	
	Read (MB/s)	Write (MB/s)
4GB~128GB	200	180

NOTES:

1. The performance was measured using CrystalDiskMark with SATA 6Gbps host.
2. Performance may differ according to flash configuration and platform.

2.2. Power

Table 2-2 Supply Voltage of ACHIEVER 2.5" SSD

Parameter	Rating
Operating Voltage	5V +/- 5%

Table 2-3 Power Consumption of ACHIEVER 2.5" SSD

Parameter	Power Consumption
Idle (max.)	0.4 W
Active (max.)	2.75 W

NOTE:

Power Consumption may differ according to flash configuration and platform.

2.3. TBW (Terabytes Written)

Capacity	TBW
4GB	120
8GB	240
16GB	481
32GB	962
64GB	1923
128GB	3760

NOTES:

1. TBW may differ according to flash configuration and platform.
2. Samples were tested under JESD218A endurance test method and JESD219A endurance workloads specification.

2.4. MTBF

MTBF, an acronym for Mean Time Between Failures, is a measure of a device's reliability. Its value represents the average time between a repair and the next failure. The predicted result of FLEXXON's ACHIEVER 2.5" SSD is more than 2 million hours.

2.5. Data Retention

- 10 years if > 90% life remaining (@25C)
- 1 year if < 10% life remaining (@25C)

3. ENVIRONMENTAL SPECIFICATIONS



Test Items	Test Conditions
Storage Temperature	-55°C ~ 95°C
Operating Temperature	Silver Grade: 0°C ~ 70°C Diamond Grade: -40°C ~ 85°C
Storage Humidity	Silver Grade: 40°C, 95% RH Diamond Grade: 55°C, 95% RH
Operating Humidity	Silver Grade: 40°C, 93% RH Diamond Grade: 55°C, 95% RH
Shock	1500G, Half Sin Pulse Duration 0.5ms
Vibration	80Hz ~ 2000Hz/20G, 20Hz ~ 80Hz/1.52mm, 3 axis/60min
Drop	80cm free fall, 6 face of each unit, 2 times each
Bending	≥ 20N, Hold 1 min/5 times
ESD	24°C, 49% RH, +/-4KV 25 times, Air +/-8KV 10 times

Table 4-1 Supported ATA Command Set

#	Command	Code	Protocol
General Feature Set			
	Execute Drive Diagnostic	90h	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 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
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

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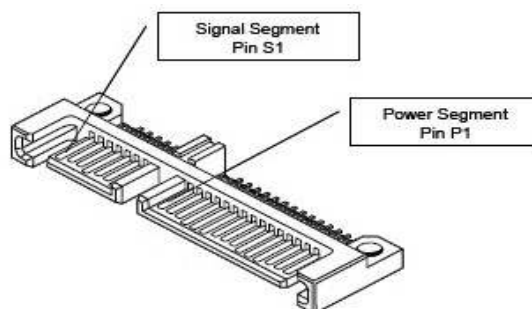


Figure 5-1 Pin Assignment of ACHIEVER 2.5" SSD

Table 5-1 Signal Segment Pin Assignment and Descriptions

Pin Number	Function
S1	GND
S2	RX+ (Differential Signal Pair A)
S3	RX- (Differential Signal Pair A)
S4	GND
S5	TX- (Differential Signal Pair B)
S6	TX+ (Differential Signal Pair B)
S7	GND

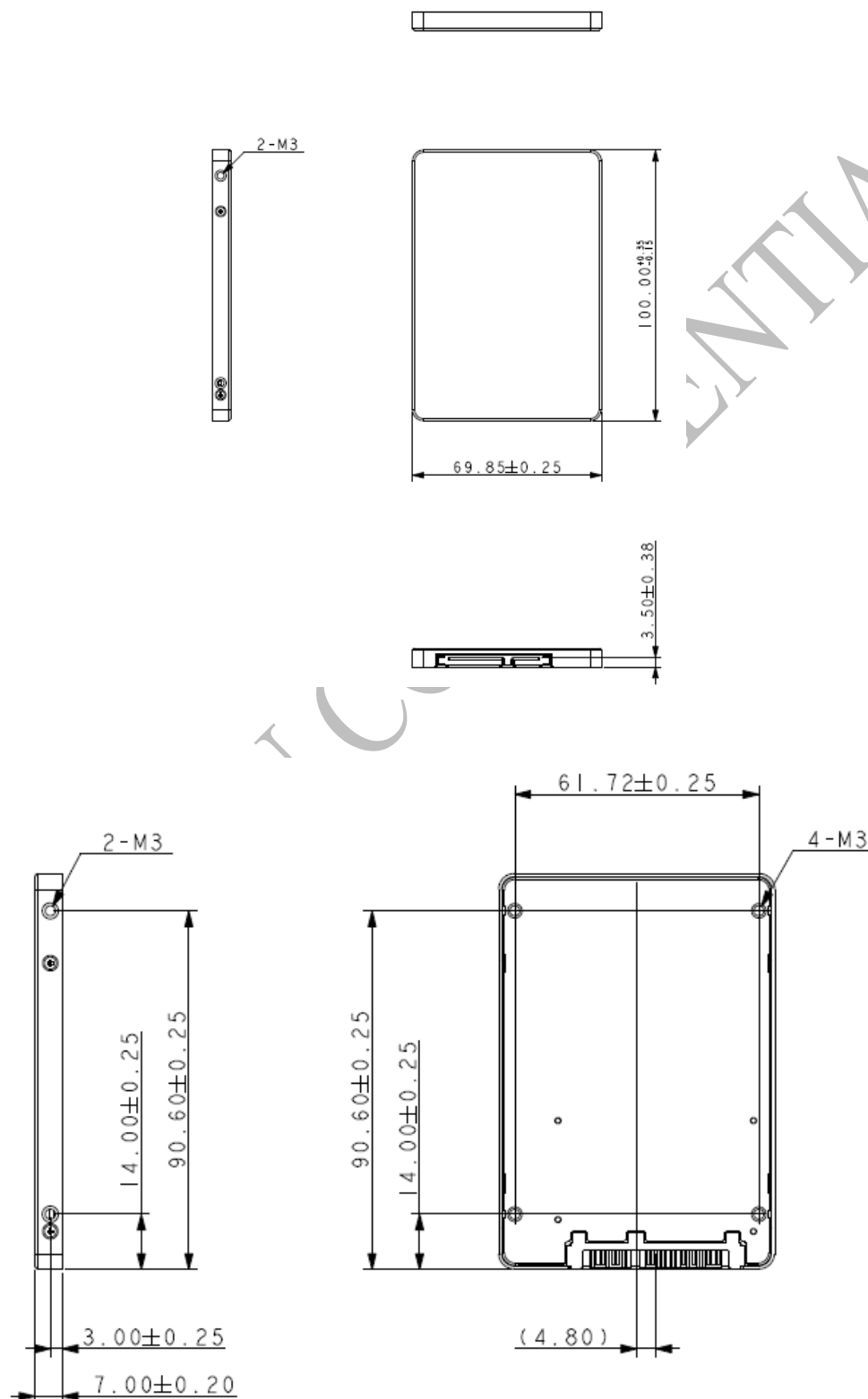
Table 5-2 Power Segment Pin Assignment and Descriptions

Pin Number	Function
P1	NC
P2	NC
P3	NC
P4	GND
P5	GND
P6	GND
P7	5V
P8	5V
P9	5V
P10	GND
P11	GND
P12	GND
P13	NC
P14	NC
P15	NC

6. PHYSICAL DIMENSION



Dimension: 100.00mm(L) x 69.85mm(W) x 7.00mm(H)



Capacity	MPN (Diamond Grade)	MPN (Silver Grade)
4GB	FSSB004GSE-M100	FSSB004GSS-M100
8GB	FSSB008GSE-M100	FSSB008GSS-M100
16GB	FSSB016GSE-M100	FSSB016GSS-M100
32GB	FSSB032GSE-M100	FSSB032GSS-M100
30GB	FSSB030GSE-M100	FSSB030GSS-M100
64GB	FSSB064GSE-M100	FSSB064GSS-M100
60GB	FSSB060GSE-M100	FSSB060GSS-M100
128GB	FSSB128GSE-M100	FSSB128GSS-M100
120GB	FSSB120GSE-M100	FSSB120GSS-M100

Revision History

Revision	Date	Description
1.0	2018/09	First release

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