ATP Velocity SI 2.5” PATA Industrial Grade SSD Specification

Version 1.1

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Revision History

Date	Version	Changes compared to previous issue
Oct. 13th, 2009	1.0	- Initial release
Oct. 29th, 2009	1.1	- Power consumption update - Modify dimension tolerance data

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Introduction:

The ATP Velocity SI 2.5” PATA Industrial Grade Solid State Drive is a high performance and high capacity mass storage solution in 2.5 inch form factor. Utilizing SLC (Single Level Cell) NAND flash components, ATP Velocity SI 2.5” PATA SSD provides outstanding performance and proven reliability for products.

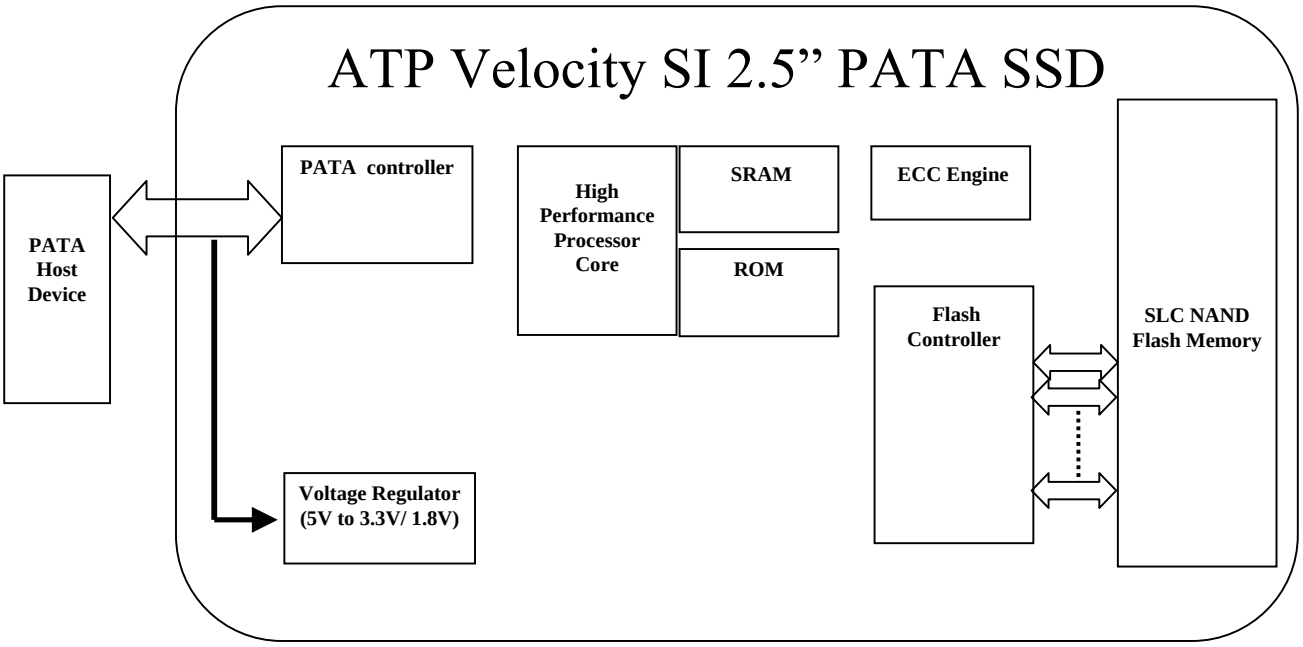
ATP Velocity SI 2.5” PATA SSD is perfect for industrial applications such as transportation, industrial PC, healthcare, telecommunications, and other harsh environments where data integrity and consistent performance is mission critical.

Main Feature:

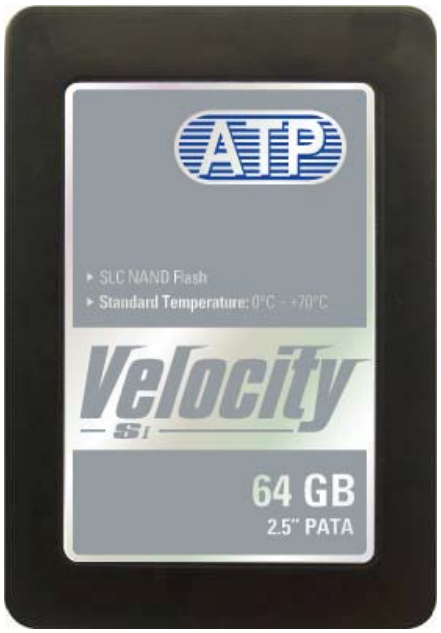
- Compact design：2.5 inch form factor
- Capacities: 8GB to 64GB
- Uses SLC(Single-Level-Cell) NAND flash memory
- Performance: Sequential read up to 84MB/s, Sequential write up to 72MB/s
- Random 4KB Read IOPS: 3,700
- Operating temperature: 0^{o}C to 70^{o}C
- Compliant with ATA-7 specification
- Support PIO mode 0~4, UDMA mode 0~6
- Enhanced endurance by Global dynamic and static wear-leveling
- Supports BCH ECC 8 bits in 512 data bytes
- Supports dynamic power management
- Supports S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) ATA feature set
- Data integrity under power-cycling
- RoHS compliant
- CE，FCC & VCCI certification

Block Diagram

ATP Velocity SI 2.5” PATA SSD consists of below functional blocks. The advanced architecture is optimized to provide highest data reliability and transfer performance.



Product Images:



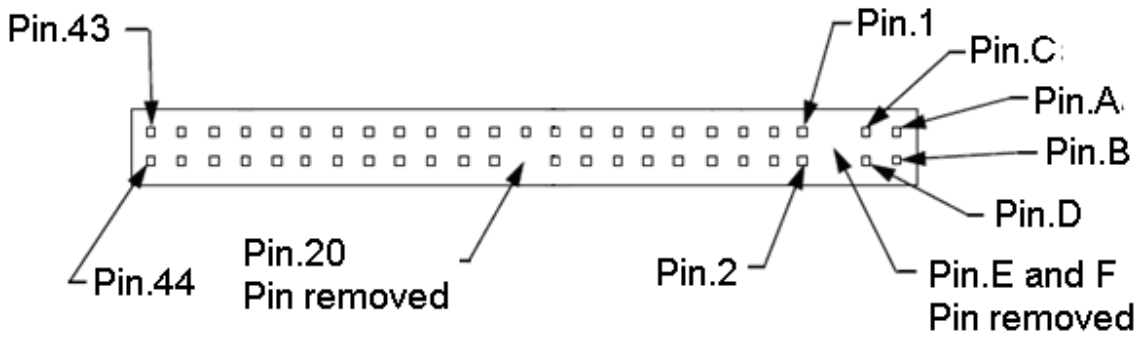
Capacities:

ATP P/N	CAPACITY
AF8GSSAD	8GB
AF16GSSAD	16GB
AF32GSSAD	32GB
AF64GSSAD	64GB

Notes:

1 GB = 1,000,000,000 Byte

PATA SSD Pin Assignment:



Signal name	Pin Name		Pin Name	Signal name
Option selection pins	A		B	Option selection pins
Option selection pins	C		D	Option selection pins
(keypin)	E		F	(keypin)
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-:STOP	23		24	Ground
DIOR-:HDMARDY-:HSTROBE	25		26	Ground
IORDY:DDMARDY-:DSTROBE	27		28	CSEL
DMACK-	29		30	Ground
INTRQ	31		32	Obsolete (see note)
DA1	33		34	PDIAG
DA0	35		36	DA2
CS0-	37		38	CS1-
DASP-	39		40	Ground
+5 V (logic)	41		42	+5 V (motor)
Ground(return)	43		44	Reserved - no connection

Notes:

Pin 32 was defined as IOCS16 in ATA-2, ANSI X3.279-1996.

System Interface:

Type	Value
Complied Standard	ATA 7 specification
Support PIO mode	0~4 mode
Support UDMA mode	0~6 mode

System Power Requirement:

Parameter	Symbol	Min	Typ	Max	Unit	Remark
Supply voltage	V_{CC}	4.5	5.0	5.5	V	
Write power	P_W	-	0.6	-	W	RMS value
Read power	P_R	-	0.6	-	W	RMS value
Standby power	P_S	-	0.012	-	W	RMS value

Environment Specifications:

Type		Value
Temperature	Operating	0 to 70°C
	Non-Operating	-45°C to 85°C
Humidity	Operating	25°C， 8% to 95%, noncondensing
	Non-Operating	40°C， 8% to 93%, noncondensing
Vibration	Operating	sine 16.4G, 10~2000Hz
Shock	Operating	Half sine 1500G/0.5ms
Altitude	Operating	80,000 feet Max.
	Non-Operating	80,000 feet Max.

Reliability:

Type	Value
Data Retention	10 years
MTBF (@ 25°C) [1]	8GB: 1,030,000 hours 16GB: 1,020,000 hours 32GB: 940,000 hours 64GB: 800,000 hours

Notes:

1. The Mean Time Between Failures (MTBF) is calculated using a prediction methodology, Telcordia SR-332, which based on reliability data of the individual components in the SSD. It assumes nominal voltage, with all other parameters within specified range.

Write/Erase Endurance

Type	Value
Endurance Technology	Enhanced global dynamic and static wear-leveling algorithm SLC flash block: 100,000 program/erase cycles
SSD Endurance	8GB: 320 terabyte random write 16GB: 640 terabyte random write 32GB: 1,280 terabyte random write 64GB: 2,560 terabyte random write

Performance:

Type	Value
Host Interface Speed	Ultra DMA 6: 133MB/s
Data Transfer Rate[1]	Sequential Read: up to 84MB/s
	Sequential Write: up to 72MB/s
Random Read IOPS[2]	4KB Random Read: 3,700 IOPS

Notes:

1. The performance may vary according to different product capacity.
2. IOPS: Input/Output Operations per Second

Physical Dimension Specifications:

Type	Measurement
Form factor	2.5”
Length	100.00 mm +/- 0.25mm
Width	69.85 mm +/- 0.25mm
Thickness	9.50 mm +/- 0.25mm

Mechanical Form Factor (Units in MM):