



AGI mSATA SSD AS150C Series

Product Specification

Version 1.0

Part Number Information

AGI128ZAS150C1-BK	Capacity: 128GB	mSATA
AGI256ZAS150C1-BK	Capacity: 256GB	mSATA
AGI512ZAS150C1-BK	Capacity: 512GB	mSATA



Revision History

Rev.	Date	Description
Preliminary	2025.09.10	First version draft published
V1.0	2026.04.22	Update capacity, performance, and reliability information

1. Introduction

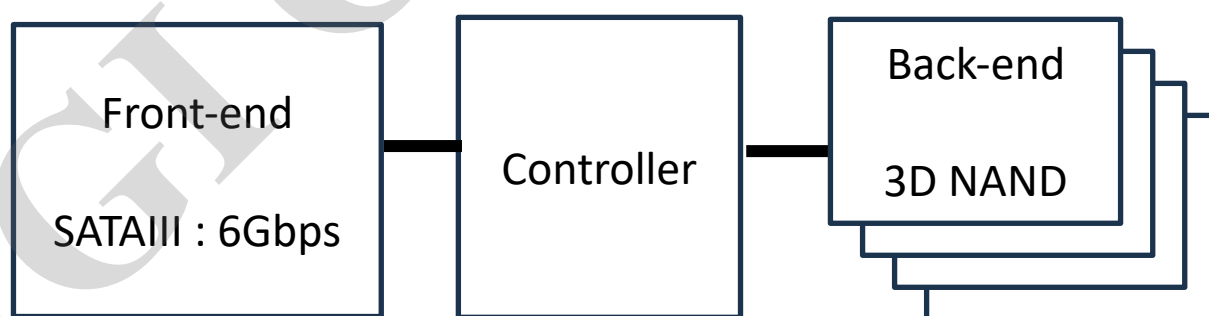
1.1 General Description

AGI® Industrial mSATA SSD is designed and built for industrial computers and embedded systems, providing stability, reliability and low power consumption. Here are three common applications for AGI® SSDs:

Hard drive replacement - Solid-state drives are the next generation of storage technology and run faster, quieter and cooler than traditional hard drives. With no moving parts, SSDs are also more durable and more reliable than hard drives.

For industrial PCs and embedded systems - AGI solid-state drives improve overall system responsiveness so it boots quicker, loads applications faster and operates more efficiently. They are suitable for a wide range of industrial and embedded platforms.

Revive older systems - Solid-state drives not only improve system performance but can also be used to extend the service life of older systems. Choosing an SSD is a practical and cost-effective way to upgrade an existing platform without a full system replacement.





1.2 General Description

1.2.1 Background Garbage Collection

SSDs use dedicated controllers to manage NAND Flash storage and perform Garbage Collection (GC). GC is a background management process that helps organize valid and invalid data within the Flash memory.

When a file is deleted in an operating system such as Windows, the OS usually updates its file system table to mark that file as deleted. On a hard disk drive (HDD), the invalid data can remain in place until the system writes new data over it.

NAND Flash works differently. Data that already exists in a used block cannot be overwritten directly. Before new data can be written, the SSD must complete a Program/Erase cycle. In practice, the controller first moves any valid data from the used block to available pages in another block, then erases the original block, and finally writes the new data to the erased block. This operation is known as Garbage Collection. Modern operating systems also support the TRIM command, which allows the OS to inform the SSD which data is no longer needed, helping the SSD reclaim space earlier and reduce unnecessary data movement.

1.2.2 Wear-Leveling

AGI Flash storage devices use controller technologies designed to balance the number of Program/Erase (P/E) cycles across the Flash memory. By spreading write and erase activity more evenly among memory blocks, wear-leveling helps extend drive life and maintain more consistent performance throughout the product's service life.



1.2.3 Feature Description

- NCQ(Native Command Queuing)
- Compatible with SATA 1.5/3.0/6.0 Gb/s
- S.M.A.R.T Support
- Trim Command
- ATA/ATAPI-8 and ACS-3
- Dynamic & Static Wear-Leveling
- Background Garbage Collection
- SATA Revision 3.1
- RAID Engine
- LDPC Engine
- Thermal Throttling
- Power Saving Support



2. General Production Specifications

2.1 Capacity

Addressable sectors follow the IDEMA organization standard, reference to Document LBA1-03 LBA Count for Disk Drives Standard.

Unformatted Capacity	Total User Addressable Sectors in LBA
128GB	250,069,680
256GB	500,118,192
512GB	1,000,215,216

2.2 Fundamental Specification

- Density: 128GB/256GB/512GB
- Form-Factor: mSATA
- Interface: 6Gb/s SATA III
- Performance:

Capacity	128GB	256GB	512GB
Sequential Read	520 MB/s	520 MB/s	520 MB/s
Sequential Write	500 MB/s	500 MB/s	500 MB/s
4K Random Read (QD32)	40000 IOPs	73000 IOPs	73000 IOPs
4K Random Write (QD32)	80000 IOPs	84000 IOPs	84000 IOPs

- Power Consumption:

Power	Average Power (mW)
Standby	240
Sequential Read	850
Sequential Write	940

*This data is based on testing with the 256GB capacity model.

2.3 Power Specification

Parameter	Specification
Input Voltage	3.3V +/- 5%

2.4 Reliability Specification

Parameter	Value
Mean Time between Failure (MTBF)	1,500,000 hours

2.5 Endurance and Warranty Policy

AGI warrants that its products will be free from defects in material and workmanship for the original end-user customer. Warranty coverage for this product remains valid until the earlier of the following:

- (i) Three years from the original end-user customer's date of purchase.
- (ii) The date on which the SSD reaches its TBW threshold, as determined by AGI software.

Parameter	Specification	
Warranty Period	3 Years/TBW either or	
TBW	128GB	90TB
	256GB	180TB
	512GB	360TB

3. Physical Specification

The mSATA form factor complies with **JEDEC MO-300** specification. Detailed mechanical dimensions are listed below, including tolerance information.

Length	Width	Thickness	Weight
50.95mm	30.00mm	3.50mm $\pm$ 0.30	< 8g (typical)

4. Environment Specifications

4.1 Storage Specification

Mode	Min	Max	unit
Operating	0	70	°C
Storage	-40	85	°C

4.2 Durability Specification

All materials are required to pass the ICQ unit's visual inspection (VI) and quality tests. Routine durability testing covers both new PCBAs and running materials to ensure consistent product durability.

Item	Condition
Shock	1500G@0.5ms

5. mSATA Pin Assignment

Pin#	Type	Description	Pin#	Type	Description
P1	Reserved	No Connect	P2	+3.3V	3.3V Source
P3	Reserved	No Connect	P4	GND	Return Current Path
P5	Reserved	No Connect	P6	+1.5V	No Connect
P7	Reserved	No Connect	P8	Reserved	No Connect
P9	GND	Return Current Path	P10	Reserved	No Connect
P11	Reserved	No Connect	P12	Reserved	No Connect
P13	Reserved	No Connect	P14	Reserved	No Connect
P15	GND	Return Current Path	P16	Reserved	No Connect
P17	Reserved	No Connect	P18	GND	Return Current Path
P19	Reserved	No Connect	P20	Reserved	No Connect
P21	GND	Return Current Path	P22	Reserved	No Connect
P23	SATA-B+	Host Receiver Differential Pair (TX+ of SSD)	P24	+3.3Vaux	3.3V Source
P25	SATA-B-	Host Receiver Differential Pair (TX- of SSD)	P26	GND	Return Current Path
P27	GND	Return Current Path	P28	+1.5V	No Connect
P29	GND	Return Current Path	P30	Reserved	No Connect (SMBus SCL)
P31	SATA-A-	Host Transmitter Differential Pair (RX- of SSD)	P32	Reserved	No Connect (SMBus SDA)
P33	SATA-A+	Host Transmitter Differential Pair (RX+ of SSD)	P34	GND	Return Current Path
P35	GND	Return Current Path	P36	Reserved	No Connect
P37	GND	Return Current Path	P38	Reserved	No Connect
P39	+3.3V	3.3V Source	P40	GND	Return Current Path
P41	+3.3V	3.3V Source	P42	Reserved	No Connect
P43	GND	Return Current Path	P44	DEVSLP	SATA Device Sleep
P45	Reserved	No Connect	P46	Reserved	No Connect
P47	Reserved	No Connect	P48	+1.5V	No Connect
P49	DAS/DSS	Device Activity Signal	P50	GND	Return Current Path
P51	Presence	Presence Detect (Ground by device)	P52	+3.3V	3.3V Source