A750Pi and A650Si/Sc Series: Bringing 3D TLC Endurance Closer to SLC/MLC

66% Higher than Other SSDs in Native TLC, 50% in pSLC



Manufactured using a new die package, the new A750Pi and A650Si/Sc Series embedded solid state drives (SSDs) are breaking endurance records. Compared with other 3D TLC drives, they deliver 66% higher endurance in native triple level cell (TLC) mode and 50% higher in pseudo single level cell (pSLC) mode, making them on par with drives built on multi-level cell (MLC) and SLC flash, respectively.

Key Features

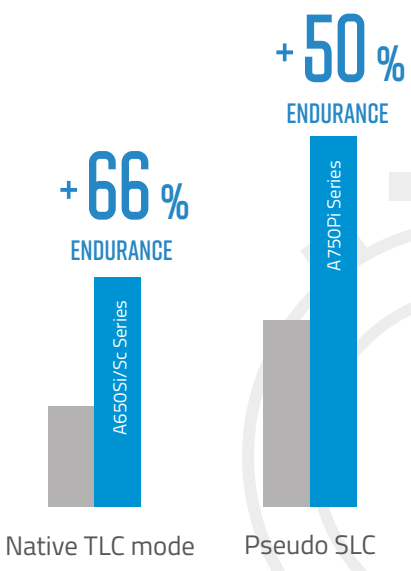
- Available in M.2 2280/2242, 2.5" & mSATA form factors
- Endurance on par with MLC & SLC flash
- 120 to 1920 GB capacities for native TLC (A650Si/A650Sc)
- 40 to 640 GB capacities for pSLC (A750Pi)
- Industrial temperature operable (A750Pi/A650Si)
- MCU-based Power Loss Protection design with Level 4 data-in-flight) protection
- LDPC ECC & RAID support
- End-to-end data path protection
- SED features*

*Optional

Why A750Pi and A650Si/Sc Series ATP SSDs?

Endurance Suited for Write-Intensive Workloads

ATP's new 3D TLC SSDs leap to new endurance heights, thanks to a new die package. In native TLC mode, the A650Si/Sc Series delivers 66% higher TBW than other SSDs to achieve near-MLC endurance. For the A750Pi Series in pSLC mode, it's 50% higher to match SLC endurance.



Reliability Testing and Validation: Setting ATP SSDs a Cut Above the Rest

Reliability testing is an important cornerstone in the ATP manufacturing process. ATP's embedded SATA SSDs go through standard as well as customizable testing depending on customer requests and application-specific requirements.



Four-Corner, Temperature Cycling, and Power Cycling Tests

Demonstrate reliable performance and stored data handling without data miscompare even under harsh conditions.

End-of-Life Validation Test

Makes sure that ATP SSDs perform reliably and maintain data integrity over their life span (and even beyond) as required.

PCBA Solderability Validation

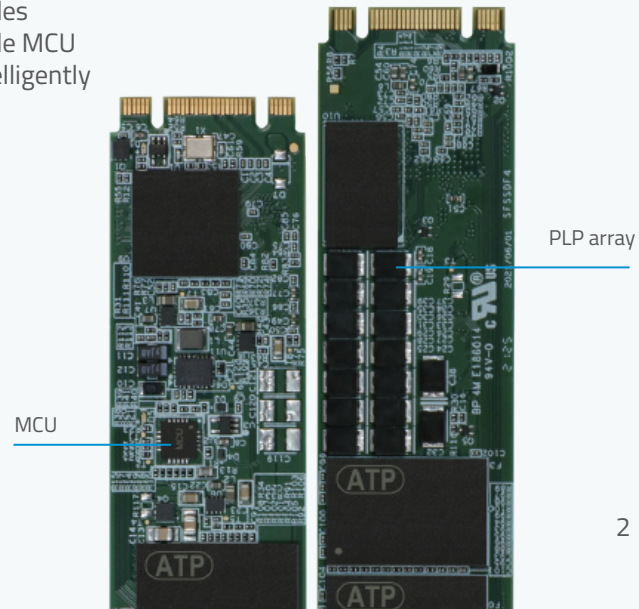
Ensures effective bonding of components on the printed circuit board assembly (PCBA) for reliable electro-mechanical connections.

Reliability Demonstration Test (RDT)

Validates the mean time between failures (MTBF) rating of the drive through actual drive-level testing instead of relying on reliability prediction systems.

MCU-Based Power Loss Protection Design

The newly designed power loss protection (PLP) array includes a power management IC (PMIC) and firmware-programmable MCU (microcontroller unit), allowing the PLP array to perform intelligently in various temperatures, power glitches and charge states.



Product Specifications

	2.5"			M.2 2280		
Product Line	A750Pi	A650Si	A650Sc	A750Pi	A650Si	A650Sc
Flash Type	3D TLC					
Flash Mode	3D TLC (pSLC mode)	Native TLC	Native TLC	3D TLC (pSLC mode)	Native TLC	Native TLC
Operating Temperature (Tcase)[1]	-40°C to 85°C		0°C to 70°C	-40°C to 85°C		0°C to 70°C
Power Loss Protection Options	Hardware + Firmware Based					
Optional SED Features	-	AES 256-bit Encryption, TCG Opal 2.0		-	AES 256-bit Encryption, TCG Opal 2.0	
Capacity	80 GB to 640 GB	120 GB to 1920 GB	120 GB to 1920 GB	80 GB to 320 GB	120 GB to 960 GB	120 GB to 960 GB
Performance						
Performance Sequential Read (MB/s) up to	560	560	560	560	560	560
Performance Sequential Write (MB/s) up to	520	520	520	520	480	480
Performance Random Read IOPS (4K,QD32) up to	90,000	100,000	100,000	90,000	100,000	100,000
Performance Random Writes IOPS (4K, QD32) up to	88,000	91,000	91,000	88,000	90,000	90,000
Endurance and Reliability						
Endurance (TBW)[2] up to	38,400 TB	9,310 TB	9,310 TB	19,200 TB	4,655 TB	4,655 TB
ReliabilityMTBF @ 25°C	>2,000,000 hours					
Others						
Dimensions: L x W x H (mm)	100 x 69.9 x 7/9.2	100 x 69.9 x 7/9.2	100 x 69.9 x 7/9.2	80 x 22 x 3.35	80 x 22 x 3.35	80 x 22 x 3.35
Certifications	CE, FCC, BSMI, UKCA, RoHS, REACH					
Warranty	5 years	2 years	2 years	5 years	2 years	2 years

	M.2 2242			mSATA		
Product Line	A750Pi	A650Si	A650Sc	A750Pi	A650Si	A650Sc
Flash Type	3D TLC					
Flash Mode	3D TLC (pSLC mode)	Native TLC	Native TLC	3D TLC (pSLC mode)	Native TLC	Native TLC
Operating Temperature (Tcase)[1]	-40°C to 85°C		0°C to 70°C	-40°C to 85°C		0°C to 70°C
Power Loss Protection Options	Hardware + Firmware Based					
Optional SED Features	-	AES 256-bit Encryption, TCG Opal 2.0		-	AES 256-bit Encryption, TCG Opal 2.0	
Capacity	40 GB to 160 GB	120 GB to 480 GB	120 GB to 480 GB	40 GB to 160 GB	120 GB to 480 GB	120 GB to 480 GB
Performance						
Performance Sequential Read (MB/s) up to	560	560	560	560	560	560
Performance Sequential Write (MB/s) up to	520	480	480	520	480	480
Performance Random Read IOPS (4K,QD32) up to	68,000	100,000	100,000	90,000	100,000	100,000
Performance Random Writes IOPS (4K, QD32) up to	88,000	90,000	90,000	88,000	90,000	90,000
Endurance and Reliability						
Endurance (TBW)[2] up to	9,600 TB	2,327 TB	2,327 TB	9,600 TB	2,327 TB	2,327 TB
ReliabilityMTBF @ 25°C	>2,000,000 hours					
Others						
Dimensions: L x W x H (mm)	42 x 22 x 3.5	42 x 22 x 3.5	42 x 22 x 3.5	50.8 x 29.85 x 3.5	50.8 x 29.85 x 3.5	50.8 x 29.85 x 3.5
Certifications	CE, FCC, BSMI, UKCA, RoHS, REACH					
Warranty	5 years	2 years	2 years	5 years	2 years	2 years

[1] Case Temperature, the composite temperature as indicated by SMART temperature attributes.
[2] Under highest Sequential write value. May vary by density, configuration and applications.

Order Information

Ordering Information					
Product Line	Form Factor	Capacity[1]	Endurance[2]	P/N Operable with Industrial Temp.	P/N Operable with Commercial Temp.
A650Si/A650Sc (Native TLC)	2.5"	120 GB	582 TB	AF120GSTCJ-7BCIP	AF120GSTCJ-7BCXP
		240 GB	1,164 TB	AF240GSTCJ-7BCIP	AF240GSTCJ-7BCXP
		480 GB	2,327 TB	AF480GSTCJ-7BCIP	AF480GSTCJ-7BCXP
		960 GB	4,655 TB	AF960GSTCJ-7BCIP	AF960GSTCJ-7BCXP
		1920 GB	9,310 TB	AF1T92STCJ-7BCIP	AF1T92STCJ-7BCXP
	M.2 2242	120 GB	582 TB	AF120GSTIA-7BCIP	AF120GSTIA-7BCXP
		240 GB	1,164 TB	AF240GSTIA-7BCIP	AF240GSTIA-7BCXP
		480 GB	2,327 TB	AF480GSTIA-7BCIP	AF480GSTIA-7BCXP
	M.2 2280	120 GB	582 TB	AF120GSTIC-7BCIP	AF120GSTIC-7BCXP
		240 GB	1,164 TB	AF240GSTIC-7BCIP	AF240GSTIC-7BCXP
		480 GB	2,327 TB	AF480GSTIC-7BCIP	AF480GSTIC-7BCXP
		960 GB	4,655 TB	AF960GSTIC-7BCIP	AF960GSTIC-7BCXP
	mSATA	120 GB	582 TB	AF120GSTHI-7BCIP	AF120GSTHI-7BCXP
		240 GB	1,164 TB	AF240GSTHI-7BCIP	AF240GSTHI-7BCXP
		480 GB	2,327 TB	AF480GSTHI-7BCIP	AF480GSTHI-7BCXP
A750Pi (Pseudo SLC)	2.5"	80 GB	4,800 TB	AF80GSACJ-7BBIP	
		160 GB	9,600 TB	AF160GSACJ-7BBIP	
		320 GB	19,200 TB	AF320GSACJ-7BBIP	
		640 GB	38,400 TB	AF640GSACJ-7BBIP	
	M.2 2242	80 GB	4,800 TB	AF80GSAIA-7BBIP	
		160 GB	9,600 TB	AF160GSAIA-7BBIP	
	M.2 2280	80 GB	4,800 TB	AF80GSAIC-7BBIP	
		160 GB	9,600 TB	AF160GSAIC-7BBIP	
		320 GB	19,200 TB	AF320GSAIC-7BBIP	
	mSATA	80 GB	4,800 TB	AF80GSAHI-7BBIP	
		160 GB	9,600 TB	AF160GSAHI-7BBIP	
Self-Encrypting Drive upon request and on project basis.					

[1] Amount of actual usable storage that can be utilized
[2] TBW in Sequential Write

Product spec and its related information are subject to change without advance notice.
Please refer to www.atpinc.com for latest information

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