



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

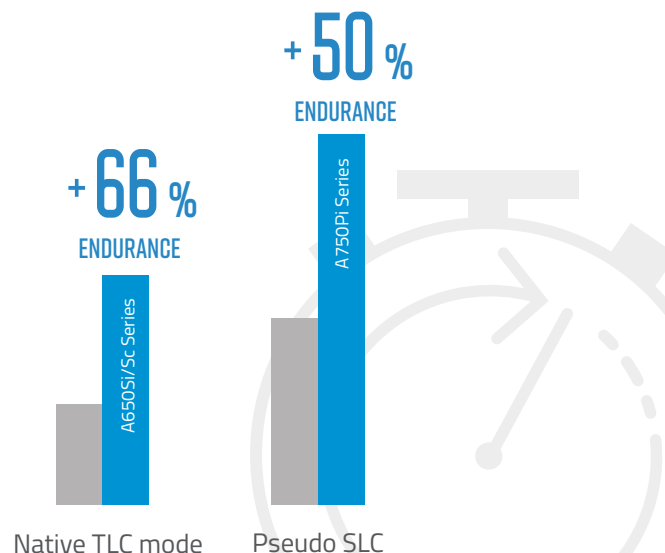
- Available in M.2 2280/2242, 2.5" & mSATA form factors
- Endurance on par with MLC & SLC flash
- 120 to 1920 GB capacities for native TLC (A650Si/A650Sc)
- 40 to 640 GB capacities for pSLC (A750Pi)
- Industrial temperature operable (A750Pi/A650Si)
- MCU-based Power Loss Protection design with Level 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.

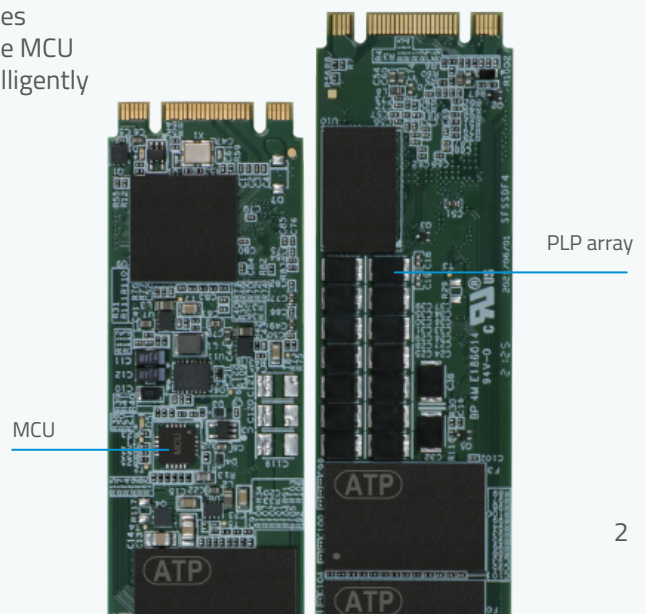


Reliability Demonstration Test (RDT)

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 |
| Reliability MTBF @ 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 |
| Reliability MTBF @ 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.