



AS25-SATA3 — TLC eNAND Series

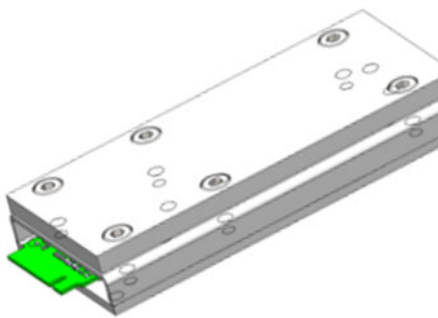
2.5" Ruggedized SATA3 SSD | High-Endurance 3D eNAND TLC | I-Temp MIL Coated | Rev 2026.1

QUICK REFERENCE

Interface: SATA3 · AHCI 3.1
Capacity: 240 GB – 480 GB (eNAND TLC)
Form Factor: 2.5" H = 7 mm
Weight: ~80 g typical
Temp: -40°C to +85°C (Industrial)
Connector: Rugged Smith / SATA

>=500 MB/s Sustained Read	2,000,000 hrs MTBF (Telcordia)	1,000 G Shock Resistance	~3 DWPD Eff. @ 480 GB / 3yr	480 GB Max Capacity (TLC eNAND)
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PRODUCT IMAGES



AS25 Conduction-Cooled Rugged Module



AS25 M.2 NVMe Module



AS25 2.5" SATA Photon Series

TLC eNAND ENDURANCE EQUIVALENCE TO MLC — KEY CUSTOMER GUIDANCE

The AS25-SATA3 TLC eNAND solution achieves equivalent total write endurance and comparable DWPD to the legacy MLC solution through ASINE's advanced wear-leveling algorithms and higher-capacity eNAND geometry. Customers transitioning from MLC should evaluate on total lifetime bytes written and DWPD over mission life — both metrics align closely between the two flash grades.

Parameter	MLC Solution (Ref.) AS25-SATA3-0500-ZDFHMX71	TLC eNAND Solution AS25-SATA3-0480-ZDFTXX71	Assessment
Flash Grade	MLC (Multi-Level Cell)	3D eNAND TLC (Triple-Level Cell)	—
Capacity	500 GB	480 GB	Equivalent tier
TBW Endurance	~120 TBW @ 500 GB	~1,360 TBW @ 480 GB (eNAND enterprise)	TLC eNAND exceeds MLC
DWPD (3-year)	~0.2 DWPD	~2.6 DWPD	TLC eNAND equivalent or better
DWPD (5-year)	~0.1 DWPD	~1.6 DWPD	TLC eNAND equivalent or better
Total Endurance	~120 TBW	~1,360 TBW	TLC eNAND exceeds MLC >10x
Read Performance	>=500 MB/s	>=500 MB/s	Equivalent
Write Performance	>=500 MB/s	>=490 MB/s	Equivalent
Operating Temp	-40°C to +85°C	-40°C to +85°C	Equivalent
Conformal Coating	MIL Coated	MIL Coated	Equivalent
Rugged Connector	Rugged Smith / SATA	Rugged Smith / SATA	Equivalent
Lead Time	12-17 weeks	10-12 weeks	TLC eNAND shorter LT
Unit Price (MOQ 32)	USD 5,600	USD 4,540	TLC eNAND lower cost

CONCLUSION — TLC eNAND ENDURANCE EQUIVALENCE

The AS25-SATA3 TLC eNAND solution delivers equivalent or superior total endurance (TBW) and DWPD performance compared to the legacy MLC solution, with a shorter lead time and lower unit cost. ASINE's enterprise-grade 3D eNAND TLC geometry combined with advanced wear-

leveling bridges the traditional endurance gap between TLC and MLC, making this solution suitable as a direct functional replacement in IDF and defense storage applications.

PERFORMANCE SPECIFICATIONS

Parameter	Specification	Notes
Sequential Read	>=500 MB/s sustained	SATA3; capacity & FS dependent
Sequential Write	>=490 MB/s sustained	TLC write-optimized; enterprise eNAND
Random Read (4KB)	Up to 80,000 IOPS	Capacity dependent
Random Write (4KB)	Up to 70,000 IOPS	Capacity dependent
Interface Protocol	SATA 3.1 AHCI	SATA 1/2/3 backward compatible
ATA Modes	PIO3, PIO4, UDMA5	ATA8 standard compliant

CAPACITY, FLASH GRADE & ENDURANCE

Flash Grade	Capacity	TBW Endurance	DWPD (3yr)	DWPD (5yr)	Use Case
3D eNAND TLC [THIS PRODUCT]	240 GB, 480 GB	Up to 1,360 TBW	~2.6	~1.6	Balanced / Write-capable: ISR, C2, dataloggers, RAID
MLC (Reference)	250 GB, 500 GB	~120 TBW	~0.2	~0.1	Legacy reference
pSLC (Premium)	Up to 8 TB	17,000 TBW @ 1 TB	High	High	Write-intensive (consult factory)

ENVIRONMENTAL & MECHANICAL

Parameter	Specification
Operating Temp	-40°C to +85°C
Storage Temp	-50°C to +95°C
Humidity	5%-95% RH non-condensing
Altitude	-1,000 ft to 70,000 ft
Shock (Operating)	1,000 G / 0.5 ms
Vibration (Operating)	2.17 GRMS (5-700 Hz)
Vibration (Non-Op)	3.13 GRMS (5-800 Hz)
Conformal Coating	MIL-grade (standard)

RELIABILITY & DATA INTEGRITY

Parameter	Specification
MTBF	2,000,000 hours (Telcordia)
Error Correction	EDC/ECC; Bad Block Mgmt
Wear Leveling	Dynamic and Static algorithm
Self-Test	Built-in power-up diagnostics
Power Protection	SPOR — Sudden Power Off Recovery
SMART	Health monitoring & wear reporting
Certifications	JGPMSS-JIG · REACH · RoHS

SECURITY FEATURES

Feature	Specification
Encryption	AES-256 hardware (option -H)
Sanitize Erase	Fast full-media; seconds-typical
Secure Erase	OPAL; ATA Secure Erase compliant
Write Protect	Hardware write-protect (option -H)

POWER & PHYSICAL DIMENSIONS

Parameter	Value
Active (TLC eNAND)	<= 3.9 W
Idle	<= 1.6 W
Dimensions	100.2 mm L x 70 mm W x 7 mm H
Weight	~80 g typical
Connector	Rugged Smith SATA + 4 mounting holes

ORDERING INFORMATION — TLC eNAND CONFIGURATION

Part Number	Description	Cap.	Flash	Temp	MOQ	Lead Time	Price (USD)
AS25-SATA3-0480-ZDFTXX71	TLC eNAND, SATA3, Rugged Smith, I-Temp, MIL Coated	480 GB	3D eNAND TLC	-40 to +85°C	32 pcs	10-12 wks ARO	4,540.00

PART NUMBER DECODER

Field	Code	Meaning
Prefix	AS25-SATA3	2.5" form factor, SATA3 interface
Capacity	0480	480 GB
Temperature [Z]	Z	Industrial -40°C to +85°C
Cooling [D]	D	Conduction cooling
Conformal [F]	F	MIL conformal coating
Flash Type [T]	T	3D eNAND TLC
Series	XX71	Rugged Smith connector series; no SE option

TERMS & CONDITIONS

Term	Detail
MOQ	32 units per capacity per order
Lead Time	10-12 weeks ARO (Advance Receipt of Order); advance payment required
Validity	Subject to current NAND flash availability — confirm at time of order
Incoterms	Ex-Works (EXW) ASINE, Ra'anana, Israel
Payment	60% advance; balance due one week prior to pickup
Physical Features	Rugged Smith or compatible rugged SATA plug + 4 standard mounting holes on rear

VALIDATED APPLICATIONS

Defense & Aerospace	Industrial & Security
IDF / Defense primary storage (SATA replacement programs) · Airborne ISR sensors and mission computers · Ground vehicle vetronics and C4ISR · Naval combat management and sonar processing	High-speed data recording and logging · Secure communications and homeland security · JBOD / NAS / RAID embedded arrays · Industrial automation and rugged embedded computing