Transcend®

Product Overview

Embedded Solutions

Quality. Today and Tomorrow.

Advanced Technologies | Software Solutions

DRAM Modules | SSD Solutions | Memory Cards | Flash Solutions

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Company Introduction

DRAM Modules

SSD Solutions

Memory Cards

Flash Solutions

About Transcend

30+ Years of Experience

Founded in 1988, Transcend Information Inc. is a leading global supplier of embedded memory products and storage solutions. Transcend has been granted over 140 patents for our award-winning products, developed by our in-house R&D team in close cooperation with our strategic component suppliers.

Total Quality Control

Transcend was the first memory module manufacturer in Taiwan—and the second in the world—to receive ISO9001, ISO14001, and QC080000 certifications. Every Transcend device is individually inspected using proprietary testing equipment and customized testing software.

Global Support

Transcend has 12 branch offices worldwide, including in Los Angeles, Maryland, Silicon Valley, Hamburg, Rotterdam, London, Tokyo, Seoul, Shanghai, Beijing, Shenzhen, and Hong Kong. Our headquarters and manufacturing site are both located in Taipei, creating an optimum product supply system with a global reach.

Our Strengths

Top Quality Storage Solutions

- Branded chips to ensure the highest quality
- Exclusive software for efficient device management

Reliable Supply

- Strategic alliance and direct relationship with top-tier suppliers

R&D Expertise

- More than 140 patents
- 100+ person in-house R&D team
- Extensive embedded product development experience

Global Operation & Worldwide Support

- Professional technical support and failure analysis reports
- 12 branch offices worldwide
- Localized sales and FAE support

Management of Product Life Cycle

- Embedded-grade product lifecycle management
- Fixed BOM management
- In-house ERP system
- Regular roadmap updates

Facilities & Production Process

- Highly automated production
- Rigorous reliability and environmental testing
- Stringent quality control: IQC, IPQC, FQC, OQC

Applications

Transcend's embedded solutions are utilized across various industries

Transportation

Fleet Management | Event Recorders | Navigation

Healthcare

Medical Tablets & AIO PCs | Medical Imaging | Patient Monitoring

Gaming

Casino Gaming | Lottery | Player Tracking

Automation

Robot Controllers | Human Machine Interfaces

Network & Telecom

Industrial Switches | 5G Base Stations | Network Security Appliances

Embedded

Digital Signage | Fanless PCs | Embedded PCs

AIoT

Edge Computing | AI Platforms

Defense

Rugged Laptops & Tablets | Rugged Rackmount Devices

Solutions & Technologies

Transcend utilizes various technologies to optimize the durability, reliability, and stability of our memory and storage devices. We can also provide customization services to adapt our products to your requirements.

DURABILITY

112-layer 3D NAND Flash

112-layer 3D NAND flash delivers higher capacities, performance, endurance, as well as lower costs. Transcend's 112-layer 3D NAND SSDs feature high I/O performance and low latency, ideal for 5G, automotive, AIoT, and edge computing applications.

Dynamic Thermal Throttling

Our Dynamic Thermal Throttling technology ensures that our SSDs operate in a safe temperature range, prolonging their lifespan and making sure that users' data is protected. A built-in thermal sensor in the controller monitors the drive temperature. When temperatures exceed a safe level, drive speeds will be throttled down until a safe temperature can be reached.

SLC Mode

SLC Mode SSDs strike a cost-performance balance between different flash types by emulating the behavior of SLC NAND flash. With a reasonable cost, users are able to achieve SLC-level endurance and performance.

SECURITY

TCG Opal Compliance

TCG Opal SEDs (self-encrypting drives) are ideal for industries where data security is of crucial importance. Transcend's Opal-compliant SSDs incorporate hardware-based AES 256-bit encryption; ensuring data is safeguarded starting from the manufacture of the storage device to system installation and management. Furthermore, TCG Opal compliant SSDs do not impact host performance since encryption and decryption are conducted on the drives themselves. Transcend's Opal-compliant SSDs offer sector-specific security, allowing managers to grant different permissions to each user, ensuring compartmentalized data security. The SSDs also feature pre-boot authentication; they can only be booted when the user is verified, preventing unauthorized access.

AES Encryption

The Advanced Encryption Standards (AES) specifies a FIPS-approved cryptographic algorithm designed to protect sensitive electronic data. Transcend's SSDs equipped with hardware-based AES offer a complete solution for applications that handle sensitive data or require enhanced data security.

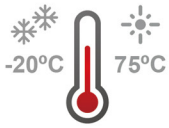
RELIABILITY

Anti-Sulfur Technology

Transcend's anti-sulfur DRAM modules meet the ISA Standard S71.04-2013 level G2 and the ASTM B809-95 standard. Anti-sulfur resistors, which have a protective layer above vulnerable silver alloys, are used exclusively to prevent malfunctions caused by sulfuration.

Wide Temperature

Transcend's products are stringently tested at the component level and at the device level within an extended thermal range. All wide-temperature products are required to pass rigorous tests conducted in a temperature and humidity chamber to ensure reliable performance in temperatures ranging from -40°C to 85°C. Wide-temperature DDR4 and DDR5 memory modules are tested to operate between -40°C to 95°C.

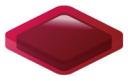


Extended Temperature

Products rated for extended temperatures are designed for reliable operation in temperatures ranging from -20°C to 75°C. Transcend offers this as standard on a wide range of 112-layer and 96-layer 3D NAND SSDs.

Corner Bond & Underfill

Corner Bond / Underfill are technologies used to increase reliability under high thermal stress, high gravitational acceleration and high fatigue cycle applications. By spreading stresses throughout the key components with a mechanical bond, less stress is concentrated on the solder joints. It is widely used in applications where stringent thermal cycling performance and shock resistance are required.



Conformal Coating

Conformal Coating increases protection for Transcend's embedded flash modules and DRAM products against various harsh environmental conditions such as moisture, dust, corrosion, extreme temperature, and chemical contaminants. Acrylic coatings are the most preferred choice for embedded applications due to their excellent moisture and electrical resistance.

STABILITY

Power Loss Protection (PLP) & Power Shield (PS)

Power Loss Protection (PLP) and Power Shield (PS) are two technologies provided by Transcend to prevent internal NAND flash data loss during a sudden power outage. When power is lost, the drive controller will stop accepting new write commands to ensure data integrity. PLP SSDs utilize tantalum capacitors to increase the amount of time the drive controller has to flush data from DRAM into NAND flash.

Embedded Software Solutions

Leverage our embedded software solutions to stand out from the others. See how Transcend can empower your business and boost your growth.

SDK Available
A Software Development Kit (SDK) can be provided to adapt to many operating systems.

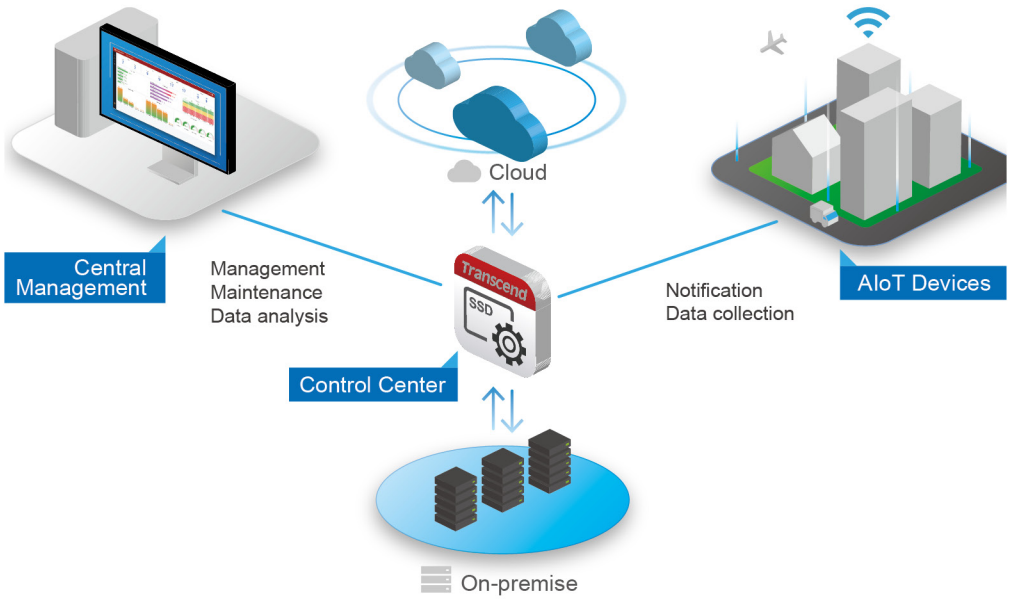
Software and Hardware Integration
Seamlessly integrate hardware and software for complex applications.

From Edge to Cloud
Work in tandem between the cloud and the edge to achieve utmost flexibility.

Broad Support
Our software solutions build strong foundations for SSDs, DRAM, flash and other devices.

Control Center — Management

Transcend's Control Center allows users to easily manage and monitor multiple storage devices deployed at the edge. Our SaaS solution is platform agnostic, and can be deployed on either public cloud services such as AWS or Azure, or on private clouds.



Consolidated Information
Offer data analysis and clear information on an intuitive interface.

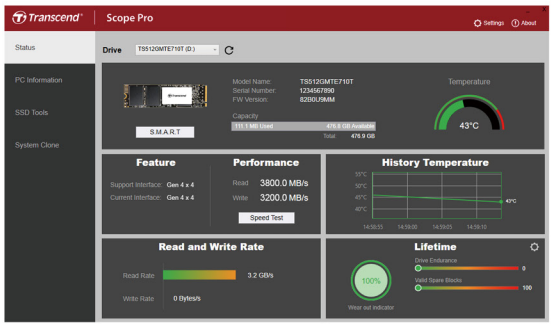
Remote upgrade & monitoring
Check devices' health status and update firmware remotely.

Early Warning System (EWS) & Instant Notices
Notify users when potential issues are detected and make proactive responses.

Scope Pro

Monitor

Transcend's Scope Pro is a convenient software package suitable for offline embedded systems. It offers useful features such as drive information, S.M.A.R.T. analysis, diagonostic scans, health checks, and system cloning.



Efficient Monitoring

Monitor device health status including available, used, and total capacity, temperature, endurance, bad blocks and wear-out indicator.

Optimized Performance

Carry out speed tests and health scans. Rearrange data stored in SSDs or SD/microSD cards.

System Clone

Perform a system clone, duplicating the operating system (OS), programs, and user data, to a new Transcend SSD.

TCG Opal Toolbox | ATA Security Toolbox | UFD Security Toolbox

Security

Transcend offers a wide range of security toolboxes for use with our embedded solutions to enhance data security.

Utilize the Opal Toolbox to configure passwords, locking ranges, initiate pre-boot authentication (PBA), and revert functions to increase drive security.

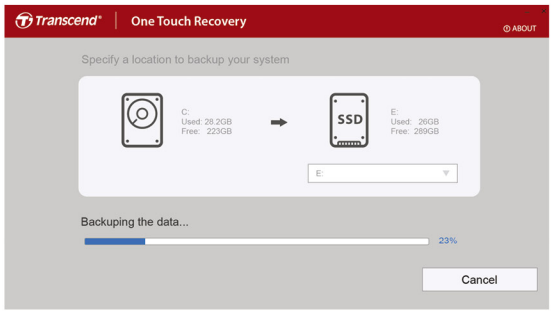
Determine the desired security level and perform lock, unlock, and drive erase functions.

Enable write protect and OTP functions to increase the security of USB flash drives.

One Touch Recovery

Rescue

One Touch Recovery safeguards digital assets by backing up crucial data to hidden partitions.



Enhanced Efficiency

By backing up data beforehand, One Touch Recovery eliminates the hours spent restoring compromised systems.

Flexible Customization

Back up and restore data from user-defined disks. The maximum number of disks is tailored to fit each user's requirements.

Remote Backup & Recovery

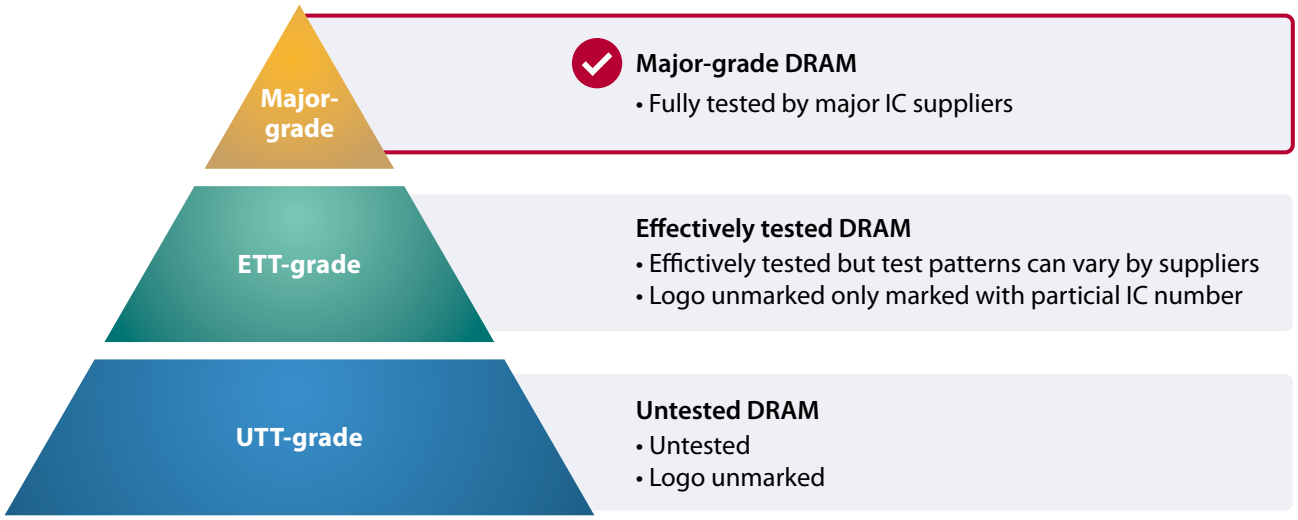
Can be operated remotely, allowing users to respond to emergency situations quickly, minimizing downtime and related costs.

DRAM Modules

Transcend's DRAM modules are offered in a variety of form factors to accommodate different embedded devices used in industrial applications. Each DRAM module is manufactured using only the highest-quality DRAM memory chips and components, and is individually tested to ensure stability and compatibility.

IC Grade

Transcend's industrial-grade DRAM memory modules only utilize major-grade DRAM chips which have undergone the original IC manufacture's in-house testing procedures.



Product Line

Module Type		Speed (MT/s)	Operating Temperature	Capacity
DDR5	Long-DIMM / SO-DIMM	4800	0°C ~ 95°C / -40°C ~ 95°C	8GB ~ 32GB
	ECC Long-DIMM / ECC SO-DIMM			16GB / 32GB
	R-DIMM			16GB / 32GB
DDR4	Long-DIMM / SO-DIMM	3200	0°C ~ 95°C / -40°C ~ 95°C	4GB ~ 32GB
		2666		2GB ~ 32GB
	ECC Long-DIMM / ECC SO-DIMM	3200		4GB ~ 32GB
		2666		4GB ~ 32GB
	R-DIMM	3200		8GB ~ 32GB
		2666		4GB ~ 32GB
DDR3	Long-DIMM / SO-DIMM	1600	0°C ~ 85°C / -40°C ~ 85°C	1GB ~ 8GB
	ECC Long-DIMM / ECC SO-DIMM			2GB ~ 8GB
	R-DIMM		0°C ~ 85°C	4GB / 8GB

*Transcend offers technology customization options for selected models. Please contact us for more detailed information.

Product Highlights

DDR5 Memory Modules
Unlock Next-Gen Performance and Efficiency

Transcend's embedded DDR5 4800 DRAM modules follow JEDEC standards, featuring high I/O throughput and low latency. The DDR5 standard introduces an on-DIMM power management integrated circuit (PMIC) that enables optimized energy control, improved power efficiency, and reduced signal complexity. The on-die ECC prevents bit errors, bringing together advanced data integrity and system reliability. Transcend's embedded DDR5 product line covers a variety of module types including Unbuffered Long-DIMM and SO-DIMM, ECC Long-DIMM and SO-DIMM, as well as Registered Long-DIMM. With 30µ" gold finger PCBs and anti-sulfuration technology, Transcend's DDR5 modules deliver unmatched performance and reliability in high-performance computing (HPC) applications.

Key Features

- Power Management IC (PMIC)
- 1.1V Low Power Supply
- On-Die ECC
- Major-Grade DRAM Components
- JEDEC® Compliant

30µ"

30µ" PCB Gold Fingers

Extra-thick gold-plated connectors enhance signal transmission and prevent corrosion, ensuring long-term reliability.

SO_2

Anti-Sulfuration

Anti-sulfur resistors are shielded from sulfide contamination due to industrial environments and pollution.

DDR5 DIMMs

- Unbuffered and ECC DIMMs optimized for high-end embedded applications
- Registered Long-DIMMs for embedded servers and workstations
- Low power consumption and higher power efficiency at 1.1V
- On-die ECC supports advanced data integrity

Module Type	DDR5 Long-DIMM	DDR5 SO-DIMM
Standard	JEDEC®	
Speed	4800 MT/s	
Capacity	8GB~32GB	
Voltage	1.1V	
Pin Count	288 pin	262 pin
PCB Height	1.23 inches	1.18 inches
PCB Gold Finger Thickness	30µ" (ECC & Registered)	
Anti-Sulfuration	Default (ECC & Registered)	
Operating Temperature	Standard Temperature: 0°C ~ 95°C Wide Temperature: -40°C ~ 95°C	

DDR5-4800 Unbuffered DIMM

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C ~ 95°C)	8GB	(1Gx16)x4	1Rx16	TS1GLA64V8G	TS1GSA64V8G
	16GB	(2Gx8)x8	1Rx8	TS2GLA64V8E	TS2GSA64V8E
	32GB	(2Gx8)x16	2Rx8	TS4GLA64V8E	TS4GSA64V8E
Wide Temp. (-40°C ~ 95°C)	8GB	(1Gx16)x4	1Rx16	TS1GLA64V8G-I	TS1GSA64V8G-I
	16GB	(2Gx8)x8	1Rx8	TS2GLA64V8E-I	TS2GSA64V8E-I
	32GB	(2Gx8)x16	2Rx8	TS4GLA64V8E-I	TS4GSA64V8E-I

DDR5-4800 ECC-DIMM

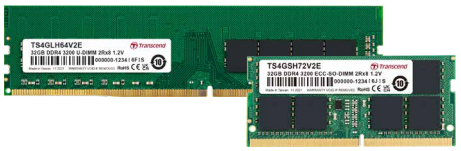
	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C ~ 95°C)	16GB	(2Gx8)x10	1Rx8	TS2GLA72V8E	TS2GSA72V8E
	32GB	(2Gx8)x20	2Rx8	TS4GLA72V8E	TS4GSA72V8E
Wide Temp. (-40°C ~ 95°C)	16GB	(2Gx8)x10	1Rx8	TS2GLA72V8E-I	TS2GSA72V8E-I
	32GB	(2Gx8)x20	2Rx8	TS4GLA72V8E-I	TS4GSA72V8E-I

DDR5-4800 Registered-DIMM

	Capacity	Component Composition	Rank x Org.	Long-DIMM
Standard Temp. (0°C ~ 95°C)	16GB	(2Gx8)x10	1Rx8	TS2GAR80V8E
	32GB	(2Gx8)x20	2Rx8	TS4GAR80V8E
Wide Temp. (-40°C ~ 95°C)	16GB	(2Gx8)x10	1Rx8	TS2GAR80V8E-I
	32GB	(2Gx8)x20	2Rx8	TS4GAR80V8E-I

DDR4 Unbuffered DIMMs

- Unbuffered DIMMs optimized for high-end embedded applications
- Error correction capability for enhanced data integrity
- Efficient operating voltage at 1.2V
- Extra-thick 30µ" PCB gold fingers and anti-sulfuration technology to ensure durability and reliability

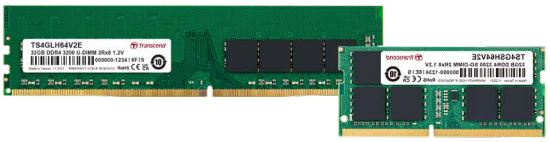


Module Type	DDR4 Long-DIMM	DDR4 SO-DIMM
Standard	JEDEC®	
Speed	3200/2666 MT/s	
Capacity	2GB~32GB	
Voltage	1.2V	
Pin Count	288 pin	260 pin
PCB Height	Standard: 1.23 inches Very Low Profile: 0.74 inches	1.18 inches
PCB Gold Finger Thickness	30µ" (Wide Temp.)	
Anti-Sulfuration	Default (Wide Temp.)	
Operating Temperature	Standard Temperature: 0°C ~ 95°C Wide Temperature: -40°C ~ 95°C	

DDR4-3200

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C ~ 95°C)	4GB	(512Mx8)x8	1Rx8	TS512MLH64V2H	TS512MSH64V2H
		(512Mx16)x4	1Rx16	TS512MLH64V2D	TS512MSH64V2D
				TS512MLH64V2D3	TS512MSH64V2D3
	8GB	(1Gx8)x8	1Rx8	TS1GLH64V2B	TS1GSH64V2B
				TS1GLH64V2B3	TS1GSH64V2B3
		(1Gx16)x4	1Rx16	TS1GLH64V2G	TS1GSH64V2G
				TS1GLH64V2G3	TS1GSH64V2G3
	16GB	(1Gx8)x16	2Rx8	TS2GLH64V2B	TS2GSH64V2B
				TS2GLH64V2B3	TS2GSH64V2B3
		(2Gx8)x8	1Rx8	TS2GLH64V2E	TS2GSH64V2E
				TS2GLH64V2E3	TS2GSH64V2E3
	32GB	(2Gx8)x16	2Rx8	TS4GLH64V2E	TS4GSH64V2E
				TS4GLH64V2E3	TS4GSH64V2E3
Wide Temp. (-40°C ~ 95°C)	4GB	(512Mx16)x4	1Rx16	TS512MLH64V2D-I	TS512MSH64V2D-I
	8GB	(1Gx8)x8	1Rx8	TS1GLH64V2B-I	TS1GSH64V2B-I
		(1Gx16)x4	1Rx16	TS1GLH64V2G-I	TS1GSH64V2G-I
	16GB	(1Gx8)x16	2Rx8	TS2GLH64V2B-I	TS2GSH64V2B-I
		(2Gx8)x8	1Rx8	TS2GLH64V2E-I	TS2GSH64V2E-I
	32GB	(2Gx8)x16	2Rx8	TS4GLH64V2E-I	TS4GSH64V2E-I
Very Low Profile (0°C~95°C)	4GB	(512Mx8)x8	1Rx8	TS512MLH64V2HL	-
	8GB	(1Gx8)x8	1Rx8	TS1GLH64V2BL	
	16GB	(1Gx8)x16	2Rx8	TS2GLH64V2BL	
	32GB	(2Gx8)x16	2Rx8	TS4GLH64V2E3L	

DDR4 Unbuffered DIMMs



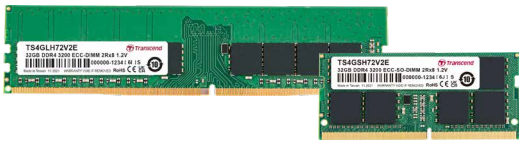
DDR4-2666

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C ~ 95°C)	2GB	(256Mx16)x4	1Rx16	TS256MLH64V6X	TS256MSH64V6X
	4GB	(512Mx16)x4	1Rx16	TS512MLH64V6D	TS512MSH64V6D
		(512Mx8)x8	1Rx8	TS512MLH64V6H	TS512MSH64V6H
				TS512MLH64V6H3	TS512MSH64V6H3
	8GB	(1Gx8)x8	1Rx8	TS1GLH64V6B	TS1GSH64V6B
				TS1GLH64V6B3	TS1GSH64V6B3
		(512Mx8)x16	2Rx8	-	TS1GSH64V6H
	16GB	(1Gx8)x16	2Rx8	TS2GLH64V6B	TS2GSH64V6B
				TS2GLH64V6B3	TS2GSH64V6B3
	32GB	(2Gx8)x16	2Rx8	TS4GLH64V6E	TS4GSH64V6E
				-	TS4GSH64V6E3
Wide Temp. (-40°C ~ 95°C)	4GB	(512Mx8)x8	1Rx8	-	TS512MSH64V6H-I
		(512Mx16)x4	1Rx16		TS512MSH64V6D-I
	8GB	(1Gx8)x8	1Rx8	-	TS1GSH64V6B-I
	16GB	(1Gx8)x16	2Rx8	TS2GLH64V6B-I	TS2GSH64V6B-I
	32GB	(2Gx8)x16	2Rx8	TS4GLH64V6E-I	TS4GSH64V6E-I
Very Low Profile (0°C ~ 95°C)	2GB	(256Mx16)x4	1Rx16	TS256MLH64V6XL	-
	4GB	(512Mx8)x8	1Rx8	TS512MLH64V6HL	
	8GB	(1Gx8)x8	1Rx8	TS1GLH64V6BL	
	16GB	(1Gx8)x16	2Rx8	TS2GLH64V6BL	

*DDR4 2400MT/s and 2133MT/s are also available.

DDR4 ECC DIMMs

- ECC DIMMs optimized for high-end embedded applications
- Error correction capability for enhanced data integrity
- Efficient operating voltage at 1.2V
- Extra-thick 30µ" PCB gold fingers and anti-sulfuration technology to ensure durability and reliability



Module Type	DDR4 ECC Long-DIMM	DDR4 ECC SO-DIMM
Standard	JEDEC®	
Speed	3200/2666 MT/s	
Capacity	4GB~32GB	
Voltage	1.2V	
Pin Count	288 pin	260 pin
PCB Height	Standard: 1.23 inches Very Low Profile: 0.74 inches	1.18 inches
PCB Gold Finger Thickness	30µ"	
Anti-Sulfuration	Default	
Operating Temperature	Standard Temperature: 0°C ~ 95°C Wide Temperature: -40°C ~ 95°C	

DDR4-3200

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C ~ 95°C)	4GB	(512Mx8)x9	1Rx8	-	TS512MSH72V2H
	8GB	(1Gx8)x9	1Rx8	TS1GLH72V2B	TS1GSH72V2B
				TS1GLH72V2B3	TS1GSH72V2B3
		(512Mx8)x18	2Rx8	-	TS1GSH72V2H
	16GB	(1Gx8)x18	2Rx8	TS2GLH72V2B	TS2GSH72V2B
		(2Gx8)x9	1Rx8	TS2GLH72V2E3	TS2GSH72V2E3
	32GB	(2Gx8)x18	2Rx8	TS4GLH72V2E	TS4GSH72V2E
				TS4GLH72V2E3	TS4GSH72V2E3
Wide Temp. (-40°C ~ 95°C)	8GB	(1Gx8)x9	1Rx8	TS1GLH72V2B-I	TS1GSH72V2B-I
	16GB	(1Gx8)x18	2Rx8	TS2GLH72V2B-I	TS2GSH72V2B-I
	32GB	(2Gx8)x18	2Rx8	TS4GLH72V2E-I	TS4GSH72V2E-I
Very Low Profile (0°C ~ 95°C)	8GB	(1Gx8)x9	1Rx8	TS1GLH72V2BL	-
	16GB	(1Gx8)x18	2Rx8	TS2GLH72V2BL	
				TS2GLH72V2B3L	
	32GB	(2Gx8)x18	2Rx8	TS4GLH72V2E3L	

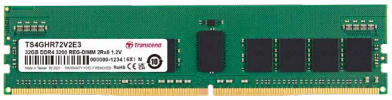
DDR4-2666

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C ~ 95°C)	4GB	(512Mx8)x9	1Rx8	TS512MLH72V6H	TS512MSH72V6H
	8GB	(1Gx8)x9	1Rx8	TS1GLH72V6B	TS1GSH72V6B
				TS1GLH72V6B3	-
	16GB	(1Gx8)x18	2Rx8	TS2GLH72V6B	TS2GSH72V6B
	32GB	(2Gx8)x18	2Rx8	TS4GLH72V6E	TS4GSH72V6E
				TS4GLH72V6E3	-
Wide Temp. (-40°C ~ 95°C)	4GB	(512Mx8)x9	1Rx8	-	TS512MSH72V6H-I
	8GB	(1Gx8)x9	1Rx8		TS1GSH72V6B-I
	16GB	(1Gx8)x18	2Rx8		TS2GSH72V6B-I
	32GB	(2Gx8)x18	2Rx8		TS4GSH72V6E-I
Very Low Profile (0°C ~ 95°C)	8GB	(1Gx8)x9	1Rx8	TS1GLH72V6BL	-
	16GB	(1Gx8)x18	2Rx8	TS2GLH72V6BL	

*DDR4 2400MT/s and 2133MT/s are also available.

DDR4 Registered DIMMs

- Registered Long-DIMMs for embedded servers and workstations
- Very Low Profile form factor for improved airflow and heat dissipation in limited space
- Efficient operating voltage at 1.2V
- Extra-thick 30µ" PCB gold fingers and anti-sulfuration technology to ensure durability and reliability



Module Type	**DDR4 R-DIMM**
Standard	JEDEC®
Speed	3200/2666 MT/s
Capacity	4GB~32GB
Voltage	1.2V
Pin Count	288 pin
PCB Height	Standard: 1.23 inches Very Low Profile: 0.74 inches
PCB Gold Finger Thickness	30µ"
Anti-Sulfuration	Default
Operating Temperature	Standard Temperature: 0°C ~ 95°C Wide Temperature: -40°C ~ 95°C

DDR4-3200

	Capacity	Component Composition	Rank x Org.	Long-DIMM
Standard Temp. (0°C ~ 95°C)	**8GB**	(1Gx8)x9	1Rx8	TS1GHR72V2B
				TS1GHR72V2B3
	16GB	(1Gx8)x18	2Rx8	TS2GHR72V2B
		(2Gx8)x9	1Rx8	TS2GHR72V2E3
	32GB	(2Gx8)x18	2Rx8	TS4GHR72V2E
				TS4GHR72V2E3
Wide Temp. (-40°C ~ 95°C)	**16GB**	(1Gx8)x18	2Rx8	TS2GHR72V2B-I
	32GB	(2Gx8)x18	2Rx8	TS4GHR72V2E-I
Very Low Profile (0°C ~ 95°C)	**8GB**	(1Gx8)x9	1Rx8	TS1GHR72V2BL
	16GB	(1Gx8)x18	2Rx8	TS2GHR72V2BL
		(2Gx8)x9	1Rx8	TS2GHR72V2EL
	32GB	(2Gx8)x18	2Rx8	TS4GHR72V2EL
Very Low Profile + Wide Temp. (-40°C ~ 95°C)	**32GB**	(2Gx8)x18	2Rx8	TS4GHR72V2EL-I

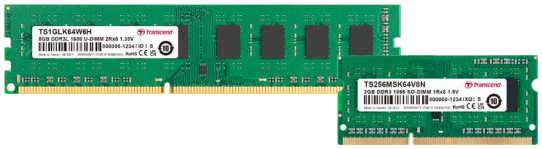
DDR4-2666

	Capacity	Component Composition	Rank x Org.	Long-DIMM
Standard Temp. (0°C ~ 95°C)	**4GB**	(512Mx8)x9	1Rx8	TS512MHR72V6H
	8GB	(512Mx8)x18	2Rx8	TS1GHR72V6H
		(1Gx8)x9	1Rx8	TS1GHR72V6B
	16GB	(1Gx8)x18	2Rx8	TS2GHR72V6B
Wide Temp. (-40°C ~ 95°C)	**32GB**	(2Gx8)x18	2Rx8	TS4GHR72V6E-I
Very Low Profile (0°C ~ 95°C)	**16GB**	(1Gx8)x18	2Rx8	TS2GHR72V6BL

*DDR4 2400MT/s and 2133MT/s are also available.

DDR3 Unbuffered DIMMs

- Unbuffered DIMMs optimized for high-end embedded applications
- Wide Temperature (-40°C~85°C) option to withstand harsh environments
- Extra-thick 30µ" PCB gold fingers and anti-sulfuration technology to ensure durability and reliability



Module Type	DDR3 Long-DIMM	DDR3 SO-DIMM
Standard	JEDEC®	
Speed	1600 MT/s	
Capacity	1GB~8GB	
Voltage	Standard: 1.5V Low Voltage: 1.35V	
Pin Count	240 pin	204 pin
PCB Height	Standard: 1.18 inches Very Low Profile: 0.74 inches	1.18 inches
PCB Gold Finger Thickness	30µ" (Wide Temp.)	
Anti-Sulfuration	Default (Wide Temp.)	
Operating Temperature	Standard Temperature: 0°C~ 85°C Wide Temperature: -40°C~ 85°C	

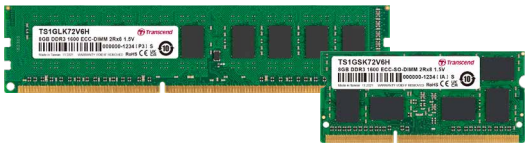
DDR3-1600

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C ~ 85°C)	2GB	(256Mx8)x8	1Rx8	TS256MLK64V6N	TS256MSK64V6N
	4GB	(256Mx8)x16	2Rx8	TS512MLK64V6N	TS512MSK64V6N
		(512Mx8)x8	1Rx8	TS512MLK64V6H	TS512MSK64V6H
	8GB	(512Mx8)x16	2Rx8	TS1GLK64V6H	TS1GSK64V6H
Wide Temp. (-40°C ~ 85°C)	8GB	(512Mx8)x16	2Rx8	-	TS1GSK64V6H-I
Low Voltage (0°C ~ 85°C)	2GB	(256Mx8)x8	1Rx8	TS256MLK64W6N	TS256MSK64W6N
		(256Mx16)x4	1Rx16	-	TS256MSK64W6X
	4GB	(256Mx8)x16	2Rx8	TS512MLK64W6N	TS512MSK64W6N
		(512Mx8)x8	1Rx8	TS512MLK64W6H	TS512MSK64W6H
	8GB	(512Mx8)x16	2Rx8	TS1GLK64W6H	TS1GSK64W6H
Low Voltage + Wide Temp. (-40°C ~ 85°C)	1GB	(128Mx8)x8	1Rx8	-	TS128MSK64W6U-I
	2GB	(256Mx8)x8	1Rx8	-	TS256MSK64W6N-I
	4GB	(256Mx8)x16	2Rx8	-	TS512MSK64W6N-I
		(512Mx8)x8	1Rx8	-	TS512MSK64W6H-I
	8GB	(512Mx8)x16	2Rx8	-	TS1GSK64W6H-I
Low Voltage + Very Low Profile (0°C ~ 85°C)	4GB	(512Mx8)x8	1Rx8	TS512MLK64W6HL	-

*DDR3 1866MT/s and 1333MT/s are also available.

DDR3 ECC DIMMs

- ECC DIMMs optimized for high-end embedded applications
- Error correction capability for enhanced data integrity
- Extra-thick 30µ" PCB gold fingers and anti-sulfuration technology to ensure durability and reliability



Module Type	DDR3 ECC Long-DIMM	DDR3 ECC SO-DIMM
Standard	JEDEC®	
Speed	1600 MT/s	
Capacity	2GB~8GB	
Voltage	Standard: 1.5V Low Voltage: 1.35V	
Pin Count	240 pin	204 pin
PCB Height	Standard: 1.18 inches Very Low Profile: 0.74 inches	1.18 inches
PCB Gold Finger Thickness	30µ"	
Anti-Sulfuration	Default	
Operating Temperature	Standard Temperature: 0°C ~ 85°C Wide Temperature: -40°C ~ 85°C	

DDR3-1600

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C ~ 85°C)	2GB	(256Mx8)x9	1Rx8	TS256MLK72V6N	TS256MSK72V6N
	4GB	(256Mx8)x9	1Rx8	TS512MLK72V6H	-
		(256Mx8)x18	2Rx8	TS512MLK72V6N	-
	8GB	(512Mx8)x18	2Rx8	TS1GLK72V6H	TS1GSK72V6H
Low Voltage (0°C ~ 85°C)	2GB	(256Mx8)x9	1Rx8	TS256MLK72W6N	-
	4GB	(512Mx8)x9	1Rx8	TS512MLK72W6H	TS512MSK72W6H
	8GB	(512Mx8)x18	2Rx8	TS1GLK72W6H	TS1GSK72W6H
Low Voltage + Wide Temp. (-40°C ~ 85°C)	2GB	(256Mx8)x9	1Rx8	-	TS256MSK72W6N-I
	4GB	(512Mx8)x9	1Rx8	-	TS512MSK72W6H-I
	8GB	(512Mx8)x18	2Rx8		TS1GSK72W6H-I
Low Voltage + Very Low Profile (0°C ~ 85°C)	4GB	(512Mx8)x9	1Rx8	TS512MLK72W6HL	-
	8GB	(512Mx8)x18	2Rx8	TS1GLK72W6HL	-

*DDR3 1866MT/s and 1333MT/s are also available.

DDR3 Registered DIMMs

- Registered Long-DIMMs for embedded servers and workstations
- Very Low Profile form factor for improved airflow and heat dissipation in limited space
- Extra-thick 30µ" PCB gold fingers and anti-sulfuration technology to ensure durability and reliability

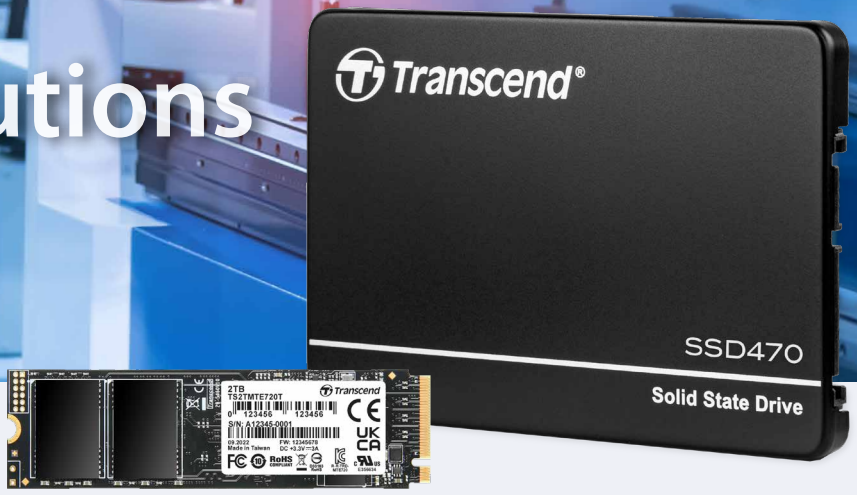
Module Type	**DDR3 R-DIMM**
Standard	JEDEC®
Speed	1600 MT/s
Capacity	4GB / 8GB
Voltage	Standard: 1.5V Low Voltage: 1.35V
Pin Count	240 pin
PCB Height	Standard: 1.18 inches Very Low Profile: 0.74 inches
PCB Gold Finger Thickness	30µ"
Anti-Sulfuration	Default
Operating Temperature	Standard Temperature: 0°C ~ 85°C

DDR3-1600

	Capacity	Component Composition	Rank x Org.	Long-DIMM
Standard Temp. (0°C ~ 85°C)	**4GB**	(256Mx8)x18	2Rx8	TS512MKR72V6N
	8GB	(512Mx8)x18	2Rx8	TS1GKR72V6H
Low Voltage (0°C~ 85°C)	**4GB**	(512Mx8)x9	1Rx8	TS512MKR72W6H
	8GB	(512Mx8)x18	2Rx8	TS1GKR72W6H
Very Low Profile (0°C~ 85°C)	**4GB**	(512Mx8)x9	1Rx8	TS512MKR72V6HL
	8GB	(512Mx8)x18	2Rx8	TS1GKR72V6HL

*DDR3 1866MT/s and 1333MT/s are also available.

SSD Solutions

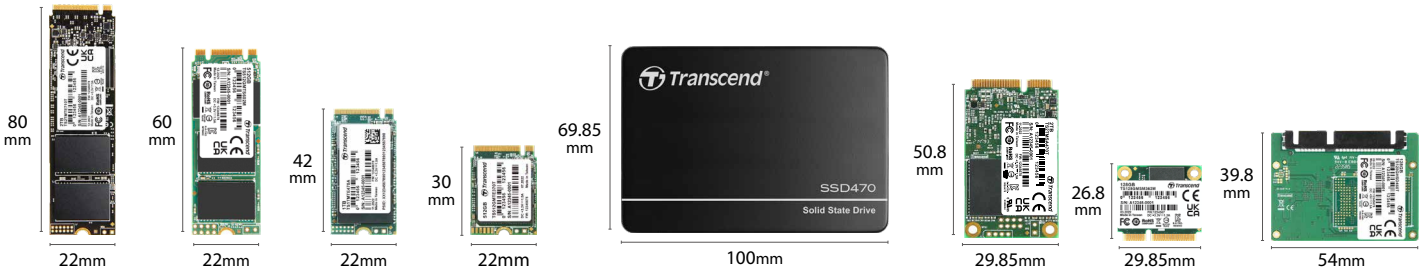


Transcend's Solid-State Drive (SSD) solutions offer fast, reliable performance in a wide variety of form factors, interfaces, and storage capacities for devices working in extreme industrial conditions. With support for Transcend's Power Shield(PS), Dynamic Thermal Throttling, and S.M.A.R.T. analysis technologies, our SSDs are designed for durability and reliability in large-scale embedded deployments.

Transcend also provides SSDs featuring technologies such as Power Loss Protection (PLP) to ensure data integrity in applications with unstable power supply; TCG Opal 2.0 to enhance data security; and SLC Mode to increase endurance and performance. These special product lines help address issues commonly seen in embedded computing applications.

SSD Solutions

M.2 2280/2260/2242/2230 | 2.5" | mSATA / mSATA mini | Half-Slim



112-Layer 3D NAND Flash

Interface	Form Factor	Model	DRAM	Capacity	Feature
PCIe Gen4	M.2 2280	MTE720T	●	1TB / 2TB	
		MTE712A	●	256GB~2TB	TCG Opal
		MTE560I	●	80GB~640GB	TCG Opal & SLC Mode
		MTE710T	●	256GB~2TB	
		MTE712P	●	256GB~2TB	PLP
PCIe Gen3	M.2 2280	MTE672A	-	128GB~1TB	TCG Opal
		MTE670T	-	128GB~1TB	
	M.2 2242	MTE470A	-	128GB~1TB	TCG Opal
		MTE460T	-	128GB~1TB	
	M.2 2230	MTE370T	-	256GB / 512GB	
SATA III	M.2 2280	MTS970A	●	128GB~4TB	TCG Opal
		MTS970T	●	128GB~4TB	
		MTS960T	-	64GB~2TB	
		MTS260I	●	40GB~1280GB	SLC Mode
	M.2 2242	MTS570T	●	128GB~1TB	
		MTS560T	-	64GB~1TB	
		MTS210I	●	40GB~320GB	SLC Mode
		MTS200I	-	20GB~320GB	SLC Mode
	2.5"	SSD470A	●	128GB~4TB	TCG Opal
		SSD470K	●	128GB~4TB	
		SSD460K	-	64GB~2TB	
		SSD470P	●	128GB~4TB	PLP
		SSD550I	●	40GB~1280GB	SLC Mode
	mSATA	MSA470T	●	128GB~2TB	
		MSA460T	-	64GB~1TB	
		MSA520I	●	40GB~320GB	SLC Mode
	Half-Slim	HSD460I	-	64GB~2TB	

96-Layer 3D NAND Flash

Interface	Form Factor	Model	DRAM	Capacity	Feature
PCIe Gen3	M.2 2280	MTE662A	●	256GB~2TB	TCG Opal
		MTE662T2	●	128GB~2TB	
		MTE652T2	●	64GB~512GB	
		MTE632T	-	128GB~512GB	
		MTE662P	●	128GB~1TB	PLP
	M.2 2242	MTE452T2	●	128GB~512GB	
	M.2 2230	MTE352T	-	128GB~512GB	
SATA III	M.2 2280	MTS952A	●	64GB~2TB	TCG Opal
		MTS952T2	●	64GB / 128GB	
		MTS932T	-	64GB~2TB	
		MTS952P	●	128GB~1TB	PLP
	M.2 2242	MTS552T2	●	64GB~512GB	
		MTS532T	-	64GB	
	2.5"	SSD452A	●	64GB~2TB	TCG Opal
		SSD452K2	●	64GB~2TB	
		SSD452P	●	64GB~2TB	PLP
		SSD530K	●	64GB / 128GB	SLC Mode
	mSATA	MSA452T2	●	64GB~1TB	
		MSA452P	●	64GB~1TB	PLP
	Half-Slim	HSD452T	●	64GB~512GB	

MLC NAND Flash

Interface	Form Factor	Model	DRAM	Capacity	Feature
SATA III	M.2 2280	MTS810M	●	32GB~256GB	
		MTS802M	●	32GB~1TB	
		MTS862K	●	16GB / 32GB	SLC Mode
	M.2 2260	MTS602M	●	32GB~512GB	
	M.2 2242	MTS410M	●	16GB~128GB	
		MTS402M	●	16GB~512GB	
		MTS462K	●	8GB / 16GB	SLC Mode
	2.5"	SSD422K	●	32GB~1TB	
		SSD420K	●	16GB~1TB	
		SSD420P	●	32GB~256GB	PLP
		SSD510K	●	16GB~128GB	SLC Mode
	mSATA	MSA380M	●	16GB~256GB	
		MSA372M	●	16GB~1TB	
		MSA510	●	16GB~128GB	SLC Mode
	mSATA mini	MSM362M	-	16GB~128GB	
	Half-Slim	HSD372M	●	16GB~128GB	

*Wide-temp models provided by request. Please contact us to know more.

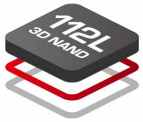
Product Highlights

112-Layer 3D NAND SSDs

Incorporating high-quality NAND flash and controller ICs from major suppliers, Transcend's 112-layer 3D NAND SSDs boast high storage densities and a 50% gain in I/O throughput. Available in both PCIe and SATA III 6Gb/s interfaces, Transcend's BiCS5 product line includes both with-DRAM and DRAM-less SSDs. With-DRAM SSDs deliver higher TBW and random R/W speeds, while DRAM-less SSDs offer lower power consumption at a competitive price point.

Transcend's 112-layer 3D NAND SSDs offer an endurance rating of 3K P/E cycles, and are able to operate under an extended temperature range (-20°C~75°C). Corner Bond technology is implemented as standard to withstand shock and vibration. Transcend's 112-layer 3D NAND SSDs' advanced performance allow embedded computing clients to tackle complex industrial workloads.

Key Features

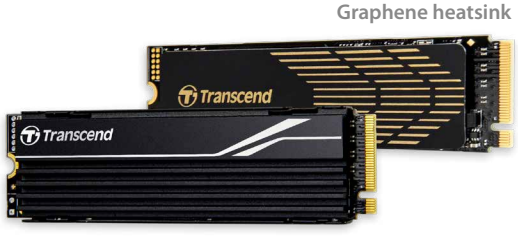


High-Quality NAND Flash

Highest quality NAND flash and controller ICs manufactured by world class suppliers.

Thermal Management

Dynamic Thermal Throttling allows SSDs to self-regulate performance and increase reliability.



Improved I/O Performance

50% higher throughput than 96-layer flash.

High Endurance

3,000 P/E Cycles guaranteed for high endurance embedded applications.

Optional Graphene or Aluminum Heatsink

Transcend offers optional ultra-thin graphene or high performance aluminum heatsink options to improve heat dissipation.

112-Layer 3D NAND Flash

PCIe Gen4 M.2 2280

- Compliant with NVM Express specification 1.4 and utilizes high-speed Gen 4 x4 interface
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in DDR4 DRAM cache and LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	MTE720T& MTE720-I	MTE712A & MTE712A-I
Interface	PCIe Gen4 x4 (8CH)	PCIe Gen4 x4 (4CH)
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C	
DRAM Cache	Default	
TCG Opal	-	Default
Sequential R/W*	7,200/6,500 MB/s	3,800/3,200MB/s
MTBF*	3,000,000 hours	
DWPD*	1.35 (3 yrs)	1.84 (3yrs)
Form Factor	2280-D2-M	
Dimensions	Standard: 80 x 22 x 3.58 mm With Graphene Heatsink: 80 x 22 x 3.77 mm With Aluminum Heatsink: 80 x 23.1 x 9.2 mm	
Operating Voltage	3.3V±5%	
Max. Power Consumption	5.75W	5.6W
Corner Bond	Default	
PCB Gold Finger Thickness	30µ"	

Ordering Information		
Extended Temp. (-20°C ~ 75°C)	**1TB** TS1TMTE720T **2TB** TS2TMTE720T	**256GB** TS256GMTE712A **512GB** TS512GMTE712A **1TB** TS1TMTE712A **2TB** TS2TMTE712A
Wide Temp. (-40°C ~ 85°C)	**1TB** TS1TMTE720T-I **2TB** TS2TMTE720T-I	**256GB** TS256GMTE712A-I **512GB** TS512GMTE712A-I **1TB** TS1TMTE712A-I **2TB** TS2TMTE712A-I

R/W: Read/Write
MTBF: Mean Time Between Failures
DWPD: Drive Writes Per Day

*Value varies by capacity, user hardware, system configuration, and calculation method.

112-Layer 3D NAND Flash

PCIe Gen4 M.2 2280

- Compliant with NVM Express specification 1.4 and utilizes high-speed Gen 4 x4 interface
- Endurance: 3K P/E (Program/Erase) cycles; up to 100K P/E cycles for SLC Mode products
- Built-in DRAM cache and LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	MTE560I	MTE710T & MTE710T-I	MTE712P & MTE712P-I
Interface	PCIe Gen4 x4		
Operating Temperature	Wide Temp.: -40°C ~ 85°C	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C	
DRAM Cache	Default		
TCG Opal	Default	-	-
Feature	SLC Mode	-	PLP
Sequential R/W*	3,800/3,100MB/s	3,800/3,200MB/s	
MTBF*	3,000,000 hours		
DWPD*	54.2 (3yrs)	1.99 (3 yrs)	1.84 (3yrs)
Form Factor	2280-D2-M		2280-D5-M
Dimensions	Standard: 80 x 22 x 3.58 mm With Graphene Heatsink: 80 x 22 x 3.77 mm With Aluminum Heatsink: 80 x 23.1 x 9.2 mm		Standard: 80 x 22 x 3.88 mm With Graphene Heatsink: 80 x 22 x 4.17 mm With Aluminum Heatsink: 80 x 23.1 x 9.2 mm
Operating Voltage	3.3V±5%		
Max. Power Consumption	5W	5.6W	
Corner Bond	Default		
PCB Gold Finger Thickness	30µ"		

Ordering Information					
Extended Temp. (-20°C ~ 75°C)	-	256GB	TS256GMTE710T	256GB	TS256GMTE712P
		512GB	TS512GMTE710T	512GB	TS512GMTE712P
		1TB	TS1TMTE710T	1TB	TS1TMTE712P
		2TB	TS2TMTE710T	2TB	TS2TMTE712P
Wide Temp. (-40°C ~ 85°C)	80GB TS80GMTE560I 160GB TS160GMTE560I 320GB TS320GMTE560I 640GB TS640GMTE560I	256GB	TS256GMTE710T-I	256GB	TS256GMTE712P-I
		512GB	TS512GMTE710T-I	512GB	TS512GMTE712P-I
		1TB	TS1TMTE710T-I	1TB	TS1TMTE712P-I
		2TB	TS2TMTE710T-I	2TB	TS2TMTE712P-I

*Value varies by capacity, user hardware, system configuration, and calculation method.

112-Layer 3D NAND Flash

PCIe Gen3 M.2 2280

- Compliant with TCG Opal 2.0 standards to ensure data security for TCG Opal products
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	MTE672A & MTE672A-I	MTE670T & MTE670T-I
Interface	PCIe Gen3 x4	
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C	
DRAM Cache	-	
TCG Opal	Default	-
Sequential R/W*	2,100/1,600 MB/s	
MTBF*	3,000,000 hours	
DWPD*	0.88 (3 yrs)	
Form Factor	2280-S2-M	
Dimensions	Standard: 80 x 22 x 2.23 mm With Graphene Heatsink: 80 x 22 x 2.42 mm With Aluminum Heatsink: 80 x 23.1 x 9.2 mm	
Operating Voltage	3.3V±5%	
Max. Power Consumption	3.1W	
Corner Bond	Default	
PCB Gold Finger Thickness	30µ"	

Ordering Information				
Extended Temp. (-20°C ~ 75°C)	128GB	TS128GMTE672A	128GB	TS128GMTE670T
	256GB	TS256GMTE672A	256GB	TS256GMTE670T
	512GB	TS512GMTE672A	512GB	TS512GMTE670T
	1TB	TS1TMTE672A	1TB	TS1TMTE670T
Wide Temp. (-40°C ~ 85°C)	128GB	TS128GMTE672A-I	128GB	TS128GMTE670T-I
	256GB	TS256GMTE672A-I	256GB	TS256GMTE670T-I
	512GB	TS512GMTE672A-I	512GB	TS512GMTE670T-I
	1TB	TS1TMTE672A-I	1TB	TS1TMTE670T-I

*Value varies by capacity, user hardware, system configuration, and calculation method.

112-Layer 3D NAND Flash

PCIe Gen3 M.2 2242/2230

- Compliant with TCG Opal 2.0 standards to ensure data security for TCG Opal products
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	MTE470A & MTE470A-I	MTE460T & MTE460T-I	MTE370T & MTE370T-I
Interface	PCIe Gen3 x4	PCIe Gen3 x2	PCIe Gen3 x4
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C		
DRAM Cache	-		
TCG Opal	Default	-	
Sequential R/W*	2,000/1,000 MB/s	1,700/900 MB/s	2,000/1,100 MB/s
MTBF*	3,000,000 hours		
DWPD*	0.86 (3 yrs)	0.88 (3 yrs)	
Form Factor	2242-S2-M	2242-D2-B-M	2230-S2-M
Dimensions	42 x 22 x 2.23 mm	42 x 22 x 3.58 mm	30 x 22 x 2.38 mm
Operating Voltage	3.3V±5%		
Max. Power Consumption	3.5W	3.4W	3.3W
Corner Bond	Default		
PCB Gold Finger Thickness	30µ"		

	Ordering Information		
Extended Temp. (-20°C ~ 75°C)	128GB TS128GMTE470A 256GB TS256GMTE470A 512GB TS512GMTE470A 1TB TS1TMTE470A	128GB TS128GMTE460T 256GB TS256GMTE460T 512GB TS512GMTE460T 1TB TS1TMTE460T	256GB TS256GMTE370T 512GB TS512GMTE370T
Wide Temp. (-40°C ~ 85°C)	128GB TS128GMTE470A-I 256GB TS256GMTE470A-I 512GB TS512GMTE470A-I 1TB TS1TMTE470A-I	128GB TS128GMTE460T-I 256GB TS256GMTE460T-I 512GB TS512GMTE460T-I 1TB TS1TMTE460T-I	256GB TS256GMTE370T-I 512GB TS512GMTE370T-I

*Value varies by capacity, user hardware, system configuration, and calculation method.

112-Layer 3D NAND Flash

SATA III M.2 2280

- Compliant with TCG Opal 2.0 standards to ensure data security for TCG Opal products
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in DRAM cache and LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	MTS970A & MTS970A-I	MTS970T & MTS970T-I
Interface	SATA III 6Gb/s	
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C	
DRAM Cache	Default	
TCG Opal	Default	-
Sequential R/W*	560/475 MB/s	560/520 MB/s
MTBF*	3,000,000 hours	
DWPD*	1.85 (3 yrs)	2.21 (3 yrs)
Form Factor	2280-D2-B-M	
Dimensions	80 x 22 x 3.58 mm	
Operating Voltage	3.3V±5%	
Max. Power Consumption	4.0W	4.1W
Corner Bond	Default	
PCB Gold Finger Thickness	30µ"	

Ordering Information				
Extended Temp. (-20°C ~ 75°C)	128GB	TS128GMTS970A	128GB	TS128GMTS970T
	256GB	TS256GMTS970A	256GB	TS256GMTS970T
	512GB	TS512GMTS970A	512GB	TS512GMTS970T
	1TB	TS1TMTS970A	1TB	TS1TMTS970T
	2TB	TS2TMTS970A	2TB	TS2TMTS970T
	4TB	TS4TMTS970A	4TB	TS4TMTS970T
Wide Temp. (-40°C ~ 85°C)	128GB	TS128GMTS970A-I	128GB	TS128GMTS970T-I
	256GB	TS256GMTS970A-I	256GB	TS256GMTS970T-I
	512GB	TS512GMTS970A-I	512GB	TS512GMTS970T-I
	1TB	TS1TMTS970A-I	1TB	TS1TMTS970T-I
	2TB	TS2TMTS970A-I	2TB	TS2TMTS970T-I
	4TB	TS4TMTS970A-I	4TB	TS4TMTS970T-I

*Value varies by capacity, user hardware, system configuration, and calculation method.

112-Layer 3D NAND Flash

SATA III M.2 2280

- Space-saving M.2 form factor (80mm)– ideal for mobile computing devices
- Endurance: 3K P/E (Program/Erase) cycles; up to 100K P/E cycles for SLC Mode products
- Built-in LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	MTS960T & MTS960T-I	MTS260I
Interface	SATA III 6Gb/s	
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C	Wide Temp.: -40°C ~ 85°C
DRAM Cache	-	Default
Feature	-	SLC Mode
Sequential R/W*	560/500 MB/s	560/520 MB/s
MTBF*	3,000,000 hours	
DWPD*	1.95 (3 yrs)	52.3 (3 yrs)
Form Factor	2280-S2-B-M	2280-D2-B-M
Dimensions	80 x 22 x 2.23 mm	80 x 22 x 3.58 mm
Operating Voltage	3.3V±5%	
Max. Power Consumption	1.5W	3.1W
Corner Bond	Default	
PCB Gold Finger Thickness	30µ"	

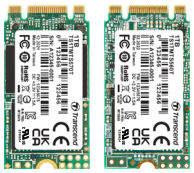
Ordering Information				
Extended Temp. (-20°C ~ 75°C)	64GB	TS64GMTS960T	-	
	128GB	TS128GMTS960T		
	256GB	TS256GMTS960T		
	512GB	TS512GMTS960T		
	1TB	TS1TMTS960T		
	2TB	TS2TMTS960T		
Wide Temp. (-40°C ~ 85°C)	64GB	TS64GMTS960T-I	40GB	TS40GMTS260I
	128GB	TS128GMTS960T-I	80GB	TS80GMTS260I
	256GB	TS256GMTS960T-I	160GB	TS160GMTS260I
	512GB	TS512GMTS960T-I	320GB	TS320GMTS260I
	1TB	TS1TMTS960T-I	640GB	TS640GMTS260I
	2TB	TS2TMTS960T-I	1280GB	TS1280GMTS260I

*Value varies by capacity, user hardware, system configuration, and calculation method.

112-Layer 3D NAND Flash

SATA III M.2 2242

- Space-saving M.2 form factor (42mm)– ideal for mobile computing devices
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance



Model	MTS570T & MTS570T-I	MTS560T & MTS560T-I
Interface	SATA III 6Gb/s	
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C	
DRAM Cache	Default	-
Feature	-	
Sequential R/W*	560/520 MB/s	560/500 MB/s
MTBF*	3,000,000 hours	
DWPD*	2.16 (3 yrs)	1.95 (3 yrs)
Form Factor	2242-D2-B-M	
Dimensions	42 x 22 x 3.58 mm	
Operating Voltage	3.3V±5%	
Max. Power Consumption	4.5W	1.4W
Corner Bond	Default	
PCB Gold Finger Thickness	30µ"	

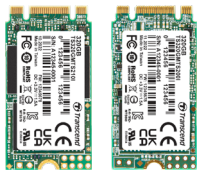
Ordering Information				
Extended Temp. (-20°C ~ 75°C)	128GB	TS128GMTS570T	64GB	TS64GMTS560T
	256GB	TS256GMTS570T	128GB	TS128GMTS560T
	512GB	TS512GMTS570T	256GB	TS256GMTS560T
	1TB	TS1TMTS570T	512GB	TS512GMTS560T
			1TB	TS1TMTS560T
Wide Temp. (-40°C ~ 85°C)	128GB	TS128GMTS570T-I	64GB	TS64GMTS560T-I
	256GB	TS256GMTS570T-I	128GB	TS128GMTS560T-I
	512GB	TS512GMTS570T-I	256GB	TS256GMTS560T-I
	1TB	TS1TMTS570T-I	512GB	TS512GMTS560T-I
			1TB	TS1TMTS560T-I

*Value varies by capacity, user hardware, system configuration, and calculation method.

112-Layer 3D NAND Flash

SATA III M.2 2242

- Space-saving M.2 form factor (42mm)– ideal for mobile computing devices
- Endurance: up to 100K P/E (Program/Erase) cycles for SLC Mode products
- Built-in LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance



Model	MTS210I	MTS200I
Interface	SATA III 6Gb/s	
Operating Temperature	Wide Temp.: -40°C ~ 85°C	
DRAM Cache	Default	-
Feature	SLC Mode	
Sequential R/W*	560/400 MB/s	560/500 MB/s
MTBF*	3,000,000 hours	
DWPD*	52.3 (3 yrs)	TBD**
Form Factor	2242-D2-B-M	
Dimensions	42 x 22 x 3.58 mm	
Operating Voltage	3.3V±5%	
Max. Power Consumption	2.7W	1.0W
Corner Bond	Default	
PCB Gold Finger Thickness	30µ"	

Ordering Information				
Wide Temp. (-40°C ~ 85°C)	**40GB**	TS40GMTS210I	**20GB**	TS20GMTS200I
	80GB	TS80GMTS210I	**40GB**	TS40GMTS200I
	160GB	TS160GMTS210I	**80GB**	TS80GMTS200I
	320GB	TS320GMTS210I	**160GB**	TS160GMTS200I
			320GB	TS320GMTS200I

*Value varies by capacity, user hardware, system configuration, and calculation method.

**Please contact your sales representatives to know more.

112-Layer 3D NAND Flash

SATA III 2.5”

- Compliant with TCG Opal 2.0 standards ensures data security for TCG Opal product
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in DRAM cache and LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	SSD470A & SSD470A-I	SSD470K & SSD470K-I
Interface	SATA III 6Gb/s	
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C	
DRAM Cache	Default	
TCG Opal	Default	-
Sequential R/W*	560/500 MB/s	560/520 MB/s
MTBF*	3,000,000 hours	
DWPD*	2.16 (3 yrs)	
Dimensions	100 x 69.85 x 6.8 mm	
Operating Voltage	5V±5%	
Max. Power Consumption	5.0W	

Ordering Information				
Extended Temp. (-20°C ~ 75°C)	**128GB**	TS128GSSD470A	**128GB**	TS128GSSD470K
	256GB	TS256GSSD470A	**256GB**	TS256GSSD470K
	512GB	TS512GSSD470A	**512GB**	TS512GSSD470K
	1TB	TS1TGSSD470A	**1TB**	TS1TSSD470K
	2TB	TS2TSSD470A	**2TB**	TS2TSSD470K
	4TB	TS4TSSD470A	**4TB**	TS4TSSD470K
Wide Temp. (-40°C ~ 85°C)	**128GB**	TS128GSSD470A-I	**128GB**	TS128GSSD470K-I
	256GB	TS256GSSD470A-I	**256GB**	TS256GSSD470K-I
	512GB	TS512GSSD470A-I	**512GB**	TS512GSSD470K-I
	1TB	TS1TGSSD470A-I	**1TB**	TS1TSSD470K-I
	2TB	TS2TSSD470A-I	**2TB**	TS2TSSD470K-I
	4TB	TS4TSSD470A-I	**4TB**	TS4TSSD470K-I

*Value varies by capacity, user hardware, system configuration, and calculation method.

112-Layer 3D NAND Flash

SATA III 2.5"

- Manufactured with top-tier NAND flash memory
- Endurance: 3K P/E (Program/Erase) cycles; up to 100K P/E cycles for SLC Mode products
- Built-in LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	SSD460K & SSD460K-I	SSD470P & SSD470P-I	SSD550I
Interface	SATA III 6Gb/s		
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C		Wide Temp.: -40°C ~ 85°C
DRAM Cache	-	Default	
Feature	-	PLP	SLC Mode
Sequential R/W*	560/500 MB/s	560/520 MB/s	560/500 MB/s
MTBF*	3,000,000 hours		
DWPD*	1.95 (3 yrs)	2.16 (3 yrs)	52.3 (3 yrs)
Dimensions	100 x 69.85 x 6.8 mm		
Operating Voltage	5V±5%		
Max. Power Consumption	1.9W	5.0W	3.3W

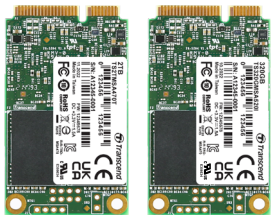
Ordering Information					
Extended Temp. (-20°C ~ 75°C)	64GB	TS64GSSD460K	128GB	TS128GSSD470P	-
	128GB	TS128GSSD460K	256GB	TS256GSSD470P	
	256GB	TS256GSSD460K	512GB	TS512GSSD470P	
	512GB	TS512GSSD460K	1TB	TS1TSSD470P	
	1TB	TS1TSSD460K	2TB	TS2TSSD470P	
	2TB	TS2TSSD460K	4TB	TS4TSSD470P	
Wide Temp. (-40°C ~ 85°C)	64GB	TS64GSSD460K-I	128GB	TS128GSSD470P-I	40GB TS40GSSD550I
	128GB	TS128GSSD460K-I	256GB	TS256GSSD470P-I	80GB TS80GSSD550I
	256GB	TS256GSSD460K-I	512GB	TS512GSSD470P-I	160GB TS160GSSD550I
	512GB	TS512GSSD460K-I	1TB	TS1TSSD470P-I	320GB TS320GSSD550I
	1TB	TS1TSSD460K-I	2TB	TS2TSSD470P-I	640GB TS640GSSD550I
	2TB	TS2TSSD460K-I	4TB	TS4TSSD470P-I	1280GB TS1280GSSD550I

*Value varies by capacity, user hardware, system configuration, and calculation method.

112-Layer 3D NAND Flash

SATA III mSATA

- Manufactured with top-tier NAND flash memory
- Endurance: 3K P/E (Program/Erase) cycles; up to 100K P/E cycles for SLC Mode products
- Built-in LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance



Model	MSA470T & MSA470T-I	MSA460T & MSA460T-I	MSA520I
Interface	SATA III 6Gb/s		
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C		Wide Temp.: -40°C ~ 85°C
DRAM Cache	Default	-	Default
Feature	-		SLC Mode
Sequential R/W*	560/520 MB/s	560/500 MB/s	560/500 MB/s
MTBF*	3,000,000 hours		
DWPD*	2.16 (3 yrs)	1.95 (3 yrs)	52.3 (3 yrs)
Form Factor	MO-300A		
Dimensions	50.8 x 29.85 x 4.85 mm		
Operating Voltage	3.3V±5%		
Max. Power Consumption	3.4W	1.4W	3.4W
Corner Bond	Default		
PCB Gold Finger Thickness	30µ"		

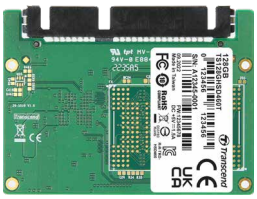
Ordering Information					
Extended Temp. (-20°C ~ 75°C)	128GB	TS128GMSA470T	64GB	TS64GMSA460T	-
	256GB	TS256GMSA470T	128GB	TS128GMSA460T	
	512GB	TS512GMSA470T	256GB	TS256GMSA460T	
	1TB	TS1TMSA470T	512GB	TS512GMSA460T	
	2TB	TS2TMSA470T	1TB	TS1TMSA460T	
Wide Temp. (-40°C ~ 85°C)	128GB	TS128GMSA470T-I	64GB	TS64GMSA460T-I	40GB TS40GMSA520I
	256GB	TS256GMSA470T-I	128GB	TS128GMSA460T-I	80GB TS80GMSA520I
	512GB	TS512GMSA470T-I	256GB	TS256GMSA460T-I	160GB TS160GMSA520I
	1TB	TS1TMSA470T-I	512GB	TS512GMSA460T-I	320GB TS320GMSA520I
	2TB	TS2TMSA470T-I	1TB	TS1TMSA460T-I	

*Value varies by capacity, user hardware, system configuration, and calculation method.

112-Layer 3D NAND Flash

SATA III Half-Slim

- Manufactured with top-tier NAND flash memory
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance



Model	HSD460I
Interface	SATA III 6Gb/s
Operating Temperature	Wide Temp.: -40°C ~ 85°C
DRAM Cache	-
Sequential R/W*	560/490 MB/s
MTBF*	3,000,000 hours
DWPD*	1.75 (3 yrs)
Form Factor	MO-297
Dimensions	54 x 39.8 x 4 mm
Operating Voltage	5V±5%
Max. Power Consumption	1.9W
Corner Bond	Default

	Ordering Information	
Wide Temp. (-40°C ~ 85°C)	**64GB**	TS64GHSD460I
	128GB	TS128GHSD460I
	256GB	TS256GHSD460I
	512GB	TS512GHSD460I
	1TB	TS1THSD460I
	2TB	TS2THSD460I

*Value varies by capacity, user hardware, system configuration, and calculation method.

96-Layer 3D NAND Flash

PCIe Gen3 M.2 2280

- Compliant with TCG Opal 2.0 standards to ensure data security for TCG Opal products
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in DRAM cache and LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	MTE662A	MTE662T2 & MTE662T-I
Interface	PCIe Gen3 x4	
Operating Temperature	Extended Temp.: -20°C ~ 75°C	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C
DRAM Cache	Default	
TCG Opal	Default	-
Sequential R/W*	3,500/2,700 MB/s	
MTBF*	3,000,000 hours	
DWPD*	2 (3 yrs)	
Form Factor	2280-D2-M	
Dimensions	80 x 22 x 3.58 mm	
Operating Voltage	3.3V±5%	
Max. Power Consumption	7.0W	
Corner Bond	Default	
PCB Gold Finger Thickness	30μ"	

Ordering Information				
Extended Temp. (-20°C ~ 75°C)	**256GB**	TS256GMTE662A	**128GB**	TS128GMTE662T2
	512GB	TS512GMTE662A	**256GB**	TS256GMTE662T2
	1TB	TS1TMTE662A	**512GB**	TS512GMTE662T2
	2TB	TS2TMTE662A	**1TB**	TS1TMTE662T2
			2TB	TS2TMTE662T2
Wide Temp. (-40°C ~ 85°C)	-		**128GB**	TS128GMTE662T-I
			256GB	TS256GMTE662T-I
			512GB	TS512GMTE662T-I
			1TB	TS1TMTE662T-I
			2TB	TS2TMTE662T-I

*Value varies by capacity, user hardware, system configuration, and calculation method.

96-Layer 3D NAND Flash

PCIe Gen3 M.2 2280

- Reliability and Stability with Power Shield (PS) and Power Loss Protection (PLP) technologies
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	MTE652T2 & MTE652T-I	MTE632T & MTE632T-I	MTE662P & MTE662P-I
Interface	PCIe Gen3 x4		
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C	Standard Temp.: 0°C ~ 70°C Wide Temp.: -40°C ~ 85°C	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C
DRAM Cache	Default	-	Default
Feature	-		PLP
Sequential R/W*	2,100/1,250 MB/s	1,700/900 MB/s	3,400/2,300 MB/s
MTBF*	3,000,000 hours		
DWPD*	2 (3 yrs)	0.73 (3 yrs)	2 (3 yrs)
Form Factor	2280-D2-M	2280-S2-M	2280-D5-M
Dimensions	80 x 22 x 3.58 mm	80 x 22 x 2.23 mm	80 x 22 x 3.88 mm
Operating Voltage	3.3V±5%		
Max. Power Consumption	3.0W	4.2W	3.4W
Corner Bond	Default		
PCB Gold Finger Thickness	30u"	-	30u"

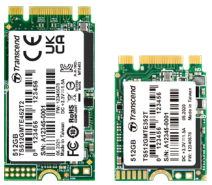
	Ordering Information		
Standard Temp. (0°C ~ 70°C)	-	128GB TS128GMTE632T 256GB TS256GMTE632T 512GB TS512GMTE632T	-
Extended Temp. (-20°C ~ 75°C)	64GB TS64GMTE652T2 128GB TS128GMTE652T2 256GB TS256GMTE652T2 512GB TS512GMTE652T2	-	128GB TS128GMTE662P 256GB TS256GMTE662P 512GB TS512GMTE662P 1TB TS1TMTE662P
Wide Temp. (-40°C ~ 85°C)	64GB TS64GMTE652T-I 128GB TS128GMTE652T-I 256GB TS256GMTE652T-I 512GB TS512GMTE652T-I	128GB TS128GMTE632T-I 256GB TS256GMTE632T-I 512GB TS512GMTE632T-I	128GB TS128GMTE662P-I 256GB TS256GMTE662P-I 512GB TS512GMTE662P-I 1TB TS1TMTE662P-I

*Value varies by capacity, user hardware, system configuration, and calculation method.

96-Layer 3D NAND Flash

PCIe Gen3 M.2 2242/2230

- Manufactured with top-tier NAND flash memory
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance



Model	MTE452T2 & MTE452T-I	MTE352T
Interface	PCIe Gen3 x2	
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C	Extended Temp.: -20°C ~ 75°C
DRAM Cache	Default	-
Sequential R/W*	1,700/1,250 MB/s	1,700/1,000 MB/s
MTBF*	3,000,000 hours	
DWPD*	2 (3 yrs)	1.93 (3 yrs)
Form Factor	2242-D2-B-M	2230-S3-B-M
Dimensions	42 x 22 x 3.58 mm	30 x 22 x 2.38 mm
Operating Voltage	3.3V±5%	
Max. Power Consumption	3.0W	3.2W
Corner Bond	Default	
PCB Gold Finger Thickness	30µ"	

Ordering Information		
Extended Temp. (-20°C ~ 75°C)	**128GB** TS128GMTE452T2 **256GB** TS256GMTE452T2 **512GB** TS512GMTE452T2	**128GB** TS128GMTE352T **256GB** TS256GMTE352T **512GB** TS512GMTE352T
Wide Temp. (-40°C ~ 85°C)	**128GB** TS128GMTE452T-I **256GB** TS256GMTE452T-I **512GB** TS512GMTE452T-I	-

*Value varies by capacity, user hardware, system configuration, and calculation method.

96-Layer 3D NAND Flash

SATA III M.2 2280

- Compliant with TCG Opal 2.0 standards to ensure data security for TCG Opal products
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in DRAM cache and LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	MTS952A	MTS952T2 & MTS952T-I
Interface	SATA III 6Gb/s	
Operating Temperature	Extended Temp.: -20°C ~ 75°C	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C
DRAM Cache	Default	
TCG Opal	Default	-
Sequential R/W*	560/410 MB/s	560/520 MB/s
MTBF*	3,000,000 hours	
DWPD*	1.61 (3 yrs)	
Form Factor	2280-D2-B-M	
Dimensions	80 x 22 x 3.58 mm	
Operating Voltage	3.3V±5%	
Max. Power Consumption	2.1W	
Corner Bond	Default	
PCB Gold Finger Thickness	30µ"	

Ordering Information				
Extended Temp. (-20°C ~ 75°C)	**64GB**	TS64GMTS952A	**64GB**	TS64GMTS952T2
	128GB	TS128GMTS952A	**128GB**	TS128GMTS952T2
	256GB	TS256GMTS952A	**256GB**	TS256GMTS952T2
	512GB	TS512GMTS952A	**512GB**	TS512GMTS952T2
	1TB	TS1TMTS952A	**1TB**	TS1TMTS952T2
	2TB	TS2TMTS952A	**2TB**	TS2TMTS952T2
Wide Temp. (-40°C ~ 85°C)	-		**64GB**	TS64GMTS952T-I
			128GB	TS128GMTS952T-I
			256GB	TS256GMTS952T-I
			512GB	TS512GMTS952T-I
			1TB	TS1TMTS952T-I
			2TB	TS2TMTS952T-I

*Value varies by capacity, user hardware, system configuration, and calculation method.

96-Layer 3D NAND Flash

SATA III M.2 2280

- Reliability and Stability with Power Shield (PS) and Power Loss Protection (PLP) technologies
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	MTS932T	MTS952P & MTS952P-I
Interface	SATA III 6Gb/s	
Operating Temperature	Standard Temp.: 0°C ~ 70°C	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C
DRAM Cache	-	Default
Feature	-	PLP
Sequential R/W*	550/400 MB/s	560/520 MB/s
MTBF*	3,000,000 hours	
DWPD*	1.16 (3 yrs)	1.61 (3 yrs)
Form Factor	2280-S2-B-M	2280-D5-B-M
Dimensions	80 x 22 x 2.23 mm	80 x 22 x 3.88 mm
Operating Voltage	3.3V±5%	
Max. Power Consumption	1.4W	2.3W
Corner Bond	-	Default
PCB Gold Finger Thickness	-	30µ"

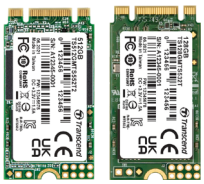
Ordering Information		
Standard Temp. (0°C ~ 70°C)	**64GB** TS64GMTS932T **128GB** TS128GMTS932T	-
Extended Temp. (-20°C ~ 75°C)	-	**128GB** TS128GMTS952P **256GB** TS256GMTS952P **512GB** TS512GMTS952P **1TB** TS1TMTS952P
Wide Temp. (-40°C ~ 85°C)	-	**128GB** TS128GMTS952P-I **256GB** TS256GMTS952P-I **512GB** TS512GMTS952P-I **1TB** TS1TMTS952P-I

*Value varies by capacity, user hardware, system configuration, and calculation method.

96-Layer 3D NAND Flash

SATA III M.2 2242

- Space-saving M.2 form factor (42mm)– ideal for mobile computing devices
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance



Model	MTS552T2 & MTS552T-I	MTS532T
Interface	SATA III 6Gb/s	
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C	Standard Temp.: 0°C ~ 70°C
DRAM Cache	Default	-
Sequential R/W*	560/510 MB/s	500/200 MB/s
MTBF*	3,000,000 hours	
DWPD*	1.61 (3 yrs)	1.16 (3 yrs)
Form Factor	2242-D2-B-M	
Dimensions	42 x 22 x 3.58 mm	
Operating Voltage	3.3V±5%	
Max. Power Consumption	1.7W	1.1W
Corner Bond	Default	-
PCB Gold Finger Thickness	30µ"	-

Ordering Information			
Standard Temp. (0°C ~ 70°C)	-	64GB	TS64GMTS532T
Extended Temp. (-20°C ~ 75°C)	64GB	TS64GMTS552T2	-
	128GB	TS128GMTS552T2	
	256GB	TS256GMTS552T2	
	512GB	TS512GMTS552T2	
Wide Temp. (-40°C ~ 85°C)	64GB	TS64GMTS552T2-I	-
	128GB	TS128GMTS552T2-I	
	256GB	TS256GMTS552T2-I	
	512GB	TS512GMTS552T2-I	

*Value varies by capacity, user hardware, system configuration, and calculation method.

96-Layer 3D NAND Flash

SATA III 2.5”

- Compliant with TCG Opal 2.0 standards to ensure data security for TCG Opal products
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in DRAM cache and LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	SSD452A	SSD452K2 & SSD452K-I
Interface	SATA III 6Gb/s	
Operating Temperature	Extended Temp.: -20°C ~ 75°C	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C
DRAM Cache	Default	
TCG Opal	Default	-
Sequential R/W*	560/410 MB/s	560/520 MB/s
MTBF*	3,000,000 hours	
DWPD*	1.61 (3 yrs)	
Dimensions	100 x 69.85 x 6.8 mm	
Operating Voltage	5V±5%	
Max. Power Consumption	3.5W	

Ordering Information				
Extended Temp. (-20°C ~ 75°C)	64GB	TS64GSSD452A	64GB	TS2TSSD452K2
	128GB	TS128GSSD452A	128GB	TS128GSSD452K2
	256GB	TS256GSSD452A	256GB	TS256GSSD452K2
	512GB	TS512GSSD452A	512GB	TS512GSSD452K2
	1TB	TS1TSSD452A	1TB	TS1TSSD452K2
	2TB	TS2TSSD452A	2TB	TS2TSSD452K2
Wide Temp. (-40°C ~ 85°C)	-		64GB	TS64GSSD452K-I
			128GB	TS128GSSD452K-I
			256GB	TS256GSSD452K-I
			512GB	TS512GSSD452K-I
			1TB	TS1TSSD452K-I
			2TB	TS2TSSD452K-I

*Value varies by capacity, user hardware, system configuration, and calculation method.

96-Layer 3D NAND Flash

SATA III 2.5"

- Reliability and Stability with Power Shield (PS) and Power Loss Protection (PLP) technologies
- Endurance: 3K P/E (Program/Erase) cycles; up to 100K P/E cycles for SLC Mode products
- Built-in DRAM cache and LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

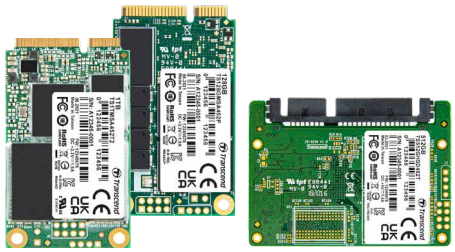
Model	SSD452P & SSD452P-I	SSD530K
Interface	SATA III 6Gb/s	
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C	Extended Temp.: -20°C ~ 75°C
DRAM Cache	Default	
Feature	PLP	SLC Mode
Sequential R/W*	560/520 MB/s	560/490 MB/s
MTBF*	3,000,000 hours	
DWPD*	1.61 (3 yrs)	45.7 (3 yrs)
Dimensions	100 x 69.85 x 6.8 mm	
Operating Voltage	5V±5%	
Max. Power Consumption	3.5W	2.8W

Ordering Information				
Extended Temp. (-20°C ~ 75°C)	64GB	TS64GSSD452P	64GB	TS64GSSD530K
	128GB	TS128GSSD452P	128GB	TS128GSSD530K
	256GB	TS256GSSD452P		
	512GB	TS512GSSD452P		
	1TB	TS1TSSD452P		
	2TB	TS2TSSD452P		
Wide Temp. (-40°C ~ 85°C)	64GB	TS64GSSD452P-I	-	
	128GB	TS128GSSD452P-I		
	256GB	TS256GSSD452P-I		
	512GB	TS512GSSD452P-I		
	1TB	TS1TSSD452P-I		
	2TB	TS2TSSD452P-I		

*Value varies by capacity, user hardware, system configuration, and calculation method.

96-Layer 3D NAND Flash

SATA III mSATA/Half-Slim



- Reliability and Stability with Power Shield (PS) and Power Loss Protection (PLP) technologies
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in DRAM cache and LDPC ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

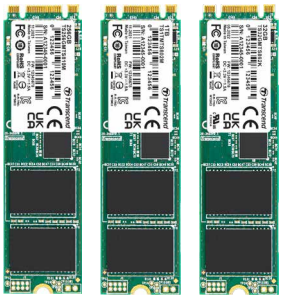
Model	MSA452T2 & MSA452T-I	MSA452P	HSD452T & HSD452T-I
Interface	SATA III 6Gb/s		
Operating Temperature	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C	Extended Temp.: -20°C ~ 75°C	Extended Temp.: -20°C ~ 75°C Wide Temp.: -40°C ~ 85°C
DRAM Cache	Default		
Feature	-	PLP	-
Sequential R/W*	560/520 MB/s		
MTBF*	3,000,000 hours		
DWPD*	1.61 (3 yrs)		
Form Factor	MO-300A		MO-297
Dimensions	50.8 x 29.85 x 4.85 mm		54 x 39.8 x 4 mm
Operating Voltage	3.3V±5%		5V±5%
Max. Power Consumption	2.4W		2.7W
Corner Bond	Default		
PCB Gold Finger Thickness	30µ"		-

	Ordering Information					
Extended Temp. (-20°C ~ 75°C)	64GB	TS64GMSA452T2	64GB	TS64GMSA452P	64GB	TS64GHSD452T
	128GB	TS128GMSA452T2	128GB	TS128GMSA452P	128GB	TS128GHSD452T
	256GB	TS256GMSA452T2	256GB	TS256GMSA452P	256GB	TS256GHSD452T
	512GB	TS512GMSA452T2	512GB	TS512GMSA452P	512GB	TS512GHSD452T
	1TB	TS1TMSA452T2	1TB	TS1TMSA452P		
Wide Temp. (-40°C ~ 85°C)	64GB	TS64GMSA452T-I	-		64GB	TS64GHSD452T-I
	128GB	TS128GMSA452T-I			128GB	TS12GHSD452T-I
	256GB	TS256GMSA452T-I			256GB	TS256GHSD452T-I
	512GB	TS512GMSA452T-I			512GB	TS512GHSD452T-I
	1TB	TS1TMSA452T-I				

*Value varies by capacity, user hardware, system configuration, and calculation method.

MLC NAND Flash

SATA III M.2 2280



- Space-saving M.2 form factor (80mm)– ideal for mobile computing devices
- Endurance: 3K P/E (Program/Erase) cycles; up to 30K P/E cycles for SLC Mode products
- Built-in DRAM cache and BCH ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

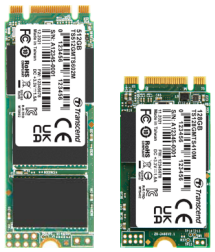
Model	MTS810M	MTS802M & MTS802I	MTS862K
Interface	SATA III 6Gb/s		
Operating Temperature	Standard Temp.: 0°C ~ 70°C	Standard Temp.: 0°C ~ 70°C Wide Temp.: -40°C ~ 85°C	Standard Temp.: 0°C ~ 70°C
DRAM Cache	Default		
Feature	-		SLC Mode
Sequential R/W*	550/420 MB/s	530/460 MB/s	530/150 MB/s
MTBF*	2,500,000 hours		
DWPD*	2.6 (3 yrs)		14.8 (3 yrs)
Form Factor	2280-D2-B-M		
Dimensions	80 x 22 x 3.58 mm		
Operating Voltage	3.3V±5%		
Max. Power Consumption	1.82W	2.64W	1.91W
Corner Bond	Default		
PCB Gold Finger Thickness	30µ"		

	Ordering Information		
Standard Temp. (0°C ~ 70°C)	**32GB** TS32GMTS810M **64GB** TS64GMTS810M **128GB** TS128GMTS810M **256GB** TS256GMTS810M	**32GB** TS32GMTS802M **64GB** TS64GMTS802M **128GB** TS128GMTS802M **256GB** TS256GMTS802M **512GB** TS512GMTS802M **1TB** TS1TMTS802M	**16GB** TS16GMTS862K **32GB** TS32GMTS862K
Wide Temp. (-40°C ~ 85°C)	-	**32GB** TS32GMTS802I **64GB** TS64GMTS802I **128GB** TS128GMTS802I **256GB** TS256GMTS802I **512GB** TS512GMTS802I **1TB** TS1TMTS802I	-

*Value varies by capacity, user hardware, system configuration, and calculation method.

MLC NAND Flash

SATA III M.2 2260/2242



- Space-saving M.2 form factor (60/42mm)– ideal for mobile computing devices
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in DRAM cache and BCH ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	MTS602M & MTS602I	MTS410M
Interface	SATA III 6Gb/s	
Operating Temperature	Standard Temp.: 0°C ~ 70°C Wide Temp.: -40°C ~ 85°C	Standard Temp.: 0°C ~ 70°C
DRAM Cache	Default	
Sequential R/W*	530/450 MB/s	550/260 MB/s
MTBF*	2,500,000 hours	
DWPD*	2.6 (3 yrs)	
Form Factor	2260-D2-B-M	2242-D2-B-M
Dimensions	60 x 22 x 3.58 mm	42 x 22 x 3.58 mm
Operating Voltage	3.3V±5%	
Max. Power Consumption	2.5W	1.22W
Corner Bond	Default	
PCB Gold Finger Thickness	30µ"	

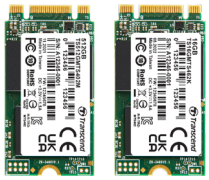
Ordering Information				
Standard Temp. (0°C ~ 70°C)	**32GB**	TS32GMTS602M	**16GB**	TS16GMTS410M
	64GB	TS64GMTS602M	**32GB**	TS32GMTS410M
	128GB	TS128GMTS602M	**64GB**	TS64GMTS410M
	256GB	TS256GMTS602M	**128GB**	TS128GMTS410M
	512GB	TS512GMTS602M		
Wide Temp. (-40°C ~ 85°C)	**32GB**	TS32GMTS602I	-	
	64GB	TS64GMTS602I		
	128GB	TS128GMTS602I		
	256GB	TS256GMTS602I		
	512GB	TS512GMTS602I		

*Value varies by capacity, user hardware, system configuration, and calculation method.

MLC NAND Flash

SATA III M.2 2242

- Space-saving M.2 form factor (42mm)– ideal for mobile computing devices
- Endurance: 3K P/E (Program/Erase) cycles; up to 30K P/E cycles for SLC Mode products
- Built-in DRAM cache and BCH ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance



Model	MTS402M & MTS402I	MTS462K
Interface	SATA III 6Gb/s	
Operating Temperature	Standard Temp.: 0°C ~ 70°C Wide Temp.: -40°C ~ 85°C	Standard Temp.: 0°C ~ 70°C
DRAM Cache	Default	
Feature	-	SLC Mode
Sequential R/W*	530/470 MB/s	300/150 MB/s
MTBF*	2,500,000 hours	
DWPD*	2 (3 yrs)	15.2 (3 yrs)
Form Factor	2242-D2-B-M	
Dimensions	42 x 22 x 3.58 mm	
Operating Voltage	3.3V±5%	
Max. Power Consumption	2.48W	0.8W
Corner Bond	Default	
PCB Gold Finger Thickness	30µ"	

Ordering Information				
Standard Temp. (0°C ~ 70°C)	**16GB**	TS16GMTS402M	**8GB**	TS8GMTS462K
	32GB	TS32GMTS402M	**16GB**	TS16GMTS462K
	64GB	TS64GMTS402M		
	128GB	TS128GMTS402M		
	256GB	TS256GMTS402M		
	512GB	TS512GMTS402M		
Wide Temp. (-40°C ~ 85°C)	**16GB**	TS16GMTS402I	-	
	32GB	TS32GMTS402I		
	64GB	TS64GMTS402I		
	128GB	TS128GMTS402I		
	256GB	TS256GMTS402I		
	512GB	TS512GMTS402I		

*Value varies by capacity, user hardware, system configuration, and calculation method.

MLC NAND Flash

SATA III 2.5”

- Manufactured with top-tier NAND flash memory
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in DRAM cache and BCH ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	SSD422K	SSD420K & SSD420I
Interface	SATA III 6Gb/s	
Operating Temperature	Standard Temp.: 0°C ~ 70°C	Standard Temp.: 0°C ~ 70°C Wide Temp.: -40°C ~ 85°C
DRAM Cache	Default	
Sequential R/W*	550/460 MB/s	530/470 MB/s
MTBF*	2,000,000 hours	
DWPD*	2.6 (3 yrs)	
Dimensions	100 x 69.85 x 6.8 mm	
Operating Voltage	5V±5%	
Max. Power Consumption	7.75W	2.65W

	Ordering Information	
Standard Temp. (0°C ~ 70°C)	**32GB** TS32GSSD422K **64GB** TS64GSSD422K **128GB** TS128GSSD422K **256GB** TS256GSSD422K **512GB** TS512GSSD422K **1TB** TS1TSSD422K	**16GB** TS16GSSD420K **32GB** TS32GSSD420K **64GB** TS64GSSD420K **128GB** TS128GSSD420K **256GB** TS256GSSD420K **512GB** TS512GSSD420K **1TB** TS1TSSD420K
Wide Temp. (-40°C ~ 85°C)	-	**16GB** TS16GSSD420I **32GB** TS32GSSD420I **64GB** TS64GSSD420I **128GB** TS128GSSD420I **256GB** TS256GSSD420I **512GB** TS512GSSD420I **1TB** TS1TSSD420I

*Value varies by capacity, user hardware, system configuration, and calculation method.

MLC NAND Flash

SATA III 2.5”

- Manufactured with top-tier NAND flash memory
- Endurance: 3K P/E (Program/Erase) cycles; up to 30K P/E cycles for SLC Mode products
- Built-in DRAM cache and BCH ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

Model	SSD420P	SSD510K
Interface	SATA III 6Gb/s	
Operating Temperature	Extended Temp.: -20°C ~ 75°C	Standard Temp.: 0°C ~ 70°C
DRAM Cache	Default	
Feature	PLP	SLC Mode
Sequential R/W*	530/210 MB/s	530/440 MB/s
MTBF*	2,000,000 hours	
DWPD*	2.6 (3 yrs)	15.2 (3 yrs)
Dimensions	100 x 69.85 x 6.8 mm	
Operating Voltage	5V±5%	
Max. Power Consumption	1.7W	2.95W

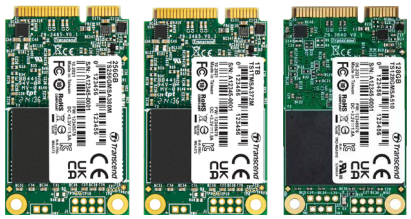
Ordering Information		
Standard Temp. (0°C ~ 70°C)	-	**16GB** TS16GSSD510K **32GB** TS32GSSD510K **64GB** TS64GSSD510K **128GB** TS128GSSD510K
Extended Temp. (-20°C ~ 75°C)	**32GB** TS32GSSD420P **64GB** TS64GSSD420P **128GB** TS128GSSD420P **256GB** TS256GSSD420P	-

*Value varies by capacity, user hardware, system configuration, and calculation method.

MLC NAND Flash

SATA III mSATA

- Manufactured with top-tier NAND flash memory
- Endurance: 3K P/E (Program/Erase) cycles; up to 30K P/E cycles for SLC Mode products
- Built-in DRAM cache and BCH ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance



Model	MSA380M	MSA372M & MSA372I	MSA510 & MSA510I
Interface	SATA III 6Gb/s		
Operating Temperature	Standard Temp.: 0°C ~ 70°C	Standard Temp.: 0°C ~ 70°C Wide Temp.: -40°C ~ 85°C	
DRAM Cache	Default		
Feature	-		SLC Mode
Sequential R/W*	550/420 MB/s	550/450 MB/s	540/450 MB/s
MTBF*	2,500,000 hours		3,000,000 hours
DWPD*	2.6 (3 yrs)		15.2 (3 yrs)
Form Factor	MO-300A		
Dimensions	50.8 x 29.85 x 4.85 mm		
Operating Voltage	3.3V±5%		
Max. Power Consumption	1.82W	2.64W	2.87W
Corner Bond	Default		-
PCB Gold Finger Thickness	30µ"		

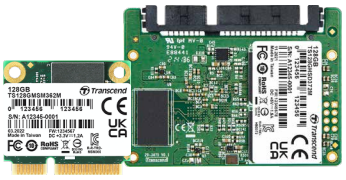
	Ordering Information		
Standard Temp. (0°C ~ 70°C)	**16GB** TS16GMSA380M **32GB** TS32GMSA380M **64GB** TS64GMSA380M **128GB** TS128GMSA380M **256GB** TS256GMSA380M	**16GB** TS16GMSA372M **32GB** TS32GMSA372M **64GB** TS64GMSA372M **128GB** TS128GMSA372M **256GB** TS256GMSA372M **512GB** TS512GMSA372M **1TB** TS1TMSA372M	**16GB** TS16GMSA510 **32GB** TS32GMSA510 **64GB** TS64GMSA510 **128GB** TS128GMSA510
Wide Temp. (-40°C ~ 85°C)	-	**16GB** TS16GMSA372I **32GB** TS32GMSA372I **64GB** TS64GMSA372I **128GB** TS128GMSA372I **256GB** TS256GMSA372I **512GB** TS512GMSA372I **1TB** TS1TMSA372I	**32GB** TS32GMSA510I

*Value varies by capacity, user hardware, system configuration, and calculation method.

MLC NAND Flash

SATA III mSATA mini/Half-Slim

- Manufactured with top-tier NAND flash memory
- Endurance: 3K P/E (Program/Erase) cycles
- Built-in BCH ECC (Error Correction Code) functionality
- Supports S.M.A.R.T., TRIM and NCQ for improved performance

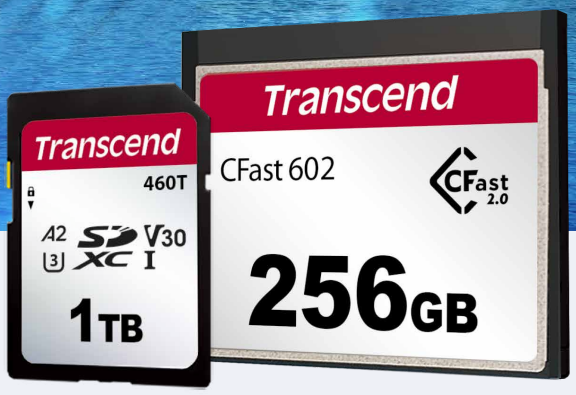


Model	MSM362M & MSM362I	HSD372M & HSD372I
Interface	SATA III 6Gb/s	
Operating Temperature	Standard Temp.: 0°C ~ 70°C Wide Temp.: -40°C ~ 85°C	
DRAM Cache	-	Default
Sequential R/W*	520/220 MB/s	530/200 MB/s
MTBF*	2,500,000 hours	
DWPD*	1.19 (3yrs)	2.6 (3yrs)
Form Factor	MO-300B	MO-297
Dimensions	26.8 x 29.85 x 3.85 mm	54 x 39.8 x 4 mm
Operating Voltage	3.3V±5%	5V±5%
Max. Power Consumption	2.01W	1.85W
Corner Bond	Default	
PCB Gold Finger Thickness	30µ"	-

	Ordering Information			
Standard Temp. (0°C ~ 70°C)	16GB	TS16GMSM362M	16GB	TS16GHSD372M
	32GB	TS32GMSM362M	32GB	TS32GHSD372M
	64GB	TS64GMSM362M	64GB	TS64GHSD372M
	128GB	TS128GMSM362M	128GB	TS128GHSD372M
Wide Temp. (-40°C ~ 85°C)	16GB	TS16GMSM362I	16GB	TS16GHSD372I
	32GB	TS32GMSM362I	32GB	TS32GHSD372I
	64GB	TS64GMSM362I	64GB	TS64GHSD372I
	128GB	TS128GMSM362I	128GB	TS128GHSD372I

*Value varies by capacity, user hardware, system configuration, and calculation method.

Memory Cards



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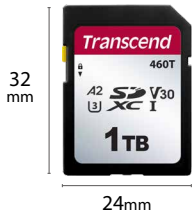
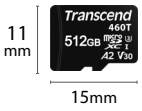
Memory Cards

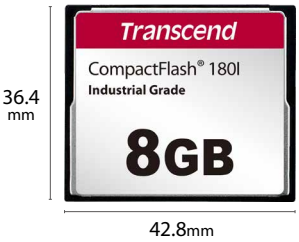
SD



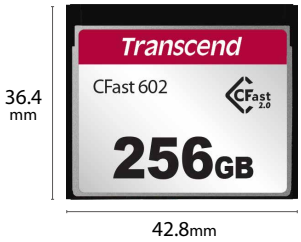
microSD



CompactFlash



CFast

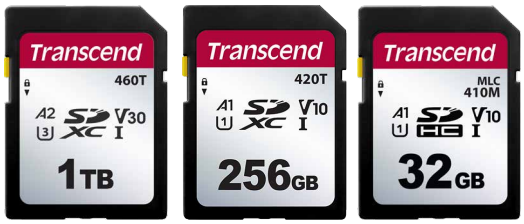


Product Line

Form Factor	Model	Flash Type	Capacity	Operating Temperature
SD	SDC460T	112-layer 3D TLC	64GB~1TB	-25°C ~ 85°C
	SDC420T	96-layer 3D TLC	16GB~256GB	
	SDC410M	MLC	2GB~32GB	
	SDC10M		8GB~64GB	
	SDC400I		8GB~64GB	-40°C ~ 85°C
	SDC220I	MLC (SLC Mode)	128MB~4GB	-40°C ~ 85°C
microSD	USD460T / USD460I	112-layer 3D TLC	64GB ~512GB	-25°C ~ 85°C / -40°C ~ 85°C
	USD240I	112-layer 3D TLC (SLC Mode)	20GB~160GB	-40°C ~ 85°C
	USD430T	96-layer 3D TLC	32GB	-25°C ~ 85°C
	USD420T		16GB~256GB	
	USD230I	96-layer 3D TLC (SLC Mode)	2GB~64GB	-40°C ~ 85°C
	USD410M	MLC	2GB~32GB	-25°C ~ 85°C
	USD10M		4GB~32GB	
	USD10I		8GB~64GB	-40°C ~ 85°C
	USD220I	MLC (SLC Mode)	2GB~16GB	
CompactFlash	CF170	MLC	8GB~64GB	-25°C ~ 85°C
	CF180	MLC (SLC Mode)	4GB~16GB	
	CF180I		128MB~8GB	-40°C ~ 85°C
CFast	CFX602 / CFX602I	MLC	8GB~256GB	-5°C ~ 70°C / -40°C ~ 85°C
	CFX722I	MLC (SLC Mode)	32GB	-40°C ~ 85°C

SD Cards

- Reliability and durability optimized for demanding industrial applications
- Endurance: 3K P/E (Program/Erase) cycles
- Up to Video Speed Class 30 (V30) and Application Performance Class 2 (A2)



Model	SDC460T	SDC420T	SDC410M
Flash	112-layer 3D TLC	96-layer 3D TLC*	MLC
Operating Temperature	Standard Temp.: -25°C ~ 85°C		
Sequential R/W**	100/85 MB/s	95/40 MB/s	95/30 MB/s
Standard	SD 6.1/5.1	SD 6.1/3.01	SD 5.1/3.0
Connector	9 pin		
Dimensions	24 x 32 x 2.1 mm		
Operating Voltage	2.7V ~ 3.6V		
Max. Power Consumption	2.88W		

	Ordering Information		
Standard Temp. (-25°C~85°C)	**64GB** TS64GSDC460T **128GB** TS128GSDC460T **256GB** TS256GSDC460T **512GB** TS512GSDC460T **1TB** TS1TSDC460T	**16GB** TS16GSDC420T **32GB** TS32GSDC420T **64GB** TS64GSDC420T **128GB** TS128GSDC420T **256GB** TS256GSDC420T	**2GB** TS2GSDC410M **4GB** TS4GSDC410M **8GB** TS8GSDC410M **16GB** TS16GSDC410M **32GB** TS32GSDC410M

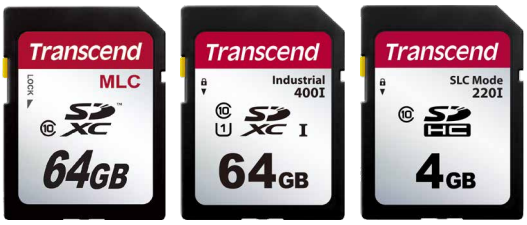
R/W: Read/Write

* TS16GSDC420T utilizes 64-layer 3D TLC.

**Value varies by capacity, user hardware, system configuration, and calculation method.

SD Cards

- Reliability and durability optimized for demanding industrial applications
- Endurance: 3K P/E (Program/Erase) cycles; up to 30K P/E cycles for SLC Mode products
- Built-in ECC (Error Correction Code) functionality



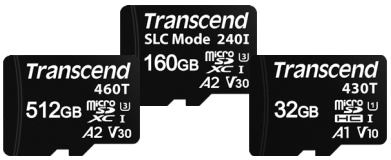
Model	SDC10M	SDC400I	SDC220I
Flash	MLC		MLC (SLC Mode)
Operating Temperature	Standard Temp.: -25°C ~ 85°C	Wide Temp.: -40°C ~ 85°C	
Sequential R/W*	20/18 MB/s	75/17 MB/s	22/20 MB/s
Standard	SD 3.01		SD 3.01/2.0
Connector	9 pin		
Dimensions	24 x 32 x 2.1 mm		
Operating Voltage	2.7V ~ 3.6V		
Max. Power Consumption	0.72W		

	Ordering Information		
Standard Temp. (-25°C ~ 85°C)	**8GB** TS8GSDHC10M **16GB** TS16GSDHC10M **32GB** TS32GSDHC10M **64GB** TS64GSDXC10M	-	-
Wide Temp. (-40°C ~ 85°C)	-	**8GB** TS8GSDC400I **16GB** TS16GSDC400I **32GB** TS32GSDC400I **64GB** TS64GSDC400I	**128MB** TS128MSDC220I **256MB** TS256MSDC220I **512MB** TS512MSDC220I **1GB** TS1GSDC220I **2GB** TS2GSDC220I **4GB** TS4GSDC220I

*Value varies by capacity, user hardware, system configuration, and calculation method.

microSD Cards

- Reliability and durability optimized for demanding industrial applications
- Endurance: 3K P/E (Program/Erase) cycles; up to 100K P/E cycles for SLC Mode products
- Up to Video Speed Class 30 (V30) and Application Performance Class 2 (A2)



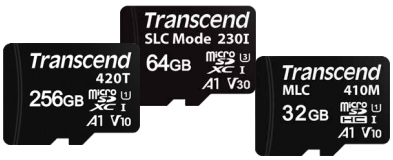
Model	USD460T & USD460I	USD240I	USD430T
Flash	112-layer 3D TLC	112-layer 3D TLC (SLC Mode)	96-layer 3D TLC
Operating Temperature	Standard Temp.: -25°C ~ 85°C Wide Temp.: -40°C ~ 85°C	Wide Temp.: -40°C ~ 85°C	Standard Temp.: -25°C ~ 85°C
Sequential R/W*	100/80 MB/s		100/40 MB/s
Standard	SD 6.1/5.1	SD 6.1	SD 6.0
Connector	8 pin		
Dimensions	11 x 15 x 1 mm		
Operating Voltage	2.7V ~ 3.6V		
Max. Power Consumption	2.88W		

	Ordering Information		
Standard Temp. (-25°C ~ 85°C)	**64GB** TS64GUSD460T **128GB** TS128GUSD460T **256GB** TS256GUSD460T **512GB** TS512GUSD460T	-	**32GB** TS32GUSD430T
Wide Temp. (-40°C ~ 85°C)	**64GB** TS64GUSD460I **128GB** TS128GUSD460I **256GB** TS256GUSD460I **512GB** TS512GUSD460I	**20GB** TS20GUSD240I **40GB** TS40GUSD240I **80GB** TS80GUSD240I **160GB** TS160GUSD240I	-

*Value varies by capacity, user hardware, system configuration, and calculation method.

microSD Cards

- Reliability and durability optimized for demanding industrial applications
- Endurance: 3K P/E (Program/Erase) cycles; up to 100K P/E cycles for SLC Mode products
- Supports S.M.A.R.T. and built-in ECC (Error Correction Code) for improved performance



Model	USD420T	USD230I	USD410M
Flash	96-layer 3D TLC*	96 Layer 3D TLC* (SLC Mode)	MLC
Operating Temperature	Standard Temp.: -25°C ~ 85°C	Wide Temp.: -40°C ~ 85°C	Standard Temp.: -25°C ~ 85°C
Sequential R/W**	95/40 MB/s	100/70 MB/s	95/50 MB/s
Standard	SD 5.1/3.01	SD 5.1/3.01	SD 5.1/3.0
Connector	8 pin		
Dimensions	11 x 15 x 1 mm		
Operating Voltage	2.7V ~ 3.6V		
Max. Power Consumption	2.88W		

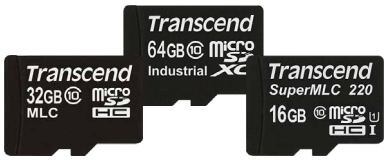
	Ordering Information		
Standard Temp. (-25°C ~ 85°C)	**16GB** TS16GUSD420T **32GB** TS32GUSD420T **64GB** TS64GUSD420T **128GB** TS128GUSD420T **256GB** TS256GUSD420T	-	**2GB** TS2GUSD410M **4GB** TS4GUSD410M **8GB** TS8GUSD410M **16GB** TS16GUSD410M **32GB** TS32GUSD410M
Wide Temp. (-40°C ~ 85°C)	-	**2GB** TS2GUSD230I **4GB** TS4GUSD230I **8GB** TS8GUSD230I **16GB** TS16GUSD230I **32GB** TS32GUSD230I **64GB** TS64GUSD230I	-

*TS16GUSD420T, TS2GUSD230I and TS4GUSD230I utilize 64-layer 3D TLC.

**Value varies by capacity, user hardware, system configuration, and calculation method.

microSD Cards

- Reliability and durability optimized for demanding industrial applications
- Endurance: 3K P/E (Program/Erase) cycles; up to 30K P/E cycles for SLC Mode products
- Supports S.M.A.R.T. and built-in ECC (Error Correction Code) for improved performance



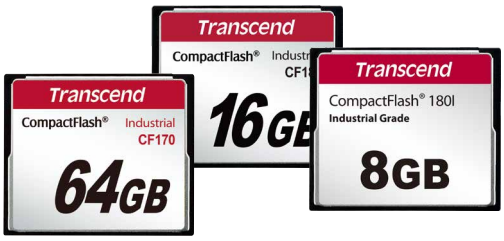
Model	USD10M	USD10I	USD220I
Flash	MLC		MLC (SLC Mode)
Operating Temperature	Standard Temp.: -25°C ~ 85°C	Wide Temp.: -40°C ~ 85°C	
Sequential R/W*	24/22 MB/s	24/22 MB/s	80/45 MB/s
Standard	SD 3.01	SD 3.01	SD 3.01/2.0
Connector	8 pin		
Dimensions	11 x 15 x 1 mm		
Operating Voltage	2.7V ~ 3.6V		
Max. Power Consumption	2.88W	0.72W	2.88W

	Ordering Information		
Standard Temp. (-25°C ~ 85°C)	**4GB** TS4GUSDC10M **8GB** TS8GUSDC10M **16GB** TS16GUSDC10M **32GB** TS32GUSDC10M	-	-
Wide Temp. (-40°C ~ 85°C)	-	**8GB** TS8GUSDC10I **16GB** TS16GUSDC10I **32GB** TS32GUSDC10I **64GB** TS64GUSDC10I	**2GB** TS2GUSD220I **4GB** TS4GUSD220I **8GB** TS8GUSD220I **16GB** TS16GUSD220I

*Value varies by capacity, user hardware, system configuration, and calculation method.

CompactFlash Cards

- Reliability and Stability optimized for demanding industrial applications
- Endurance: 3K P/E (Program/Erase) cycles; up to 30K P/E cycles for SLC Mode products
- Supports S.M.A.R.T. and Power Loss Protection (PLP) for improved reliability



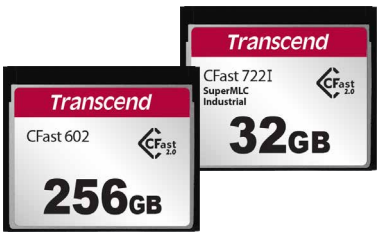
Model	CF170	CF180	CF180I
Flash	MLC	MLC (SLC Mode)	
Operating Temperature	Extended Temp.: -25°C ~ 85°C		Wide Temp.: -40°C ~ 85°C
Sequential R/W*	87/67 MB/s	85/75 MB/s	85/70 MB/s
Standard	True IDE		
Connector	50 pin		
Dimensions	42.8 x 36.4 x 3.3 mm		
Operating Voltage	3.3V±5% / 5V±10%		
Max. Power Consumption	0.8W	0.6W	0.528W

	Ordering Information		
Extended Temp. (-25°C ~ 85°C)	**8GB** TS8GCF170 **16GB** TS16GCF170 **32GB** TS32GCF170 **64GB** TS64GCF170	**4GB** TS4GCF180 **8GB** TS8GCF180 **16GB** TS16GCF180	-
Wide Temp. (-40°C ~ 85°C)	-	-	**128MB** TS128MCF180I **256MB** TS256MCF180I **512MB** TS512MCF180I **1GB** TS1GCF180I **2GB** TS2GCF180I **4GB** TS4GCF180I **8GB** TS8GCF180I

*Value varies by capacity, user hardware, system configuration, and calculation method.

CFast Cards

- Reliability and Stability optimized for demanding industrial applications
- Endurance: 3K P/E (Program/Erase) cycles; up to 30K P/E cycles for SLC Mode products
- Supports S.M.A.R.T. and built-in ECC (Error Correction Code) for improved performance

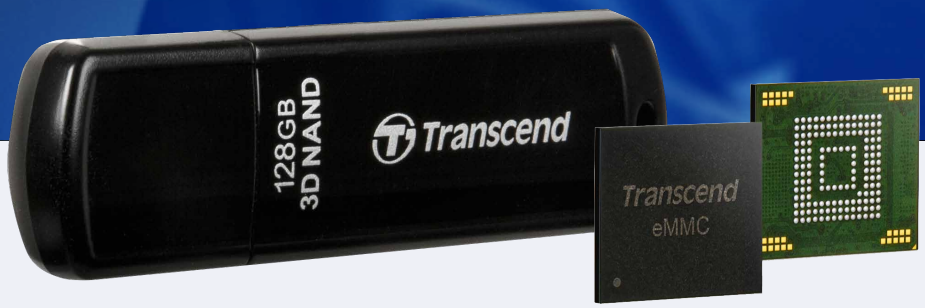


Model	CFX602 & CFX602I	CFX722I
Flash	MLC	MLC (SLC Mode)
Operating Temperature	Standard Temp.: -5°C ~ 70°C Wide Temp.: -40°C ~ 85°C	Wide Temp.: -40°C ~ 85°C
Sequential R/W*	510/340 MB/s	510/355 MB/s
Interface	SATA III 6Gb/s	
Connector	24 pin	
Dimensions	42.8 x 36.4 x 3.3 mm	
Operating Voltage	3.3V±5%	
Max. Power Consumption	2.15W	1.2W

	Ordering Information	
Standard Temp. (-5°C ~ 70°C)	**8GB** TS8GCFX602 **16GB** TS16GCFX602 **32GB** TS32GCFX602 **64GB** TS64GCFX602 **128GB** TS128GCFX602 **256GB** TS256GCFX602	-
Wide Temp. (-40°C ~ 85°C)	**8G** TS8GCFX602I **16GB** TS16GCFX602I **32GB** TS32GCFX602I **64GB** TS64GCFX602I **128GB** TS128GCFX602I **256GB** TS256GCFX602I	**32GB** TS32GCFX722I

*Value varies by capacity, user hardware, system configuration, and calculation method.

Flash Solutions

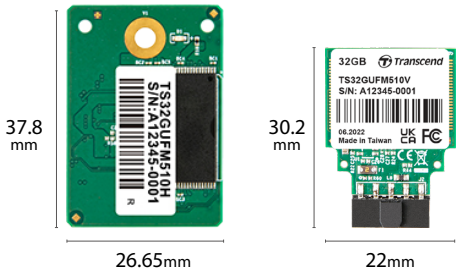


Transcend's flash solutions include USB flash drives, USB flash modules, and e.MMC. Our USB flash drives feature a compact and portable design, ideal for applications where reliability and data retention are crucial. Our flash modules offer a simple solution for integrating SSD storage technology into legacy PC- and laptop-based systems.

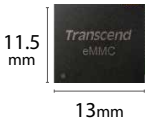
Flash Solutions

USB Flash Drive

USB Flash Module



e.MMC



Product Line

Form Factor	Model	Flash Type	Capacity	Operating Temperature
USB Flash Drives	JF282T	112-layer 3D TLC	64GB~256GB	0°C ~ 70°C
	JF180I	112-layer 3D TLC (SLC Mode)	8GB / 16GB	-40°C ~ 85°C
	JF280T	96-layer 3D TLC	16GB~128GB	0°C ~ 70°C
	JF270M	MLC	8GB~32GB	
	JF740K	MLC (SLC Mode)	8GB	
USB Flash Modules	UFM510H	MLC	2GB~32GB	0°C ~ 70°C
	UFM510V		8GB~32GB	
e.MMC	EMC410T	96-layer 3D TLC	32GB	-25°C ~ 85°C
	EMC310M	MLC	8GB / 16GB	

USB Flash Drives

- Reliability and durability optimized for edge storage
- High-speed performance with USB3.0/USB 3.1 Gen 1 interface and backwards compatible with USB 2.0
- Hot-swapping for easy plug-and-play

Model	JF282T	JF180I	JF280T
Flash	112-layer 3D TLC	112-layer 3D TLC* (SLC Mode)	96-layer 3D TLC*
Operating Temperature	Standard Temp.: 0°C ~ 70°C	Wide Temp.: -40°C ~ 85°C	Standard Temp.: 0°C ~ 70°C
Sequential R/W**	155/40 MB/s	155/135 MB/s	140/40 MB/s
Interface	USB 3.1 Gen 1	USB 3.0	USB 3.1 Gen 1
Connector	USB Type-A		
Dimensions	61.5 x 18.6 x 8.7 mm		
Operating Voltage	5V ± 10%		
Max. Power Consumption	1.0W		0.7W

	Ordering Information		
Standard Temp. (0°C ~ 70°C)	**64GB** TS64GJF282T **128GB** TS128GJF282T **256GB** TS256GJF282T	-	**16GB** TS16GJF280T **32GB** TS32GJF280T **64GB** TS64GJF280T **128GB** TS128GJF280T
Wide Temp. (-40°C ~ 85°C)	-	**8GB** TS8GJF180I **16GB** TS16GJF180I	-

R/W: Read/Write

*TS8GJF180I utilizes 96-layer 3D TLC. TS16GJF280T utilizes 64-layer 3D TLC.

**Value varies by capacity, user hardware, system configuration, and calculation method.

USB Flash Drives

- Reliability and durability optimized for edge storage
- High-speed performance with USB3.0/USB 3.1 Gen 1 interface and backwards compatible with USB 2.0
- Hot-swapping for easy plug-and-play

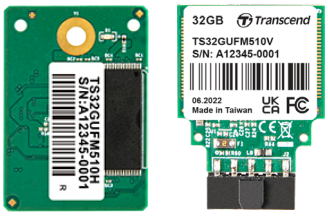
Model	JF270M	JF740K
Flash	MLC	MLC (SLC Mode)
Operating Temperature	Standard Temp.: 0°C ~ 70°C	
Sequential R/W*	160/40 MB/s	119/86 MB/s
Interface	USB 3.1 Gen 1	
Connector	USB Type-A	
Dimensions	61.5 x 18.6 x 8.7 mm	22.4 x 12.2 x 6 mm
Operating Voltage		
Max. Power Consumption	1.0W	0.83W

	Ordering Information	
Standard Temp. (0°C ~ 70°C)	**8GB** TS8GJF270M **16GB** TS16GJF270M **32GB** TS32GJF270M	**8GB** TS8GJF740K

*Value varies by capacity, user hardware, system configuration, and calculation method.

USB Flash Modules

- Compact storage devices with low power consumption - ideal for small embedded systems
- Built-in BCH ECC (Error Correction Code) functionality
- Supports wear-leveling and block management for reliability



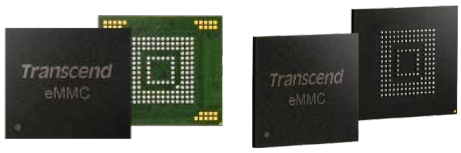
Model	UFM510H	UFM510V
Flash	MLC	
Operating Temperature	Standard Temp.: 0°C ~ 70°C	
Sequential R/W*	42/21 MB/s	
Interface	USB 2.0	
Connector	10 pin USB port	
Dimensions	37.8 x 26.65 x 5.81 mm	30.2 x 22 x 6 mm
Operating Voltage	5V±10%	
Max. Power Consumption	0.69W	0.58W

	Ordering Information			
Standard Temp. (0°C ~ 70°C)	**2GB**	TS2GUFM510H	**8GB**	TS8GUFM510V
	8GB	TS8GUFM510H	**16GB**	TS16GUFM510V
	16GB	TS16GUFM510H	**32GB**	TS32GUFM510V
	32GB	TS32GUFM510H		

*Value varies by capacity, user hardware, system configuration, and calculation method.

e.MMC

- 153-ball BGA package - ideal for small embedded systems
- Built-in ECC (Error Correction Code) functionality
- Supports wear-leveling and secure erase



Model	EMC410T	EMC310M
Flash	96-layer 3D TLC	MLC
Operating Temperature	Standard Temp.: -25°C ~ 85°C	
Sequential R/W*	290/155 MB/s	280/100 MB/s
Form Factor	e.MMC 5.1 (BGA-153)	
Dimensions	11.5 x 13 x 1 mm	
Bus Width Supported	x1, x4, x8	
Bus Speed Mode	HS400	
Clock Frequency Supported	0 MHz~200 MHz	

	Ordering Information	
Standard Temp. (-25°C ~ 85°C)	**32GB** TS32GEMC410T	**8GB** TS8GEMC310M **16GB** TS16GEMC310M

*Value varies by capacity, user hardware, system configuration, and calculation method.

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