

JEDEC 1.0 Mass Production Version

DDR5 Industrial Memory Modules

Accelerating the Implementation of DDR5 Industrial Applications



Anti-Sulfuration



Anti-sulfuration memory modules are mainly used in equipment exposed in highly contaminated environment.

- World's first anti-sulfuration memory modules
- Solves corrosion problems effectively and increases overall system lifespan
- Ensures product reliability and durability
- Widely recognized and awarded patents in many countries



Conformal Coating

Enhances reliability of products by applying coatings on the surface of printed circuit boards. The protective film can safeguard devices from dust ingress and liquid immersion.

- Uses automated spraying to maintain precise coating thickness
- Enhances product reliability
- Prolongs DRAM modules lifespan



Underfill

Apacer underfill technology ensures products continue to operate normally in high vibration and in extreme environmental conditions.

- Strengthens the solder joints between solder balls and printed circuit board
- Increases the product's resistance against shock and vibration
- Reduces thermal stress damage
- Complies with MIL-STD-810G
- Increases product reliability and lifespan



Wide Temperature

Especially designed for harsh climates and special environmental conditions.

- Operating temperature range: $-40^{\circ}\text{C} \leq \text{TC} \leq 85^{\circ}\text{C}$
- All industrial-grade components (DRAM, resistors and capacitors) ensure stability and reliability
- High/Low temp. test/Temp.cycling test
- Power cycling test

The Most Reliable Storage For Industries

Global Presence

Taiwan (Headquarters)

Apacer Technology Inc.
Tel: +886-2-2267-8000
Fax: +886-2-2267-2261
Industrial@apacer.com

Japan

Apacer Technology Corp.
Tel: +81-3-5419-2668
Fax: +81-3-5419-0018
jpservices@apacer.com

U.S.A.

Apacer Memory America, Inc.
Tel: +1-408-518-8699
Fax: 1-510-249-9551
ssdsales@apacerus.com

Europe

Apacer Technology B.V.
Tel: +31-40-267-0000
Fax: +31-40-290-0686
sales@apacer.nl

India

Apacer Technologies Pvt. Ltd.
Tel: +91-80-41529061~3
Fax: +91-80-41700215
sales_india@apacer.com

Shanghai

Apacer Electronic(Shanghai) Co., Ltd.
Tel: +86-21-6228-9939
Industrial@apacer.com



Apacer

The Most **Reliable** Storage For Industries



Industrial SSD & DRAM Solutions

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Embedded

Module Type	UDIMM	SODIMM	ECC UDIMM	ECC SODIMM	UDIMM	SODIMM	ECC UDIMM	ECC SODIMM
Memory Technology	DDR4	DDR4	DDR4	DDR4	DDR5	DDR5	DDR5	DDR5
Frequency	2133/2400/2666/2933/3200				4800			
Density	2GB/4GB/8GB/16GB/32GB		4GB/8GB/16GB/32GB		8GB / 16GB / 32GB		16GB / 32GB	
Voltage	1.2v	1.2v	1.2v	1.2v	1.1V	1.1V	1.1V	1.1V
Pin Count	288-Pin	260-Pin	288-Pin	260-Pin	288-Pin	262-Pin	288-Pin	262-Pin
Width	64-Bit	64-Bit	72-Bit	72-Bit	64-Bit	64-Bit	72-Bit	72-Bit
PCB Height	1.23"	1.18"	1.23"	1.18"	1.23"	1.18"	1.23"	1.18"
Operation / Wide Temperature. (°C)	TC= 0°C to 85°C / -40°C to 85°C		TC= 0°C to 85°C / -40°C to 85°C		TC= 0°C to 85°C / -40°C to 85°C		TC= 0°C to 85°C / -40°C to 85°C	
Value-added Technology	  		   		   		   	
*DDR / DDR2 / DDR3 are also available					*Optional			

Server/Workstation

Model	DDR5 RDIMM	DDR4 RDIMM	DDR3 RDIMM
Module Type	RDIMM	RDIMM	RDIMM
Memory Technology	DDR5	DDR4	DDR3
Frequency	4800	2133/2400/2666/2933/3200	1066/1333/1600/1866
Density	16G/32G	4G/8G/16G/32G/64G/128G	1G/2G/4G/8G
Voltage	1.1v	1.2v	1.5v/1.35v
Pin Count	288-Pin	288-Pin	240-Pin
Width	80-Bit	72-Bit	72-Bit
PCB Height	1.23"	1.23"	1.18"
Operation Temperature	TC=0℃ to 85℃		TC=0℃ to 85℃ / -40℃ to 85℃
Application	Healthcare / Server & Networking		
Value-Added			

Very Low Profile

Model	DDR4 VLP UDIMM	DDR4 VLP SODIMM	DDR4 VLP ECC UDIMM	DDR4 VLP ECC SODIMM	DDR4 VLP RDIMM
Module Type	VLP UDIMM	VLP SODIMM	VLP ECC UDIMM	VLP ECC SODIMM	VLP RDIMM
Memory Technology	DDR4	DDR4	DDR4	DDR4	DDR4
Frequency	2133/2400/2666/2933/3200	2133/2400/2666/2933/3200	2133/2400/2666/2933/3200	2133/2400/2666/2933/3200	2133/2400/2666/2933/3200
Density	4G/8G/16G/32G	4G/8G	4G/8G/16G/32G	4G/8G	4G/8G/16G/32G
Voltage	1.2v	1.2V	1.2v	1.2V	1.2v
Pin Count	288-Pin	260-Pin	288-Pin	260-Pin	288-Pin
Width	64-Bit	64-Bit	72-Bit	72-Bit	72-Bit
PCB Height	0.738"	0.709"	0.738"	0.7"	0.738"
Operation Temperature	TC=0℃ to 85℃ / -40℃ to 85℃				
Application	IoT / Server & Networking	IoT / Transportation	Healthcare / Server & Networking		Healthcare / Server & Networking
Value-Added					

SATA Flash Drive

- Capacity: MO-297-3D TLC: 120GB-2048GB, 2.5"-3D TLC: 120GB-8192GB
- SATA 3 (6 Gbit/s) interface
- Support LDPC ECC
- Global Wear-Leveling Technology
- AES256 Support
- End-to-End Data Protection
- DEVSLP/Thermal Sensor
- DataDefender™
- S.M.A.R.T. and SSD Widget
- DataRAID™
- TCG Opal 2.0 (Optional)
- CorePower (SV24P-25&SV25P-25 only)
- SLC-liteX P/E Cycles up to 100K
- SLC / MLC / SLC-liteX are also available

SATA Disk Module

- Capacity: 7pin-3D TLC 30GB-480GB
- Support LDPC ECC
- Global Wear-Leveling Technology
- AES256 Support
- Power Failure Management
- End-to-End Data Protection
- S.M.A.R.T. and SSD Widget support
- Multi-PowerPath Technology
- Thermal Sensor
- SLC / MLC / SLC-liteX are also available
- DataRAID™
- TCG Opal 2.0(Optional)
- SLC-liteX P/E Cycles up to 100K

PCIe SSD

M.2

- Capacity: 2230-3D TLC: 60GB-480GB
2242-3D TLC: 60GB-1024GB
2280-3D TLC: 120GB-3840GB / SLC-LiteX: 160GB-640GB
- Interface: 2230/2242-Compliant with PCIe Gen3 x2 / Gen3 x4 interface
2280-Compliant with PCIe Gen3 x4 / Gen4 x4 interface
- M.2 (NGFF) connector
- Support CoreGlacier Technology
- Built-in LDPC ECC and S.M.A.R.T. SSD Widget
- Support Datadefender and DataRAID™
- Build-in End-to-End Data Protection and Thermal throttling Technology
- Support AES 256 and Signed FW
- Anti-Sulfuration (Optional)

PCIe SSD

CFexpress Card & 2.5" & BGA SSD

- Form Factor: CFX Type B/2.5"/PCIe BGA SSD (M.2 1620)
- Capacity: CFexpress-3D TLC 60GB-960GB ; 2.5"-3D TLC 960GB-7680GB ; BGA SSD-3D TLC 120GB-960GB
- Interface: CFexpress-Compliant with NVMe 2.0 and PCIe Gen3 x2 interface
2.5"-Compliant with PCIe Gen3 x4 interface
BGA SSD-Compliant with PCIe Gen3 x4 / Gen4 x4 interface
- Power Failure Management
- Built-in LDPC ECC and S.M.A.R.T. SSD Widget
- End-to-End Data Protection and Thermal throttling Technology
- Support TRIM
- Support Wide Temperature
- Support AES 256
- Write Protect Switch (CFexpress only)

μSSD

- Capacity: 3D TLC 30GB-240GB
- Compliant with MO-276 standard (16 x 20 x 1.4 mm)
- SoC (System on Chip) / SiP (System in Chip) technology
- Support LDPC ECC
- Global Wear-Leveling Technology
- TRIM Support
- Device Sleep
- Data RAID™
- Power Failure Management
- S.M.A.R.T. and SSD Widget
- SATA 3 (6 Gbit/s) interface

USB Drive

- Capacity: SLC 256MB-32GB, MLC 8GB-128GB; 3D TLC 16GB-256GB
- Compliant with USB 2.0/3.0/3.1 gen1/3.1 gen1 Type C specifications
- Flash Bad-block Management
- Global Wear-Leveling Technology
- S.M.A.R.T.
- Power Failure Management
- Air 15kv ESD Protection (UV110-UF5 only)
- SLC-liteX technology (optional)

M.2 (NGFF)

- Capacity: 2242 3D TLC 120GB-1024GB
2280 3D TLC 120GB-2048GB
- SATA 3 (6 Gbit/s) interface
- Support LDPC ECC
- Global Wear-Leveling Technology
- AES256 support
- End-to-End Data Protection
- DEVSLP/Thermal Sensor
- DataDefender™
- S.M.A.R.T. and SSD Widget
- DataRAID™
- TCG Opal 2.0 (Optional)
- CorePower (SV24P&SV25P only)
- SLC-liteX P/E Cycles up to 100K
- Anti-Sulfuration (Optional)
- SLC / MLC / SLC-liteX are also available

mSATA

- Capacity: MO-300-3D TLC 30GB-2048GB
MO-3D TLC 30GB-960GB
- Support LDPC ECC
- Global Wear-Leveling Technology
- AES256 support
- End-to-End Data Protection
- DEVSLP/Thermal Sensor
- DataDefender™
- S.M.A.R.T. and SSD Widget
- DataRAID™
- SATA 3 (6 Gbit/s) interface
- TCG Opal 2.0 (Optional)
- SLC-liteX P/E Cycles up to100K
- SLC / MLC / SLC-liteX are also available

CFast

CFast Card

- Capacity: 3D TLC 30GB-960GB
3D SLC-liteX 10GB-320GB
- Support LDPC ECC
- Global Wear-Leveling Technology
- AES256 Support
- End-to-End Data Protection
- DEVSLP/Thermal Sensor
- DataDefender™
- S.M.A.R.T. and SSD Widget
- DataRAID™
- Write Protect(Optional)
- SLC / MLC are also available
- CorePower (SV25P-CFast only)
- SLC-liteX P/E Cycles up to 100K

UDM

USB Disk Module

- Capacity: SLC 128MB-32GB, MLC 8GB-128GB; 3D TLC 16GB-256GB; SLC-liteX 8GB-64GB
- Compliant with standard USB specifications
- Supports Linux / Win7 / Win10 or later
- Shock resistance, anti-vibration design and low power consumption
- Supports Wide Temperature
- Built-in S.M.A.R.T. function
- Pitch size 2.00 mm and 2.54 mm supported
- 3D TLC supporting page mapping

Industrial microSD

Industrial microSD & SD Card

- Capacity: SD Card-SLC 256MB-32GB , MLC 8GB-128GB; 3D TLC 32GB-256GB
microSD Card-SLC 256MB-8GB , MLC: 8GB-128GB. 3D TLC 32GB-256GB
- Compliant with SD5.0, SD4.0, SD3.0, and SD2.0 specifications
- Supports SD and SPI modes
- Global Wear Leveling and flash block management
- Low power consumption
- S.M.A.R.T. function supported
- Smart Read Refresh™
- FTL: Page Mapping (optional)
- SLC-lite / SLC-liteX technology (optional)
- Supports Wide Temperature
- Intelligent power failure recovery

Industrial CF

Industrial CompactFlash

- Capacity: SLC 128MB-64GB, MLC 8GB-128GB, SLC-liteX: 8GB-64GB
- Compliant with CF 6.0 / CF 6.1 specification
- Advanced wear-leveling technology and flash block management
- Built-in ATA Secure Erase and S.M.A.R.T. functions
- Intelligent power failure recovery
- Supports Wide Temperature
- Write Protect Switch (optional)
- SLC-lite / SLC-liteX technology (optional)