

# Apacer

The Most **Reliable** Memory  
For Industries

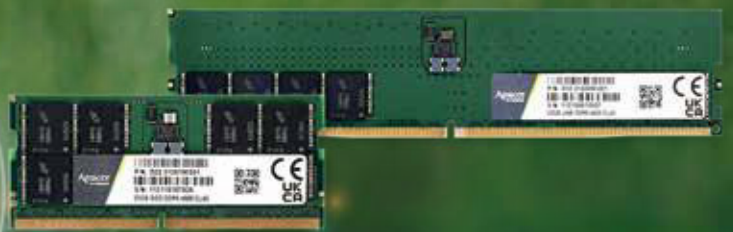


## Industrial DRAM Solutions

[www.apacer.com](http://www.apacer.com)

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# What Sets Apacer Apart?

## Quality Assurance

- 100% reliable & compliant
  - Wide temperature test
  - Thermal shock test
  - Strict ORT (Ongoing Reliability Test)
  - Power cycle test
  - Humidity test
  - Altitude test
  - Reliability test (Vibration/Shock)

## Extensive Experience

- Tier 1 industrial SSD & memory supplier; delivered over 377 million units
- Comprehensive experience in product customization (across industries)

## Reliable Service

- Fixed BOM solution
- Longevity of supply, EOL & LTB notice
- Manufacturing in Taiwan protects IP

## Professional Technique

- Strong HW/FW engineering know-how
- Customized design with a variety of solutions
- State-of-the-art technology

## Trustworthy Supplier

- A global-scale service and maintenance system
- Responsive local FAE technical support
- 24/7 flexible and quick delivery service
- Complete RMA system



## Temperature

Wide  
Temperature

## Dust/ Moisture

Conformal  
Coating

## Shock/ Vibration

Underfill  
XR-DIMM  
Rugged SODIMM

## Corrosion

Anti-Sulfuration  
(patented)

# Solutions for Extreme Environments

Nowadays, as industrial memory products have been widely used in various kinds of applications, the need for memory modules that can maintain highly stable operating performance in harsh conditions is remarkably increasing.

As an industrial solution veteran and leading memory brand, Apacer always takes an outside-in perspective and strives for new breakthroughs, providing many value-added solutions and technologies for extreme environments to ensure product reliability, stability and durability.

# Technologies and Advantages



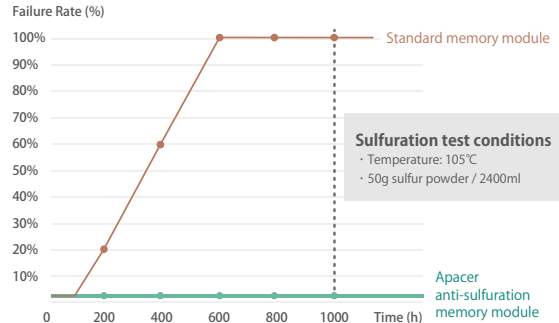
## Anti-Sulfuration



Apacer's patented anti-sulfuration memory modules replace standard silver electrodes with an exclusive alloy which has passed the ASTM B809-95 anti-sulfuration test.

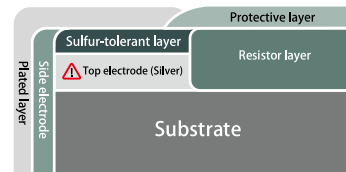
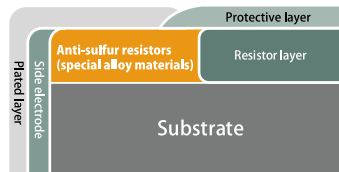
- World's first anti-sulfuration memory modules
- Solve corrosion problems effectively and increase overall system lifespan

## Anti-sulfuration test



## Anti-sulfuration technology comparison

	Apacer's advanced anti-sulfuration technology	Traditional anti-sulfuration technology
<b>Method</b>	Adopts exclusive and improved alloy materials replace normal electrode	Covers an sulfur-tolerant layer to protect the electrode
<b>Advantages / Disadvantages</b>	Reliable anti-sulfuration performance, improved product reliability and durability	Unstable anti-sulfuration performance due to process failure

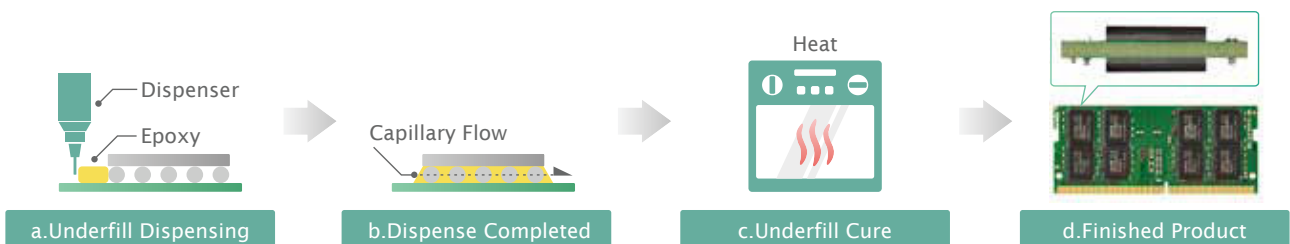


## Underfill

Apacer provides underfill technology to increase product reliability and resistance to various thermal and mechanical shocks, ensuring that products continue to operate normally in high vibration and under extreme changes in environmental temperature.



- 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 shock and vibration requirements
- Increases product reliability and lifespan



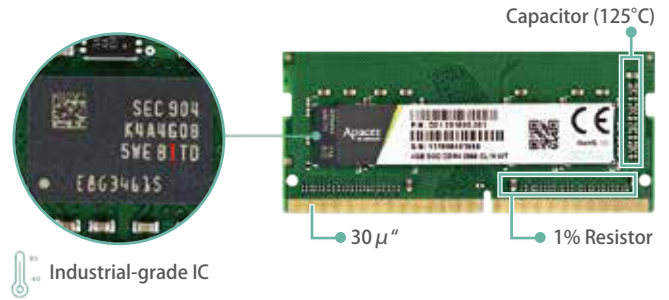


## Wide Temperature

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, PCB, resistors and capacitors) ensure stability and reliability**
- **High/Low temp. test / Temp. cycling test**
- **Power cycling test**

### Insists on using industrial-grade DRAM ICs



### Apacer's strengths of wide temperature memory

Apacer industrial-grade wide temp. memory		Standard memory (Commercial)
<p><b>Industrial-grade (-40 ~ +85°C)</b> Suitable for extreme high and low temperature environment</p>	◀ <b>DRAM</b> ▶	Commercial-grade (0 ~ +85°C)
<p><b>30µm</b> Avoids gold finger oxidation and ensures the stability of signal transmission</p>	◀ <b>PCB plating thickness</b> ▶	3µm
<p><b>Up to +125°C</b> Ensures more stable voltage supply in high-temperature environment</p>	◀ <b>Capacitor temp. specification</b> ▶	+85°C
<p><b>± 1% tolerance</b> Increases circuit stability and durability</p>	◀ <b>Resistor specification</b> ▶	± 5% tolerance



**30µm**  
Gold Finger

### 30µm Gold Finger

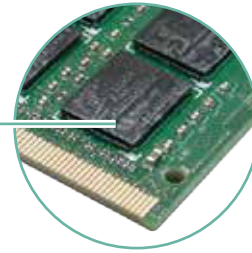
With the 30µm gold plating, the connector interface is more reliable and can withstand the potential damages in industrial applications.



## 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



● Apacer DRAM module with conformal coating



## Extremely Rugged XR-DIMM

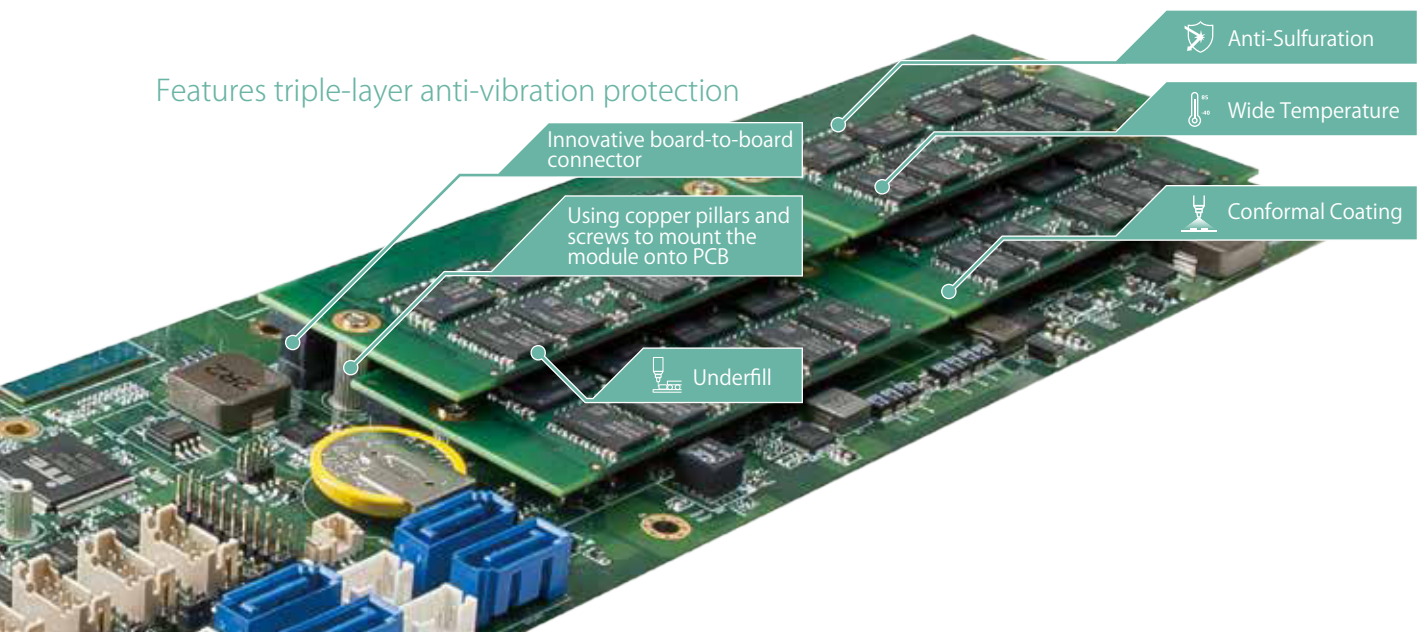
- Innovative board-to-board connector design
- Adopts highly durable 300-pin connector and mounting holes to improve the anti-vibration and anti-shock reliability
- Dual anti-shock and vibration certification: RTCA DO-160G / MIL-STD-810G
- Supports multiple protection technologies and value-added applications

### Rugged Memory Comparison

	XR-DIMM Rugged Memory	Onboard memory
<b>Anti-shock &amp; anti-vibration ability</b>	Great	Great
<b>Memory upgradability</b>	Yes	No
<b>Repair difficulty</b>	Easy	Difficult
<b>RMA cost</b>	Low	High
<b>Stackable design</b>	Yes	No
<b>Motherboard space usage</b>	Flexible	Uniform and inflexible

Supports multiple value-added applications

Features triple-layer anti-vibration protection



Innovative board-to-board connector

Using copper pillars and screws to mount the module onto PCB

Underfill

Anti-Sulfuration

Wide Temperature

Conformal Coating

# Embedded

## UDIMM (Unbuffered DIMM)

- JEDEC-compliant design
- Applicable for desktop computers, industrial computers and embedded systems



Model	DDR5 UDIMM	DDR4 UDIMM	DDR3 UDIMM	DDR2 UDIMM	DDR UDIMM
<b>Module Type</b>	UDIMM	UDIMM	UDIMM	UDIMM	UDIMM
<b>Memory Technology</b>	DDR5	DDR4	DDR3	DDR2	DDR
<b>Frequency</b>	4800/5600	2133/2400/2666 2933/3200	1066/1333/1600/1866	533/667/800	266/333/400
<b>Density</b>	8GB/16GB/32GB	2GB/4GB/8GB/ 16GB/32GB	1GB/2GB/4GB/ 8GB/16GB	1GB/2GB/4GB	512MB/1GB
<b>Voltage</b>	1.1v	1.2v	1.5v/1.35v	1.8v	2.5v/2.6v
<b>Pin Count</b>	288-Pin	288-Pin	240-Pin	240-Pin	184-Pin
<b>Width</b>	64-Bit	64-Bit	64-Bit	64-Bit	64-Bit
<b>PCB Height</b>	1.23"	1.23"	1.18"	1.18"	1.25"
<b>Operation Temperature</b>	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C	TA=0°C to 70°C
<b>Application</b>	Gaming / Healthcare / IoT / Factory Automation				



## SODIMM (Small Outline DIMM)

- JEDEC-compliant design
- Applicable for space-constraint systems, such as notebook computers, small-size industrial computers and embedded systems



Model	DDR5 SODIMM	DDR4 SODIMM	DDR3 SODIMM	DDR2 SODIMM	DDR SODIMM
<b>Module Type</b>	SODIMM	SODIMM	SODIMM	SODIMM	SODIMM
<b>Memory Technology</b>	DDR5	DDR4	DDR3	DDR2	DDR
<b>Frequency</b>	4800/5600	2133/2400/2666 2933/3200	1066/1333/1600/1866	533/667/800	266/333/400
<b>Density</b>	8GB/16GB/32GB	2GB/4GB/ 8GB/16GB/32GB	1GB/2GB/4GB/ 8GB/16GB	1GB/2GB/4GB	512MB/1GB
<b>Voltage</b>	1.1v	1.2v	1.5v/1.35v	1.8v	2.5v/2.6v
<b>Pin Count</b>	262-Pin	260-Pin	204-Pin	200-Pin	200-Pin
<b>Width</b>	64-Bit	64-Bit	64-Bit	64-Bit	64-Bit
<b>PCB Height</b>	1.18"	1.18"	1.18"	1.18"	1.25"
<b>Operation Temperature</b>	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C	TA=0°C to 70°C
<b>Application</b>	Gaming / IoT / Transportation / Factory Automation				





# Server/Workstation

## RDIMM (ECC Registered DIMM)

- Includes a register to enhance clock, command and control signals
- Supports ECC error detection and correction
- Supports a built-in temperature-monitoring thermal sensor
- Applicable for enterprise servers and cloud data centers



Model	DDR5 RDIMM	DDR4 RDIMM	DDR3 RDIMM
<b>Module Type</b>	RDIMM	RDIMM	RDIMM
<b>Memory Technology</b>	DDR5	DDR4	DDR3
<b>Frequency</b>	4800/5600	2133/2400/2666/2933/3200	1066/1333/1600/1866
<b>Density</b>	16GB/32GB/64GB/128GB	4GB/8GB/16GB/ 32GB/64GB/128GB	4GB/8GB
<b>Voltage</b>	1.1v	1.2v	1.5v/1.35v
<b>Pin Count</b>	288-Pin	288-Pin	240-Pin
<b>Width</b>	80-Bit	72-Bit	72-Bit
<b>PCB Height</b>	1.23"	1.23"	1.18"
<b>Operation Temperature</b>	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C
<b>Application</b>	Healthcare / Server & Networking		



## LRDIMM (Load Reduced DIMM)

- Includes a register to enhance clock, command and control signals
- Enhanced data signal with placing data buffer
- Supports ECC error detection and correction
- Supports a built-in temperature-monitoring thermal sensor
- Applicable for enterprise servers and cloud data centers



Model	DDR4 LRDIMM
<b>Module Type</b>	LRDIMM
<b>Memory Technology</b>	DDR4
<b>Frequency</b>	2666/2933/3200
<b>Density</b>	64GB/128GB
<b>Voltage</b>	1.2v
<b>Pin Count</b>	288-Pin
<b>Width</b>	72-Bit
<b>PCB Height</b>	1.23"
<b>Operation Temperature</b>	TC=0°C to 85°C
<b>Application</b>	Healthcare / Server & Networking

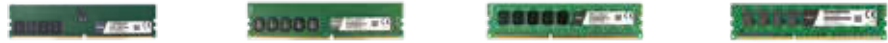
### Value-Added



# Server/Workstation

## ECC UDIMM (ECC Unbuffered DIMM)

- Supports ECC error detection and correction
- Supports a built-in temperature-monitoring thermal sensor
- Applicable for servers and workstations that require highly stable operation



Model	DDR5 ECC UDIMM	DDR4 ECC UDIMM	DDR3 ECC UDIMM	DDR2 ECC UDIMM
<b>Module Type</b>	ECC UDIMM	ECC UDIMM	ECC UDIMM	ECC UDIMM
<b>Memory Technology</b>	DDR5	DDR4	DDR3	DDR2
<b>Frequency</b>	4800/5600	2133/2400/2666/2933/3200	1066/1333/1600/1866	533/667/800
<b>Density</b>	16GB/32GB	4GB/8GB/16GB/32GB	2GB/4GB/8GB/16GB	1GB/2GB/4GB
<b>Voltage</b>	1.1v	1.2v	1.5v/1.35v	1.8v
<b>Pin Count</b>	288-Pin	288-Pin	240-Pin	240-Pin
<b>Width</b>	72-Bit	72-Bit	72-Bit	72-Bit
<b>PCB Height</b>	1.23"	1.23"	1.18"	1.18"
<b>Operation Temperature</b>	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C
<b>Application</b>	Healthcare / IoT / Server & Networking / Factory Automation			

### Value-Added



## ECC SODIMM (ECC Small Outline DIMM)

- Supports ECC error detection and correction
- Supports a built-in temperature-monitoring thermal sensor
- Applicable for microservers, workstations, networking platforms and embedded systems



Model	DDR5 ECC SODIMM	DDR4 ECC SODIMM	DDR3 ECC SODIMM
<b>Module Type</b>	ECC SODIMM	ECC SODIMM	ECC SODIMM
<b>Memory Technology</b>	DDR5	DDR4	DDR3
<b>Frequency</b>	4800/5600	2133/2400/2666/2933/3200	1066/1333/1600/1866
<b>Density</b>	16GB/32GB	4GB/8GB/16GB/32GB	2GB/4GB/8GB/16GB
<b>Voltage</b>	1.1v	1.2v	1.5v/1.35v
<b>Pin Count</b>	262-Pin	260-Pin	204-Pin
<b>Width</b>	72-Bit	72-Bit	72-Bit
<b>PCB Height</b>	1.18"	1.18"	1.18"
<b>Operation Temperature</b>	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C
<b>Application</b>	IoT / Server & Networking / Transportation / Factory Automation		

### Value-Added



# Server/Workstation

## SORDIMM (Small Outline ECC Registered DIMM)

- Achieves signal synchronization and stability with the use of a register
- Supports ECC error detection and correction
- Supports a built-in temperature-monitoring thermal sensor
- Applicable for small-sized microserver and networking equipment, such as switches and routers



Model	DDR4 SORDIMM
Module Type	(VLP) SORDIMM
Memory Technology	DDR4
Frequency	2133/2400/2666
Density	4GB/8GB/16GB
Voltage	1.2v
Pin Count	260-Pin
Width	72-Bit
PCB Height	0.738"/1.18"
Operation Temperature	TC=0°C to 85°C
Application	Server & Networking

### Value-Added



## VLP Mini RDIMM / VLP Mini ECC UDIMM

- Supports a built-in temperature-monitoring thermal sensor
- High capacity, high performance and high stability
- Supports ECC error detection and correction
- Measures only 80mm long
- Applicable for space-constrained networking, communication, server and embedded system



Model	DDR4 Mini RDIMM	DDR4 VLP Mini ECC UDIMM
Module Type	(VLP) Mini RDIMM	VLP Mini ECC UDIMM
Memory Technology	DDR4	DDR4
Frequency	2133/2400/2666	2133/2400/2666
Density	4GB/8GB/16GB	4GB/8GB/16GB
Voltage	1.2v	1.2v
Pin Count	288-Pin	288-Pin
Width	72-Bit	72-Bit
PCB Height	0.738"/1.23"	0.738"
Operation Temperature	TC=0°C to 85°C	TC=0°C to 85°C
Application	Server & Networking	Server & Networking

### Value-Added



# Very Low Profile

## VLP UDIMM (Very Low Profile Unbuffered DIMM)

- Measures only 0.72~0.738-inch in height
- Prevents mechanical issues, and improves heat dissipation
- Applicable for space-constrained systems, such as small-size industrial computers and embedded systems



Model	DDR5 VLP UDIMM	DDR4 VLP UDIMM
<b>Module Type</b>	VLP UDIMM	VLP UDIMM
<b>Memory Technology</b>	DDR5	DDR4
<b>Frequency</b>	4800/5600	2133/2400/2666/2933/3200
<b>Density</b>	16GB/32GB	4GB/8GB/16GB/32GB
<b>Voltage</b>	1.1v	1.2v
<b>Pin Count</b>	288-Pin	288-Pin
<b>Width</b>	64-Bit	64-Bit
<b>PCB Height</b>	0.738"	0.738"
<b>Operation Temperature</b>	TC=0°C to 85°C	TC=0°C to 85°C
<b>Application</b>	IoT / Server & Networking	

### Value-Added



## VLP SODIMM (Very Low Profile SODIMM) / VLP ECC SODIMM (Very Low Profile ECC SODIMM)

- Measures only 0.7~0.709-inch in height
- Saves up to 40% board space
- Applicable for space-constrained systems, such as small form-factor industrial computers and embedded systems



Model	DDR4 VLP SODIMM	DDR4 VLP ECC SODIMM
<b>Module Type</b>	VLP SODIMM	VLP ECC SODIMM
<b>Memory Technology</b>	DDR4	DDR4
<b>Frequency</b>	2133/2400/2666/2933/3200	2133/2400/2666/2933/3200
<b>Density</b>	4GB/8GB	4GB/8GB
<b>Voltage</b>	1.2V	1.2V
<b>Pin Count</b>	260-Pin	260-Pin
<b>Width</b>	64-Bit	72-Bit
<b>PCB Height</b>	0.709"	0.7"
<b>Operation Temperature</b>	TC=0°C to 85°C	TC=0°C to 85°C
<b>Application</b>	IoT / Transportation	

### Value-Added





# Very Low Profile

## VLP RDIMM (Very Low Profile Registered DIMM)

- Measures only 0.738-inch in height
- Prevents mechanical issues, and improves heat dissipation
- Supports ECC error detection and correction
- Supports a built-in temperature-monitoring thermal sensor
- Applicable for space-constrained systems and systems that require high stability, such as blade servers, 1U rack servers and various embedded systems.



Model	DDR4 VLP RDIMM	DDR3 VLP RDIMM
<b>Module Type</b>	VLP RDIMM	VLP RDIMM
<b>Memory Technology</b>	DDR4	DDR3
<b>Frequency</b>	2133/2400/2666/2933/3200	1066/1333/1600
<b>Density</b>	4GB/8GB/16GB/32GB	4GB/8GB
<b>Voltage</b>	1.2v	1.5v/1.35v
<b>Pin Count</b>	288-Pin	240-Pin
<b>Width</b>	72-Bit	72-Bit
<b>PCB Height</b>	0.738"	0.738"
<b>Operation Temperature</b>	TC=0°C to 85°C	TC=0°C to 85°C
<b>Application</b>	Healthcare / Server & Networking	

### Value-Added



## VLP ECC UDIMM (Very Low Profile ECC Unbuffered DIMM)

- Measures only 0.738-inch in height
- Prevents mechanical issues, and improves heat dissipation
- Supports ECC error detection and correction
- Supports a built-in temperature-monitoring thermal sensor
- Applicable for space-constrained, servers and workstations that require high stability



Model	DDR5 VLP ECC UDIMM	DDR4 VLP ECC UDIMM	DDR3 VLP ECC UDIMM
<b>Module Type</b>	VLP ECC UDIMM	VLP ECC UDIMM	VLP ECC UDIMM
<b>Memory Technology</b>	DDR5	DDR4	DDR3
<b>Frequency</b>	4800/5600	2133/2400/2666/2933/3200	1066/1333/1600
<b>Density</b>	16GB/32GB	4GB/8GB/16GB/32GB	2GB/4GB/8GB
<b>Voltage</b>	1.1v	1.2v	1.5v/1.35v
<b>Pin Count</b>	288-Pin	288-Pin	240-Pin
<b>Width</b>	72-Bit	72-Bit	72-Bit
<b>PCB Height</b>	0.738"	0.738"	0.738"
<b>Operation Temperature</b>	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C
<b>Application</b>	Healthcare / Server & Networking		

### Value-Added



# Wide Temperature

## Wide Temp. UDIMM (Wide Temperature UDIMM)

- Able to operate in temperatures ranging from -40°C to 85°C
- Uses industrial-grade SDRAM components
- With 30u gold plating PCB to improve anti-oxidation and ensure stability of signal transmission
- Applicable for industrial, defense, aeronautical and vehicular systems that face extreme environmental challenges



Model	DDR5 Wide Temp. UDIMM	DDR4 Wide Temp. UDIMM	DDR3 Wide Temp. UDIMM
<b>Module Type</b>	Wide Temperature UDIMM	Wide Temperature UDIMM	Wide Temperature UDIMM
<b>Memory Technology</b>	DDR5	DDR4	DDR3
<b>Frequency</b>	4800/5600	2133/2400/2666/2933/3200	1066/1333/1600
<b>Density</b>	8GB/16GB/32GB	4GB/8GB/16GB/32GB	2GB/4GB/8GB
<b>Voltage</b>	1.1v	1.2v	1.5v/1.35v
<b>Pin Count</b>	288-Pin	288-Pin	240-Pin
<b>Width</b>	64-Bit	64-Bit	64-Bit
<b>PCB Height</b>	1.23"	1.23"	1.18"
<b>Operation Temperature</b>	TC=-40°C to 85°C	TC=-40°C to 85°C	TC=-40°C to 85°C
<b>Application</b>	Defense / IoT / Transportation / Factory Automation		

### Value-Added



## Wide Temp. SODIMM (Wide Temperature SODIMM)

- Able to operate in temperatures ranging from -40°C to 85°C
- Uses industrial-grade SDRAM components
- With 30u gold plating PCB to improve anti-oxidation and ensure stability of signal transmission
- Applicable for industrial, defense, aeronautical and vehicular systems that face extreme environmental challenges



Model	DDR5 Wide Temp. SODIMM	DDR4 Wide Temp. SODIMM	DDR3 Wide Temp. SODIMM	DDR2 Wide Temp. SODIMM	DDR Wide Temp. SODIMM
<b>Module Type</b>	Wide Temperature SODIMM	Wide Temperature SODIMM	Wide Temperature SODIMM	Wide Temperature SODIMM	Wide Temperature SODIMM
<b>Memory Technology</b>	DDR5	DDR4	DDR3	DDR2	DDR
<b>Frequency</b>	4800/5600	2133/2400/2666/2933/3200	1066/1333/1600	533/667/800	266/333/400
<b>Density</b>	8GB/16GB/32GB	4GB/8GB/16GB/32GB	2GB/4GB/8GB	1GB/2GB	512MB/1GB
<b>Voltage</b>	1.1v	1.2v	1.5v/1.35v	1.8v	2.5v/2.6v
<b>Pin Count</b>	262-Pin	260-Pin	204-Pin	200-Pin	200-Pin
<b>Width</b>	64-Bit	64-Bit	64-Bit	64-Bit	64-Bit
<b>PCB Height</b>	1.18"	1.18"	1.18"	1.18"	1.25"
<b>Operation Temperature</b>	TC=-40°C to 85°C	TC=-40°C to 85°C	TC=-40°C to 85°C	TC=-40°C to 85°C	TA=-40°C to 85°C
<b>Application</b>	Defense / IoT / Transportation / Factory Automation				

### Value-Added



# Wide Temperature

## Wide Temp. ECC UDIMM (Wide Temperature ECC UDIMM)

- Able to operate in temperatures ranging from -40°C to 85°C
- Uses industrial-grade SDRAM components
- With 30u gold plating PCB to improve anti-oxidation and ensure stability of signal transmission
- Applicable for industrial, defense, aeronautical and vehicular systems that face extreme environmental challenges



Model	DDR5 Wide Temp. ECC UDIMM	DDR4 Wide Temp. ECC UDIMM	DDR3 Wide Temp. ECC UDIMM
<b>Module Type</b>	Wide Temperature ECC UDIMM	Wide Temperature ECC UDIMM	Wide Temperature ECC UDIMM
<b>Memory Technology</b>	DDR5	DDR4	DDR3
<b>Frequency</b>	4800/5600	2133/2400/2666/2933/3200	1066/1333/1600
<b>Density</b>	16GB/32GB	4GB/8GB/16GB/32GB	2GB/4GB/8GB
<b>Voltage</b>	1.1v	1.2v	1.5v/1.35v
<b>Pin Count</b>	288-Pin	288-Pin	240-Pin
<b>Width</b>	72-Bit	72-Bit	72-Bit
<b>PCB Height</b>	1.23"	1.23"	1.18"
<b>Operation Temperature</b>	TC=-40°C to 85°C	TC=-40°C to 85°C	TC=-40°C to 85°C
<b>Application</b>	Defense / IoT / Transportation / Factory Automation		

### Value-Added



## Wide Temp. ECC SODIMM (Wide Temperature ECC SODIMM)

- Able to operate in temperatures ranging from -40°C to 85°C
- Uses industrial-grade SDRAM components
- With 30u gold plating PCB to improve anti-oxidation and ensure stability of signal transmission
- Applicable for industrial, defense, aeronautical and vehicular systems that face extreme environmental challenges



Model	DDR5 Wide Temp. ECC SODIMM	DDR4 Wide Temp. ECC SODIMM	DDR3 Wide Temp. ECC SODIMM
<b>Module Type</b>	Wide Temperature ECC SODIMM	Wide Temperature ECC SODIMM	Wide Temperature ECC SODIMM
<b>Memory Technology</b>	DDR5	DDR4	DDR3
<b>Frequency</b>	4800/5600	2133/2400/2666/2933/3200	1066/1333/1600
<b>Density</b>	16GB/32GB	4GB/8GB/16GB/32GB	2GB/4GB/8GB
<b>Voltage</b>	1.1v	1.2v	1.5v/1.35v
<b>Pin Count</b>	262-Pin	260-Pin	204-Pin
<b>Width</b>	72-Bit	72-Bit	72-Bit
<b>PCB Height</b>	1.18"	1.18"	1.18"
<b>Operation Temperature</b>	TC=-40°C to 85°C	TC=-40°C to 85°C	TC=-40°C to 85°C
<b>Application</b>	Defense / IoT / Transportation / Factory Automation		

### Value-Added



# Anti-Sulfuration (Apacer Patented)

## Anti-Sulfuration Memory Modules

- World's first anti-sulfuration memory modules for the sulfur-containing environment
- The innovative design is now patented
- Applicable for equipment exposed in highly contaminated environment and electronic equipment used in areas of high-concentration sulfur gas



Model	DDR5 Anti-Sulfuration UDIMM	DDR4 Anti-Sulfuration UDIMM	DDR5 Anti-Sulfuration SODIMM	DDR4 Anti-Sulfuration SODIMM
<b>Module Type</b>	Anti-Sulfuration UDIMM	Anti-Sulfuration UDIMM	Anti-Sulfuration SODIMM	Anti-Sulfuration SODIMM
<b>Memory Technology</b>	DDR5	DDR4	DDR5	DDR4
<b>Frequency</b>	4800/5600	2133/2400/2666/2933/3200	4800/5600	2133/2400/2666/2933/3200
<b>Density</b>	8GB/16GB/32GB	4GB/8GB/16GB/32GB	8GB/16GB/32GB	4GB/8GB/16GB/32GB
<b>Voltage</b>	1.1v	1.2v	1.1v	1.2v
<b>Pin Count</b>	288-Pin	288-Pin	262-Pin	260-Pin
<b>Width</b>	64-Bit	64-Bit	64-Bit	64-Bit
<b>PCB Height</b>	1.23"	1.23"	1.18"	1.18"
<b>Operation Temperature</b>	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C / -40°C to 85°C
<b>Application</b>	Defense / Healthcare / IoT / Transportation / Factory Automation			



Model	DDR5 Anti-Sulfuration RDIMM	DDR4 Anti-Sulfuration RDIMM	DDR5 Anti-Sulfuration ECC UDIMM	DDR4 Anti-Sulfuration ECC UDIMM	DDR5 Anti-Sulfuration ECC SODIMM	DDR4 Anti-Sulfuration ECC SODIMM
<b>Module Type</b>	Anti-Sulfuration RDIMM	Anti-Sulfuration RDIMM	Anti-Sulfuration ECC UDIMM	Anti-Sulfuration ECC UDIMM	Anti-Sulfuration ECC SODIMM	Anti-Sulfuration ECC SODIMM
<b>Memory Technology</b>	DDR5	DDR4	DDR5	DDR4	DDR5	DDR4
<b>Frequency</b>	4800/5600	2133/2400/2666/2933/3200	4800/5600	2133/2400/2666/2933/3200	4800/5600	2133/2400/2666/2933/3200
<b>Density</b>	16GB/32GB	4GB/8GB/16GB/32GB	16GB/32GB	4GB/8GB/16GB/32GB	16GB/32GB	4GB/8GB/16GB/32GB
<b>Voltage</b>	1.1v	1.2v	1.1v	1.2v	1.1v	1.2v
<b>Pin Count</b>	288-Pin	288-Pin	288-Pin	288-Pin	262-Pin	260-Pin
<b>Width</b>	80-Bit	72-Bit	72-Bit	72-Bit	72-Bit	72-Bit
<b>PCB Height</b>	1.23"	1.23"	1.23"	1.23"	1.18"	1.18"
<b>Operation Temperature</b>	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C
<b>Application</b>	Defense / Healthcare / IoT / Transportation / Factory Automation					





# Rugged Memory

## Rugged SODIMM

- Designed with two mounting holes to secure the memory module to the board to achieve shock and vibration resistance
- Dual anti-shock and vibration certification: RTCA DO-160G / MIL-STD-883K
- Applicable for transportation, automation, wind power generation, energy, defense and aeronautical equipment that requires shock and vibration resistance



Model	DDR4 Rugged SODIMM
Module Type	Rugged SODIMM
Memory Technology	DDR4
Frequency	2133/2400/2666/2933/3200
Density	8GB/16GB/32GB
Voltage	1.2v
Pin Count	260-Pin
Width	64-Bit/72-Bit
PCB Height	1.377"
Operation Temperature	TC=0°C to 85°C / -40°C to 85°C
Application	Defense / Transportation

### Value-Added



## XR-DIMM

- Designed for shock and vibration environments
- Innovative design with highly rugged 300-pin connector and mounting holes
- Dual anti-shock and vibration certification: RTCA DO-160G / MIL-STD-810G
- Improves the stability of signal transmission
- Applicable for transportation, defense and aeronautical equipment that requires shock and vibration resistance



Model	DDR4 XR-DIMM
Module Type	XR-DIMM
Memory Technology	DDR4
Frequency	2133/2400
Density	8GB/16GB
Voltage	1.2v
Pin Count	300-Pin
Width	72-Bit
PCB Height	1.466"
Operation Temperature	TC=-40°C to 85°C
Application	Defense / Transportation

### Value-Added



# Fully Lead-Free

## Fully Lead-Free Memory Module

- The world's first Fully Lead-Free memory module, surpassing RoHS environmental standards.
- Fully compliant with RoHS standards, no RoHS exemptions required
- Uses Fully Lead-Free Resistors without RoHS 7(c)-I exemption
- Meeting the market demand for environmentally friendly products



Model	DDR5 Fully Lead-free UDIMM	DDR5 Fully Lead-free SODIMM	DDR5 Fully Lead-free RDIMM	DDR5 Fully Lead-free ECC UDIMM	DDR5 Fully Lead-free ECC SODIMM
<b>Module Type</b>	Fully Lead-free UDIMM	Fully Lead-free SODIMM	Fully Lead-free RDIMM	Fully Lead-free ECC UDIMM	Fully Lead-free ECC SODIMM
<b>Memory Technology</b>	DDR5	DDR5	DDR5	DDR5	DDR5
<b>Frequency</b>	4800/5600	4800/5600	4800	4800/5600	4800/5600
<b>Density</b>	8GB/16GB/32GB	8GB/16GB/32GB	16GB/32GB	16GB/32GB	16GB/32GB
<b>Voltage</b>	1.1v	1.1v	1.1v	1.1v	1.1v
<b>Pin Count</b>	288-Pin	262-Pin	288-Pin	288-Pin	262-Pin
<b>Width</b>	64-Bit	64-Bit	80-Bit	72-Bit	72-Bit
<b>PCB Height</b>	1.23"	1.18"	1.23"	1.23"	1.18"
<b>Operating Temperature</b>	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C	TC=0°C to 85°C
<b>Application</b>	Gaming / Healthcare / IoT / Factory Automation	Gaming / IoT / Transportation / Factory Automation	Healthcare / Server & Networking	Healthcare / IoT / Server & Networking / Factory Automation	IoT / Server & Networking / Transportation / Factory Automation
<b>Value-Added</b>					





## About Apacer

Apacer is a global leader in digital storage solutions, and is devoted to innovative storage technology and services. After more than 25 years in the industry, we remain dedicated to “Becoming Better Partners.” Our core values, as always, continue to revolve around reliability and innovation.

The company focuses on embedded applications for a variety of vertical markets, including military, medical, gaming, and industrial, and has become an integration expert in digital storage, innovative applications, and value-added services. Apacer is known for its advanced technologies and product quality and was ranked by Gartner as the top industrial SSD supplier for five consecutive years, from 2012 to 2016. In addition, Apacer is committed to making a positive impact on societal issues and has joined the **Responsible Business Alliance (RBA)**, which is formerly known as Electronic Industry Citizenship Coalition (EICC), a coalition promoting **ESG (Environmental, Social, Governance)** within the global electronics supply chain. We believe that the success of a corporation is marked not by profit but by how we benefit others, whether by caring for the environment or making contributions to society.



## Compliance and Associations

