



## Embedded Solutions



# DRAM Modules DDR4

Transcend's DDR4 DRAM modules operate at a nominal voltage of just 1.2V, offering higher energy efficiency and exceptional clock speeds to cater to the demands of the embedded industry. The modules are available in multiple form factors and technologies, such as ECC and wide-temperature support. All components are of the highest quality, having been sourced directly from the world's first-tier supplier of DRAM chips and stringently tested for unparalleled compatibility, reliability, and performance.

## Features

- JEDEC standard 1.2V ± 0.06V power supply
- High energy efficiency
- 8 bit pre-fetch
- Burst Length: 4, 8
- 16 Banks (4 Bank Groups)
- Support DBI mode
- Support Command/Address parity detection
- Support Data Cyclic Redundancy Check (CRC) for improved data reliability
- On-die termination with ODT pin
- Serial presence detect with EEPROM
- 100% tested for stability, compatibility and performance

## Advanced Technologies



Anti-Sulfur Technology



Corner Bond & Underfill



Conformal Coating





Wide Temperature



30 μ Gold Finger

# DDR4 Unbuffered DIMMs

Module Type	DDR4	
	Long-DIMM	SO-DIMM
Product Image		
Standard	JEDEC	
Frequency	3200/2666/2400/2133 MHz	
Capacity	2GB~32GB	
Voltage	1.2V	
Pin Count	Long-DIMM: 288 pin	SO-DIMM: 260 pin
PCB Height	Standard: 1.23 inches Very Low Profile: 0.74 inches	1.18 inches
Operating Temperature	Standard Temperature: 0°C~85°C Wide Temperature: -40°C~85°C	

## Ordering Information

### DDR4-3200 Long-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~85°C)	Very Low Profile (VLP)
8GB	(1Gx8)x8	1Rx8	TS1GLH64V2B2	-	-
16GB	1Gx8	2Rx8	TS2GLH64V2B2	-	-

### DDR4-3200 SO-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~85°C)	Very Low Profile (VLP)
8GB	(1Gx8)x8	1Rx8	TS1GSH64V2B2	-	-
16GB	1Gx8	2Rx8	TS2GSH64V2B2	-	-



## DDR4-2133 Long-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~ 85°C)	Very Low Profile (VLP)
4GB	(512Mx16)x4	1Rx16	TS512MLH64V1D	TS512MLH64V1D-I	TS512MLH64V1DL
4GB	(512Mx8)x8	1Rx8	TS512MLH64V1H	TS512MLH64V1H-I	TS512MLH64V1HL
8GB	(512Mx8)x16	2Rx8	TS1GLH64V1H	TS1GLH64V1H-I	TS1GLH64V1HL
8GB	(1Gx8)x8	1Rx8	TS1GLH64V1B	TS1GLH64V1B-I	TS1GLH64V1BL
16GB	(1Gx8)x16	2Rx8	TS2GLH64V1B	TS2GLH64V1B-I	TS2GLH64V1BL

## DDR4-2133 SO-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~ 85°C)
2GB	(256Mx16)x4	1Rx16	TS256MSH64V1X	TS256MSH64V1X-I
4GB	(512Mx16)x4	1Rx16	TS512MSH64V1D	TS512MSH64V1D-I
4GB	(512Mx8)x8	1Rx8	TS512MSH64V1H	TS512MSH64V1H-I
8GB	(512Mx8)x16	2Rx8	TS1GSH64V1H	TS1GSH64V1H-I
8GB	(1Gx8)x8	1Rx8	TS1GSH64V1B	TS1GSH64V1B-I
16GB	(1Gx8)x16	2Rx8	TS2GSH64V1B	TS2GSH64V1B-I

# DDR4 ECC DIMMs

Module Type	DDR4	
	ECC Long-DIMM	ECC SO-DIMM
Product Image		
Standard	JEDEC	
Frequency	2666/2400/2133 MHz	
Capacity	4GB~32GB	
Voltage	1.2V	
Pin Count	ECC Long-DIMM: 288 pin	ECC SO-DIMM: 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~ 85°C Wide Temperature: -40°C~ 85°C	

## Ordering Information

### DDR4-2666 ECC Long-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~ 85°C)	Very Low Profile (VLP)
4GB	(512Mx8)x9	1Rx8	TS512MLH72V6H	TS512MLH72V6H-I	TS512MLH72V6HL
8GB	(512Mx8)x18	2Rx8	TS1GLH72V6H	TS1GLH72V6H-I	TS1GLH72V6HL
8GB	(1Gx8)x9	1Rx8	TS1GLH72V6B	TS1GLH72V6B-I	TS1GLH72V6BL
16GB	(1Gx8)x18	2Rx8	TS2GLH72V6B	TS2GLH72V6B-I	TS2GLH72V6BL
32GB	(2Gx8)x18	2Rx8	TS4GLH72V6E	TS4GLH72V6E-I	TS4GLH72V6EL

### DDR4-2666 ECC SO-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~ 85°C)
4GB	(512Mx8)x9	1Rx8	TS512MSH72V6H	TS512MSH72V6H-I
8GB	(512Mx8)x18	2Rx8	TS1GSH72V6H	TS1GSH72V6H-I
8GB	(1Gx8)x9	1Rx8	TS1GSH72V6B	TS1GSH72V6B-I
16GB	(1Gx8)x18	2Rx8	TS2GSH72V6B	TS2GSH72V6B-I
32GB	(2Gx8)x18	2Rx8	TS4GSH72V6E	TS4GSH72V6E-I
32GB	(2Gx8)x18	2Rx8	TS4GSH72V6E2	

### DDR4-2400 ECC Long-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~ 85°C)	Very Low Profile (VLP)
4GB	(512Mx8)x9	1Rx8	TS512MLH72V4H	TS512MLH72V4H-I	TS512MLH72V4HL
8GB	(512Mx8)x18	2Rx8	TS1GLH72V4H	TS1GLH72V4H-I	TS1GLH72V4HL
8GB	(1Gx8)x9	1Rx8	TS1GLH72V4B	TS1GLH72V4B-I	TS1GLH72V4BL
16GB	(1Gx8)x18	2Rx8	TS2GLH72V4B	TS2GLH72V4B-I	TS2GLH72V4BL
32GB	(2Gx8)x18	2Rx8	TS4GLH72V4E	TS4GLH72V4E-I	-

### DDR4-2400 ECC SO-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~ 85°C)
4GB	(512Mx8)x9	1Rx8	TS512MSH72V4H	TS512MSH72V4H-I
8GB	(512Mx8)x18	2Rx8	TS1GSH72V4H	TS1GSH72V4H-I
8GB	(1Gx8)x9	1Rx8	TS1GSH72V4B	TS1GSH72V4B-I
16GB	(1Gx8)x18	2Rx8	TS2GSH72V4B	TS2GSH72V4B-I
32GB	(2Gx8)x18	2Rx8	TS4GSH72V4E	TS4GSH72V4E-I


### DDR4-2133 ECC Long-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~ 85°C)	Very Low Profile (VLP)
4GB	(512Mx8)x9	1Rx8	TS512MLH72V1H	TS512MLH72V1H-I	TS512MLH72V1HL
8GB	(512Mx8)x18	2Rx8	TS1GLH72V1H	TS1GLH72V1H-I	TS1GLH72V1HL
8GB	(1Gx8)x9	1Rx8	TS1GLH72V1B	TS1GLH72V1B-I	TS1GLH72V1BL
16GB	(1Gx8)x18	2Rx8	TS2GLH72V1B	TS2GLH72V1B-I	TS2GLH72V1BL

### DDR4-2133 ECC SO-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~ 85°C)
4GB	(512Mx8)x9	1Rx8	TS512MSH72V1H	TS512MSH72V1H-I
8GB	(512Mx8)x18	2Rx8	TS1GSH72V1H	TS1GSH72V1H-I
8GB	(1Gx8)x9	1Rx8	TS1GSH72V1B	TS1GSH72V1B-I
16GB	(1Gx8)x18	2Rx8	TS2GSH72V1B	TS2GSH72V1B-I

# DDR4 Registered DIMMs

Module Type	DDR4 Registered DIMM
Product Image	
Standard	JEDEC
Frequency	2666/2400/2133 MHz
Capacity	4GB~32GB
Voltage	1.2V
Pin Count	R-DIMM: 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~ 85°C

## Ordering Information

### DDR4-2666 Registered DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Very Low Profile (VLP)
4GB	(512Mx8)x9	1Rx8	TS512MHR72V6H	-
8GB	(512Mx8)x18	2Rx8	TS1GHR72V6H	TS1GHR72V6HL
8GB	(1Gx8)x9	1Rx8	TS1GHR72V6B	-
16GB	(1Gx8)x18	2Rx8	TS2GHR72V6B	TS2GHR72V6BL
32GB	(2Gx4)x36	2Rx4	TS4GHR72V6C	-
32GB	(2Gx8)x18	2Rx8	TS4GHR72V6E	TS4GHR72V6EL
32GB	(2Gx8)x18	2Rx8	TS4GHR72V6E2	-

## DDR4-2400 Registered DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Very Low Profile (VLP)
4GB	(512Mx8)x9	1Rx8	TS512MHR72V4H	-
8GB	(512Mx8)x18	2Rx8	TS1GHR72V4H	TS1GHR72V4HL
8GB	(1Gx8)x9	1Rx8	TS1GHR72V4B	-
16GB	(1Gx8)x18	2Rx8	TS2GHR72V4B	TS2GHR72V4BL
32GB	(2Gx4)x36	2Rx4	TS4GHR72V4C	-
32GB	(2Gx8)x18	2Rx8	TS4GHR72V4E	TS4GHR72V4EL

## DDR4-2133 Registered DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Very Low Profile (VLP)
4GB	(512Mx8)x9	1Rx8	TS512MHR72V1H	TS512MHR72V1HL
8GB	(512Mx8)x18	2Rx8	TS1GHR72V1H	TS1GHR72V1HL
8GB	(1Gx8)x9	1Rx8	TS1GHR72V1B	TS1GHR72V1BL
16GB	(1Gx8)x18	2Rx8	TS2GHR72V1B	TS2GHR72V1BL
32GB	(2Gx4)x36	2Rx4	TS4GHR72V1C	-

Product specifications are subject to change without notice. Pictures shown may differ from actual products. Due to the complexity and variety of industrial applications, Transcend cannot guarantee 100% compatibility with all platforms and under all scenarios. For special applications and environments, it is strongly suggested that you contact Transcend beforehand for clarification.



Please feel free to contact us with any special requests you might have.  
Tel: +886-2-2792-8000 [www.transcend-info.com](http://www.transcend-info.com)

## DDR4-2666 Long-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~ 85°C)	Very Low Profile (VLP)
2GB	(256Mx16)x4	1Rx16	TS256MLH64V6X	TS256MLH64V6X-I	TS256MLH64V6XL
4GB	(512Mx16)x4	1Rx16	TS512MLH64V6D	TS512MLH64V6D-I	TS512MLH64V6DL
4GB	(512Mx8)x8	1Rx8	TS512MLH64V6H	TS512MLH64V6H-I	TS512MLH64V6HL
8GB	(512Mx8)x16	2Rx8	TS1GLH64V6H	TS1GLH64V6H-I	TS1GLH64V6HL
8GB	(1Gx8)x8	1Rx8	TS1GLH64V6B	TS1GLH64V6B-I	TS1GLH64V6BL
8GB	(1Gx8)x8	1Rx8	TS1GLH64V6B2	-	-
16GB	(1Gx8)x16	2Rx8	TS2GLH64V6B	TS2GLH64V6B-I	TS2GLH64V6BL
16GB	(1Gx8)x16	2Rx8	TS2GLH64V6B2	-	-
32GB	(2Gx8)x16	2Rx8	TS4GLH64V6E	TS4GLH64V6E-I	TS4GLH64V6EL

## DDR4-2666 SO-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~ 85°C)
2GB	(256Mx16)x4	1Rx16	TS256MSH64V6X	TS256MSH64V6X-I
4GB	(512Mx16)x4	1Rx16	TS512MSH64V6D	TS512MSH64V6D-I
4GB	(512Mx8)x8	1Rx8	TS512MSH64V6H	TS512MSH64V6H-I
8GB	(512Mx8)x16	2Rx8	TS1GSH64V6H	TS1GSH64V6H-I
8GB	(1Gx8)x8	1Rx8	TS1GSH64V6B	TS1GSH64V6B-I
8GB	(1Gx8)x8	1Rx8	TS1GSH64V6B2	-
16GB	(1Gx8)x16	2Rx8	TS2GSH64V6B	TS2GSH64V6B-I
16GB	(1Gx8)x16	2Rx8	TS2GSH64V6B2	-
32GB	(2Gx8)x16	2Rx8	TS4GSH64V6E	TS4GSH64V6E-I

## DDR4-2400 Long-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~ 85°C)	Very Low Profile (VLP)
2GB	(256Mx16)x4	1Rx16	TS256MLH64V4X	TS256MLH64V4X-I	TS256MLH64V4XL
4GB	(512Mx16)x4	1Rx16	TS512MLH64V4D	TS512MLH64V4D-I	TS512MLH64V4DL
4GB	(512Mx8)x8	1Rx8	TS512MLH64V4H	TS512MLH64V4H-I	TS512MLH64V4HL
8GB	(512Mx8)x16	2Rx8	TS1GLH64V4H	TS1GLH64V4H-I	TS1GLH64V4HL
8GB	(1Gx8)x8	1Rx8	TS1GLH64V4B	TS1GLH64V4B-I	TS1GLH64V4BL
16GB	(1Gx8)x16	2Rx8	TS2GLH64V4B	TS2GLH64V4B-I	TS2GLH64V4BL
32GB	(2Gx8)x16	2Rx8	TS4GLH64V4E	TS4GLH64V4E-I	TS4GLH64V4EL

## DDR4-2400 SO-DIMM

Capacity	Component Composition	Rank x Org.	Standard (1.2V)	Wide Temp. (-40°C~ 85°C)
2GB	(256Mx16)x4	1Rx16	TS256MSH64V4X	TS256MSH64V4X-I
4GB	(512Mx16)x4	1Rx16	TS512MSH64V4D	TS512MSH64V4D-I
4GB	(512Mx8)x8	1Rx8	TS512MSH64V4H	TS512MSH64V4H-I
8GB	(512Mx8)x16	2Rx8	TS1GSH64V4H	TS1GSH64V4H-I
8GB	(1Gx8)x8	1Rx8	TS1GSH64V4B	TS1GSH64V4B-I
16GB	(1Gx8)x16	2Rx8	TS2GSH64V4B	TS2GSH64V4B-I
32GB	(2Gx8)x16	2Rx8	TS4GSH64V4E	TS4GSH64V4E-I