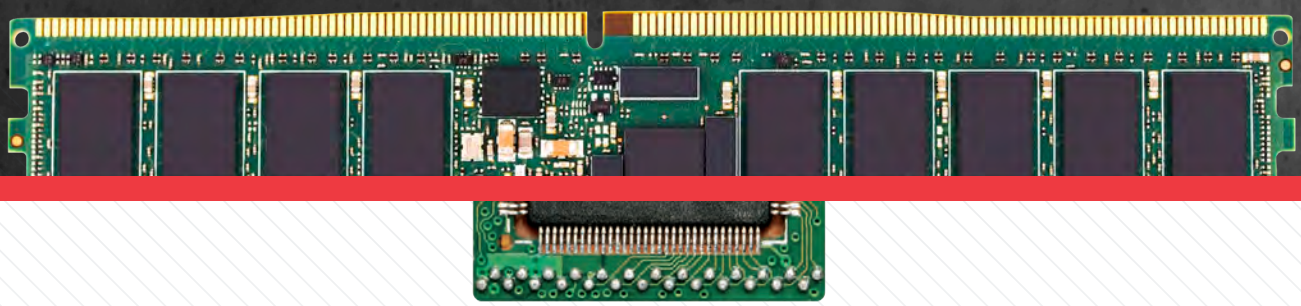
MEMORY & STORAGE SOLUTIONS

DRAM, FLASH/SSD, Persistent Memory & Customized Packaging



viking TECHNOLOGY

ENGINEERING. DESIGN. MANUFACTURING.

With over 25 years of Memory and Storage experience in supporting some of the world's biggest OEMs, Viking Technology has the capability to support any memory requirements for any market. Whether it's standard off-the-shelf solutions or customized form factors, Viking Technology can support it.

VIKING TECHNOLOGY

Viking Technology is a global technology leader in the fields of RF, Optical, Microelectronics and Memory technologies. With over 25+ years of experience in Engineering, Design, Manufacturing and Test, Viking Technology has led some of the most leading-edge OEM solutions for the embedded/industrial, medical, telecommunications, and military/aerospace markets.

In the field of Memory engineering, Viking Technology specializes in Non-Volatile DIMMs (NVDIMM), Solid State Drives (SSD), and DRAM solutions. With a breadth of products that spans embedded flash solutions such as eUSB, Secure Digital (SD), mSATA, slimSATA, and M.2 SSD to enterprise solutions such as NVDIMM Persistent memory along with 2.5in & 1.8in SATA/PCIe/NVMe/SAS SSDs. Viking Technology also offers one of the most comprehensive lines of DRAM solutions spanning from DDR4 to legacy support of DDR1 in every form factor both standard, ultra small, unique, and custom designs.

Viking Technology's engineering services, design, and expertise also support strategic partner engagements to enable customized solutions not found anywhere else. These solutions span technology engagements in ultra extreme temperatures (-40°C to +200°C), ruggedization, shock & vibe, high-density die stacking, conformal coating, heat dissipation, miniaturization, future storage class memory, and specialize form factor designs.

VIKING TECHNOLOGY FIELDS OF ENGINEERING:

vikingRF TECHNOLOGY vikingoptical TECHNOLOGY vikingmicro TECHNOLOGY vikingmemory TECHNOLOGY

VIKING TECHNOLOGY FAMILY OF MEMORY SOLUTIONS

PERSISTENT MEMORY

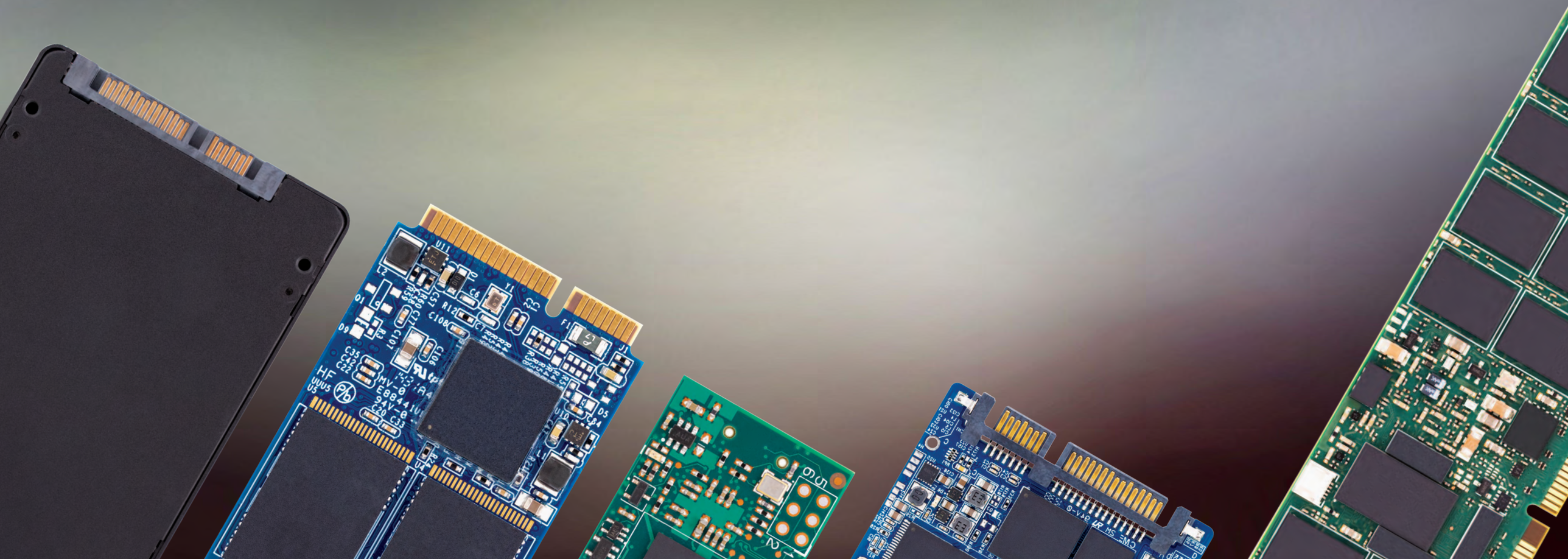
- DDR4 NVDIMM–N/NVDIMM–P
- VT-PM family of drives (2.5. in. U.2 NVMe)
- Energy Subsystems (ESS) – Supercaps
  - Form Factors: 2.5", PCIe, Custom

FLASH/SSD STORAGE

- 2.5 in. SSD
- 1.8 in. SSD
- M.2 SSD
- slimSATA
- mSATA
- eUSB
- USB Thumbdrives
- SD, microSD cards
- Custom Designs

DRAM (DDR4, DDR3, DDR2, DDR1)

- Multi-Chip Package (MCP)
- RDIMM/UDIMM
- LRDIMM
- VLP RDIMM/UDIMM
- ULP RDIMM/UDIMM
- MINI RDIMM/UDIMM
- ULP MINI RDIMM/UDIMM
- SORDIMM/SOUDIMM
- VLP SORDIMM/SOUDIMM



LEADER IN EMBEDDED SOLUTIONS.

ENTERPRISE STORAGE & SERVERS

- Storage Arrays
- Servers
- Micro Servers
- Blades
- HBAs & Custom RAID Cards

INDUSTRIAL/EMBEDDED

- Embedded Computer
- ATCA/MicroTCA
- Ruggedized Computers
- Gaming, ATM, POS, Industrial Automation
- In-Flight Entertainment

TELECOM & NETWORKING

- Switches
- Routers
- Base Stations

MILITARY/DEFENSE/AEROSPACE

- Ruggedized Servers/Laptops
- UAV
- Event Recorders
- Space constrained applications

APPLICATION DRIVEN & OPTIMIZED

Broadest DRAM Offering

High demand for reliability

Efficient storage resource utilization

Simplify asset management

Long product serviceability

Small form factor solutions

Energy efficient solutions

Zero down-time (fault tolerant)

High demand for storage performance

Tier storage based on access requirements

Containment of rising infrastructure costs

Quick online transactions solutions

Ultra High-Capacity DRAM and Storage

MEMORY & STORAGE SOLUTIONS FOR AUTOMOTIVE APPLICATIONS

In today's Automotive world of "Infotainment" and central computer systems, productivity through receiving real-time data on the go, and advanced driver assistance system (ADAS), the requirements and complexity for embedded storage are critical to the success of driver experience and security. With such demands for high-performance, fast access, extreme temperature and humility, and shock & vibration resistance, the automotive market have some of the most stringent requirements for storage devices.

Viking Technology's automotive memory & storage solutions are built with automotive requirements in mind. Viking Technology automotive grade memory & storage solutions are tested in climates ranging from mountainous regions to deserts, at temperatures ranging from industrial (-40°C to +85°C) to the standards of today's automotive storage devices (-40°C to +125°C). As ruggedized storage device built to resist larger amounts of shock and vibrations, each solutions are capable of operating at high-speeds conditions while subjected to extreme humility ranging from 5% to 95% makes it the ideal storage solution for all vehicles (*water submersion capable, ask your Viking representative).

Viking Technology's automotive memory & storage solutions also come with high transactional and transfer performance which are critical to the complexity of today's automobiles due to the increases in workload and performance applications that are necessary to implement on current and future engine technologies (gas, electric and hybrid) as the number of items that are accessed increases. Viking Technology's automotive memory & storage solutions are designed for the growing requirements of in-dashboard infotainment systems, multimedia audio, video and a variety of navigation information for today's vehicles.

AUTOMOTIVE FEATURES

- Extended Temperature Tested (-40°C to +85°C)
- Automotive Temperature Graded (-40°C to +125°C)
- Extreme Humility Tested (5% to 95%)
- Fully compliant with RoHS regulation
- Automotive Shock & Vibration Enabled
- Solderable solution
- Beyond Everest Altitude (80,000 ft)
- PowerFail Protected Supported

MEMORY & STORAGE SOLUTIONS FOR MILITARY APPLICATIONS

APPLICATIONS

- Rugged Military, Defense Electronics, Homeland Security — Ground, Sea and Air
- Mobile Hand-Held Field Computers and Mission Data Recorder Instruments
- Aerospace Avionics and Cockpit Instrumentation
- Unmanned Ground Vehicles/UAVs/Robotics
- Guidance Systems/Telemetry/Tracking/GPS
- Surveillance/Mapping/Reconnaissance

THE VIKING VALUE ADVANTAGE

- AS9100, TL 9000 and ISO 14001 Certified
- USA based R&D, Development and Production
- Advanced Packaging Expertise
- DOD specified testing capabilities (i.e. TDBI)
- Long-standing strategic partnerships and comprehensive supply-chain management
- Obsolescence mitigation
- Locked BOM under customer PCN control
- Localized Field Application Engineering for complete pre and post sale technical support

FEATURES

- Meets SWaP military COTS requirements
- Password protected AES-128 encrypted data
- Military Secure Erase and Sanitization
- Ruggedized and Security enhancements
- S.M.A.R.T. command transport (SCT) technology
- Power-throttling support
- Thermal sensing energy management
- CRC and ECC
- Wear-leveling and bad block management
- S.M.A.R.T. support for SSD vitality monitoring

MILITARY SERVICED & OPTIMIZED

Designed and manufactured in the USA at an AS9100-certified DOD trusted facility, Viking Technology Memory and Storage are high reliability solutions designed and optimized for Military & Aerospace applications with advanced military security features.

Viking Technology's rugged military designed SSDs combine large flash storage capacities with ultra-reliable performance. These SSDs are rigorously tested and independently verified to MIL-STD-810F to operate in harsh environments:

- Extreme temperature, Thermal Shock & Cycling
- Mechanical Shock and Gunfire Vibration
- Low Pressure – High Altitude
- High Humidity, Salt Fog, Fungus
- Blowing Dust and Sand
- Explosive Atmospheres

MILITARY OPTIMIZED DATA SECURITY

Serving the military market for over 2 decades, Viking Technology storage solutions provides uncompromised data security capabilities and absolute privacy, preventing all unauthorized access to sensitive information through fast military secure erase of password protected AES-128 encrypted data, key and data map. These storage solutions can be further optimized for NSA and DoD purge/sanitization protocols using software commands:

- NSA/CSS
- DoD5220.22-M
- USA Army
- Navy NAVSO
- Air Force
- RCC-TG IRIG

RUGGEDIZATION

Viking Technology solutions can also be enhanced with additional ruggedized and security features to meet stringent requirements for sensitive military applications of government and DOD agencies:

- Special security options (i.e. Destructive Purge)
- MIL-STD packaging and labeling
- Conformal coating qualified
- Shock/vibration resistant packaging: Silicone gel fill, Epoxy staking, Under-fill or Encapsulation
- EMP resistance and ESD protection to 30K Volt
- Shock tolerant connectors
- Special components (i.e. Hi-Temp, Rad-Hard)

PERSISTENT MEMORY

Viking Technology has a strong legacy in developing Persistent Memory solutions over several generations of products; ranging from Non-Volatile DIMMs (NVDIMMs) to persistent drive form factor solutions with DRAM enablement.

These persistent solutions are delivering the key components to enterprise customers looking to enable the next generation of computing and storage architectures.

DDR4 NVDIMM

Viking's (NVDIMM) DDR4 Non-Volatile DIMM, delivers both performance and reliability to enterprise applications. This non-volatile memory module has been designed to be integrated into Intel's new NVDIMM enabled servers via DDR4 DIMM sockets and designed to preserve critical data in the event of a power or system failure. Viking's NVDIMM enables the host system to recover from a failure event with simplicity and ease.

NVDIMM – N

Memory mapped DRAM with no system access to flash.

- Low-Capacity (2GB - 32GB)
- Very-low Latency (10s of nanoseconds)

NVDIMM – F

Memory mapped FLASH where DRAM is not system mapped.

- High-Capacity (100GB - 1TB)
- Low Latency (10s of microseconds)

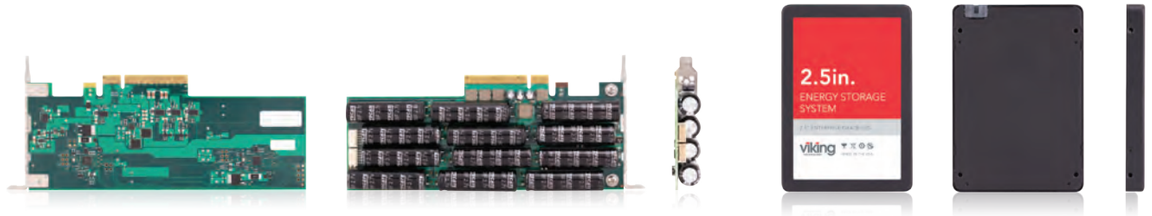
NVDIMM – P

Memory mapped FLASH and memory mapped DRAM with two access mechanisms: persistent DRAM (-N) and block oriented drive access (-F).

- High-Capacity (100GB - 1TB)
- Low Latency (100s of nanoseconds)

NVDIMM Energy Sub-System (ESS)

The NVDIMM is a DDR4 Non-Volatile DIMM enabled by an energy subsystem (ESS) which provides enough power to the module in an event of power-loss to safely store all mission critical data. Viking's ESS modules come in a variety of standard & custom form factors from 2.5in, PCIe, FanBay and special builds, with or without casing. As well, Viking Technology has the ability to customize any ESS to fit within any customer server/storage appliance.



VT-PM Drive

VT-PM drives, part of Viking's persistent memory technology family of products, are 2.5" U.2 NVMe PCIe Gen3 drives optimized to Enterprise-grade with Radian Memory System's architecture technology. The VT-PM8 and VT-PM16 are persistent memory drives that deliver performance and unlimited write endurance similar to that of DRAM, while simultaneously providing the data persistence desired for enterprise applications.

ADVANTAGES

Simple, Reliable, Persistent	Supports the NVMe Command Set	Hot Swap, Live Insertion, Surprise Remove
No Remote Capacitor Packs or Cabling	Interface Simplicity	OEM Lifecycle Monitoring Diagnostics

- 2.5" U.2 NVMe Drive form factor
- Lowest latency NVMe device regardless of queue depth
- Internal super-capacitor system fully contained in single drive
- NVMe (block) and byte addressable mmap access
- Dual Port 2x2 or Single Port x4 mode

SPECIFICATIONS

Capacity	16GB (8GB: VT-PM8)
U.2 2.5" NVMe form factor	Length: 100mm, Height: 15.0mm, Width: 69.75mm
Dual Port and Single Port Modes	Dual Port 2x2 lane configuration or Single Port x4 lane configuration
PCIe x4 Gen3	Compliant with PCI-Sig PCIe 3.0 Base specification
NVMe Command Set	NVM Express specification 1.0
NV-RAM Capacity	8GB, 16GB based upon DDR4 at 2,400 MHz with internal power backup system
DRAM ECC	64-bit data/8-bit ECC code detects double bit errors and corrects single bit errors
NAND ECC	Hardware LDPC engine
NVMe Engines	Supports NVMe command set, submission/completion queues and MSI-X vector interrupts
Programmed I/O (PIO)	Fixed BAR provides support for direct 4 byte addressable (dword) host access by mapping memory (mmap) into host PCI address space with configurable window size
Maximum Payload Size	Configurable to 128B or 256B single packet size
BIST and Health Monitoring	Provides OEMs the ability to monitor environmental status, component health, and log statistics for continuous product life cycle management
Field Upgradeable Firmware Updates	Mechanism for upgrading firmware in the field via host control (no drive removal necessary)
Internal Supercapacitor Module	Field replaceable assembly
Power Requirements (+12V rail)	Typical Maximum: 13.5W at 40°C Recharge Cycle: Up to 17W at 40°C with concurrent r/w operations
Supercapacitor Recharge Time	38 seconds
Temperature	Operating: 0° to 40°C at 100 LFM Storage: 40°C to 85°C
Weight	.295 lbs.
Shock/Vibration	Operating: 5 G Non-Operating: 10 G
ESD	1,500 volts, human body model
MTBF	1M hours
Device Drivers	NVMe Linux 4.10 and above

Radian MEMORY SYSTEMS

Utilizes Radian Memory Systems technology

FLASH/ SSD

Viking Technology offers a wide portfolio of Flash & SSD storage solutions that comes in a variety of form factors such as 2.5in, 1.8in, M.2, slimSATA, mSATA, eUSB, USB FlashDrives, SD, microSD and custom build.

As well, Viking Technology utilizes various NAND and Controller vendors to help insulate our customers against single NAND supply issues as well as price competitiveness. This also allows Viking Technology to provide the best form fit and function to each and every application.

2.5 inch SSD

Viking Technology's 2.5 Inch SSDs are built with the understanding of OEM expectations through comprehensive and exhaustive design verification and production test methods. Viking's 2.5 Inch SSDs for the embedded and Industrial market delivers the highest levels of quality, environmental ruggedness and endurance. As well, the 2.5 Inch SSDs can be leverage for the Enterprise market with engineered options for the highest levels of performance and reliability, Viking featuring multiple interfaces including SATA, SAS and PCIe/NVMe that delivers high performance with reliability.

AVAILABLE IN SATA, SAS, PCIE/NVME AND U.2

- Supports MLC/SLC/3D NAND Configurations
- Advanced SSD-specific SMART command support
- Package and firmware customization
- Locked BOM
- Data path protection, Encryption, Max Write performance

MARKETS SERVED

Data Center | HDD | Video | Telecom | Aerospace | Servers | Storage

1.8 inch SSD

Viking Technology's 1.8 Inch SSDs are built with the understanding of OEM expectations through comprehensive and exhaustive design verification and production test methods. Viking's 1.8 Inch SSDs for the embedded and Industrial market delivers the highest levels of quality, environmental ruggedness and endurance. As well, the 1.8 Inch SSDs can be leverage for the Enterprise market with engineered options for the highest levels of performance and reliability, Viking featuring SATA-III and delivers high performance with reliability.

COST EFFECTIVE STORAGE SOLUTIONS

- Available in SATA-III
- Read intensive & Low cost solution options
- Data path protection, Encryption, Max write performance
- Supports MLC/SLC NAND Configurations
- Advanced SSD-specific SMART command support
- Package and firmware customization
- Insulation against single NAND supply issues
- Locked BOM

MARKETS SERVED

Data Center | HDD | Video | Telecom | Aerospace | Servers | Storage

M.2 SSD

Viking Technology's M.2 Solid State Drive (SSD) is a high-performance, high-capacity flash solution optimized for the embedded and server market. The M.2 SSD is a caseless drive with either a SATA or PCIe/NVMe connector; delivering high-bandwidth READs and WRITEs at a fraction of the size of a standard 2.5 inch SSD. The thin form factor comes in a variety of sizes best fit for the customer's system requirements.

M.2 is a new storage form factor optimized specifically for embedded solutions to increase overall performance and capacity.

VIKING CUSTOMIZATION OPTIONS:

Client and Enterprise options

3D NAND Options

Toshiba 15nm MLC

Micron 16nm MLC

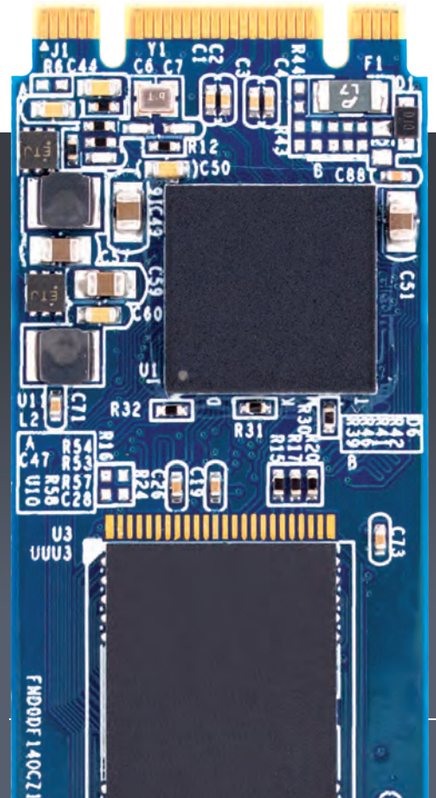
Low capacity form factor 22mm x 42mm

High capacity form factor 22mm x 110mm

Form Factor options 22mm x (42, 60, 80, 110) mm

MARKETS SERVED

Servers | POS | Cache | Industrial | Mobile | Digital Signage | Boot Device

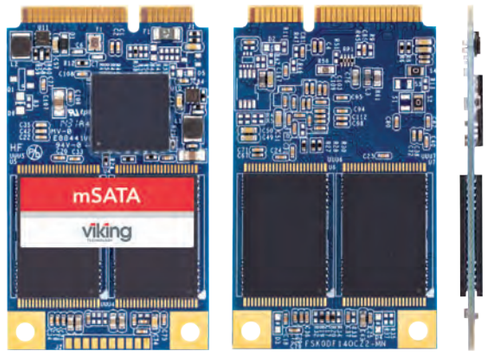


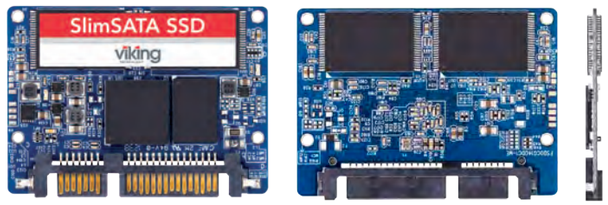
- Data path protection, Encryption, Max Write performance
- Ultra high-performance
- Advanced SSD-Specific SMART command support
- Low & High capacity form factor options

slimSATA & mSATA SSDs

slimSATA & mSATA SSD are solid state drive solutions ideal for space-constrained embedded server & storage systems, telecommunications, automotive, gaming and many industrial applications. Both solutions deliver outstanding performance in a small, industry standard form factor and features intelligent flash management techniques to optimize endurance and wear-leveling. Both drives come in a variety of performance and capacity as well as ruggedization and increased endurance.

- Available in SATA-III 6Gbs
- Read intensive & Low cost solution options
- Max write performance
- Supports MLC/SLC/3D NAND Configurations
- Advanced SSD-specific SMART command support
- Package and firmware customization
- Insulation against single NAND supply issues
- Locked BOM





MARKETS SERVED

Servers | Cache | Data Acceleration | Factory Automation | Boot Device | Medical Equipment

eUSB

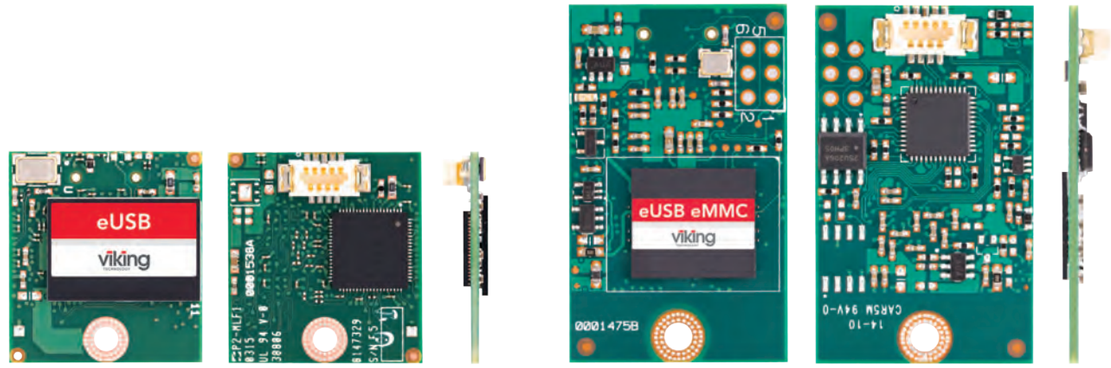
The embedded USB (eUSB) module from Viking Technology provides a rugged, reliable and cost effective non-volatile memory solution to OEM customers in the Networking, Embedded and Industrial markets. eUSB modules are secure pluggable USB 2.0/3.0 devices with built-in ECC and global wear-leveling for exceptional reliability and product lifetime. Viking eUSB modules are available in capacities up to 128GB and deliver performance up to 35 MB/s. Available in both industry standard, low profile, and custom versions, as well as 3.3V and 5V operation.

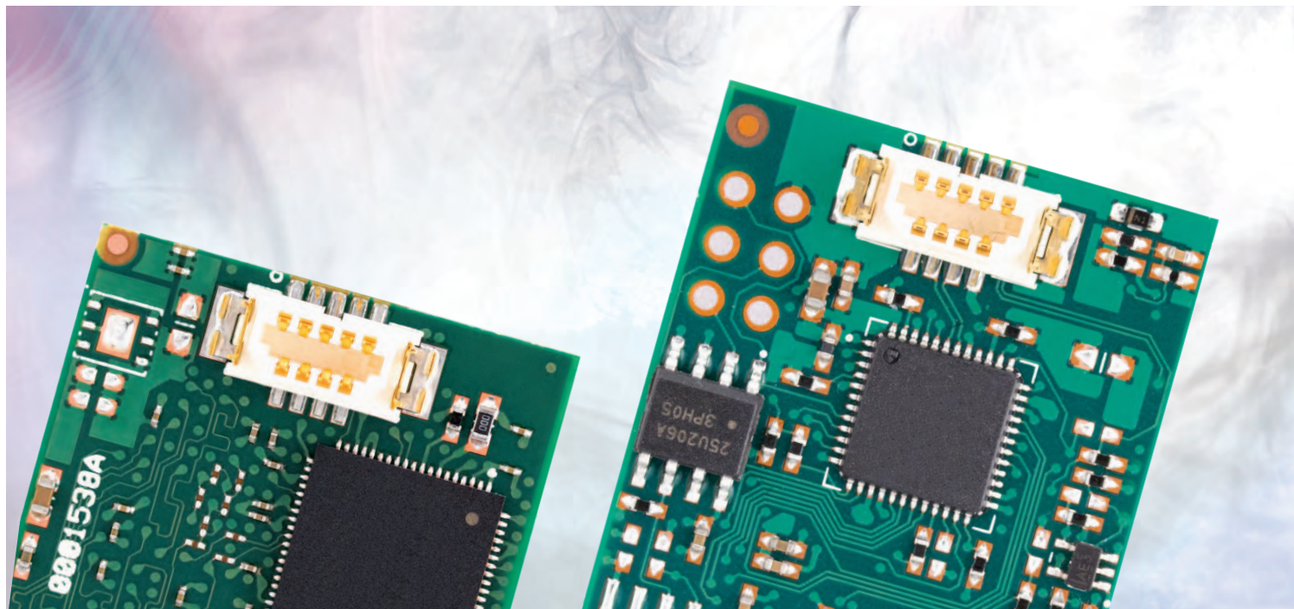
eUSB

- Reduced size eUSB
- Optimized for space constraint routers/switches
- Available in iTemp & cTemp configurations
- Screw mountable for ruggedization

eUSB eMMC

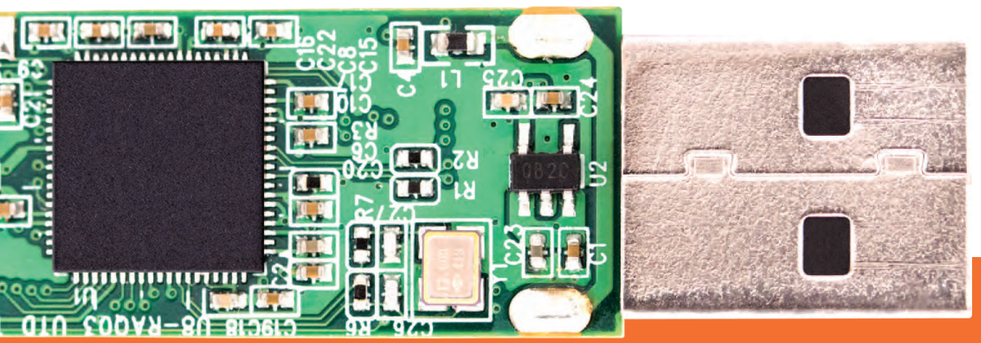
- Cost effectiveness utilizing eMMC Flash
- Low-cost endurance alternative to SLC NAND
- ECC and Data Management
- Highest endurance
- Extremely low cost alternative





USB Thumbdrive

Viking Technology USB Thumbdrive, also known as a USB Flash Drive, is a embedded/industrial Flash storage device that includes flash memory with an integrated USB 2.0/3.0 interface. The USB Thumbdrive comes in a variety for sizes best fit for any application and space constraint systems.



- Optimized for space constraint routers/switches
- Available in iTemp & cTemp configurations
- Available in capacities up to 512GB
- Utilizes SLC/MLC/ 3D NAND
- Locked BOM
- Package & Firmware customization
- Conformal coated configuration

MARKETS SERVED

IP Routing | Switches | Servers | Cache | Data Acceleration | Factory Automation | Medical Equipment | Boot Device | Data Logging

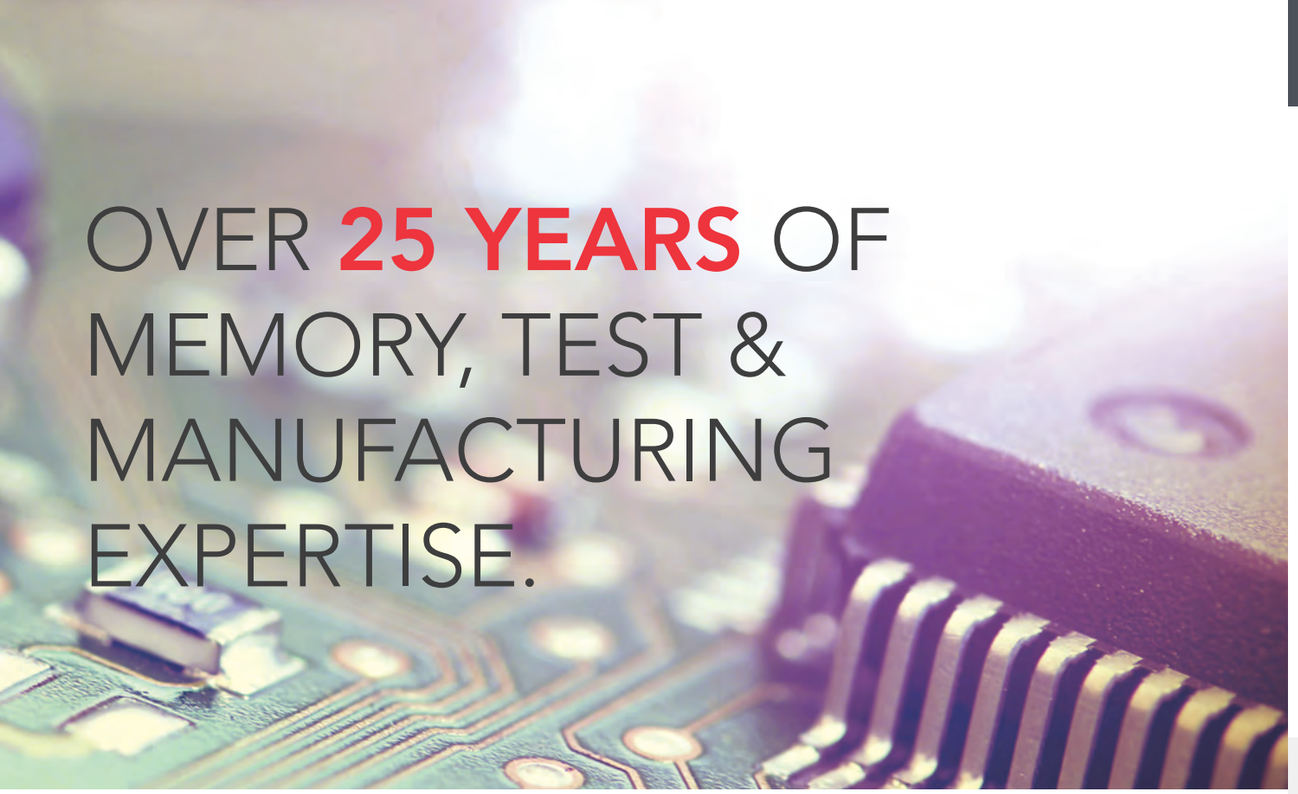
SD & microSD

Viking Technology Secure Digital Cards (SD) and microSD cards are powerful, highest capacity memory card that delivers maximum speed for performance, reliability, and security to the most demanding of embedded solutions. These removeable cards are optimized for the embedded market with high-shock tolerance, high-temperature configurations, and ruggedization for extreme environments.

- Capacities up to 256GB
- Superior wear leveling
- High Performance
- SD Security specs v. 2.0
- Mechanical write protection switch
- Supports commercial and industrial temperature

MARKETS SERVED

Servers | Cache | Data Acceleration | Factory Automation | Medical Equipment | Boot Device | Switches | Data Logging



OVER **25 YEARS** OF MEMORY, TEST & MANUFACTURING EXPERTISE.

MEASURES OF QUALITY

- MTBF calculation using the Belco remodeling method
- Real-time monitoring of field DPPM
- Weekly reviews of MRB with closed loop feedback action
- Weekly monitoring of First pass yield, RTY, scrap, in process defects
- Bi-annual CSI monitoring of all suppliers
- Quarterly SSI monitoring of all suppliers
- Environmental awareness with ISO 14000
- Corporate CSR
- Certified to ISO 9000, TL 9000 and AS 9100
- In-house reliability tools and thermal-cycle, shock chambers
- Local MIL 810 testing and certification available
- In-house Failure Analysis
- All inspectors IPC CERTIFIED
- All QE's have ASQ certifications
- In-house designed test programs

ENVIRONMENTAL/ RELIABILITY

Mil-Std-810F Test Suite

- Altitude
- High temp operating
- Low temp operating
- Humidity
- Thermal shock
- Blowing dust
- Vibration
- Mechanical shock
- Acceleration
- Explosive atmosphere

EMC

Thermal Cycling

SSD TEST & VALIDATION SUPPORT

SMART FEATURE SET

SMART Command Set

- Return status
- Threshold not exceeded bit
- Read attribute data
- SMART logging

SMART Command Transport Functionality

SMART Attributes

- Drive health notification
- Performance monitoring
- Program/erase cycel count to predict life
- Runtime bad blocks

SECURITY FEATURE SET

ATA Security Feature Set

- Test each security mode
- Test transactions between modes
- Test each mode across power cycles

ATA Security Erase

Instant Erase

Military Security Erase

256-bit AES Encryption

LONG TERM ENDURANCE

Long Term Endurance Test

- Verify bad blocks increasing after extensive number of program/erase cycles
- Verify spare blocks are being remapped to replace bad blocks
- Verify data integrity is maintained across all data (user and static)
- Verify no read/write errors reported to host
- Monitor SMART attributes for accuracy

Power Cycling During Write Operations

- Verify firmware and metadata integrity
- Verify write performance maintained over multiple cycles
- Verify static data integrity
- If supercap supported, verify integrity of "in flight" writes
- Vary timing of power down event relative to when write commands are issued
- Vary command type, sectors transferred, data pattern each cycle

HARDWARE VERIFICATION PROCEDURE

Power Consumption, Component Temps

- Supply currents measure under varying load and operating modes
- Component case temps measured under worst case loads

AC Timing

- Setup time, hold time, output enable access time
- All interface modes
- NAND timing verified for each NAND configuration supported
- Reset to ready

SATA SSD VALIDATION OVERVIEW

SATA/ATA Protocol Validation

Reliability & Error Handling

Performance Characterization

Power Cycling

SATA Host Interface Validation in all modes: AHCI, Lecacy IDE, BIOS RAID, SAS, etc.

SMART Feature Set

Host System Interoperability

Power Management States and Transitions

Security Feature Set

Voltage & Temperature Corner Testing

Long Term Endurance

PERFORMANCE CHARACTERIZATION

Industry Standard Benchmarks

- IOmeter
  - Single SSD and RAID 0 stripe (4-8 SSDs)
- Custom flows to pre-condition SSD's for steady state performance

Custom Performance Characterization Scripts

- Large matrix of test cases
  - Command type
  - Data pattern
    - Pseudo random
    - Standard 1's, 0's
  - Word Increment
    - Industry standard file formats (zip, mpg, jpg, sql, etc)
- # Sectors transferred
  - Transfer mode
  - Sequential/random
  - Logs IOPs and MB/sec for every case

RELIABILITY & ERROR HANDLING

- Custom Test Scripts Written to Verify
- Diagnostic Command Support (via SATA)
- EC Data Protection for NAND
- Data Protection for NAND
- Force Unit Access Feature (FUA)
- Life Curve Throttling
- PHY Event Counter
- Software Setting Preservation (SSP)

SuperCap Functionality

- Reliable operation during power cycling
  - SuperCap health monitoring
- SSD Processor Watchdog Timer

DRAM

Viking Technology has over two decades of experience supporting Original Equipment Manufacturers (OEMs) with the industry's most comprehensive range of DRAM modules. Leveraging advanced packaging expertise, locked BOM control, and AS9100, TL 9000, and ISO 14001 certified facilities, Viking Technology is able to deliver the highest quality DRAM modules that meet the requirements of the Enterprise, Telecommunications and Embedded markets.

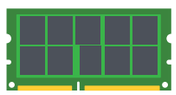
Viking Technology also specializes in Stacking Technologies that allow for ultra-high density memory modules. Viking Technology's 3rd Generation of Patented stacking, the VT-Stack™ enables OEM customers that are designing solutions with DRAM, NAND Flash or even next generation memory technologies such as ReRAM, MRAM, or PhaseChange, to optimize the performance and design cycle of their products.

PARALLELCELL (MCP)

Viking Technology ParallelCell Multi-Chip Package (MCP) is part of the extreme density line of DDR3 and DDR4 memory products optimized for the embedded, industrial, and military/ aerospace markets. ParallelCell products achieve significantly higher memory performance and density per cubic inch than conventional memory DIMMs. These performance and density milestones will critically change the way future system hardware is designed and deployed.

Very small footprint: Saves up to 85% board space vs. Standard DIMM Modules	Rugged: Soldered-down PBGA – No DIMM connector	Very high memory capacity per cu. in.
Lower cost motherboard due to easier DDR routing	Superior signal integrity	Very high memory bandwidth per cu. in.

8GB LRDIMM (133.35mm x 30mm)

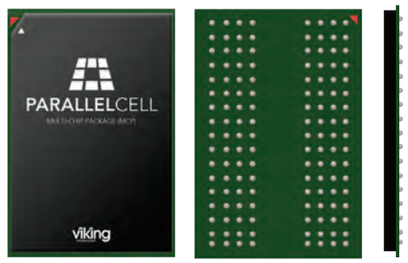


8GB SODIMM (67.6mm x 30mm)

8GB MINI-DIMM (82mm x 30mm)

Actual size

8GB PARALLEL CELL MCP
(15mm x 20mm)



Viking Technology's line of memory/storage solutions with extended temperature support are built with the most stringent of requirements in mind, with extreme temperature ranges, high humility support, shock resistance, and ruggedization. Viking's extended temperature solutions ranges from standard commercial (0°C to +70°C) & industrial temperatures (-40°C to +85°C) as well as customized temperature ranges of up to +170°C. These extended temperature solutions can be found in applications used in mountainous regions to deserts and even in arctic conditions for Oil and Gas down-hole drilling. Beyond the temperature ranges, each solution can be customized as a ruggedized memory/storage device built to resist larger amounts of shock and vibrations. These solutions offer the utmost in performance and reliability in challenging, real-world conditions.

FLASH/SSD EXTENDED TEMPERATURE SUPPORT

FORM FACTOR	INTERFACE	CAPACITY	TEMPERATURE SUPPORTED			
3.5 IN. SSD	SAS	25TB/50TB	Commercial			
2.5 IN. SSD	SAS/NVMe/PCIe	up to 30TB	Commercial			
2.5 IN. SSD	SATA	up to 8TB	Commercial	Industrial	Automotive	Military
M.2 SSD	SAS/NVMe/PCIe	up to 4TB	Commercial			
M.2 SSD	SATA	up to 4TB	Commercial	Industrial		
SlimSATA/mSATA	SATA	up to 1TB	Commercial	Industrial		
eUSB	USB	up to 32GB	Commercial	Industrial	Automotive	Military
SD/microSD	SD	up to 256GB	Commercial	Industrial		
Discrete Flash Card	PATA	up to 32GB	Commercial	Industrial	Automotive	Military
USB ThumbDrive	USB	up to 512GB	Commercial	Industrial	Automotive	Military
Stacked Solutions	Custom	up to 32GB	Commercial	Industrial	Automotive	Military

DRAM EXTENDED TEMPERATURE SUPPORT

FORM FACTOR	DDR4	DDR3	DDR2	DDR1
LRDIMM	Up to 128GB	Up to 32GB		
RDIMM	Up to 64GB	Up to 32GB	Up to 16GB	Up to 4GB
UDIMM	Up to 64GB	Up to 16GB	Up to 8GB	Up to 2GB
VLP RDIMM	Up to 32GB	Up to 16GB	Up to 8GB	Up to 4GB
VLP UDIMM	Up to 32GB	Up to 8GB	Up to 4GB	Up to 1GB
ULP RDIMM	Up to 32GB	Up to 16GB	Up to 8GB	
MiniRDIMM	Up to 16GB	Up to 16GB	Up to 8GB	Up to 1GB
MiniUDIMM	Up to 16GB	Up to 16GB	Up to 4GB	Up to 1GB
VLP MiniRDIMM	Up to 16GB	Up to 8GB	Up to 4GB	NA
VLP MiniUDIMM		Up to 8GB	Up to 4GB	NA
ULP MiniRDIMM	Up to 16GB	Up to 8GB		NA
ULP MiniUDIMM	Up to 16GB	Up to 8GB		NA
SORDIMM	Up to 16GB	Up to 16GB	Up to 4GB	Up to 1GB
SOUDIMM	Up to 16GB	Up to 8GB	Up to 4GB	Up to 1GB
SOCDIMM	NA	NA	Up to 4GB	Up to 1GB
VLP SORDIMM	Up to 8GB	Up to 8GB		
TEMPERATURE RANGE				
	Commercial	Commercial	Commercial	Commercial
	Industrial	Industrial	Industrial	Industrial
	Automotive	Automotive		
	Military	Military		

DDR4, DDR3, DDR2, DDR1

From enterprise to Embedded to network infrastructure, OEMs from around the world trust in Viking Technology's DRAM modules and technology. Viking has more than just a long history of supporting OEMs with edging lead DRAM technology but also provides its customers with legacy support. With the industry's broadest offering of standard DRAM modules, specialty modules, and small form factor modules, Viking is not only a provider of high-quality memory but a partner in DRAM technology.

RDIMM/UDIMM

DDR4: 133.35mm
DDR3: 30.00mm
DDR2: 30.00mm

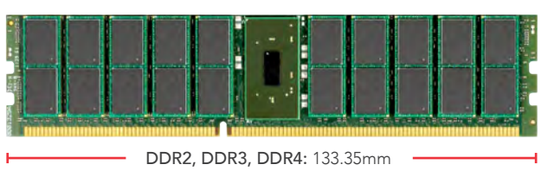
DDR2, DDR3, DDR4: 133.35mm

MINI RDIMM/UDIMM

DDR4: 31.25mm
DDR3: 30.00mm
DDR2: N/A

DDR2, DDR3: 82mm
DDR4: 80mm

LRDIMM



DDR4: 31.25mm
DDR3: 30.00mm
DDR2:

DDR2, DDR3, DDR4: 133.35mm

VLP MINI RDIMM/UDIMM

DDR4: 18.75mm
DDR3: 18.75mm
DDR2: N/A

DDR2, DDR3: 82mm
DDR4: 80mm

VLP RDIMM/UDIMM

DDR4: 18.75mm
DDR3: 18.75mm
DDR2: 18.25mm

DDR2, DDR3, DDR4: 133.35mm

ULP MINI RDIMM/UDIMM

DDR4: 17.78mm
DDR3: 17.78mm
DDR2: 17.78mm

DDR2, DDR3: 82mm
DDR4: 80mm

ULP RDIMM/UDIMM

DDR4: 17.78mm
DDR3: 17.78mm
DDR2: 17.78mm

DDR2, DDR3, DDR4: 133.35mm

SORDIMM/SOUDIMM

DDR4: 30.00mm
DDR3: 30.00mm
DDR2: 30.00mm

DDR2, DDR3: 67.6mm
DDR4: 69.6mm

VLP SORDIMM/SOUDIMM

DDR4: 18.75mm
DDR3: 18.75mm
DDR2: N/A

DDR2, DDR3: 67.6mm
DDR4: 69.6mm

DENSITIES AND CONFIGURATIONS

- Broadest DRAM Offering
- JEDEC Standard
- Low-cost options
- Customized Testing
- Bill of Materials (BOM)
- Extending Burn-in Testing
- Thermal Modeling
- Small Form Factors

SPECIFICATION		DDR1	DDR2	DDR3	DDR4
CHIP DENSITY	Min	256MB	512MB	1GB	4GB
	Max	512MB	2GB*	8GB*	32GB
MODULE DENSITY	Max	4GB	16GB	64GB	128GB
SPEED	Slowest	200MT/s	400MT/s	800MT/s	1600MT/s
	Fastest	400MT/s	800MT/s	1866MT/s	2666MT/s
PACKAGE	Package	TSOP/FBGA	FBGA	FBGA	FBGA

FORM FACTOR	DDR4	DDR3	DDR2	DDR1
LRDIMM	Up to 128GB	Up to 32GB		
RDIMM	Up to 64GB	Up to 32GB	Up to 16GB	Up to 4GB
UDIMM	Up to 64GB	Up to 16GB	Up to 8GB	Up to 2GB
VLP RDIMM	Up to 32GB	Up to 16GB	Up to 8GB	Up to 4GB
VLP UDIMM	Up to 32GB	Up to 8GB	Up to 4GB	Up to 1GB
ULP RDIMM	Up to 32GB	Up to 16GB	Up to 8GB	
MiniRDIMM	Up to 16GB	Up to 16GB	Up to 8GB	Up to 1GB
MiniUDIMM	Up to 16GB	Up to 16GB	Up to 4GB	Up to 1GB
VLP MiniRDIMM	Up to 16GB	Up to 8GB	Up to 4GB	NA
VLP MiniUDIMM		Up to 8GB	Up to 4GB	NA
ULP MiniRDIMM	Up to 16GB	Up to 8GB		NA
ULP MiniUDIMM	Up to 16GB	Up to 8GB		NA
SORDIMM	Up to 16GB	Up to 16GB	Up to 4GB	Up to 1GB
SOUDIMM	Up to 16GB	Up to 8GB	Up to 4GB	Up to 1GB
SOCDIMM	NA	NA	Up to 4GB	Up to 1GB
VLP SORDIMM	Up to 8GB	Up to 8GB		

ENGINEERING DESIGN EXPERTISE IN THE FIELD OF RF/MICROWAVE, OPTICAL & MICROELECTRONICS

Viking is the leader in turnkey design and production of complex Optical and RF components and systems used in a variety of applications including the latest communication network infrastructure operating at 100Gb/s and beyond, as well as equipment for medical, industrial and defense/aerospace.

These include components such as lasers, modulators, drivers, sub-systems such as transceivers, amplifiers, microwave radios and complete circuit cards or systems.

TECHNOLOGY

Advanced microelectronic technologies – bare die packaging, wire bonding, flip-chip, optical interconnection

High-speed RF & Optical multi-chip modules (MCM)

High-speed materials & interconnections (advanced ceramics & organic laminates, build-up, flex)

Precision optical alignment & interconnection

PRODUCT DESIGN

Product design for RF, Microwave & Optical applications (analog/digital)

Computer modeling for Optical, RF/EM, Electrical, Thermal, Mechanical

Test systems development (HW/SW)

10/40/100/200G & 400G/1TB – Components, Modules, Blades

Radar T/R modules & Systems

MANUFACTURING

Assembly & test processes for complex RF & Opto-electronic products (Circuit cards, Modules, Components)

Advanced microelectronic & micro-optic processes (chip & wire, flip-chip, active/passive alignment, hermetic sealing)

Flexible manufacturing for early NPI prototypes

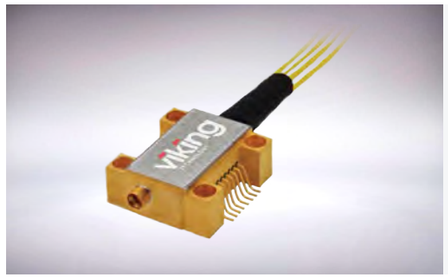
Test processes for RF/Optical

Global manufacturing

CORE CAPABILITIES, COMPLETE **END-TO-END** SOLUTIONS

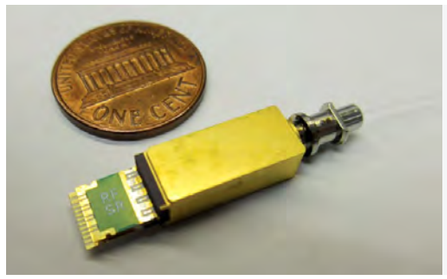
Comb/Pulse Source

- Stable & robust pulse source
- Tuneable center frequency (1530-1620nm)
- Low Jitter (<1ps)
- Fiber coupled output



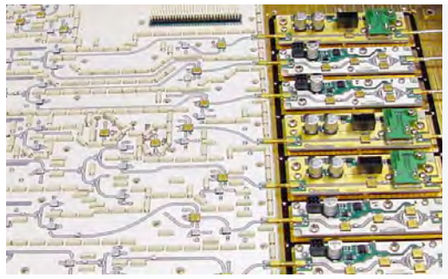
Tunable Super Channel Source – 400Gb/s Transmission

- Four Coherent, Phase Locked wavelengths on separate fibers in a single package
- Output power more than +10dBm per channel
- High Power SMSR > 35dB
- Narrow Linewidth <300Khz per line
- Low power dissipation <2W per channel



400Gb/s PAM4 QUAD TOSA

- Low loss optical thin film MUX
- Flex interconnection at 40GHz
- <1µm free space optics post cure shift
- Repeatable flex blind insertion test interface



X-Band Switch Matrix

- High performance military radar application
- Path to path isolation >70dB
- Wide band operation at X-band
- Highly integrated RF and control circuits for high speed switching
- Self diagnostic capability

MICROELECTRONIC TECHNOLOGIES

Bare die interconnections – Optical alignment, wire-bonding, micro flip-chip

Microelectronic components & materials

Microelectronic & optical process engineering & manufacturing

Miniaturization & Optimization of Free-space optical environments

Customize 2.5D & 3D miniaturization

HIGH-SPEED MODELING & DESIGN

Optical modeling & design (components, interconnections) up to 100 GHz

RF, Signal Integrity modeling & design

Power & decoupling networks

Die impedance matching circuits

Free space, guided interconnections

Optical path optimization for Next Gen (PAM4) Systems

RF, OPTICAL COMPONENT DESIGN

RF, Optical, Thermal interconnection design

Substrate/package design

Hermetic, non-hermetic

Package to system interconnection

Components: Drivers, Amplifiers, TRX, Modulators, antennas, lasers, etc.

MODULES/SUB-SYSTEM & BLADE DESIGN

RF, Optical System design – specifications to detailed implementation

Multidisciplinary solutions including optical, analog, high-speed, FPGA, embedded software, physical & thermal design

Modules, blades, systems

RF, OPTICAL TEST ENGINEERING

High-speed, RF, Optical test development for manufacturing & customer specific test environments

Structural, functional, system test

Design validation – high end testing capabilities (110GHz)

RELIABILITY ENGINEERING & REGULATORY TESTING

Reliability analysis, FMEA

Custom product qualification

Failure analysis

Regulatory compliance

VIKING TECHNOLOGY
A DIVISION OF SANMINA CORPORATION

GLOBAL
Customer Connected

MATURE
Developed Over 25 Years

COMPLETE SYSTEM
Consistently Deployed

1200+ CUSTOMERS
Diverse Customer Base

30,000+ SUPPLIERS
Integrated

- Founded in 1980 in San Jose, California
- Global footprint: 75 facilities in 25 countries
- $6.4B revenue
- 45,000 employees

WELCOME TO THE SANMINA FAMILY

Sanmina makes some of the most complex and innovative optical, electronic and mechanical products in the world. Recognized as a technology leader, Sanmina provides end-to-end design, manufacturing and logistics solutions, delivering superior quality and support to Original Equipment Manufacturers (OEMs) primarily in the communications networks, computing and storage, medical, defense and aerospace, industrial and semiconductor, multimedia, automotive and clean technology sectors.

Sanmina maintains a network of regional design, quick turn, New Product Introduction (NPI) facilities and repair centers, in addition to a complete global footprint of manufacturing operations in 23 countries on six continents. Each day, in every region of the world, Sanmina designs, manufactures ships and repairs complex, mission-critical products. For over 30 years, customers have come to expect quality, delivery, reliability and service from Sanmina. Together we build productive relationships based on exceptional customer satisfaction.

Viking Technology is proud to be part of the Sanmina family, with a globally recognize name in technology and trusted partner in all of manufacturing.

END-TO-END SERVICES

ADVANCED TECHNOLOGY FOR COMPLEX PRODUCTS

ENGINEERING AND NPI CAPABILITIES

STRONG LIQUIDITY & FINANCIALS

FLASH/SSD PART NUMBERS

FORM FACTOR	INTERFACE	TEMP	CAPACITY	VIKING PN#	CONTROLLER	NAND
1.8" SATA	5mm	0°C to+70°C	60GB	VRFS11060GBC5WT3	SM2258	TSB BiCS 3D
1.8" SATA	5mm	-40°C to+85°C	60GB	VRFS11060GBI5WT3	SM2258	TSB BiCS 3D
1.8" SATA	5mm	0°C to+70°C	60GB	VRFS11060GTCSSTH	PhisonS10	TSB 24nm SLC
1.8" SATA	5mm	0°C to+70°C	120GB	VRFS11120GBC5WT3	SM2258	TSB BiCS 3D
1.8" SATA	5mm	-40°C to+85°C	120GB	VRFS11120GBI5WT3	SM2258	TSB BiCS 3D
1.8" SATA	5mm	-40°C to+85°C	120GB	VRFS11120GTISSTH	PhisonS10	TSB 24nm SLC
1.8" SATA	5mm	0°C to+70°C	240GB	VRFS11240GBC5WT3	SM2258	TSB BiCS 3D
1.8" SATA	5mm	-40°C to+85°C	240GB	VRFS11240GBI5WT3	SM2258	TSB BiCS 3D
1.8" SATA	5mm	0°C to+70°C	480GB	VRFS11480GBC5WT3	SM2258	TSB BiCS 3D
1.8" SATA	5mm	-40°C to+85°C	480GB	VRFS11480GBI5WT3	SM2258	TSB BiCS 3D
1.8" SATA	5mm	0°C to+70°C	960GB	VRFS11960GBCHWT3	SM2258	TSB BiCS 3D
1.8" SATA	5mm	-40°C to+85°C	960GB	VRFS11960GBIHWT3	SM2258	TSB BiCS 3D
2.5" PCIe	7mm	0°C to+70°C	60GB	VRFN22060GJC5WT3	SM2262	TSB BiCS 3D
2.5" PCIe	7mm	-40°C to+85°C	60GB	VRFN22060GJI5WT3	SM2262	TSB BiCS 3D
2.5" PCIe	7mm	0°C to+70°C	120GB	VRFN22120GJC5WT3	SM2262	TSB BiCS 3D
2.5" PCIe	7mm	-40°C to+85°C	120GB	VRFN22120GJI5WT3	SM2262	TSB BiCS 3D
2.5" PCIe	7mm	0°C to+70°C	1920GB	VRFN221T92JCFWT3	SM2262	TSB BiCS 3D
2.5" PCIe	7mm	-40°C to+85°C	1920GB	VRFN221T92JIFWT3	SM2262	TSB BiCS 3D
2.5" PCIe	7mm	0°C to+70°C	240GB	VRFN22240GJC5WT3	SM2262	TSB BiCS 3D
2.5" PCIe	7mm	-40°C to+85°C	240GB	VRFN22240GJI5WT3	SM2262	TSB BiCS 3D
2.5" PCIe	7mm	0°C to+70°C	480GB	VRFN22480GJC5WT3	SM2262	TSB BiCS 3D
2.5" PCIe	7mm	-40°C to+85°C	480GB	VRFN22480GJI5WT3	SM2262	TSB BiCS 3D
2.5" PCIe	7mm	0°C to+70°C	960GB	VRFN22960GJCHWT3	SM2262	TSB BiCS 3D
2.5" PCIe	7mm	-40°C to+85°C	960GB	VRFN22960GJIHWT3	SM2262	TSB BiCS 3D
2.5" SATA	7mm	0°C to+70°C	60GB	VRFS22060GBC5WT3	SM2258	TSB BiCS 3D
2.5" SATA	7mm	-40°C to+85°C	60GB	VRFS22060GBI5WT3	SM2258	TSB BiCS 3D
2.5" SATA	7mm	-40°C to+85°C	60GB	VRFS22060GTIRSTH	PhisonS10	TSB 24nm SLC
2.5" SATA	7mm	0°C to+70°C	120GB	VRFS22120GBC5WT3	SM2258	TSB BiCS 3D
2.5" SATA	7mm	-40°C to+85°C	120GB	VRFS22120GBI5WT3	SM2258	TSB BiCS 3D
2.5" SATA	7mm	0°C to+70°C	240GB	VRFS22240GBC5WT3	SM2258	TSB BiCS 3D
2.5" SATA	7mm	-40°C to+85°C	240GB	VRFS22240GBI5WT3	SM2258	TSB BiCS 3D
2.5" SATA	7mm	0°C to+70°C	480GB	VRFS22480GBC5WT3	SM2258	TSB BiCS 3D
2.5" SATA	7mm	-40°C to+85°C	480GB	VRFS22480GBI5WT3	SM2258	TSB BiCS 3D
2.5" SATA	7mm	0°C to+70°C	960GB	VRFS22960GBCHWT3	SM2258	TSB BiCS 3D
2.5" SATA	7mm	-40°C to+85°C	960GB	VRFS22960GBIHWT3	SM2258	TSB BiCS 3D
3.5"	SAS 6Gbs	0°C to+50°C	22.9TB	VNF33122T934CCMHB	Custom 6Gb/s SAS	Custom
3.5"	SAS 6Gbs	0°C to+50°C	45.8TB	VNF33145T834CCMHB	Custom 6Gb/s SAS	Custom
eUSBLowProfile	USB2.0	0°C to+70°C	16GB	VRFDUC3L016GACR3TH	HyperstoneU8	TSB 24nm SLC
eUSBLowProfile	USB2.0	0°C to+70°C	30GB	VRFDUC3L030GACSTH	HyperstoneU8	TSB 24nm SLC
eUSBLowProfile	USB2.0	-40°C to+85°C	30GB	VRFDUC3L030GAISTH	HyperstoneU8	TSB 24nm SLC
eUSBLowProfile	USB2.0	0°C to+70°C	2GB	VRFDUC3L2048YCE3A8	SMI3252	TSB 24nm SLC
eUSBLowProfile	USB2.0	0°C to+70°C	4GB	VRFDUC3L4096YCH3A6	SMI3252	TSB 24nm SLC
eUSBLowProfile	USB2.0	0°C to+70°C	8GB	VRFDUC3L8192ACQ3TH	SMI3252	TSB 24nm SLC
eUSBStdProfile	USB2.0	0°C to+70°C	16GB	VRFDUC3016GACSTH	HyperstoneU8	TSB 24nm SLC
eUSBStdProfile	USB2.0	-40°C to+85°C	16GB	VRFDUC3016GAISTH	HyperstoneU8	TSB 24nm SLC
eUSBStdProfile	USB2.0	0°C to+70°C	30GB	VRFDUC3030GACSTH	HyperstoneU8	TSB 24nm SLC
eUSBStdProfile	USB2.0	-40°C to+85°C	30GB	VRFDUC3030GAISTH	HyperstoneU8	TSB 24nm SLC
eUSBStdProfile	USB2.0	0°C to+70°C	8GB	VRFDUC38192ACQTH	HyperstoneU8	TSB 24nm SLC

FLASH/SSD PART NUMBERS

FORM FACTOR	INTERFACE	TEMP	CAPACITY	VIKING PN#	CONTROLLER	NAND
eUSBStdProfile	USB2.0	-40°C to+85°C	8GB	VRFDUC38192AISTH	HyperstoneU8	TSB 24nm SLC
M.2 PCIe	2242	0°C to+70°C	60GB	VRFNP6060GKC5WT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2242	-40°C to+85°C	60GB	VRFNP6060GKI5WT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2242	0°C to+70°C	120GB	VRFNP6120GKC5WT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2242	-40°C to+85°C	120GB	VRFNP6120GKI5WT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2242	0°C to+70°C	240GB	VRFNP6240GKCHWT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2242	-40°C to+85°C	240GB	VRFNP6240GKIHWT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2242	0°C to+70°C	480GB	VRFNP6480GKCFWT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2242	-40°C to+85°C	480GB	VRFNP6480GKIFWT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2242	0°C to+70°C	960GB	VRFNP6960GKC4WT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2242	-40°C to+85°C	960GB	VRFNP6960GKI4WT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2280	0°C to+70°C	120GB	VPFNP5120GDCHWT3	PS5008	TSB BiCS 3D
M.2 PCIe	2280	0°C to+70°C	240GB	VPFNP5240GDCHWT3	PS5008	TSB BiCS 3D
M.2 PCIe	2280	0°C to+70°C	480GB	VPFNP5480GDCHWT3	PS5008	TSB BiCS 3D
M.2 PCIe	2280	0°C to+70°C	960GB	VPFNP5001TDCFWT3	PS5008	TSB BiCS 3D
M.2 PCIe	2280	0°C to+70°C	60GB	VRFNP5060GKC5WT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2280	-40°C to+85°C	60GB	VRFNP5060GKI5WT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2280	0°C to+70°C	120GB	VRFNP5120GKC5WT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2280	-40°C to+85°C	120GB	VRFNP5120GKI5WT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2280	0°C to+70°C	240GB	VRFNP5240GKC5WT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2280	-40°C to+85°C	240GB	VRFNP5240GKI5WT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2280	0°C to+70°C	480GB	VRFNP5480GKCHWT3	SM2263XT	TSB BiCS 3D
M.2 PCIe	2280	-40°C to+85°C	480GB	VRFNP5480GKIHWT3	SM2263XT	TSB BiCS 3D
M.2 SATA	2242	0°C to+70°C	60GB	VRFEM6060GBC5WT3	SM2258	TSB BiCS 3D
M.2 SATA	2242	-40°C to+85°C	60GB	VRFEM6060GBI5WT3	SM2258	TSB BiCS 3D
M.2 SATA	2242	0°C to+70°C	60GB	VRFEM6060GEC5WT3	SM2259	TSB BiCS 3D
M.2 SATA	2242	-40°C to+85°C	60GB	VRFEM6060GEI5WT3	SM2259	TSB BiCS 3D
M.2 SATA	2242	0°C to+70°C	120GB	VRFEM6120GBC5WT3	SM2258	TSB BiCS 3D
M.2 SATA	2242	-40°C to+85°C	120GB	VRFEM6120GBI5WT3	SM2258	TSB BiCS 3D
M.2 SATA	2242	0°C to+70°C	120GB	VRFEM6120GEC5WT3	SM2259	TSB BiCS 3D
M.2 SATA	2242	-40°C to+85°C	120GB	VRFEM6120GEI5WT3	SM2259	TSB BiCS 3D
M.2 SATA	2242	0°C to+70°C	240GB	VRFEM6240GBCHWT3	SM2258	TSB BiCS 3D
M.2 SATA	2242	-40°C to+85°C	240GB	VRFEM6240GBIHWT3	SM2258	TSB BiCS 3D
M.2 SATA	2242	0°C to+70°C	240GB	VRFEM6240GECHWT3	SM2259	TSB BiCS 3D
M.2 SATA	2242	-40°C to+85°C	240GB	VRFEM6240GEIHWT3	SM2259	TSB BiCS 3D
M.2 SATA	2242	0°C to+70°C	480GB	VRFEM6480GBCFWT3	SM2258	TSB BiCS 3D
M.2 SATA	2242	-40°C to+85°C	480GB	VRFEM6480GBIFWT3	SM2258	TSB BiCS 3D
M.2 SATA	2242	0°C to+70°C	480GB	VRFEM6480GECFWT3	SM2259	TSB BiCS 3D
M.2 SATA	2242	-40°C to+85°C	480GB	VRFEM6480GEIFWT3	SM2259	TSB BiCS 3D
M.2 SATA	2260	0°C to+70°C	60GB	VRFEM4060GEC5WT3	SM2259	TSB BiCS 3D
M.2 SATA	2260	-40°C to+85°C	60GB	VRFEM4060GEI5WT3	SM2259	TSB BiCS 3D
M.2 SATA	2260	0°C to+70°C	120GB	VRFEM4120GEC5WT3	SM2259	TSB BiCS 3D
M.2 SATA	2260	-40°C to+85°C	120GB	VRFEM4120GEI5WT3	SM2259	TSB BiCS 3D
M.2 SATA	2260	0°C to+70°C	240GB	VRFEM4240GEC5WT3	SM2259	TSB BiCS 3D
M.2 SATA	2260	-40°C to+85°C	240GB	VRFEM4240GEI5WT3	SM2259	TSB BiCS 3D
M.2 SATA	2260	0°C to+70°C	480GB	VRFEM4480GECHWT3	SM2259	TSB BiCS 3D
M.2 SATA	2260	-40°C to+85°C	480GB	VRFEM4480GEIHWT3	SM2259	TSB BiCS 3D
M.2 SATA	2260	0°C to+70°C	960GB	VRFEM4960GECFWT3	SM2259	TSB BiCS 3D

FLASH/SSD PART NUMBERS

FORM FACTOR	INTERFACE	TEMP	CAPACITY	VIKING PN#	CONTROLLER	NAND
M.2 SATA	2260	-40°C to+85°C	960GB	VRFEM4960GEIFWT3	SM2259	TSB BiCS 3D
M.2 SATA	2280	0°C to+70°C	120GB	VPFEM5120GZC5WT3	PhisonS11	TSB BiCS 3D
M.2 SATA	2280	-40°C to+85°C	120GB	VPFNP5120GDI5WT3	PS5008	TSB BiCS 3D
M.2 SATA	2280	-40°C to+85°C	240GB	VPFNP5240GDI5WT3	PS5008	TSB BiCS 3D
M.2 SATA	2280	-40°C to+85°C	480GB	VPFNP5480GDIHWT3	PS5008	TSB BiCS 3D
M.2 SATA	2280	-40°C to+85°C	960GB	VPFNP5960GDIFWT3	PS5008	TSB BiCS 3D
M.2 SATA	2280	0°C to+70°C	120GB	VPFEM5120GZC5WT3	PhisonS11	TSB BiCS 3D
M.2 SATA	2280	0°C to+70°C	240GB	VPFEM5240GZC5WT3	PhisonS11	TSB BiCS 3D
M.2 SATA	2280	0°C to+70°C	480GB	VPFEM5480GZCHWT3	PhisonS11	TSB BiCS 3D
M.2 SATA	2280	0°C to+70°C	60GB	VRFEM5060GBC5WT3	SM2258	TSB BiCS 3D
M.2 SATA	2280	-40°C to+85°C	60GB	VRFEM5060GBI5WT3	SM2258	TSB BiCS 3D
M.2 SATA	2280	0°C to+70°C	120GB	VRFEM5120GBC5WT3	SM2258	TSB BiCS 3D
M.2 SATA	2280	-40°C to+85°C	120GB	VRFEM5120GBI5WT3	SM2258	TSB BiCS 3D
M.2 SATA	2280	0°C to+70°C	240GB	VRFEM5240GBC5WT3	SM2258	TSB BiCS 3D
M.2 SATA	2280	-40°C to+85°C	240GB	VRFEM5240GBI5WT3	SM2258	TSB BiCS 3D
M.2 SATA	2280	0°C to+70°C	480GB	VRFEM5480GBCHWT3	SM2258	TSB BiCS 3D
M.2 SATA	2280	-40°C to+85°C	480GB	VRFEM5480GBIHWT3	SM2258	TSB BiCS 3D
M.2 SATA	2280	0°C to+70°C	960GB	VRFEM5960GBCFWT3	SM2258	TSB BiCS 3D
M.2 SATA	2280	-40°C to+85°C	960GB	VRFEM5960GBIFWT3	SM2258	TSB BiCS 3D
mSATA	MO300	0°C to+70°C	64GB	VPFEM2064GZCBPTZL	Toshiba	TSB NAND
mSATA	MO300	-40°C to+85°C	64GB	VPFEM2064GZIAPTZL	Toshiba	TSB NAND
mSATA	MO300	0°C to+70°C	128GB	VPFEM2128GZCAPTZL	Toshiba	TSB NAND
mSATA	MO300	-40°C to+85°C	128GB	VPFEM2128GZIAPTZL	Toshiba	TSB NAND
mSATA	MO300	0°C to+70°C	60GB	VRFEM2060GBC5WT3	SM2258	TSB BiCS 3D
mSATA	MO300	-40°C to+85°C	60GB	VRFEM2060GBI5WT3	SM2258	TSB BiCS 3D
mSATA	MO300	-40°C to+85°C	16GB	VPFEM2016GZIDPTL	PhisonS11	TSB NAND
mSATA	MO300	0°C to+70°C	120GB	VRFEM2120GBC5WT3	SM2258	TSB BiCS 3D
mSATA	MO300	-40°C to+85°C	120GB	VRFEM2120GBI5WT3	SM2258	TSB BiCS 3D
mSATA	MO300	0°C to+70°C	240GB	VRFEM2240GBC5WT3	SM2258	TSB BiCS 3D
mSATA	MO300	-40°C to+85°C	240GB	VRFEM2240GBI5WT3	SM2258	TSB BiCS 3D
mSATA	MO300	0°C to+70°C	480GB	VRFEM2480GBCHWT3	SM2258	TSB BiCS 3D
mSATA	MO300	-40°C to+85°C	480GB	VRFEM2480GBIHWT3	SM2258	TSB BiCS 3D
mSATA	MO300	0°C to+70°C	960GB	VRFEM2960GBCFWT3	SM2258	TSB BiCS 3D
mSATA	MO300	-40°C to+85°C	960GB	VRFEM2960GBIFWT3	SM2258	TSB BiCS 3D
mSATA	MO300	0°C to+70°C	120GB	VPFEM2120GZC5WT3	PhisonS11	TSB BiCS 3D
mSATA	MO300	0°C to+70°C	240GB	VPFEM2240GZC5WT3	PhisonS11	TSB BiCS 3D
mSATA	MO300	0°C to+70°C	480GB	VPFEM2480GZCHWT3	PhisonS11	TSB BiCS 3D
SD Card	Full Size SD	-40°C to+85°C	1GB	VPFSD310242QIESTH	PS8210	TSB 24nm SLC
SD Card	Full Size SD	-40°C to+85°C	2GB	VPFSD32048QIFSTH	PS8210	TSB 24nm SLC
SD Card	Full Size SD	-40°C to+85°C	4GB	VPFSD34096QIQSTH	PS8210	TSB 24nm SLC
SD Card	Full Size SD	-25°C to+85°C	8GB	VPFSD38192QIWSTH	PS8210	TSB 24nm SLC
SD Card	Full Size SD	-25°C to+85°C	32GB	VTSD3032GCCBMTLC	Toshiba	TSB BiCS 3D
SD Card	Full Size SD	-25°C to+85°C	32GB	VTSD3032GCCBMTLE	Toshiba	TSB BiCS 3D
SD Card	Full Size SD	-25°C to+85°C	64GB	VTSD3064GCCAMTLC	Toshiba	TSB BiCS 3D
SD Card	Full Size SD	-25°C to+85°C	64GB	VTSD3064GCCAMTLE	Toshiba	TSB BiCS 3D
SD Card	Full Size SD	-25°C to+85°C	128GB	VTSD3128GCCZMTLC	Toshiba	TSB BiCS 3D
SD Card	Full Size SD	-25°C to+85°C	128GB	VTSD3128GCCZMTLE	Toshiba	TSB BiCS 3D
SD Card	Full Size SD	-40°C to+85°C	0.5GB	VPFSD30512QI7STH	PS8210	TSB 24nm SLC

FLASH/SSD PART NUMBERS

FORM FACTOR	INTERFACE	TEMP	CAPACITY	VIKING PN#	CONTROLLER	NAND
SD Card	microSD	-40°C to+85°C	1GB	VPFUSD10242QIESTH	PS8210	TSB 24nm SLC
SD Card	microSD	-40°C to+85°C	2GB	VPFUSD2048QIFSTH	PS8210	TSB 24nm SLC
SD Card	microSD	-40°C to+85°C	4GB	VPFUSD4096QIQSTH	PS8210	TSB 24nm SLC
SD Card	microSD	-25°C to+85°C	8GB	VTUSD008GCCWMTLN	Toshiba	TSB BiCS 3D
SD Card	microSD	-25°C to+85°C	16GB	VTUSD016GCCDMTLN	Toshiba	TSB BiCS 3D
SD Card	microSD	-25°C to+85°C	32GB	VTUSD032GCCBMTLN	Toshiba	TSB BiCS 3D
SD Card	microSD	-25°C to+85°C	32GB	VTUSD032GCCBMTLC	Toshiba	TSB BiCS 3D
SD Card	microSD	-25°C to+85°C	32GB	VTUSD032GCCBMTLE	Toshiba	TSB BiCS 3D
SD Card	microSD	-25°C to+85°C	64GB	VTUSD064GCCAMTLC	Toshiba	TSB BiCS 3D
SD Card	microSD	-25°C to+85°C	64GB	VTUSD064GCCAMTLE	Toshiba	TSB BiCS 3D
SD Card	microSD	-25°C to+85°C	128GB	VTUSD128GCCZMTLC	Toshiba	TSB BiCS 3D
SD Card	microSD	-25°C to+85°C	128GB	VTUSD128GCCZMTLE	Toshiba	TSB BiCS 3D
SD Card	microSD	-40°C to+85°C	0.5GB	VPFUSD0512QI7STH	PS8210	TSB 24nm SLC
slimSATA	MO297	0°C to+70°C	60GB	VRFEM1060GBC5WT3	SM2258	TSB BiCS 3D
slimSATA	MO297	-40°C to+85°C	60GB	VRFEM1060GBI5WT3	SM2258	TSB BiCS 3D
slimSATA	MO297	0°C to+70°C	120GB	VRFEM1120GBC5WT3	SM2258	TSB BiCS 3D
slimSATA	MO297	-40°C to+85°C	120GB	VRFEM1120GBI5WT3	SM2258	TSB BiCS 3D
slimSATA	MO297	0°C to+70°C	240GB	VRFEM1240GBC5WT3	SM2258	TSB BiCS 3D
slimSATA	MO297	-40°C to+85°C	240GB	VRFEM1240GBI5WT3	SM2258	TSB BiCS 3D
slimSATA	MO297	0°C to+70°C	480GB	VRFEM1480GBCHWT3	SM2258	TSB BiCS 3D
slimSATA	MO297	-40°C to+85°C	480GB	VRFEM1480GBIHWT3	SM2258	TSB BiCS 3D
slimSATA	MO297	0°C to+70°C	960GB	VRFEM1960GBCFWT3	SM2258	TSB BiCS 3D
slimSATA	MO297	-40°C to+85°C	960GB	VRFEM1960GBIFWT3	SM2258	TSB BiCS 3D

DDR4 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
288-pin DIMM	Registered	4GB	512Mbx72	2400MT/s	ECC	x8	1	LP	0°C to+85°C	VR9MR127228HBJ
288-pin DIMM	Registered	4GB	512Mbx72	2133MT/s	ECC	x8	1	LP	0°C to+85°C	VR9MR127228HBH
288-pin DIMM	Registered	8GB	1Gbx72	2400MT/s	ECC	x8	1	LP	0°C to+85°C	VR9MR1G7228JBJ
288-pin DIMM	Registered	8GB	1Gbx72	2133MT/s	ECC	x8	1	LP	0°C to+85°C	VR9MR1G7228JBH
288-pin DIMM	Registered	8GB	1Gbx72	2400MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MR1G7228HBJ
288-pin DIMM	Registered	8GB	1Gbx72	2133MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MR1G7228HBH
288-pin DIMM	Registered	8GB	1Gbx72	2400MT/s	ECC	x4	1	LP	0°C to+85°C	VR9MR1G7224HBJ
288-pin DIMM	Registered	8GB	1Gbx72	2133MT/s	ECC	x4	1	LP	0°C to+85°C	VR9MR1G7224HBH
288-pin DIMM	Registered	16GB	2Gbx72	2400MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MR2G7228JBJ
288-pin DIMM	Registered	16GB	2Gbx72	2667MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MR2G7228JBK
288-pin DIMM	Registered	16GB	2Gbx72	2133MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MR2G7228JBH
288-pin DIMM	Registered	16GB	2Gbx72	2400MT/s	ECC	x4	2	LP	0°C to+85°C	VR9MR2G7224HBJ
288-pin DIMM	Registered	16GB	2Gbx72	2133MT/s	ECC	x4	2	LP	0°C to+85°C	VR9MR2G7224HBH
288-pin DIMM	Registered	32GB	4Gbx72	2400MT/s	ECC	x4	2	LP	0°C to+85°C	VR9MR4G7224JBJ
288-pin DIMM	Registered	16GB	2Gbx72	2133MT/s	ECC	x4	1	LP	0°C to+85°C	VR9MR2G7224JBH
288-pin DIMM	Registered	32GB	4Gbx72	2133MT/s	ECC	x4	2	LP	0°C to+85°C	VR9MR4G7224JBH
288-pin DIMM	Registered	8GB	1Gbx72	2133MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MR1G7228HBH
288-pin DIMM	Registered	16GB	2Gx72	2133MT/s	ECC	x4	2	LP	0°C to+85°C	VR9MR2G7224HBH
288-pin DIMM	Registered	32GB	4Gx72	2667MT/s	ECC	x4	2	LP	0°C to+85°C	VR9MR4G7224JBK
288-pin DIMM	Registered	64GB	8Gbx72	2400MT/s	ECC	x4	4	LP	0°C to+85°C	VR9MR8G7224JEJ

DDR4 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
288-pin DIMM	Registered	8GB	1Gx72	2400MT/s	ECC	x8	1	LP	0°C to+85°C	VR9MR1G7228JBJ
288-pin DIMM	Registered	4GB	512Mbx72	2400MT/s	ECC	x8	1	VLP	0°C to+85°C	VR9VR127228HBJ
288-pin DIMM	Registered	4GB	512Mbx72	2133MT/s	ECC	x8	1	VLP	0°C to+85°C	VR9VR127228HBH
288-pin DIMM	Registered	8GB	1Gbx72	2400MT/s	ECC	x4	1	VLP	0°C to+85°C	VR9VR1G7224HBJ
288-pin DIMM	Registered	8GB	1Gbx72	2133MT/s	ECC	x4	1	VLP	0°C to+85°C	VR9VR1G7224HBH
288-pin DIMM	Registered	8GB	1Gbx72	2400MT/s	ECC	x8	1	VLP	0°C to+85°C	VR9VR1G7228JBJ
288-pin DIMM	Registered	8GB	1Gbx72	2133MT/s	ECC	x8	1	VLP	0°C to+85°C	VR9VR1G7228JBH
288-pin DIMM	Registered	16GB	2Gbx72	2400MT/s	ECC	x4	1	VLP	0°C to+85°C	VR9VR2G7224JBJ
288-pin DIMM	Registered	16GB	2Gbx72	2133MT/s	ECC	x4	1	VLP	0°C to+85°C	VR9VR2G7224JBH
288-pin DIMM	Registered	16GB	2Gbx72	2400MT/s	ECC	x8	2	VLP	0°C to+85°C	VR9VR2G7228JBJ
288-pin DIMM	Registered	16GB	2Gbx72	2133MT/s	ECC	x8	2	VLP	0°C to+85°C	VR9VR2G7228JBH
288-pin DIMM	Registered	32GB	4Gbx72	2133MT/s	ECC	x4	2	VLP	0°C to+85°C	VR9VR4G7224JHH
288-pin DIMM	Registered	32GB	4Gbx72	2667MT/s	ECC	x4	2	VLP	0°C to+85°C	VR9VR4G7224JHK
288-pin DIMM	Unbuffered	4GB	512Mbx64	2400MT/s	None	x8	1	LP	0°C to+85°C	VR9MU126428HBJ
288-pin DIMM	Unbuffered	4GB	512Mbx64	2667MT/s	None	x8	1	LP	0°C to+85°C	VR9MU126428HBK
288-pin DIMM	Unbuffered	4GB	512Mbx64	2133MT/s	None	x8	1	LP	0°C to+85°C	VR9MU126428HBH
288-pin DIMM	Unbuffered	4GB	512Mbx72	2400MT/s	ECC	x8	1	LP	0°C to+85°C	VR9MU127228HBJ
288-pin DIMM	Unbuffered	4GB	512Mbx72	2133MT/s	ECC	x8	1	LP	0°C to+85°C	VR9MU127228HBH
288-pin DIMM	Unbuffered	4GB	512Mbx72	2667MT/s	ECC	x8	1	LP	0°C to+85°C	VR9MU127228HBK
288-pin DIMM	Unbuffered	4GB	512Mbx72	2400MT/s	ECC	x8	1	LP	0°C to+85°C	VR9MU127228HBJ
288-pin DIMM	Unbuffered	8GB	1Gbx64	2400MT/s	None	x8	2	LP	0°C to+85°C	VR9MU1G6428HBJ
288-pin DIMM	Unbuffered	8GB	1Gbx64	2133MT/s	None	x8	2	LP	0°C to+85°C	VR9MU1G6428HBH
288-pin DIMM	Unbuffered	8GB	1Gbx64	2400MT/s	None	x8	1	LP	0°C to+85°C	VR9MU1G6428JBJ
288-pin DIMM	Unbuffered	8GB	1Gbx64	2667MT/s	None	x8	1	LP	0°C to+85°C	VR9MU1G6428JBK
288-pin DIMM	Unbuffered	8GB	1Gbx64	2133MT/s	None	x8	1	LP	0°C to+85°C	VR9MU1G6428JBH
288-pin DIMM	Unbuffered	16GB	2Gbx72	2133MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MU2G7228JBH
288-pin DIMM	Unbuffered	16GB	2Gbx72	2400MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MU2G7228JBJ
288-pin DIMM	Unbuffered	16GB	2Gbx72	2667MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MU2G7228JBK
288-pin DIMM	Unbuffered	8GB	1Gbx72	2400MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MU1G7228HBJ
288-pin DIMM	Unbuffered	8GB	1Gbx72	2133MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MU1G7228HBH
288-pin DIMM	Unbuffered	8GB	1Gbx72	2400MT/s	ECC	x8	1	LP	0°C to+85°C	VR9MU1G7228JBJ
288-pin DIMM	Unbuffered	8GB	1Gbx72	2133MT/s	ECC	x8	1	LP	0°C to+85°C	VR9MU1G7228JBH
288-pin DIMM	Unbuffered	8GB	1Gbx72	2667MT/s	ECC	x8	1	LP	0°C to+85°C	VR9MU1G7228JBK
288-pin DIMM	Unbuffered	16GB	2Gbx64	2400MT/s	None	x8	2	LP	0°C to+85°C	VR9MU2G6428JBJ
288-pin DIMM	Unbuffered	16GB	2Gbx64	2133MT/s	None	x8	2	LP	0°C to+85°C	VR9MU2G6428JBH
288-pin DIMM	Unbuffered	16GB	2Gbx72	2400MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MU1G7228JBJ
288-pin DIMM	Unbuffered	16GB	2Gbx72	2133MT/s	ECC	x8	2	LP	0°C to+85°C	VR9MU1G7228JBH
288-pin DIMM	Unbuffered	8GB	1Gbx72	2400MT/s	ECC	x8	2	VLP	0°C to+85°C	VR9VU1G7228HBJ
288-pin DIMM	Unbuffered	8GB	1Gbx72	2133MT/s	ECC	x8	2	VLP	0°C to+85°C	VR9VU1G7228HBH
288-pin DIMM	Unbuffered	8GB	1Gbx72	2400MT/s	ECC	x8	2	VLP	0°C to+85°C	VR9VU1G7228JBJ
288-pin DIMM	Unbuffered	16GB	2Gbx72	2400MT/s	ECC	x8	2	VLP	0°C to+85°C	VR9VU2G7228JBJ
288-pin DIMM	Unbuffered	16GB	2Gbx72	2133MT/s	ECC	x8	2	VLP	0°C to+85°C	VR9VU2G7228JBH
288-pin ULP DIMM	Registered	16GB	2Gx72	2133MT/s	ECC	x8	2	VLP	0°C to+85°C	VR9UR2G7228JBH
260-pin SODIMM	Unbuffered	4GB	512Mbx64	2400MT/s	None	x8	1	LP	0°C to+85°C	VR9FU126428HBJ
260-pin SODIMM	Unbuffered	4GB	512Mbx64	2133MT/s	None	x8	1	LP	0°C to+85°C	VR9FU126428HBH
260-pin SODIMM	Unbuffered	4GB	512Mbx72	2400MT/s	ECC	x8	1	LP	0°C to+85°C	VR9FU127228HBJ
260-pin SODIMM	Unbuffered	4GB	512Mbx72	2400MT/s	ECC	x8	1	LP	0°C to+85°C	VR9FU127228HBJ
260-pin SODIMM	Unbuffered	4GB	512Mbx72	2133MT/s	ECC	x8	1	LP	0°C to+85°C	VR9FU127228HBH

DDR4 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
260-pin SODIMM	Unbuffered	4GB	512Mbx64	2667MT/s	None	x8	1	LP	0°C to+85°C	VR9FU126428HBK
260-pin SODIMM	Unbuffered	8GB	1Gbx64	2400MT/s	None	x8	2	LP	0°C to+85°C	VR9FU1G6428HBJ
260-pin SODIMM	Unbuffered	8GB	1Gbx64	2133MT/s	None	x8	2	LP	0°C to+85°C	VR9FU1G6428HBH
260-pin SODIMM	Unbuffered	8GB	1Gbx64	2667 MT/s	None	x8	1	LP	0°C to+85°C	VR9FU1G6428JBK
260-pin SODIMM	Unbuffered	8GB	1Gbx72	2400MT/s	ECC	x8	2	LP	0°C to+85°C	VR9FU1G7228HBJ
260-pin SODIMM	Unbuffered	8GB	1Gbx72	2133MT/s	ECC	x8	2	LP	0°C to+85°C	VR9FU1G7228HBH
260-pin SODIMM	Unbuffered	8GB	1Gbx72	2400MT/s	ECC	x8	1	LP	0°C to+85°C	VR9FU1G7228JBJ
260-pin SODIMM	Unbuffered	16GB	2Gbx64	2400MT/s	None	x8	2	LP	0°C to+85°C	VR9FU2G6428JBJ
260-pin SODIMM	Unbuffered	16GB	2Gbx64	2133MT/s	None	x8	2	LP	0°C to+85°C	VR9FU2G6428JBH
260-pin SODIMM	Unbuffered	16GB	2Gbx64	2667MT/s	None	x8	2	LP	0°C to+85°C	VR9FU2G6428JBK
260-pin SODIMM	Unbuffered	16GB	2Gbx72	2400MT/s	ECC	x8	2	LP	0°C to+85°C	VR9FU2G7228JBJ
260-pin SODIMM	Unbuffered	16GB	2Gbx72	2133MT/s	ECC	x8	2	LP	0°C to+85°C	VR9FU2G7228JBH
260-pin SODIMM	Unbuffered	32GB	4Gbx64	2400MT/s	None	x8	2	LP	0°C to+85°C	VR9FU4G6428JEJ
260-pin SODIMM	Unbuffered	32GB	4Gbx64	2667MT/s	None	x8	2	LP	0°C to+85°C	VR9FU4G6428JEK
260-pin SODIMM	Unbuffered	8GB	1Gbx64	2133MT/s	None	x8	1	LP	0°C to+85°C	VR9FU1G6428JBH
260-pin SODIMM	Unbuffered	8GB	1Gx64	2400MT/s	None	x8	1	LP	0°C to+85°C	VR9FU1G6428JBJ
260-pin SODIMM	Unbuffered	8GB	1Gx72	2133MT/s	ECC	x8	1	LP	0°C to+85°C	VR9FU1G7228JBH
288-pin MINI-DIMM	Registered	8GB	1Gbx72	2400MT/s	ECC	x8	1	VLP	0°C to+85°C	VR9WR1G7228JBJ
288-pin MINI-DIMM	Registered	8GB	1Gbx72	2133MT/s	ECC	x8	1	VLP	0°C to+85°C	VR9WR1G7228JBH
244/288-pin ULP MINI-DIMM	Unbuffered	8GB	1Gbx72	2400MT/s	ECC	x8	1	ULP	0°C to+85°C	VR9ZU1G7228JBJ
244/288-pin ULP MINI-DIMM	Unbuffered	8GB	1Gbx72	2133MT/s	ECC	x8	1	ULP	0°C to+85°C	VR9ZU1G7228JBH
244/288-pin ULP MINI-DIMM	Unbuffered	16GB	2Gbx72	2400MT/s	ECC	x8	2	ULP	0°C to+85°C	VR9ZU2G7228JEJ
244/288-pin ULP MINI-DIMM	Registered	16GB	2Gx72	2400MT/s	ECC	x8	2	ULP	0°C to+85°C	VR9ZR2G7228JEJ
240-pin 17.75mm ULP DIMM	Registered	16GB	2Gbx72	2133MT/s	ECC	x8	2	ULP	0°C to+85°C	VR9UR2G7228JBH
204/260 – pin VLP SODIMM	Unbuffered	8GB	1Gbx72	2400MT/s	ECC	x8	1	VLP	0°C to+85°C	VR9YU1G7228JBJ
204/260 – pin VLP SODIMM	Unbuffered	8GB	1Gbx72	2133MT/s	ECC	x8	1	VLP	0°C to+85°C	VR9YU1G7228JBH
204/260 – pin VLP SODIMM	Unbuffered	16GB	2Gx72	2400MT/s	ECC	x8	1	VLP	0°C to+85°C	VR9YU2G7228JEJ
244/288-pin VLP Mini-DIMM	Unbuffered	8GB	1Gx72	2133MT/s	ECC	x8	1	VLP	0°C to+85°C	VR9WU1G7228JBH
244/288-pin VLP Mini-DIMM	Unbuffered	16GB	2Gx72	2133MT/s	ECC	x8	2	VLP	0°C to+85°C	VR9WU2G7228JHH
244/288-pin VLP Mini-DIMM	Unbuffered	8GB	1Gx72	2400MT/s	ECC	x8	1	VLP	0°C to+85°C	VR9WU1G7228JBJ
184/240/288-pin VLP DIMM	Registered	8GB	1Gx72	2400MT/s	ECC	x4	1	VLP	0°C to+85°C	VR9VR1G7224HBJ
184/240/288-pin VLP DIMM	Registered	8GB	1Gx72	2133MT/s	ECC	x8	2	VLP	0°C to+85°C	VR9VR1G7228HBH
184/240/288-pin VLP DIMM	Registered	8GB	1Gx72	2133MT/s	ECC	x8	1	VLP	0°C to+85°C	VR9VR1G7228HBH
184/240/288-pin VLP DIMM	Registered	16GB	2Gx72	2400MT/s	ECC	x4	1	VLP	0°C to+85°C	VR9VR2G7224JBJ
184/240/288-pin VLP DIMM	Registered	16GB	2Gx72	2667MT/s	ECC	x4	1	VLP	0°C to+85°C	VR9VR2G7224JBK
184/240/288-pin VLP DIMM	Registered	32GB	4Gx72	2400MT/s	ECC	x4	1	VLP	0°C to+85°C	VR9VR4G7224JEJ
184/240/288-pin VLP DIMM	Registered	32GB	4Gx72	2400MT/s	ECC	x4	1	VLP	0°C to+85°C	VR9VR4G7224JHJ
184/240/288-pin VLP DIMM	Registered	64GB	8Gbx72	2133MT/s	ECC	x4	4	VLP	0°C to+85°C	VR9VR8G7224JJH
244/288-pin Mini-DIMM	Unbuffered	16GB	2Gx72	2667MT/s	ECC	x8	2	LP	0°C to+85°C	VR9JU2G7228JBK
244/288-pin Mini-DIMM	Registered	16GB	2Gx72	2400MT/s	ECC	x8	2	LP	0°C to+85°C	VR9JR2G7228JBJ
260-pin SODIMM	Registered	8GB	1Gx72	2667MT/s	ECC	x8	1	LP	0°C to+85°C	VR9FR1G7228JBK
260-pin SODIMM	Registered	16GB	2Gx72	2667MT/s	ECC	x8	2	LP	0°C to+85°C	VR9FR2G7228JBK
260-pin SODIMM	Registered	32GB	4Gx72	2400MT/s	ECC	x8	4	LP	0°C to+85°C	VR9FR4G7228JEJ
260-pin SODIMM	Unbuffered	4GB	512Mx64	2133	None	x8	1	LP	-40°C to+85°C	VR9FU126428HB-HMBT

DDR4 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
260-pin SODIMM	Unbuffered	8GB	1Gx64	2133	None	x8	1	LP	-40°C to+85°C	VR9FU1G6428JB-HMBT
260-pin SODIMM	Unbuffered	16GB	1Gx64	2133	None	x8	2	LP	-40°C to+85°C	VR9FU2G6428JB-HMBT
260-pin SODIMM	Unbuffered	16GB	2Gx64	2400	None	x8	2	LP	-40°C to+85°C	VR9FU2G6428JBJMBT
260-pin SODIMM	Unbuffered	4GB	1Gx64	2667	None	x8	1	LP	-40°C to+85°C	VR9FU126428HB-KMBT
260-pin SODIMM	Unbuffered	8GB	1Gx64	2667	None	x8	1	LP	-40°C to+85°C	VR9FU1G6428JB-KMBT
260-pin SODIMM	Unbuffered	16GB	2Gx64	2667	None	x8	2	LP	-40°C to+85°C	VR9FU2G6428JBK
260-pin SODIMM	Unbuffered	16GB	2Gx72	2400MT/s	ECC	x8	2	LP	-40°C to+85°C	VR9FU2G7228JBJMBT

DDR3 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
204-pin SODIMM	Unbuffered	4GB	512Mbx64	1600	None	x8	1	LP	0°C to+85°C	VR7PU126498HBF
204-pin SODIMM	Unbuffered	1GB	128Mbx64	1600	None	x16	1	LP	0°C to+85°C	VR7PU286496GBF
204-pin SODIMM	Unbuffered	2GB	256Mbx64	1866	None	x8	1	LP	0°C to+85°C	VR7PU566498GBG
204-pin SODIMM	Unbuffered	4GB	512Mbx64	1600	None	x8	2	LP	0°C to+85°C	VR7PU126498GBF
204-pin SODIMM	Unbuffered	16GB	2Gbx64	1600	None	x8	2	LP	0°C to+85°C	VR7PU2G6458JBF
204-pin SODIMM	Unbuffered	16GB	2Gbx64	2133	None	x8	2	LP	0°C to+85°C	VR7PU2G6458JBH
204-pin SODIMM	Unbuffered	8GB	1Gbx64	1600	None	x8	2	LP	0°C to+85°C	VR7PU1G6458HBF
204-pin SODIMM	Unbuffered	8GB	1Gbx64	1866	None	x8	2	LP	0°C to+85°C	VR7PU1G6458HBGN1
204-pin SODIMM	Unbuffered	8GB	1Gbx64	1333	None	x8	2	LP	0°C to+85°C	VR7PU1G6458HBD
204-pin SODIMM	Unbuffered	4GB	512Mbx64	1600	None	x8	1	LP	0°C to+85°C	VR7PU126458HBF
204-pin SODIMM	Unbuffered	4GB	512Mbx64	1333	None	x8	1	LP	0°C to+85°C	VR7PU126458HBD
204-pin SODIMM	Unbuffered	4GB	512Mbx64	1066	None	x8	1	LP	0°C to+85°C	VR7PU126458HBA
204-pin SODIMM	Unbuffered	4GB	512Mbx64	1600	None	x8	2	LP	0°C to+85°C	VR7PU126458GBF
204-pin SODIMM	Unbuffered	4GB	512Mbx64	1333	None	x8	2	LP	0°C to+85°C	VR7PU126458GBD
204-pin SODIMM	Unbuffered	2GB	256Mbx64	1600	None	x8	1	LP	0°C to+85°C	VR7PU566458GBF
204-pin SODIMM	Unbuffered	2GB	256Mbx64	1600	None	x8	1	LP	0°C to+85°C	VR7PU566458GBF
204-pin SODIMM	Unbuffered	2GB	256Mbx64	1600	None	x8	1	LP	0°C to+85°C	VR7PU566458GBF
204-pin SODIMM	Unbuffered	2GB	256Mbx64	1600	None	x8	1	LP	0°C to+85°C	VR7PU566498GBF
204-pin SODIMM	Unbuffered	2GB	256Mbx64	1600	None	x8	1	LP	0°C to+85°C	VR7PU566498GBF
204-pin SODIMM	Unbuffered	2GB	256Mbx64	1333	None	x8	1	LP	0°C to+85°C	VR7PU566458GBD
204-pin SODIMM	Unbuffered	2GB	256Mbx64	1333	None	x8	1	LP	0°C to+85°C	VR7PU566458GBD
204-pin SODIMM	Unbuffered	2GB	256Mbx64	1600	None	x8	2	LP	0°C to+85°C	VR7PU566458FBF
204-pin SODIMM	Unbuffered	2GB	256Mbx64	1333	None	x8	2	LP	0°C to+85°C	VR7PU566458FBD
204-pin SODIMM	Unbuffered	1GB	128Mbx64	1066	None	x8	1	LP	0°C to+85°C	VR7PU286458FBA
204-pin SODIMM	Unbuffered	1GB	128Mbx64	1600	None	x8	1	LP	0°C to+85°C	VR7PU286458FBF
204-pin SODIMM	Unbuffered	1GB	128Mbx64	1333	None	x8	1	LP	0°C to+85°C	VR7PU286458FBD
204-pin SODIMM	Unbuffered	16GB	2Gbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7PU2G7258JBF
204-pin SODIMM	Unbuffered	16GB	2Gbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7PU2G7258JBD
204-pin SODIMM	Unbuffered	8GB	1Gbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7PU1G7258HBF
204-pin SODIMM	Unbuffered	8GB	1Gbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7PU1G7298HBF
204-pin SODIMM	Unbuffered	8GB	1Gbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7PU1G7258HBD
204-pin SODIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7PU127258HBF
204-pin SODIMM	Unbuffered	4GB	512Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7PU127258HBD
204-pin SODIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7PU127258GBF

DDR3 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
204-pin SODIMM	Unbuffered	4GB	512Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7PU127258GBD
204-pin SODIMM	Unbuffered	4GB	512Mbx72	1866	ECC	x8	1	LP	0°C to+85°C	VR7PU127258HBG
204-pin SODIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7PU567258GBF
204-pin SODIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7PU567258GBF
204-pin SODIMM	Unbuffered	2GB	256Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7PU567258GBD
204-pin SODIMM	Unbuffered	2GB	256Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7PU567258GBD
204-pin SODIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7PU567258FBF
204-pin SODIMM	Unbuffered	2GB	256Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7PU567258FBD
204-pin SODIMM	Registered	16GB	2Gbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7PA2G7258JBF
204-pin SODIMM	Registered	16GB	2Gbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7PA2G7258JBD
204-pin SODIMM	Registered	8GB	1Gbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7PA1G7258HBF
204-pin SODIMM	Registered	8GB	1Gbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7PA1G7258HBD
204-pin SODIMM	Registered	4GB	512Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7PA127258HBF
204-pin SODIMM	Registered	4GB	512Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7PA127258HBD
204-pin SODIMM	Registered	4GB	512Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7PA127258GBF
204-pin SODIMM	Registered	4GB	512Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7PA127258GBD
204-pin SODIMM	Registered	2GB	256Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7PA567258GBF
204-pin SODIMM	Registered	2GB	256Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7PA567258GBD
204-pin SODIMM	Registered	2GB	256Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7PA567258FBF
204-pin SODIMM	Registered	2GB	256Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7PA567258FBD
204-pin SODIMM	Registered	1GB	128Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7PA287258FBF
204-pin SODIMM	Registered	1GB	128Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7PA287258FBD
204-pin SODIMM	Address Parity (Reg)	4GB	512Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7PA127298HBD
204-pin SODIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7PU127298GBF
204-pin SODIMM	Unbuffered	2GB	256x64	1066	None	x8	1	LP	0°C to+85°C	VR7PU566458GBA
204-pin SODIMM	Unbuffered	2GB	256x64	1066	None	x8	1	LP	0°C to+85°C	VR7PU566458GBA
204-pin SODIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7PU127298HBF
204-pin SODIMM	Unbuffered	4GB	512Mbx64	1333	None	x8	2	LP	0°C to+85°C	VR7PU126458HBD
204-pin SODIMM	Unbuffered	4GB	512Mbx64	1066	None	x8	2	LP	0°C to+85°C	VR7PU126458GBA
204-pin SODIMM	Unbuffered	8GB	1Gbx64	1600	None	x8	2	LP	0°C to+85°C	VR7PU1G6498HBF
204-pin SODIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7PU567258GBF
204-pin SODIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7PU567298GBF
204-pin SODIMM	Unbuffered	8GB	1Gx72	1866	ECC	x8	2	LP	0°C to+85°C	VR7PU1G7258HBG
204-pin SODIMM	Unbuffered	16GB	1Gx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7PU2G7298JBF
244-pin MINIDIMM	Unbuffered	8GB	1Gbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7JU1G7258HBF
244-pin MINIDIMM	Unbuffered	8GB	1Gbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7JU1G7258HBD
244-pin MINIDIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7JU127258GBF
244-pin MINIDIMM	Unbuffered	4GB	512Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7JU127258GBD
244-pin MINIDIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7JU567258FBF
244-pin MINIDIMM	Unbuffered	2GB	256Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7JU567258FBD
244-pin MINIDIMM	Unbuffered	8GB	1Gbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7WU1G7258HHF
244-pin MINIDIMM	Unbuffered	8GB	1Gbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7WU1G7258HHF
244-pin MINIDIMM	Unbuffered	8GB	1Gbx72	1333	ECC	x8	2	VLP	0°C to+85°C	VR7WU1G7258HHD
244-pin MINIDIMM	Unbuffered	8GB	1Gbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7WU1G7298JBF
244/288-pin VLP Mini-DIMM	Unbuffered	8GB	1Gx72	1866	ECC	x8	1	VLP	0°C to+85°C	VR7WU1G7258JBG
244-pin VLP Mini-DIMM	Unbuffered	8GB	1Gx72	1866	ECC	x8	2	VLP	0°C to+85°C	VR7WU1G7258HHG
244-pin MINIDIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7WU127258HBF

DDR3 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
244-pin MINIDIMM	Unbuffered	4GB	512Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7WU127258HBD
244-pin MINIDIMM	Unbuffered	4GB	512Mbx72	1866	ECC	x8	1	VLP	0°C to+85°C	VR7WU127258HBG
244-pin MINIDIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7WU567258GBF
244-pin MINIDIMM	Unbuffered	2GB	256Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7WU567258GBD
244-pin MINIDIMM	Unbuffered	1GB	128Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7WU287258FBF
244-pin MINIDIMM	Unbuffered	1GB	128Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7WU287258FBD
184/240/288-pin DIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7VU127258HBF
184/240/288-pin DIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7VU567258GBF
184/240/288-pin DIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7VU567258GBF
184/240/288-pin DIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7VU127298HBF
184/240/288-pin DIMM	Address Parity (Reg)	8GB	1Gbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VA1G7258HBF
184/240/288-pin DIMM	Address Parity (Reg)	8GB	1Gbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VA1G7258HBF
184/240/288-pin DIMM	Address Parity (Reg)	4GB	512Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7VA127258HBF
184/240/288-pin DIMM	Address Parity (Reg)	8GB	1Gbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VA1G7258HBF
184/240/288-pin DIMM	Address Parity (Reg)	32GB	4Gbx72	1333	ECC	x4	4	VLP	0°C to+85°C	VR7VA4G7294HJD
184/240/288-pin DIMM	Address Parity (Reg)	8GB	1Gbx72	1333	ECC	x8	2	VLP	0°C to+85°C	VR7VA1G7258HBD
184/240/288-pin DIMM	Address Parity (Reg)	8GB	1Gbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VA1G7298HBF
184/240/288-pin DIMM	Address Parity (Reg)	4GB	512Mbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VA127258GBF
184/240/288-pin DIMM	Address Parity (Reg)	4GB	512Mbx72	1066	ECC	x8	2	VLP	0°C to+85°C	VR7VA127258GBA
244/288-pin MINIDIMM	Unbuffered	4GB	512Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7JU127258GBD
244-pin MINIDIMM	Registered	16GB	2Gbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7JA2G7258JBF
244-pin MINIDIMM	Registered	16GB	2Gbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7JA2G7258JBD
244-pin MINIDIMM	Registered	8GB	1Gbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7JA1G7258HBF
244-pin MINIDIMM	Registered	8GB	1Gbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7JA1G7258HBD
244-pin MINIDIMM	Registered	4GB	512Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7JA127258HBF
244-pin MINIDIMM	Registered	4GB	512Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7JA127258HBD
244-pin MINIDIMM	Registered	4GB	512Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7JA127258GBF
244-pin MINIDIMM	Registered	4GB	512Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7JA127258GBD
244-pin MINIDIMM	Registered	2GB	256Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7JA567258FBD
244-pin MINIDIMM	Registered	2GB	256Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7JA567258FBF
244-pin MINIDIMM	Registered	2GB	256Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7JA567258FBD
244/288-pin MINIDIMM	Address Parity	8GB	1Gbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7JA1G7258HBD
244-pin MINIDIMM	Registered	8GB	1Gbx72	1600	ECC	x8	2	MLP	0°C to+85°C	VR7RA1G7258HBF
244-pin MINIDIMM	Registered	8GB	1Gbx72	1333	ECC	x8	2	MLP	0°C to+85°C	VR7RA1G7258HBD
244-pin MINIDIMM	Registered	4GB	512Mbx72	1600	ECC	x8	2	MLP	0°C to+85°C	VR7RA127258GBF
244-pin MINIDIMM	Registered	4GB	512Mbx72	1333	ECC	x8	2	MLP	0°C to+85°C	VR7RA127258GBD
244-pin MINIDIMM	Registered	2GB	256Mbx72	1600	ECC	x8	2	MLP	0°C to+85°C	VR7RA567258FBF
244-pin MINIDIMM	Registered	2GB	256Mbx72	1333	ECC	x8	2	MLP	0°C to+85°C	VR7RA567258FBD
240-pin DIMM	Registered	16GB	2Gx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7EA2G7258HBD
244-pin MINIDIMM	Registered	8GB	1Gbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7WA1G7258JBF
244-pin MINIDIMM	Registered	8GB	1Gbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7WA1G7258JBD
244-pin MINIDIMM	Registered	4GB	512Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7WA127258HBF
244-pin MINIDIMM	Registered	4GB	512Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7WA127258HBD

DDR3 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
244-pin MINIDIMM	Registered	2GB	256Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7WA567258GBF
244-pin MINIDIMM	Registered	2GB	256Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7WA567258GBD
244-pin MINIDIMM	Registered	1GB	128Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7WA287258FBF
244-pin MINIDIMM	Registered	1GB	128Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7WA287258FBD
244/288-pin MINIDIMM	Address Parity	4GB	512Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7WA127258HBD
244/288-pin MINIDIMM	Unbuffered	4GB	512Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7WU127298HBD
244/288-pin MINIDIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7WU127298HBF
244/288-pin MINIDIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7WU567298GBF
244/288-pin MINIDIMM	Unbuffered	8GB	1Gbx72	1333	ECC	x8	2	VLP	0°C to+85°C	VR7WU1G7298HHD
244/288-pin MINIDIMM	Unbuffered	8GB	1Gbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7WU1G7298HHF
240-pin DIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7EU127298HBF
240-pin DIMM	Unbuffered	4GB	512Mbx64	1600	None	x8	1	LP	0°C to+85°C	VR7EU126458HBF
240-pin DIMM	Unbuffered	4GB	512Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7EU127258GBD
240-pin DIMM	Unbuffered	4GB	512Mbx72	1333	ECC	x8	4	LP	0°C to+85°C	VR7EU127258FBE
240-pin DIMM	Unbuffered	1GB	128Mbx72	1333		x8	4	LP	0°C to+85°C	VR7EU287258DBE
240-pin DIMM	Unbuffered	8GB	1Gbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7EU1G7258HBD
240-pin DIMM	Unbuffered	8GB	1Gbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7EU1G7258HBF
240-pin DIMM	Unbuffered	4GB	1Gbx64	1600	None	x8	1	LP	0°C to+85°C	VR7EU126458HBF
240-pin DIMM	Unbuffered	4GB	1Gbx64	1866	None	x8	1	LP	0°C to+85°C	VR7EU126458HBG
240-pin DIMM	Unbuffered	4GB	1Gbx64	1600	None	x8	1	LP	0°C to+85°C	VR7EU126498HBF
240-pin DIMM	Unbuffered	4GB	1Gbx64	1866	None	x8	1	LP	0°C to+85°C	VR7EU126498HBG
240-pin DIMM	Address Parity	2GB	256Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7EA567258GBD
240-pin DIMM	Address Parity	8GB	1Gx72	1866	ECC	x4	1	LP	0°C to+85°C	VR7EA1G7254HBG
240-pin DIMM	Address Parity	8GB	1Gx72	1600	ECC	x4	1	LP	0°C to+85°C	VR7EA1G7294HBF
240-pin DIMM	Address Parity	32GB	4Gx72	1600	ECC	x4	4	LP	0°C to+85°C	VR7EA4G7294HHF
240-pin DIMM	Unbuffered	16GB	2Gbx64	1600	None	x8	2	LP	0°C to+85°C	VR7EU2G6458JBF
240-pin DIMM	Unbuffered	16GB	2Gbx64	1333	None	x8	2	LP	0°C to+85°C	VR7EU2G6458JBD
240-pin DIMM	Unbuffered	8GB	1Gbx64	1600	None	x8	2	LP	0°C to+85°C	VR7EU1G6458HBF
240-pin DIMM	Unbuffered	8GB	1Gbx64	1333	None	x8	2	LP	0°C to+85°C	VR7EU1G6458HBD
240-pin DIMM	Unbuffered	4GB	512Mbx64	1333	None	x8	1	LP	0°C to+85°C	VR7EU126458HBD
240-pin DIMM	Unbuffered	2GB	256Mbx64	1600	None	x8	1	LP	0°C to+85°C	VR7EU566458GBF
240-pin DIMM	Unbuffered	2GB	256Mbx64	1333	None	x8	1	LP	0°C to+85°C	VR7EU566458GBD
240-pin DIMM	Unbuffered	2GB	256Mbx64	1333	None	x8	2	LP	0°C to+85°C	VR7EU566498FBD
240-pin DIMM	Unbuffered	2GB	256Mx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7EU567258GBD
240-pin DIMM	Unbuffered	16GB	2Gbx72	1600	None	x8	2	LP	0°C to+85°C	VR7EU2G7298JBG
240-pin DIMM	Unbuffered	16GB	2Gbx72	1600	None	x8	2	LP	0°C to+85°C	VR7EU2G7258JBF
240-pin DIMM	Unbuffered	16GB	2Gbx72	1333	None	x8	2	LP	0°C to+85°C	VR7EU2G7258JBD
240-pin DIMM	Unbuffered	8GB	1Gbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7EU1G7298HBF
240-pin DIMM	Unbuffered	8GB	1Gbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7EU1G7298HBFN1
240-pin DIMM	Unbuffered	8GB	1Gbx72	1866	ECC	x8	2	LP	0°C to+85°C	VR7EU1G7258HBG
240-pin DIMM	Unbuffered	8GB	1Gbx72	1866	ECC	x8	2	LP	0°C to+85°C	VR7EU1G7298HBG
240-pin DIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7EU127258HBD
240-pin DIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7EU127258HBF
240-pin DIMM	Unbuffered	4GB	512Mbx72	800	ECC	x8	1	LP	0°C to+85°C	VR7EU127258HBZ
240-pin DIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7EU127258GBF
240-pin DIMM	Unbuffered	4GB	512Mbx72	1866	ECC	x8	1	LP	0°C to+85°C	VR7EU127258HBG
240-pin DIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7EU567258GBF
240-pin DIMM	Unbuffered	2GB	256Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7EU567258GBD

DDR3 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
240-pin DIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7EU567258FBF
240-pin DIMM	Unbuffered	2GB	256Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7EU567258FBD
240-pin DIMM	Unbuffered	1GB	128Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7EU287258FBF
240-pin DIMM	Unbuffered	1GB	128Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7EU287258FBD
240-pin DIMM	Address Parity	16GB	2Gbx72	1600	ECC	x8	4	LP	0°C to+85°C	VR7EA2G7298HBF
240-pin DIMM	Address Parity	8GB	1Gx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7EA1G7258HBG
240-pin DIMM	Address Parity (RDIMM)	4GB	512Mx72	1600	ECC	x4	1	LP	0°C to+85°C	VR7EA127294GBF
240-pin DIMM	Address Parity (RDIMM)	8GB	1Gx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7EA1G7298HBF
240-pin DIMM	Load Reduced (LRDIMM)	32GB	4Gx72	1600	ECC	x4	4	LP	0°C to+85°C	VR7EL4G7254HHF
184/240/288-pin DIMM	Unbuffered	8GB	1Gbx72	1333	ECC	x8	2	VLP	0°C to+85°C	VR7VU1G7258HBD
184/240/288-pin DIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7VU567258GBF
184/240/288-pin DIMM	Unbuffered	2GB	256Mx72	800	ECC	x8	1	VLP	0°C to+85°C	VR7VU567258GBZ
240-pin DIMM	Unbuffered	8GB	1Gbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VU1G7258HBF
240-pin DIMM	Unbuffered	8GB	1Gbx72	1866	ECC	x8	2	VLP	0°C to+85°C	VR7VU1G7298HBG
240-pin DIMM	Unbuffered	4GB	512Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7VU127258HBD
240-pin DIMM	Unbuffered	4GB	512Mbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VU127258GBF
240-pin DIMM	Unbuffered	4GB	512Mbx72	1333	ECC	x8	2	VLP	0°C to+85°C	VR7VU127258GBD
240-pin DIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7VU567258GBF
240-pin DIMM	Unbuffered	2GB	256Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7VU567258GBD
240-pin DIMM	Unbuffered	2GB	256Mbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VU567258FBF
240-pin DIMM	Unbuffered	2GB	256Mbx72	1333	ECC	x8	2	VLP	0°C to+85°C	VR7VU567258FBD
240-pin DIMM	Registered	16GB	2Gbx72	1600	ECC	x4	2	LP	0°C to+85°C	VR7EA2G7254HBF
240-pin DIMM	Registered	16GB	2Gbx72	1333	ECC	x4	2	LP	0°C to+85°C	VR7EA2G7254HBD
240-pin DIMM	Registered	16GB	2Gbx72	1866	ECC	x4	2	LP	0°C to+85°C	VR7EA2G7254HBG
240-pin DIMM	Registered	16GB	2Gbx72	1600	ECC	x4	2	LP	0°C to+85°C	VR7EA2G7294HBF
240-pin DIMM	Registered	8GB	1Gbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7EA1G7258HBF
240-pin DIMM	Registered	8GB	1Gbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7EA1G7258HBD
240-pin DIMM	Registered	8GB	1Gbx72	1600	ECC	x4	2	LP	0°C to+85°C	VR7EA1G7254GBF
240-pin DIMM	Registered	8GB	1Gbx72	1333	ECC	x4	2	LP	0°C to+85°C	VR7EA1G7254GBD
240-pin DIMM	Registered	4GB	512Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7EA127258HBF
240-pin DIMM	Registered	4GB	512Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7EA127258HBD
240-pin DIMM	Registered	4GB	512Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7EA127258GBF
240-pin DIMM	Registered	4GB	512Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7EA127258GBD
240-pin DIMM	Registered	4GB	512Mbx72	1600	ECC	x4	1	LP	0°C to+85°C	VR7EA127254GBF
240-pin DIMM	Registered	4GB	512Mbx72	1333	ECC	x4	1	LP	0°C to+85°C	VR7EA127254GBD
240-pin DIMM	Registered	4GB	512Mbx72	1600	ECC	x4	2	LP	0°C to+85°C	VR7EA127254FBF
240-pin DIMM	Registered	4GB	512Mbx72	1333	ECC	x4	2	LP	0°C to+85°C	VR7EA127254FBD
240-pin DIMM	Registered	2GB	256Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7EA567258GBF
240-pin DIMM	Registered	2GB	256Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7EA567258GBD
240-pin DIMM	Registered	2GB	256Mbx72	1600	ECC	x4	1	LP	0°C to+85°C	VR7EA567254FBF
240-pin DIMM	Registered	2GB	256Mbx72	1333	ECC	x4	1	LP	0°C to+85°C	VR7EA567254FBD
240-pin DIMM	Registered	2GB	256Mbx72	1600	ECC	x8	2	LP	0°C to+85°C	VR7EA567258FBF
240-pin DIMM	Registered	2GB	256Mbx72	1333	ECC	x8	2	LP	0°C to+85°C	VR7EA567258FBD
240-pin DIMM	Registered	1GB	128Mbx72	1600	ECC	x8	1	LP	0°C to+85°C	VR7EA287258FBF
240-pin DIMM	Registered	1GB	128Mbx72	1333	ECC	x8	1	LP	0°C to+85°C	VR7EA287258FBD
240-pin DIMM	Registered (Addr Parity)	32GB	4Gbx72	1600	ECC	x8	4	LP	0°C to+85°C	VR7EA4G7258JHF

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FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
240-pin DIMM	Registered	16GB	2Gbx72	1600	ECC	x4	2	MLP	0°C to+85°C	VR7QA2G7254HBF
240-pin DIMM	Registered	16GB	2Gbx72	1333	ECC	x4	2	MLP	0°C to+85°C	VR7QA2G7254HBF
240-pin DIMM	Registered	8GB	1Gbx72	1600	ECC	x4	2	MLP	0°C to+85°C	VR7QA1G7254GBF
240-pin DIMM	Registered	8GB	1Gbx72	1333	ECC	x4	2	MLP	0°C to+85°C	VR7QA1G7254GBF
240-pin DIMM	Registered	4GB	512Mbx72	1600	ECC	x4	2	MLP	0°C to+85°C	VR7QA127254FBF
240-pin DIMM	Registered	4GB	512Mbx72	1333	ECC	x4	2	MLP	0°C to+85°C	VR7QA127254FBD
240-pin DIMM	Registered	16GB	2Gbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VA2G7258JBF
184/240/288-pin VLP DIMM	Registered	16GB	2Gx72	1600	ECC	x4	2	VLP	0°C to+85°C	VR7VA2G7294HHF
240-pin DIMM	Registered	16GB	2Gbx72	1333	ECC	x8	2	VLP	0°C to+85°C	VR7VA2G7258JBD
240-pin DIMM	Registered	8GB	1Gbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VA1G7258HBF
240-pin DIMM	Registered	8GB	1Gbx72	1333	ECC	x8	2	VLP	0°C to+85°C	VR7VA1G7258HBD
240-pin DIMM	Registered	8GB	1Gbx72	1600	ECC	x4	1	VLP	0°C to+85°C	VR7VA1G7254HBF
240-pin DIMM	Registered	8GB	1Gbx72	1333	ECC	x4	1	VLP	0°C to+85°C	VR7VA1G7254HBD
240-pin DIMM	Registered	4GB	512Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7VA127258HBF
240-pin DIMM	Registered	4GB	512Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7VA127258HBD
240-pin DIMM	Registered	4GB	512Mbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VA127258GBF
240-pin DIMM	Registered	4GB	512Mbx72	1333	ECC	x8	2	VLP	0°C to+85°C	VR7VA127258GBD
240-pin DIMM	Registered	2GB	256Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7VA567258GBF
240-pin DIMM	Registered	2GB	256Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7VA567258GBD
240-pin DIMM	Registered	2GB	256Mbx72	1600	ECC	x4	1	VLP	0°C to+85°C	VR7VA567254FBF
240-pin DIMM	Registered	2GB	256Mbx72	1333	ECC	x4	1	VLP	0°C to+85°C	VR7VA567254FBD
240-pin DIMM	Registered	2GB	256Mbx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VA567258FBF
240-pin DIMM	Registered	2GB	256Mbx72	1333	ECC	x8	2	VLP	0°C to+85°C	VR7VA567258FBD
240-pin DIMM	Registered	1GB	128Mbx72	1600	ECC	x8	1	VLP	0°C to+85°C	VR7VA287258FBF
240-pin VLP DIMM	Registered	16GB	2Gx72	1600	ECC	x8	2	VLP	0°C to+85°C	VR7VA2G7298JBF
240-pin DIMM	Registered	1GB	128Mbx72	1333	ECC	x8	1	VLP	0°C to+85°C	VR7VA287258FBD
240-pin VLP DIMM	Registered	4GB	512Mx72	1600	ECC	x4	1	VLP	0°C to+85°C	VR7VA127294GBF
240-pin VLP DIMM	Registered	8GB	1Gx72	1600	ECC	x4	1	VLP	0°C to+85°C	VR7VA1G7294HBF
244-pin ULP MiniDIMM	Unbuffered	8GB	1Gx72	1600	ECC	x8	2	ULP	0°C to+85°C	VR7ZU1G7258HEF
244-pin ULP MiniDIMM	Unbuffered	8GB	1Gx72	1600	ECC	x8	2	ULP	0°C to+85°C	VR7ZU1G7298HHF
244-pin ULP Mini-DIMM	Address Parity (Reg)	8GB	1Gx72	1600	ECC	x8	2	ULP	0°C to+85°C	VR7ZA1G7298HBF
244-pin ULP MiniDIMM	Unbuffered	4GB	512Mx72	1600	ECC	x8	1	ULP	0°C to+85°C	VR7ZU127258HBF
204-pin SODIMM	Address Parity (Reg)	4GB	512Mx72	1333	ECC	x8	2	LP	-40°C to+85°C	VR7PA127258GB-DMKT
204-pin SODIMM	Address Parity (Reg)	4GB	512Mx72	1333	ECC	x8	2	LP	-40°C to+85°C	VR7PA127258GBDS2T
204-pin SODIMM	204-pin SODIMM	4GB	512Mx72	1333	ECC	x8	2	LP	-40°C to+85°C	VR7PA127258GBDF1T
204-pin SODIMM	Address Parity (Reg)	4GB	512Mx72	1866	ECC	x8	1	LP	-40°C to+85°C	VR7PA127298HBG-xx
204-pin SODIMM	Address Parity (Reg)	8GB	1Gx72	1600	ECC	x8	2	LP	-40°C to+85°C	VR7PA1G7258HB-FMPT
204-pin SODIMM	Address Parity (Reg)	8GB	1Gx72	1600	ECC	x8	2	LP	-40°C to+85°C	VR7PA1G7298HBF-xx
204-pin SODIMM	Address Parity (Reg)	8GB	1Gx72	1866	ECC	x8	2	LP	-40°C to+85°C	VR7PA1G7298HBG-xxx
204-pin SODIMM	Address Parity (Reg)	16GB	2Gx72	1600	ECC	x8	2	LP	-40°C to+85°C	VR7PA2G7298JBF-xx
204-pin SODIMM	Address Parity (Reg)	4GB	512Mx72	1333	ECC	x8	1	LP	-40°C to+85°C	VR7PU127298HB-DMET
204-pin SODIMM	Unbuffered	2GB	256Mx64	1066	None	x8	1	LP	-40°C to+85°C	VR7PU566458G-BAMKT

DDR3 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
204-pin SODIMM	Unbuffered	2GB	256Mx64	1600	None	x8	1	LP	-40°C to+85°C	VR7PU566498GB-FMKT
204-pin SODIMM	Unbuffered	4GB	512Mx64	1066	None	x8	1	LP	-40°C to+85°C	VR7PU126458G-BAMKT
204-pin SODIMM	Unbuffered	4GB	512Mx64	1600	None	x8	2	LP	-40°C to+85°C	VR7PU126498GB-FMKT
204-pin SODIMM	Unbuffered	4GB	512Mx64	1600	None	x8	1	LP	-40°C to+85°C	VR7PU126498HB-FMET
204-pin SODIMM	Unbuffered	4GB	512Mx64	1600	None	x8	1	LP	-40°C to+85°C	VR7PU126498HB-FMPT
204-pin SODIMM	Unbuffered	4GB	512Mx64	1333	None	x8	1	LP	-40°C to+85°C	VR7PU126458HB-DMET
204-pin SODIMM	Unbuffered	4GB	512Mx64	1333	None	x8	1	LP	-40°C to+85°C	VR7PU126458HB-DMPT
204-pin SODIMM	Unbuffered	4GB	512Mx64	1066	None	x8	1	LP	-40°C to+85°C	VR7PU126458HB-AMPT
204-pin SODIMM	Unbuffered	1GB	128Mx64	1066	None	x8	1	LP	-40°C to+85°C	VR7PU286458FBAMJT
204-pin SODIMM	Unbuffered	8GB	1Gx64	1600	None	x8	2	LP	-40°C to+85°C	VR7PU1G6498HB-FMPT
204-pin SODIMM	Unbuffered	8GB	1Gx72	1600	ECC	x8	1	LP	-40°C to+85°C	VR7PU1G7298HB-FMPT
204-pin SODIMM	Unbuffered	16GB	2Gx64	1600	None	x8	2	LP	-40°C to+85°C	VR7PU2G6498JB-FMAT
240-pin DIMM	Unbuffered	4GB	512Mx64	1600	None	x8	1	LP	-40°C to+85°C	VR7EU126458HB-FMPT
244-pin VLP MiniDIMM	Unbuffered	4GB	512Mx72	1333	ECC	x8	1	VLP	-40°C to+85°C	VR7WU127298HB-DMET
244-pin VLP MiniDIMM	Unbuffered	2GB	256Mx72	1333	ECC	x8	1	VLP	-40°C to+85°C	VR7WU567258GB-DMKT
244/288-pin MINIDIMM custom height	Registered	16GB	2Gx72	1333	ECC	x8	2	VLP	-40°C to+85°C	VR7RA2G7298JH-DMAT
244/288-pin MINIDIMM custom height	Registered	16GB	2Gx72	1333	ECC	x8	2	VLP	-40°C to+85°C	VR7EA1G7258JB-GMAT
244-pin ULP Mini-DIMM	Address Parity (Reg)	8GB	1Gx72	1600	ECC	x8	2	ULP	-40°C to+85°C	VR7ZA1G7298HBF

DDR2 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
200-pin SODIMM	Unbuffered	4GB	512Mbx64	800/CL5	None	x8	2	LP	0°C to+85°C	VR5DU126418GBY
200-pin SODIMM	Unbuffered	4GB	512Mbx64	800/CL6	None	x8	2	LP	0°C to+85°C	VR5DU126418GBZ
200-pin SODIMM	Unbuffered	4GB	512Mbx64	667	None	x8	2	LP	0°C to+85°C	VR5DU126418GBW
200-pin SODIMM	Unbuffered	4GB	512Mbx64	533	None	x8	2	LP	0°C to+85°C	VR5DU126418GBS
200-pin SODIMM	Unbuffered	2GB	256Mbx64	800/CL5	None	x8	2	LP	0°C to+85°C	VR5DU566418FBY
200-pin SODIMM	Unbuffered	2GB	256Mbx64	800/CL6	None	x8	2	LP	0°C to+85°C	VR5DU566418FBZ
200-pin SODIMM	Unbuffered	2GB	256Mbx64	667	None	x8	2	LP	0°C to+85°C	VR5DU566418FBW
200-pin SODIMM	Unbuffered	2GB	256Mbx64	533	None	x8	2	LP	0°C to+85°C	VR5DU566418FBS
200-pin SODIMM	Unbuffered	1GB	128Mbx64	800/CL5	None	x8	1	LP	0°C to+85°C	VR5DU286418FBY
200-pin SODIMM	Unbuffered	1GB	128Mbx64	800/CL6	None	x8	1	LP	0°C to+85°C	VR5DU286418FBZ
200-pin SODIMM	Unbuffered	1GB	128Mbx64	667	None	x8	1	LP	0°C to+85°C	VR5DU286418FBW
200-pin SODIMM	Unbuffered	1GB	128Mbx64	533	None	x8	1	LP	0°C to+85°C	VR5DU286418FBS
200-pin SODIMM	Unbuffered	1GB	128Mbx64	800/CL5	None	x8	2	LP	0°C to+85°C	VR5DU286418EBY
200-pin SODIMM	Unbuffered	1GB	128Mbx64	800/CL6	None	x8	2	LP	0°C to+85°C	VR5DU286418EBZ
200-pin SODIMM	Unbuffered	1GB	128Mbx64	667	None	x8	2	LP	0°C to+85°C	VR5DU286418EBW
200-pin SODIMM	Unbuffered	1GB	128Mbx64	533	None	x8	2	LP	0°C to+85°C	VR5DU286418EBS

DDR2 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
200-pin SODIMM	Unbuffered	1GB	128Mbx64	800/CL5	None	x16	2	LP	0°C to+85°C	VR5DU286416FBY
200-pin SODIMM	Unbuffered	1GB	128Mbx64	800/CL6	None	x16	2	LP	0°C to+85°C	VR5DU286416FBZ
200-pin SODIMM	Unbuffered	1GB	128Mbx64	667	None	x16	2	LP	0°C to+85°C	VR5DU286416FBW
200-pin SODIMM	Unbuffered	1GB	128Mbx64	533	None	x16	2	LP	0°C to+85°C	VR5DU286416FBS
200-pin SODIMM	Unbuffered	512MB	64Mbx64	800/CL5	None	x8	1	LP	0°C to+85°C	VR5DU646418EBY
200-pin SODIMM	Unbuffered	512MB	64Mbx64	800/CL6	None	x8	1	LP	0°C to+85°C	VR5DU646418EBZ
200-pin SODIMM	Unbuffered	512MB	64Mbx64	667	None	x8	1	LP	0°C to+85°C	VR5DU646418EBW
200-pin SODIMM	Unbuffered	512MB	64Mbx64	533	None	x8	1	LP	0°C to+85°C	VR5DU646418EBS
200-pin SODIMM	Unbuffered	512MB	64Mbx64	800/CL5	None	x16	1	LP	0°C to+85°C	VR5DU646416FBY
200-pin SODIMM	Unbuffered	512MB	64Mbx64	800/CL6	None	x16	1	LP	0°C to+85°C	VR5DU646416FBZ
200-pin SODIMM	Unbuffered	512MB	64Mbx64	667	None	x16	1	LP	0°C to+85°C	VR5DU646416FBW
200-pin SODIMM	Unbuffered	512MB	64Mbx64	533	None	x16	1	LP	0°C to+85°C	VR5DU646416FBS
200-pin SODIMM	Unbuffered	512MB	32Mbx64	800/CL6	None	x16	1	LP	0°C to+85°C	VR5DU326416EBZ
200-pin SODIMM	Unbuffered	512MB	64Mbx64	800/CL6	None	x16	1	LP	0°C to+85°C	VR5DU646416EBZ
200-pin SODIMM	PLL/Clock	2GB	256Mbx72	800/CL5	ECC	x8	2	LP	0°C to+85°C	VR5DP567218FBY
200-pin SODIMM	PLL/Clock	2GB	256Mbx72	800/CL6	ECC	x8	2	LP	0°C to+85°C	VR5DP567218FBZ
200-pin SODIMM	PLL/Clock	2GB	256Mbx72	667	ECC	x8	2	LP	0°C to+85°C	VR5DP567218FBW
200-pin SODIMM	PLL/Clock	2GB	256Mbx72	533	ECC	x8	2	LP	0°C to+85°C	VR5DP567218FBS
200-pin SODIMM	PLL/Clock	1GB	128Mbx72	800/CL5	ECC	x8	1	LP	0°C to+85°C	VR5DP287218FBY
200-pin SODIMM	PLL/Clock	1GB	128Mbx72	800/CL6	ECC	x8	1	LP	0°C to+85°C	VR5DP287218FBZ
200-pin SODIMM	PLL/Clock	1GB	128Mbx72	667	ECC	x8	1	LP	0°C to+85°C	VR5DP287218FBW
200-pin SODIMM	PLL/Clock	1GB	128Mbx72	533	ECC	x8	1	LP	0°C to+85°C	VR5DP287218FBS
200-pin SODIMM	PLL/Clock	512MB	64Mbx72	800/CL5	ECC	x8	1	LP	0°C to+85°C	VR5DP647218EBY
200-pin SODIMM	PLL/Clock	512MB	64Mbx72	800/CL6	ECC	x8	1	LP	0°C to+85°C	VR5DP647218EBZ
200-pin SODIMM	PLL/Clock	512MB	64Mbx72	667	ECC	x8	1	LP	0°C to+85°C	VR5DP647218EB
200-pin SODIMM	PLL/Clock	512MB	64Mbx72	533	ECC	x8	1	LP	0°C to+85°C	VR5DP647218EBW
200-pin SODIMM	Registered	4GB	512Mbx72	800/CL5	ECC	x8	2	LP	0°C to+85°C	VR5DR127218GBY
200-pin SODIMM	Registered	4GB	512Mbx72	800/CL6	ECC	x8	2	LP	0°C to+85°C	VR5DR127218GBZ
200-pin SODIMM	Registered	4GB	512Mbx72	667	ECC	x8	2	LP	0°C to+85°C	VR5DR127218GBW
200-pin SODIMM	Registered	4GB	512Mbx72	533	ECC	x8	2	LP	0°C to+85°C	VR5DR127218GBS
200-pin SODIMM	Registered	2GB	256Mbx72	800/CL5	ECC	x8	2	LP	0°C to+85°C	VR5DR567218FBY
200-pin SODIMM	Registered	2GB	256Mbx72	800/CL6	ECC	x8	2	LP	0°C to+85°C	VR5DR567218FBZ
200-pin SODIMM	Registered	2GB	256Mbx72	667	ECC	x8	2	LP	0°C to+85°C	VR5DR567218FBW
200-pin SODIMM	Registered	2GB	256Mbx72	533	ECC	x8	2	LP	0°C to+85°C	VR5DR567218FBS
200-pin SODIMM	Registered	1GB	128Mbx72	800/CL5	ECC	x8	1	LP	0°C to+85°C	VR5DR287218FBY
200-pin SODIMM	Registered	1GB	128Mbx72	800/CL6	ECC	x8	1	LP	0°C to+85°C	VR5DR287218FBZ
200-pin SODIMM	Registered	1GB	128Mbx72	667	ECC	x8	1	LP	0°C to+85°C	VR5DR287218FBW
200-pin SODIMM	Registered	1GB	128Mbx72	533	ECC	x8	1	LP	0°C to+85°C	VR5DR287218FBS
200-pin SODIMM	Registered	512MB	64Mbx72	800/CL5	ECC	x8	1	LP	0°C to+85°C	VR5DR647218EBY
200-pin SODIMM	Registered	512MB	64Mbx72	800/CL6	ECC	x8	1	LP	0°C to+85°C	VR5DR647218EBZ
200-pin SODIMM	Registered	512MB	64Mbx72	667	ECC	x8	1	LP	0°C to+85°C	VR5DR647218EBW
200-pin SODIMM	Registered	512MB	64Mbx72	533	ECC	x8	1	LP	0°C to+85°C	VR5DR647218EBS
244-pin MINIDIMM	Registered	4GB	512Mbx72	800/CL5	ECC	x8	2	LP	0°C to+85°C	VR5JR127218GBY
244-pin MINIDIMM	Registered	4GB	512Mbx72	800/CL6	ECC	x8	2	LP	0°C to+85°C	VR5JR127218GBZ
244-pin MINIDIMM	Registered	4GB	512Mbx72	667	ECC	x8	2	LP	0°C to+85°C	VR5JR127218GBW
244-pin MINIDIMM	Registered	4GB	512Mbx72	533	ECC	x8	2	LP	0°C to+85°C	VR5JR127218GBS
244-pin MINIDIMM	Registered	2GB	256Mbx72	800/CL5	ECC	x8	2	LP	0°C to+85°C	VR5JR567218FBY
244-pin MINIDIMM	Registered	2GB	256Mbx72	800/CL6	ECC	x8	2	LP	0°C to+85°C	VR5JR567218FBZ

DDR2 PART NUMBERS

FORM FACTOR	BUFFERING	DENSITY	ORG.	SPEED	ECC	DRAM I/O	RANK	PROFILE	TEMP	PART NUMBER
244-pin MINIDIMM	Registered	2GB	256Mbx72	667	ECC	x8	2	LP	0°C to+85°C	VR5JR567218FBW
244-pin MINIDIMM	Registered	2GB	256Mbx72	533	ECC	x8	2	LP	0°C to+85°C	VR5JR567218FBS
244-pin MINIDIMM	Registered	1GB	128Mbx72	800/CL5	ECC	x8	1	LP	0°C to+85°C	VR5JR287218FBY
244-pin MINIDIMM	Registered	1GB	128Mbx72	800/CL6	ECC	x8	1	LP	0°C to+85°C	VR5JR287218FBZ
244-pin MINIDIMM	Registered	1GB	128Mbx72	667	ECC	x8	1	LP	0°C to+85°C	VR5JR287218FBW
244-pin MINIDIMM	Registered	1GB	128Mbx72	533	ECC	x8	1	LP	0°C to+85°C	VR5JR287218FBS
244-pin MINIDIMM	Registered	512MB	64Mbx72	800/CL5	ECC	x8	1	LP	0°C to+85°C	VR5JR647218EBY
244-pin MINIDIMM	Registered	512MB	64Mbx72	800/CL6	ECC	x8	1	LP	0°C to+85°C	VR5JR647218EBZ
244-pin MINIDIMM	Registered	512MB	64Mbx72	667	ECC	x8	1	LP	0°C to+85°C	VR5JR647218EBW
244-pin MINIDIMM	Registered	512MB	64Mbx72	533	ECC	x8	1	LP	0°C to+85°C	VR5JR647218EBS
244-pin MINIDIMM	Registered	2GB	256Mbx72	800/CL5	ECC	x8	1	VLP	0°C to+85°C	VR5WR567218GBY
244-pin MINIDIMM	Registered	2GB	256Mbx72	800/CL6	ECC	x8	1	VLP	0°C to+85°C	VR5WR567218GBZ
244-pin MINIDIMM	Registered	2GB	256Mbx72	667	ECC	x8	1	VLP	0°C to+85°C	VR5WR567218GBW
244-pin MINIDIMM	Registered	2GB	256Mbx72	533	ECC	x8	1	VLP	0°C to+85°C	VR5WR567218GBS
244-pin MINIDIMM	Registered	1GB	128Mbx72	800/CL5	ECC	x8	1	VLP	0°C to+85°C	VR5WR287218FBY
244-pin MINIDIMM	Registered	1GB	128Mbx72	800/CL6	ECC	x8	1	VLP	0°C to+85°C	VR5WR287218FBZ
244-pin MINIDIMM	Registered	1GB	128Mbx72	667	ECC	x8	1	VLP	0°C to+85°C	VR5WR287218FBW
244-pin MINIDIMM	Registered	1GB	128Mbx72	533	ECC	x8	1	VLP	0°C to+85°C	VR5WR287218FBS
244-pin MINIDIMM	Registered	512MB	64Mbx72	800/CL5	ECC	x8	1	VLP	0°C to+85°C	VR5WR647218EBY
244-pin MINIDIMM	Registered	512MB	64Mbx72	800/CL6	ECC	x8	1	VLP	0°C to+85°C	VR5WR647218EBZ
244-pin MINIDIMM	Registered	512MB	64Mbx72	667	ECC	x8	1	VLP	0°C to+85°C	VR5WR647218EBW
244-pin MINIDIMM	Registered	512MB	64Mbx72	533	ECC	x8	1	VLP	0°C to+85°C	VR5WR647218EBS
244/288-pin MINIDIMM	Registered	1GB	256Mbx72	667	ECC	x8	1	LP	0°C to+85°C	VR5JR567218FBW
244/288-pin MINIDIMM	Registered	1GB	128Mbx72	533	ECC	x8	1	LP	0°C to+85°C	VR5JR287218FBS
244/288-pin MINIDIMM	Registered	1GB	256Mbx72	800/CL5	ECC	x8	1	VLP	0°C to+85°C	VR5WR567218FHY
244/288-pin MINIDIMM	Registered	1GB	128Mbx72	533	ECC	x8	1	LP	0°C to+85°C	VR5JR287218FBS
244/288-pin MINIDIMM	Registered	2GB	256Mbx72	800/CL5	ECC	x8	1	VLP	0°C to+85°C	VR5WR567218GBY
244/288-pin MINIDIMM	Registered	1GB	128Mbx72	667	ECC	x8	1	VLP	0°C to+85°C	VR5WR287218FBW
184/240/288-pin MINIDIMM	Registered	1GB	256Mbx72	667	ECC	x8	1	VLP	0°C to+85°C	VR5VR567218FBW
244/288-pin MINIDIMM	PLL	1GB	128Mbx72	800/CL5	ECC	x8	1	VLP	0°C to+85°C	VR5WP287218FBYA1
244/288-pin VLP Mini-DIMM	PLL	2GB	256Mbx72	800/CL5	ECC	x8	1	VLP	0°C to+85°C	VR5WP567218GBYN1
240-pin DIMM	Unbuffered	4GB	512Mbx64	800/CL5	None	x8	2	LP	0°C to+85°C	VR5EU126418GBY

Not a complete list of DDR2 Part Numbers

*Viking Technology offers a full portfolio of DRAM modules from DDR4 down to legacy DDR1 memory solutions with support in every form factor, capacity, and configuration in each technology interface.

For all inquiries in DDR2 and DDR1, please contact your sales manager for detailed part number and configuration or email us at **sales@vikingtechnology.com**.

NOTES

For sales information, email us at sales@vikingtechnology.com, or visit our website for all global locations and contact information.

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