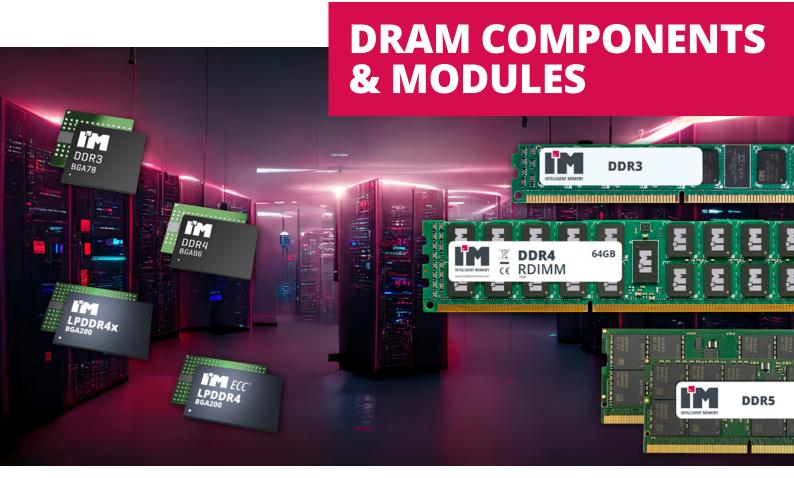UNLIMITED INGENUITY

INTELLIGENT MEMORY

DRAM COMPONENTS & MODULES

IM provides DRAM Components and Modules with varying form factors, rare densities, configurations, features and package types over a number of different DRAM product categories.

IM is proud to have pioneered dual die and quad die, while continuously putting in the time and effort to regularly increase the densities in our product offering. From standard to specialized, our low-volume, high-mix solutions are optimized to offer an assortment of products with high sustained performance, stability, and endurance.

IM provides two lines of DRAM Modules, allowing for more flexibility and customization:

- *IMOriginal* modules which utilize exclusively IM's own quality components
- *IMSelect* modules which can be configured with various third-party components

Both options are produced and tested by IM in-house. All of IM's DRAM modules are highly reliable, with built-in error correction (ECC) features available and long-term support.

DURABILITY   RELIABILITY   LONGEVITY

DRAM COMPONENTS OVERVIEW

DDR4

- Densities: 4Gb, 8Gb, 16Gb, & 32Gb
- x8, x16 organization support, and x4 for high-density solutions
- 1.2V (VDD, VDDQ), and 2.5V VPP
- High data transfer rates: Support up to 3200Mbps

DDR3

- Densities: 1Gb, 2Gb, 4Gb, 8Gb & 16Gb
- x8, x16 organization support, and x4 for 4Gb & 8Gb
- Full product range of 8Gb (x4, x8 & x16) in 1CS or 2CS
- 1.35V and 1.5V Power Supply
- High data transfer rates: Support up to 2133Mbps

DDR2

- Densities: 512Mb, 1Gb & 2Gb
- x8, x16 organization support, and x4 for 2Gb
- 1.8V Power Supply
- High data transfer rates: Support up to 1066Mbps

DDR

- Densities: 256Mb, 512Mb & 1Gb
- x8, x16 organization support
- 2.5V Power Supply
- High data transfer rates: Support up to 400Mbps

SDRAM

- Densities: 64Mb, 128Mb, 256Mb & 512Mb
- x8, x16, x32 organization support
- 3.3V Power Supply
- High data transfer rates: Support up to 200Mbps

LPDDR4(x)

- Densities: 4Gb up to 64Gb
- 1 channel (x16), 1 rank
- 2 channels (x32), 1 rank or 2 ranks
- Low-Power Consumption:

  - LPDDR4
    - 1.8V VDD1
    - 1.1V VDD2
    - 1.1V VDDQ
  - LPDDR4X
    - 1.8V VDD1
    - 1.1V VDD2
    - 0.6V VDDQ

- High data transfer rates: Support up to 4266Mbps
- 200-Ball FBGA
- Integrated ECC available for 4Gb & 8Gb

LPDDR3

- Densities: 8Gb x32 (1 rank) & 16Gb x32 (2 rank) are available
- Low-Power Consumption: 1.8V (VDD1) & 1.2V (VDD2, VDDQ)
- High data transfer rates: Support up to 1866Mbps
- 178-Ball FBGA

LPDDR2

- Densities: 4Gb x32, 2Gb x32 & 1Gb x16 are available
- Low-Power Consumption: 1.8V (VDD1) & 1.2V (VDD2, VDDQ)
- High data transfer rates: Support up to 1066Mbps
- 134-Ball FBGA

DRAM Components*	64Mb	128Mb	256Mb	512Mb	1Gb	2Gb	4Gb	8Gb	16Gb	24Gb	32Gb	64Gb
SDRAM	✔	✔	✔✔	✔✔								
DDR			✔	✔	✔✔							
DDR2				✔	✔✔	✔✔						
DDR3L					✔✔	✔	✔	✔✔	✔			
DDR4							✔	✔	✔✔			
LPDDR2					✔	✔	✔					
LPDDR3								✔	✔			
LPDDR4							✔✔	✔✔	✔		✔	✔
LPDDR4x							✔	✔	✔	✔	✔	✔

Features:
- ✔ Available Now
- ✔ On-chip ECC option available
- ✔ x4 configuration available

*BGA Leaded Balls package option available; AEC-Q parts offered upon request. Please contact IM for details.

DRAM MODULES OVERVIEW

DDR5 *IMS*

- Form Factors: Non-ECC UDIMM, ECC UDIMM, Non-ECC SODIMM, ECC SODIMM & RDIMM
- Higher bandwidth performance (up to PC5-44800)
- PCB Height: Standard and Very Low Profile
- Capacity: 8GB to 64GB
- PCB Height: Standard & VLP
- JEDEC Standard 1.1V

DDR4 *IMO / IMS*

- Form Factors: Non-ECC UDIMM, ECC UDIMM, non-ECC SODIMM, ECC SODIMM, RDIMM, Mini-RDIMM & ECC Mini-UDIMM
- Higher bandwidth performance (up to PC4-25600)
- Capacities: 2GB to 64GB
- PCB Height: Standard, VLP & ULP
- JEDEC Standard 1.2V

DDR3 *IMO / IMS*

- Form Factors: Non-ECC UDIMM, ECC UDIMM, Non-ECC SODIMM, ECC SODIMM, LRDIMM, RDIMM, Mini-RDIMM & ECC Mini-UDIMM
- Higher bandwidth performance (up to PC3-14900)
- Capacities: 1GB to 32GB
- PCB Height: Standard, VLP & ULP
- JEDEC Standard 1.35V & 1.5V

DDR2 *IMO / IMS*

- Form Factors: Non-ECC UDIMM, ECC UDIMM, Non-ECC SODIMM, ECC SODIMM, RDIMM & Mini-RDIMM
- Higher bandwidth performance (up to PC2-6400)
- Capacities: 512MB to 8GB
- PCB Height: Standard, VLP
- JEDEC Standard 1.8V

DDR *IMO / IMS*

- Form Factors: Non-ECC UDIMM, ECC UDIMM, Non-ECC SODIMM, ECC SODIMM & RDIMM
- Higher bandwidth performance (up to PC-3200)
- Capacities: 256MB to 2GB
- PCB Height: Standard & VLP
- JEDEC Standard 2.5V

SDRAM *IMO / IMS*

- Form Factors: Non-ECC UDIMM, ECC UDIMM Non-ECC SODIMM & ECC SODIMM
- Higher bandwidth performance (up to PC-133)
- Capacities: 128MB to 512MB
- PCB Height: Standard
- JEDEC Standard 3.3V

IMO = IMOriginal
IMS = IMSelect

DRAM Modules	LRDIMM	RDIMM	UDIMM	RSODIMM	SODIMM	MINI-RDIMM	MINI-UDIMM
SDRAM (3.3V, max: PC-133)			✔✔ Max: 512MB		✔✔ Max: 512MB		
DDR (2.5V, max: PC-3200)		✔ Max: 1GB	✔✔ Max: 1GB		✔✔ Max: 1GB		
DDR2 (1.8V, max: PC2-6400)		✔ Max: 8GB	✔✔ Max: 4GB		✔✔ Max: 4GB	✔✔ Max: 512MB	
DDR3 (1.5V/1.35V, max: PC3-14900)	✔ Max: 32GB	✔✔✔ Max: 32GB	✔✔✔✔ Max: 16GB	✔ Max: 16GB	✔✔✔✔ Max: 16GB	✔✔ Max: 16GB	✔✔ Max: 16GB
DDR4 (1.2V, max: PC4-25600)	✔ Max: 64GB	✔✔✔ Max: 64GB	✔✔✔✔ Max: 32GB		✔✔✔✔ Max: 32GB	✔✔ Max: 16GB	✔✔ Max: 32GB
DDR5 (1.1V, max: PC5-44800)		✔ Max: 32GB	✔✔✔ Max: 32GB		✔✔ Max: 32GB		
Features:	✔ ECC or Non-ECC are optional						
	✔ VLP / ULP (Very Low Profile / Ultra Low Profile) are available						
	✔ Available now						

SPOTLIGHT PRODUCTS

DRAM Modules:
- High Density **IMOriginal** 64GB & 32GB DDR4
- Industrial Standard **IMSelect** DDR5
- Longevity for 7 years+ and long-term support on legacy technologies DDR3 through SDRAM

DRAM Components:
- High Density 32Gb & 16Gb DDR4
- Comprehensive Range of LPDDR4 & LPDDR4x
- High Density 16Gb & 8Gb DDR3

KEY FEATURES

DRAM Modules:
- **IMOriginal** Modules use IM's own quality components
- **IMSelect** Modules use third-party components
- Long product lifetimes with continued support
- Fixed BOM
- IM designs, manufactures, tests and supports all kinds of technical & after-sales services
- Additional Service Options Available
    - Fully RoHS (without exemption)
    - Conformal Coating
    - Anti-Sulphuration

APPLICATIONS

Aerospace & Defense: Avionics systems, satellite communication systems, and military-grade computing platforms

Automotive Systems: Infotainment systems, advanced driver-assistance systems (ADAS), and in-vehicle networking

Embedded Systems: Industrial IoT devices, smart sensors, and control systems

Industrial Automation: Programmable logic controllers (PLCs), robotics, and machine vision systems

Medical Devices: Patient monitors, diagnostic equipment, and imaging systems

Networking Infrastructure: Routers, switches, and gateways

Portable Electronics: Tablets, laptops, POS

Test & Measurement Instruments: Oscilloscopes, spectrum analyzers, and data loggers

For more information or to request samples, please visit us at **www.intelligentmemory.com**

You may also contact our sales team directly at **sales@intelligentmemory.com**

October 2024