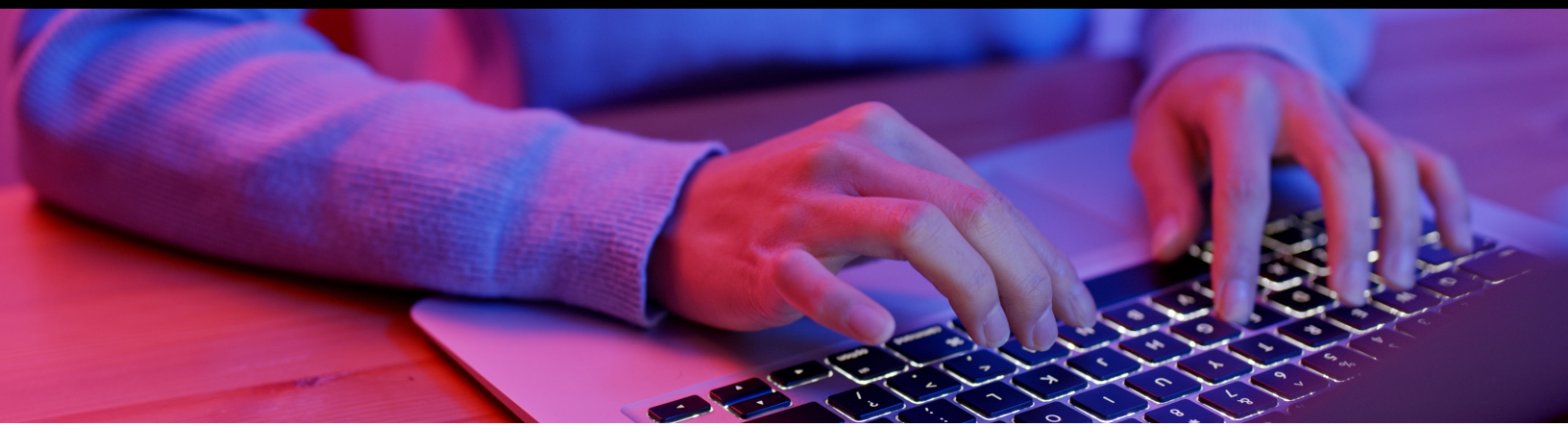

Industry-leading LPDRAM portfolio

Consumers want more features and functionality from their ultrathin computing devices, mobile phones and automotive infotainment systems — and you're expected to design it in with less power, less time and less space. Micron's broad portfolio of low-power DRAM (LPDRAM) devices — featuring our industry-leading LPDDR4 and cutting-edge LPDDR5 — can help you achieve the best balance of features for your design. You'll get the right mix of low-power, high-performance devices, all backed by world-class technical support that features simulation models, in-house qualifications and lab analysis.

Ideal applications

- **Mobile** – Handsets, tablets
- **Consumer** – DTV, digital cameras, wearables, PMP/MP3 players, portable games, personal navigation devices
- **Networking** – Machine-to-machine (M2M) devices, USB dongles
- **Security** – Fingerprint detectors, digital surveillance
- **Automotive** – Infotainment, ADAS, communications, clusters
- **Industrial/medical** – Patient monitors, defibrillators, portable ultrasound machines
- **Client** – Notebooks, ultrathins, convertibles, detachables
- **Graphics** – Portable games

See our entire line of LPDRAM devices and get specific part detail information at **micron.com/lpdram**.

Micron LPDRAM advantages

Low power
Extend battery life with ultra-low power supply voltages and standby currents.

High performance
Deliver up to 4266 GT/s data transfer rates with LPDDR4 and up to 6400 GT/s with our latest LPDDR5.

Temperature ranges
Maintain high performance in extreme environments with extended temperatures.

Product portfolio breadth
Enhance design flexibility and provide a migration path with a wide range of densities and packages.

Testing and reliability
Provide greater reliability with parts that undergo stringent quality and reliability testing — including automotive product lines that meet ISO9001 and TS16949 requirements and feature the industry's first ASIL D-certified DRAM.

Regional technical support
Receive expert assistance from our design engineers and local FAEs.

Features		Benefits
Densities	512Mb (LPSDR) 512Mb to 2Gb (LPDDR) 512Mb to 2Gb (LPDDR2) 8Gb to 32Gb (LPDDR3) 4Gb to 128Gb (LPDDR4) 16Gb to 128Gb (LPDDR5)	Provides flexibility for a variety of application designs
Configurations	x16, x32 (LPSDR, LPDDR) x16, x32, x64 (LPDDR4) x32, x64 (LPDDR3) x32, (2 channels, x16) (LPDDR2) x64 (4 channels, x16) (LPDDR4, LPDDR5)	Enables the use of fewer components to support wide bus architectures
Core voltages	1.8V (LPSDR, LPDDR) 1.2V (LPDDR2, LPDDR3) 0.6V, 1.1V (LPDDR4) 0.5V, 1.05V (LPDDR5)	Helps reduce power consumption—a key advantage over standard DRAM
Clock frequencies	Up to 166 MHz (LPSDR) Up to 208 MHz (LPDDR) Up to 533 MHz (LPDDR2) Up to 933 MHz (LPDDR3) Up to 2133 MHz (LPDDR4) Up to 3200 MHz (LPDDR5) Up to 4250 MHz (LPDDR5X)	Provides high performance, high bandwidth, and low power consumption
Power consumption	Refer to specific data sheet	Delivers low power consumption in standby and active modes, plus special mobile features to reduce power for a more efficient design
Specials features	Temperature-compensated self refresh (TCSR)	Adjusts refresh timing to minimize power consumption at lower ambient temperatures
	Partial-array self refresh (PASR)	Reduces power by refreshing only critical data
	Deep power-down (DPD)[1]	Provides an ultra-low power state when data retention is not required
	Programmable drive strength (DS)	Enables adjustment for operation in point-to-point and point-to-2-point applications
	Programmable V_{OH} signal level (LPDDR4 only)	Enables adjustment for operation in point-to-point and point-to-2-point applications
Temperature ranges	–30°C to +85°C (WT LPDDR2/3/4/5) –30°C to +105°C (XT LPDDR3/4) –40°C to +85°C (IT) –40°C to +95°C (IT LPDDR4, LPDDR5) –40°C to +105°C (AT LPSDR, LPDDR, LPDDR2/4/5) –40°C to +125°C (Ultra[2] LPDDR2/4/5)	Enables high performance in extreme environments
Packages	PoP	Saves board space by enabling a mobile LPDRAM to be stacked on top of a processor so that the two components require only one footprint on the board
	Wafer	Supports bare die with edge bond pads for easy stacking in SIP and MCP solutions
	FBGA	Supports JEDEC-standard FBGA ballout
	Near memory package	High density, smaller footprint; excellent board-level reliability; wide IO for high bandwidth; improved signal integrity with shorter distance between processor and memory

1. LPDDR4 does not support DPD.
2. Only available for select automotive products.

micron.com

Products are warranted only to meet Micron's production data sheet specifications. Products, programs and specifications are subject to change without notice.