Big Performance,
Small Footprint
Multichip Packages

Micron® MCPs for Embedded IoT Applications

Embedded Internet of Things (IoT) applications are expanding into numerous markets across the globe including industrial, energy, retail, transportation, home automation, healthcare, automotive and security.

These applications are supporting real-time analytics that drive distributed computing and increased data storage at the end node. This increases the need for high-performance memory solutions in smaller and smaller packages across a wide range of wireless and close-range networks.

The cellular network transition away from 2G/GSM is also driving memory density requirements up by 4X, making high-density memory even more essential. Multichip packages (MCPs) answer this requirements shift by stacking multiple memory technologies in a single package. You get the smallest footprint possible in a broad range of densities — without giving up on performance.

Why MCPs?

Along with selecting the right technologies, density combination, and packages, designers must consider several other critical factors to effectively optimize memory in their application, including performance, power, cost, size, scalability, voltage, reliability and product lifecycle. As a result, designers are increasingly turning to MCP solutions.

Micron MCP Offerings

Product	Components
NAND MCP	SLC NAND + LPDDRx
eMCP	e.MMC + LPDDRx
ePoP	eMCP in a package-on-package (PoP) configuration

Advantages of Micron MCPs

Space Saving
Free up space on your printed circuit board (PCB) versus using multiple discrete packages, leaving room for further application enhancements.

High Quality and Performance
With Micron-fabricated silicon components, you get top-notch quality and performance backed by our rigourous testing techniques.

High Durability
Withstand extreme temperatures with IT and AAT temperature options.

One-Stop Shop
Select from a broad portfolio of reliable, high-density MCP solutions to meet your embedded IoT application needs.

Long-Term Support
Meet the needs of your long-lifecycle products with Micron's 5-year+ product longevity commitments on select MCP products.

Systems Expertise
Rely on Micron's systems expertise to optimize your application and bring it to market faster.

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Key Features for Embedded IoT Designs

Micron MCP key features can help enhance your next embedded IoT innovation:

- **Broad Portfolio:** Get NAND and e.MMC based MCP solutions in a broad of densities and JEDEC-compliant packages (FBGA, TFBGA, VFBGA, PoP) to meet all your design needs.

- **Small Package Sizes:** Save more than 50% space on the PCB versus using more than one discrete memory package thanks to stacked components, shared pins and reduced ball pitch, reducing your memory footprint.

- **Tight Coupling of Memory Components:** Enhance overall system performance with shortened interconnection of tightly coupled components.

- **Product Longevity:** Get 5-year+ availability on select MCP products to meet product demand both now and in the future.

- **Reduced Bill of Materials:** Save costs thanks to reduced bonding wire, assembly and packaging costs.

- **Low Voltage:** Build with 1.8V MCPs, ideal for low-power applications.

- **Industrial and Automotive Temperatures:** Design for extreme-temperature operating conditions with IT (–40°C to 85°C) and AAT (–40°C to 105°C) options.

- **High P/E Cycles:** Provide reliability for high PROGRAM/ERASE (P/E) cycle field use conditions with 100,000 P/E cycles.

Why Micron for MCPs?

With Micron, you benefit from the expertise of a total memory solution provider. We have decades of experience designing NAND, e.MMC and LPDRAM technologies. We offer a broad product portfolio of industrial- and automotive-grade MCP memory solutions that meet your application needs across all wireless network generations. As the supplier of all memory within our MCPs, Micron is able to provide quality product development support so you can spend less time and fewer resources to interface multiple memory devices with different timing parameters.

Micron MCP Packages (mm) (package photos are actual size)	121-Ball 8 x 7.5	130-Ball 8 x 9	149-Ball 8 x 9.5	137-Ball 10.5 x 13	162-Ball 8 x 10.5	162-Ball 11.5 x 13	168-Ball 12 x 12 (PoP)	221-Ball 11.5 x 13
e.MMC + LPDDR3								
8GB e.MMC + 8Gb LPDDR3								✔
e.MMC + LPDDR2								
4GB e.MMC + 4Gb LPDDR2							✔	
NAND + LPDDR4								
4Gb NAND + 4Gb LPDDR4x			✔					
4Gb NAND + 2Gb LPDDR4x			✔					
NAND + LPDDR3								
4Gb NAND + 8Gb LPDDR3								✔
NAND + LPDDR2								
4Gb NAND + 4Gb LPDDR2					✔			
4Gb NAND + 2Gb LPDDR2					✔			
2Gb NAND + 2Gb LPDDR2					✔			
2Gb NAND + 1Gb LPDDR2					✔			
1Gb NAND + 1Gb LPDDR2	✔							
1Gb NAND + 512Mb LPDDR2	✔							
NAND + LPDDR								
4Gb NAND + 2Gb LPDDR		✔		✔			✔	
2Gb NAND + 1Gb LPDDR		✔		✔				
1Gb NAND + 512Mb LPDDR		✔						

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