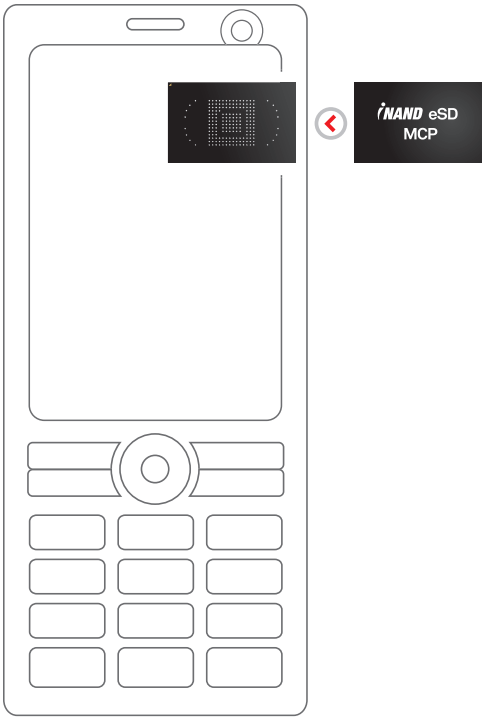
# iNAND™-Based MCP

## Design in More

**High-Capacity iNAND eSD**
**Low-Power DRAM (DDR)**
**Data and Code Storage**



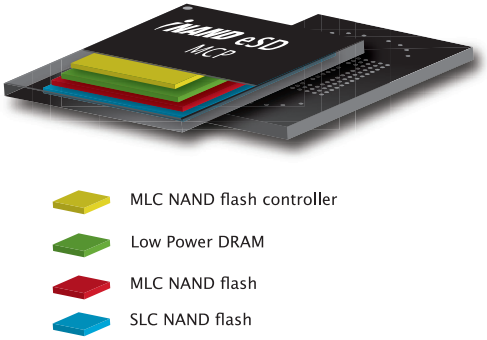

With every new generation of mobile multimedia handsets, more applications are converging into a single device. Feature-rich handsets offer music playback, high-quality video and TV applications, navigation services and gaming. More embedded storage lets users enrich their multimedia lifestyles.

The SanDisk® iNAND™-based multichip package (MCP) offers a range of high-capacity storage, low-power DRAM (SDR/DDR) and single-level cell (SLC) NAND flash combinations. They all share the same architecture and the same package. A single device enables tailored storage, code execution and boot requirements to free up precious real estate, reduce design complexity and give designers the flexibility and scalability to support multiple handset designs.

## Main Features and Benefits

### Catering to Diverse Memory Needs

The SanDisk iNAND-based MCP offers numerous combinations of iNAND eSD high-capacity storage of up to 16GB, high-performance, low-power DRAM up to 2Gb (256MB) and SLC NAND of up to 2Gb, all packaged in a small form factor.




### High-Capacity Data Storage

iNAND eSD uses SanDisk advanced, cost-effective multi-level cell (MLC) NAND flash technology, a designated SD™ controller and embedded flash management firmware. Handset designers enjoy ease of integration, reliability and high-performance perfectly suited for multimedia mobile applications.

### Code Storage and System Boot

iNAND eSD, based on SanDisk MLC NAND flash technology, is a reliable code storage and boot device. Dedicated physical partitions, managed by customizable levels of protection, now allow boot code to be safely stored and accessed via the SD interface. Eliminating the need for an additional boot code storage device and a NAND interface substantially reduces system design complexity and cost.

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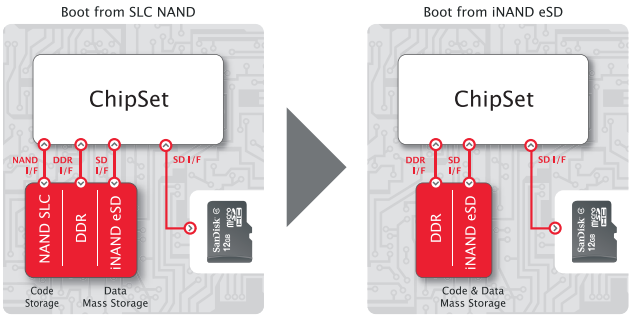
## Low-Power System DRAM

SanDisk iNAND-based MCPs incorporate industry-standard, high-performance, low-power DRAM, designed especially for mobile devices. SanDisk technology ensures MCP design is optimized to meet the strict signal integrity and power routing requirements of high-speed LP-DRAM (SDR/DDR), without compromising package height and cost constraints.

## Optimized for Smooth Migration

SanDisk iNAND-based MCP provides a flexible and scalable solution for various memory configuration requirements. It supports seamless migration to future designs, including boot from iNAND eSD via the SD interface.




Because iNAND-based MCP devices of various configurations, capacities and package sizes share the same architecture and ballout, one platform design can be used for various handset models.

## More Reliable

SanDisk brings a wealth of experience and cutting-edge technology to MCP design. SanDisk employs advanced packaging, stacking, assembly and testing technologies to provide highly reliable and efficient packaging.

### Why iNAND-Based MCP?

- **Advanced flash technology** – Access the latest generation of SanDisk advanced MLC NAND flash technology.
- **Standard interface and form factor** – Make integration a breeze with industry-leading SD interface and standard packaging.
- **Support both current and future designs** – Migrate smoothly to future architectures with scalable capacities and iNAND eSD boot functionality.
- **High performance** – Provide 15MB/s sustained read and 9MB/s sustained write.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### SanDisk iNAND-Based MCP Family of Products

| | iNAND | LP DRAM | SLC NAND |
|---|---|---|---|
| Capacity** | 2Gb-128Gb (256MB-16GB) | 512Mb-2Gb | 2Gb |
| Interface | SD | SDR DDR (x16/x32) | NAND |
| NAND flash technology | SanDisk MLC | LP (Low Power) Mobile DRAM | SLC NAND flash |
| Package (mm) | 11.5x13, 12x16, 12x18 | | |
| Flash management | Embedded firmware | N/A | N/A |
| Performance | Sustained read: 15MB/sec<br>Sustained write: 9MB/sec | 166MHz-200MHz | Random access: 25uS (max)<br>Sequential access: 45uS (min)<br>Page program time: 250uS (typ) |
| Operating voltage | Core: 1.8V/3.3V<br>I/O: 1.8V/3.3V | Core: 1.8V<br>I/O: 1.8V | Core: 1.8V<br>I/O: 1.8V |
| Power-save mode | 60uA-110uA | 25uA (typ) | 10uA (typ) |
| Active current | Default: 100mA<br>High speed: 200mA | 22mA-75mA | 10mA (typ) |

** 1 gigabyte (GB) = 1 billion bytes; 1 megabyte (MB) = 1 million bytes; speed based on internal testing; performance may be lower depending on host device. Some capacity not available for data storage.*
*** Note these are capacity ranges for reference only. Not all iNAND and DRAM capacities are available.*