

# MEMORY & STORAGE SOLUTIONS FOR INDUSTRIAL & EMBEDDED APPLICATIONS



## WHO WE ARE

- Serving global embedded and industrial customers for over 30 years, offering a variety of interfaces, form factors, and capacities
- Your one-stop shop for memory solutions: From standard to special, legacy to mainstream
- Commercial and logistical support, reliability, and quality across the globe
- Complete in-house support: From design, to manufacturing and testing capabilities, through to applications
- A wide variety of unique, complex, and niche memory solutions
- Offering a comprehensive portfolio of DRAM components, DRAM modules, and NAND Flash products
- Long product lifetimes ensure longevity with continued support
- Locked BOMs and product lifecycle management with no surprises
- Customizable configurations and feature-rich products across a range of solutions
- Supply stability and availability through strategic partnerships



For more information or to request samples, please visit us at [www.intelligentmemory.com](http://www.intelligentmemory.com)

You may also contact our sales team directly at [sales@intelligentmemory.com](mailto:sales@intelligentmemory.com)

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# INDUSTRY SEGMENTS



# NAND FLASH PRODUCTS

	eMMC	SD	SATA	PCIe	PATA	USB
<b>Form Factors</b>	100-ball 14x18mm  153-ball 11,5x13mm	SD  microSD	M.2 (2242, 2280) 2.5" mSATA mSATA mini CFast BGA	M.2 (2242, 2280) U.2 CFX BGA	CompactFlash	USB Stick
<b>Product Families</b>	Silver Ruby Emerald	Silver Ruby Emerald	Silver Ruby Emerald	Silver Ruby Emerald	Emerald	Emerald
<b>Temperature Ranges</b>	Extended Commercial: -25°C to +85°C  Industrial: -40°C to +85°C  Auto. Grade 3: -40°C to +85°C  Auto. Grade 2: -40°C to +105°C	Extended Commercial: -25°C to +85°C  Industrial: -40°C to +85°C	Commercial: 0°C to +70°C  Industrial: -40°C to +85°C	Commercial: 0°C to +70°C  Industrial: -40°C to +85°C	Commercial: 0°C to +70°C  Industrial: -40°C to +85°C	Commercial: 0°C to +70°C  Industrial: -40°C to +85°C

# NAND FLASH KEY FEATURES

- Available as removable media, embedded form factors and BGA components
- Equipped with high quality hardware and industrial grade firmware
- Developed and tested for demanding operating environments
- Offered in different grades and customized for specific applications to optimize performance, lifetime and reliability
  - IM's NAND line-up includes 3 family categories (classified by their endurance):
    - Emerald - The "SLC grade"
    - Ruby - The "pseudoSLC grade"
    - Silver - The "MLC/TLC grade"
- All product grades come with a full range of tools and technical support
  - Tools include workload generation, live performance evaluation, life time monitoring, etc.

# DRAM COMPONENTS & MODULES

DRAM Components	64Mb	128Mb	256Mb	512Mb	1Gb	2Gb	4Gb	8Gb	16Gb
<b>SDRAM</b> (3.3V)	✓✓	✓✓	✓✓✓	✓✓✓					
<b>DDR</b> (2.5V)			✓	✓	✓✓				
<b>DDR2</b> (1.8V)				✓	✓✓	✓✓			
<b>DDR3</b> (1.35V/1.5V)					✓✓	✓	✓	✓✓	✓
<b>DDR4</b> (1.2V)							✓	✓	✓
<b>LPDDR4</b> (1.1V)							✓	✓	✓
<b>Features:</b>	<ul style="list-style-type: none"> <li>✓ Commercial &amp; Industrial Temperature Grade, Leaded balls package option available</li> <li>✓ x4 configuration available</li> <li>✓ ECC – On-chip ECC option available (AEC-Q100 also available)</li> <li>✓ x32 configuration and/or BGA package available</li> <li>✓ under consideration</li> </ul>								

DRAM Modules	LRDIMM	RDIMM	UDIMM	RSODIMM	SODIMM	MINI-RDIMM	MINI-UDIMM
<b>FPM/EDO</b> (3.3V/5V, max: 50ns)			✓ Max: 256MB		✓ Max: 128MB		
<b>SDRAM</b> (3.3V, max: PC-166)			✓✓ Max: 512MB		✓✓ Max: 512MB		
<b>DDR</b> (2.5V, max: PC-3200)		✓ Max: 1GB	✓✓ Max: 1GB		✓✓ Max: 1GB		
<b>DDR2</b> (1.8V, max: PC2-6400)		✓ Max: 8GB	✓✓ Max: 4GB		✓✓ Max: 4GB	✓✓ Max: 512MB	
<b>DDR3</b> (1.35V/1.5V, max: PC3-12800)	✓ Max: 32GB	✓✓ Max: 32GB	✓✓✓ Max: 16GB	✓ Max: 16GB	✓✓✓ Max: 16GB	✓✓ Max: 16GB	✓✓ Max: 16GB
<b>DDR4</b> (1.2V, max: PC4-25600)		✓✓ Max: 64GB	✓✓✓ Max: 32GB		✓✓✓ Max: 32GB	✓✓ Max: 16GB	✓✓ Max: 32GB
<b>DDR5</b> (1.1V, max: PC5-44800)		✓ Max: 64GB	✓ Max: 32GB		✓ Max: 32GB		
<b>Features:</b>	<ul style="list-style-type: none"> <li>✓ ECC or Non-ECC optional</li> <li>✓ VLP / ULP (Very Low Profile / Ultra Low Profile) available</li> <li>✓ I-Temp available</li> </ul>						

### SDRAM Highlights

- Components with max. 512Mb, both TSOP and BGA
- 256Mb & 512Mb components with ECC feature, TSOP x8, x16 & x32
- UDIMM and SODIMM modules with up to 512MB

### DDR Highlights

- Components with max. 1Gb, both TSOP and BGA
- 1Gb components with ECC feature, TSOP x8 and x16
- RDIMM, SODIMM and UDIMM modules with up to 1GB

### DDR2 Highlights

- Components with max. 2Gb with Single Chip Select x4, x8 and x16
- 1Gb components with ECC feature, x8 and x16
- High density modules: E.g. 8GB RDIMM and 4GB UDIMM

### DDR3 Highlights

- 16Gb components with Dual Chip Select x16
- 8Gb components with Single or Dual Chip Select, x4, x8 and x16
- 1Gb components with ECC feature, x8 and x16
- UDIMM and SODIMM modules with up to 16GB (optional ECC)

### DDR4 Highlights

- Faster data transfer rates and low voltage operation
- Full configurations offered (8Gb and 4Gb with x8 and x16)
- Highest speed up to 3200Mbps
- Working temps in the range of -40°C to +95°C

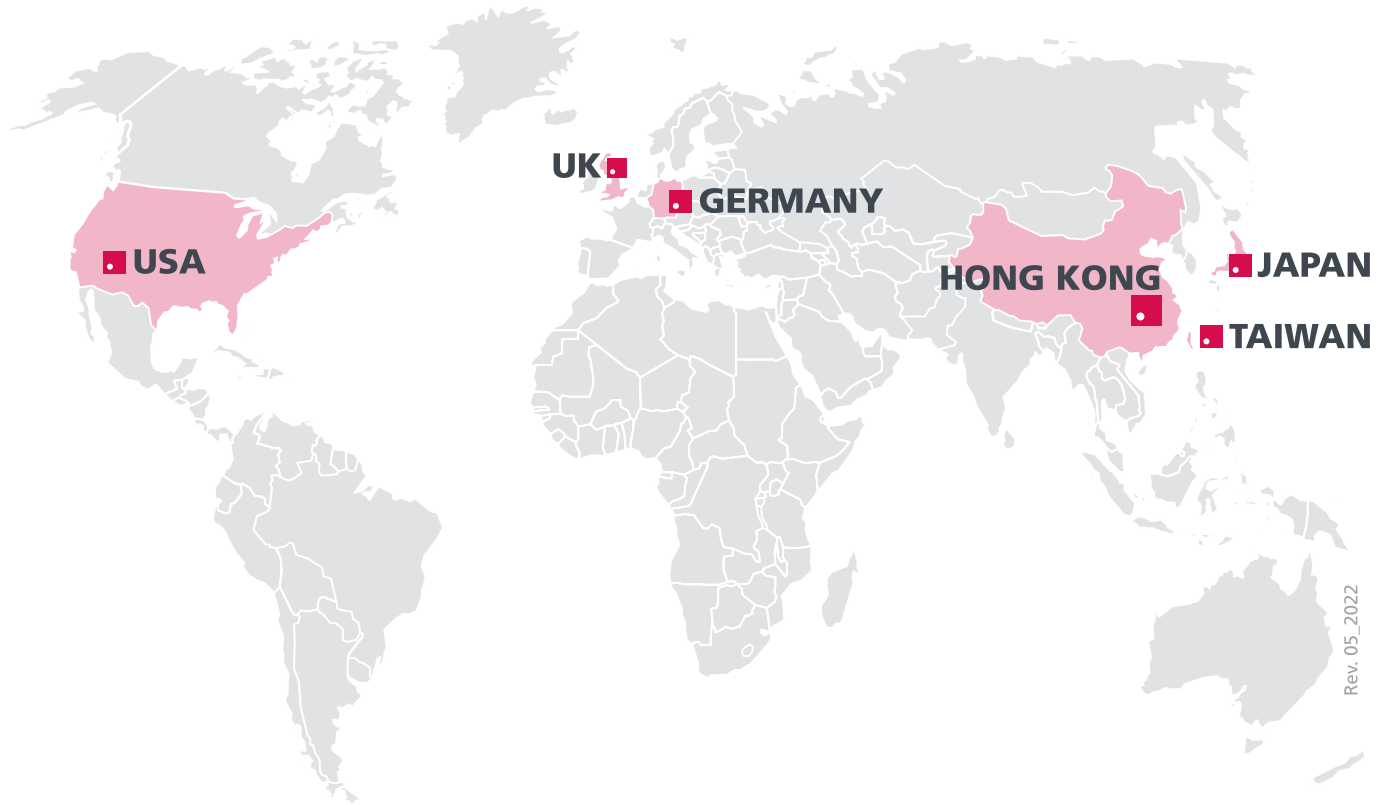
### LPDDR4 Component Highlights

- Low Voltage Power Supply 1.8V and I/O at 1.1V
- Mobile features for lower power
- ZQ Calibration
- Integrated ECC error correction
- 4Gb x32 and 8Gb x32 are available

### DDR5 Module Highlights

- Multiple form factors:
  - UDIMM, SODIMM & RDIMM with ECC
  - UDIMM & SODIMM Non-ECC
- The use of original DRAM components to fulfill industrial standards
- Highest speed up to 5600MT/s (PC5-44800)
- Lower power requirements: Only 1.1V needed
- Capacity: 8GB to 64GB

# LOCATIONS



In addition to headquarters in Hong Kong, IM has branches operating in USA, Germany, UK, Japan, and Taiwan which offer product development and technical support.

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