

# New Ultra-Small WLCSP Package for MachXO2

**Extremely Small Footprint and Over 100X Power Reduction Deliver Huge Benefits for Programmable Logic Designers**



Lattice is now shipping samples of its MachXO2™ PLD family using a 2.5mm x 2.5mm 25-ball Wafer Level Chip Scale package (WLCSP). MachXO2 devices now combine an extremely small footprint — until now unprecedented in the PLD market — with the industry’s lowest power and most feature-rich low-density PLDs. Built on a low power 65nm process featuring embedded Flash technology, the MachXO2 family delivers a 3X increase in logic density, a 10X increase in embedded memory and more than a 100X reduction in static power compared to previous generations. With the industry’s most robust PLD functionality, ultra-low power and new WLCSP packaging, the MachXO2 devices can now address applications previously not accessible to PLDs.

## Small Form Factor Packaging for MachXO2 PLDs

Package	Dimensions	Footprint	User I/O (max)	Package Description
<b>25-ball WLCSP</b>	2.5mm x 2.5mm	6.2mm <sup>2</sup>	19	Die size-defined BGA with 0.4mm solder ball pitch
<b>49-ball WLCSP</b>	3.1mm x 3.0mm	9.4mm <sup>2</sup>	40	Die size-defined BGA with 0.4mm solder ball pitch
<b>64-ball ucBGA</b>	4mm x 4mm	16.0mm <sup>2</sup>	45	Ultra Chip Scale BGA with 0.4mm solder ball pitch
<b>132-ball csBGA</b>	8mm x 8mm	64.0mm <sup>2</sup>	105	Chip Scale BGA with 0.5mm solder ball pitch

## MachXO2 Delivers a Smaller Footprint

The MachXO2 family brings to market some of the smallest package footprints in the industry. With its WLCSP, ucBGA and csBGA package options for MachXO2, Lattice offers superior packaging solutions for markets demanding the smallest possible form factor. As consumer device connectivity and space constraints move in opposite directions, this class of devices opens up new possibilities for designers.

## MachXO2 Single Chip Integration

### ■ Functional Integration

- Hardened I<sup>2</sup>C, SPI, and timer/counter functions save up to 600 LUTs
- Up to 240 Kbits embedded block RAM and 256 Kbits user Flash memory

### ■ Operate Off Single Power Supply

- Integrated voltage regulator for HC devices

### ■ Space-Saving Single Chip

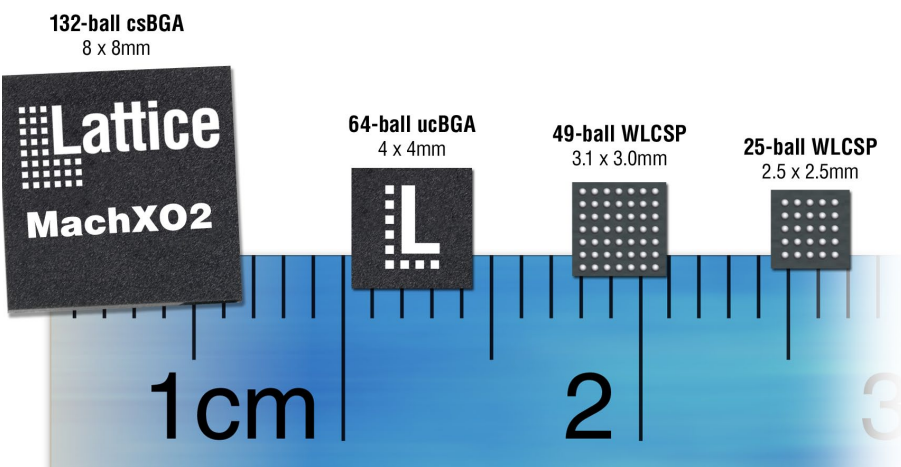
- On-chip Flash memory provides instant-on, high security and single chip solution
- No configuration device required

## Availability

MachXO2 LCMXO2-1200ZE devices in the 25 WLCSP are now available as engineering samples, with production devices scheduled to be available by Q4 2011. All other ultra-low footprint packages mentioned in this news brief will be sampling by the end of 2011.

## Learn More

For more packaging information and details about the low cost, low power MachXO2 PLD family, visit [www.latticesemi.com/machxo2/tiny](http://www.latticesemi.com/machxo2/tiny).



## Quick Links

### MachXO2 FAMILY DATA SHEET

[www.latticesemi.com/documents/DS1035.pdf](http://www.latticesemi.com/documents/DS1035.pdf)

### MachXO2 FAMILY

[www.latticesemi.com/xo2](http://www.latticesemi.com/xo2)

### PACKAGE INFORMATION

[www.latticesemi.com/machxo2/tiny](http://www.latticesemi.com/machxo2/tiny)

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