

iCE40 Ultra™

Deliver Killer Features – Fast

More capable. Smaller footprint.

 **75%**
 **lower power than our previous family**

2.08mm



0.45mm

5x

more hardened IP than the competition

30%

smaller package size than the competition

3x

more LUT density than the competition

2.08mm

Unsurpassed integration of hardened IP in an incredibly small package size.

Reduced chip size and power consumption with integrated IR and RGB current sinks in one device.

The most capable, customizable device for performing common functions related to:



IR remote



Barcodes



Touch



User identification

Flexibility to differentiate. Programmability speeds customization of killer functions like:



User stimulated colors



Breathing effects



Pedometer



You define it!

Upgrade. Innovate. Reduce Cost.

Integrated hard IP & programmable logic enable rapid customization

Three 24mA current sinks for RGB LED drivers

500mA constant current sink for IR / high bright LEDs



Instant on capability with integrated non-volatile memory

Small packages to reduce board area, complexity and cost

Production ready proven solutions for Smart Remote, Barcode, Breathing LED driver, etc.

iCE40 Ultra™ FPGAs for Mobile Devices

Small, capable, efficient. World's most integrated mobile FPGA.

Unsurpassed integration speeds customization, drives down cost

Accelerate innovation, create exciting new customer experiences and minimize BOMs. 4K LUTs and key IP for IR, barcode, touch, user ID, LEDs and pedometer.

Reduce power without compromising performance

Extend battery life in compact, high functionality mobile platforms. iCE40 Ultra consumes even lower power than previous devices.

Ultra small 2.08 mm x 2.08 mm x 0.45 mm WLCSP

Space constraints are no barrier to flexibility, innovation and customization with all of this functionality in the world's smallest FPGAs.



Features	iCE40 Ultra™		
	iCE5LP1K	iCE5LP2K	iCE5LP4K
Density LUTs	1100	2048	3520
EBR RAM (Kbits)	64	80	80
PLL	1	1	1
NVCM	Yes	Yes	Yes
DSP (16x16 Multipliers)	2	4	4
Hard I ² C, SPI	1,1	2,2	2,2
Oscillator (10KHz)	1	1	1
Oscillator (48KHz)	1	1	1
24mA RGB LED Sink	3	3	3
500mA IR LED Sink	1	1	1
PWM	Yes	Yes	No
0.35mm Pitch Packages			
36-ball WLCSP (2.08 x 2.08 x 0.45 mm)	26	26	26
0.40mm Pitch Packages			
36-ball ucfBGA (2.5 x 2.5 x 0.80 mm)	26	26	26
0.50mm Pitch Packages			
48-ball QFN (7.0 x 7.0 x 0.90 mm)	39	39	39

Example Solutions

- **Infrared Remote Control:**
latticesemi.com/InfraredTxRx
- **Pedometer:**
latticesemi.com/Pedometer
- **RGB LED Indicator:**
latticesemi.com/RGB
- **Barcode Emulator:**
latticesemi.com/BarcodeEmulation

Need to know more?

- **Product Information:**
latticesemi.com/iCE40Ultra
- **Packaging Information:**
latticesemi.com/BGA
- **Quality Information:**
latticesemi.com/QualityAndReliability

Applications Support

techsupport@latticesemi.com

