CoolRunner XPLA3™

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Today's Announcement

"New Xilinx CoolRunner CPLDs reach new levels of low power and higher performance"

XCR3000XL CPLD family uses <100 uA of standby current at 5 ns

High Growth Portable Markets

Cellular Phones

- 69% Subscriber Growth
  - 325M in '99
  - 500M in '02
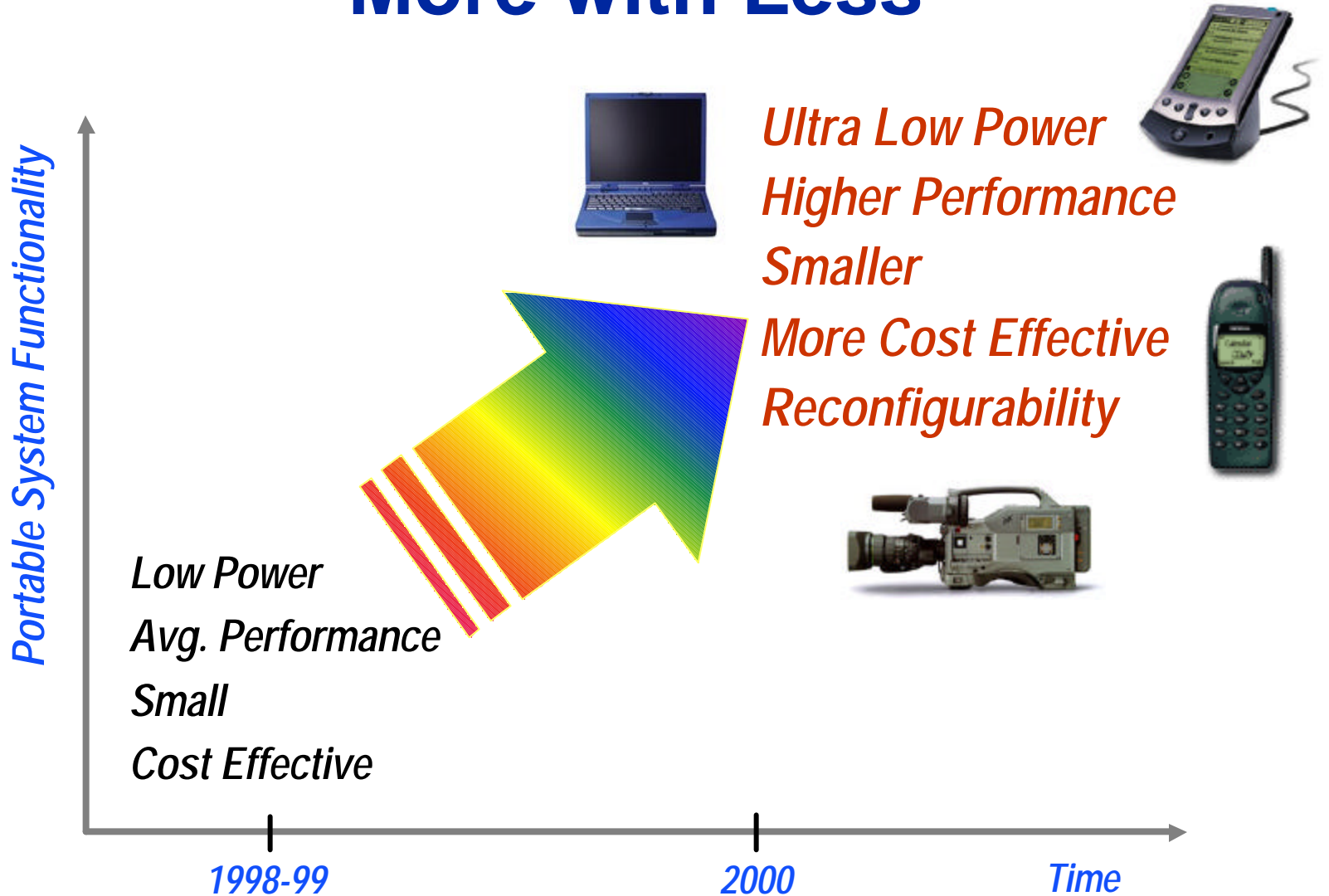 - upgrades

Portable PCs

- CAGR = 14% ('99 to '02)
  - growth from 20Mu to 26Mu

PDAs

- CAGR = 32% ('99 to '02)
  - growing to 14M units/yr in '02

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Portable Applications Demanding "More with Less"

Portable System Functionality (vertical axis)

Ultra Low Power
Higher Performance
Smaller
More Cost Effective
Reconfigurability

Low Power
Avg. Performance
Small
Cost Effective

1998-99   *2000*   Time

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Perfect CPLD for Portable Applications

- ◆ **Fast Zero Power technology provides ultra low power AND high performance**

- ◆ **Enables user-programmable logic for high performance system design**

- ◆ **ISP enables Reconfigurability**
  - — in-system or via internet/satellite ◄ **Key Trend**
  - — faster time-to-market
  - — longer time-in-market

- ◆ **Small 0.8mm & 0.5mm chip scale packaging**

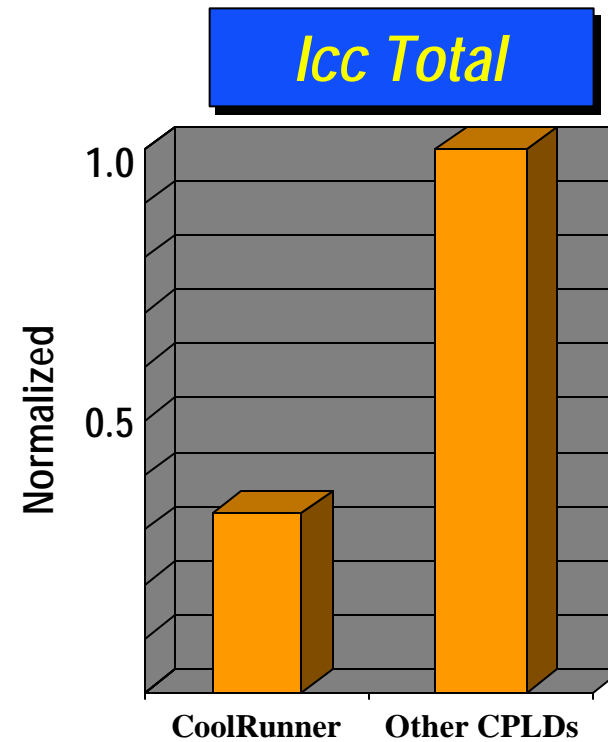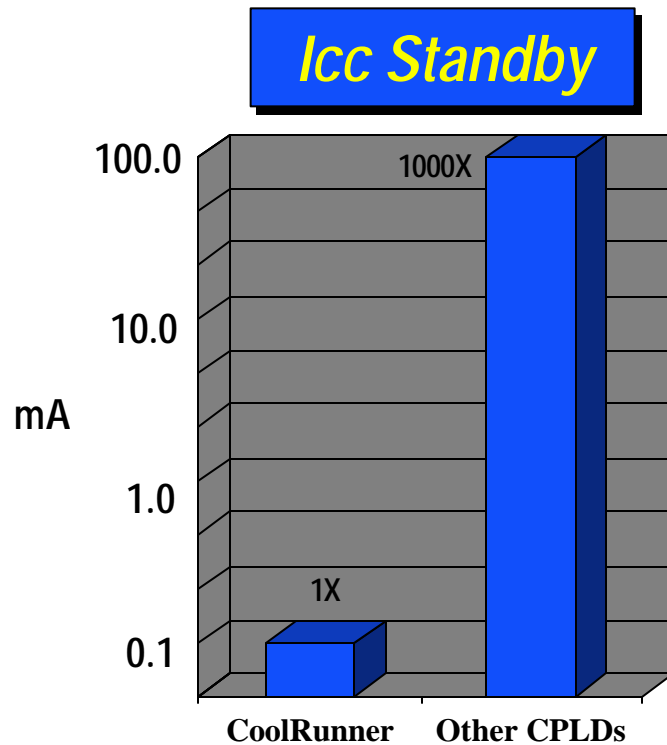- ◆ **Lower cost**
  - — 0.35u advanced technology

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Shatters Constraints of Existing CPLDs

CoolRunner XPLA3

◆ **Lowest Power CPLD in the world!**

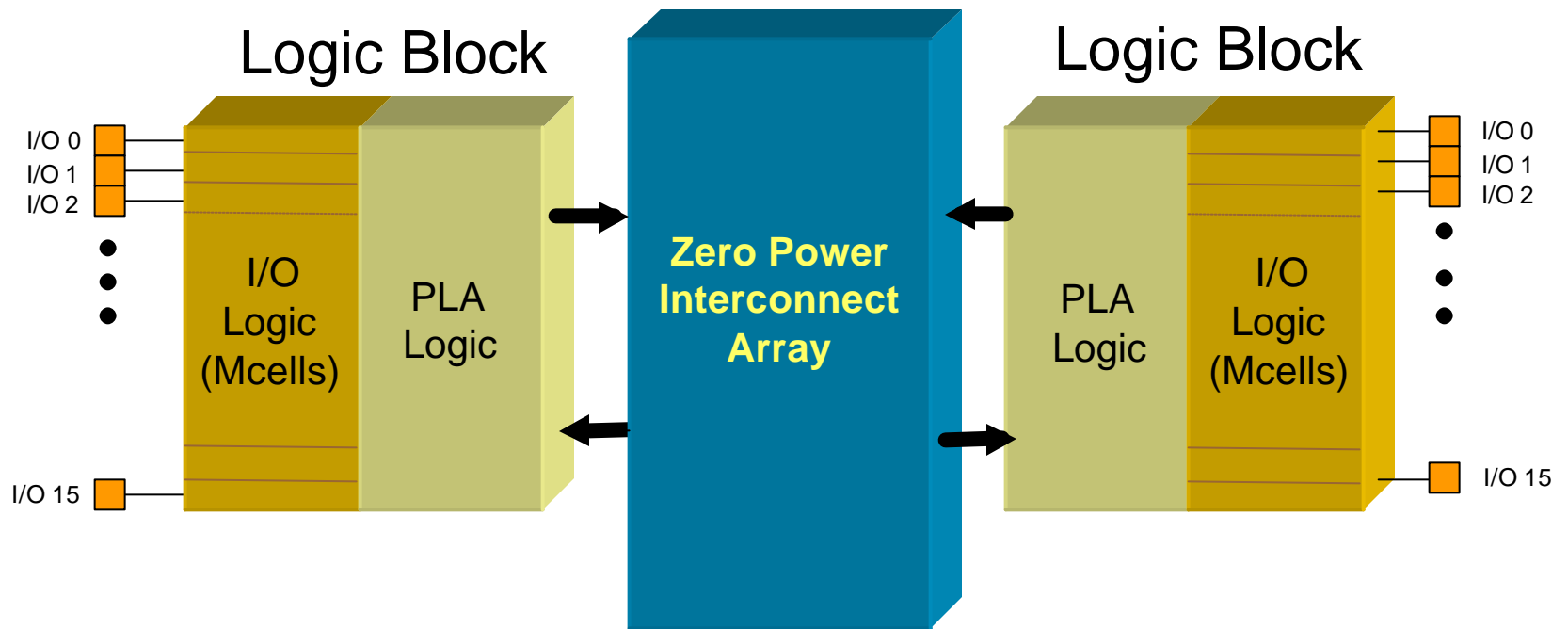— 1000x lower standby power; 2/3 lower total power

Icc Standby

Icc Total

mA

100.0

1000X

10.0

1.0

0.1

1X

CoolRunner   Other CPLDs

Normalized

1.0

0.5

CoolRunner   Other CPLDs

average versus comparable densities

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CoolRunner XPLA3 Family

	XCR3032XL	XCR3064XL	XCR3128XL	XCR3256XL	XCR3384XL
Macrocells	32	64	128	256	384
Usable Gates	750	1,500	3,000	6,000	9,000
t_{PD} (ns)	5	6	6	7.5	7.5
f_{SYS} (MHz)	200	167	167	133	133
Packages (Max. User I/Os)	44VQ (32) 48CS (32)	44VQ (32) 48CS* (32) 56CP (44) 100VQ (64)	100VQ (80) 144CS (104) 144TQ (104)	144TQ (104) 208PQ (160) 280CS (160)	280CS(216)

* planned package

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CoolRunner XPLA3 3.3v ISP Architecture

Logic Block | Zero Power Interconnect Array | Logic Block

I/O 0
I/O 1
I/O 2
•
•
•
I/O 15

I/O Logic (Mcells)

PLA Logic

Zero Power Interconnect Array

PLA Logic

I/O Logic (Mcells)

I/O 0
I/O 1
I/O 2
•
•
•
I/O 15

- ◆ ZIA - virtual crosspoint switch
- ◆ 16 macrocells per logic block
- ◆ Full PLA for best connectivity
- ◆ 36 inputs to the logic block

- ◆ Fast input registers
- ◆ Extensive clocking capabilities
- ◆ 5v tolerant I/Os
- ◆ 1149.1 JTAG

CoolRunner XPLA3 Customer Value

- ◆ **Longer lasting battery life**
  - — smaller battery packs

- ◆ **Lower costs**
  - — smaller power supplies; fans & cooling requirements

- ◆ **Fits into hand-held size applications**
  - — chip scale packaging provides optimum functionality in the smallest footprint

- ◆ **Enables products to become "field upgradable"**
  - — XPLA3 technology optimized to accommodate last minute design changes via ISP

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CoolRunner Design Win Examples

- **Portable / Consumer**
    - PDAs
    - Cell phones
    - MP3 players
    - Laptops
    - Docking stations
    - Battery powered scanners
    - Camcorder viewfinders
    - Digital cameras
    - Portable dictation systems
    - Gas meters
    - Handheld meters
    - Penguin counters

- **Medical**
    - Portable syringe pump
    - Home monitoring system
    - Blood analyzer

- **Telecom**
    - "Neighborhood" Multiplexors
    - Bay Stations
    - Routers
    - Multiplexors
    - PBXs
    - DACS
    - Central office switches
    - Speech recognition systems

- **PC Peripheral**
    - PCMCIA memory cards
    - Portable computer displays
   - White board scanners
    - Memory cards

- **High Performance**
    - Alpha workstations and servers
   - Video graphics cards

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Competitive CPLDs Can't Deliver

- ◆ **All require significantly higher power**
  - — sense amp based architectures
- ◆ **Reduction in sense amp power results in significant loss of performance**
  - — low power mode <u>reduces</u> f_{MAX} performance by 2/3
  - — long latency times (sleep mode wake-up)

Other CPLDs
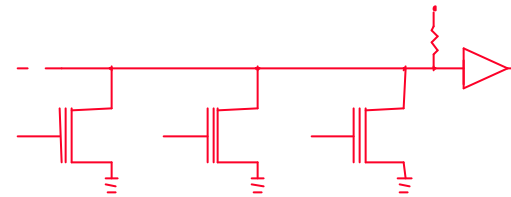
Sense amplifier .25mA each @ <u>Standby</u>
Higher I_{CC} at f_{max}

CoolRunner XPLA3
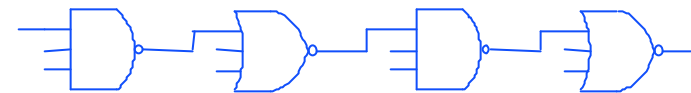
Fast Zero Power
CMOS Everywhere - Zero Static Power

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WebPowered Software Solutions

- ◆ **FREE WebFITTER™**
  - — supports all Xilinx CPLDs
  - — HDL (VHDL/Verilog/ABEL) & standard netlists (EDIF / XNF)
  - — automatic device selection
  - — fitting and timing reports
  - — on-line price quotes

http://www.xilinx.com/sxpresso/webfitter.htm

- ◆ **FREE WebPACK™**
  - — downloadable desktop solution
  - — HDL synthesis & ABEL
  - — full device fitting
  - — JTAG programming
  - — 3rd party EDA support

http://www.xilinx.com/sxpresso/webpack.htm

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XPLA3 Third Party Tool Support
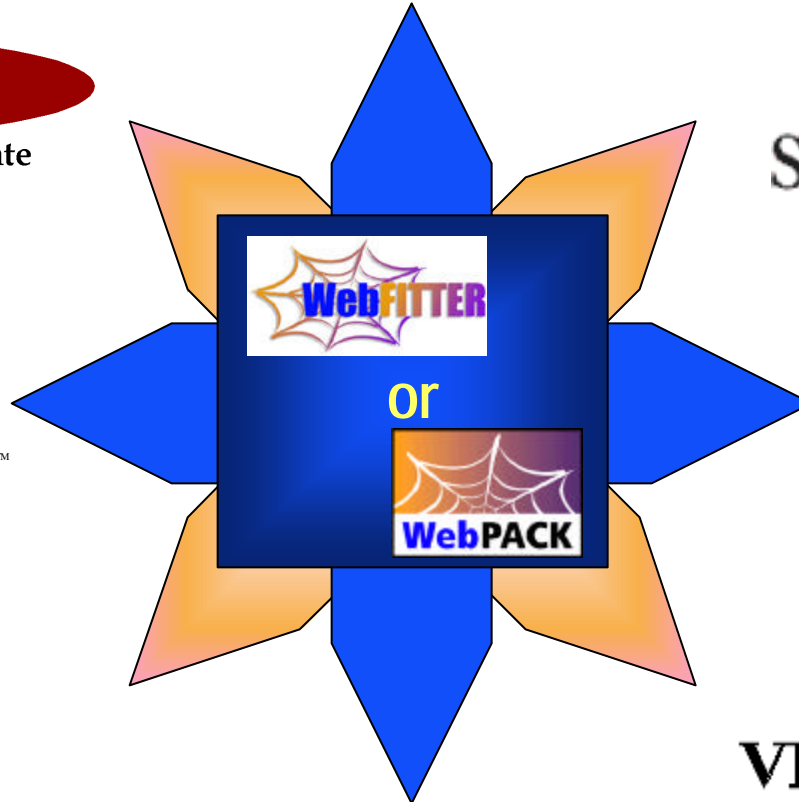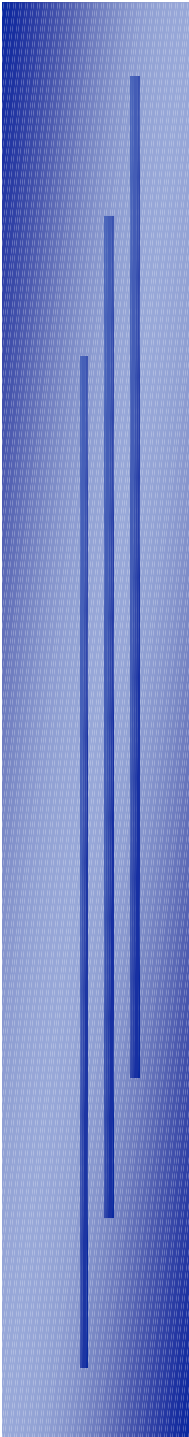
XPLA3 Sets New Standard in CPLDs

- ◆ Industry's lowest power CPLD

- ◆ Provides real benefits to portable, handheld markets

- ◆ Only web-powered CPLD solution

- ◆ Expands Xilinx suite of "high volume" programmable solutions

- ◆ Still runs on Grapefruits!