

### eX Family Selector Guide

	eX64	eX128	eX256
System Gates	3,000	6,000	12,000
Dedicated Registers	64	128	256
Combinatorial Cells	128	256	512
Maximum User I/Os	84	100	132
Packages	TQ64, TQ100, CS49, CS128	TQ64, TQ100, CS49, CS128	TQ100, CS128, CS180

## Actel's eX FPGAs

### Enabling the "Wired" Lifestyle

- LP/Sleep Mode Current <250µA
- Standby/Static Current 2mA
- Small footprint
- Single chip
- High performance
- Fast time-to-market
- Design security
- Low cost at high volumes

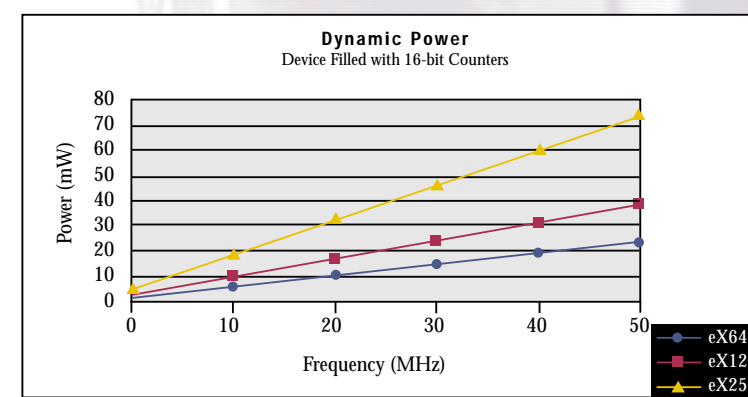
Have you had enough of the seemingly hopeless search for the ultimate low-cost solution for low-power, high-performance designs? The search is now over: Actel's eX family of FPGAs has optimum circuit design capability and will meet all your power, speed, package, and price requirements. Targeted for the e-Appliance and communications infrastructure markets, eX enables designers to use single-chip programmable logic for their traditional low-density ASIC requirements without the long leadtimes and costly NRE charges.

#### Save Energy— Lower your Power

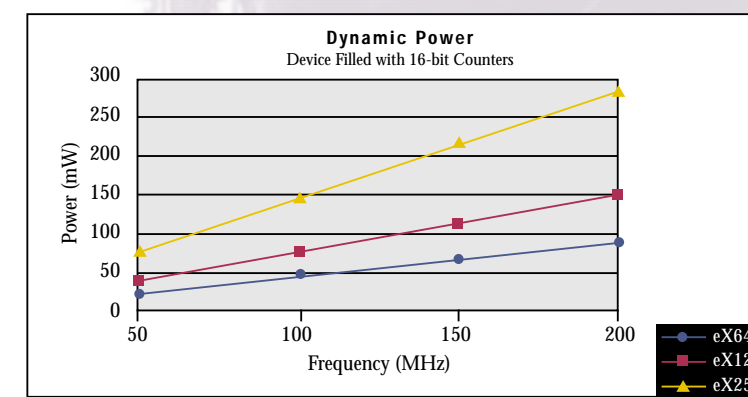
Consumers don't care what the standby current of a component in their device is...but they do care about how often they have to replace their batteries. Recognizing this, designers of consumer electronics are focusing on using chips with low power consumption. The eX family of FPGAs combines the inherently low power attributes of Actel's antifuse technology with a low power "sleep" mode to extend battery life. Another benefit of low power consumption is increased device reliability, an important consideration in the communications infrastructure market. The eX devices' 2.5V core operation offers additional power savings, while their I/Os are capable of driving 2.5V, 3.3V, or 5.0V, and are 5.0V-tolerant. The I/Os are also hot-swap compliant, requiring no special power-up or -down sequence.

#### Performance

With internal clock speeds greater than 300 MHz and clock-to-out delays as fast as 4.2 ns, Actel's eX FPGAs offer the high performance that designers need without a power penalty. The eX family offers 'ease of speed' with its fine-grained architecture and segmented routing structure. With eX you don't have to use any tricks or performance-enhancing techniques to meet your design requirements.



eX Dynamic Power Consumption – Low Frequency



eX Dynamic Power Consumption – High Frequency

For more information about Actel's products, call 1-888-99-ACTEL or visit our Web site at <http://www.actel.com>

Actel Corporation • 955 East Arques Avenue • Sunnyvale, California USA 94086

Tel: 408-739-1010 • Fax: 408-739-1540

Actel Europe, Ltd. • Maxfli Court, Riverside Way • Camberley, Surrey GU153YL • United Kingdom

Tel: +44 (0)1276 401450 • Fax: +44 (0)1276 401490

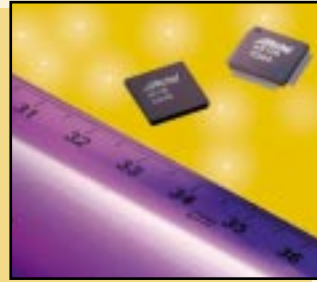
Actel Japan • EXOS Ebisu Building 4F • 1-24-14 Ebisu Shibuya-ku • Tokyo 150 • Japan

Tel: +81 (0) 3-3445-7671 • Fax: +81 (0) 3-3445-7668

©2001 Actel Corporation. All rights reserved. Actel and the Actel logo are trademarks of Actel Corporation. All other brand or product names are the property of their owners.

5192276-1/5.01





### The Best Things come in Small Packages...

Consumer electronics are shrinking in size while growing in capability. But for the products to shrink, the internal components have to follow suit. Actel's antifuse FPGAs already have the advantage of being a single-chip solution. Since they don't need an external storage device to hold the chip's configuration data, the cost of a PROM and the associated board space are eliminated. Even more board space is saved because of the small footprint of the eX devices. Manufactured on an advanced 0.22µ CMOS process technology and with small chip scale packages (CSPs) and thin quad flat packs (TQFPs) the eX devices fit more logic in much smaller packages, saving space and greatly increasing portability.

### Save Time and Money

With the eX family, you can have it all. Designed to simplify design and verification phases, eX devices accelerate development and speed delivery of your product. Actel's automatic place-and-route tools enable 100% logic utilization resulting in faster design time. And the unique general and local routing structures of Actel's antifuse FPGAs enable 100% pin-locking, even at full logic utilization, so the PCB can be developed concurrently with the FPGA. Even verification time is reduced

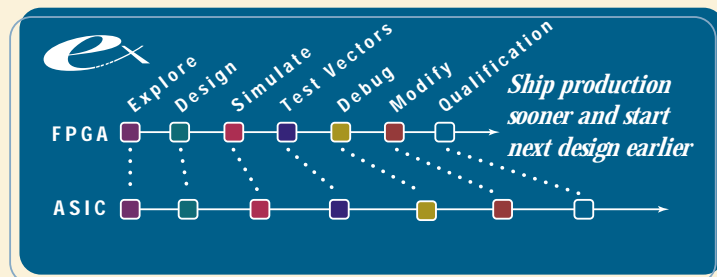
because Actel's eX FPGAs can be analyzed in-system and in real time using the Silicon Explorer II diagnostic tool.

But efficiency does not mean high cost: Actel's eX FPGAs offer an ASIC-like design flow without the high ASIC-like price. There are no NRE charges or leadtimes to worry about. Additional cost savings are possible because no boot-up device is needed to store device data. Priced for high-volume production, Actel's eX FPGAs are the off-the-shelf solution for designers who want to speed time to market without compromising on cost or performance.

### Play it Safe—Protect your Property

Design security is a necessity in today's highly competitive technology industry to protect designs from pirating. Actel's eX FPGAs offer that security. Their nonvolatility means there is no need for a startup bitstream, eliminating the possibility of configuration data being intercepted. This also prevents in-system errors and accidental data erasures that otherwise may occur during download.

Add to that the inherent security of the antifuse technology itself. The antifuses that form the interconnections within the eX FPGAs are extremely small, are densely distributed throughout the device, and do not leave an observable signature that can be electrically probed or visually inspected. These safeguards render the eX FPGAs virtually immune to copying and reverse engineering.



## Design Tools and Services

### Design Services

#### The One Stop Design Solution

With a ten-year history of providing hardware and software services, Actel's *Protocol Design Services* team offers its customers design support at all stages of project development. With extensive knowledge of FPGA design and prototyping, services are delivered on time, within budget, and to the customers' specifications.

### Development Software

The DeskTOP series brings together the best in silicon, synthesis, and simulation to create a complete and integrated design environment for designing in Actel FPGAs. The basic **DeskTOP** is an integrated development environment, including simulation, synthesis, and place-and-route tools, for designs less than 50k gates.

**DeskTOP Pro** increases the design simulation limit to 400k with unlimited synthesis, allowing designers to move up as their skills and density requirements increase.

**DeskTOP Open**, which includes simulation up to 400k gates and place-and-route tools, is ideal for ASIC designers who are starting to use FPGAs in their designs, but have already invested in synthesis tools.

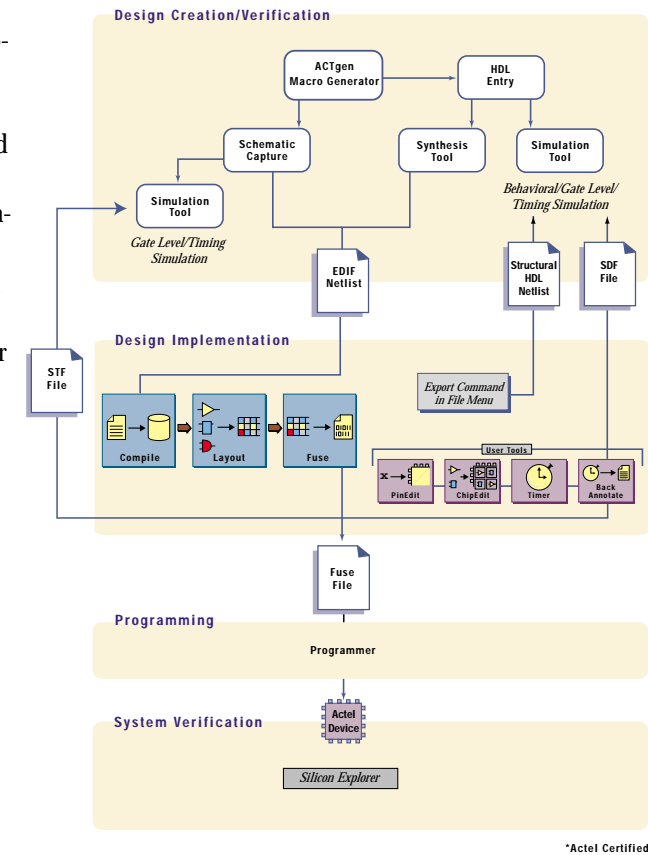
**Designer Series** is Actel's suite of FPGA development point tools for PCs and Workstations that includes the ACTgen Macro Builder, Designer place-and-route software with Timer timing driven place-and-route.

### Real-time Device Verification

Actel's antifuse FPGAs contain internal probe circuitry that provides built-in access to every node in a design, enabling 100% real-time observation and analysis of a device's internal logic nodes without design iteration. The probe circuitry is accessed by Silicon Explorer, an easy-to-use 18-channel logic analysis system. Silicon Explorer enables designers to complete real-time in-system verification at system rates up to 100 MHz without leaving their desks.

### Programming

Actel offers programming options, including Silicon Sculptor single-site and multisite device programmers that support all Actel device families. For high-volume production programming needs, we offer volume programming services through our distribution partners.



\*Actel Certified

