
Atmel's Broad EPLD Product Line

Atmel has two major EPLD lines: PAL-type SPLDs and high-density CPLDs. Each has a particular feature set that may be just right for specific design requirements.

Atmel's PAL-Type Products

The Atmel PAL-type family of products is a modified version of the popular industry standard 16V8, 20V8, and 22V10s. Already in wide use, and supported by many development tools, these versions also offer features such as quarter-power, low standby power, and zero stand-by power. Atmel's family of Flash-based devices combines proven high-performance and low-power technologies. As a result, no matter how diverse the application, Atmel has the products to fit the socket.

Atmel CPLD Products

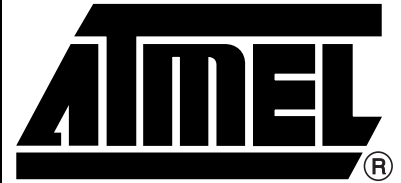
The V-series CPLDs are based on a 22V10-type architecture and provide market-leading capacity and flexibility in 28, 44, and 68 pins. The ATV750/B has a 22V10 footprint with twice the registers

and additional features for better logic utilization. The ATV2500/Boffers 24 I/O pins, 48 registers, 17 product terms per macro, and 100% connectivity.

The ATF1500 Series CPLDs are targeted at wider logic density, with higher number of I/O's. This family has devices from 44 to 160 pins, and 32 to 96 I/O's. High connectivity, and flexible architecture make these parts highly suitable for system design. In system programmability in the larger devices allow for reconfiguration even after the device is in the system.

Standard Development Tools

Atmel's philosophy is that designers should be able to use known development tools. Third-party design tools such as Synario™, ABEL™, CUPL™, PPLDesigner-XL™, LOG/iC™, and PLDSyn™ support Atmel's EPLDs. Also Atmel-specific versions of the popular Synario, ABEL, and CUPL design tools are offered. In addition, workstation support is available on popular platforms with Viewlogic, MINC, Cadence, Mentor, and Synopsys.



Introduction

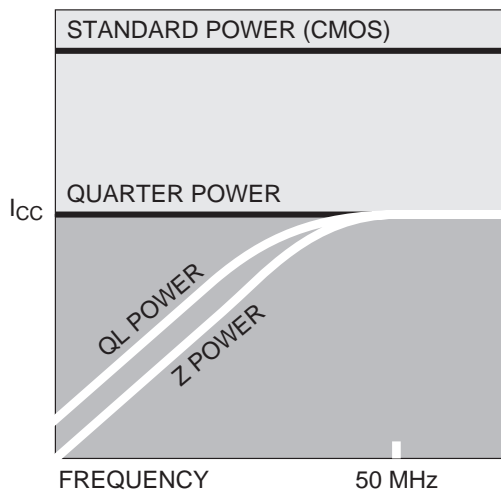


No Limits to EPLD Designs with Atmel

Designers are continuously challenged to add more features to their products while using the same board space, and at the same time maintain or decrease the overall power consumption of their system. To meet these challenges, Atmel offers a broad range of high-density, low-power, and cost-effective solutions enabling designers to create products that are “just what the market ordered.”

Based on a standard architecture, which uses industry standard development tools, Atmel’s EPLDs offer the unique low-power or “L” feature while providing 100% connectivity. These devices are processed with Atmel’s proprietary 0.65-micron, electrically erasable and UV-erasable memory processes.

Figure 1. Power Curve⁽¹⁾



Note: 1. Atmel’s QL products benefit from quarter-power savings and the low standby power feature all in one device.

Power Savings

Atmel’s low-power EPLDs are high-performance products with significantly reduced power consumption compared to standard-power devices. Save up to 80% of the power required by competing solutions. Lower power consumption allows for smaller, lower cost power supplies and provides lower junction temperatures that, in turn, result in higher system reliability.

Low-power Feature

Ideally suited for power sensitive applications, Atmel’s low-power devices save power at low frequencies by applying the patented “L” feature. This feature enables the device to power down automatically to a standby mode. The Power

Curve graph above shows the I_{CC} vs. Frequency curves for standard-and low-power devices.

At low frequencies, Atmel’s low-power devices automatically cycle through the wake up and standby modes to save power while a standard-power device remains powered at all times. The “L” feature provides dramatic power savings for designs with a standby mode (“Green PC”) and for those that operate below 50 MHz. Applications that are combinatorial in nature (no clock) also benefit by using Atmel’s low-power devices.

Quarter-power Feature

Atmel’s quarter-power devices offer lower active power than a standard-power device. This feature saves power at any frequency, and the parts are compatible with industry standard quarter-power devices available on the market today.

“Z” Products

Standby current below 25μ for battery powered applications.

“QL” Products

Atmel’s quarter-power devices are available with the “L” feature. These “QL” devices benefit from quarter-power savings and the low standby power feature all in one Atmel device—the ultimate in cost effective power savings!

“LV” Products

Atmel was the first PLD supplier to introduce a 3.3-volt product with the AT22LV10 and AT22LV10L in 1990. Now, as the market develops, Atmel is expanding “LV” offerings to include CPLDs as well as SPLDs.

No Limits To Connectivity

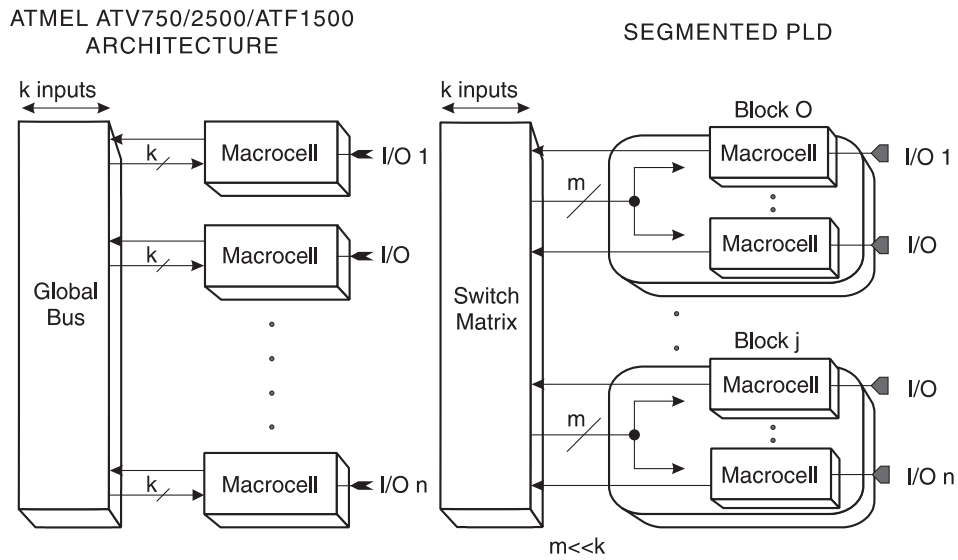
Connectivity measures how easily and effectively signals are routed between logic blocks within a PLD. In simple EPLDs, such as the industry standard 16V8/20V8/22V10, every input and feedback is connected to every product term of every macrocell—providing 100% connectivity. For CPLDs, it has become common practice to trade off connectivity for speed and die size. Atmel’s CPLDs, however, use a global interconnect, architecture that combines speed and the highest connectivity—even 100% connectivity up through 44-pins.

The Atmel 24-pin ATV750, 44-pin ATF1500, and 44-pin ATV2500 devices provide the benefits of true 100% connectivity. Every input and feedback is connected to

every product term of every macrocell. This means higher utilization of product density and easier routing. As a result,

design modifications are easily made without changing pin assignments.

Figure 2. ATV750/ATF1500/ATV2500 Connectivity⁽¹⁾



Note: 1. Atmel's global architecture provides "real" 100% connectivity. Other segmented CPLD architectures provide limited connectivity, often in the 10-30% range, increasing the chances of routing difficulties and design delays when changes must be made.



Atmel Headquarters

Corporate Headquarters

2325 Orchard Parkway
San Jose, CA 95131
TEL (408) 441-0311
FAX (408) 487-2600

Europe

Atmel U.K., Ltd.
Coliseum Business Centre
Riverside Way
Camberley, Surrey GU15 3YL
England
TEL (44) 1276-686-677
FAX (44) 1276-686-697

Asia

Atmel Asia, Ltd.
Room 1219
Chinachem Golden Plaza
77 Mody Road Tsimhatsui
East Kowloon
Hong Kong
TEL (852) 2721-9778
FAX (852) 2722-1369

Japan

Atmel Japan K.K.
9F, Tonetsu Shinkawa Bldg.
1-24-8 Shinkawa
Chuo-ku, Tokyo 104-0033
Japan
TEL (81) 3-3523-3551
FAX (81) 3-3523-7581

Atmel Operations

Atmel Colorado Springs

1150 E. Cheyenne Mtn. Blvd.
Colorado Springs, CO 80906
TEL (719) 576-3300
FAX (719) 540-1759

Atmel Rousset

Zone Industrielle
13106 Rousset Cedex
France
TEL (33) 4-4253-6000
FAX (33) 4-4253-6001

Fax-on-Demand

North America:
1-(800) 292-8635
International:
1-(408) 441-0732

e-mail

literature@atmel.com

Web Site

<http://www.atmel.com>

BBS

1-(408) 436-4309

© Atmel Corporation 1999.

Atmel Corporation makes no warranty for the use of its products, other than those expressly contained in the Company's standard warranty which is detailed in Atmel's Terms and Conditions located on the Company's web site. The Company assumes no responsibility for any errors which may appear in this document, reserves the right to change devices or specifications detailed herein at any time without notice, and does not make any commitment to update the information contained herein. No licenses to patents or other intellectual property of Atmel are granted by the Company in connection with the sale of Atmel products, expressly or by implication. Atmel's products are not authorized for use as critical components in life support devices or systems.

Marks bearing ® and/or ™ are registered trademarks and trademarks of Atmel Corporation.

Terms and product names in this document may be trademarks of others.



Printed on recycled paper.

0413C-08/99/xM