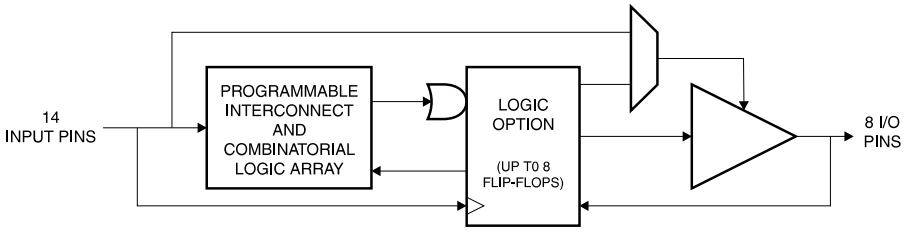
Features

- **Edge-controlled Power-down Pin**
- **Zero Power Equivalent of ATF20V8B**
- **Edge-sensing Zero Standby Power (10 µA Typical)**
- **Industry Standard Architecture**
  - **Emulates Many 24-pin PALs®**
  - **Low-cost Easy-to-use Software Tools**
- **High-speed Electrically-erasable Programmable Logic Devices**
  - **10 ns Maximum Pin-to-pin Delay**
- **CMOS and TTL Compatible Inputs and Outputs**
  - **Latch Feature Hold Outputs to Previous Logic States**
- **Advanced Flash Technology**
  - **Reprogrammable**
  - **100% Tested**
- **High-reliability CMOS Process**
  - **20 Year Data Retention**
  - **100 Erase/Write Cycles**
  - **2,000V ESD Protection**
  - **200 mA Latchup Immunity**
- **Commercial, and Industrial Temperature Ranges**
- **Dual-in-line and Surface Mount Packages in Standard Pinouts**
- **PCI-compliant**

Block Diagram

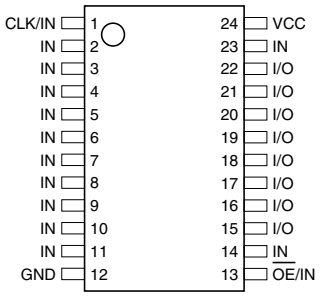


Pin Configurations

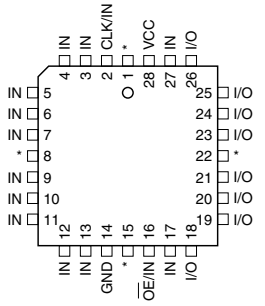
All Pinouts Top View

Pin Name	Function
CLK	Clock
IN	Logic Inputs
I/O	Bi-directional Buffers
$\overline{OE}$	Output Enable
*	No Internal Connection
VCC	+5V Supply

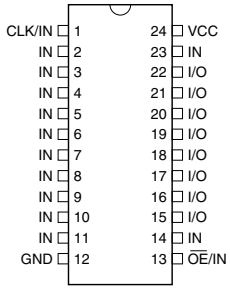
TSSOP



PLCC



DIP



High-performance EE PLD

ATF20V8CZ
ATF20V8CZQ

Advance Information

Rev. 0454G–03/00

Description

The ATF20V8CZ is a high-performance CMOS (electrically-erasable) programmable logic device (PLD) that utilize Atmel's proven electrically-erasable Flash memory technology. Speeds down to 10 ns and power dissipation as low as 10 mA are offered. All speed ranges are specified over the full 5V ± 10% range for industrial temperature ranges, and 5V ± 5% range for commercial ranges.

The ATF20V8CZ provides the zero power CMOS PLD solution, with "zero" standby power (10 µA typical). The ATF20V8CZ powers down automatically though Atmel's patented Input Transition Detection (ITD) circuitry to the "zero" standby power mode when all inputs are idle. Pin "keeper" circuits on input and output pins reduce static power consumed by pull-ups.

The ATF20V8CZ incorporates a superset of the generic architectures, which allows direct replacement of the 20R8 family and most 24-pin combinatorial PLDs. Eight outputs are each allocated eight product terms. Three different modes of operation, configured automatically with software, allowing highly complex logic functions to be realized.

DC and AC Operating Conditions

	Commercial	Industrial
Operating Temperature (Ambient)	0°C - 70°C	-40°C - 85°C
V_{CC} Power Supply	5V ± 5%	5V ± 10%

Functional Description

The ATF20V8CZ macrocell can be configured in one of three different modes. Each mode makes the ATF20V8CZ look like a different device. The ATF20V8CZ can be a registered output, combinatorial I/O, combinatorial output, or dedicated input. Most PLD compilers can choose the right mode automatically. The user can also force the selection by supplying the compiler with a mode selection. The determining factors would be the usage of register versus combinatorial outputs and dedicated outputs versus output with output enable control.

The ATF20V8CZ powers down automatically through the ITD circuitry down to a "zero" standby power (10 µA typical) when all inputs are idle. This feature allows the user flexibility to reduce total system power, enhance reliability all without sacrificing speed. Static power loss due to pull-up resistors is reduced through input and output pin "keeper" circuits which holds pins to their previous logic levels when idle.

The universal architecture of the ATF20V8CZ can be programmed to emulate many 24-pin PAL devices. The user can download the subset device JEDEC programming file to the PLD programmer, and the ATF20V8CZ can be configured to act like the chosen device.

Unused product terms are automatically disabled by the compiler to further decrease power consumption. A security fuse, when programmed, protects the contents the ATF20V8CZ. Eight bytes (64 fuses) of User Signature are accessible to the user for purposes such as storing project name, part number, revision or date. The User Signature is accessible regardless of the state of the security fuse.

Using "C" Product for Industrial

To use commercial product for Industrial temperature ranges, down-grade one speed grade from the "I" to the "C" device (7 ns "C" = 10 ns "I") and de-rate power by 30%.

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

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