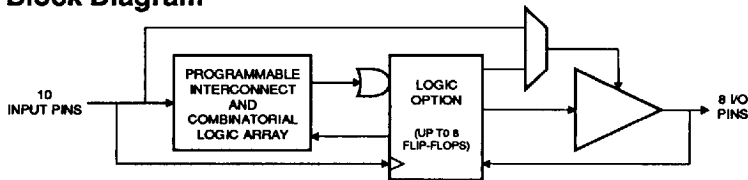


Features

- Quarter Power Equivalent of ATF16V8B - 55 mA Maximum
- Low Power ATF16V8BQL - 10 mA Maximum Standby
- Industry Standard Architecture
 - Emulates Many 20-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
 - Input and I/O Pull-Up Resistors
- Advanced Flash Technology
 - Reprogrammable
 - 100% Tested
- High Reliability CMOS Process
 - 20 Year Data Retention
 - 100 Erase/Write Cycles
 - 2,000 V ESD Protection
 - 200 mA Latchup Immunity
- Full Military, Commercial, and Industrial Temperature Ranges
- Dual-In-Line and Surface Mount Packages in Standard Pinouts

Block Diagram



Description

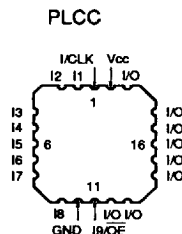
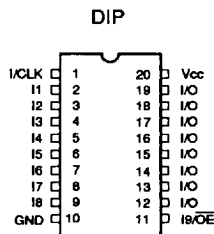
The ATF16V8BQs are high performance CMOS (Electrically Erasable) Programmable Logic Devices (PLDs) which utilize Atmel's proven electrically erasable Flash memory technology. Speeds down to 10 ns and power dissipation as low as 10 mW are offered. All speed ranges are specified over the full $5\text{ V} \pm 10\%$ range for military and industrial temperature ranges, and $5\text{ V} \pm 5\%$ for commercial ranges.

The ATF16V8BQL provides the low power CMOS PLD solution, with low DC power (5.0 mW typical). The ATF16V8BQL significantly reduces total system power and enhances system reliability.

The ATF16V8BQs incorporate a superset of the generic architectures, which allows direct replacement of the 16R8 family and most 20-pin combinatorial PLDs. Eight outputs are each allocated eight product terms. Three different modes of operation, configured automatically with software, allow highly complex logic functions to be realized.

Pin Configurations

Pin Name	Function
CLK	Clock
I	Logic Inputs
I/O	Bidirectional Buffers
OE	Output Enable
VCC	+5 V Supply





D.C. and A.C. Operating Conditions

	Commercial	Industrial	Military
Operating Temperature (Case)	0°C - 70°C	-40°C - 85°C	-55°C - 125°C
Vcc Power Supply	5 V $\pm$ 5%	5 V $\pm$ 10%	5 V $\pm$ 10%

Functional Description

The ATF16V8BQ can be configured in one of three different modes. Each mode makes the ATF16V8BQ look like a different device. The ATF16V8BQ macrocells 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 outputs with output enable control.

The ATF16V8BQ universal architecture can be programmed to emulate many 20-pin PAL devices. These architectural subsets can be found in each of the configuration modes described in the

following pages. The user can download the listed subset device JEDEC programming file to the PLD programmer, and the ATF16V8BQ can be configured to act like the chosen device. Check with your programmer manufacturer for this capability.

Unused product terms are automatically disabled by the compiler to decrease power consumption. A Security Fuse, when programmed, protects the content of the ATF16V8BQ. 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.

Compiler Mode Selection

	Registered	Complex	Simple	Auto Select
ABEL, Atmel-ABEL	P16V8R	P16V8C	P16V8AS	P16V8
CUPL	G16V8MS	G16V8MA	G16V8AS	G16V8
LOG/IC	GAL16V8_R	GAL16V8_C7	GAL16V8_C8	GAL16V8
OrCAD-PLD	"Registered"	"Complex"	"Simple"	GAL16V8A
PLDesigner	P16V8R	P16V8C	P16V8C	P16V8A
Tango-PLD	G16V8R	G16V8C	G16V8AS	G16V8