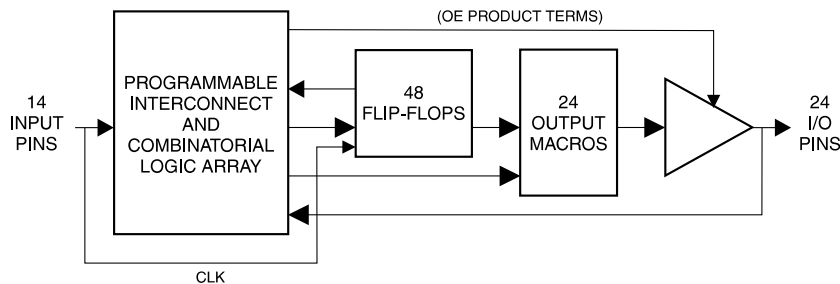


Features

- High-performance, High-density, Electrically-erasable Programmable Logic Device
- Fully Connected Logic Array with 416 Product Terms
- Wide Supply Range (2.7V to 5.5V)
- 10 ns Maximum Pin-to-pin Delay for 5V Operation
- Low-power Edge-sensing "L" Option with 1 mA Standby Current
- Flexible Output Macrocell
 - 48 Flip-flops – Two per Macrocell
 - 72 Sum Terms
 - All Flip-flops, I/O Pins Feed in Independently
- D- or T-type Flip-flops
- Product Term or Direct Input Pin Cloning
- Registered or Combinatorial Internal Feedback
- Backward Compatible with ATV2500B/BQL and ATV2500H/L Software
- Advanced Electrically-erasable Technology
 - Reprogrammable
 - 100% Tested
- 44-lead Surface Mount Package

Block Diagram



Description

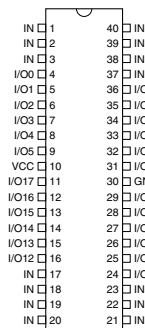
The ATF2500C is the highest-density PLD available in a 44-pin package. With its fully connected logic array and flexible macrocell structure, high gate utilization is easily obtainable. The ATF2500C is a high-performance CMOS (electrically-erasable) Programmable Logic Device (PLD) which utilizes Atmel's proven electrically-erasable Flash memory technology.

(continued)

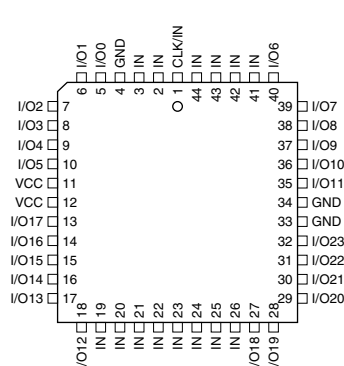
Pin Configurations

| Pin Name | Function |
|-----------------|-----------------------|
| IN | Logic Inputs |
| CLK/IN | Pin Clock and Input |
| I/O | Bidirectional Buffers |
| I/O 0,2,4... | "Even" I/O Buffers |
| I/O 1,3,5... | "Odd" I/O Buffers |
| GND | Ground |
| V _{CC} | +5V Supply |

DIP/SOIC



PLCC/LCC



Note: For ATF2500CQ and ATF2500CQL (PLCC/LCC packages) pin 4 and pin 26 GND connections are not required.



High-speed Programmable Logic Device

ATF2500C

Advance Information





The ATF2500C is organized around a single universal and-or array. All pin and feedback terms are always available to every macrocell. Each of the 38 logic pins are array inputs, as are the outputs of each flip-flop.

In the ATF2500C, four product terms are input to each sum term. Furthermore, each macrocell's three sum terms can be combined to provide up to 12 product terms per sum term with no performance penalty. Each flip-flop is individually selectable to be either D- or T-type, providing further logic compaction. Also, 24 of the flip-flops may be bypassed to provide internal combinatorial feedback to the logic array.

Product terms provide individual clocks and asynchronous resets for each flip-flop. The flip-flops may also be individually configured to have direct input pin clocking. Each output has its own enable product term. Eight synchronous preset product terms serve local groups of either four or eight flip-flops. Register preload functions are provided to simplify testing. All registers automatically reset upon power-up.

The Atmel-unique "L" low-power feature is an edge-sensing option that is now field programmable for the ATF2500C family. The "L" feature utilizes Atmel-patented Input Transition Detection (ITD) circuitry and is activated by selecting the "L" option from the program menu.

Absolute Maximum Ratings*

| | |
|--|--------------------------------|
| Temperature Under Bias..... | -55°C to +125°C |
| Storage Temperature | -65°C to +150°C |
| Voltage on Any Pin with Respect to Ground | -2.0V to +7.0V ⁽¹⁾ |
| Voltage on Input Pins with Respect to Ground During Programming..... | -2.0V to +14.0V ⁽¹⁾ |
| Programming Voltage with Respect to Ground | -2.0V to +14.0V ⁽¹⁾ |

*NOTICE: Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Note: 1. Minimum voltage is -0.6V DC which may undershoot to -0.2V for pulses of less than 20 ns. Maximum output pin voltage is $V_{CC} + 0.75V$ DC which may overshoot to +7.0V for pulses of less than 20 ns.

DC and AC Operating Conditions

All members of the family are specified to operate in either one of two voltage ranges. Parameters are specified as noted to be either 2.7V to 3.6V, $5V \pm 5\%$ or $5V \pm 10\%$.

| 5V Operation | Commercial | Industrial | Military |
|-----------------------|-------------------------|----------------------------|--------------------------|
| Operating Temperature | 0°C - 70°C (Ambient) | -40°C - +85°C (Ambient) | -55°C - +125°C (Case) |
| V_{CC} Power Supply | $5V \pm 5\%$ | $5V \pm 10\%$ | $5V \pm 10\%$ |

| 3V Operation | Commercial | Industrial | Military |
|-----------------------|-------------------------|----------------------------|--------------------------|
| Operating Temperature | 0°C - 70°C (Ambient) | -40°C - +85°C (Ambient) | -55°C - +125°C (Case) |
| V_{CC} Power Supply | 2.7V - 3.6V | 2.7V - 3.6V | 2.7V - 3.6V |



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