

AmPAL*21VT8

24-Pin Dual-Clock Programmable Array Logic

ADVANCE INFORMATION

DISTINCTIVE CHARACTERISTICS

- Enhanced second-generation PAL architecture
- 15 ns maximum propagation delay, $f_{MAX} = 40$ MHz
- Up to twenty-one inputs and eight outputs
- Two banks of four user-programmable output logic macrocells for registered or combinational operation
- Individually user-programmable output polarity
- Variable product term distribution for increased design flexibility
- Individual or common clock with programmable polarity for each bank of output logic macrocells
- Two product terms for enable of each output
- Asynchronous-RESET and synchronous-PRESET product terms for each bank of output logic macrocells
- Power-up RESET and PRELOAD capability
- Superior quality
 - Full AC and DC parametric testing performed on every part
 - Exclusive on-chip test circuitry ensures post-programming functional yield (PPFY) of 99.9%.
- Platinum-silicide fuses ensure high programming yield (> 98%), fast programming and unsurpassed reliability

GENERAL DESCRIPTION

The AmPAL21VT8 is an ultra-fast and enhanced second-generation Programmable Array Logic (PAL) device. It uses the familiar sum-of-products (AND-OR) single array logic structure, allowing users to customize logic functions by programming the device for specific applications. Fabricated with AMD's new advanced bipolar IMOX-III SLOT-process technology and incorporating, with enhancements, the innovative architectural features of the AmPAL22V10, the AmPAL21VT8 is an extremely versatile PAL device.

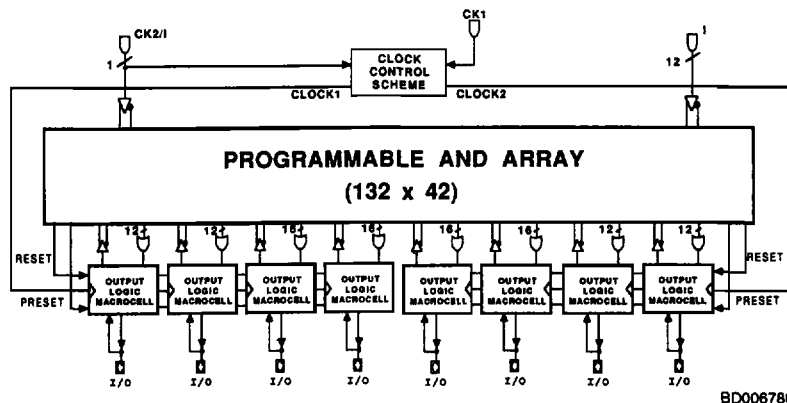
The AmPAL21VT8 contains up to twenty-one array inputs and eight outputs. The eight outputs are output logic macrocells (as in the AmPAL22V10) organized into two banks of four each. Each output logic macrocell is capable of being programmed as "combinatorial" or "registered" with active-HIGH or active-LOW polarity. Each of the two banks of output logic macrocells can be clocked individually or with a common clock. In addition, the individual/common clock has user-programmable polarity. This flexibility permits the system designer to tailor the device to the particular application requirements.

Increased logic power has been built into the AmPAL21VT8 by providing a variable number of logical product terms per output. Four outputs have twelve logical product terms each and the other four have sixteen logical product terms each. This variable allocation of logical product terms allows complex logic functions to be implemented in a single AmPAL21VT8.

The AmPAL21VT8 also offers designers increased flexibility and control over the output enable function. Each output is logically controlled by an OR of two logical product terms. This allows the designer to use more complex control than previously available.

System operation has been enhanced by the addition of synchronous-PRESET and asynchronous-RESET product terms common to all the output logic macrocells in a bank. The AmPAL21VT8 also incorporates power-up RESET on all the registered outputs. It also has the capability to PRELOAD registers to any desired state during testing. This is essential to permit full logic verification during test.

BLOCK DIAGRAM



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FUNCTIONAL DESCRIPTION

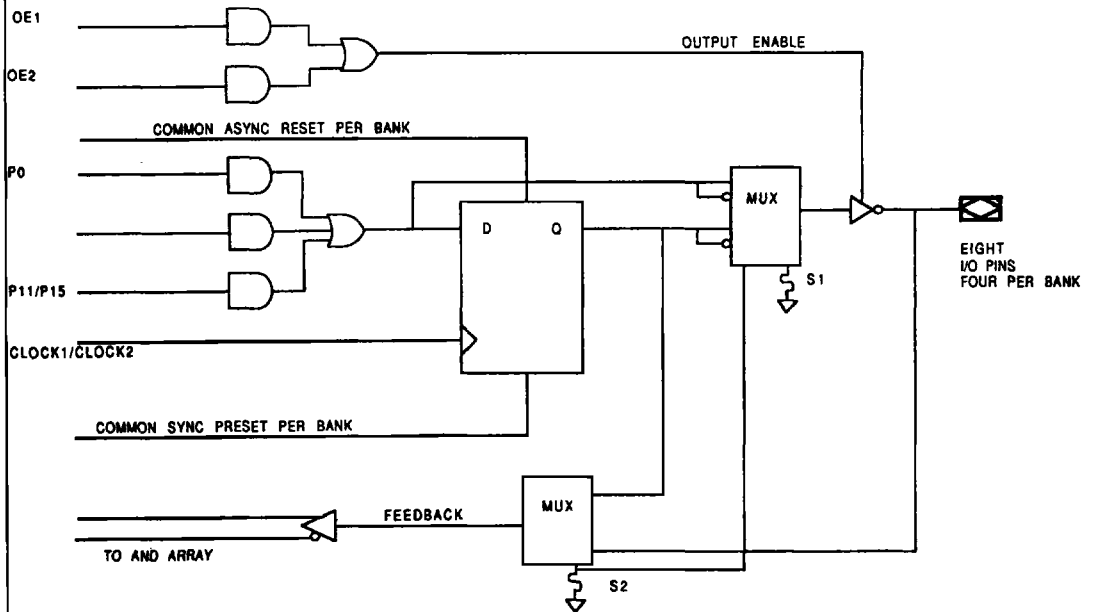


Figure 1. AmPAL21VT8 Output Logic Macrocell

OPERATING RANGES

Commercial (C) Devices

Temperature (T_A) 0 to +75°CSupply Voltage (V_{CC}) +5.75 V to +5.25 V