XPressArray™ 0.18μ Hybrid Gate Array

Key Features

- Next-generation 0.18μ hybrid gate array
- Platform for high-performance 1.8V/1.5V ASICs and FPGA-to-ASIC conversions
- NRE and production cost savings
- Significant time-to-market advantages
- Drop-in replacement for cost-reducing Xilinx and Altera FPGA designs
- 64K to 2.6M ASIC gates, 220K to 11M FPGA system gates
- 200MHz system, 350MHz local clock speeds
- Low power consumption (0.060μW/MHz/gate)
- 38Kbits to 1.4Mbits of embedded configurable memory
- Single-port/dual-port RAM, initializable
- Flexible I/O technology
- Configurable signal, core and I/O power supply pad locations
- Supports LVTTL, LVCMOS, PCI, PCI-X, HSTL, SSTL, GTL/+, LVPECL, LVDS, BLVDS
- 1.5V, 1.8V, 2.5V and 3.3V capable I/O
- True 3.3V and 5V I/O tolerance with no external resistor necessary
- Up to 830 user I/Os
- Comprehensive clock management circuitry
- Up to 12 digital DLLs and 4 PLLs
- Variety of package options
- Integrated scan-test and JTAG support for high-fault coverage
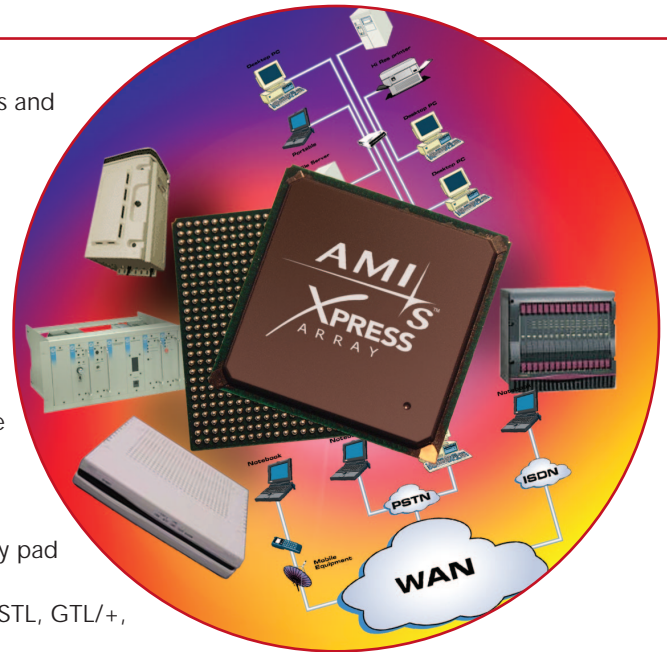
Product Description

Targeted at medium-density, high-speed, 1.8V and 1.5V ASIC applications and high-density FPGA-to-ASIC conversions, the XPressArray 0.18μ hybrid gate array is an innovative next-generation technology platform that reduces time-to-market for system-on-chip (SoC) applications while delivering significant NRE and unit cost savings.

XPressArray offers a true drop-in replacement for most Xilinx and Altera FPGAs, making it the industry's lowest cost ASIC conversion solution. The result is a simplified route to cost reductions for OEMs looking to combine the flexibility of FPGA prototyping with a path to ASICs for final production.

Operating with system clock speeds up to 200MHz and local clocks up to 350MHz and available in a variety of package options, XPressArray devices deliver high-performance, low power ASIC solutions with densities to 2.6M ASIC gates.

Embedded configurable memory ranges from 38Kbits to 1.4Mbits, while flexible I/O technology includes support for a comprehensive array of common standards and compatibility with 1.5V, 1.8V, 2.5V, 3.3V and 5.0V I/O schemes. High fault coverage is provided through integrated scan-test and JTAG support.

For FPGA conversions, rapid access to XPressArray technology can be achieved via AMI Semiconductor's NETRANS® FPGA-to-ASIC design flow. Alternatively, the availability of XPressArray synthesis libraries for leading commercial synthesizers allows conversion of FPGA designs to ASICs by simply re-targeting from an FPGA library to an XPressArray library.
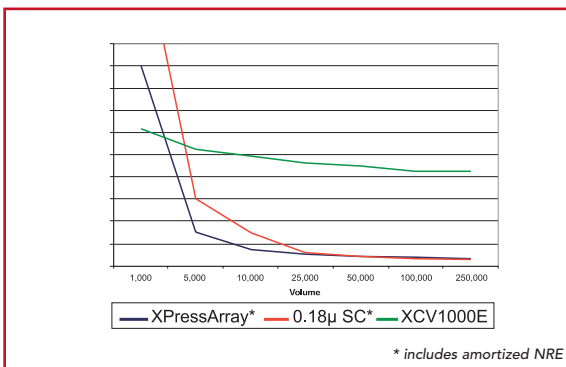
For a datasheet with complete technical specifications, please visit AMI Semiconductor's Technical Library at www.amis.com.

XPressArray - AMIS Feature Sheet

XPressArray Technology

The XPressArray technology is ideal for medium-density ASIC applications requiring high performance and low power, with 1.8V or 1.5V core operation. XPressArray devices are fabricated using a hybrid technology that integrates an established 0.18µ front-end process with a proven AMI Semiconductor metal finishing technology, which is used to produce a customized back end. The 0.18µ processing steps are common to multiple applications, reducing costs by allowing existing tooling to be utilized. At the same time, tooling and manufacturing costs are significantly lower for the metal finishing process than for traditional 0.18µ cell-based processes. The result is that XPressArray delivers reduced cycle times and significant reductions in terms of both NRE and unit cost through manufacturing utilizing gate array technology.

XPressArray Cost Comparison

There are eight arrays in the AMI Semiconductor XPressArray family. These arrays offer between 64K and 2.6M gates and up to 1.4Mbits of embedded RAM. RAM may be configured as single or dual port with asymmetrical port widths. The architecture also supports RAM initialization. Flexible I/O technology includes fully configurable core and I/O power supply pads and support for the industry's widest range of I/O standards including PCI-X, HSTL, SSTL, GTL and 622Mbps LVDS. Comprehensive clock management circuitry features up to 12 all digital delay-locked loops (DLLs) and a maximum of four phase-locked loops (PLLs).

Compared to equivalent FPGAs operating at the same voltage levels, XPressArray devices offer higher densities, better performance and lower power consumption. Low power consumption further contributes to cost savings as lower cost plastic packaging can be used in many cases. XPressArray products are designed for pin-for-pin replacement of Virtex™ and Apex™ FPGAs and offer integration of multiple FPGAs into one ASIC. Package options include traditional plastic TQFP/PQFP as well as plastic and super BGA in 0.80mm, 1.00mm and 1.27mm pitches.

XPressArray Base	System Gates[1]	Usable ASIC Gates[2]	Usable RAM Bits[3]	DLL	PLL	Bond Pads[4]
XP170E	220K	64K	38K	2	2	170
XP220E	616K	136K	71K	4	2	220
XP272E	988K	226K	119K	4	2	272
XP378E	1972K	456K	240K	8	2	378
XP444E	3048K	718K	378K	8	2	444
XP568E	4970K	1181K	622K	8	4	568
XP708E	7942K	1895K	998K	12	4	708
XP830E	11100K	2664K	1403K	12	4	830[5]

(1) Equivalent FPGA system gates.
(2) Usable 2-NAND gate array equivalent gates, assumes full RAM utilization.
(3) Usable 2RW RAM bits, assumes full logic utilization.

(4) Total combined signal, power/ground and test bond pads.
(5) Flip-chip power pads not included in bond pad count.

XPressArray Base Configurations

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