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FPGA & ASIC
CUSTOM ENGINEERING

Medianet Research & Development division offers the most innovative FPGA and DSP solutions. Our service provide the silicon, software engineering and services, to ensure your competitive advantage, backed by the highest levels of support avery step of the way.

La divisione Ricerca e Sviluppo di Medianet vi offre le più innovative soluzioni tecnologiche basate su chip FPGA e DSP di ultima generazione. Il nostro servizio comprende sia la fornitura dei chip dedicati, che la realizzazione del software su misura. Medianet vi supporterà passo passo in ogni fase, dall'idea iniziale ad prodotto finito,per garantirvi un sicuro successo commerciale.

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FPGA & ASIC SOLUTIONS

Controlling costs

Lowest total system cost is the major concept organizations thrive to achieve in order to reduce the overall cost of the project for the company, maximize profit and increase market share. When designing an FPGA, designers should not regard the unit price tag as the only component contributing to total system cost. Other hidden costs, which are often ignored, can contribute significantly to total system cost.

The lack of LAPU capability can add several unnecessary components such as a CPLD for supervision tasks and bus maintenance, clock generator and reset controller, as the PLL and chip-enable signals are not available to help in system setup. For flash-based FPGAs lower bill-of-material costs through the use of fewer components is just the start of the cost savings. Lower printed circuit board cost (PCB) as board area is reduced, product reliability and yield increases and lower power consumption that allows for a cheaper power supply and no forced cooling techniques all contribute to cost reduction.

Every embedded system has different requirements and not every system will benefit from the elimination of all these components, but in general the cost savings of a nonvolatile FPGA in your next embedded systems design may be the best decision you can make to lower the total bill-of-material costs. Beyond bill-of-material costs of components, PCB and assembly there are also significant and often intangible costs associated with validation, verification and qualification of additional unnecessary components.

This results in development schedule delays and design engineering overhead, which kill productivity through inefficient use of resources. Finally, certain product attributes should be considered in the design stage with operations and manufacturing to lead to maximized manufacturing efficiency. Choosing a nonvolatile FPGA solution may reduce operations costs through simpler testing and easier product qualification, enhancing product yield, reduced risk, reduced EMI, reduce suppliers and lower inventories.

Protecting your investment

There are additional issues when designing FPGAs in embedded systems, whose effects cannot be measured by time or cost, but their influence on the company's overall business can be devastating. Issues of design security, product defamation protection and product liability reduction can be directly influenced by the FPGA technology used for the embedded system.

No longer are systems protected by ASICs, when FPGAs have displaced them at the heart of the system. FPGA technology choices can have a big impact on exposure to these issues and patents and litigation are hardly the way to enforce IP theft. Enforcement of patents is cost prohibitive in most cases, uncertain in its outcome and the lack of international standards makes the process difficult and time consuming. By the time you have won the legal 'battle' you usually will have lost the business 'war'.

An FPGA device that has its configuration bit stream exposed on each powerup cycle is hazardous to the health of the design and company's overall business. It is easy to intercept and capture the device configuration downloaded from external PROM or processor and clone the design in a very short time. The design can be taken by the contract manufacturer or 'hackers' to program blank standard product FPGA devices to over-build additional systems and sell them on the 'gray' market.

The design can also be cloned, again resulting with business damages to the original company, which designed the product and invested money and effort in developing its IP. FPGAs based on nonvolatile flash provide a good solution for these concerns as the configuration bit stream is programmed into the device itself and cannot be intercepted.

These FPGAs are highly resistant to invasive attacks, de-capping and stripping only reveals the structure of the device and not the actual contents of the nonvolatile memory cell. Furthermore, the latest flash FPGA solutions have an integrated AES decryption core that allows secure infield reprogrammability as well as over-building protection.

Total cost-of-ownership is directly influenced by embedded system designers' practices especially when FPGA technology choices are considered.

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