Powerful FPGA platform simplifies USB 2.0 integration, reduces LSI development time and supports sub-100ms hardware reconfiguration

Flexible Morph-IC-II platform from FTDI combines Altera Cyclone®-II FPGA with silicon and software for Hi-Speed 480Mbit/s USB

USB silicon and software specialist Future Devices Technology International Limited (FTDI) has launched a flexible and powerful development platform that speeds the creation of FPGA-based applications and simplifies the integration of Hi-Speed 480Mbit/s USB communication in advanced logic circuit designs.

The Morph-IC-II platform combines an Altera Cyclone®-II FPGA with high-performance USB 2.0 capabilities that facilitate Hi-speed communications with ultra-fast, sub-100ms FPGA programming/re-programming. This makes Morph-IC-II ideal for applications which require users to reconfigure hardware functionality 'on-the-fly' by downloading new software over USB : "morphing" the hardware. As well as enhancing application flexibility, hardware reconfiguration via USB can also reduce BoM costs as the FPGA need only be sized for the most complex discrete function rather than all potential functions.

FTDI's new platform incorporates all of the hardware, software and documentation needed for 'out-of-the-box' FPGA development. The hardware comprises a compact development module incorporating an Altera EP2C5F256C8N Cyclone-II FPGA and an FTDI FT2232H USB-to-multi-purpose UART/FIFO IC. One channel of the FT2232H is utilised for FPGA-to-PC communications and supports data transfer speeds of up to 40Mbyte/s. The second channel of the FT2232H is used to configure and reconfigure the FPGA over USB. USB programming eliminates the need for Flash configuration memory normally required to configure SRAM-based FPGAs.

The Morph-IC-II features up to 80 general purpose I/O (GPIO) lines ensuring optimum flexibility for connecting the FPGA to external circuits and interfaces.

USB software interfacing is provided via FTDI's royalty-free drivers and sample FPGA reference designs help to speed prototyping and further reduce development times. The FPGA can be rapidly programmed and configured using Altera's Quartus II development software, which is available as a free download from the Altera website.

Altera's EP2C5F256C8N FPGA offers 4,608 embedded FPGA logic elements (LEs) and 26 embedded logic RAM elements for the implementation of LSI and entry-level VLSI (very large scale integration) designs with up to 80,000 gates

and 119Kbits of RAM. The FTDI FT2232H IC offers USB-to-UART and USB-to-high-speed FIFO options for general-purpose communications with PC application software. The FT2232H also features a Multi Protocol Synchronous Serial Engine (MPSSE) ; a configurable serial controller that allows designers to implement JTAG, SPI, I^2C or other application-specific serial interfaces.

Morph-IC-II is supplied with FTDI's VCP (Virtual COM port) and D2XX Microsoft Windows and Linux USB drivers, eliminating the need for additional driver development for most applications. VCP drivers make the USB device appear to the PC as an additional COM port, enabling application software to access the USB device in the same way as it would access a standard port. The D2XX drivers, which offer direct access to the USB device through a DLL, provide an API-based interface for developers to interact with the hardware using C/C++, C#, Visual Basic, Embarcadero Delphi® and National Instruments LabVIEW.

As well as supporting FPGA application development and the FPGA-based prototyping of high-volume ASIC applications, Morph-IC-II is also an ideal education platform for developers who want to learn more about FPGA design. FTDI also allows customers to use the Morph-IC-II schematics and programming utility as a reference design for their own PCB developments.

The Morph-IC-II development platform is available now at a cost of $110.00 for single units. Volume pricing is available.

About FTDI
Future Technology Devices International (FTDI) specialises in the design and supply of silicon and software solutions for the Universal Serial Bus (USB). FTDI offers a simple route to USB migration by combining easy-to-implement IC devices with proven, ready-to-use, royalty-free USB firmware and driver software. The company's single and multi-channel USB peripheral devices come with an easy-to-use UART or FIFO interface. These popular devices can be used in legacy USB-to-RS232/RS422 converter applications or to quickly interface an MCU, PLD, or FPGA to USB. A wide range of evaluation kits and modules are available to evaluate FTDI's silicon prior to design-in.

Vinculum is FTDI's brand name for a range of USB Host/Slave controller ICs that provide easy implementation of USB host controller functionality within products and use FTDI's tried and tested firmware to significantly reduce development costs and time to market.

FTDI is a fabless semiconductor company headquartered in Glasgow, UK, and has regional sales offices in Oregon, USA, ShangHai, China and Taipei, Taiwan. More information is available at http://www.ftdichip.com

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