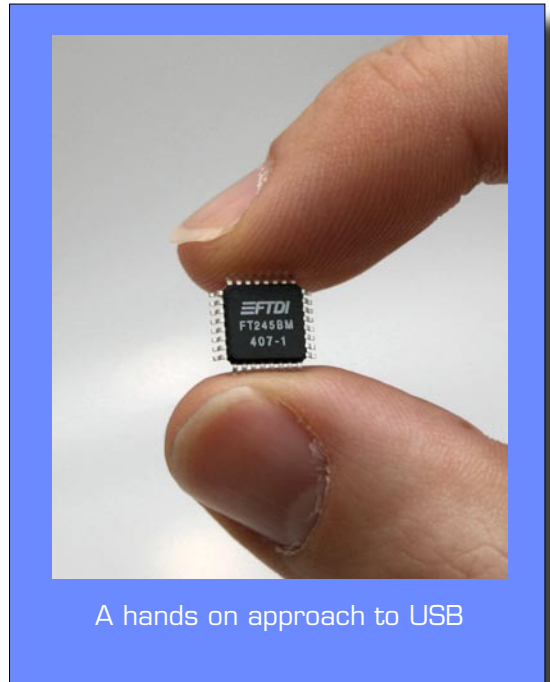# FTDI - USB development made simple

FTDI design and sell specialist ICs for USB interfacing. Our products offer an easy route for developing new Universal Serial Bus (USB) peripherals or for converting legacy peripherals to USB . We offer the easiest route to USB migration by combining USB UART and USB FIFO silicon solutions with our ready-to-go royalty free USB drivers. FTDI's "total" solutions offer reduced development and debug costs and a fast time to market.

Drivers are available in two forms, VCP drivers which simulate a standard serial port in a PC environment and D2XX "direct" drivers which allow application software access to the devices via a DLL based interface. Operating systems supported to date include -

• Windows 98, ME, 2000 and XP
• Linux kernel version 2.40 and higher
• Windows CE.NET (version 4.2)
• MacOS-8, OS-9 and OS-X

Application notes, schematics, drivers and numerous examples are available for download from the FTDI web site.

A hands on approach to USB

FT232BM & FT245BM

FT2232C DUAL USB UART / FIFO

The FT2232C is the 3rd generation of FTDI's popular USB UART / FIFO I.C. family. This device features two Multi-Purpose UART / FIFO controllers which can be configured individually in several different modes. As well as a UART interface, FIFO interface and Bit-Bang IO modes of the 2nd generation FT232BM and FT245BM devices, the FT2232C offers a variety of additional new modes of operation, including a Multi-Protocol Synchronous Serial Engine interface which is designed specifically for synchronous serial protocols such as JTAG and SPI bus.

• Multi-Port USB to Serial Products
• JTAG, SPI, I²C, FPGA and MCU programming / interfacing
• Sync / Async Bit Bang (GPIO) modes
• Optically isolated USB products

FT232BM USB UART

The FT232BM is a cost-effective single chip USB UART for transferring serial data over USB. With data transfer rates of up to 3M baud the FT232BM significantly raises the performance level above that of traditional ISA and PCI based UART solutions whilst offering true plug and play and easy interfacing through its USB interface.

• USB to RS232 / 422 / 485 converters
• Mobile Phone USB data cables
• GPS USB Interface
• USB Bar Code Scanners
• Upgrading Legacy Peripherals to USB
• USB Modem Interfacing • Smart Card readers
• PDA Interfacing • Serial Printer Interfacing

FT245BM USB FIFO

The FT245BM provides an easy way of transferring data to / from a MCU based peripheral and a USB host PC. Its simple FIFO-like design makes it easy to interface to any CPU (MCU) at peak data transfer rates of up to 1 Megabyte per second. No in-depth knowledge of USB is required to design a USB peripheral based on this device.

• MCU / PLD / FPGA interface to USB
• USB Instrumentation
• USB MP3 Player Interface
• USB Set Top Box Interface
• USB Industrial Monitoring & Control
• USB Device Programmers
• High speed data acquisition over USB

Future Technology Devices Intl. Ltd.
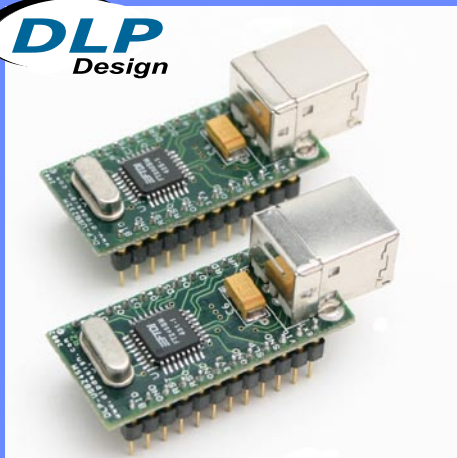### http://www.ftdichip.com

FTDI Chip

Innovative USB Programmable FPGA Modules from FTDI

MORPH-IC combines the flexibility of the FT2232C interface together with an Altera ACEX 1K series FPGA in a compact ready to use module. The power and IO pins of the module are brought out onto two standard 40 pin headers on the underside of its PCB, allowing easy connection to the pins. The module can also be plugged into a PCB using readily available mating connectors. Under control of PC based application software, the contents of the FPGA can be reloaded in under 0.2 seconds. This allows MORPH-IC based products to switch between different hardware configurations via USB almost instantaneously.

• USB Products with re-configurable hardware
• USB Products with field upgradable hardware
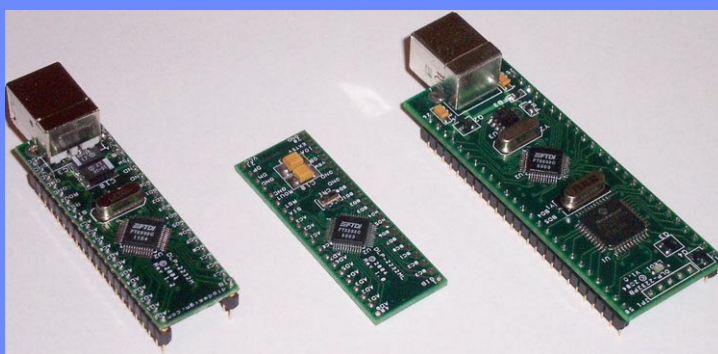• FPGA & VHDL learning tool

MORPH - IC Module

Development Modules from DLP Design

DLP-USB232M & DLP-USB245M

These products allow customers to quickly evaluate FTDI's devices and drivers prior to commencing their own design. Some modules simply incorporate the FTDI device and essential support components into a convenient DIP format, whilst others have an on-board microcontroller as well. These modules are suitable for incorporating directly into low & medium volume product designs as they can plug into standard DIP sockets.

DLP-USB232M and DPL-USB245M are basic modules incorporating FTDI's second generation FT232BM and FT245BM devices. The PCB includes all essential support components including EEPROM and USB "B" connector and fits in a 24 pin 0.6in DIP socket.

DLP-2232M & DLP-2232ML are basic modules incorporating FTDI's third generation FT2232C device. The PCB includes all essential support components including EEPROM. The DLP2232M includes a USB "B" connector and fits a 40 pin 0.6in DIP socket.

The DLP-2232PB is a powerful integrated module featuring FTDI's FT2232C 3rd generation Dual USB UART/FIFO together with a PIC 16F877 MPU. The DLP-2232PB allows reprogramming of the 16F877 over USB without the need for a separate flash programmer. The DLP-2232PB is supplied pre-programmed with "Token I/O" code for basic port pin

DLP-2232M, DLP-2232ML & DLP-2232PB

input/output capability The DLP-2232PB plugs into a two 25 way SIL header strips (supplied).

There are many other evaluation kits and development modules available. For the full range of products from FTDI and 3rd party suppliers, consult the evaluation kits page of the FTDI web site. These include modules featuring Ubicom SX, other Microchip PIC and TI MSP430F169 MCUs, USB Serial cables, prototyping systems and learning tools, CAN bus controllers, USB Radio Telemetry modules, Flash Programmers, USB Lab Equipment and other Altera, Xilinx and Lattice Logic based FPGA development kits.