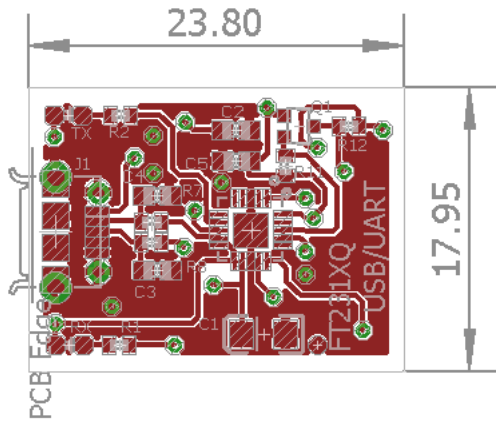**Intended to use primarily with COMFORT GADGET or other Arduino based hardware**

Datasheet Version 0.9

The FT231XE is a USB to serial UART interface with full modem control and the following advanced features:
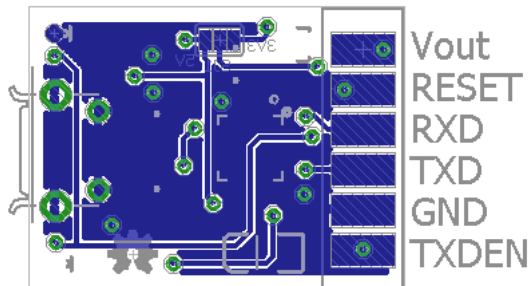
 • Single chip USB to asynchronous serial data transfer interface.

 • Entire USB protocol handled on the chip. No USB specific firmware programming required.

 • Fully integrated 2048 byte multi-timeprogrammable (MTP) memory, storing device descriptors and CBUS I/O configuration.

 • Fully integrated clock generation with no external crystal required plus optional clock output selection enabling glue-less interface to external MCU or FPGA.

 • Data transfer rates from 300 baud to 3 Mbaud (RS422, RS485, and RS232) at TTL levels.

 • 512 byte receive buffer and 512 byte transmit buffer utilising buffer smoothing technology to allow for high data throughput.

 • FTDI's royalty-free Virtual Com Port (VCP) and Direct (D2XX) drivers eliminate the requirement for USB driver development in most cases.

 • Configurable CBUS I/O pins.

 • Transmit and receive LED drive signals.

 • UART interface support for 7 or 8 data bits, 1 or 2 stop bits and odd / even / mark / space no parity

• Synchronous and asynchronous bit bang interface options with RD# and WR# strobes.

 • USB Battery Charger Detection. Allows for USB peripheral devices to detect the presence of a higher power source to enable improved charging.

 • Device supplied pre-programmed with unique USB serial number.

 • USB Power Configurations; supports buspowered, self-powered and bus-powered with power switching • Integrated +3.3V level converter for USB I/O.

 • True 3.3V CMOS drive output and TTL input; Operates down to 1V8 with external pull-ups. Tolerant of 5V input.

 • Configurable I/O pin output drive strength; 4 mA(min) and 16 mA(max). • Integrated power-on-reset circuit.

 • Fully integrated AVCC supply filtering - no external filtering required.

 • UART signal inversion option. • + 5V Single Supply Operation.

 • Internal 3V3/1V8 LDO regulators Low operating and USB suspend current; 8mA (active-typ) and 125uA (suspend-typ).

 • UHCI/OHCI/EHCI host controller compatible

 • USB 2.0 Full Speed capable.

 • Extended operating temperature range; -40 to 85°C.

FT231XE module features:

 • Very small – only 24 x 18mm

• Micro-USB B connector

• Standard 0.1" header for output pins

• Preconfigured for 3,3V I/O voltage

• Pin configuration match COMFORT GADGET programming connector

Output connector pin names:

Vout
RESET
RXD
TXD
GND
TXDEN

Note: TXDEN signal not used

open hardware

USB VIN ONLY ON VBUS/VCC

J1
10118194-0001LF

1 VCC

SH1
SH2
SH3
SH4
VDD
SH
ID
GND
D-
D+

GND

C4
47pF

C3
47pF

R7 27R
R8 27R

GND GND

C5
0.1uF

GND GND

3.3V VCC

FT231XQ

GND_PIN3
GND_PIN13
GND_PIN21

RESET#

USBDM
USBDP

VCC
VCCIO
3V3OUT

TXD
RXD
RTS#
CTS#
DTR#
DSR#
DCD#
RI#

CBUS0
CBUS1
CBUS2
CBUS3

TXD
RXD
RTS
CTS
DTR
DSR
DCD
RI

TXDEN

CUT TRACES ON SJ2 AND SJ3
TO DISCONNECT LEDS

RXLED

TXLED

R1
1k

R2
1k

RED
RX

3.3V

3.3V

TX
GREEN

DO NOT CONNECT ALL THREE PADS
ON SJ1 AT THE SAME TIME!

DTR

R11
10k

3.3V

Q1
BSS138

R12
10k

RESET

VOUT

SJ1

3.3V

VCC

VOUT

GND

C2
0.1uF

VCC

GND

C1
10uF

VCC

GND

U$3
1X6SMD

Ps6
Ps5
Ps4
Ps3
Ps2
Ps1

TXDEN
RXD
TXD
RESET
VOUT
GND