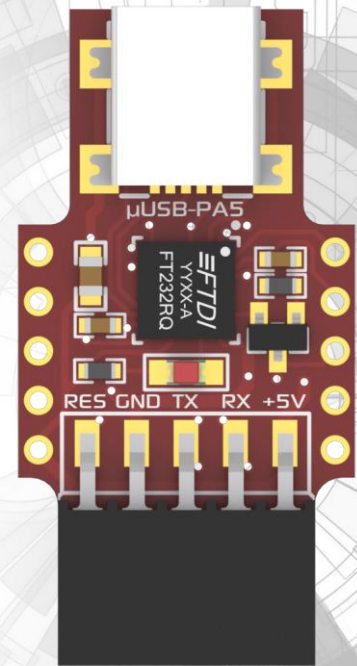


micrUSB Programming Adaptor

DATASHEET

DOCUMENT DATE: 23rd MARCH 2019
DOCUMENT REVISION: 2.1



uUSB-PA5/uUSB-PA5-II

Uncontrolled Copy when printed or downloaded.
Please refer to the 4D Systems website for the latest
Revision of this document

Table of Contents

| | |
|--|----|
| 1. Description | 3 |
| 2. Module Compatibility..... | 3 |
| 3. Features..... | 3 |
| 4. Pin Configuration and Summary | 4 |
| 5. Typical Applications | 5 |
| 6. Mechanical Dimensions..... | 6 |
| 7. Schematic Diagram HW REV 1.0..... | 7 |
| 8. Schematic Diagram HW REV 3.0..... | 8 |
| 9. Hardware Revision History | 9 |
| 10. Datasheet Revision History | 9 |
| 11. Ordering Information | 10 |
| 12. Legal Notice | 10 |
| 13. Contact Information | 10 |

1. Description

The microUSB Programming Adaptor is a USB to TTL UART bridge converter which is simple, cost effective, very small and easy to use.

There are 2 versions of the microUSB Programming Adaptor, the uUSB-PA5 and the uUSB-PA5-II.

They both use a mini-B type USB connector to connect to your PC. The uUSB-PA5 is based on the FTDI FT232RQ USB to Serial Bridge IC from FTDI Chip, while the uUSB-PA5-II is based on the SiLabs CP2104 USB to Serial Bridge IC from Silicon Labs.

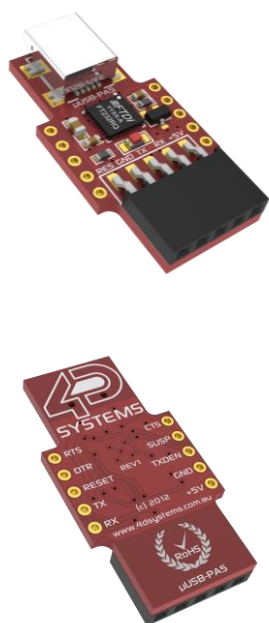
From the perspective of programming 4D Systems modules, both the uUSB-PA5 and uUSB-PA5-II operate in the same way.

They provide the User with multi baud rate serial data and access to additional signals such as flow control in a convenient 10 pin 2.54mm (0.1") pitch Dual-In-Line package.

The main 5 pin interface is a standard 2.54mm (0.1") pitch female header, designed to connect directly to a majority of the 4D Systems modules.

The uUSB-PA5 and uUSB-PA5-II are ideal for prototype or production.

RX and TX signals are both 3.3V and 5V tolerant.



2. Module Compatibility

The uUSB-PA5 was designed in 2012. The uUSB-PA5-II was designed in 2015 to replace the uUSB-PA5.

While a large range of 4D Systems modules are compatible with these programming adaptors, some are not, for mechanical reasons.

The following is a small list of known modules that are not compatible with the uUSB-PA5/PA5-II.

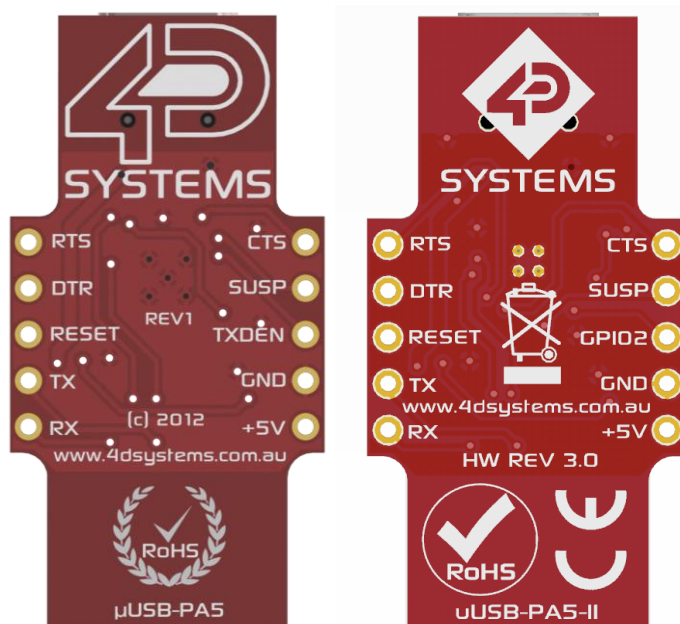
- uLCD-28PT (note, this is not the PTU)
- uLCD-32PT (note, this is not the PTU)

Please use the 4D Programming cable instead, or simply connect the 5 way cable that ships with each module, between the uUSB-PA5/PA5-II and the display module, which overcomes this compatibility issue.

3. Features

- USB 2.0 compliant Full Speed 12Mbps maximum speed, Suspend supported.
- Hardware or Xon/Xoff handshaking supported, 300bps to 3Mbps (uUSB-PA5), 300bps to 2Mbps (uUSB-PA5-II)
- UART supports 7 or 8 data bits, 1-2 Stop bits, odd/even/mark/space and no parity (uUSB-PA5). 5, 6, 7, 8 data bits, 1, 1.5, 2 stop bits, odd/even/mark/space and no parity (uUSB-PA5-II)
- Power on reset circuit
- Virtual COM port drivers allow operation with existing COM port PC applications
- Supports Windows 2000 and above, MAC (OSX-8 and above) and Linux (2.4 kernel and above)
- USB powered
- -40 to +85 degrees Celsius temp range
- Small size, 33.7mm x 17.3mm
- Traffic/Operation LED indicates board status
- Additional flow control and features available for the user to solder, using standard 2.54mm (0.1") pitch through holes along each side of the PCB.
- RoHS Compliant

4. Pin Configuration and Summary



microUSB (uUSB-PA5) additional Pin Outs

| Symbol | Description |
|--------|--|
| RTS | Ready to Send Output (active low) |
| DTR | Data Terminal Ready Output (active low) |
| RESET | This pin provides a LOW level RESET pulse of several hundred micro seconds when the DTR signal is toggled. |
| TX | Serial Data Transmit output. This connects to the host Rx (Serial Receive) input. |
| RX | Serial Data Receive input. This connects to the host Tx (Serial Transmit) output. |
| CTS | Clear to Send Input (active low) |
| SUSP | USB Suspend State (active low) |
| TXDEN | Transmit Data Enable, for enabling external circuits such as RS485 (active high) |
| GND | Ground |
| +5V | +5V Power from USB (up to 500mA). Power supply to external circuits |

microUSB (uUSB-PA5-II) additional Pin Outs

| Symbol | Description |
|--------|--|
| RTS | Ready to Send Output (active low) |
| DTR | Data Terminal Ready Output (active low) |
| RESET | This pin provides a LOW level RESET pulse of several hundred micro seconds when the DTR signal is toggled. |
| TX | Serial Data Transmit output. This connects to the host Rx (Serial Receive) input. |
| RX | Serial Data Receive input. This connects to the host Tx (Serial Transmit) output. |
| CTS | Clear to Send Input (active low) |
| SUSP | USB Suspend State (active low) |
| GPIO2 | Set to Push/Pull for enabling external circuits such as RS485 (active high) |
| GND | Ground |
| +5V | +5V Power from USB (up to 500mA). Power supply to external circuits |

5. Typical Applications

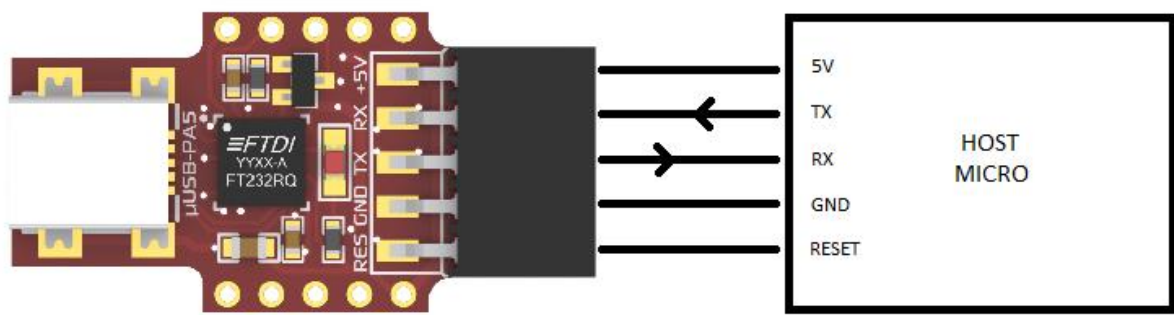
The microUSB (**uUSB-PA5/PA5-II**) are designed to accommodate many applications. Its small size and convenient form factor are perfect for adding micro USB functionality to embedded applications.

Obviously the primary purpose of the uUSB-PA5 and uUSB-PA5-II is to be the programming interface for 4D Systems products, however it has a much wider scope and can be utilized for many applications.

The microUSB makes an easy USB-Serial interface, so you can easily create USB to RS-232 converters, USB to RS-422/RS-485 converters, upgrade legacy RS-232 devices, make PDA and cellphone USB interface cables, barcode readers, POS terminals, etc.

In any application, make sure the TX and RX lines from the uUSB are crossed over to the attached peripheral. That is, the TX from the uUSB connects to the RX of the target and the RX from the uUSB connects to the TX of the target device.

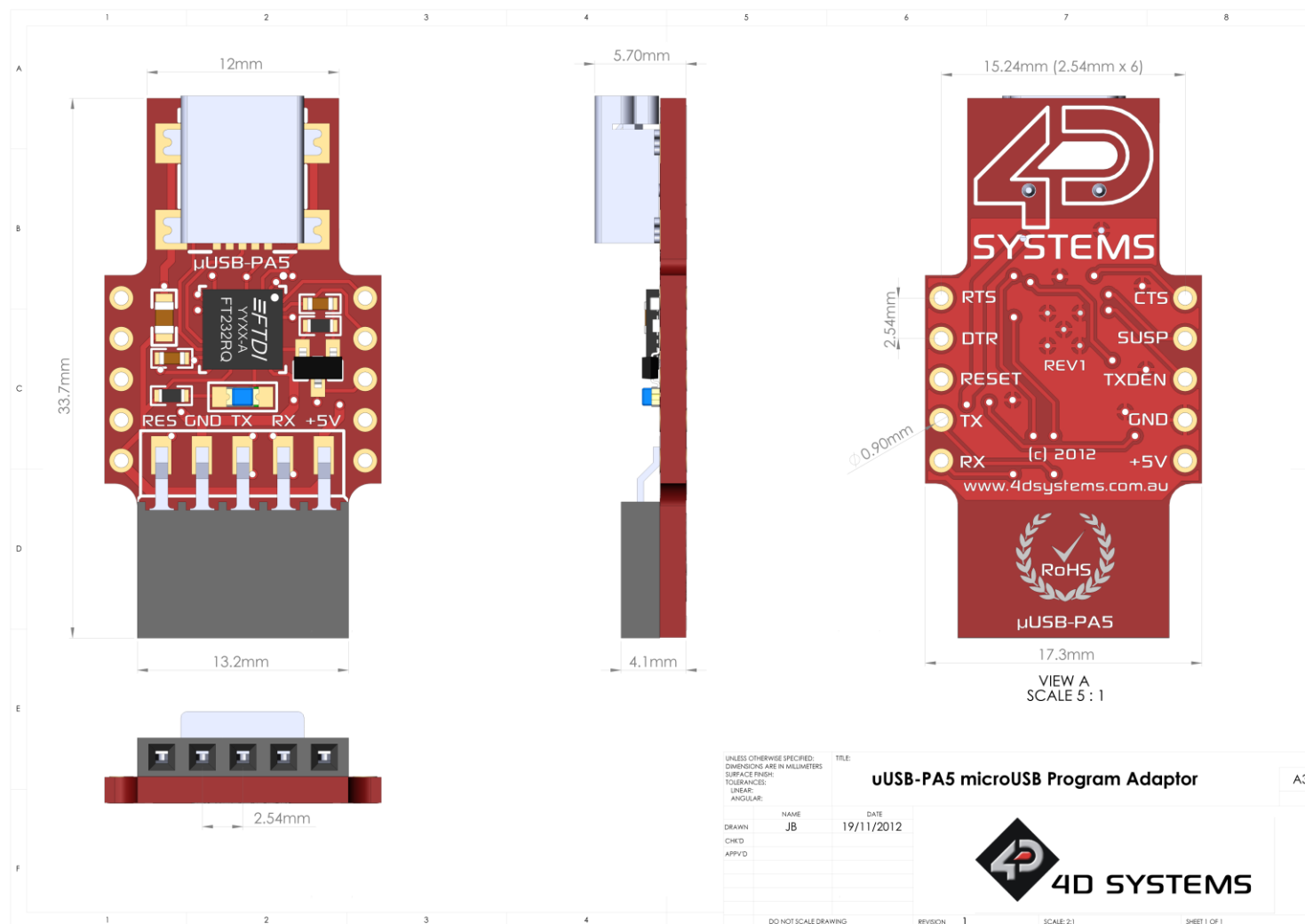
Note: the TX and RX signal levels are between 0 Volts and 3.3 Volts, however are 5.0V tolerant.



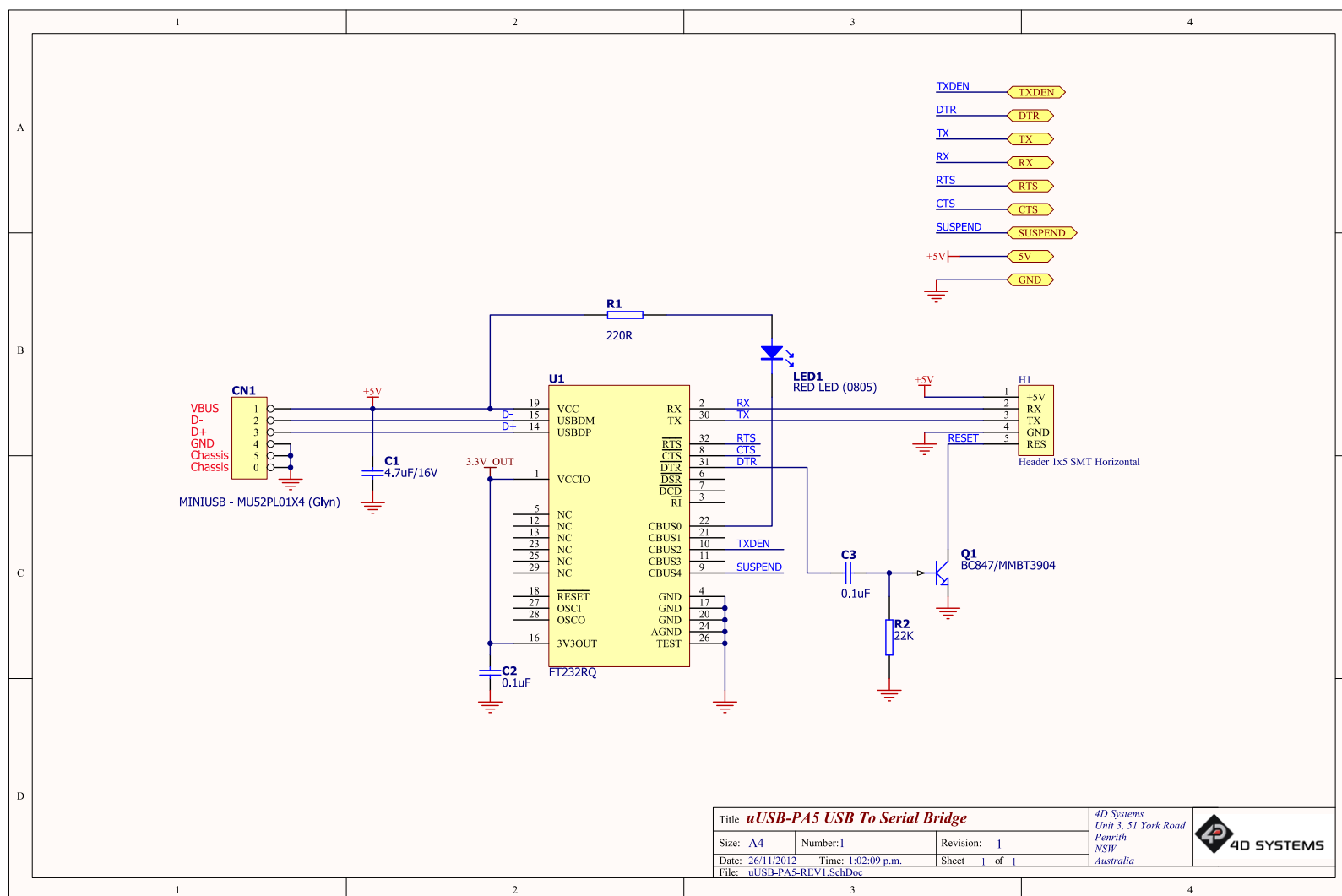
The microUSB is designed to have a compact footprint, and be compatible with prototyping such as plugging it directly into a breadboard when male 2.54mm (0.1") headers are soldered to the row of 5 pins, along each side.

For assistance with latest driver downloads, please visit the uUSB-PA5 product page of the 4D Systems website, www.4dsystems.com.au

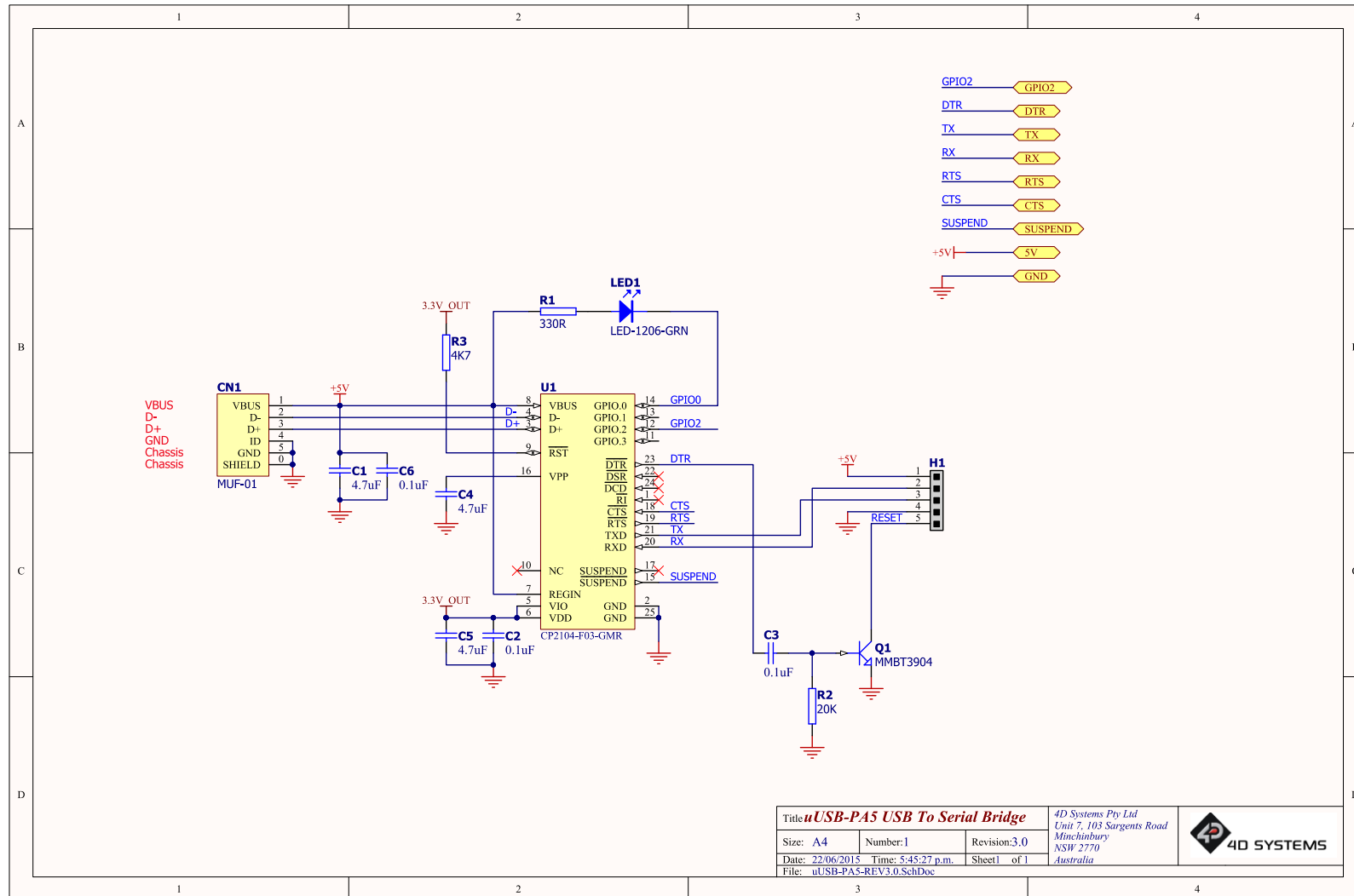
6. Mechanical Dimensions



7. Schematic Diagram HW REV 1.0



8. Schematic Diagram HW REV 3.0



9. Hardware Revision History

| Revision Number | Date | Description |
|-----------------|------------|---|
| 1.0 | 01/01/2012 | Initial Public Release Version |
| 3.0 | 01/01/2015 | Migration to SiLabs CP2104 from FT232RQ |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

10. Datasheet Revision History

| Revision Number | Date | Description |
|-----------------|------------|---|
| 1.0 | 19/11/2012 | Initial Public Release Version |
| 1.1 | 27/11/2013 | Changes on some technical details |
| 2.0 | 17/07/2015 | Introduction of uUSB-PA5-II |
| 2.1 | 23/03/2019 | Cosmetic changes to uUSB-PA5-II Datasheet |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

11. Ordering Information

| ORDERING INFORMATION |
|---|
| Order Code: uUSB-PA5 uUSB-PA5-II Package: 90mm x 130mm |

12. Legal Notice

Proprietary Information

The information contained in this document is the property of 4D Systems Pty. Ltd. and may be the subject of patents pending or granted, and must not be copied or disclosed without prior written permission.

4D Systems endeavours to ensure that the information in this document is correct and fairly stated but does not accept liability for any error or omission. The development of 4D Systems products and services is continuous and published information may not be up to date. It is important to check the current position with 4D Systems. 4D Systems reserves the right to modify, update or make changes to Specifications or written material without prior notice at any time.

All trademarks belong to their respective owners and are recognised and acknowledged.

Disclaimer of Warranties & Limitation of Liability

4D Systems makes no warranty, either expressed or implied with respect to any product, and specifically disclaims all other warranties, including, without limitation, warranties for merchantability, non-infringement and fitness for any particular purpose.

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications.

In no event shall 4D Systems be liable to the buyer or to any third party for any indirect, incidental, special, consequential, punitive or exemplary damages (including without limitation lost profits, lost savings, or loss of business opportunity) arising out of or relating to any product or service provided or to be provided by 4D Systems, or the use or inability to use the same, even if 4D Systems has been advised of the possibility of such damages.

4D Systems products are not fault tolerant nor designed, manufactured or intended for use or resale as on line control equipment in hazardous environments requiring fail – safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines or weapons systems in which the failure of the product could lead directly to death, personal injury or severe physical or environmental damage ('High Risk Activities'). 4D Systems and its suppliers specifically disclaim any expressed or implied warranty of fitness for High Risk Activities.

Use of 4D Systems' products and devices in 'High Risk Activities' and in any other application is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless 4D Systems from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any 4D Systems intellectual property rights.

13. Contact Information

For Technical Support: support@4dsystems.com.au

For Sales Support: sales@4dsystems.com.au

Website: www.4dsystems.com.au

Copyright 4D Systems Pty. Ltd. 2000-2019.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[4D Systems:](#)

[uUSB-PA5](#) [uUSB-PA5-II](#)