

LPM355X

USB to Serial Converter



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Doc. Rev.0 (31/07/12)



Features

- All-In-One USB to Serial Converter.
- USB 2.0 Full Speed compatible.
- Wide serial lines voltage range 2.7V to 5.5V.
- Baudrate up to 921.6Kbps.
- No external components required.
- Free Virtual Com Port driver.
- USB Mini-B connector.
- Very small footprint (20.3x18.3mm).
- Pitch 2.54mm (100mils) for easy mouting on prototyping boards.
- Typical Application: connection to PC through USB port.

Description

LPM355X is a USB to Serial converter that makes easy the connection of serial UART interface to a USB 2.0 Full Speed bus. The low pin count and very small footprint of LPM355X are intended for optimised PCB designs. The converter can be interfaced directly with 3.3V and 5V external devices that can also be powered directly from LPM355X.

Free USB drivers (VCP – Virtual Com Port) are provided for quick installation on PC and connection is performed through a USB mini-B connector.

The UART interface supports 7 or 8 data bits, 1 or 2 stop bits, even, even or odd parity, RTS/CTS handshake signals and all the standard baudrates up to 921.6Kbps.

Typical Application

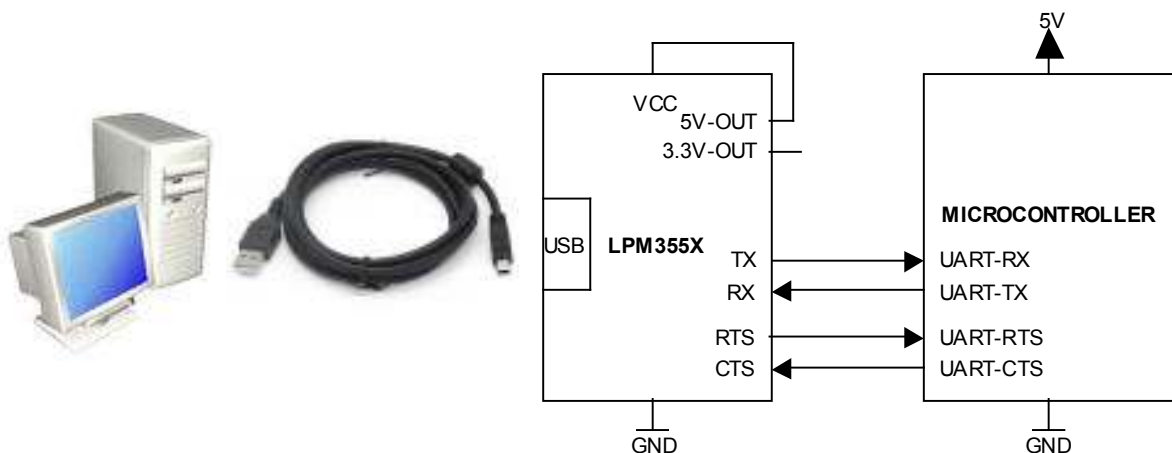


Figure 1 – Typical application schematic with 5V UART interface

Application schematics

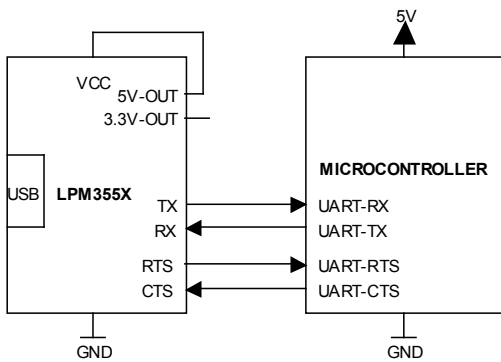


Figure 2 – UART connection with external 5V device

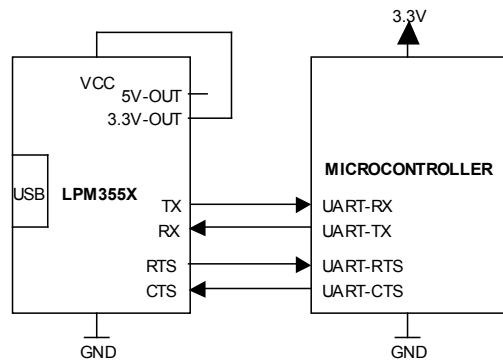


Figure 3 – UART connection with external 3.3V device

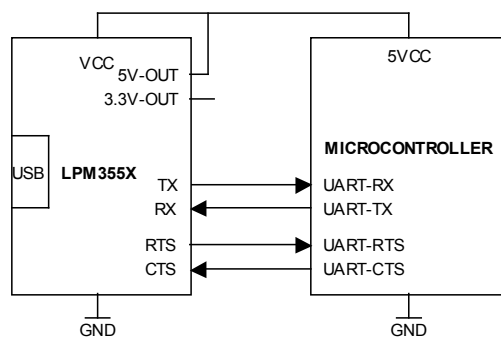


Figure 4 – External device powered by 5V USB Supply Voltage

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Pin Diagram

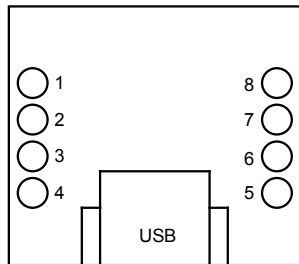


Figure 5 – Pin Diagram (Top View)

Pin Description

Pin number	Pin Name	Pin Type	Description
1	RX	IN	RX line of serial communication.
2	RTS	OUT	RTS line of serial communication.
3	TX	OUT	TX line of serial communication.
4	CTS	IN	CTS line of serial communication.
5	GND	POWER	Ground.
6	5V-OUT	POWER	5V Supply Voltage output from USB Bus.
7	VCC	POWER	Supply Voltage for serial lines RX, TX, RTS, CTS. (Can be connected to 5V-OUT or 3.3V-OUT).
8	3.3V-OUT	POWER	3.3V Supply Voltage output.

Table 1 – Pin Description

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Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Symbol	Parameter	Rating
V _{BUS}	USB connector Supply Voltage	-0.3V to +5.5V
V _{CC}	Serial lines Supply Voltage RX, TX, RTS, CTS	-0.5V to +6.5V
V _{IN}	Input Voltages RX, CTS	-0.5V to +6.5V
V _{OUT}	Output Voltages TX, RTS	-0.5V to +6.5V

Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance to the datasheet specifications. It is not recommended exceeding them or designing to absolute maximum ratings.

Symbol	Parameter	Rating
V _{BUS}	USB connector Supply Voltage	+3.0V to +5.5V
V _{CC}	Serial lines Supply Voltage RX, TX, RTS, CTS	+2.7V to +5.5V
T _A	Operating ambient temperature range	-40°C to +85°C

Electrical Characteristics

Symbol	Parameter	Min	Typ	Max
I _{BUS}	DC maximum supply current from USB connector	6.5mA	8mA	8.3mA
I _{VCC}	DC maximum supply current on V _{CC}	-	-	10μA
I _{3V3-OUT}	DC maximum output current from 3.3V-OUT	-	-	50mA
I _{5V-OUT}	DC maximum output current from 5V-OUT	-	-	500mA
V _{IH}	High level input voltage on serial pin RX, CTS	2.0V	-	-
V _{IL}	Low level input voltage on serial pin RX, CTS	-	-	0.8V
V _{OH}	High level output voltage on serial pin TX, RTS	2.0V	-	-
V _{OL}	Low level output voltage on serial pin TX, RTS	-	-	0.55V
I _{OUT}	DC maximum output current from serial pin TX, RTS	-	-	16mA

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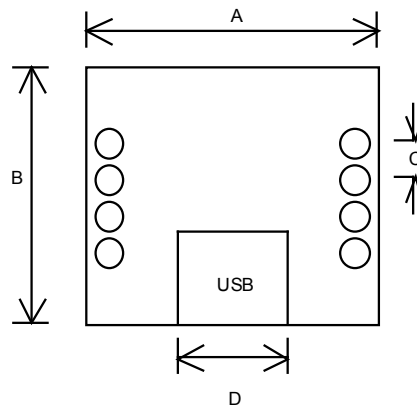
UART Interface

The following table shows the supported UART interface configurations:

UART interface	
Data bits	7 or 8
Stop bits	1 or 2
Parity	Even, Odd, None
Baudrates (bps)	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600
Handshake	RTS, CTS

Table 2 – Supported UART interface configurations

Packaging Informations



Dim	Millimeters	Mils
A	20.32	800
B	18.29	720
C	2.54	100
D	5.97	235

Figure 6 – Package Dimensions