

# **UMS1**

USB to UART interface module

User's manual

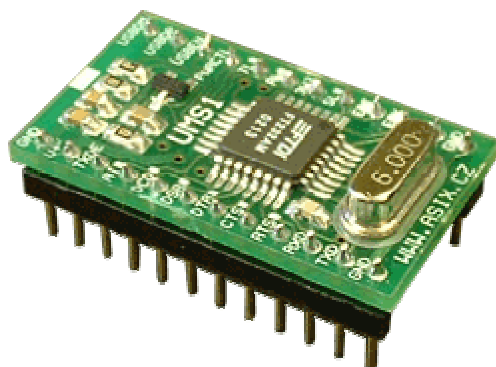


# CONTENTS

<b>1. UMS1</b>	<b>3</b>
<b>2. USAGE</b>	<b>3</b>
<b>3. FEATURES</b>	<b>3</b>
<b>4. TECHNICAL REFERENCE</b>	<b>5</b>
4.1. SCHEMATICS	5
4.2. TOP VIEW	6
4.3. BOTTOM VIEW	6
4.4. PIN DESCRIPTION	7
<b>5. DRIVER INSTALATION</b>	<b>7</b>
<b>6. TECHNICAL SPECIFICATION</b>	<b>8</b>
6.1. ABSOLUTE RATINGS	8
6.2. TYPICAL RATINGS	8
<b>7. CONTACT</b>	<b>9</b>

## 1. UMS1

UMS1 is a module based on FT8U232AM integrated circuit manufactured by FTDI Ltd., which provides with easy to use USB connectivity to PC without any need of additional knowledge about USB itself.



## 2. USAGE

UMS1 is a USB to UART interface with full hardware flow control capability. It is capable of data transfer rates up to 920 kBd (RS232) and up to 2 MBd (RS422/485). External EEPROM memory may be connected to store VID and PID identifiers for OEM applications.

The module connects by 2 signals directly to USB connector, the application side provides with UART signals including hardware flow control.

From mechanical standpoint, the module is arranged as DIP24 with standard pin spacing of 0.1 inch (2.54 mm) so it is possible to fit it into either common or precise DIP24 socket, or to solder it directly to printed circuit board. The USB connector is to be connected externally which allows the designer to choose the placement of the connector and its type: 'B' or 'mini B' or USB cable soldered directly to the board may be used. This design significantly simplifies the development in small production series.

Software drivers for Windows 98/ME/2K/XP, Mac OS8/OS9/OS X and Linux are available for free on FTDI website (<http://www.ftdichip.com>).

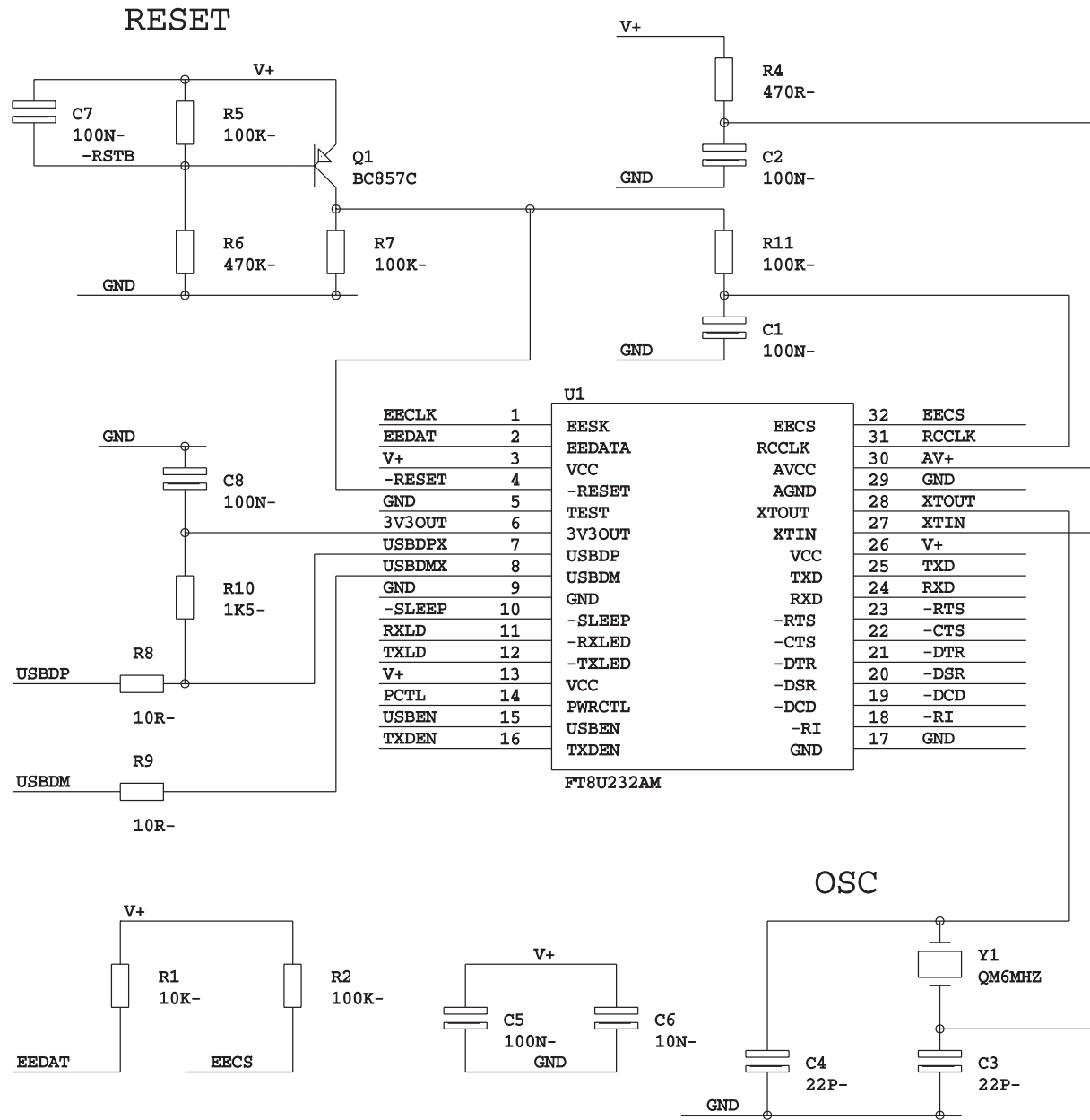
## 3. FEATURES

- Data inputs/outputs 5 V - CMOS compatible
- Powered from USB
- Data transfer rates from 300 Bd to 920 kBd (RS232) and from 300 Bd to 2 MBd (RS422/485)
- Full hardware flow control available
- 384 byte receive buffer
- 128 byte transmit buffer
- Support for RS485 level converter

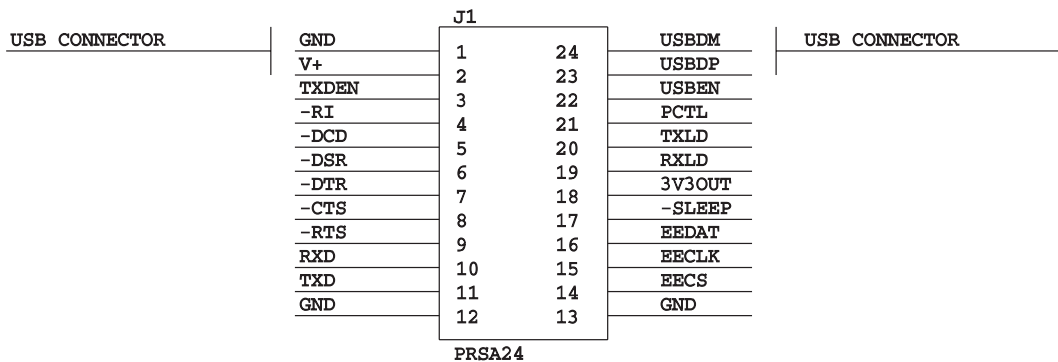
- Integrated frequency multiplier 6 MHz - 48 MHz
- Supports USB 1.1 protocol, USB 2.0 compatible
- Support for OEM applications (VID and PID can be stored in external EEPROM memory)
- Drivers for Windows 98/2K/ME/XP, Mac OS8/OS9/OS X and Linux available for free
- DIP24 socket compatible, PCB mountable

# 4. TECHNICAL REFERENCE

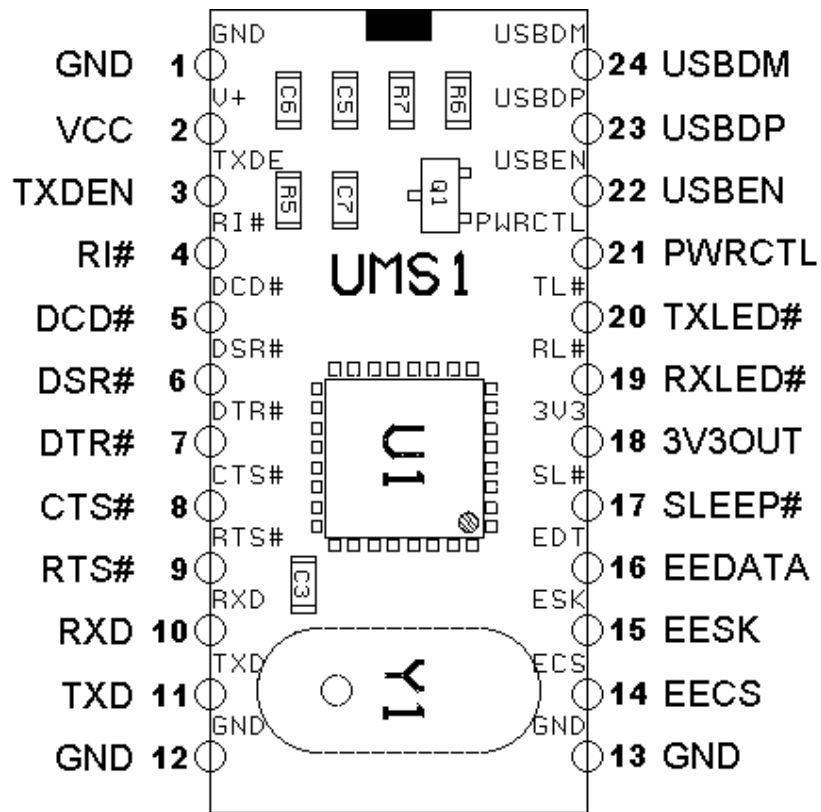
## 4.1. SCHEMATICS



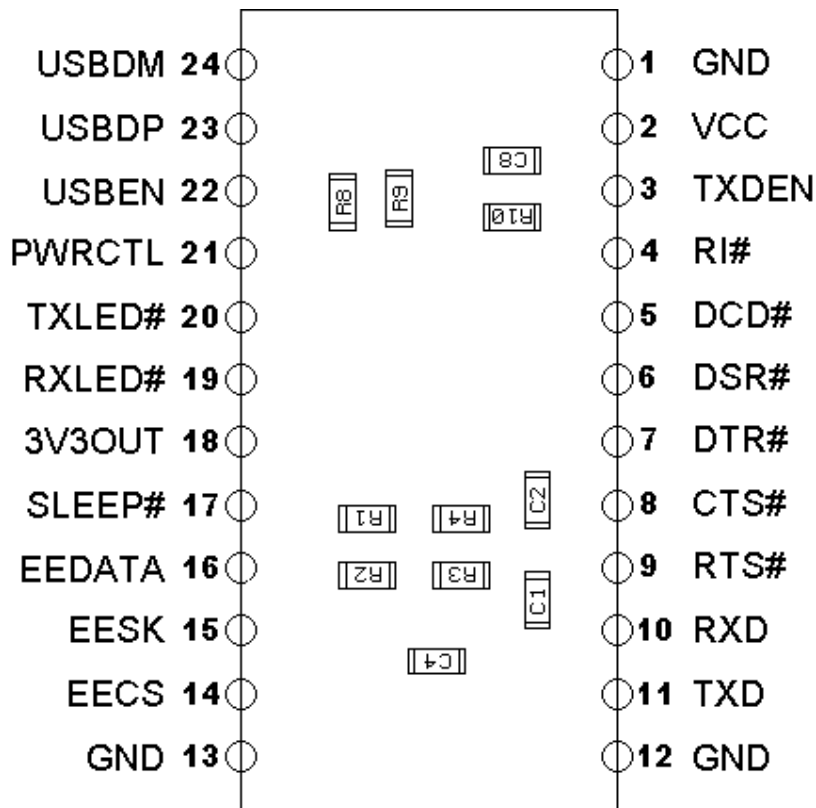
## HEADER



## 4.2. TOP VIEW



## 4.3. BOTTOM VIEW



#### 4.4. PIN DESCRIPTION

Pin	Label	FTDI	Typ	Description
1	GND	GND	PWR	Signal ground
2	V+	VCC	PWR	Power supply +4.4 V to 5.25 V
3	TXDE	TXDEN	OUT	Transmit enable for RS485
4	RI#	RI#	IN	Ring indicator
5	DCD#	DCD#	IN	Data carrier detect
6	DSR#	DSR#	IN	Data set ready
7	DTR#	DTR#	OUT	Data terminal ready
8	CTS#	CTS#	IN	Clear to send
9	RTS#	RTS#	OUT	Request to send
10	RXD	RXD	IN	Received data
11	TXD	TXD	OUT	Transmitted data
12	GND	GND	PWR	Signal ground
13	GND	GND	PWR	Signal ground
14	ECS	EESCS	I/O	EEPROM enable
15	ESK	EESK	OUT	EEPROM clock
16	EDT	EEDATA	I/O	EEPROM data I/O
17	SLP#	SLEEP#	OUT	Sleep mode indicator (log.0)
18	3V3	3V3OUT	OUT	3.3 V output from internal voltage regulator - this pin can source up to 5 mA.
19	RL#	RXLED#	O.C.	Receive LED
20	TL#	TXLED#	O.C.	Transmit LED
21	PWRCT	PWRCTL	IN	Power supply selection - bus powered (log.0) or external supply (log.1)
22	USBEN	USBEN	OUT	Indicates that the USB device has been configured
23	USBDP	USBDP	I/O	USB data signal plus. It is necessary to connect resistor of 1.5 kOhm between USBDP and 3V3OUT or RSTOUT#.
24	USBDM	USBDM	I/O	USB data signal minus.

## 5. DRIVER INSTALLATION

For Windows operating systems there are two types of drivers:

- Virtual COM port, which can be accessed as common COM port using Win32 API
- Direct driver, to gain full control of the chip, a DLL to interface the driver is provided

Detailed description of driver installation procedure can be found on FTDI website (<http://www.ftdichip.com>).

## 6. TECHNICAL SPECIFICATION

### 6.1. ABSOLUTE RATINGS

Storage temperature	$T_{STR}$	min. -65 °C	max. 150 °C
Operational temperature	$T_{PWR}$	min. 0 °C	max. 70 °C
Power supply voltage	$V_{CC_{MAX}}$	min. -0.5 V	max. 6.00 V
Input voltage – inputs	$V_{IN1}$	min. -0.5 V	max. $V_{CC}+0.5$ V
Input voltage - I/O	$V_{IN2}$	min. -0.5 V	max. $V_{CC}+0.5$ V
Output current – outputs	$I_{O1}$		max. 24 mA
Output current - I/O	$I_{O2}$		max. 24 mA
Power	$W_{PWR}$		max. 500 mW

### 6.2. TYPICAL RATINGS

VCC Operating supply voltage	VCC	min. 4.4 V	max. 5.25 V
Operating supply current	$ICC_1$		max. 50 mA
Suspended supply current	$ICC_2$		max. 250 $\mu$ A
Input voltage log.1	$V_{IH}$	min. 2.7 V	
Input voltage log.0	$V_{IL}$		max. 0.6 V
Output voltage log.1	$V_{OH}$	min. 2.8 V, $R_i=15$ kOhm	
Output voltage log.0	$V_{OL}$		max. 0.3 V, $R_i=1.5$ kOhm
Output current log.1	$I_{OH}$	4 mA, $V_{OH}=V_{CC}-0.5$ V	
Input current log.0	$I_{OL}$	8 mA, $V_{OL}=0.5$ V	



## 7. CONTACT

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### MANUMS1

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