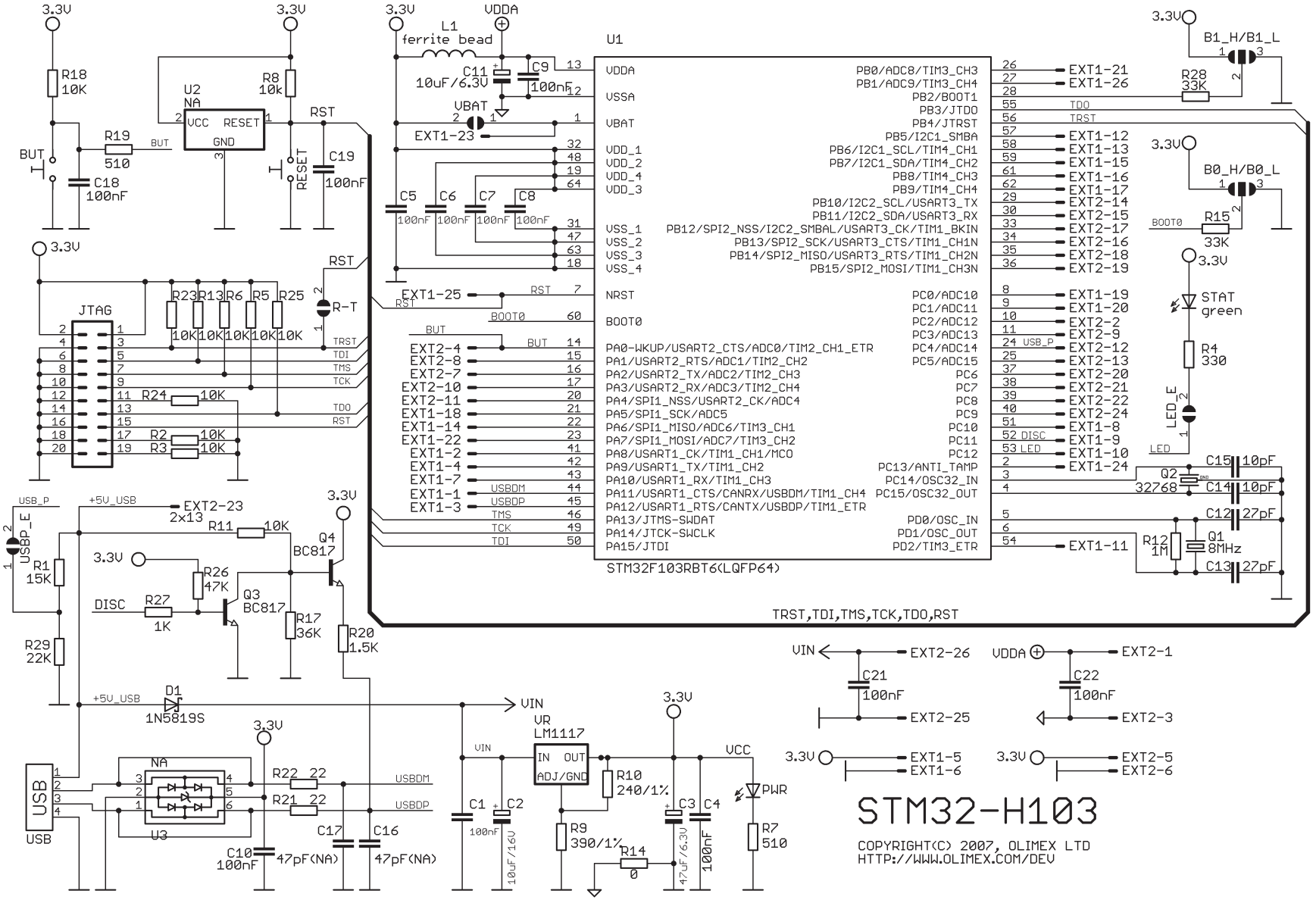
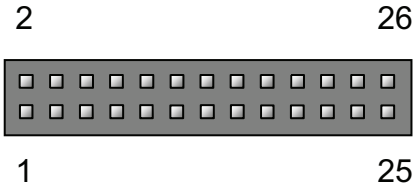
**SCHEMATIC:**


STM32-H103
COPYRIGHT(C) 2007, OLIMEX LTD
HTTP://WWW.OLIMEX.COM/DEV
STM32F103RBT6(LQFP64)
U1
JTAG
USB
VR
LM1117
TRST,TDI,TMS,TCK,TDO,RST

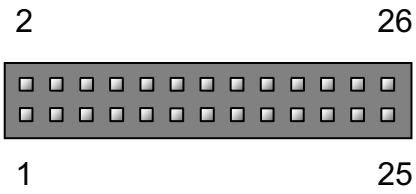
## EXTERNAL CONNECTOR DESCRIPTION:

## EXTENSION 1




| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | PA11/USBDM/CANRX | 2 | PA8 |
| 3 | PA12/USBDP/CANTX | 4 | PA9/UART1.TX |
| 5 | +3.3V out | 6 | GND |
| 7 | PA10/UART1.RX | 8 | PC10 |
| 9 | PC11/USBpull | 10 | PC12/LED |
| 11 | PD2 | 12 | PB5/I2C1.SMBA |
| 13 | PB6/I2C.SCL | 14 | PA6/SPI1.MISO |
| 15 | PB7/I2C.SDA | 16 | PB8 |
| 17 | PB9 | 18 | PA5/SPI1.SCK |
| 19 | PC0 | 20 | PC1 |
| 21 | PB0 | 22 | PA7/SPI1.MOSI |
| 23 | VBAT | 24 | PC13 |
| 25 | RST | 26 | PB1 |

## EXTENSION 2




| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | VDDA | 2 | PC2 |
| 3 | GNDA | 4 | PA0/BUT |
| 5 | 3.3V | 6 | GND |
| 7 | PA2/UART2.TX | 8 | PA1 |
| 9 | PC3 | 10 | PA3/UART2.RX |
| 11 | PA4/SPI1.NSS | 12 | PC4/USB-P |
| 13 | PC5 | 14 | PB10/UART3.TX |
| 15 | P11/UART3.RX | 16 | PB13/SPI2.SCK |
| 17 | PB12/SPI2.NSS/I2C.SMBA | 18 | PB14/SPI2.MISO |
| 19 | PB15/SPI2.MOSI | 20 | PC6 |
| 21 | PC7 | 22 | PC8 |
| 23 | +5V USB | 24 | PC9 |
| 25 | GND | 26 | VIN |

# JUMPER DESCRIPTION:

**R-T** connects JTAG TRST signal to STM32F103RBT6 RESET
Default state closed (shorted)

**VBAT** connects 3.3V to STM32F103RBT6 Vbat pin.1
Default state closed (shorten), Vbat signal is also available to EXT1-23, so if you want to connect external backup battery to the STM32F103RBT6 this jumper should be opened (unshorted) and the external battery to be connected to EXT1-23 pin.

**USBP-E** connects USB power supply to STM32F103RBT6 pin.24 PC4/ADC14 and allow to detect if the board is connected to USB host.
Default state closed (shorten)

**LED-E** connects STATUS LED to STM32F103RBT6 pin.53 PC12
Default state closed (shorten)

**BOOT0, BOOT1** boot sequence select
B1_H/B1_L (Boot1_High/Boot1_Low)
B0_H/B0_L (Boot0_High/Boot0_Low)

Default position: Boot1 is log. 0 

Boot0 is log. 0 

| Boot mode selection pins | | Boot mode | Aliasing |
|---|---|---|---|
| BOOT1 | BOOT0 | | |
| x | 0 | User Flash memory | User Flash memory is selected as boot space |
| 0 | 1 | SystemMemory | SystemMemory is selected as boot space |
| 1 | 1 | Embedded SRAM | Embedded SRAM is selected as boot space |

## CAN:

The STM32F103RBT6 CAN is compliant with specifications 2.0A and B (active) with a bit rate up to 1 Mbit/s. It can receive and transmit standard frames with 11-bit identifiers as well as extended frames with 29-bit identifiers. It has three transmit mailboxes, two receive FIFOs with 3 stages and 14 scalable filter banks.

The CAN and USB share same pins PA11/EXT1-1 and PA12/EXT1-3, so you can't use both CAN and USB on same time.

## USB:

The STM32F103RBT6 embeds a USB device peripheral compatible with the USB Full-speed 12 Mbs. The USB interface implements a full speed (12 Mbit/s) function interface. It has software configurable endpoint setting and suspend/resume support. The dedicated 48 MHz clock source is generated from the internal main PLL.

The CAN and USB share same pins PA11/EXT1-1 and PA12/EXT1-3, so you can't use both CAN and USB on same time.

## ADC:

STM32F103RBT6 have two 12-bit Analog to Digital Converters which share up to 16 external channels, performing conversions in singleshot or scan modes. In scan mode, automatic conversion is performed on a selected group of analog inputs.
Additional logic functions embedded in the ADC interface allow:
- Simultaneous sample and hold
- Interleaved sample and hold
- Single shunt

The ADC can be served by the DMA controller.
An analog watchdog feature allows very precise monitoring of the converted voltage of one, some or all selected channels. An interrupt is generated when the converted voltage is outside the programmed thresholds. The events generated by the standard timers (TIMx) and the Advanced Control timer (TIM1) can be internally connected to the ADC start trigger, injection trigger, and DMA trigger respectively, to allow the application to synchronize A/D conversion and timers.