Figure 11. STM32F4DISCOVERY
Figure 15. USB_OTG_FS
Figure 16: Peripherals

- LD5 [Red]
- LD3 [Orange]
- LD6 [Blue]
- LD4 [Green]
- R40 [510]
- R36 [680]
- R41 [680]
- R42 [680]
- PD12 [MB997 STM32F4DISCOVERY Peripherals LEDs]
- MEMS

- C38 [100nF]
- R39 [220K]
- VDD[1,2,3,4]
- B1 [SW-PUSH-CMS SB20]
- PA0 [USER & WAKE-UP Button]
- R35 [330]
- R38 [100K]
- VDD[1,2,3,4]
- B2 [SW-PUSH-CMS SB1 Not Fitted]
- PD13 [3V]
- C39 [100nF]
- SPI1_MOSI
- SPI1_SCK
- PA7 PE0 PE1
- MEMS_INT1 MEMS_INT2 MEMS_INT1
- PA6 SPI1_MISO CS_I2C/SPI
- VDD_IO1 NC2 NC3 SCL/SPC
- GND5 SDA/SDI/SDO SEL/SDO
- INT2 9 Reserved10 INTO/DRDY11 GND12 GND13 VDD14 Reserved15 GND16
- U5 [LIS3DSH]
- PA7 PA5 PE0 PE1
- Reserved10
- VDD IO3 IO1 IO9 IO3
- US
- C9 [100nF]
FEATURES

- Implement the FTDI Chip: FT2232H Dual High Speed USB to Multipurpose UART/FIFO IC
  - Single chip USB to dual serial / parallel ports with a variety of configurations.
  - Entire USB protocol handled on the chip. No USB specific firmware programming required.
  - USB 2.0 High Speed (480Mbits/Second) and Full Speed (12Mbits/Seconds) compatible.
  - Dual Multi-Protocol Synchronous Serial Engine (MPSSE) to simplify synchronous serial protocol (USB to JTAG, I2C, SPI or bit-bang) design.
  - Dual independent UART or FIFO or MPSSE ports. Independent Baud rate generators.
  - Fast Opto-Isolated serial interface option.
  - FTDI’s royalty-free Virtual Com Port (VCP) and Direct (D2XX) drivers eliminate the requirement for USB driver development in most cases. Adjustable receive buffer timeout.
  - Independent Baud rate generators.
  - RS232/RS422/RS485 UART Transfer Data Rate up to 12Mbaud. (RS232 Data Rate limited by external level shifter).
  - UART Interface supports 7/8 bit data, 1/2 stop bits, and Odd/Even/Mark/Space/No Parity.
  - +3.3V I/O interfacing (+5V Tolerant).
  - Extended -40°C to 85°C industrial operating temperature range.
  - Matlab™/Simulink™ block support
  - GPIO Block, 8 pins available for digital input/ output.
  - SPI Blocks (Master).
  - I2C Blocks (Master).
  - Fast Serial Blocks (Fast Opto-Isolate Mode) enable up to 1kHz closed-loop Simulink HIL Simulation.
  - ROHS Compliant

APPLICATIONS

- USB to UART converter with high-speed baud rate (up to 12Mbaud).
- USB to I2C converter.
- USB to SPI converter.
- USB to GPIO converter.
- FiO to Simulink high speed data acquisition up to 2kHz (dependent on host PC speed).
- FiO to Simulink closed loop HIL simulation up to 1kHz (dependent on host PC speed).
DC MOTORS WITH ENCODERS

STM32F4Discovery

ENCODER  MOTOR

+5V  ->  RED  BLACK  ->  Motor -
GND  ->  BLACK  RED  ->  Motor +
ENCx_A  ->  YELLOW/GREEN
ENCx_B  ->  BLUE

M1_Black  MOTOR 1
  M1_Red
  1 1  2  M1_BLEK
  OUT1A

M2_Black  MOTOR 2
  M2_Red
  1 2  3  M2_BLEK
  OUT1A

M3_Black  MOTOR 3
  M3_Red
  1 2  3  M3_BLEK
  OUT1A

M4_Black  MOTOR 4
  M4_Red
  1 2  3  M4_BLEK
  OUT1A

JP1: EXT 1-2  JP2 and JP3 NOT Fitted
R5, R16  ->  0R

JP1: EXT 1-2  JP2 and JP3 NOT Fitted
R5, R16  ->  0R