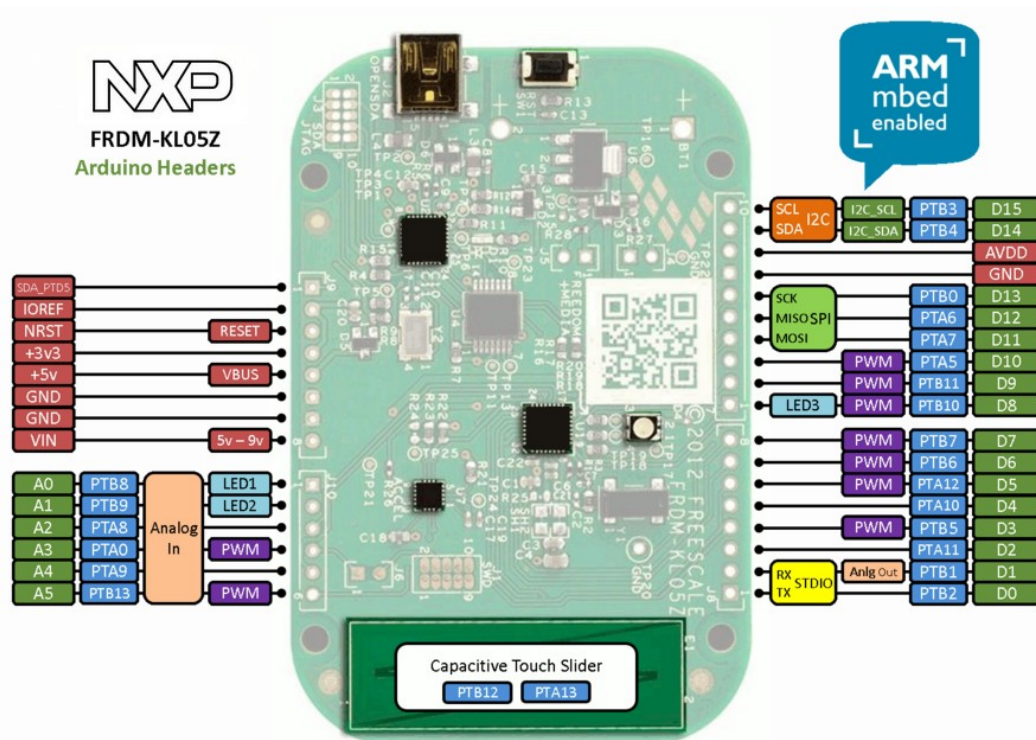# FRDM-KL05Z

The FRDM-KL05Z is an ultra-low-cost development platform enabled by the Kinetis L Series KL0x MCU family built on the ARM® Cortex™-M0+ processor. Features include easy access to MCU I/O, battery-ready, low-power operation, a standard-based form factor with expansion board options and a built-in debug interface for flash programming and run-control. The FRDM-KL05Z is supported by a range of NXP and third-party development software.


Overview

The FRDM-KL05Z has been designed by NXP in collaboration with mbed for prototyping all sorts of devices, especially those requiring the size and price point offered by Cortex-M0+. It is packaged as a development board with connectors to break out to strip board and breadboard, and includes a built-in USB FLASH programmer.

It is based on the NXP KL05Z, with a 32-bit ARM Cortex-M0+ core running at 48MHz. It includes 32KB FLASH, 4KB RAM and lots of interfaces including SPI, I2C, ADC, DAC, PWM, Touch Sensor and other I/O interfaces.
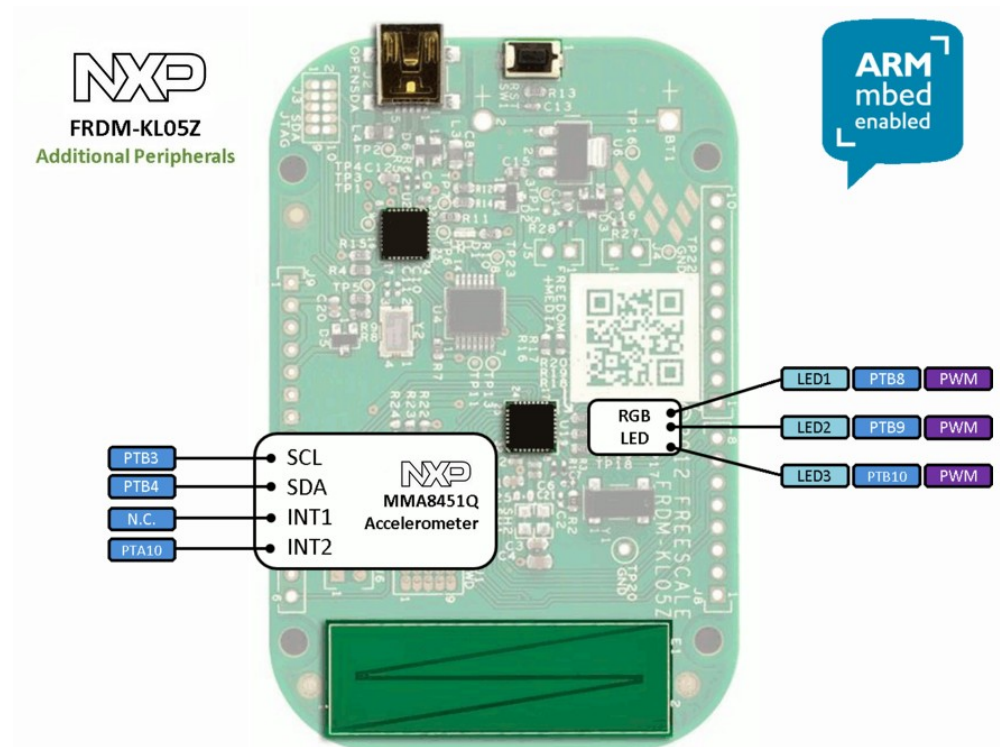
The FRDM-KL05Z is fully supported in the mbed platform, so it gets access to the free tools and SDK that provides experienced embedded developers with powerful and productive tools for building proof-of-concepts. The pinout above shows the commonly used interfaces and their locations. Note that all the numbered pins (PT_XX) can also be used as DigitalIn and DigitalOut interfaces.

LED (RGB)
LED_RED = PTB8
LED_GREEN = PTB9
LED_BLUE = PTB10

mbed original LED naming
LED1 = LED_RED
LED2 = LED_GREEN
LED3 = LED_BLUE
LED4 = LED_BLUE

USB Pins
USBTX = PTB1
USBRX = PTB2

Mbed Pin Names

Arduino Headers
D0 = PTB2
D1 = PTB1
D2 = PTA11
D3 = PTB5
D4 = PTA10
D5 = PTA12
D6 = PTB6
D7 = PTB7
D8 = PTB10
D9 = PTB11
D10 = PTA5
D11 = PTA7
D12 = PTA6
D13 = PTB0
D14 = PTB4
D15 = PTB3

A0 = PTB8
A1 = PTB9
A2 = PTA8
A3 = PTA0
A4 = PTA9
A5 = PTB13

I2C pins
I2C_SCL = D15
I2C_SDA = D14

TSI electrodes
TSI_ELEC0 = PTA13
TSI_ELEC1 = PTB12

Features¶

NXP KL05Z Kinetis KL4 MCU (MKL05Z32VFM4)

- High performance ARM® Cortex™-M0+ Core
- 48MHz, 4KB RAM, 32KB FLASH
- SPI (1)
- I2C (1)
- UART (1)
- PWM (8)
- ADC (6)
- DAC (1x 12bit)
- Touch Sensor
- GPIO (28)

- **FRDM-KL05Z Onboard Sensors**
  - MMA8451Q - 3-axis accelerometer
  - Capacitive touch sensor

- **Evalution Form factor**
  - 81mm x 53mm
  - 5V USB or 4.5-9V supply
  - Built-in USB drag 'n' drop FLASH programmer

- **mbed HDK & SDK enabled**
  - Drag-n-drop programming
  - USB Serial Port
  - CMSIS-DAP
  - Online development tools
  - Easy to use C/C++ SDK
  - Lots of published libraries and projects

- **Status**
  - Production

More Information: https://os.mbed.com/platforms/FRDM-KL05Z/