

# PY32F040R1xT-START

## User Guide



**Puya Semiconductor (Shanghai) Co., Ltd**

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## 1. Introduction

The PY32F040R1xT-START development board integrates a PY-LINK emulator. For detailed usage instructions of PY-LINK, please refer to the document "PYLink\_UserManual\_zh-CN.pdf". The START board uses the PY32F040 as the main controller. This development board, equipped with a 32-bit ARM® Cortex®-M0+ CPU core from Puya, provides a simple hardware development environment. The board is powered via the USB interface of PY-LINK. It offers peripheral resources including extension pins, as well as SWD, Reset, Boot, User button key, Reset key, LED, and more. This document provides detailed hardware schematics and related application examples.

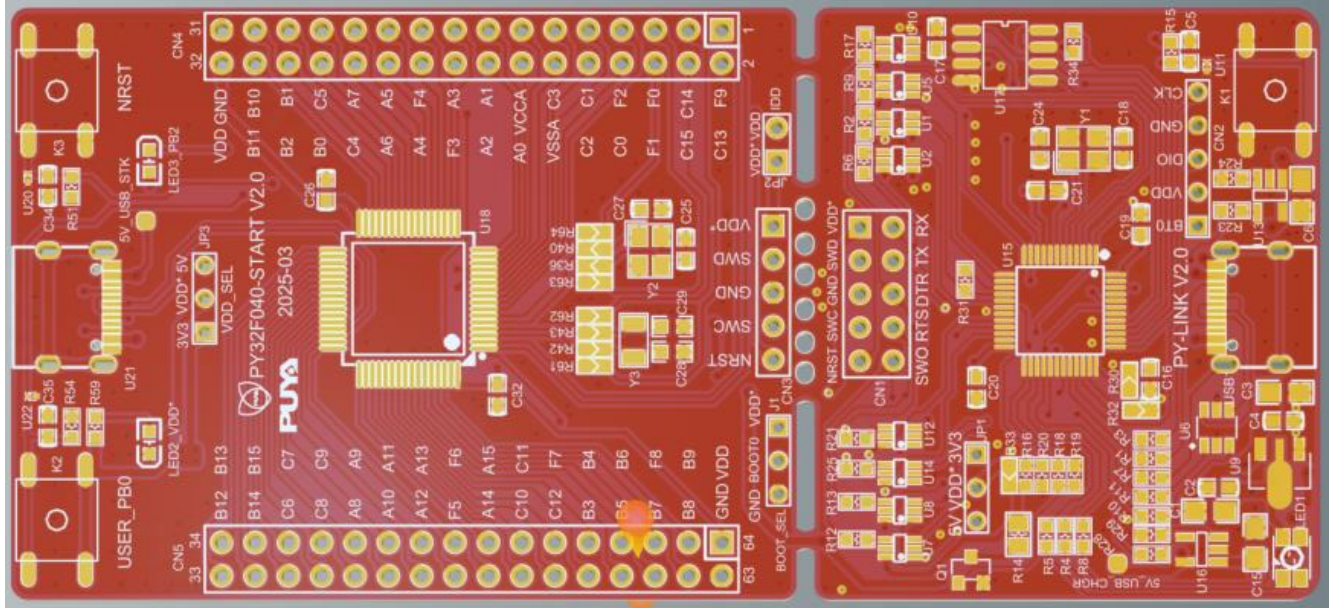


Figure 1-1 PCB 3D renderings

## 2. Functional pin assignment

Table 2-1 Pin Assignment

Function	Pin	Description	Note
LED	\	LED1	PY-LINK LED
	\	LED2	VDD
	PB2	LED3	User LED
KEY	\	K1	PY-LINK Key
	PB0	K2	User Key
	PF2	K3	Reset Key

## 3. Getting Started Guide

The development board is powered via a Type-C USB connection. To download programs to the board, a Type-C USB cable is required. Select the correct boot mode, connect the USB cable, and if LED1 lights up, it indicates a proper power connection. The example code is only provided in the Keil version.

## 4. Overview of Hardware Design

### 4.1 Power supply

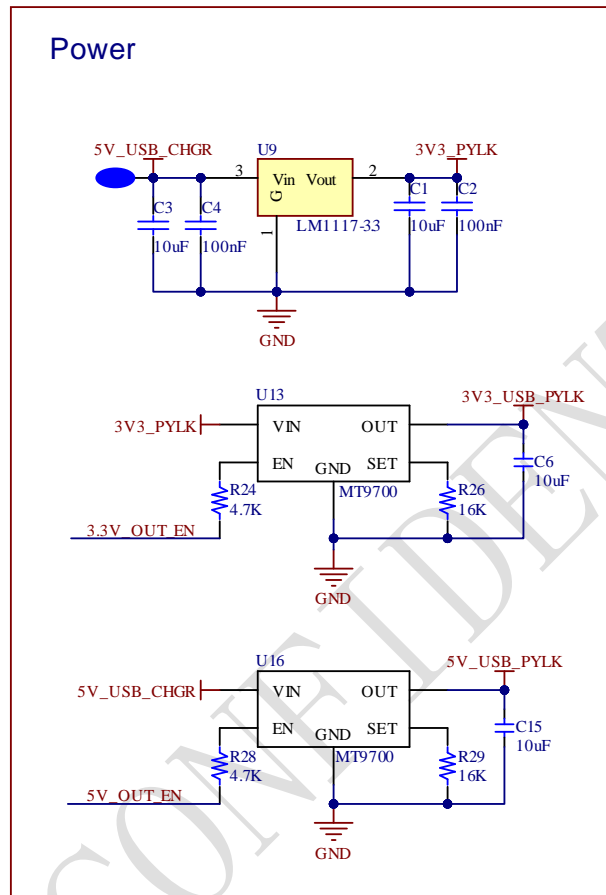


Figure 4-1 Power supply schematic

## 4.2 Boot Mode Selection

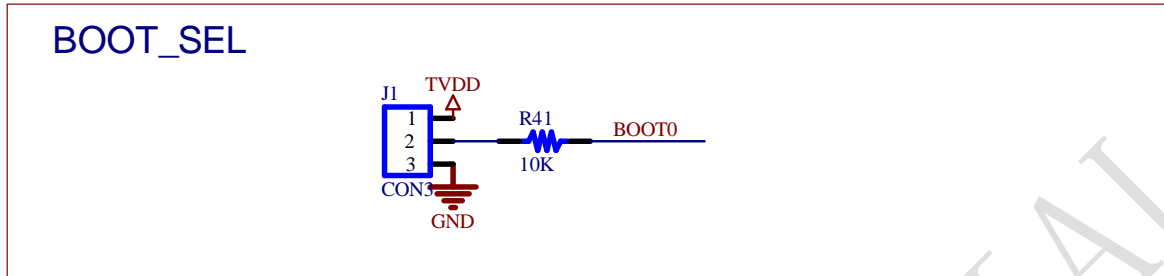


Figure 4-2 Boot mode selection schematic

Three different boot mode can be selected through the BOOT0 pin and boot selector option bit nBOOT1 (stored in the Option bytes), as shown in the following table:

Table 4-1 Boot mode configuration

Boot mode configuration		Mode
nBOOT1 bit	BOOT0 pin	
X	0	Main Flash memory is selected as the boot area
1	1	System memory is selected as the boot area
0	1	Embedded SRAM is selected as the boot area

### 4.3 LED indicator light

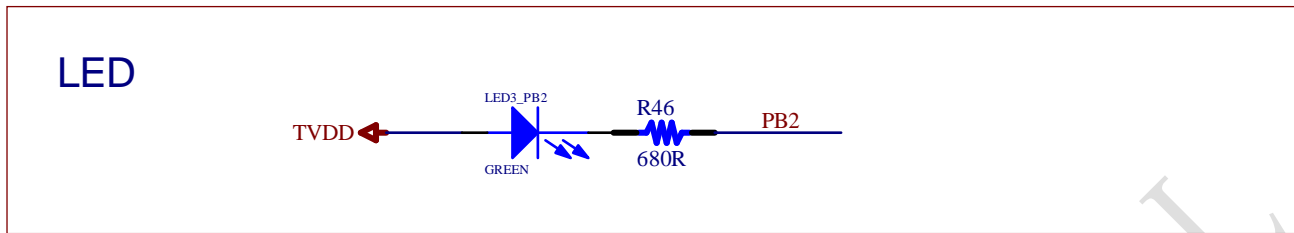


Figure 4-3 LED Functional schematic

### 4.4 Reset Key

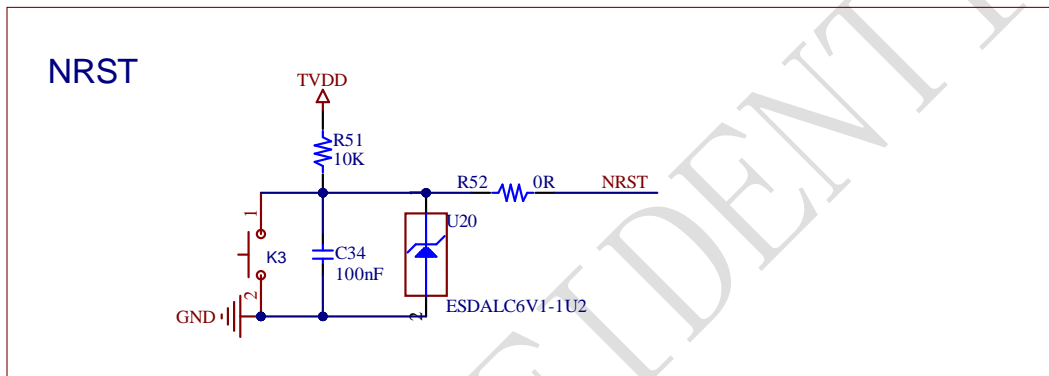


Figure 4-4 Reset key function schematic

### 4.5 User Key

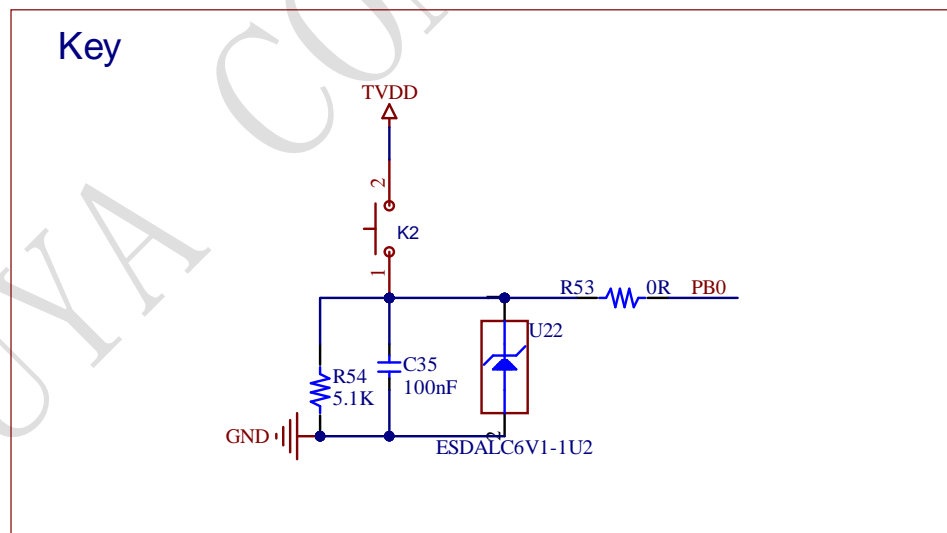


Figure 4-5 User key function schematic

## 5. Guide to Using the Example

### 5.1 GPIO Toggle

#### 5.1.1 Purpose of the Example

This sample program includes the following functions of the MCU:

- Learn to control LEDs using GPIOs
- Learn to use SysTick to generate time delays

There is one LED on the development board, the LED is controlled by GPIO. This sample program will tell how to light up the LED.

#### 5.1.2 Execution Results

Download the program <GPIO\_Toggle> to the development board and you will see the LED blinking.

## 6. Schematic

### 6.1 MCU Schematic

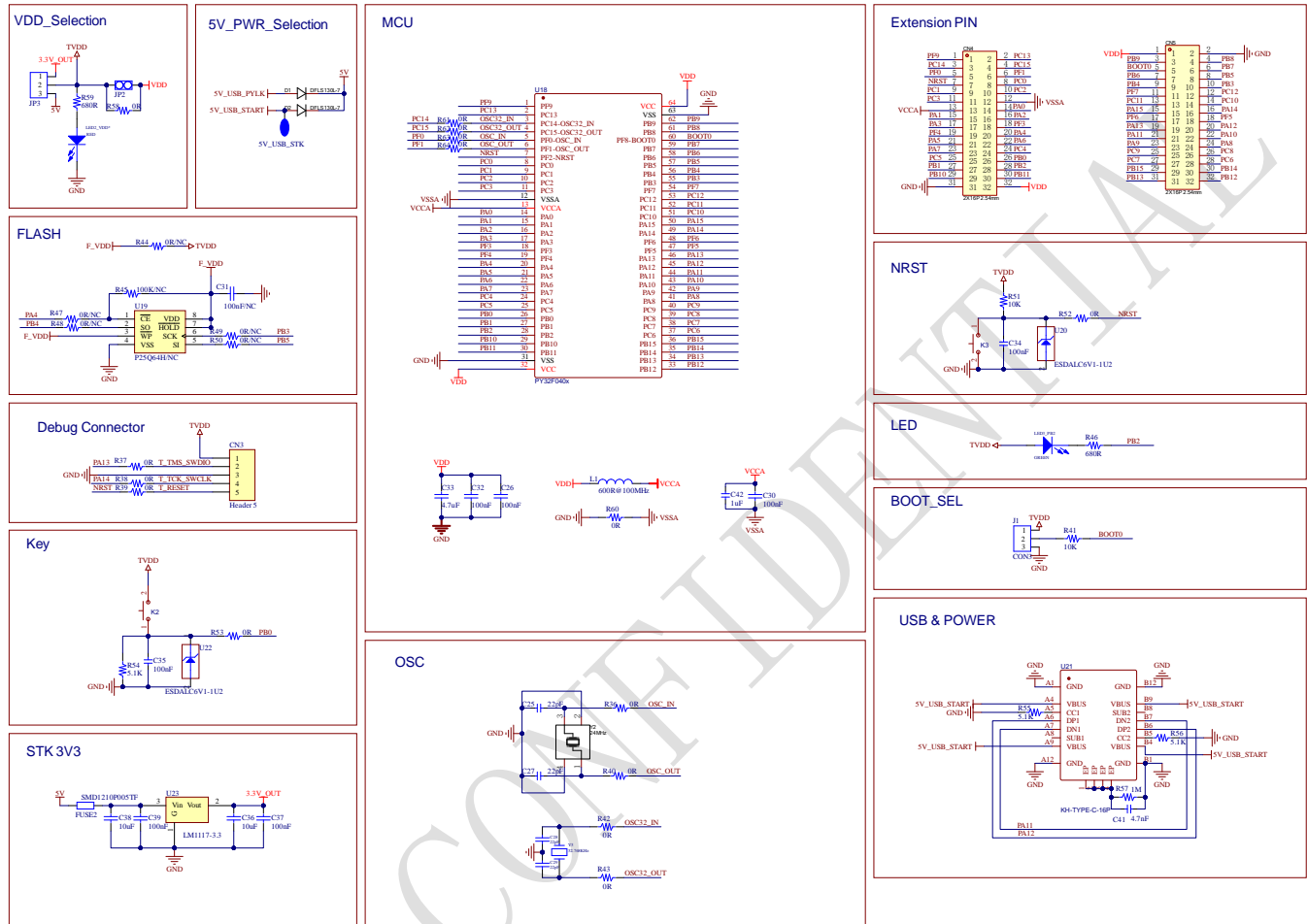


Figure 6-1 MCU Schematic



## 6.2 PY\_LINK Schematic

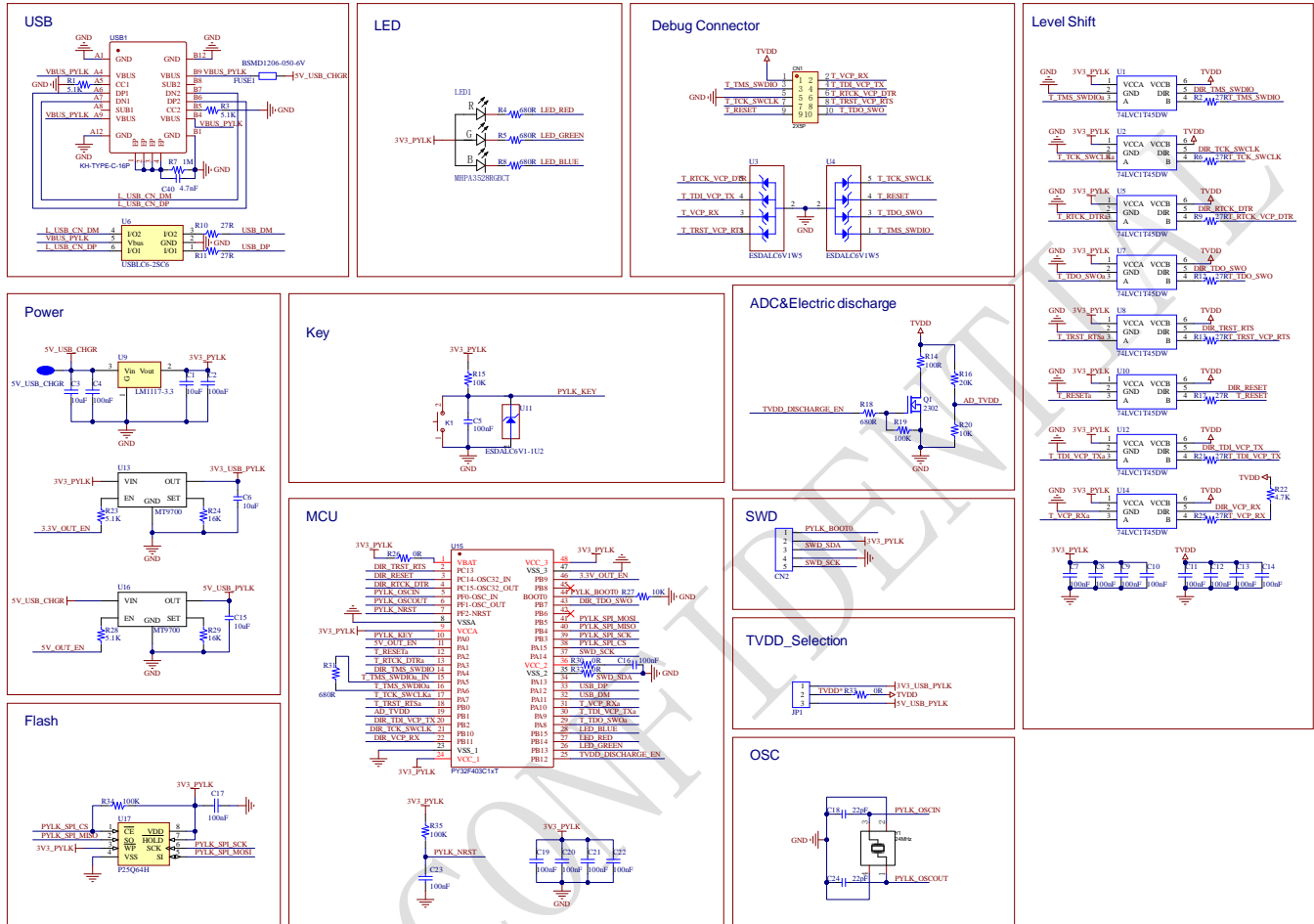


Figure 6-2 PY\_LINK Schematic

## 7. Updated History

Version	Content	Date
V1.0	Initial version	2025/03/28



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