

1. Description

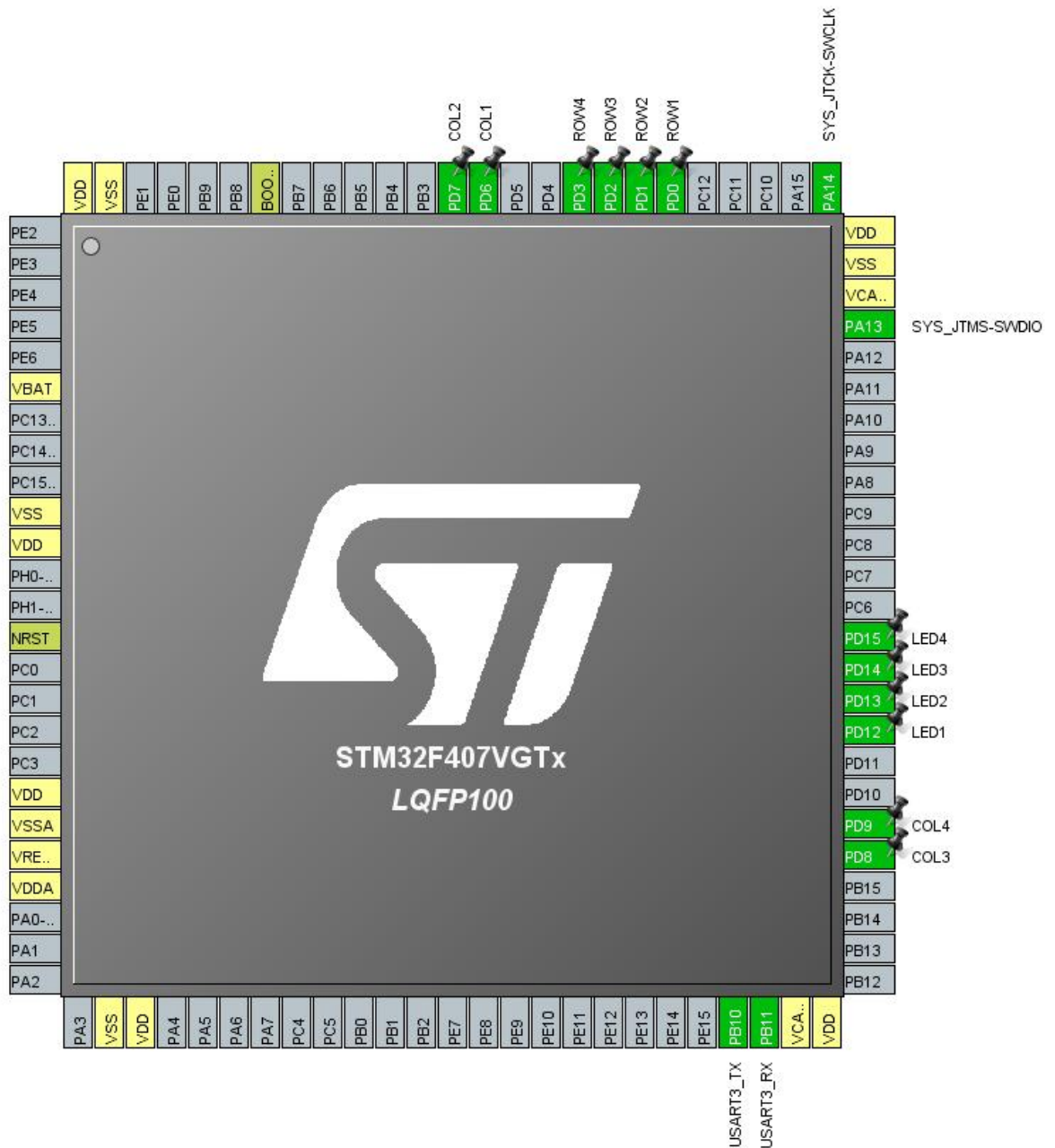
1.1. Project

| | |
|-----------------|-------------------|
| Project Name | FinalPrjKeypad |
| Board Name | STM32F4DISCOVERY |
| Generated with: | STM32CubeMX 5.0.1 |
| Date | 07/21/2019 |

1.2. MCU

| | |
|----------------|---------------|
| MCU Series | STM32F4 |
| MCU Line | STM32F407/417 |
| MCU name | STM32F407VGTx |
| MCU Package | LQFP100 |
| MCU Pin number | 100 |

2. Pinout Configuration



3. Pins Configuration

| Pin Number LQFP100 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|-----------------------|---------------------------------------|----------|--------------------------|-------|
| 6 | VBAT | Power | | |
| 10 | VSS | Power | | |
| 11 | VDD | Power | | |
| 14 | NRST | Reset | | |
| 19 | VDD | Power | | |
| 20 | VSSA | Power | | |
| 21 | VREF+ | Power | | |
| 22 | VDDA | Power | | |
| 27 | VSS | Power | | |
| 28 | VDD | Power | | |
| 47 | PB10 | I/O | USART3_TX | |
| 48 | PB11 | I/O | USART3_RX | |
| 49 | VCAP_1 | Power | | |
| 50 | VDD | Power | | |
| 55 | PD8 | I/O | GPIO_EXTI8 | COL3 |
| 56 | PD9 | I/O | GPIO_EXTI9 | COL4 |
| 59 | PD12 * | I/O | GPIO_Output | LED1 |
| 60 | PD13 * | I/O | GPIO_Output | LED2 |
| 61 | PD14 * | I/O | GPIO_Output | LED3 |
| 62 | PD15 * | I/O | GPIO_Output | LED4 |
| 72 | PA13 | I/O | SYS_JTMS-SWDIO | |
| 73 | VCAP_2 | Power | | |
| 74 | VSS | Power | | |
| 75 | VDD | Power | | |
| 76 | PA14 | I/O | SYS_JTCK-SWCLK | |
| 81 | PD0 * | I/O | GPIO_Output | ROW1 |
| 82 | PD1 * | I/O | GPIO_Output | ROW2 |
| 83 | PD2 * | I/O | GPIO_Output | ROW3 |
| 84 | PD3 * | I/O | GPIO_Output | ROW4 |
| 87 | PD6 | I/O | GPIO_EXTI6 | COL1 |
| 88 | PD7 | I/O | GPIO_EXTI7 | COL2 |
| 94 | BOOT0 | Boot | | |
| 99 | VSS | Power | | |
| 100 | VDD | Power | | |

* The pin is affected with an I/O function

5. Software Project

5.1. Project Settings

| Name | Value |
|-----------------------------------|--|
| Project Name | FinalPrjKeypad |
| Project Folder | C:\Users\User\Desktop\MicroLabprj\FinalPrjKeypad |
| Toolchain / IDE | MDK-ARM V5 |
| Firmware Package Name and Version | STM32Cube FW_F4 V1.23.0 |

5.2. Code Generation Settings

| Name | Value |
|---|---|
| STM32Cube Firmware Library Package | Copy all used libraries into the project folder |
| Generate peripheral initialization as a pair of '.c/.h' files | No |
| Backup previously generated files when re-generating | No |
| Delete previously generated files when not re-generated | Yes |
| Set all free pins as analog (to optimize the power consumption) | No |

6. Power Consumption Calculator report

6.1. Microcontroller Selection

| | |
|-----------|---------------|
| Series | STM32F4 |
| Line | STM32F407/417 |
| MCU | STM32F407VGTx |
| Datasheet | 022152_Rev8 |

6.2. Parameter Selection

| | |
|-------------|-----|
| Temperature | 25 |
| Vdd | 3.3 |

7. IPs and Middleware Configuration

7.1. RTC

mode: Activate Clock Source

mode: Activate Calendar

7.1.1. Parameter Settings:

General:

| | |
|-------------------------------|---------------|
| Hour Format | Hourformat 24 |
| Asynchronous Predivider value | 31 * |
| Synchronous Predivider value | 999 * |

Calendar Time:

| | |
|--|----------------------|
| Data Format | BCD data format |
| Hours | 0 |
| Minutes | 0 |
| Seconds | 0 |
| Day Light Saving: value of hour adjustment | Daylightsaving None |
| Store Operation | Storeoperation Reset |

Calendar Date:

| | |
|----------|-------------------|
| Week Day | Saturday * |
| Month | July * |
| Date | 10 * |
| Year | 0 |

7.2. SYS

Debug: Serial Wire

Timebase Source: SysTick

7.3. USART3

Mode: Asynchronous

7.3.1. Parameter Settings:

Basic Parameters:

| | |
|-------------|---------------------------|
| Baud Rate | 115200 |
| Word Length | 8 Bits (including Parity) |
| Parity | None |
| Stop Bits | 1 |

Advanced Parameters:

| | |
|----------------|----------------------|
| Data Direction | Receive and Transmit |
| Over Sampling | 16 Samples |

*** User modified value**

8. System Configuration

8.1. GPIO configuration

| IP | Pin | Signal | GPIO mode | GPIO pull/up pull down | Max Speed | User Label |
|--------|------|----------------|--|-----------------------------|--------------------|------------|
| SYS | PA13 | SYS_JTMS-SWDIO | n/a | n/a | n/a | |
| | PA14 | SYS_JTCK-SWCLK | n/a | n/a | n/a | |
| USART3 | PB10 | USART3_TX | Alternate Function Push Pull | Pull-up | Very High * | |
| | PB11 | USART3_RX | Alternate Function Push Pull | Pull-up | Very High * | |
| GPIO | PD8 | GPIO_EXTI8 | External Interrupt Mode with Rising edge trigger detection | Pull-down * | n/a | COL3 |
| | PD9 | GPIO_EXTI9 | External Interrupt Mode with Rising edge trigger detection | Pull-down * | n/a | COL4 |
| | PD12 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | High * | LED1 |
| | PD13 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | High * | LED2 |
| | PD14 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | High * | LED3 |
| | PD15 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | High * | LED4 |
| | PD0 | GPIO_Output | Output Push Pull | Pull-down * | Low | ROW1 |
| | PD1 | GPIO_Output | Output Push Pull | Pull-down * | Low | ROW2 |
| | PD2 | GPIO_Output | Output Push Pull | Pull-down * | Low | ROW3 |
| | PD3 | GPIO_Output | Output Push Pull | Pull-down * | Low | ROW4 |
| | PD6 | GPIO_EXTI6 | External Interrupt Mode with Rising edge trigger detection | Pull-down * | n/a | COL1 |
| | PD7 | GPIO_EXTI7 | External Interrupt Mode with Rising edge trigger detection | Pull-down * | n/a | COL2 |

8.2. DMA configuration

nothing configured in DMA service

8.3. NVIC configuration

| Interrupt Table | Enable | Preenmption Priority | SubPriority |
|---|--------|----------------------|-------------|
| Non maskable interrupt | true | 0 | 0 |
| Hard fault interrupt | true | 0 | 0 |
| Memory management fault | true | 0 | 0 |
| Pre-fetch fault, memory access fault | true | 0 | 0 |
| Undefined instruction or illegal state | true | 0 | 0 |
| System service call via SWI instruction | true | 0 | 0 |
| Debug monitor | true | 0 | 0 |
| Pendable request for system service | true | 0 | 0 |
| System tick timer | true | 0 | 0 |
| EXTI line[9:5] interrupts | true | 1 | 0 |
| USART3 global interrupt | true | 0 | 0 |
| PVD interrupt through EXTI line 16 | unused | | |
| Flash global interrupt | unused | | |
| RCC global interrupt | unused | | |
| FPU global interrupt | unused | | |

* User modified value

9. Software Pack Report