# WeAct Black Pill V2.0

STM32F411CEU6

## 📝 Board

| | |
|---|---|
| **Name** | WeAct Black Pill V2.0 |
| **Part** | Unknown |
| **Brand** | WeAct Studio |
| **Origin** | China |

## Microcontroller

| | |
|---|---|
| **Part** | STM32F411CEU6 |
| **Manufacturer** | ST-Microelectronics |
| **Core** | Arm Cortex-M4 |
| **Max. Clock Speed** | 100MHz |
| **Package** | UFQFPN 48 pins |
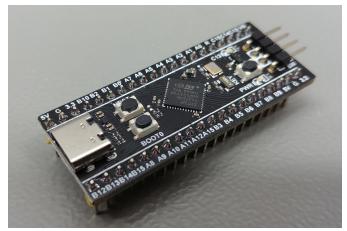
## Internal memories

| | |
|---|---|
| **FLASH** | 512KiB |
| **SRAM** | 128KiB |
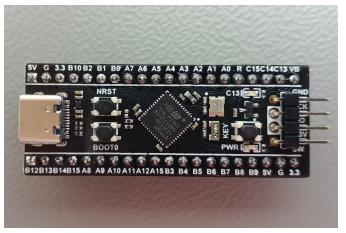
## Oscillators

| | |
|---|---|
| **HSI** | 16MHz |
| **LSI** | 32kHz |
| **HSE** | 25MHz |
| **LSE** | 32.768kHz |

## 🖼 Pictures



*WeAct Black Pill V2.0: Perspective view*



*WeAct Black Pill V2.0: Top view*

# ⚡ Power

| Sources | Any +3.3V pin (+3.3V) |
| --- | --- |
| | Any +5V pin (+5V) |
| | USB connector (+5V) |
| V$_{DDA}$ pin | No |
| V$_{SSA}$ pin | No |
| V$_{REF-}$ pin | No |
| V$_{REF+}$ pin | No |
| Backup battery | Pin |

# 🔀 Regulator
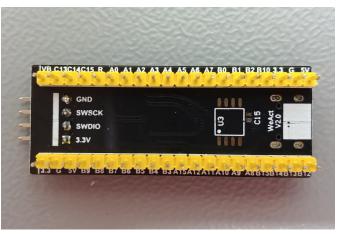
| Manufacturer | Diodes Incorporated |
| --- | --- |
| Part | AP7343 (6т) |
| Package | X2-DFN1010-4 4 pins |
| Input | +3.52V to +5.25V |
| Output | +3.3V @ 300mA |
| Datasheet | AP7343.pdf |

# ⬛ PCB

| Color | Black |
| --- | --- |
| Size (w x l) | 20.78mm x 52.81mm |
| Mounting | Breadboard |

# ❗ Remarks

- **Warning:** The +5V pins on this board are directly connected to the +5V pin of the USB connector. There is no protection in place. Do not power this board through USB and an external power supply at the same time.



*WeAct Black Pill V2.0: Bottom view*

# 📄 Resources

- 🖼 Perspective view
- 🖼 Top view
- 🖼 Bottom view
- 📄 Original schematic
- 📄 Original dimensions drawing
- 🔗 Source files on Github

# Inputs & outputs

## ↻ Reset button

| Name | NRST |
|---|---|
| Reference | - |
| Type | Button |
| Connected to | $\overline{NRST}$ |
| Mode | Active low |

## ⏻ Power LED

| Name | PWR |
|---|---|
| Reference | - |
| Type | LED |
| Connected to | +3.3V rail |
| Mode | N.A. |

## ✳ BOOT0 button

| Name | BOOT0 |
|---|---|
| Reference | - |
| Type | Button |
| Connected to | BOOT0 |
| Mode | Active high |

## 👤 User LED

| Name | PC13 |
|---|---|
| Reference | - |
| Type | LED |
| Connected to | PC13 |
| Mode | Sink |

## 👤 User button

| Name | KEY |
|---|---|
| Reference | - |
| Type | Button |
| Connected to | PA0 |
| Mode | Active low |

# Connectors & headers

## ⇄ Header 1 properties

| Name | Unknown |
|---|---|
| Reference | None |
| Type | pin header (2.54mm, 20x1, male) |

## ⇄ Header 1 pins

| # | Name | Function | Connected to |
|---|---|---|---|
| 1 | 5V | - | +5V rail |
| 2 | G | - | Ground plane |
| 3 | 3.3 | - | +3.3V rail |
| 4 | B10 | - | PB10 |
| 5 | B2 | - | PB2 |
| 6 | B1 | - | PB1 |
| 7 | B0 | - | PB0 |
| 8 | A7 | - | PA7 |
| 9 | A6 | - | PA6 |
| 10 | A5 | - | PA5 |
| 11 | A4 | - | PA4 |
| 12 | A3 | - | PA3 |
| 13 | A2 | - | PA2 |
| 14 | A1 | - | PA1 |
| 15 | A0 | - | PA0 |
| 16 | R | - | $\overline{\text{NRST}}$ |
| 17 | C15 | - | PC15 |
| 18 | C14 | - | PC14 |
| 19 | C13 | - | PC13 |
| 20 | VB | - | $V_{BAT}$ |

## ⇄ Header 2 properties

| Name | Unknown |
|---|---|
| Reference | None |
| Type | pin header (2.54mm, 20x1, male) |

## ⇄ Header 2 pins

| # | Name | Function | Connected to |
|---|---|---|---|
| 1 | B12 | - | PB12 |
| 2 | B13 | - | PB13 |

| | | | |
|---|---|---|---|
| 3 | B14 | - | PB14 |
| 4 | B15 | - | PB15 |
| 5 | A8 | - | PA8 |
| 6 | A9 | - | PA9 |
| 7 | A10 | - | PA10 |
| 8 | A11 | - | PA11 |
| 9 | A12 | - | PA12 |
| 10 | A15 | - | PA15 |
| 11 | B3 | - | PB3 |
| 12 | B4 | - | PB4 |
| 13 | B5 | - | PB5 |
| 14 | B6 | - | PB6 |
| 15 | B7 | - | PB7 |
| 16 | B8 | - | PB8 |
| 17 | B9 | - | PB9 |
| 18 | 5V | - | +5V rail |
| 19 | G | - | Ground plane |
| 20 | 3.3 | - | +3.3V rail |

## ⚡ USB connector properties

| Name | Unknown |
|---|---|
| Reference | None |
| Type | USB C |

## ⚡ USB connector pins

| # | Name | Function | Connected to |
|---|---|---|---|
| A1/ B12 | - | GND | Ground plane |
| A4/ B9 | - | VBUS | +5V rail |
| B8 | - | SBU2 | Ground plane via 5.1kΩ (R8) |
| A5 | - | CC1 | Ground plane via 5.1kΩ (R8) |
| B7 | - | D- | PA11 via 10Ω (R9) |

| | | | |
|---|---|---|---|
| A6 | - | D+ | PA12 via 10Ω (R7) |
| A7 | - | D- | PA11 via 10Ω (R9) |
| B6 | - | D+ | PA12 via 10Ω (R7) |
| A8 | - | SBU1 | Ground plane via 5.1kΩ (R8) |
| B5 | - | CC2 | Ground plane via 5.1kΩ (R8) |
| B4/ A9 | - | VBUS | +5V rail |
| B1/ A12 | - | GND | Ground plane |

## 🐞 SWD header properties

| Name | SW |
|---|---|
| Reference | None |
| Type | pin header (2.54mm, 4x1, male) |

## 🐞 SWD header pins

| # | Name | Function | Connected to |
|---|---|---|---|
| 1 | 3.3V | VCC | +3.3V rail |
| 2 | SWDIO | SWDIO | PA13 |
| 3 | SWCLK | SWCLK | PA14 |
| 4 | GND | GND | Ground plane |

# Devices

## 🗄 Generic EEPROM properties *footprint*

| Name | Unknown |
|---|---|
| Reference | U3 |
| Manufacturer | Unknown |
| Part | Generic EEPROM |
| Marking | Unknown |
| Datasheet | Unavailable |

## 🗄 Generic EEPROM pins *footprint*

| # | Name | Function | Connected to |
|---|---|---|---|
| 1 | - | /CS | PA4 |
| 2 | - | DO | PB4 |
| 3 | - | /WP | +3.3V rail |
| 4 | - | GND | Ground plane |
| 5 | - | DI | PA7 |

| Package | SOP 8 pins | | 6 | - | CLK | PA5 |
| --- | --- | --- | --- | --- | --- | --- |
| Description | Generic I2C EEPROM | | 7 | - | /HOLD | +3.3V rail |
| | | | 8 | - | VCC | +3.3V rail |

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