

# USB, POWER PATHS, CHARGING AND FILTERING

The diagram illustrates the power management system for the JST\_2PINPICBLADE, showing USB, power paths, charging, and filtering components.

**USB Input Section:**

- USB\_C connector (J3) pins: VBUS, D+, D-, D-, CC1, CC2, SHLD, GND.
- Diodes: D2, D6, D7 (D-TVS).
- Resistors: R9, R11 (5.1K).

**Power Path Section:**

- VBUS input.
- Resistor: R12 (100K).
- Diode: D4 (SD103AWS).
- Resistor: R1 (100K).
- Diode: D5 (SD103AWS).
- Resistor: R1 (100K).
- Diode: D5 (SD103AWS).
- Resistor: R1 (100K).
- Diode: D5 (SD103AWS).

**Charging Section:**

- CHRG1 LP4055A (LP4055A) charger.
- VBAT input.
- Resistor: R12 (100K).
- Diode: D4 (SD103AWS).
- Resistor: R1 (100K).
- Diode: D5 (SD103AWS).
- Resistor: R1 (100K).
- Diode: D5 (SD103AWS).
- Resistor: R1 (100K).
- Diode: D5 (SD103AWS).

**Charging Rate Table:**

Charge Rate	Current
10K	110mA
5.0K	200mA
3.3K	300mA
2.0K	500mA
1.2K	830mA

**Notes:**

- 830mA charge rate is the recommended fastest this PMIC can charge.
- SOLDERJUMPERCLOSED

# BATTERY FUEL GAUGE

The diagram shows the MAX17048G battery fuel gauge (U3) connected to a 3.3V supply and ground. The chip is connected to the 3.3V supply via resistors R16, R17, and R18. The output of the gauge is connected to the VBAT pin. The chip is also connected to ground via resistors R19 and R20, and a capacitor C24.

Pin connections for U3 (MAX17048G):

- Pin 1 (CTG): 3.3V
- Pin 2 (CELL): 3.3V
- Pin 3 (VDD): 3.3V
- Pin 9 (EP): 3.3V
- Pin 5 (IO10): 3.3V
- Pin 4 (GND): GND
- Pin 6 (FG\_QSTRT): GND (via R19)
- Pin 7 (IO9): GND
- Pin 8 (SDA): GND
- Pin 10 (ALERT): GND

Other components:

- R16: 100K (3.3V to IO8)
- R17: 100K (3.3V to IO9)
- R18: 100K (3.3V to IO10)
- R19: 100K (FG\_QSTRT to GND)
- R20: 100K (IO10 to GND)
- C24: 0.1uF (IO10 to GND)

The diagrams illustrate three common button wiring methods:

- Diagram 1:** A simple push button with terminals A, B, A', and B'. Terminal A is connected to GND, and terminal B is connected to IO0.
- Diagram 2:** A push button with a pull-up resistor. Terminal A is connected to GND, and terminal B is connected to RESET through a resistor.
- Diagram 3:** A push button with both pull-up and pull-down resistors. Terminal A is connected to GND through a 3K3 resistor (R15), and terminal B is connected to USB through a 2K resistor (R14). The button terminals are also connected to IO33.

# LD02 & AUTO-SHUTDOWN

The diagram illustrates the LD02 and AUTO-SHUTDOWN circuit. It features a 3V3.2 voltage regulator (U2, NCP167BMX330TBG) and an AND gate (IC1B, NL175V08XV5T2GDR). The regulator's input is connected to VBUS through a 1uF capacitor (C17). The regulator's output (pin 1) is connected to a 3V3.2 rail, which is also filtered by a 1uF capacitor (C22). The regulator's EN pin (pin 3) is connected to the output of the AND gate. The AND gate has two inputs: VDD\_SPI (pin 1) and IO17 (pin 2). The AND gate's output (pin 4) is connected to the LD02\_EN pin of the regulator. The AND gate's input 3 is connected to GND.

# EXTERNAL FLASH & PSRAM

The image shows two circuit diagrams for connecting external memory chips to a microcontroller. Both chips are connected via SPI to VDD\_SPI and GND.

**FLASH Circuit (IC3):** The W25Q128JVSIQ FLASH chip is connected to VDD\_SPI and GND. The chip's CS pin is connected to a 100k resistor (R2) and GND. The chip's SO(D1) pin is connected to the SPIQ pin of the microcontroller. The chip's WP(D2) pin is connected to the SPIWP pin of the microcontroller. The chip's HOLD(D3) pin is connected to the SPIHD pin of the microcontroller. The chip's SCK pin is connected to the SPICLK pin of the microcontroller. The chip's SI(D0) pin is connected to the SPID pin of the microcontroller. A 0.1uF capacitor (C11) is connected between VDD\_SPI and GND.

**PSRAMNARROW Circuit (IC7):** The PSRAMNARROW chip is connected to VDD\_SPI and GND. The chip's CE pin is connected to a 100k resistor (R5) and GND. The chip's SI01 pin is connected to the SPIQ pin of the microcontroller. The chip's SI02 pin is connected to the SPIWP pin of the microcontroller. The chip's SI03 pin is connected to the SPIHD pin of the microcontroller. The chip's SCLK pin is connected to the SPICLK pin of the microcontroller. The chip's SI00 pin is connected to the SPID pin of the microcontroller. A 0.1uF capacitor (C6) is connected between VDD\_SPI and GND.

# RGB LED & STEMMA/AT

RGB LED

LED2

WS2812B1515

DI

DO

GND

VDD

3V3\_2

QWIIIC CONNECTOR VERT

STEMMA1	QWIIIC CONNECTOR VERT
GND	1
VCC	2
SDA	3
SCL	4

I018

I019

3.3V

GND

# HEADERS