

5V BUCK LOGIC

The diagram illustrates a 5V Buck Logic circuit. The input is VBAT, which is connected to the Vsel pin (pin 15) of the TPS63070RNM converter (U5). The Vsel pin is also connected to a 10k resistor (R21) and a 10nF capacitor (C17). The Vsel pin is also connected to a 10nF capacitor (C16) and a 10nF capacitor (C15). The Vsel pin is also connected to a 1uH inductor (L3). The Vsel pin is also connected to a 10k resistor (R22). The Vsel pin is also connected to a 0.1uF capacitor (C18). The Vsel pin is also connected to a 10uF capacitor (C19). The Vsel pin is also connected to a 22uF capacitor (C20). The Vsel pin is also connected to a 22uF capacitor (C21). The Vsel pin is also connected to a 22uF capacitor (C22). The Vsel pin is also connected to a 220 ohm resistor (R32). The output of the converter is a 5V regulated supply, which is connected to a red LED (D2).

USB-C

VBUS

USB1

TYPE-C 16PIN 2MD

A1B1 2 GND EH 13

A4B4 4 VBUS

A5 SBUS2

A6 Dn2

A7 Dp1

A8 Dn1

B1A1 2 GND EH 14

B4A4 4 SBU1

B5 CC2

B8A8 8 EH

R1 5.1K

R2 5.1K

GND

GND

3.3V LDO

STM32

RESET 7 NRST

BOOT 60 BOOT0

HSE_IN 5 PH0

HSE_OUT 6 PH1

SD_CMD 54 PD2

PYRO_3 8 PC0

PYRO_2 9 PC1

PYRO_1 10 PC2

ICM_INT 24 PC3

RF_CS 37 PC4

SD_DAT0 39 PC6

SD_DAT1 40 PC7

SD_DAT2 54 PC8

SD_DAT3 52 PC9

SD_CLK 53 PC10

LSE_IN 3 PC11

LSE_OUT 4 PC12

VCAP_1 30

C32 2.2uF

GND

+3V3

FCM1608KF-601T03

C40 10nF

C41 10nF

GND

PA0 14 SERV06

PA1 15 SERV05

PA2 16

PA3 17 SERV04

PA4 20 ICM_CS

PA5 21 SCK

PA6 22 MISO

PA7 23 MOSI

PA8 41 SERV01

PA9 42 SERV02

PA10 43 SERV03

PA11 44 USD_DN

PA12 45 USD_DP

PA13 46

PA14 49

PA15 50

PCB0 25 ICM_INT2

PCB1 26

PCB2 27

PCB3 55 SD_CD

PCB4 56

PCB5 58 BQ_INT

PCB6 59 I2C_SCL

PCB7 60 I2C_SDA

PCB8 61 BQ_CE

PCB9 62 BMP_INT

PCB10 28

PCB11 29

PCB12 33

PCB13 34 RF_DI01

PCB14 35 RF_DI00

PCB15 36 RF_RESET

VBAT 1

VDD 19

VDD 32

VDD 48

VDD 64

VDDA 33

VSS 18

VSSA 12

U1 STM32F722RETx

GND

SERVOMOTOR

+5V_SERVO

SERVO1

1 PWM
2 +
3 -

M1
Motor_Servo

GND

+5V_SERVO

SERVO2

1 PWM
2 +
3 -

M2
Motor_Servo

GND

+5V_SERVO

SERVO3

1 PWM
2 +
3 -

M3
Motor_Servo

GND

+5V_SERVO

SERVO4

1 PWM
2 +
3 -

M4
Motor_Servo

GND

+5V_SERVO

SERVO5

1 PWM
2 +
3 -

M5
Motor_Servo

GND

+5V_SERVO

SERVO6

1 PWM
2 +
3 -

M6
Motor_Servo

GND

PYRO

The diagram illustrates the PYRO module circuit, which consists of three identical channels (PYRO_1, PYRO_2, PYRO_3) connected to a common VBAT supply. Each channel includes a 100 ohm resistor (R25, R34, R26) in series with an IRLML6402TRPBF-JSM MOSFET (Q1, Q3, Q2). The gates of the MOSFETs are connected to a common line, and their sources are connected to ground. The drains are connected to a common output line. The VBAT supply is connected to the output line through a 100 ohm resistor (R26).

The diagram shows the LORA module's internal circuit. A 3.3V supply is connected to the module's pins. The U7 RA-02 chip is connected to the 3.3V supply and ground. The chip's pins are labeled as follows:

- Pin 1: GND
- Pin 2: GND
- Pin 3: 3.3V
- Pin 4: RF_RESET
- Pin 5: RF_DIO0
- Pin 6: RF_DIO1
- Pin 7: DIO1
- Pin 8: DIO2
- Pin 9: DIO3
- Pin 10: GND
- Pin 11: GND
- Pin 12: NSS
- Pin 13: MOSI
- Pin 14: MISO
- Pin 15: SCK
- Pin 16: RF_CS

The RF_RESET pin (4) is connected to a 3.3V supply through a 0.1uF capacitor (C38). The RF_DIO0 pin (5) is connected to ground. The RF_DIO1 pin (6) is connected to ground. The DIO1 pin (7) is connected to ground. The DIO2 pin (8) is connected to ground. The DIO3 pin (9) is connected to ground. The NSS pin (12) is connected to ground. The MOSI pin (13) is connected to ground. The MISO pin (14) is connected to ground. The SCK pin (15) is connected to ground. The RF_CS pin (16) is connected to ground.

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BATTERY IN

The diagram illustrates two circuit configurations for connecting external components to microcontroller pins:

- Top Configuration:** An X2 crystal (X322525M0B45I) is connected between pins 4 (GNDOSC) and 3 (HSE_OUT). Pin 2 (LSE_OUT) is connected to ground via capacitor C33 (20pF). Pin 1 (HSE_IN) is connected to ground via capacitor C34 (20pF).
- Bottom Configuration:** A Q13FC1350000400 crystal is connected between pins 1 (LSE_IN) and 2 (LSE_OUT). Pin 1 is connected to ground via capacitor C35 (15pF), and pin 2 is connected to ground via capacitor C36 (15pF).

SWITCHES

DECOUPLING

The diagram illustrates the I2C pullup circuit. It shows two vertical lines representing the I2C_SCL and I2C_SDA signals. Each line is connected to a +3V3 supply through a resistor. The resistor for SCL is labeled R29, 4.7K, and the resistor for SDA is labeled R30, 4.7K. Red arrows point upwards from the resistors to the +3V3 supply, indicating the pullup direction.