



SEPT 2024

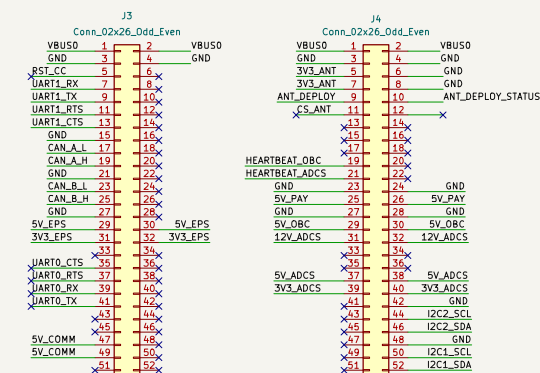
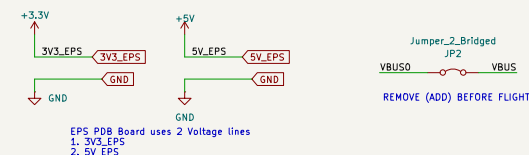
QAed BY:

Unit Pin	Internal Connection	Component Pin	Component
EPS_3V3_EPS	→ 3V3_3V3_EPS	I2C1_SCL	I2C1
EPS_5V_EPS	→ 5V_5V_EPS	I2C1_SDA	I2C1
EN_5V_EPS	→ EN_5V_EPS	I2C2_SCL	I2C2
FLT_5V_EPS	→ FLT_5V_EPS	I2C2_SDA	I2C2
EN_5V_OBC	→ EN_5V_OBC	UART1_CTS	COMM UART
FLT_5V_OBC	→ FLT_5V_OBC	UART1_RTS	COMM UART
EN_5V_COMM	→ EN_5V_COMM	UART1_TX	COMM UART
FLT_5V_COMM	→ FLT_5V_COMM	UART1_RX	COMM UART
EN_3V3_ANT	→ EN_3V3_ANT	HEARTBEAT_OBC	HBT
FLT_3V3_ANT	→ FLT_3V3_ANT	HEARTBEAT_ADCS	HBT
EN_3V3_ADCS	→ EN_3V3_ADCS	CAN_A_L	EPS CAN COMMS
FLT_3V3_ADCS	→ FLT_3V3_ADCS	CAN_A_H	EPS CAN COMMS
EN_5V_ADCS	→ EN_5V_ADCS	CAN_B_L	EPS CAN COMMS
FLT_5V_ADCS	→ FLT_5V_ADCS	CAN_B_H	EPS CAN COMMS
EN_12V_ADCS	→ EN_12V_ADCS	SPL_SCLK	SPI
FLT_12V_ADCS	→ FLT_12V_ADCS	SPL_MOSI	SPI
EN_5V_PAY	→ EN_5V_PAY	SPL_MISO	SPI
FLT_5V_PAY	→ FLT_5V_PAY	SPL_CS	SPI
FLT_3V3_EPS	→ FLT_3V3_EPS	RDY_ADC	ANT_DEPLOY
STATUS_3V3	→ STATUS_3V3	RESET_ADC	ANT_DEPLOY
STATUS_5V	→ STATUS_5V	ANT_DEPLOY	ANT_DEPLOY
SHDN_12V	→ SHDN_12V	ANT_DEPLOY_STATUS	ANT_DEPLOY

File: EPS_ControlUnit.kicad_sch

Figure 3-2: USB 2.0 ESD Protection

[Link to Electrical Pin Definitions Sheet](#)

[illegible]

ALL PASSIVES ARE 0603 UNLESS SPECIFIED

Title: EPS Power Distribution Board

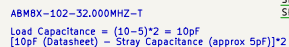
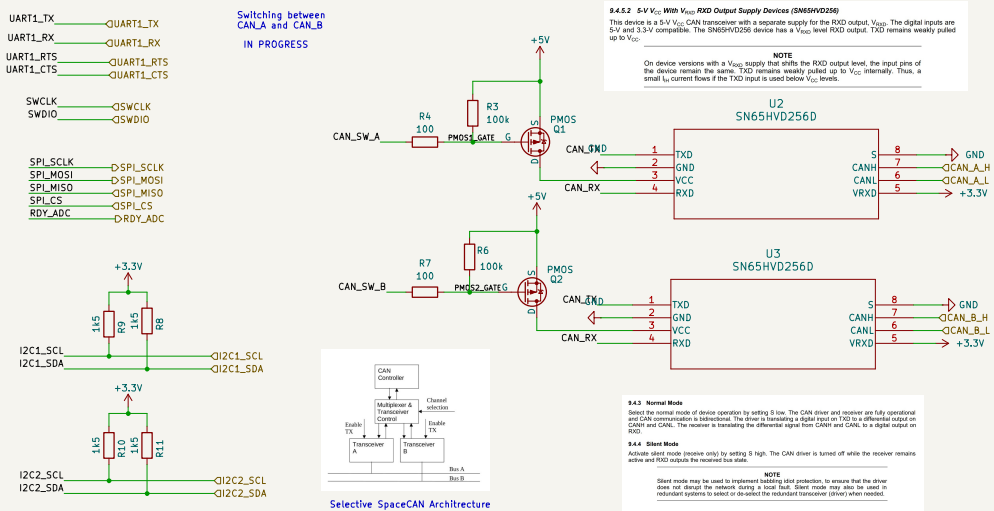
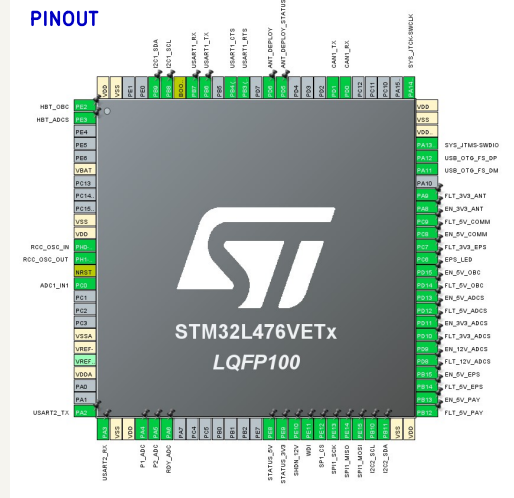
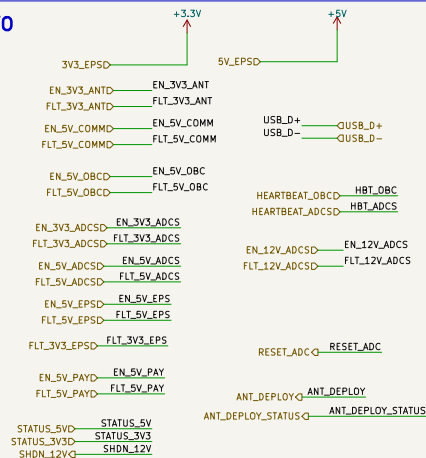
Size: A3		Date: 2024-09-12
KiCad E.D.A. 8.0.5		

Rev:
Id: 1/3

AMEYA MARAKARKANDY

COMMUNICATION INTERFACES

NOTE:
VBAT should be tied to
external battery or RTC
for now have connected with VDD

U5
TPS3824-33QDBVRQ1

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IIT Bombay Student Satellite Program
Sheet: /EPS Control Unit/
File: EPS_ControlUnit.kicad_sch

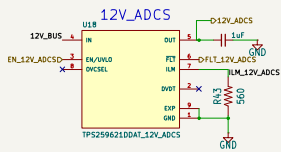
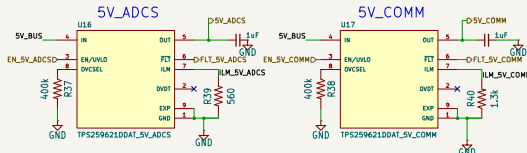
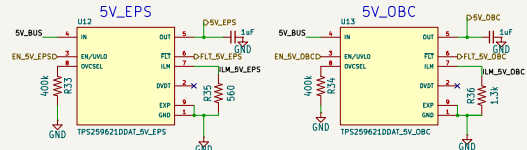
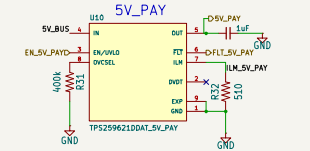
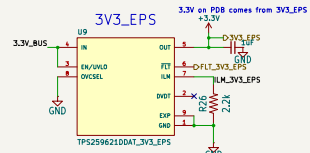
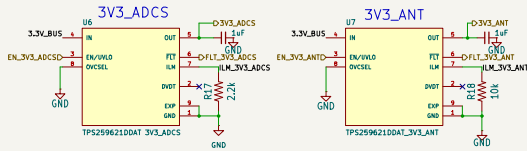
Title: EPS Control Unit	
Size: A3	Date: 2024-09-08
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Rev: v1.0
Id: 2/3

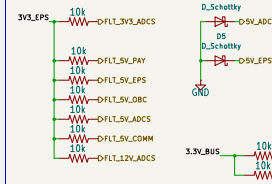
EPS DISTRIBUTION & REGULATION UNIT

HARSHIL SINGLA

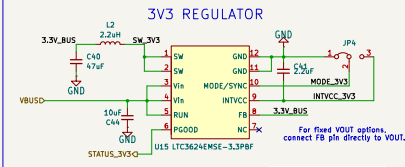
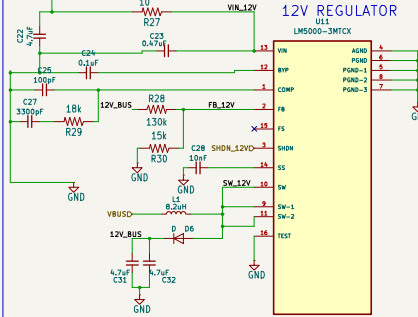
CURRENT LIMITER



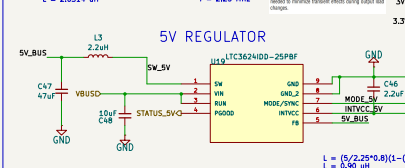
CURRENT LIMITER EXTRA CONNECTIONS



VOLTAGE CONVERTER/REGULATOR

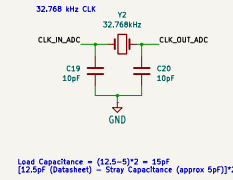


Input Capacitor (CIN) Selection
The input capacitance, CIN, is needed to filter the square wave current at the drain of the top power MOSFET. To prevent large voltage transients from occurring, a low ESR input capacitor sized for the maximum RMS current should be used. The maximum RMS current is given by:
 $I_{RMS} = I_{OUT}(Max) \cdot (0.497)$
 $I_{OUT}(Max) = 1A$
 $L = (2.3/2.25 \cdot A)(1 - (2.3/7.4))$
 $L = 2.0314 \mu H$

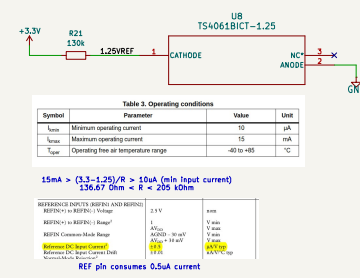


REPLACE INDUCTORS WITH STANDARD VALUES
PACKAGES: 30MM SERIES 8080
2.2uH 8080
4.7uH 8030
8.2uH 5050

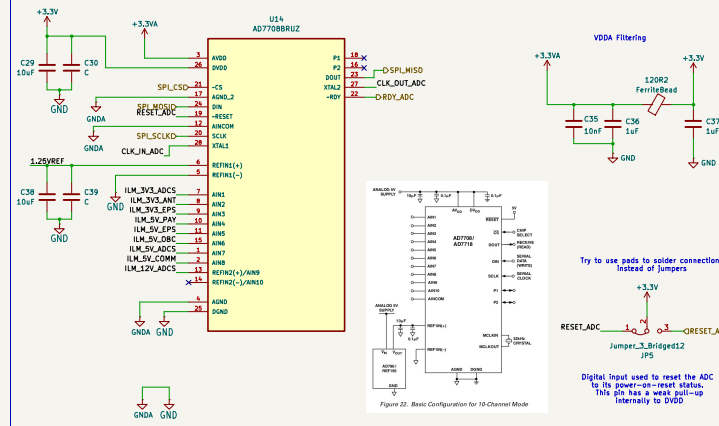
CLOCK



REFERENCE VOLTAGE



ADC (TELEMETRY)



Author: Harshil Singla
IIT Bombay Student Satellite Program
Sheet: /EPS Power Distribution/
Filter: EPS_PowerDistribution.Kicad.sch
Title: EPS Power Distribution and Regulation Unit
Size: User Date: 2024-09-05
Kicad E.D.A. 8.0.5
Rev: 1d: 3/3