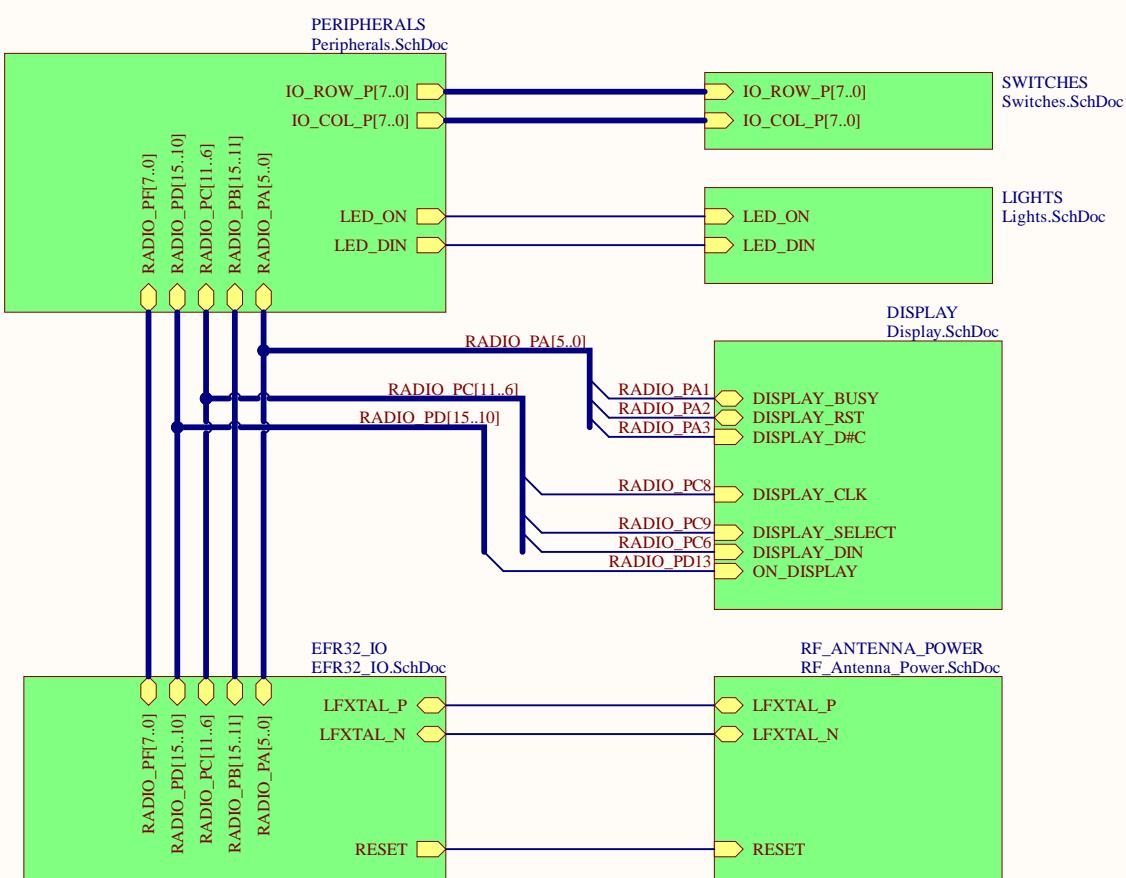


**SHEETS**

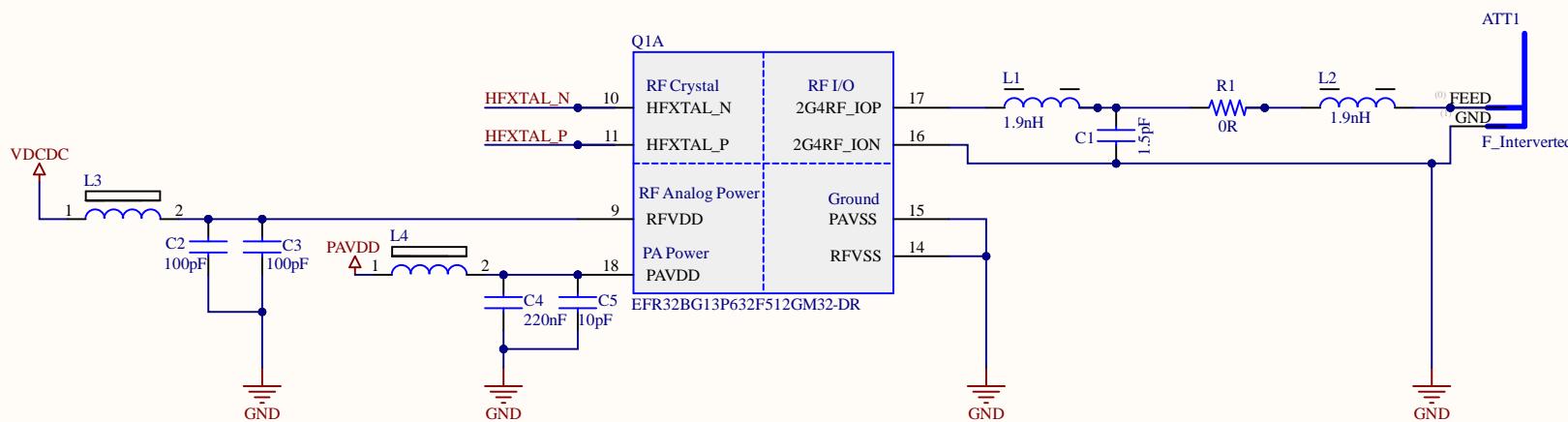
NAME	SHEET
RF_ANTENNA_POWER	2
EFR_GPIO	3
PERIPHERALS	4
POWER	5
SWITCHES	6
LIGHTS	8
DISPLAY	7

Test points		
Modules		
Interrupts	Designators	Signal
	TP1	IO_ROW_INT
	TP2	IO_COL_INT
Temperature sensor	TP3	TEMP_LOAD_SW
Mini SWD connector	TP4	RESET
	TP5	SWDIO
	TP6	PTI_FRAME
	TP7	VCOM_RX
	TP8	VCOM_TX
	TP9	SWCLK
	TP10	PTI_DATA
eInk display	TP11	SWO
	TP12	DISPLAY_D#C
	TP13	DISPLAY_DIN
	TP14	DISPLAY_CLK
	TP15	DISPLAY_SELECT
I2C communication	TP16	SCL
	TP17	SDA
Power supply	TP18	VBAT
	TP19	Solar Pannel output
	TP21	VSTOR
	TP22	+3.3V
	TP23	VMCU
	TP25	VMCU
Crystals	TP26	HXTAL_N
	TP27	HXTAL_P
	TP28	LXTAL_P
	TP29	LXTAL_N

Voltage ranges				
	Min	Typ	Max	Units
BlueGecko	1.8		3.8	V
PMIC	0.1		5.1	V
eInk Display	2.2		3.7	V
Load Switch	1.6		5.5	V
Temperature sensor	1.9		3.6	V
IO Expander	1.65		5.5	V



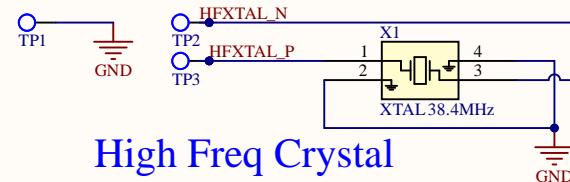
Title		
Size	Number	Revision
Letter	1	v1.0
Date:	10/24/2024	Sheet of
File:	C:\Users...\Keyboard-Left.SchDoc	Drawn By: Parth Thakkar



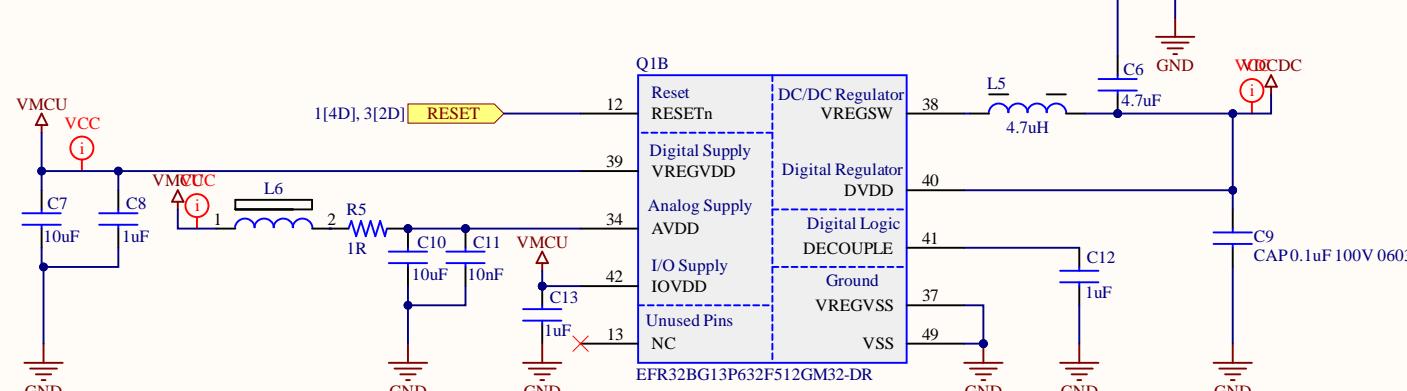
Antenna & Radio Interface



# Low Freq Crystal



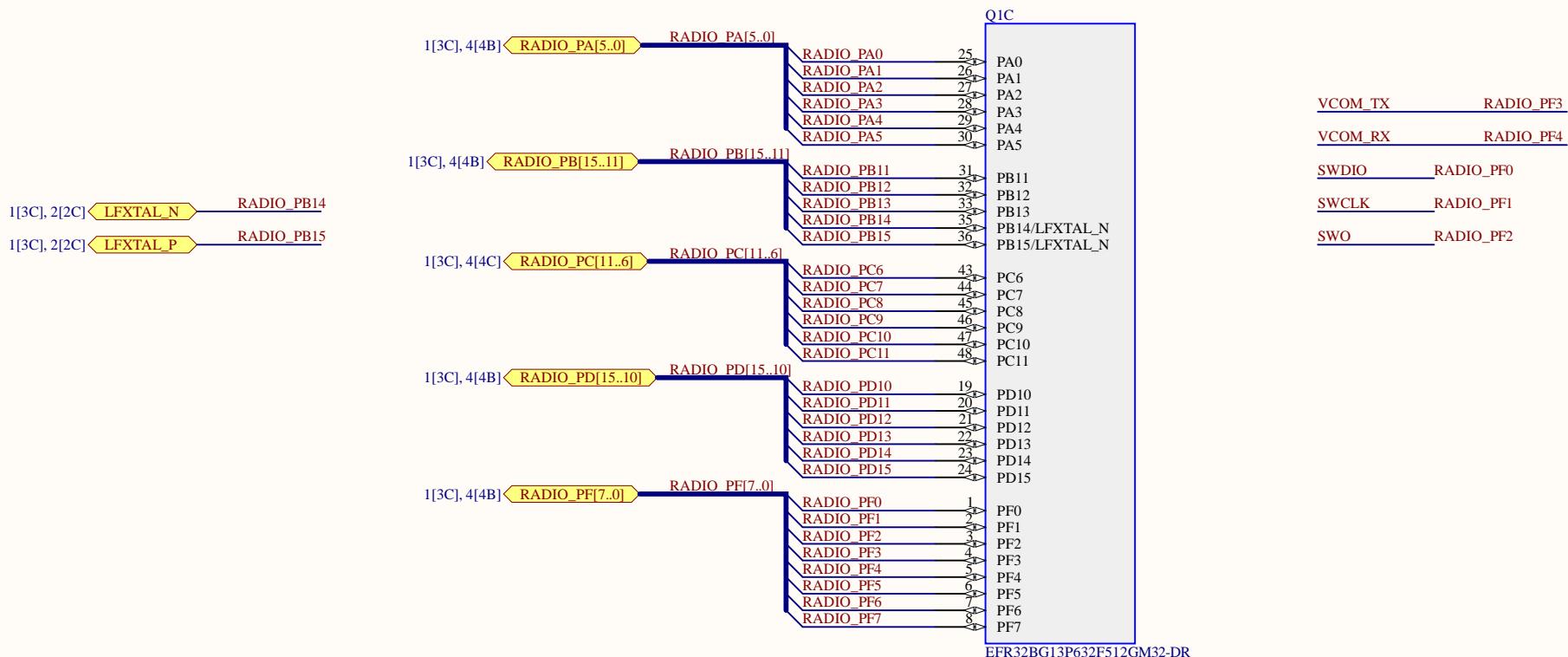
## High Freq Crystal



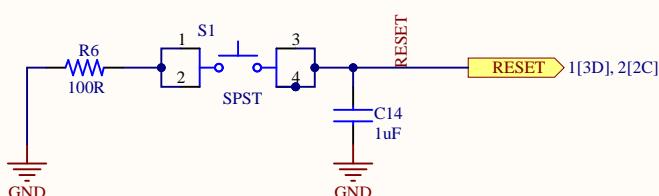
## Power & Decoupling

Title		RF and Crystal	
Size Letter	Number	2	Revision v1.0
Date:	10/24/2024	Sheet of	Low Self Esteem
File:	C:\Users\lalRF Antenna Power.SchDoc	Drawn By:	Parth Thakkar

# EFRBG13 GPIOs

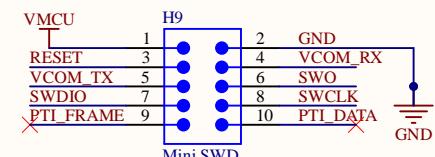


△ Reset input, active low. This pin is internally pulled up to AVDD. To apply an external reset source to this pin, it is required to only drive this pin low during reset, and let the internal pull-up ensure that reset is released.



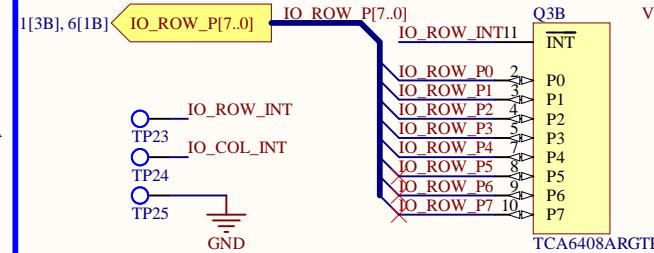
## Mini Simplicity Connector

△ • Serial Wire Debug (SWD) with SWO  
• Packet Trace Interface (PTI)  
• Virtual COM port (VCOM)  
• AEM monitored voltage rail

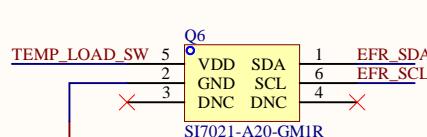


## IO Connections

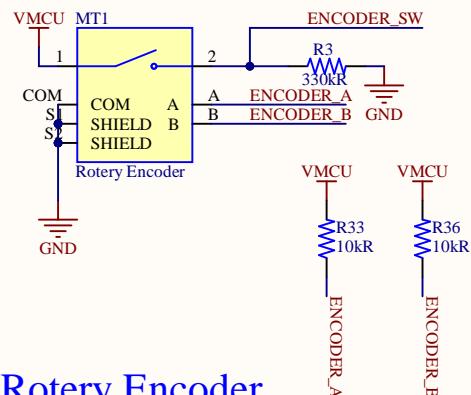
Size	Number	Revision
Letter		v1.0
	3	
Date:	10/24/2024	Sheet of Low Self Esteem
File:	C:\Users\Parth Thakkar	Drawn By: Parth Thakkar



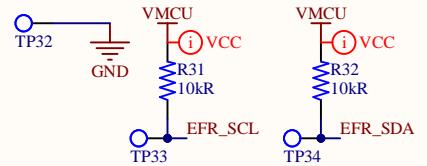
## IO Expanders



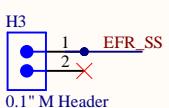
## Temperature Sensor



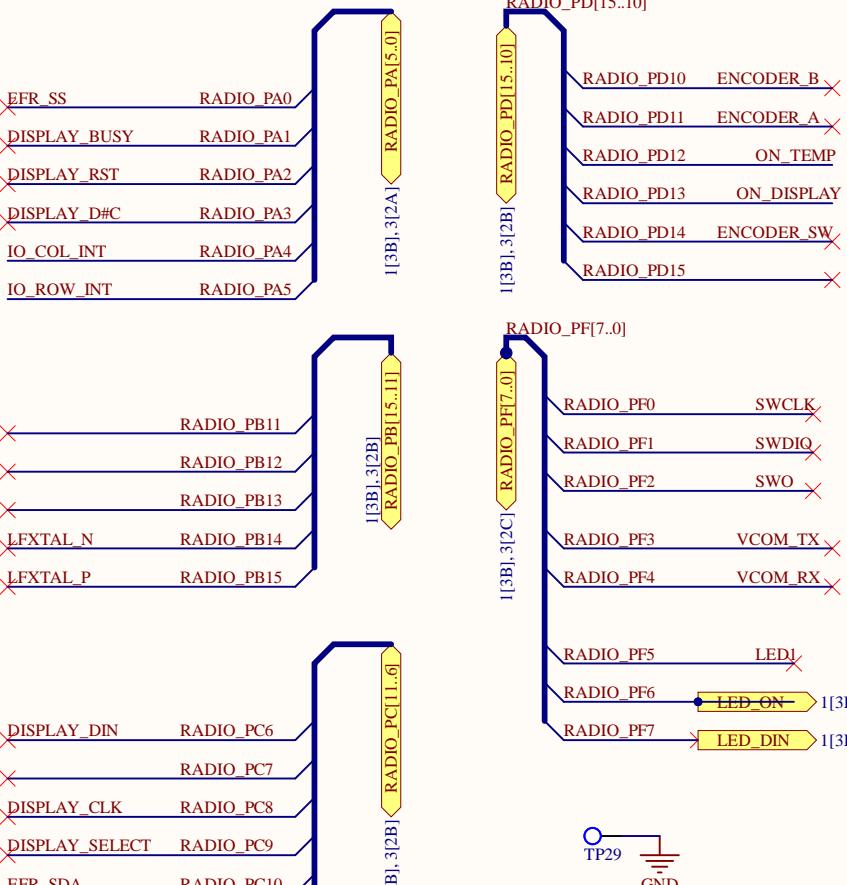
## Pullups for I2C



## Extra Slave Select



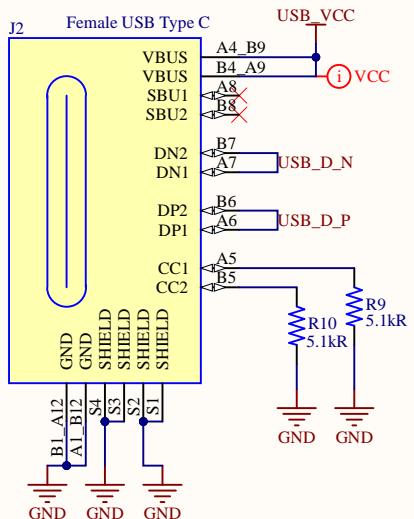
## GPIOs



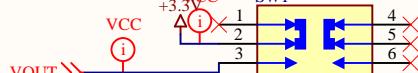
## Peripherals

Title		Size	Number	Revision
Letter			4	*
Date:	10/24/2024	Sheet of	Low Self Esteem	
File:	C:\Users\...\Peripherals.SchDoc	Drawn By:	Parth Thakkar	

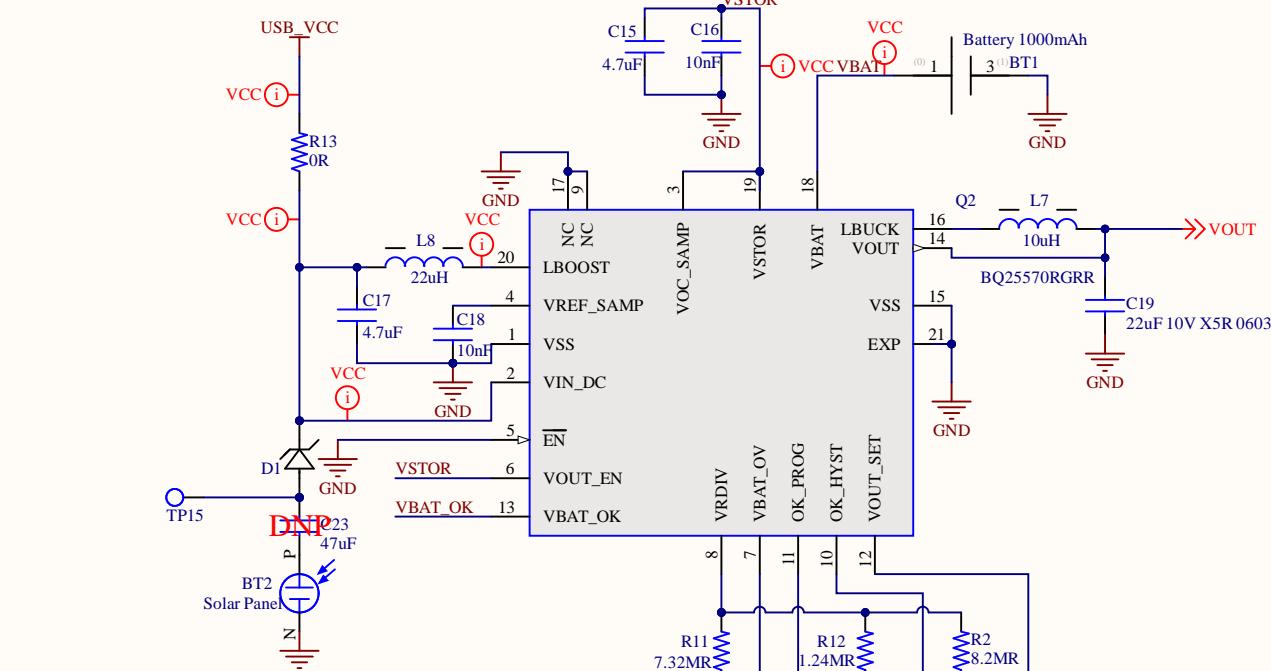
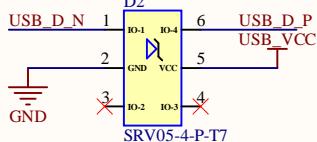
## Rotary Encoder



Type C



DPDT Switch



**VBAT\_OV (Battery Overvoltage):**  
 $VBAT\_OV = 1.21V * (1 + ROV2/ROV1) * 2/3$   
 $VBAT\_OV = 1.21V * (1 + 7.32M/5.62M) * 2/3 = 4.2V$

**VBAT\_OK (Battery OK threshold):**  
 $VBAT\_OK = 1.21V * (1 + ROK2/ROK1)$   
 $VBAT\_OK = 1.21V * (1 + 6.65M/4.99M) = 3.2V$

**VBAT\_OK\_HYST (Battery OK hysteresis threshold):**  
 $VBAT\_OK\_HYST = 1.21V * (1 + (ROK2 + ROK3)/ROK1)$   
 $VBAT\_OK\_HYST = 1.21V * (1 + (6.65M + 1.24M)/4.99M) = 3.6V$

**VOUT (Output voltage):**  
 $VOUT = 1.21V * (1 + ROUT2/ROUT1)$   
 $VOUT = 1.21V * (1 + 0.9M/2.1M) = 3.3V$

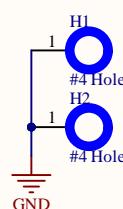
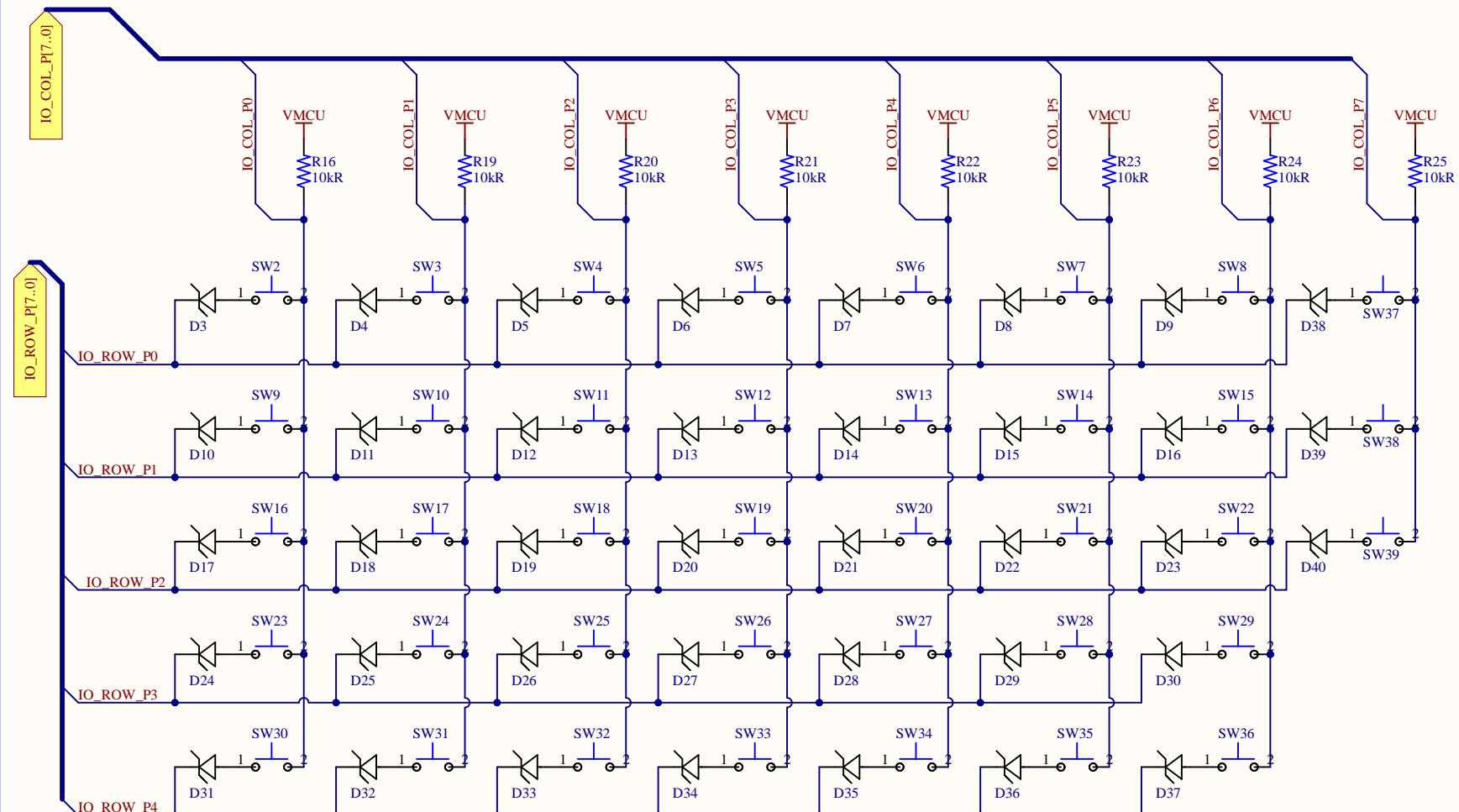
**MPPT (Maximum Power Point Tracking):**  
 $VREF\_SAMP = VIN\_DC(OC) * (ROC2 / (ROC1 + ROC2))$   
 $3.35V = 4.15V * (2M / (8M + 2M))$



Power Management

Title		
Size	Number	Revision
Letter	5	v1.0
Date:	10/24/2024	Sheet of
File:	C:\Users\Parth Thakkar	Drawn By: Parth Thakkar

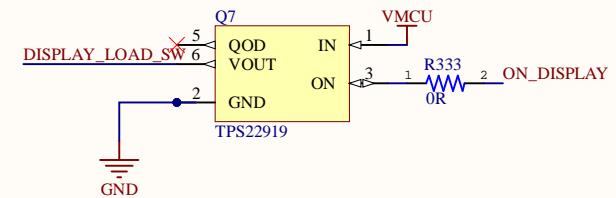
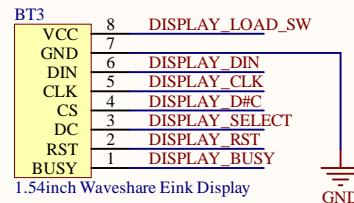
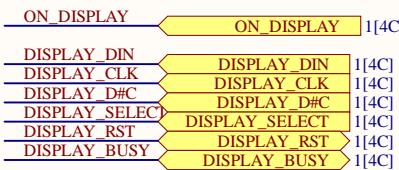
# Mechanical Switches



## Mechanical Holes

Title		
Size	Number	Revision
A	6	v1.0
Date:	10/24/2024	Sheet of
File:	C:\Users\...\Switches.SchDoc	Drawn By: Parth Thakkar

# DISPLAY



Waveshare's e 1.5inch e-Paper V2

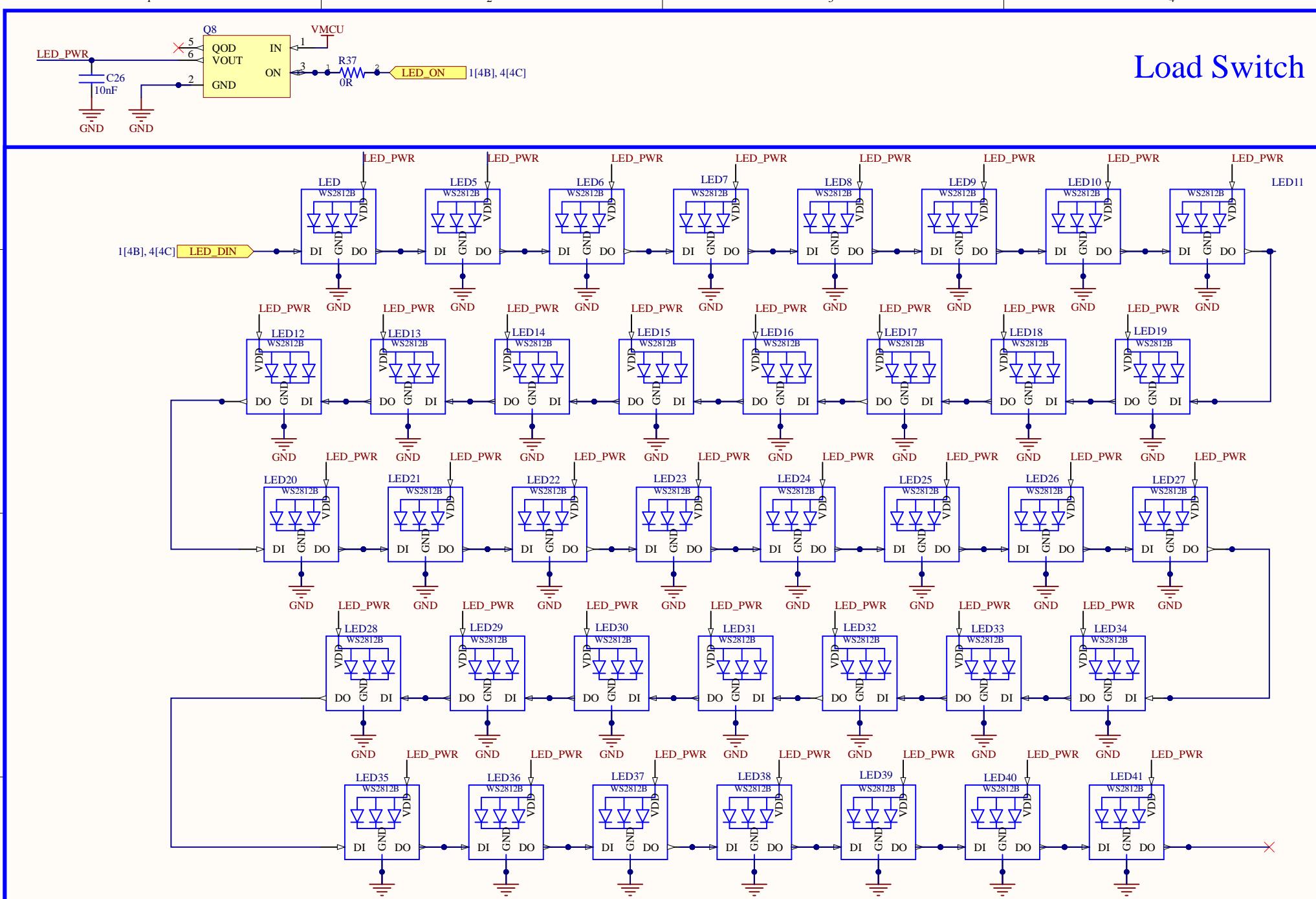
Parameter	Test condition	Min	Typ	Max	V
VDD		2.2		3.7	
Operating temp		-40		105	degC
Current during update		0.0015		0.008	A
Sleep current				0.000002	A
Refresh time				2	s

C

D

Title		
Size	Number	Revision
Letter	7	v1.0
Date:	10/24/2024	Sheet of
File:	C:\Users\...\Display.SchDoc	Low Self Esteem
		Drawn By: Parth Thakkar

# Load Switch



**RGB LEDs**

Title		
Size Letter	Number	Revision v1.0
	8	
Date:	10/24/2024	Sheet of
File:	C:\Users\...\Lights.SchDoc	Drawn By: Parth Thakka



