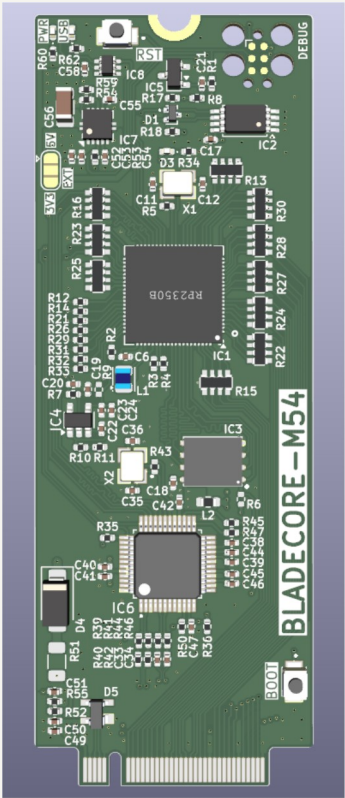


CONTENT

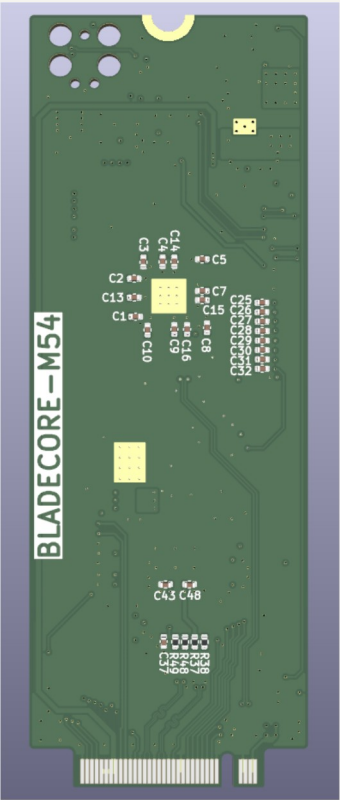
Page	Index
1	Cover Page
2	Block Diagram
3	Project Architecture
4	Microcontroller Peripherals
5	Microcontroller
6	Ethernet Interface
7	USB Interface and Power
8	Power - Sequencing
9	Revision History
10	.....
11	.....
12	.....
13	.....
14	.....
15	.....
16	.....
17	.....
18	.....
19	.....
20	.....

PCB PREVIEW

TOP VIEW



BOTTOM VIEW



COMMENT GUIDELINES

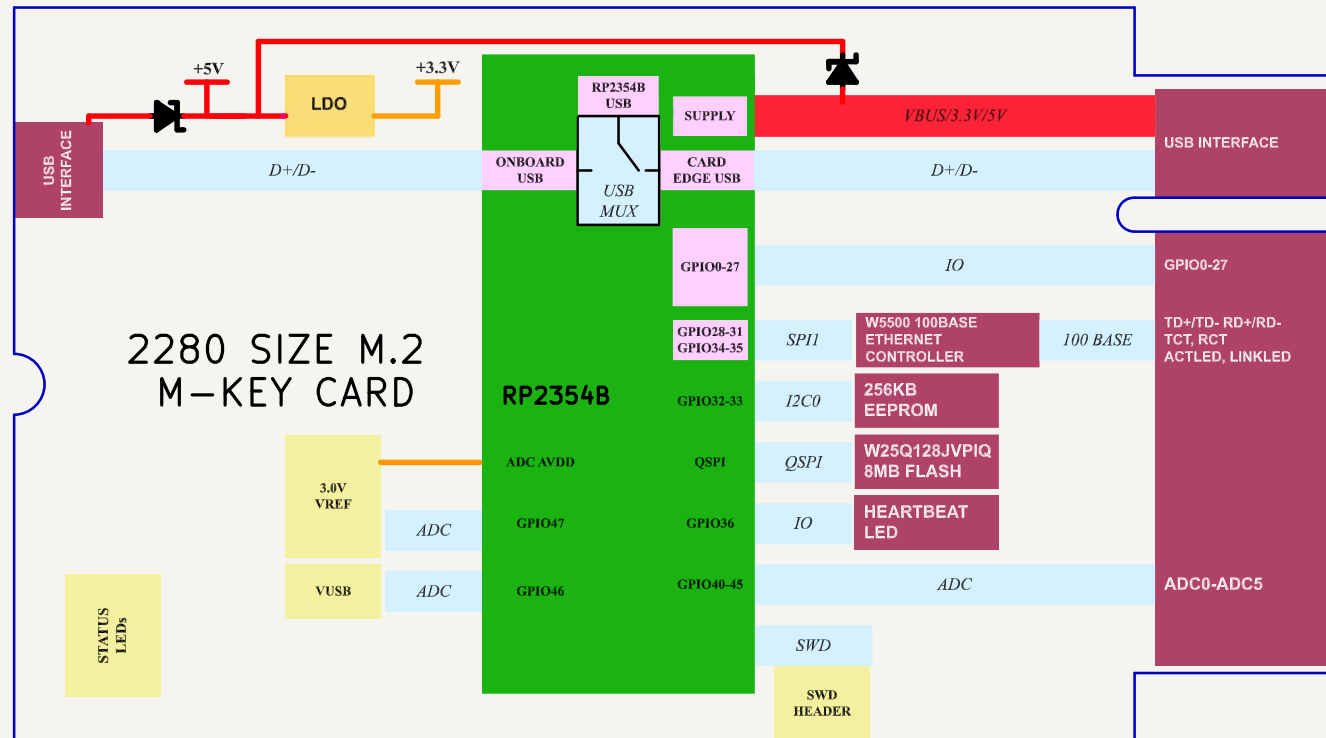
General comments are black, 50 mil size  
Design notes and guidelines are blue, 50 mil size  
Layout instructions are red, 50 mil size

NOTES

Not fitted components are marked as X

 Date: 2026-01-31 Sheet Title: Root	Board Name: <b>PDNode-600</b>		Project Name: <b>BladeCore-M54</b>	
	File Name: BladeCore-M54.kicad_sch		Revision: 1.0.0	Variant: Pro
	Company: DavidMakesThings	Designer: David Sipos Reviewer:	Size: A3	Sheet: 1 of 9

## [2] Block Diagram



### Electrical specifications:

Input voltage:	3.3V - 5.5 V
Absolut maximum current consumption	480 mA
Typical current consumption	60mA
IO voltage	3.3V
Onboard LDO output capacity	1.5A
LDO Dropout	60mV
EEPROM	256 kbit
External Flash	8MB

 Date: 2026-01-31 Sheet Title: Block Diagram	Board Name: <b>PDNode-600</b>		Project Name: <b>BladeCore-M54</b>	
	File Name: Block Diagram.kicad_sch		Revision: 1.0.0	Variant: Pro
	Company: <b>DvidMakesThings</b>	Designer: David Sipos Reviewer:		Size: <b>A3</b>
			Sheet: <b>2</b> of <b>9</b>	

### [3] Project Architecture

The diagram illustrates the project architecture, showing the connection between the microcontroller peripherals and various external components.

**Microcontroller Peripherals:**

- File: microcontroller\_peripherals.kicad\_sch
- GPIOs: GPIO0 through GPIO27
- ADCs: ADC0 through ADC5
- SPIs: SPI0 through SPI4
- Ethernet Interface: ETH\_RST, ETH\_INT, SPI0\_SCSN, SPI0\_SCLK, SPI0\_MOSI, SPI0\_MISO
- Other: ACT\_LED, LINK\_LED

**USB Interface and Power:**

- File: usb\_interface.kicad\_sch
- USB\_RP\_D+, USB\_RP\_D-, ADC\_VREF, ADC\_VUSB

**Ethernet Interface:**

- File: ethernet\_interface.kicad\_sch
- ETH\_RST, ETH\_INT, SPI0\_SCSN, SPI0\_SCLK, SPI0\_MOSI, SPI0\_MISO, TD\_PD, TD\_N, TCTD, RD\_P, RD\_N, RCTD, ACT\_LED, LINK\_LED

**Components:**

- J1: MDT320M03001
- JP1: SolderJumper\_3\_Open
- +5V, +3.3V power sources
- PWR\_FLAG, PWR, LINK\_LED, ACT\_LED, RCT, RD\_P, RD\_N, TD\_P, TD\_N, TCT, GND, SHIELD

**Legend:**

- VBUS\_ISO: Only populate R51 when USB powering is needed
- R51: OR 1% 1206
- D5: SP0503BAHTG

Board Name:		Project Name:	
PDNode-600		BladeCore-M54	
File Name:		Revision:	Variant:
Project Architecture.kicad_sch		1.0.0	Pro
Date: 2026-01-31	Company:	Designer:	Size:
Sheet Title:	DavidMakesThings	David Sipos	A3
Project Architecture		Reviewer:	3 of 9



File Name:  
Project Architecture.kicad\_sch

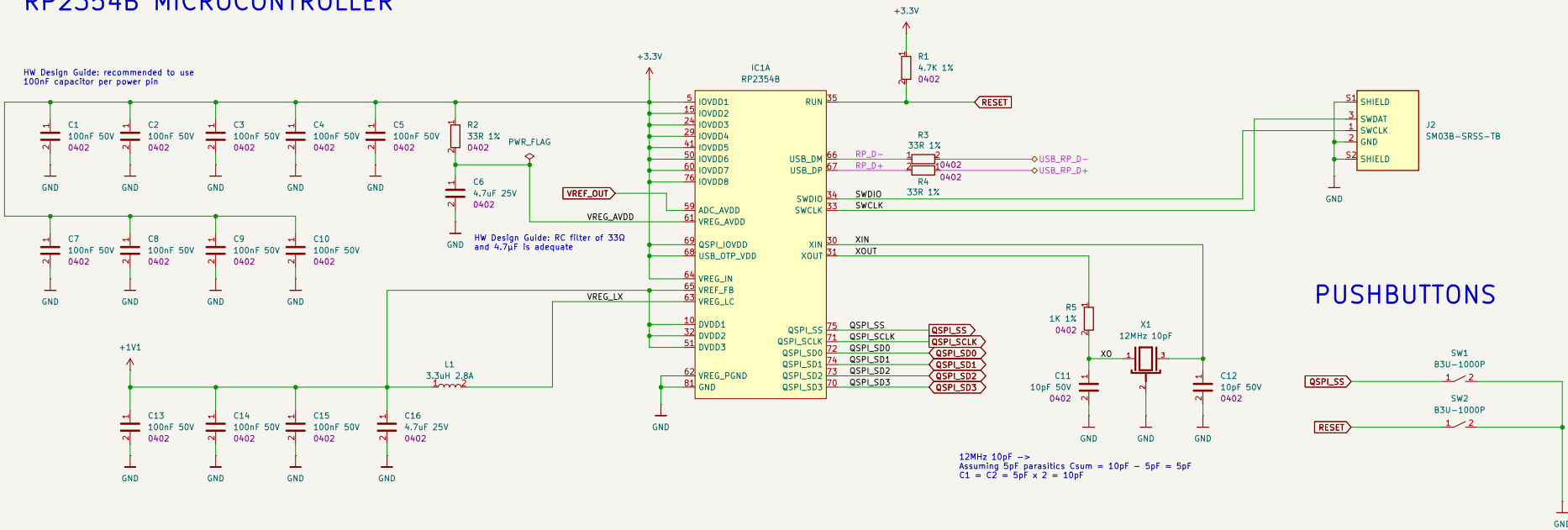
Designer:  
David Sipos  
Reviewer:

Revision:	Variant:
1.0.0	Pro

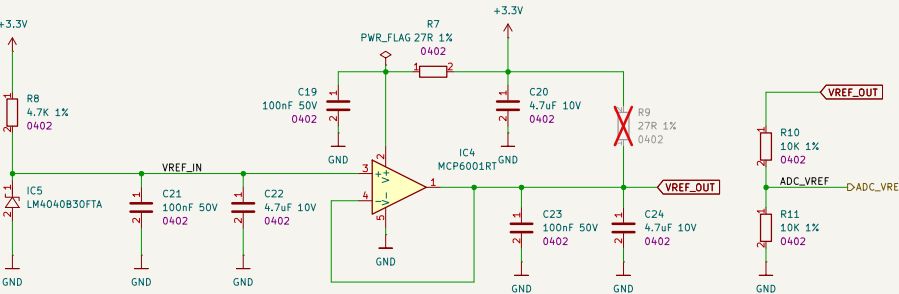
Size:	Sheet:
A3	3 of 9

# [4] Microcontroller Peripherals

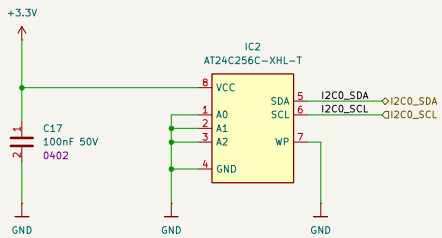
## RP2354B MICROCONTROLLER



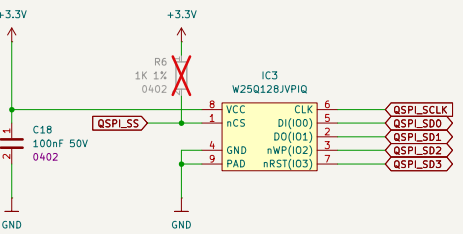
## 3.0V ADC VOLTAGE REFERENCE



## EXTERNAL EEPROM



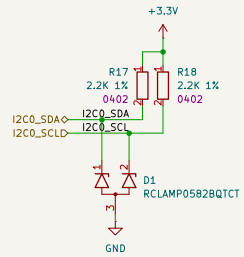
## EXTERNAL FLASH



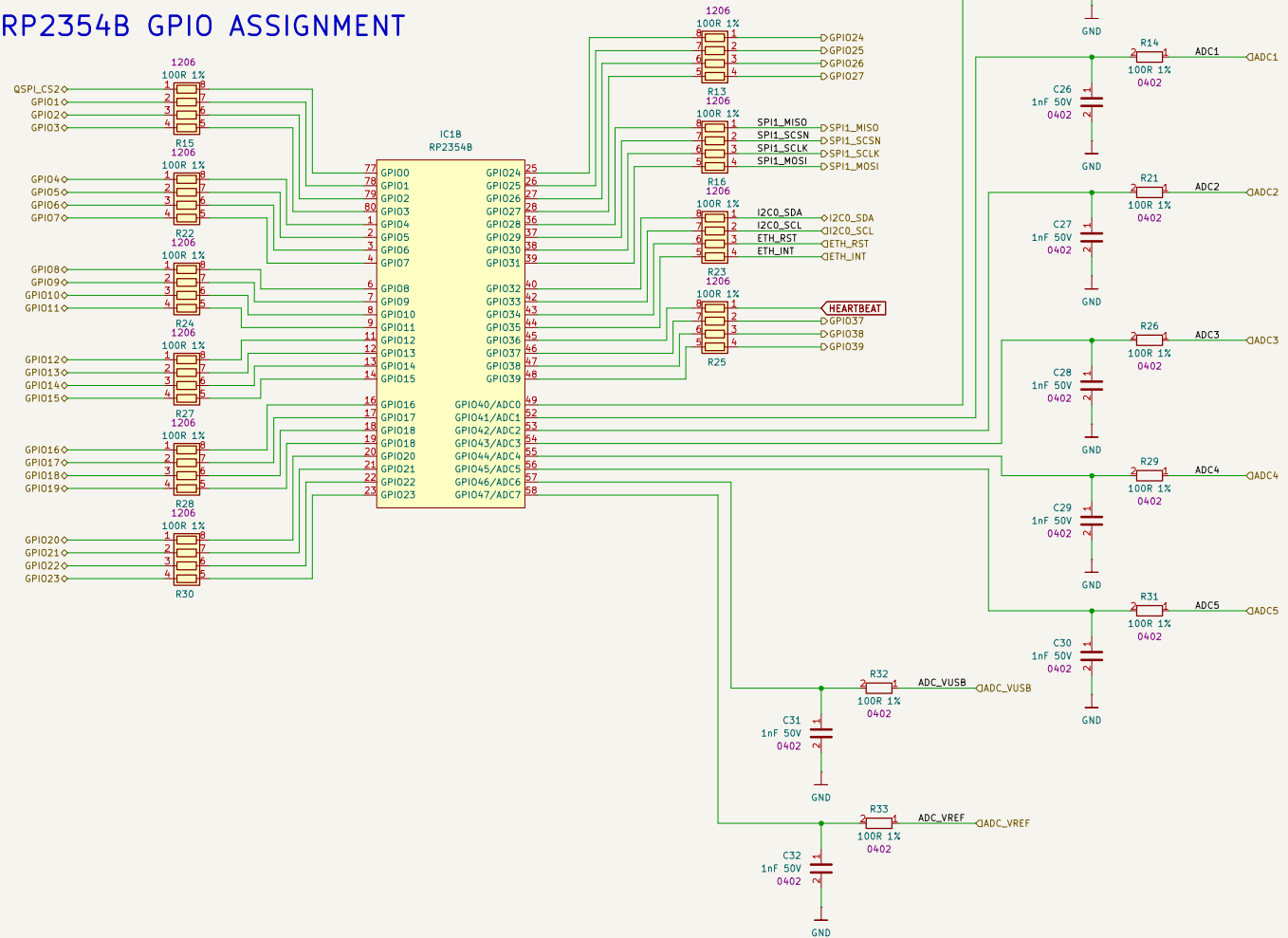
 Date: 2026-01-31 Sheet Title: Microcontroller Peripherals	Board Name: PDNode-600		Project Name: BladeCore-M54	
	File Name: microcontroller_peripherals.kicad_sch		Revision: 1.0.0	Variant: Pro
	Company: DvidMakesThings		Size: A3	Sheet: 4 of 9
	Designer: David Sipos Reviewer:			

# [5] Microcontroller

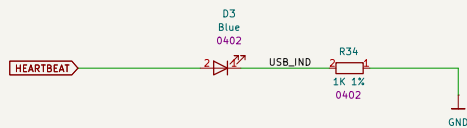
## I2C PULLUP



## RP2354B GPIO ASSIGNMENT



## HEARTBEAT LED



Date: 2026-01-31

Sheet Title:

Microcontroller

Board Name:

PDNode-600

File Name:

microcontrollerkicad\_sch

Company:

DavidMakesThings

Designer:

David Sipos

Reviewer:

Project Name:

BladeCore-M54

Revision:

1.0.0

Variant:

Pro

Size:

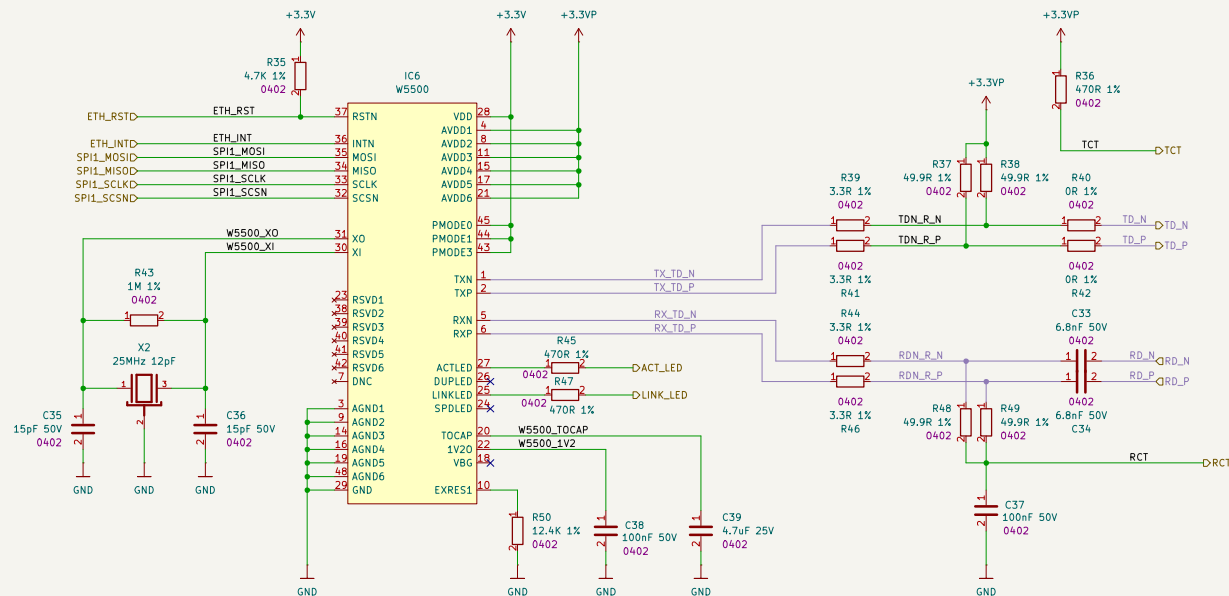
A3

Sheet:

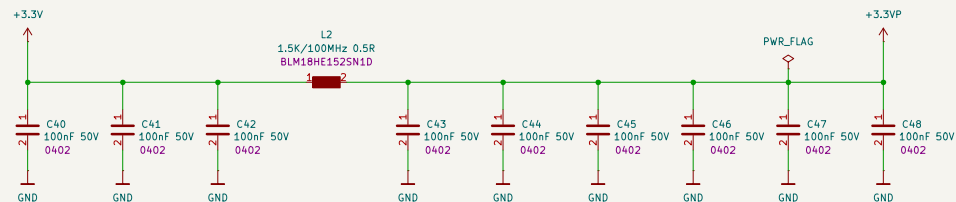
5 of 9

# [6] Ethernet Interface

## W5500 ETHERNET CONTROLLER WITH PHY



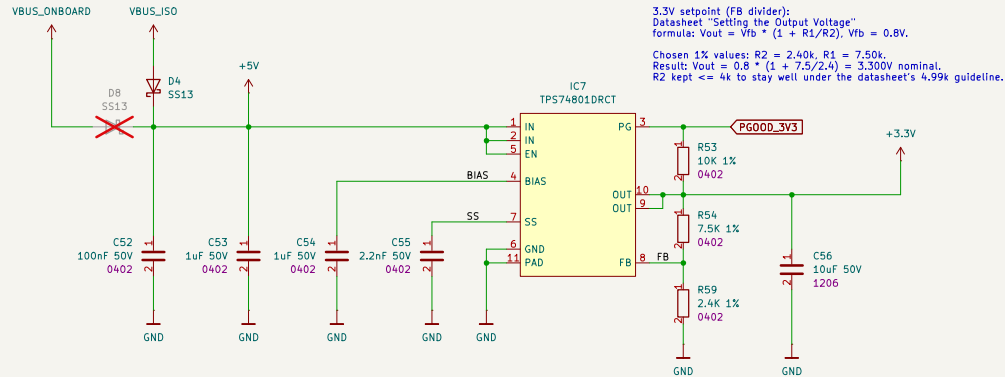
## DECOUPLING



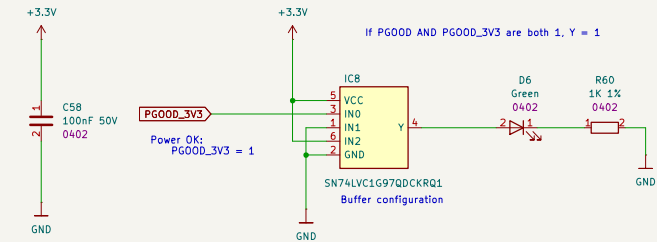
	Board Name: <b>PDNode-600</b>		Project Name: <b>BladeCore-M54</b>	
	File Name: ethernet_interface.kicad_sch		Revision: 1.0.0	Variant: Pro
	Sheet Title: Ethernet Interface	Company: DavidMakesThings	Designer: David Sipos Reviewer:	Size: A3
			Sheet: 6 of 9	

# [7] USB Interface and Power

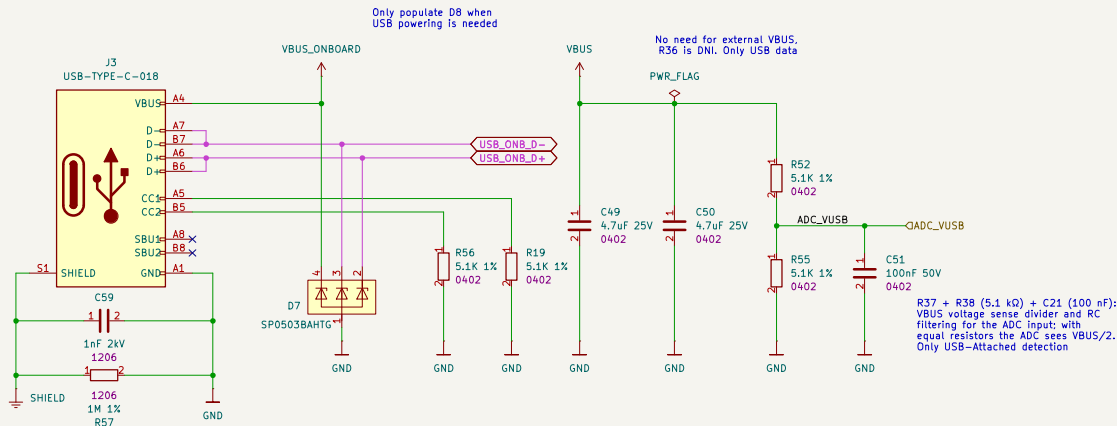
## +5V to 3.3V PMIC



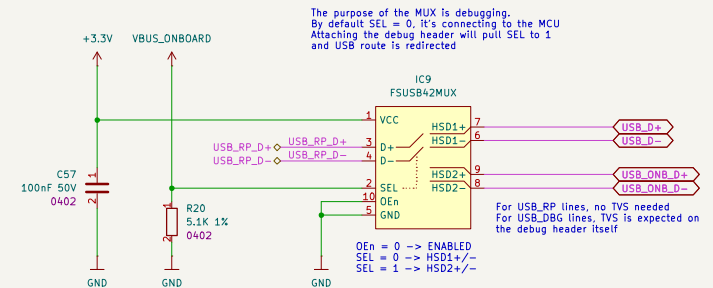
## PGOOD LOGIC



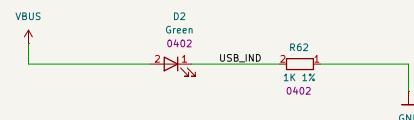
## ONBOARD USB CONNECTOR



## USB DATA-PATH SELECTOR

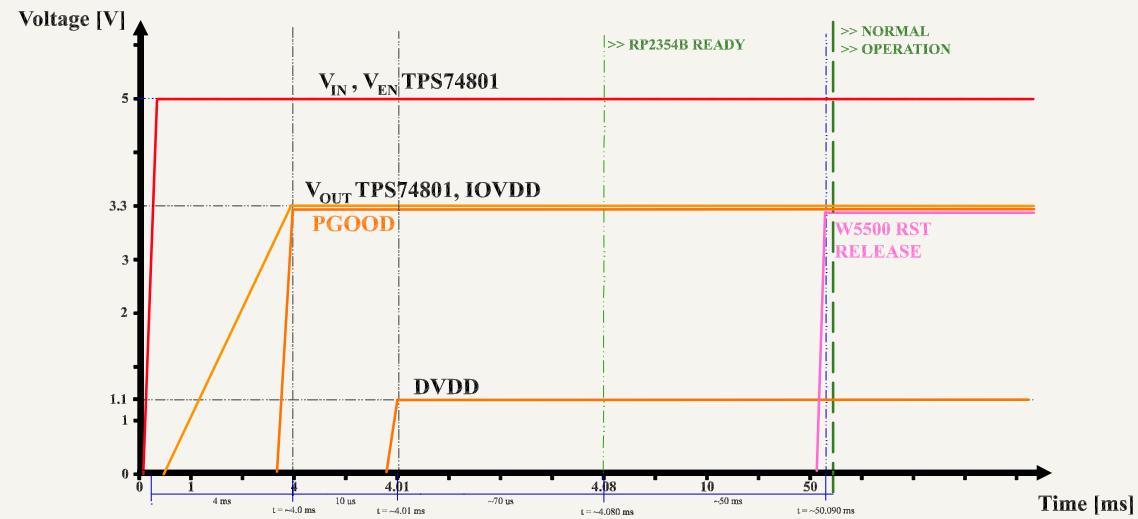


## USB INDICATOR LED



 Date: 2026-01-31 Sheet Title: USB Interface and Power	Board Name: <b>PDNode-600</b>		Project Name: <b>BladeCore-M54</b>	
	File Name: usb_interface.kicad_sch		Revision: 1.0.0	Variant: Pro
	Company: <b>DvidMakesThings</b>	Designer: David Sipos	Size: <b>A3</b>	Sheet: <b>7</b> of <b>9</b>
	Reviewer:			

## [8] Power - Sequencing



#	Stage	Δt	Total elapsed
1	VIN applied (5.0V)	0	0.000 ms
2	VEN high (TPS74801 EN)	0	0.000 ms
3	VOUT = 3.3V (soft-start)	4.000 ms	4.000 ms
4	PGOOD valid	0	4.000 ms
5	RP2354B 3.3V present	0	4.000 ms
6	RP2354B 1.1V valid (POR)	0.010 ms	4.010 ms
7	RP2354B ready	0.080 ms	4.090 ms
8	W5500 ready	50.000 ms	54.090 ms

	Board Name: <b>PDNode-600</b>		Project Name: <b>BladeCore-M54</b>	
	File Name: Power - Sequencing.kicad_sch		Revision: 1.0.0	Variant: Pro
	Sheet Title: Power - Sequencing	Company: <b>DvidMakesThings</b>	Designer: David Sipos Reviewer:	Size: <b>A3</b>
				Sheet: <b>8</b> of <b>9</b>



# [9] Revision History

DATE	REVISION	RESPONSIBLE	CHANGE
31.01.2026	1.0.0	DMT	INITIAL CREATION

 Date: 2026-01-31 Sheet Title: Revision History	Board Name: <b>PDNode-600</b>		Project Name: <b>BladeCore-M54</b>	
	File Name: RevisionHistory.kicad_sch		Revision: 1.0.0	Variant: Pro
	Company: <b>DvidMakesThings</b>		Designer: David Sipos Reviewer:	Size: <b>A3</b>
				Sheet: <b>9</b> of <b>9</b>