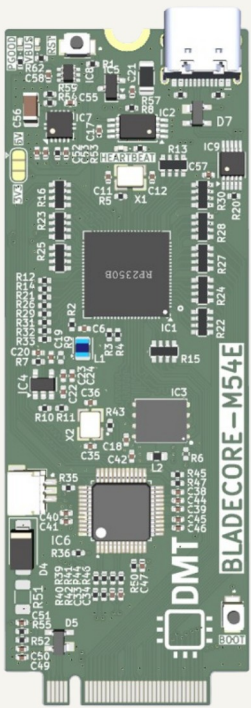


CONTENT

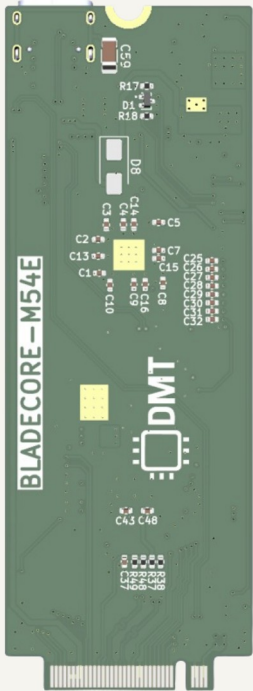
Page	Index
1	Cover Page
2	Block Diagram
3	Project Architecture
4	Microcontroller Peripherals
5	Microcontroller
6	Ethernet Interface
7	USB Interface and Power
8	Power - Sequencing
9	Revision History
10	.....
11	.....
12	.....
13	.....
14	.....
15	.....
16	.....
17	.....
18	.....
19	.....
20	.....

PCB PREVIEW

TOP VIEW



BOTTOM VIEW




COMMENT GUIDELINES

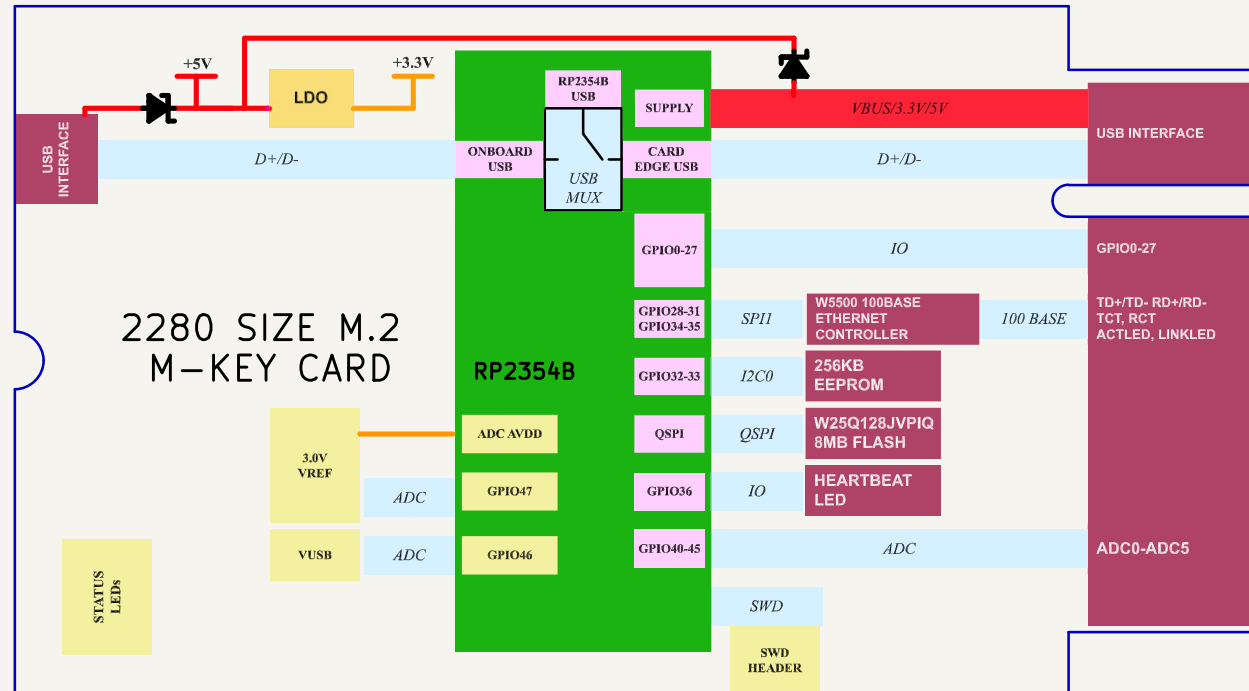
General comments are black, 50 mil size
Design notes and guidelines are blue, 50 mil size
Layout instructions are red, 50 mil size

NOTES

Not fitted components are marked as X


	Board Name: BladeCore		Project Name: M54	
	File Name: BladeCore-M54E.kicad_sch		Revision: 1.0.0	Variant: E
	Sheet Title: Root	Company: DvidMakesThings	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

	Board Name: BladeCore	Project Name: M54	
	File Name: Block Diagram.kicad_sch	Revision: 1.0.0	Variant: E
	Sheet Title: Block Diagram	Company: DroidMakesThings	Designer: David Sipos Reviewer:
		Size: A3	Sheet: 2 of 9

[3] Project Architecture

The diagram illustrates the project architecture, showing the connection between the Microcontroller Peripherals, USB Interface and Power, Ethernet Interface, and the Microcontroller. The central component is the connector J1 (MDT320M03001), which provides a bridge between the external interfaces and the microcontroller's pins.

Microcontroller Peripherals: This block includes various peripheral components such as USB, ADC, I2C, SPI, and Ethernet. It is connected to the Microcontroller via a set of pins (GPIOs).

USB Interface and Power: This block shows the USB interface and power supply. It includes a USB symbol and a power supply symbol. The USB interface is connected to the Microcontroller via a set of pins (GPIOs).

Ethernet Interface: This block shows the Ethernet interface. It includes a network symbol and is connected to the Microcontroller via a set of pins (GPIOs).

Microcontroller: The central component of the system, which is connected to all other blocks. It includes a set of pins (GPIOs) that are connected to the external interfaces.

Connector J1 (MDT320M03001): This connector provides a bridge between the external interfaces and the microcontroller's pins. It includes pins for power, data, and control signals.

Power and Ground Connections: The diagram shows various power and ground connections, including +5V, +3.3V, GND, and VBUS. These connections are essential for the proper operation of the system.

Signal Connections: The diagram shows various signal connections, including USB, I2C, SPI, and Ethernet. These connections are essential for the proper operation of the system.

Legend: The legend defines the symbols used in the diagram, including the USB symbol, the power supply symbol, and the network symbol.

Notes: The diagram includes several notes, such as "Only populate R51 when USB powering is needed" and "Solder Jumper 3_Open". These notes provide important information for the user.

File Names: The diagram includes several file names, such as "microcontroller_peripherals.kicad_sch", "usb_interface.kicad_sch", "ethernet_interface.kicad_sch", and "microcontroller.kicad_sch". These files are part of the project's source code.

Board Name: The board name is "BladeCore".

Project Name: The project name is "M54".

Revision: The revision is "1.0.0".

Variant: The variant is "E".

Date: The date is "2026-01-31".

Sheet Title: The sheet title is "Project Architecture".

Company: The company is "DavidMakesThings".

Designer: The designer is "David Sipos".

Reviewer: The reviewer is "David Sipos".

Size: The size is "A3".

Sheet: The sheet is "3 of 9".



Sheet Title:
Project Architecture

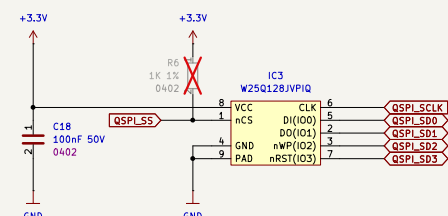
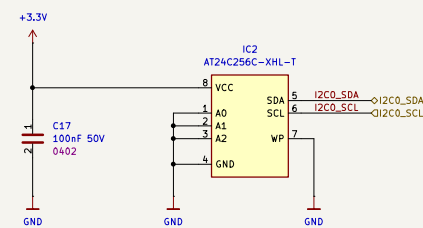
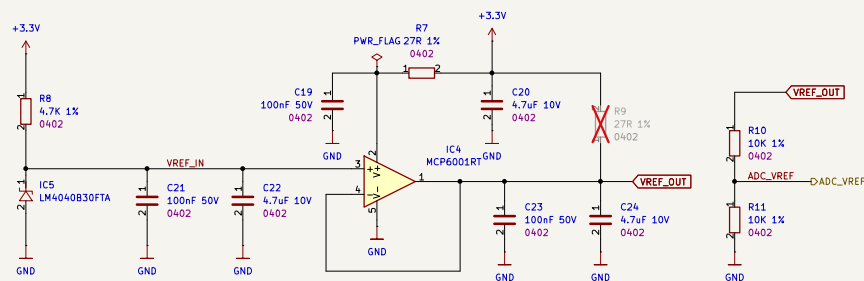
Company:
DvidMakesThings

Size:	Sheet:
A3	3 of 9

RP2354B MICROCONTROLLER



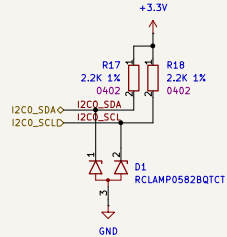
3.0V ADC VOLTAGE REFERENCE



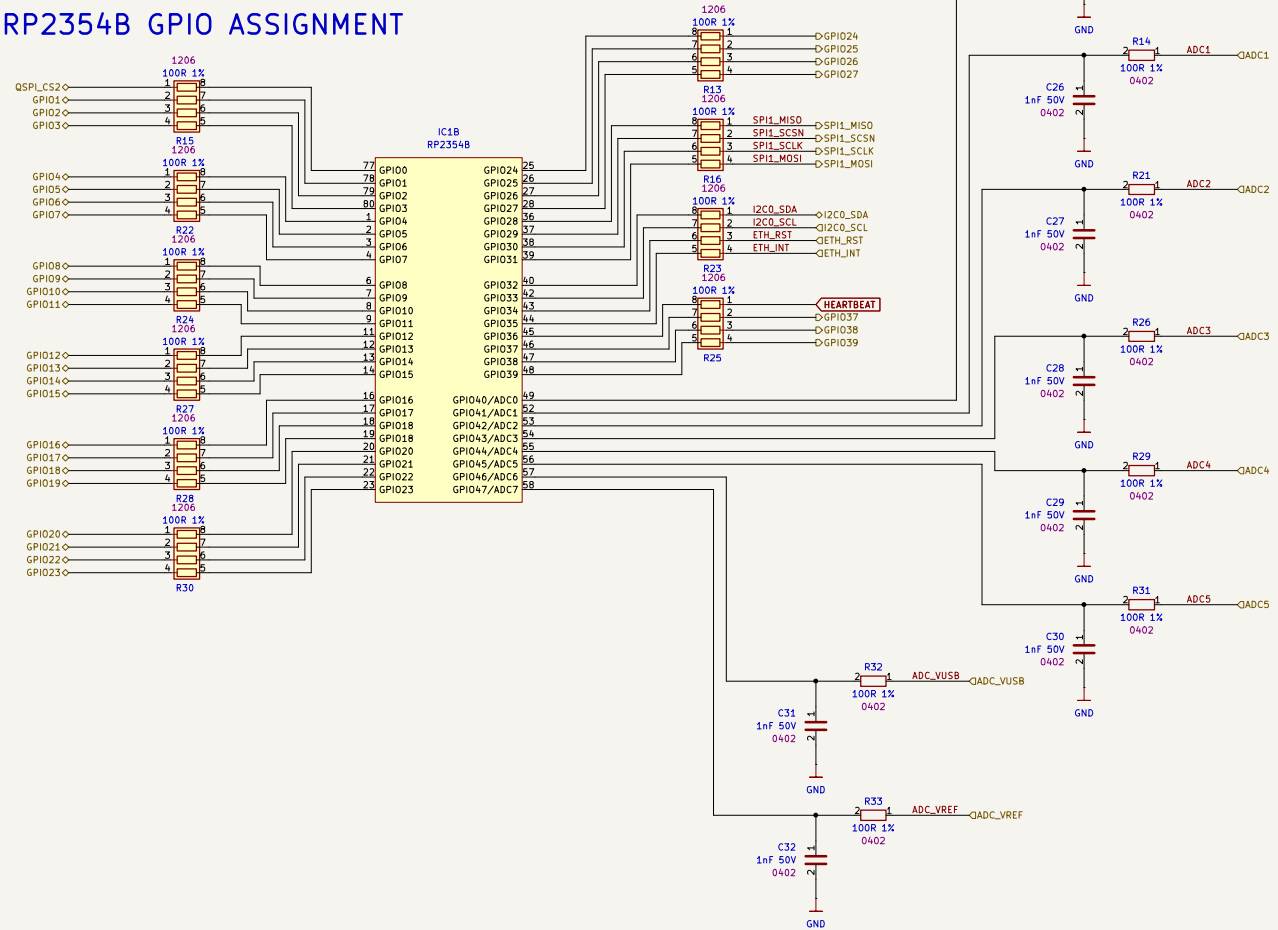
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	File Name: microcontroller_peripherals.kicad_sch		Revision: 1.0.0	Variant: E
Date: 2026-01-31	Company: DroidMakesThings	Designer: David Sipos Reviewer:	Size: A3	Sheet: 4 of 9
Sheet Title: Microcontroller Peripherals				

[5] Microcontroller

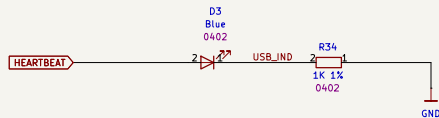
I2C PULLUP



RP2354B GPIO ASSIGNMENT



HEARTBEAT LED



Date: 2026-01-31

Sheet Title: Microcontroller

Board Name: BladeCore

File Name: microcontroller_kicad_sch

Company: DvidMakesThings

Project Name: M54

Revision: 1.0.0

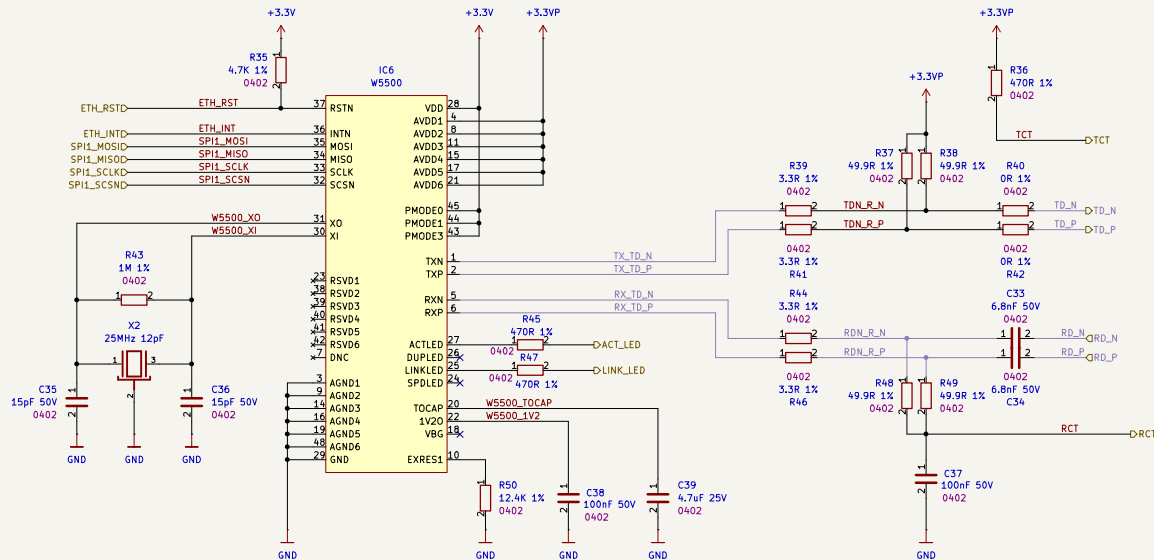
Size: A3

Variant: E

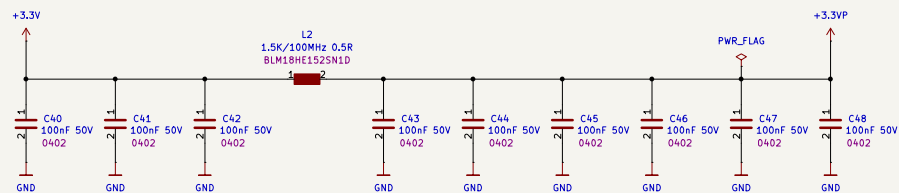
Sheet: 5 of 9


[6] Ethernet Interface

W5500 ETHERNET CONTROLLER WITH PHY



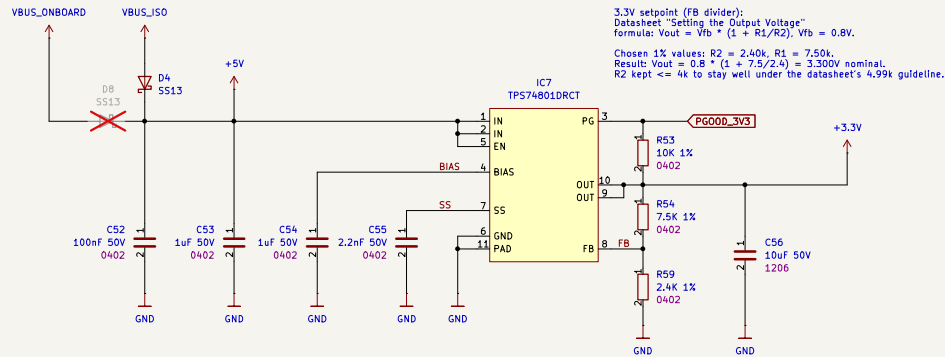
DECOUPLING



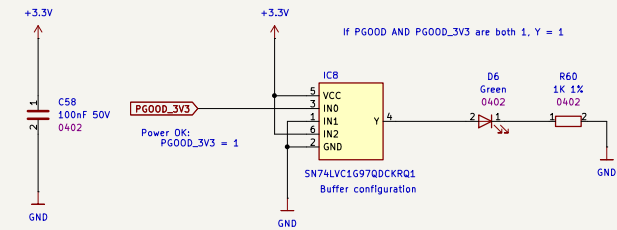
	Board Name: BladeCore		Project Name: M54	
	File Name: ethernet_interface.kicad_sch		Revision: 1.0.0	Variant: E
	Sheet Title: Ethernet Interface	Company: DroidMakesThings	Designer: David Sipos	Reviewer: David Sipos
Date: 2026-01-31		Size: A3	Sheet: 6 of 9	

[7] USB Interface and Power

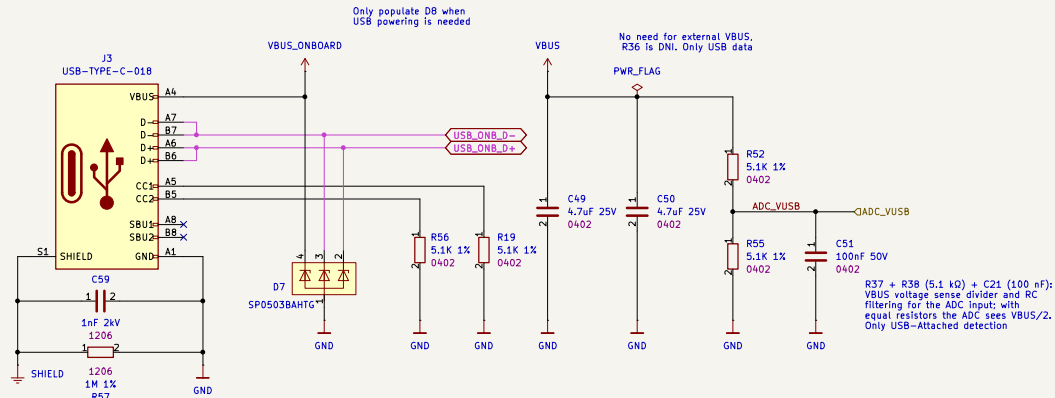
+5V to 3.3V PMIC



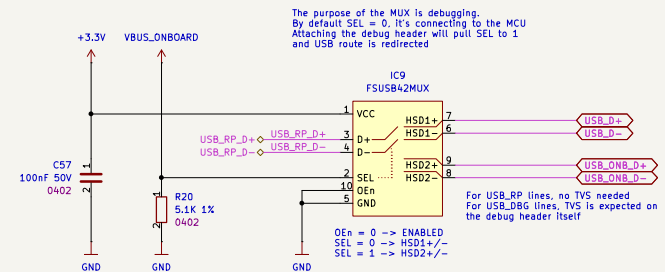
PGOOD LOGIC



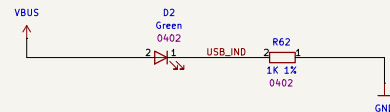
ONBOARD USB CONNECTOR




USB DATA-PATH SELECTOR

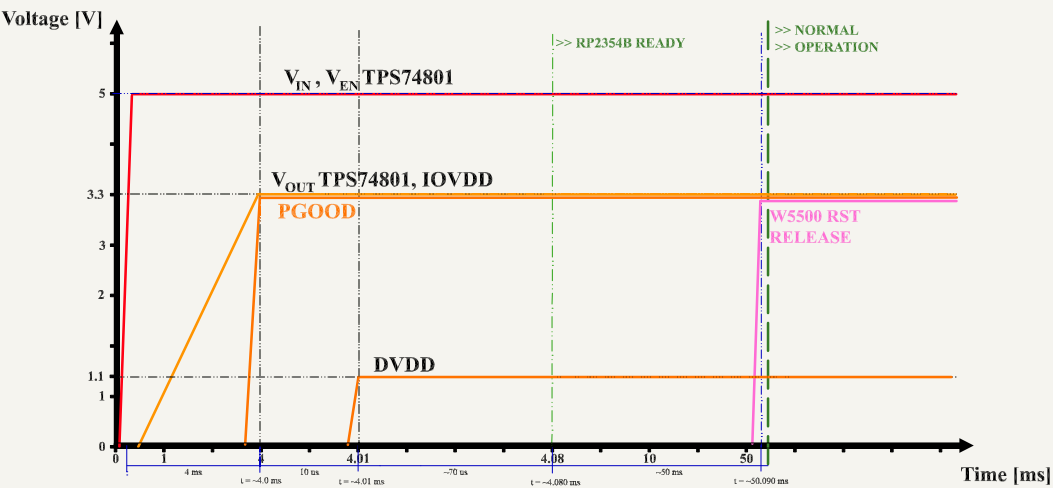


USB INDICATOR LED



	Board Name: BladeCore	Project Name: M54	
	File Name: usb_interface.kicad_sch	Revision: 1.0.0	Variant: E
	Company: DavidMakesThings	Designer: David Sipos	Size: A3
Sheet Title: USB Interface and Power	Reviewer:	Sheet: 7 of 9	

[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



Date: 2026-01-31

Sheet Title:
Power - Sequencing

Board Name:
BladeCore

File Name:
Power - Sequencing.kicad_sch

Company:
DvidMakesThings

Designer:
David Sipos
Reviewer:

Project Name:
M54

Revision:
1.0.0


Size:
A3

Variant:
E

Sheet:
8 of 9

[9] Revision History

DATE	REVISION	RESPONSIBLE	CHANGE
31.01.2026	1.0.0	DMT	INITIAL CREATION

	Board Name: BladeCore		Project Name: M54	
	File Name: Revision History.kicad_sch		Revision: 1.0.0	Variant: E
	Sheet Title: Revision History	Company: DvidMakesThings	Designer: David Sipos Reviewer:	Size: A3
				Sheet: 9 of 9