

**Product Specification**

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# NHD-10.1-HDMI-A-RSXP-CTU

## TFT Liquid Crystal Display

<b>NHD-</b>	Newhaven Display
<b>10.1-</b>	10.1" Diagonal
<b>HDMI-</b>	HDMI Interface
<b>A-</b>	1024x600 Resolution, HDMI Audio Support
<b>RSXP-</b>	IPS Display
<b>CTU-</b>	Capacitive USB-HID Touch

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## Additional Resources

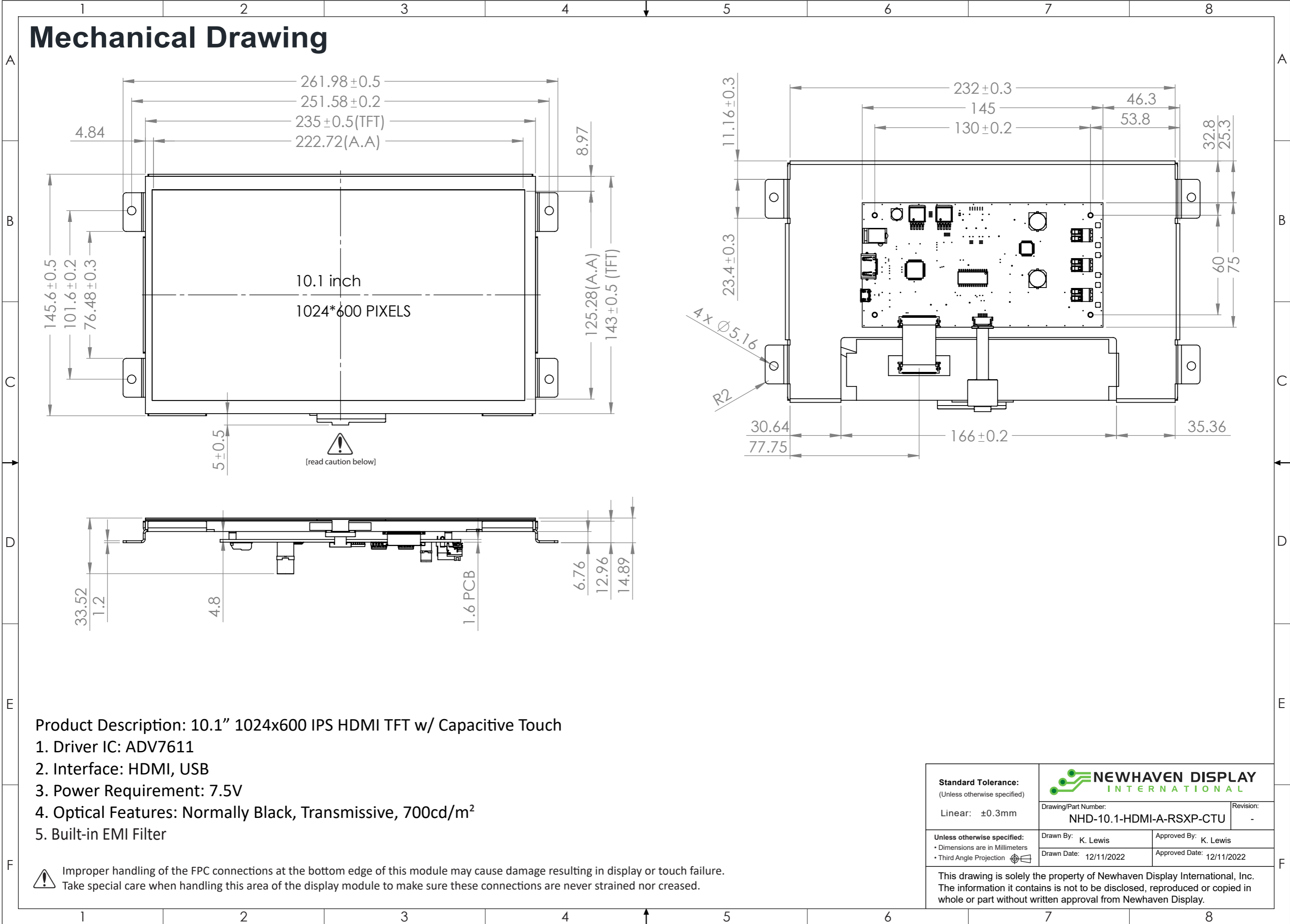
- **Support Forum:** <https://support.newhavendisplay.com/hc/en-us/community/topics>
- **GitHub:** <https://github.com/newhavendisplay>
- **Example Code:** <https://support.newhavendisplay.com/hc/en-us/categories/4409527834135-Example-Code/>
- **Knowledge Center:** [https://www.newhavendisplay.com/knowledge\\_center.html](https://www.newhavendisplay.com/knowledge_center.html)
- **Quality Center:** [https://www.newhavendisplay.com/quality\\_center.html](https://www.newhavendisplay.com/quality_center.html)
- **Precautions for using LCDs/LCMs:** <https://www.newhavendisplay.com/specs/precautions.pdf>
- **Warranty / Terms & Conditions:** <https://www.newhavendisplay.com/terms.html>



## Document Revision History


Revision	Date	Description	Changed By
0	07/13/2022	Initial Release	CJ
1	09/08/2022	Updated Electrical Characteristics and Quality Information	JT
2	12/11/2022	Mechanical Drawing Updated	KL
3	02/02/2024	Schematic Updated CTP Controller Updated to FT5536U-003	KL



# Mechanical Drawing



Product Description: 10.1" 1024x600 IPS HDMI TFT w/ Capacitive Touch

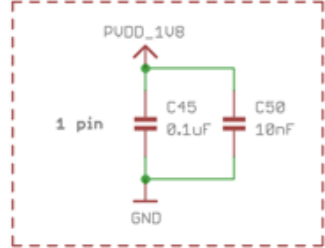
1. Driver IC: ADV7611
2. Interface: HDMI, USB
3. Power Requirement: 7.5V
4. Optical Features: Normally Black, Transmissive, 700cd/m<sup>2</sup>
5. Built-in EMI Filter

 Improper handling of the FPC connections at the bottom edge of this module may cause damage resulting in display or touch failure. Take special care when handling this area of the display module to make sure these connections are never strained nor created.

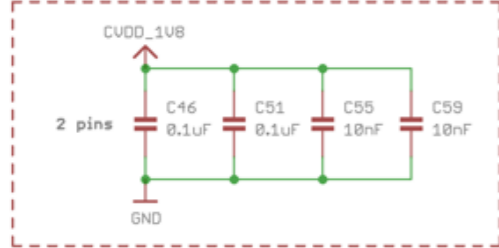
<b>Standard Tolerance:</b> (Unless otherwise specified)  Linear: ±0.3mm		
	Drawing/Part Number: <b>NHD-10.1-HDMI-A-RSXP-CTU</b>	Revision: -
<b>Unless otherwise specified:</b> • Dimensions are in Millimeters • Third Angle Projection 	Drawn By: K. Lewis Drawn Date: 12/11/2022	Approved By: K. Lewis Approved Date: 12/11/2022
	This drawing is solely the property of Newhaven Display International, Inc. The information it contains is not to be disclosed, reproduced or copied in whole or part without written approval from Newhaven Display.	

# ADU7611 (Low Power 165 MHz HDMI Receiver)

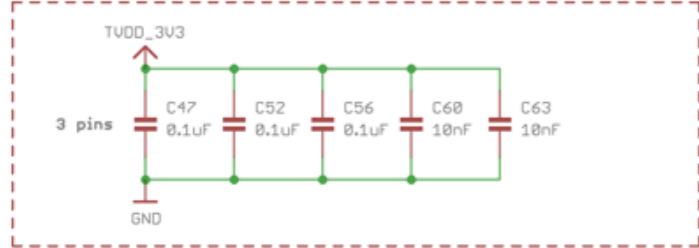
## PUDD Decoupling



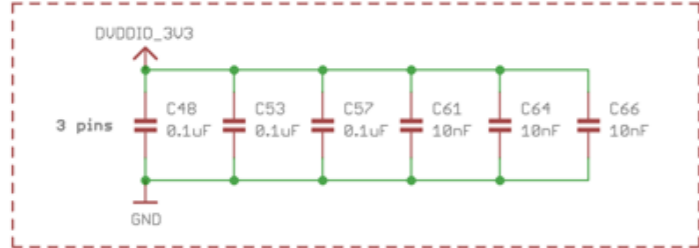
## CUDD Decoupling



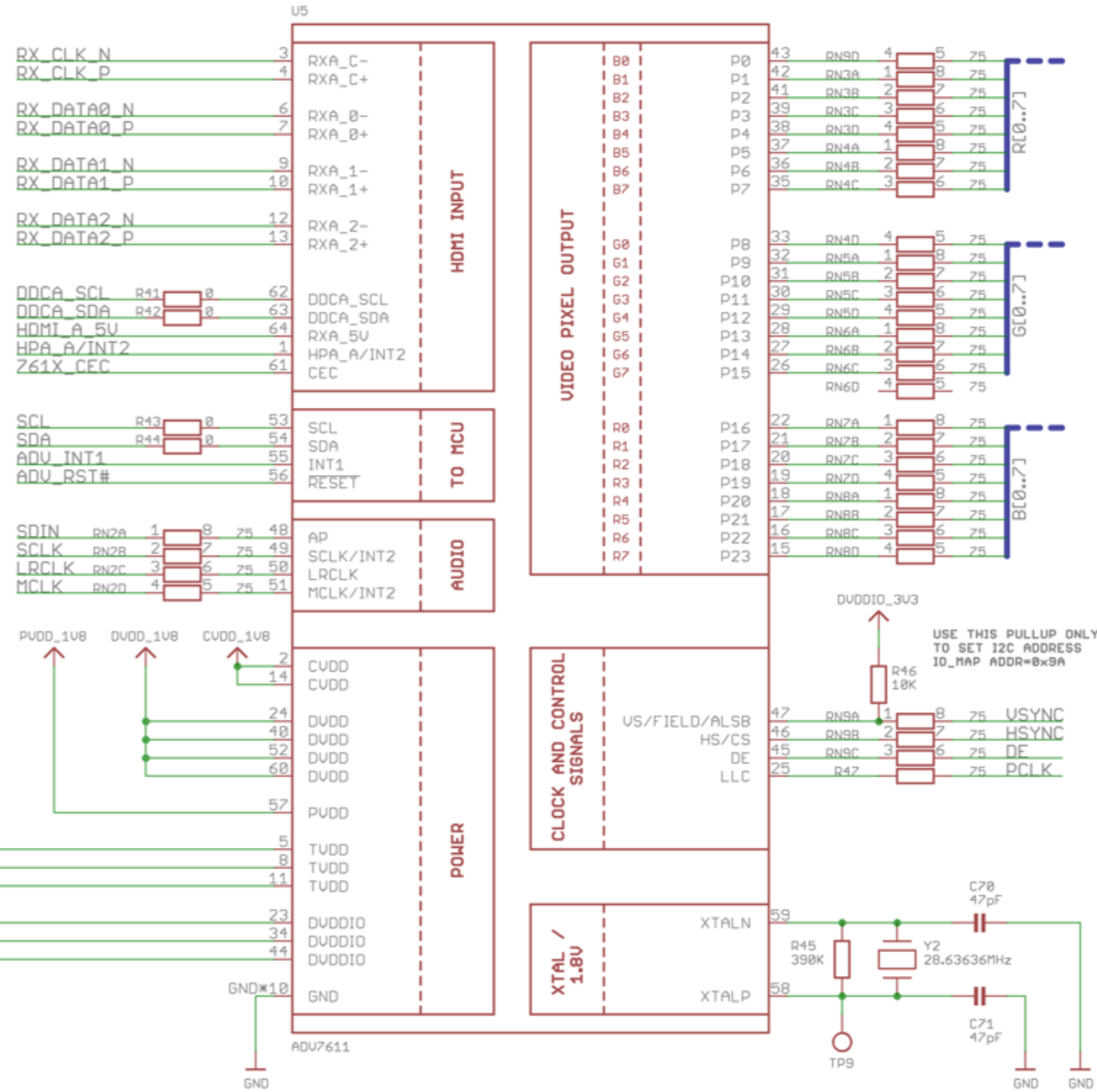
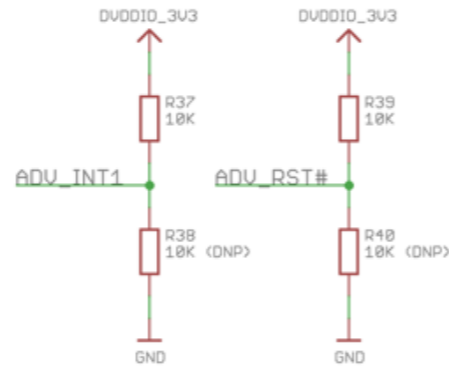
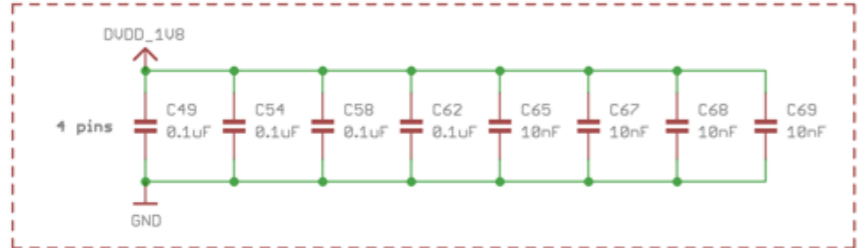
## TUDD Decoupling



## DVDDIO Decoupling



## DVDD Decoupling



PIXEL PORT CONFIGURATION = 010 (DEFAULT 011)

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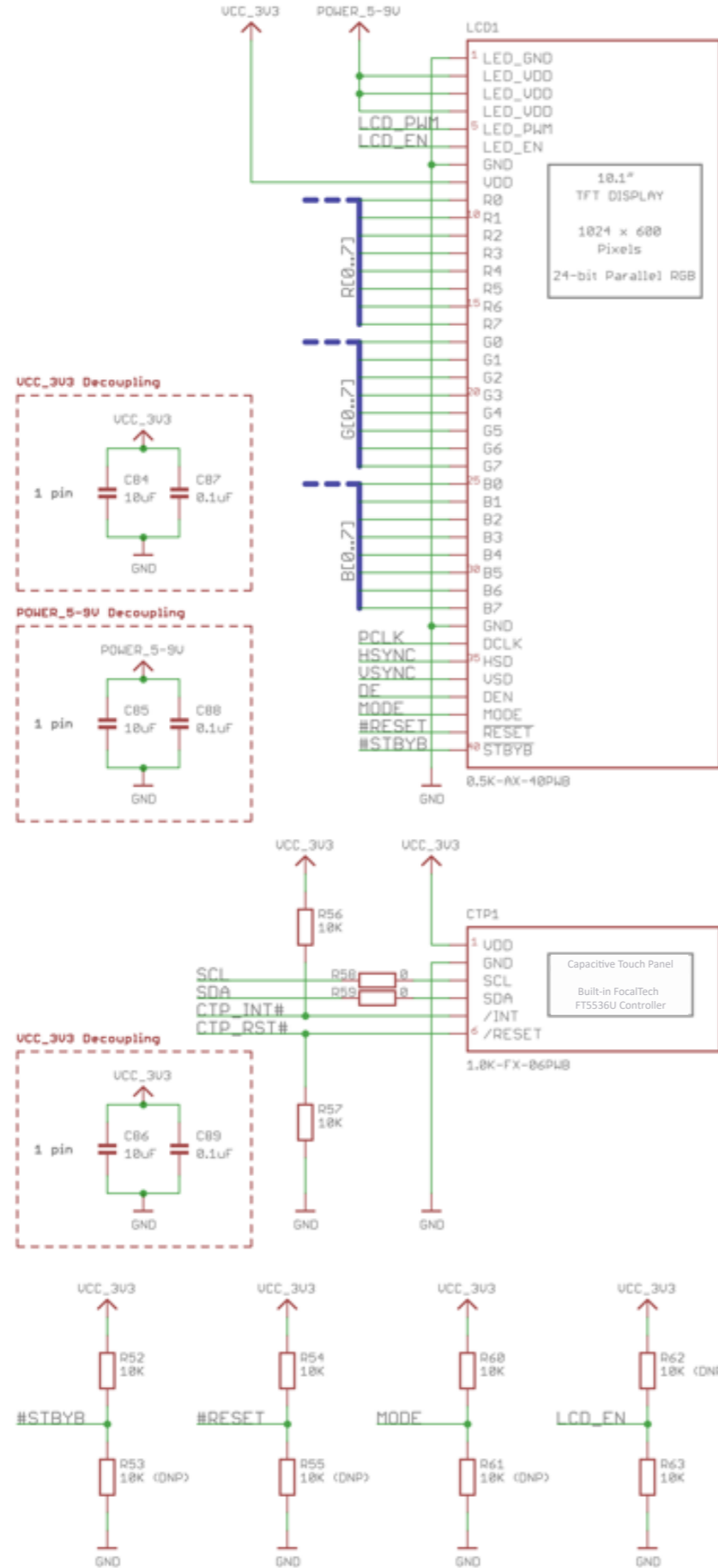
Schematic / Part Number: **NHD-10.1-HDMI-A** Revision: **1A**

Drawn By: **K. Lewis** Checked By: **K. Lewis**

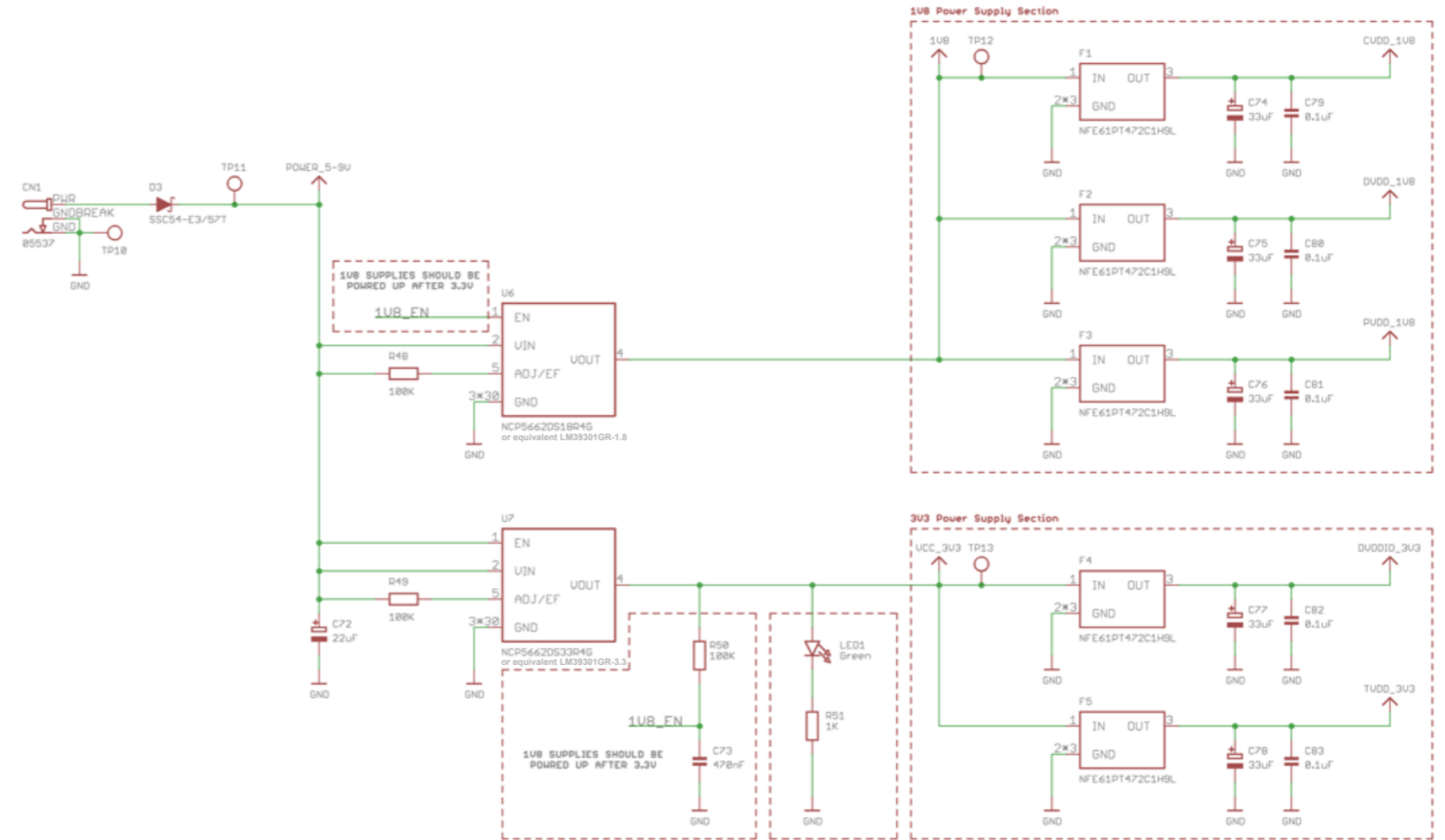
Drawn Date: **02/02/2024** Checked Date: **02/02/2024**

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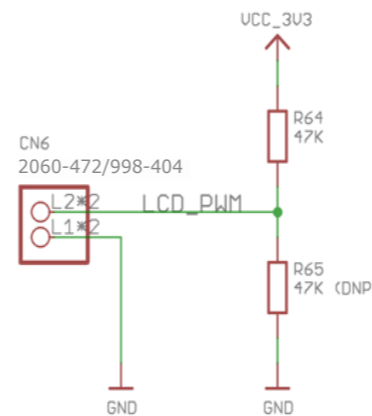
# LCD Interface



# Power Supply



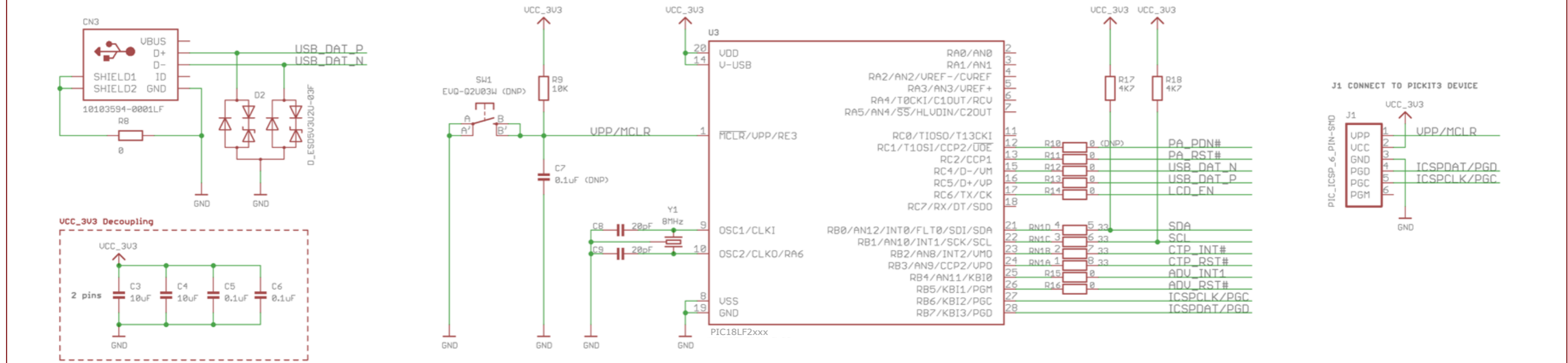
# PWM LED Backlight



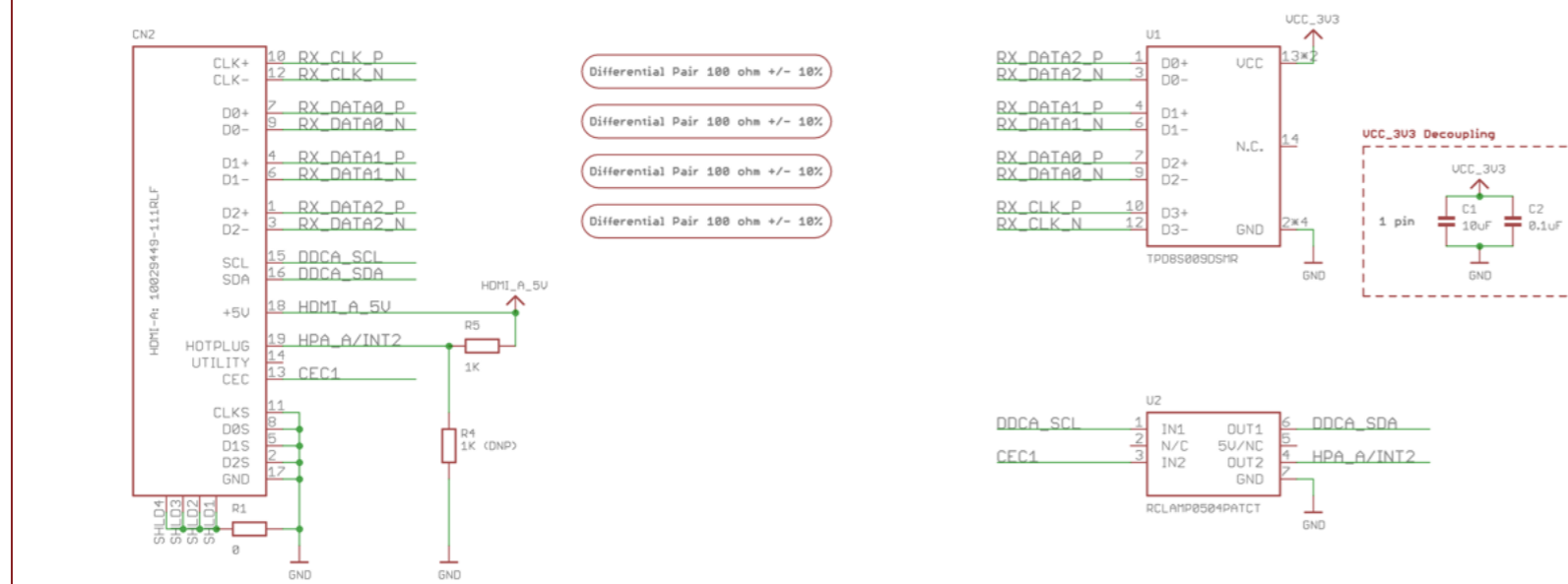
Schematic / Part Number:		Revision:
NHD-10.1-HDMI-A		1A
Drawn By: K. Lewis	Checked By: K. Lewis	
Drawn Date: 02/02/2024	Checked Date: 02/02/2024	

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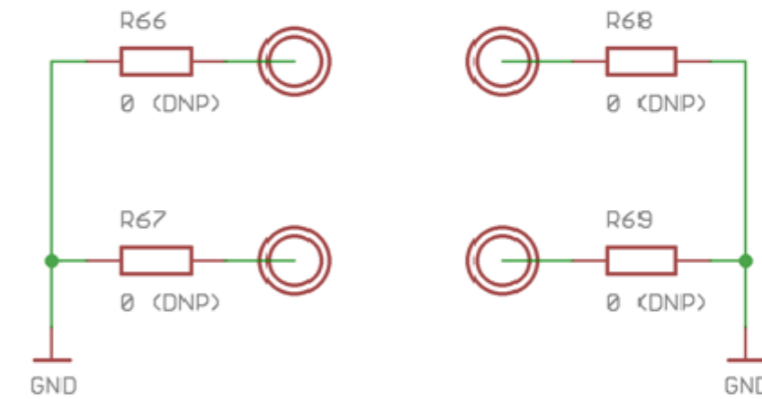
# PIC18LF2xxx / Micro-B USB Capacitive Touch Screen Controller



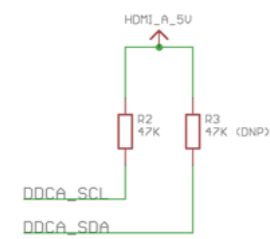
## HDMI Port A - Connector and ESD Suppression



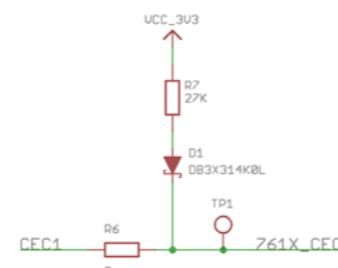
## Mounting Holes 3.2mm Plated



### DDC A Circuitry



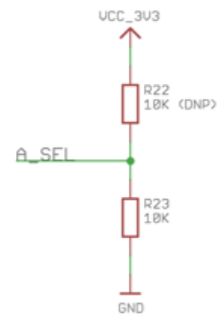
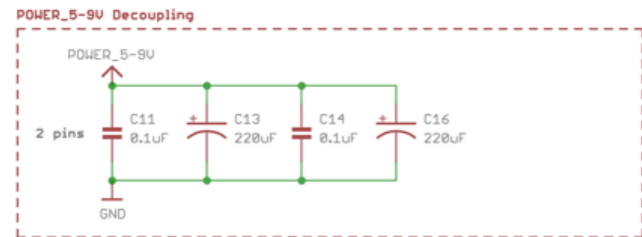
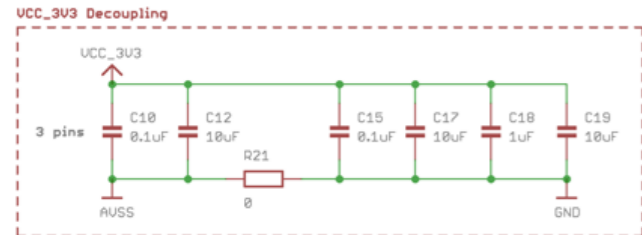
### CEC Circuitry



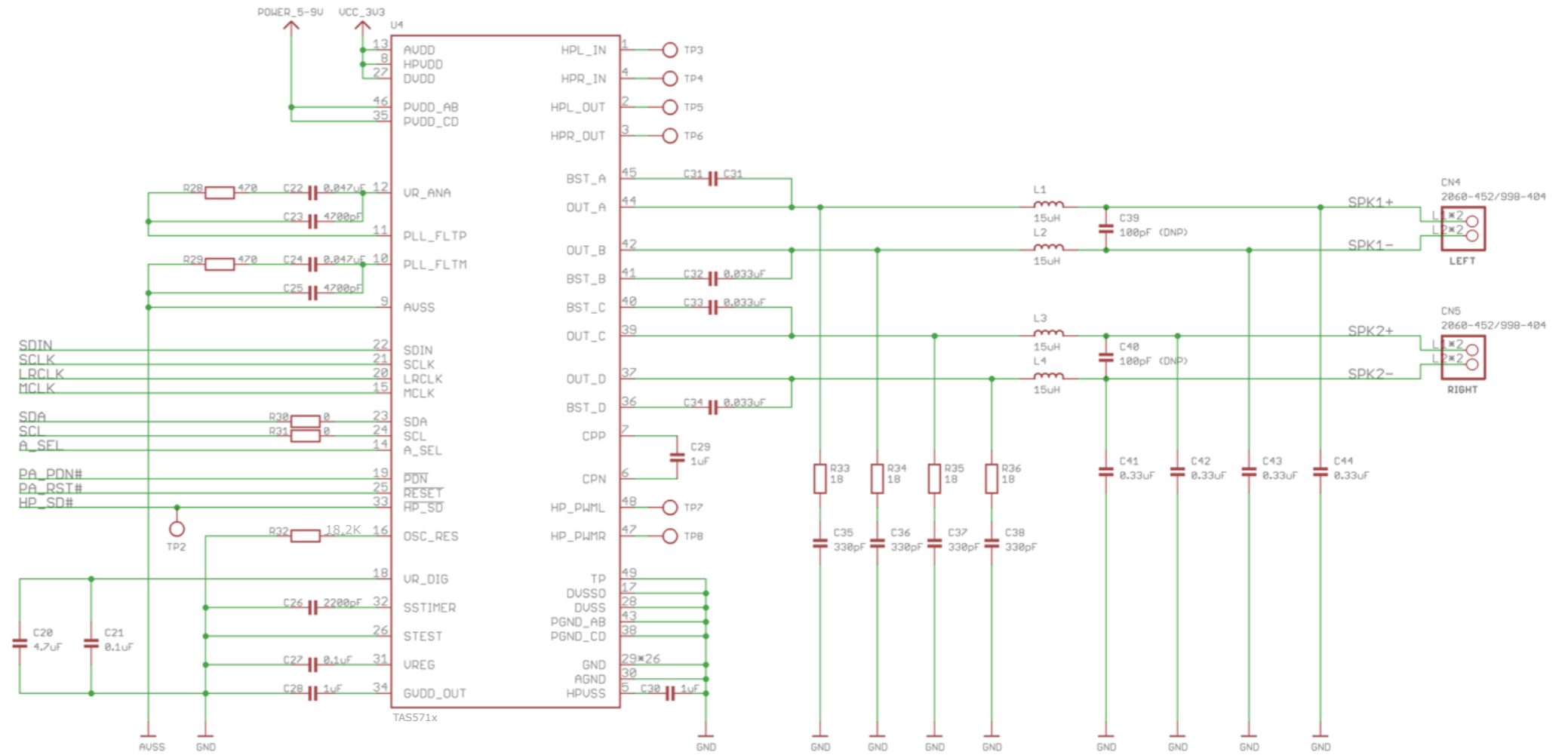
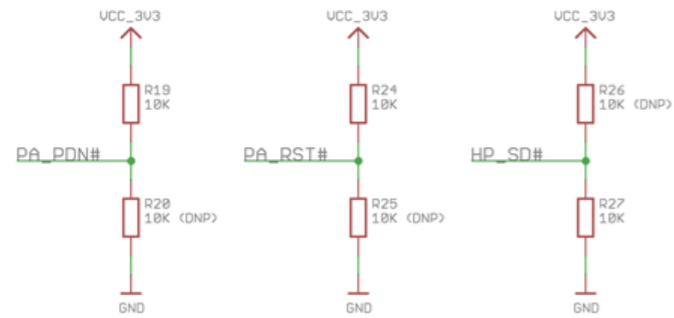
Schematic / Part Number: <b>NHD-10.1-HDMI-A</b>		Revision: <b>1A</b>
Drawn By: <b>K. Lewis</b>	Checked By: <b>K. Lewis</b>	
Drawn Date: <b>02/02/2024</b>	Checked Date: <b>02/02/2024</b>	

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# 10-W Digital Audio Power Amplifier



USE THIS PULLUP TO SET I2C ADDRESS.  
A VALUE OF 0 MAKES THE I2C DEV ADDRESS 0X54,  
AND A VALUE OF 1 MAKES IT 0X56.



**NEWHAVEN DISPLAY INTERNATIONAL**

Schematic / Part Number: <b>NHD-10.1-HDMI-A</b>		Revision: 1A
Drawn By: K. Lewis	Checked By: K. Lewis	
Drawn Date: 02/02/2024	Checked Date: 02/02/2024	

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## Electrical Characteristics

Item	Symbol	Condition	Min.	Typical	Max.	Unit
Operating Temperature Range	T <sub>OP</sub>	Absolute Max	-20	-	+70	°C
Storage Temperature Range	T <sub>ST</sub>	Absolute Max	-30	-	+80	°C
Backlight PWM Voltage	V <sub>PWM</sub>	-	1.5	3.3	5.5	V
Backlight PWM Frequency	f <sub>PWM</sub>	V <sub>PWM</sub> = 3.3V	200	-	2000	Hz
Module Supply Voltage	V <sub>DD</sub>	-	6.0	7.5	9.0	V
Module Supply Current	I <sub>DD</sub>	V <sub>DD</sub> = 6V	-	1.7	1.9	A
		V <sub>DD</sub> = 9V	-	1.0	1.2	A

## HDMI Receiver Information

On-board Analog Devices ADV7611 Low Power HDMI Receiver.

To view the full ADV7611 specification, please download it by accessing the link below:

<https://support.newhavendisplay.com/hc/en-us/articles/6963189583127-ADV7611>

## Audio Amplifier Information

On-board Texas Instruments TAS5717 Digital Audio Power Amplifier.

To view the full TAS5717 specification, please download it by accessing the link below:

<https://support.newhavendisplay.com/hc/en-us/articles/7397555534615-TAS5717>

## Technical Resource

3D Model	TFT Panel Used	Display Type	Luminance Rating	Optimal Viewing Angle	Touch Panel
<a href="#">NHD-10.1-1024600BF-ASXP-CTP</a>	<a href="#">NHD-10.1-1024600BF-ASXP-CTP</a>	IPS	700cd/m <sup>2</sup>	80° all angles	PCAP (USB-HID)



## EDID Array

```
const unsigned char NHD_HDMI10.1A[] = {
0x00, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0x00, 0x39, 0x04, 0x03, 0x00, 0x00, 0x00, 0x00, 0x00,
0x01, 0x1B, 0x01, 0x03, 0xA1, 0x16, 0x0D, 0x78, 0x02, 0xBB, 0xD0, 0x94, 0x57, 0x55, 0x91, 0x27,
0x21, 0x50, 0x54, 0x00, 0x00, 0x00, 0x01, 0x00, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01,
0x01, 0x01, 0x01, 0x01, 0x01, 0xB0, 0x13, 0x00, 0x40, 0x41, 0x58, 0x19, 0x20, 0x30, 0x20,
0x3A, 0x00, 0xDF, 0x7D, 0x00, 0x00, 0x00, 0x18, 0x01, 0x1D, 0x00, 0x72, 0x51, 0xD0, 0x1E, 0x20,
0x6E, 0x28, 0x55, 0x00, 0xDF, 0x7D, 0x00, 0x00, 0x00, 0x18, 0x00, 0x00, 0x00, 0xFC, 0x00, 0x4E,
0x48, 0x44, 0x2D, 0x31, 0x30, 0x2E, 0x31, 0x20, 0x4C, 0x56, 0x44, 0x53, 0x00, 0x00, 0x00, 0xFD,
0x00, 0x00, 0x3C, 0x00, 0x2D, 0x08, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x01, 0x65,
0x02, 0x03, 0x10, 0x60, 0x63, 0x03, 0x0C, 0x00, 0x83, 0x01, 0x00, 0x00, 0x23, 0x09, 0x04, 0x04,
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0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x61
};
```

## EDID Timing

Pixel Clock:	50.40	<input type="checkbox"/> Interlaced
H. Active Pixels:	1024	V. Active Lines: 600
H. Blank:	320	V. Blank: 25
H. Front Porch:	48	V. Front Porch: 3
H. Sync Width:	32	V. Sync Width: 10
H. Image Size:	223	V. Image Size: 125
H. Border:	0	V. Border: 0
H. Clock: 37.50 kHz		V. Clock: 60.00 Hz

## Quality Information

Test Item	Content of Test	Test Condition	Note
High Temperature storage	Endurance test applying the high storage temperature for a long time.	+80°C, 240 hrs.	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C, 240 hrs.	1,2
High Temperature Operation	Endurance test applying the electric stress (voltage & current) and the high thermal stress for a long time.	+70°C, 120 hrs.	2
Low Temperature Operation	Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.	-20°C, 120 hrs.	1,2
High Temperature / Humidity Operation	Endurance test applying the electric stress (voltage & current) and the high thermal with high humidity stress for a long time.	+50°C, 90% RH, 120 hrs.	1,2
Thermal Shock resistance	Endurance test applying the electric stress (voltage & current) during a cycle of low and high thermal stress.	-30°C, 30min->25°C, 10min -> 80°C, 30min 10 cycles	
Vibration test	Endurance test applying vibration to simulate transportation and use.	Frequency:250r/min Amplitude: 1 inch Time:45min	3
Static electricity test	Endurance test applying electric static discharge.	Air: $V_s=\pm 8KV$ , Contact: $V_s=\pm 4KV$ 10 Times	

**Note 1:** No condensation to be observed.

**Note 2:** Conducted after 4 hours of storage at 25°C, 0%RH.

**Note 3:** Test performed on product itself, not inside a container.