

**Product Specification**

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# NHD-10.1-HDMI-A-RSXV-xxx

## 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>RSXV-</b>	Premium (MVA) Display
<b>xxx-</b>	N/A - No Touch, CTU - Capacitive USB-HID

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## Additional Resources

- **Support Forum:** <http://www.nhdforum.newhavendisplay.com>
- **Github:** <https://github.com/newhavendisplay>
- **Example Code:** [https://www.newhavendisplay.com/example\\_code.html](https://www.newhavendisplay.com/example_code.html)
- **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

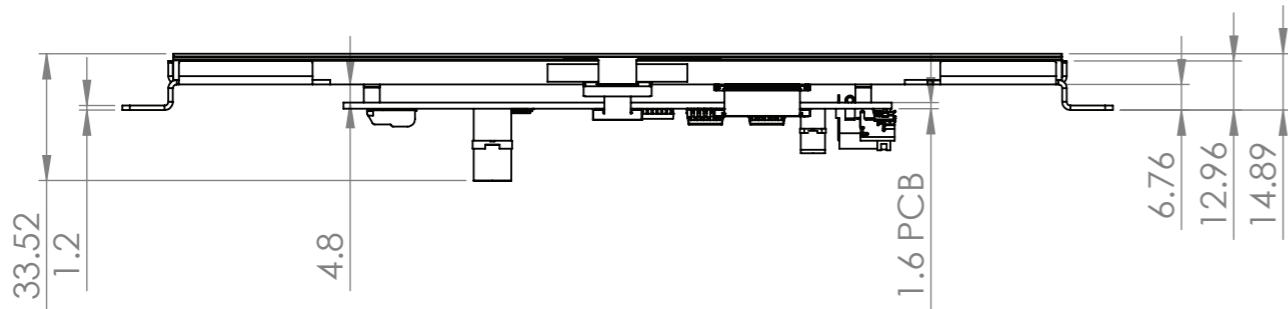
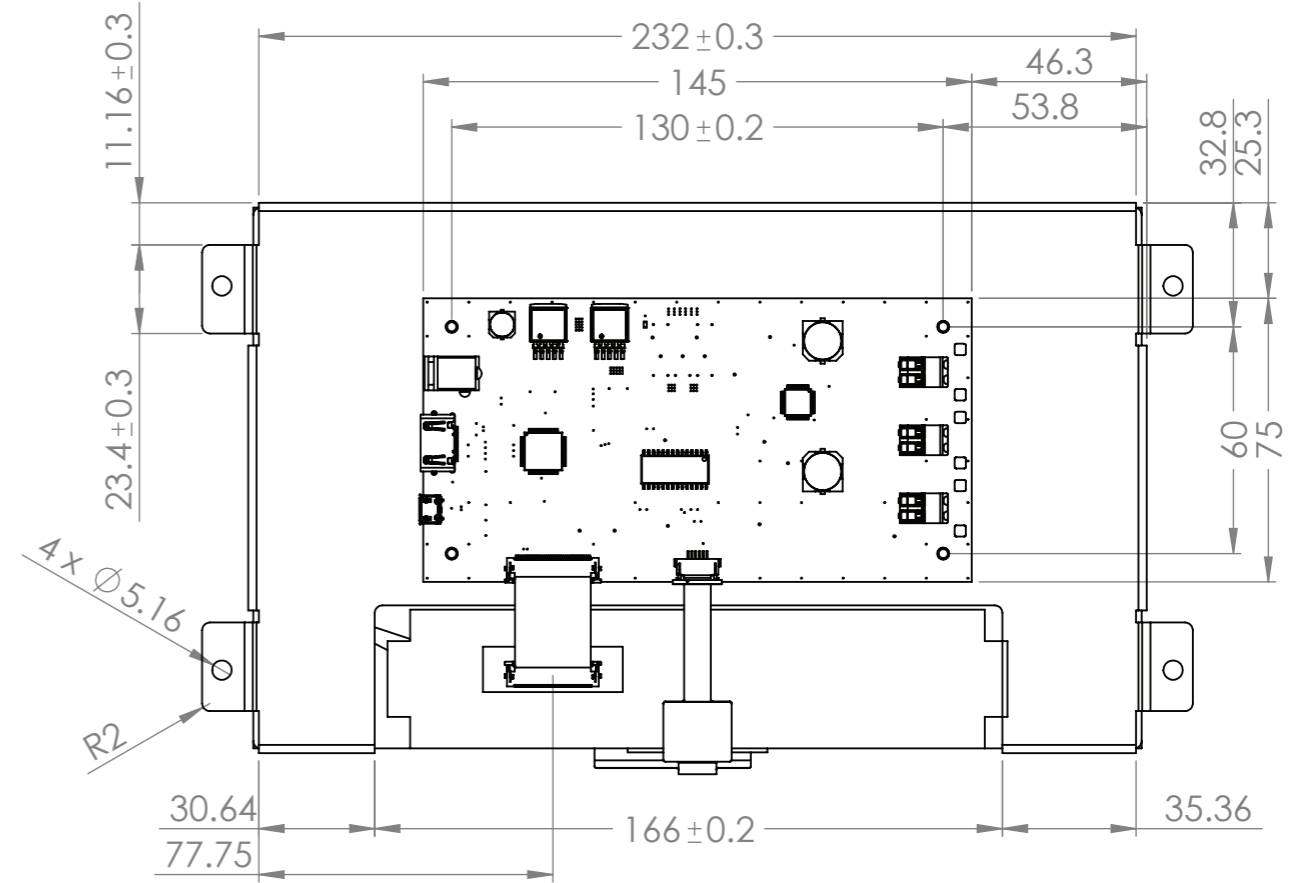
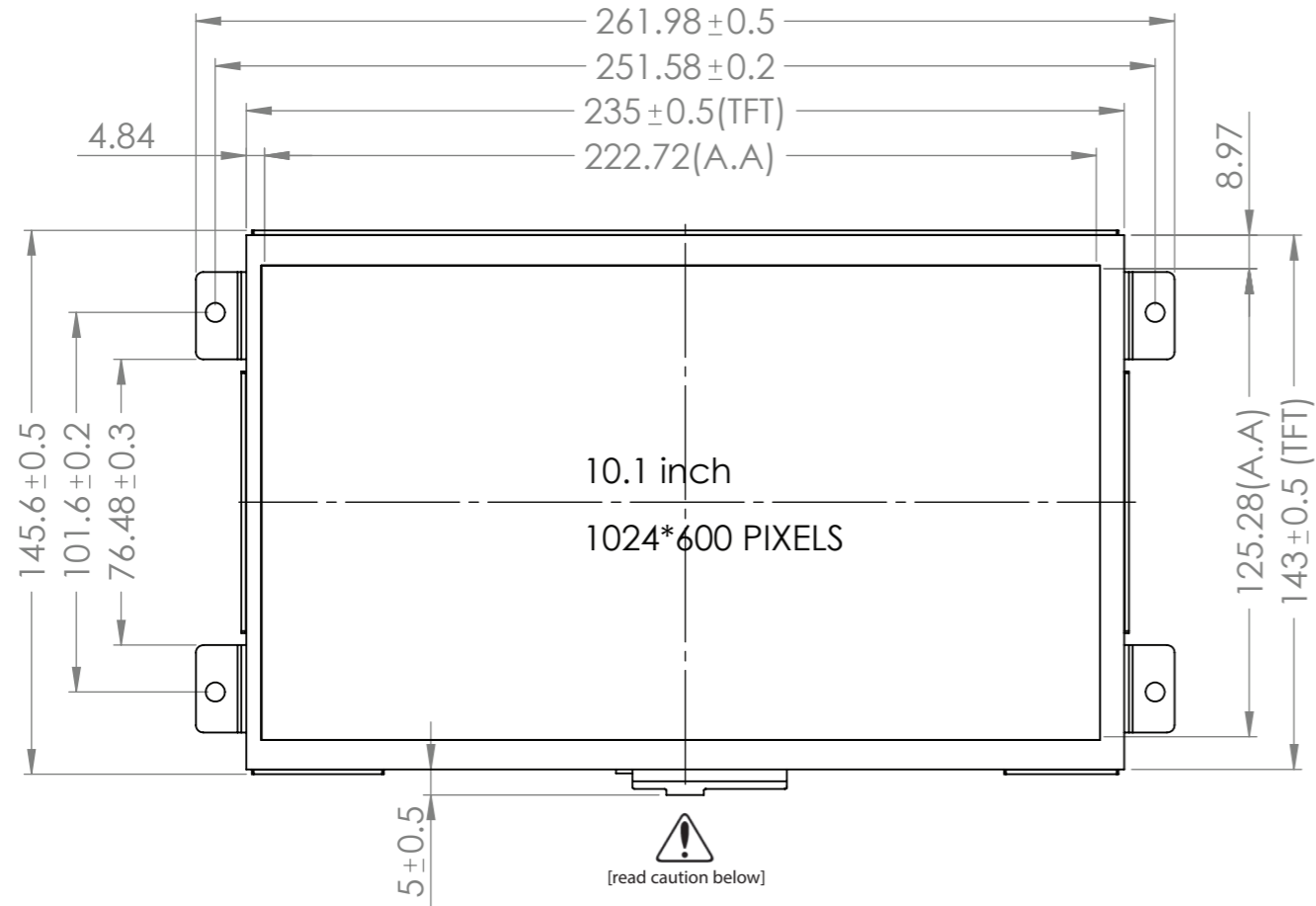
Revision	Date	Description	Changed By
0	08/09/2021	Initial Release	ZP
1	01/14/2022	FT5526 IC Version Update	ZP

## Functions and Features

- 10.1" HDMI TFT Module w/ USB-HID Capacitive Touch option
- On-board Analog Devices ADV7611 HDMI Receiver
- Plug-and-play USB-HID Touch, no external driver installation required
- 2-Channel Stereo Audio supported through HDMI; speaker terminal outputs
- HDMI (Type-A) Input
- Compatible with PC (Windows/Linux)
- Compatible with Linux based SBCs such as Raspberry Pi, BeagleBone, etc.
- 24-bit True Color, 1024x600 Resolution (WSVGA)
- High Brightness LED backlight with PWM
- 75° Viewing Angles all sides
- 4 x Mounting Holes (#10-32), compatible with Rack Unit (RU) spacing
- Engineered in Elgin, IL (USA)

# Mechanical Drawing

SYMBOL	REVISION	DATE



**NOTES:**

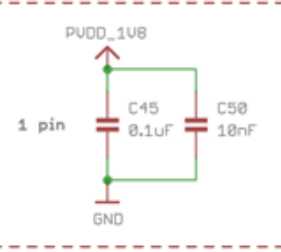
- 10.1" Premium HDMI TFT Module w/ USB-HID Capacitive Touch
- Resolution: 1024x600
- On-board Analog Devices ADV7611 HDMI Receiver
- HDMI Audio supported, On-board Texas Instruments TAS5717 Stereo Audio Amplifier
- On-board L / R Speaker Terminals, supports 24 - 18 AWG wire, suitable for (2) 8Ω speakers up to 10W each
- Optimal Viewing Direction: Full View
- Display Mode: Transmissive / Normally White / Anti-Glare
- Luminance: 700 cd/m<sup>2</sup>
- 4x Mounting Holes, compatible with Rack Unit (RU) spacing

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 creased.

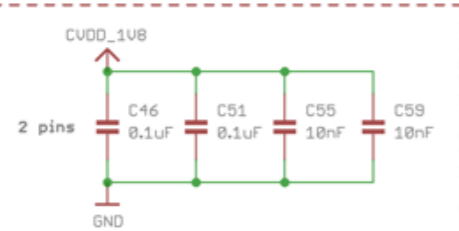
STANDARD TOLERANCES (UNLESS OTHERWISE SPECIFIED)			
LINEAR: ±0.3 mm	DRAWING/PART NUMBER: <b>NHD-10.1-HDMI-A-RSXV-CTU</b>		REVISION: 1.1
UNLESS OTHERWISE SPECIFIED	DRAWN BY: N. Patel	CHECKED BY: P. Bartek	APPROVED BY: M. LaVine
- DIMENSIONS ARE IN MILLIMETERS	DRAWN DATE: 7/31/18	CHECKED DATE: 8/17/18	APPROVED DATE: 8/17/18
- THIRD ANGLE PROJECTION	DO NOT SCALE DRAWING		SHEET 1 OF 1
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)

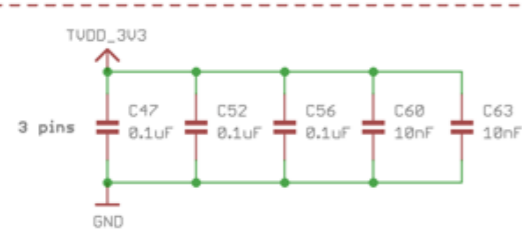
## PUDD Decoupling



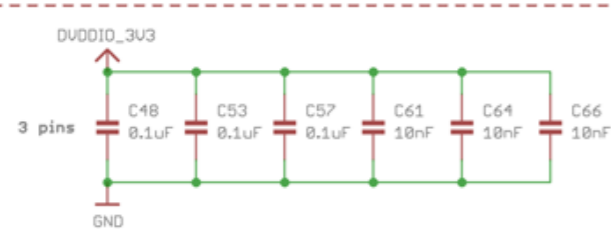
## CUDD Decoupling



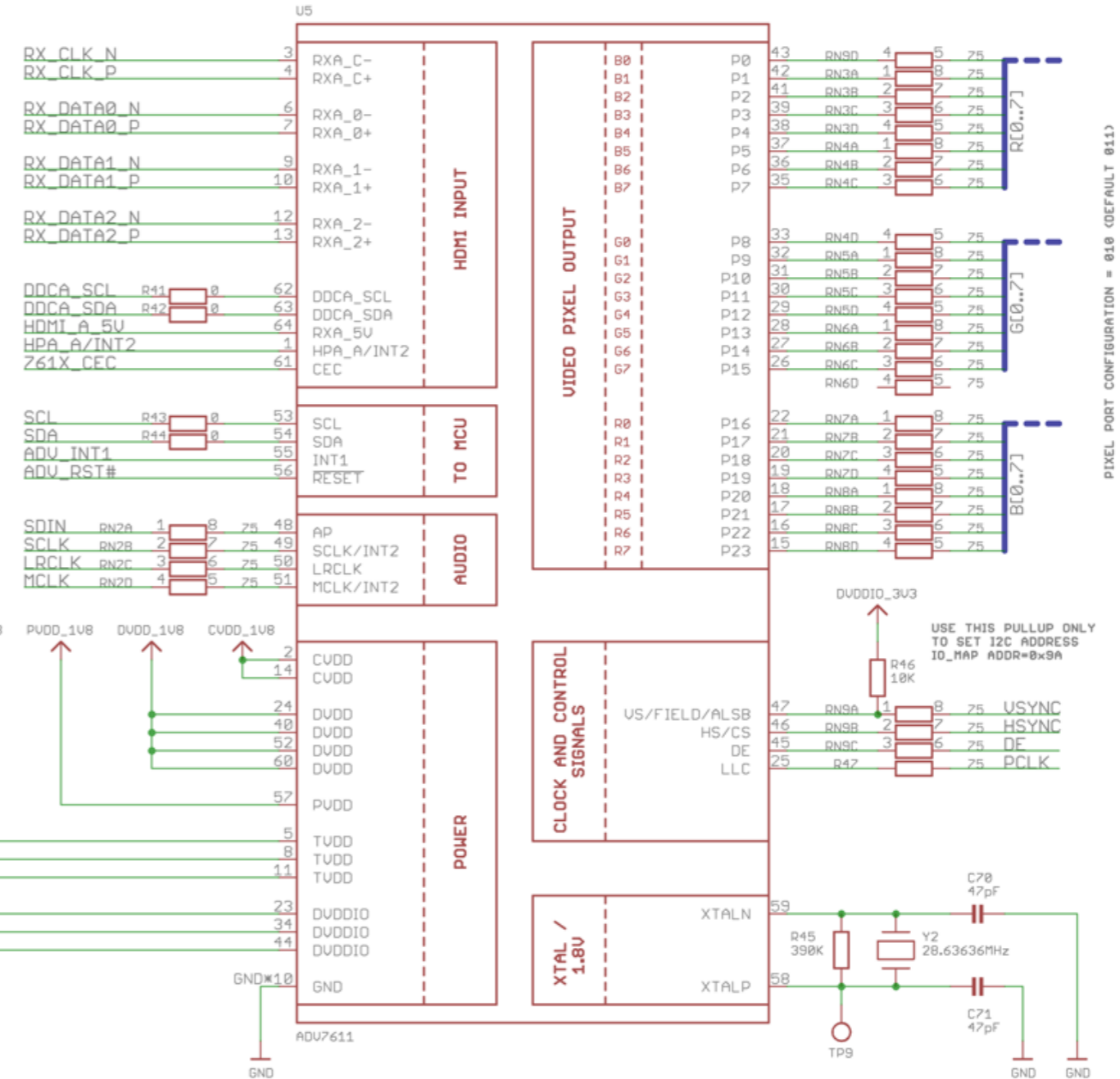
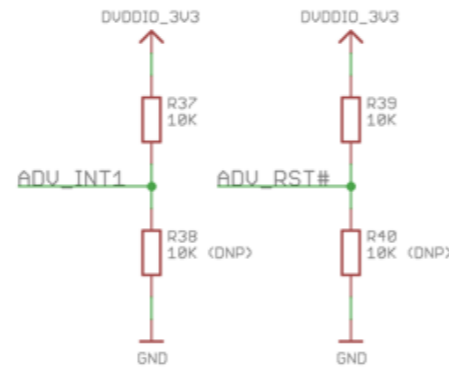
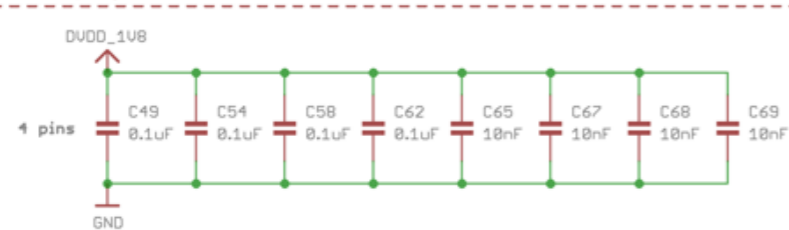
## TUDD Decoupling



## DVDDIO Decoupling



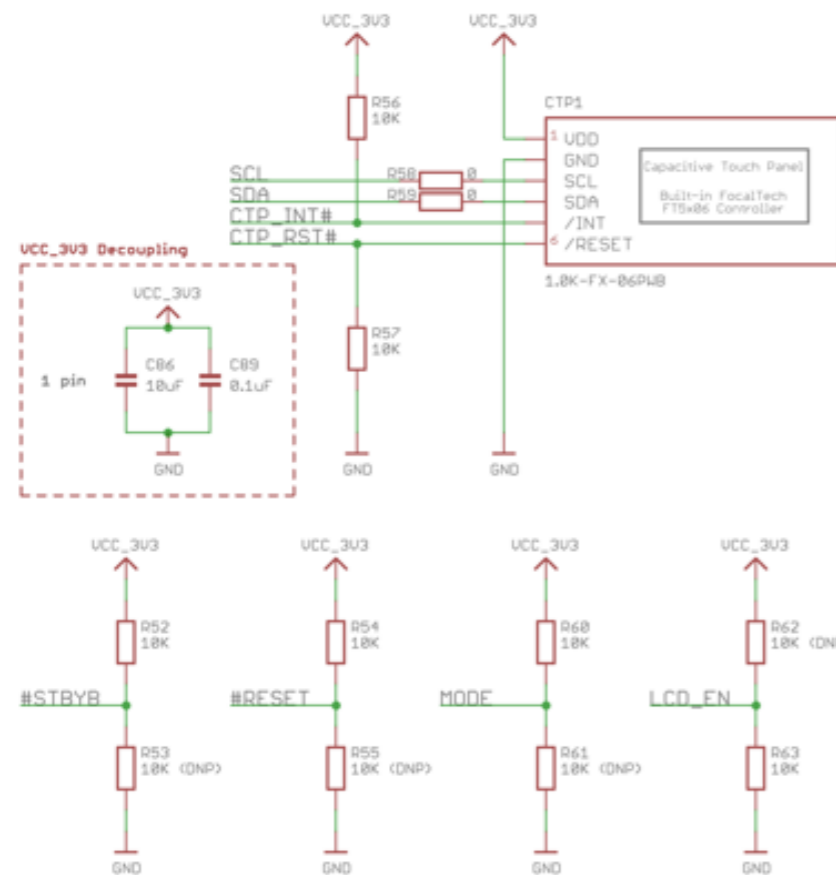
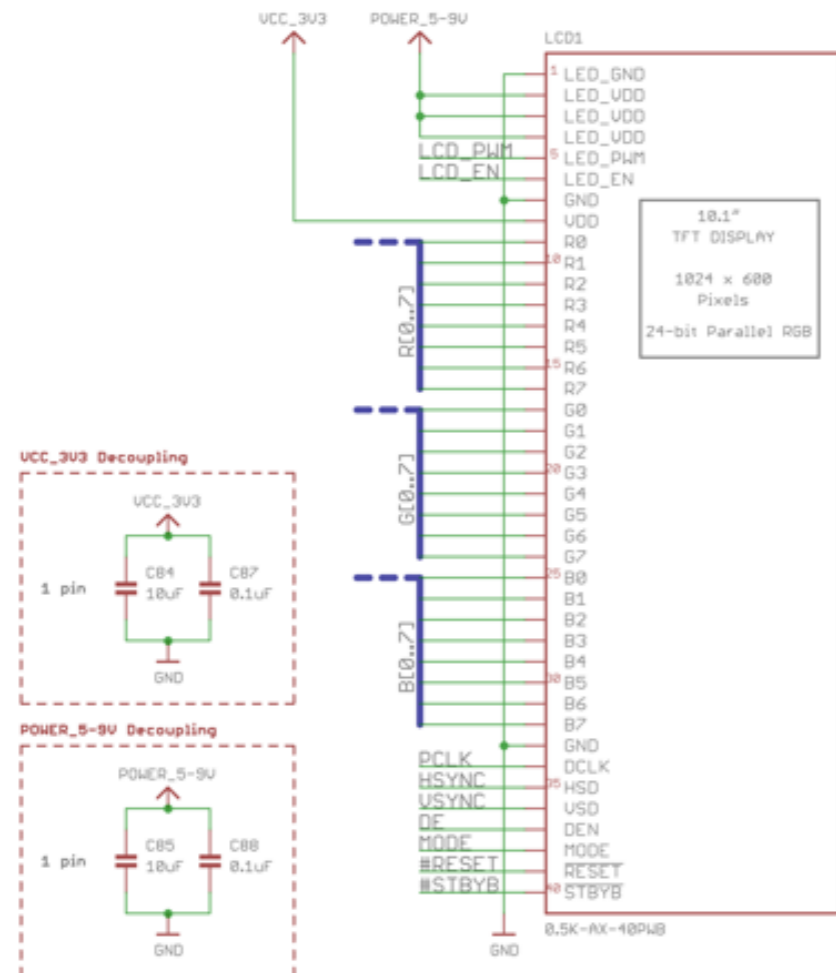
## DVDD Decoupling



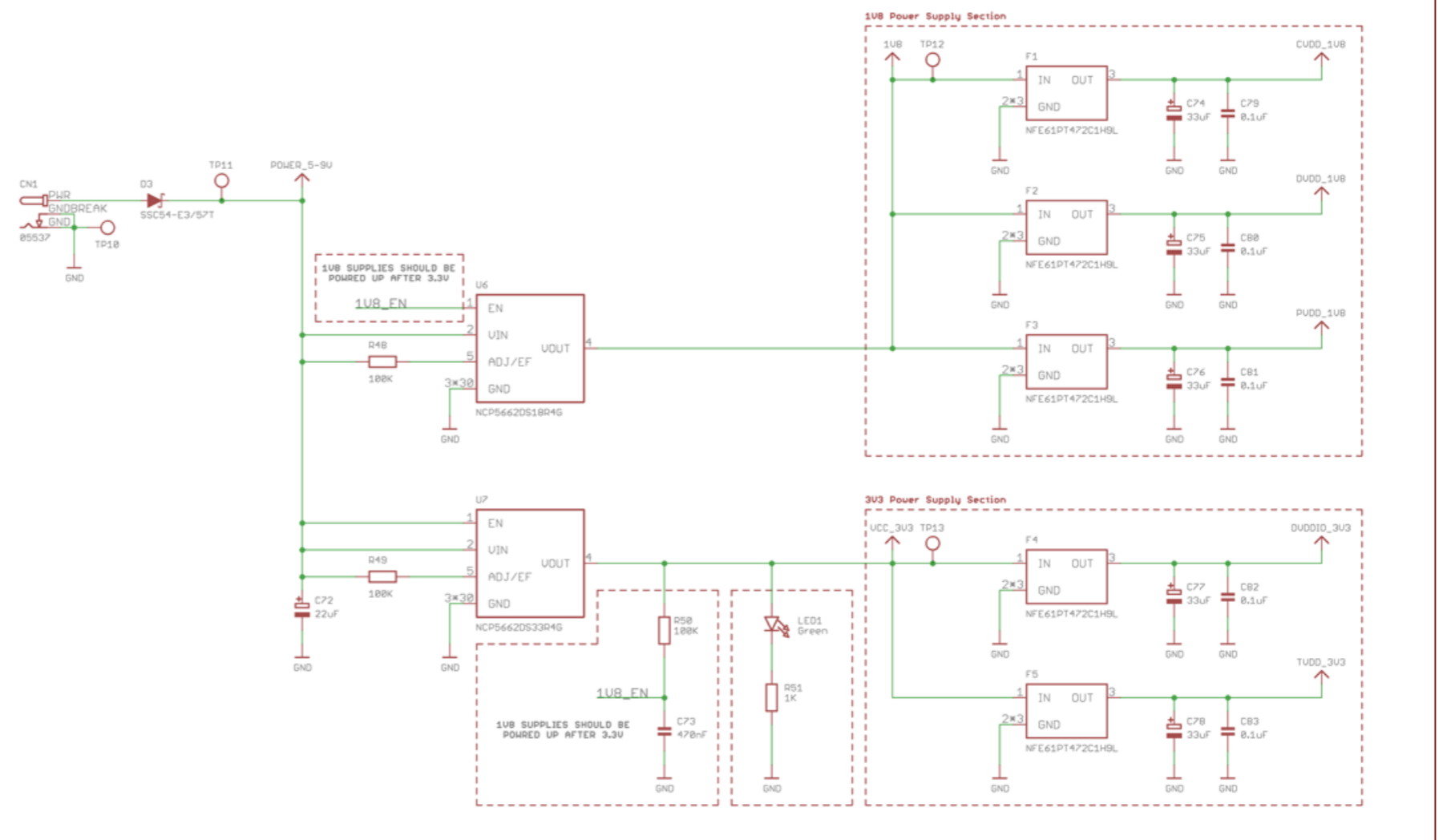
PIXEL PORT CONFIGURATION = 010 (DEFAULT 011)

<b>Standard Tolerance:</b> (Unless otherwise specified)  Linear: ±0.3mm			Drawing/Part Number: <b>NHD-10.1-HDMI-A-SCH</b>	Revision: -
			Drawn By: Z.Palrang	Approved By: Z.Palrang
<b>Unless otherwise specified:</b> • Dimensions are in Millimeters • Third Angle Projection	Drawn Date: 08/12/2021	Approved Date: 08/12/2021	Scale: NS	Sheet 1 of 1
<b>Do Not Scale Drawing</b>				
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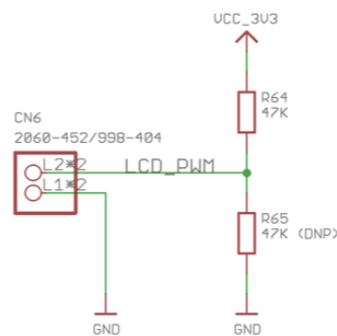
# LCD Interface



# Power Supply

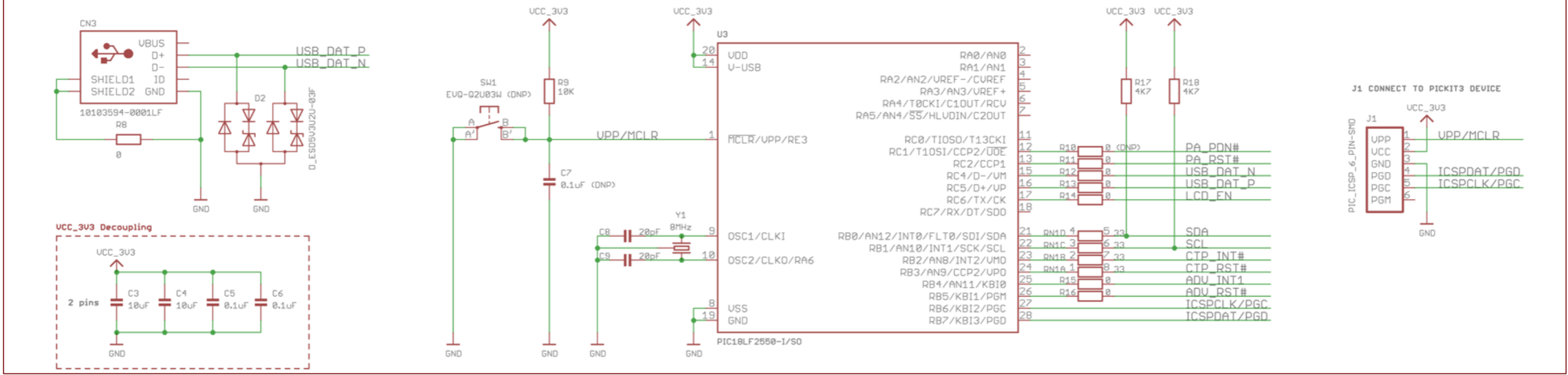


# PWM LED Backlight



<b>Standard Tolerance:</b> (Unless otherwise specified)  Linear: ±0.3mm		
	Drawing/Part Number: <b>NHD-10.1-HDMI-A-SCH</b>	Revision: -
<b>Unless otherwise specified:</b> • Dimensions are in Millimeters • Third Angle Projection	Drawn By: Z.Palrang	Approved By: Z.Palrang
	Drawn Date: 08/12/2021	Approved Date: 08/12/2021
<b>Do Not Scale Drawing</b>		Sheet 1 of 1
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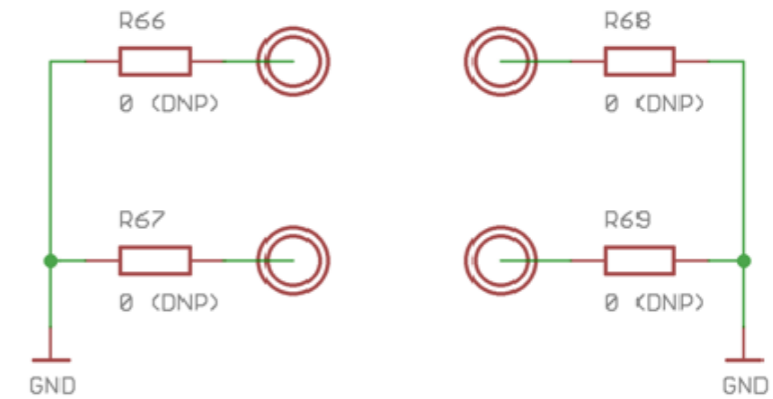
# PIC18LF2550 / Micro-B USB Capacitive Touch Screen Controller



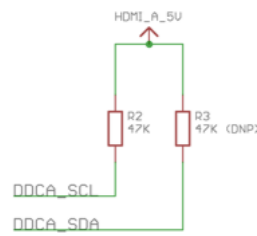
## HDMI Port A - Connector and ESD Suppression



## Mounting Holes 3.2mm Plated



## DDC A Circuitry



## CEC Circuitry



**Standard Tolerance:**  
(Unless otherwise specified)

Linear: ±0.3mm

**Unless otherwise specified:**

• Dimensions are in Millimeters  
• Third Angle Projection



Drawing/Part Number: **NHD-10.1-HDMI-A-SCH** Revision: -

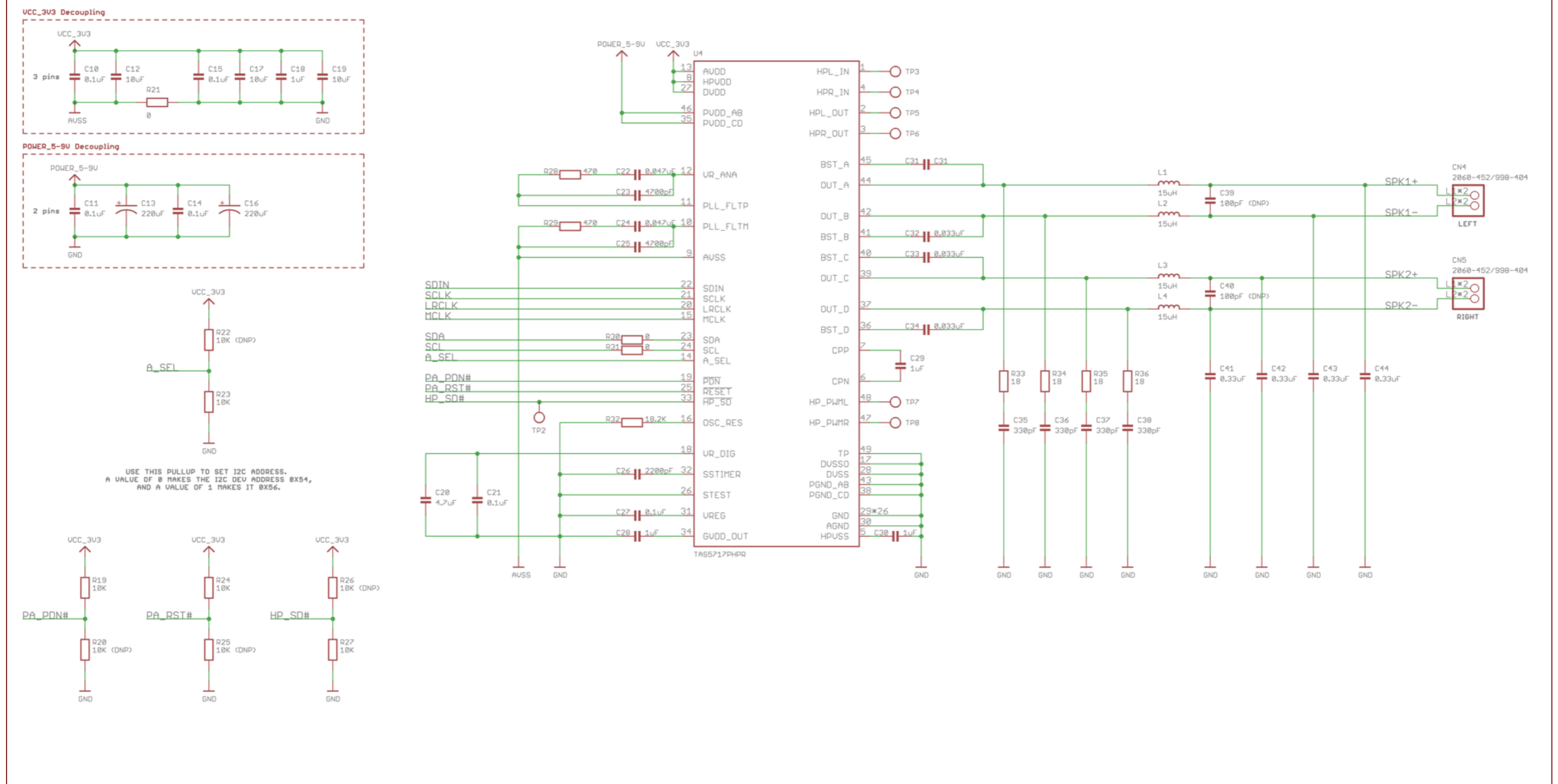
Drawn By: Z.Palrang Approved By: Z.Palrang Size: **A3**

Drawn Date: 08/12/2021 Approved Date: 08/12/2021 Scale: **NS**

**Do Not Scale Drawing** Sheet 1 of 1

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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.

<b>Standard Tolerance:</b> (Unless otherwise specified)  Linear: ±0.3mm		
	Drawing/Part Number: <b>NHD-10.1-HDMI-A-SCH</b>	Revision: -
<b>Unless otherwise specified:</b> • Dimensions are in Millimeters • Third Angle Projection	Drawn By: Z.Palrang	Approved By: Z.Palrang
	Drawn Date: 08/12/2021	Approved Date: 08/12/2021
<b>Do Not Scale Drawing</b>		Sheet 1 of 1
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.		



## Electrical Characteristics

Item	Symbol	Condition	Min.	Typical	Max.	Unit
Operating Temperature Range	T <sub>OP</sub>	Absolute Max	-20	-	+50	°C
Storage Temperature Range	T <sub>ST</sub>	Absolute Max	-30	-	+60	°C
Backlight PWM Voltage	V <sub>PWM</sub>	-	2.5	3.3	5.5	V
Backlight PWM Frequency	f <sub>PWM</sub>	V <sub>PWM</sub> = 3.3V	1	-	20	kHz
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:

<http://www.analog.com/media/en/technical-documentation/data-sheets/ADV7611.pdf>

## 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:

<http://www.ti.com/lit/ds/symlink/tas5719.pdf>

## Technical Resource

3D Model	TFT Panel Used	Display Type	Luminance Rating	Optimal Viewing Angle	Touch Panel
<a href="#">NHD-10.1-1024600AF-ASXV#</a>	<a href="#">NHD-10.1-1024600AF-ASXV#</a>	Premium MVA	800 cd/m <sup>2</sup>	75° all angles	No Touch
<a href="#">NHD-10.1-1024600AF-ASXV#-CTP</a>	<a href="#">NHD-10.1-1024600AF-ASXV#-CTP</a>	Premium MVA	700 cd/m <sup>2</sup>	75° 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, 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.	+60°C, 240 hrs.	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-20°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.	+50°C, 120 hrs.	2
Low Temperature Operation	Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.	0°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.	-20°C, 30min->25°C, 5min -> 70°C, 30min = 1 Cycle 10 cycles	
Vibration test	Endurance test applying vibration to simulate transportation and use.	10-55Hz, 15mm amplitude. 60 sec in each of 3 directions X,Y,Z For 15 minutes	3
Static electricity test	Endurance test applying electric static discharge.	Air: V <sub>s</sub> =±8KV, Contact: V <sub>s</sub> =±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.