

Product Specification

NHD-5.0-HDMI-N-RSXP

TFT Liquid Crystal Display

NHD -	Newhaven Display
5.0 -	5" Diagonal
HDMI -	HDMI Interface
N -	800x480 Resolution
RSXP -	IPS Display

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Additional Resources

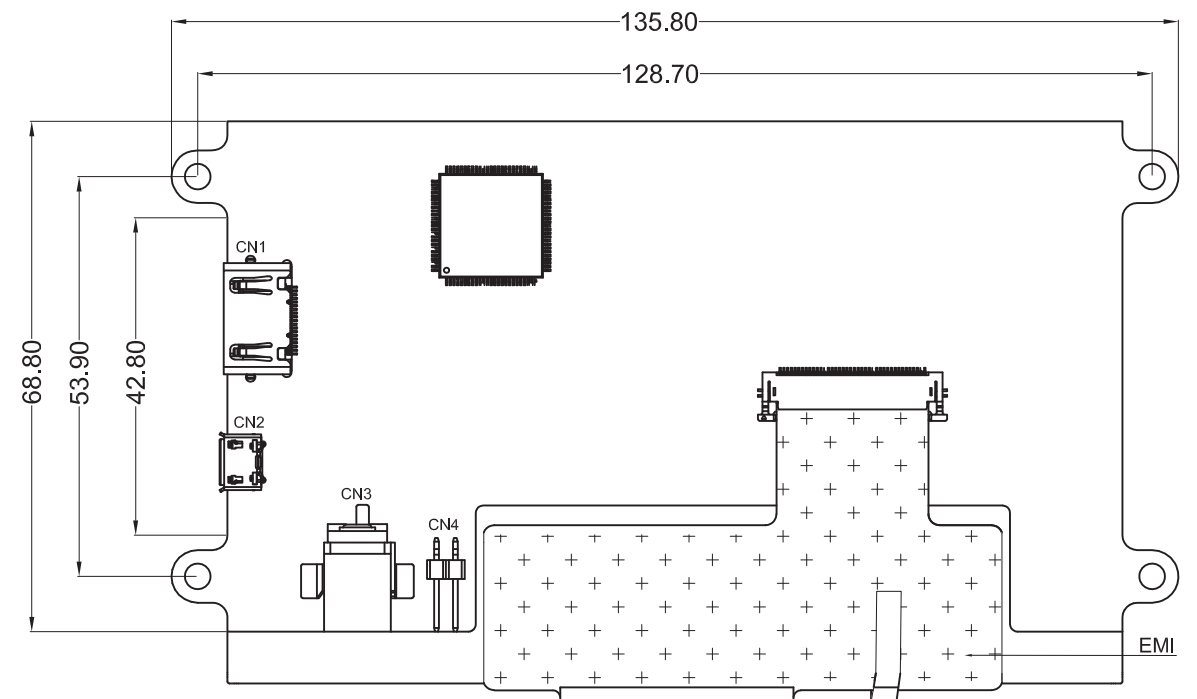
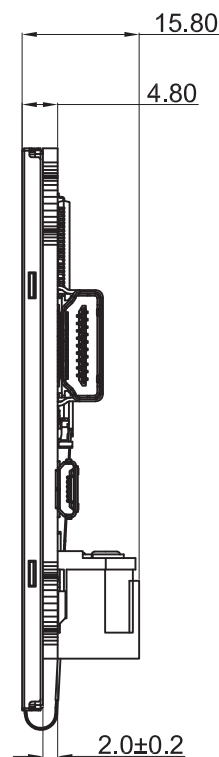
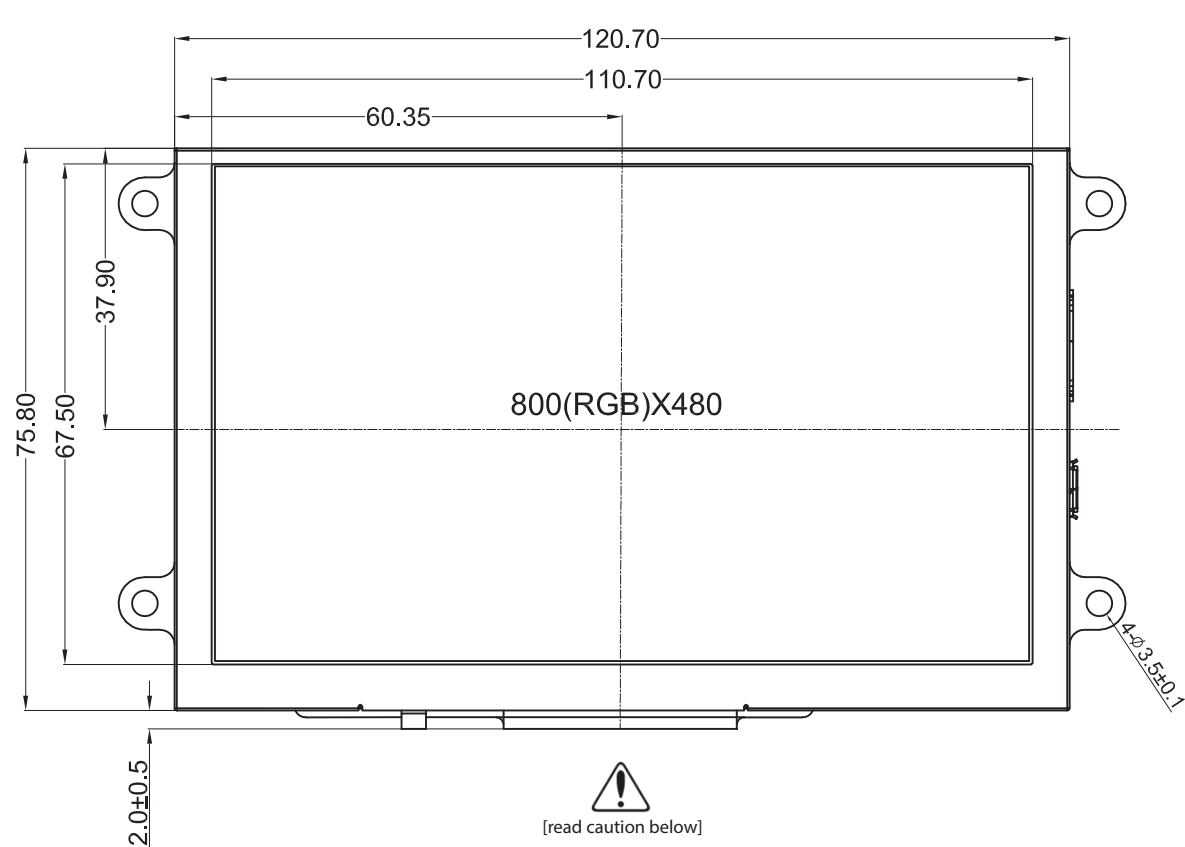
- **Support Forum:** <https://support.newhavendisplay.com/hc/en-us/community/topics>
- **GitHub:** <https://github.com/newhavendisplay>
- **Example Code:** <https://support.newhavendisplay.com/hc/en-us/categories/4409527834135-Example-Code/>
- **Knowledge Center:** https://www.newhavendisplay.com/knowledge_center.html
- **Quality Center:** 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	06/15/2022	Initial Release	CJ

Mechanical Drawing

SYMBOL	REVISION	DATE



Product Description: 5.0" IPS HDMI TFT Module

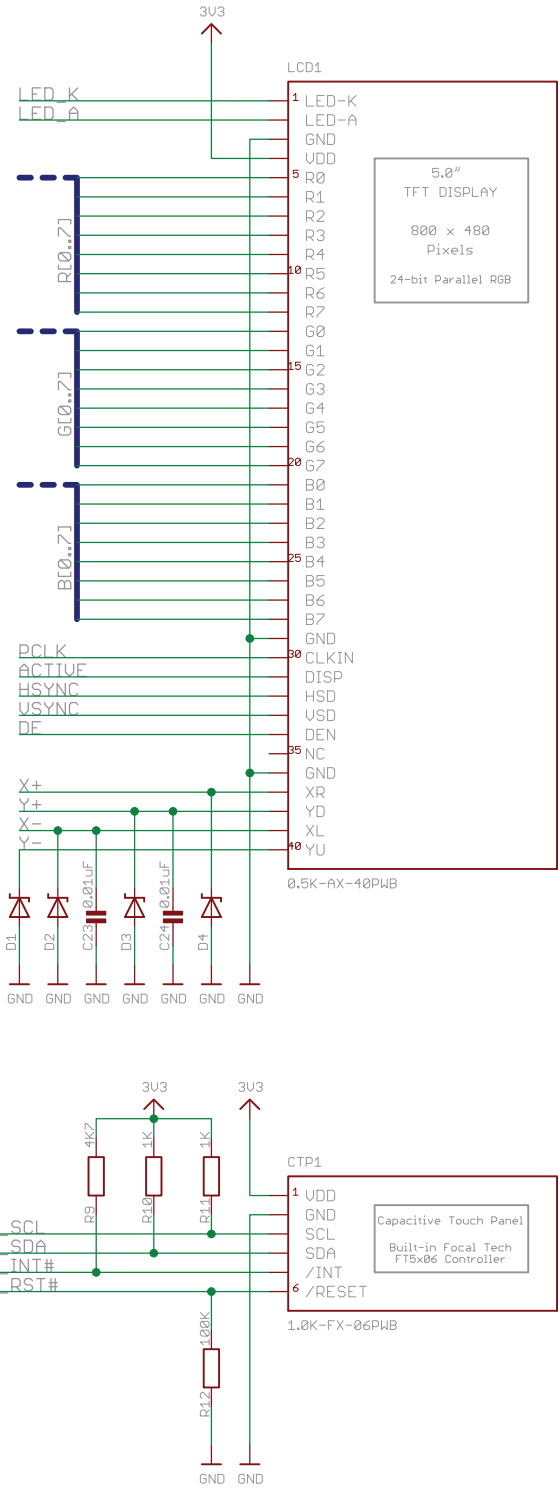
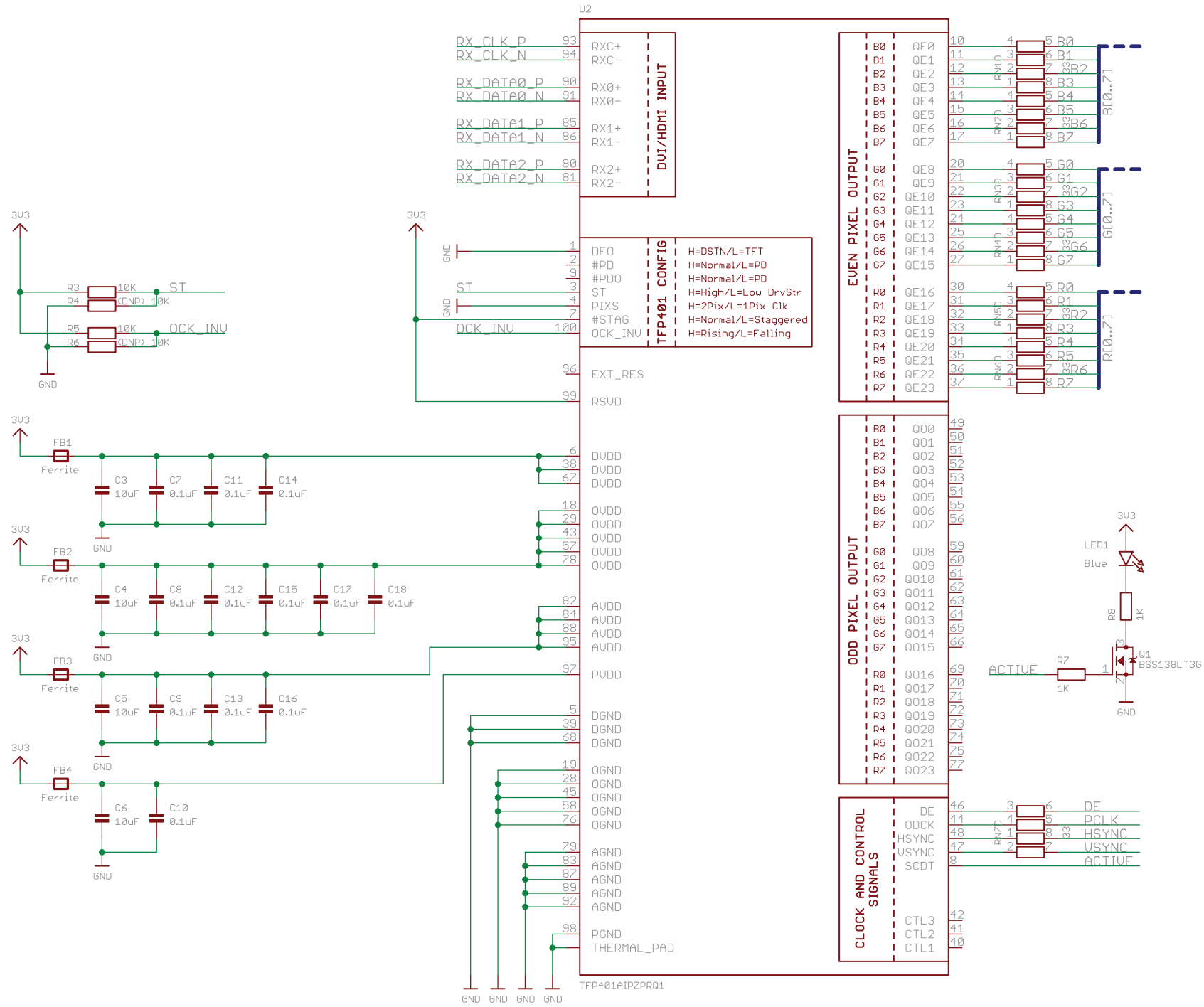
1. TFT Driver IC: TFP401A
2. TFT Interface: 24-Bit RGB
3. TFT Power Requirement: 5V/1.2A
4. Optical Features: Normally Black, Transmissive, Anti-Glare, 1100 cd/m2

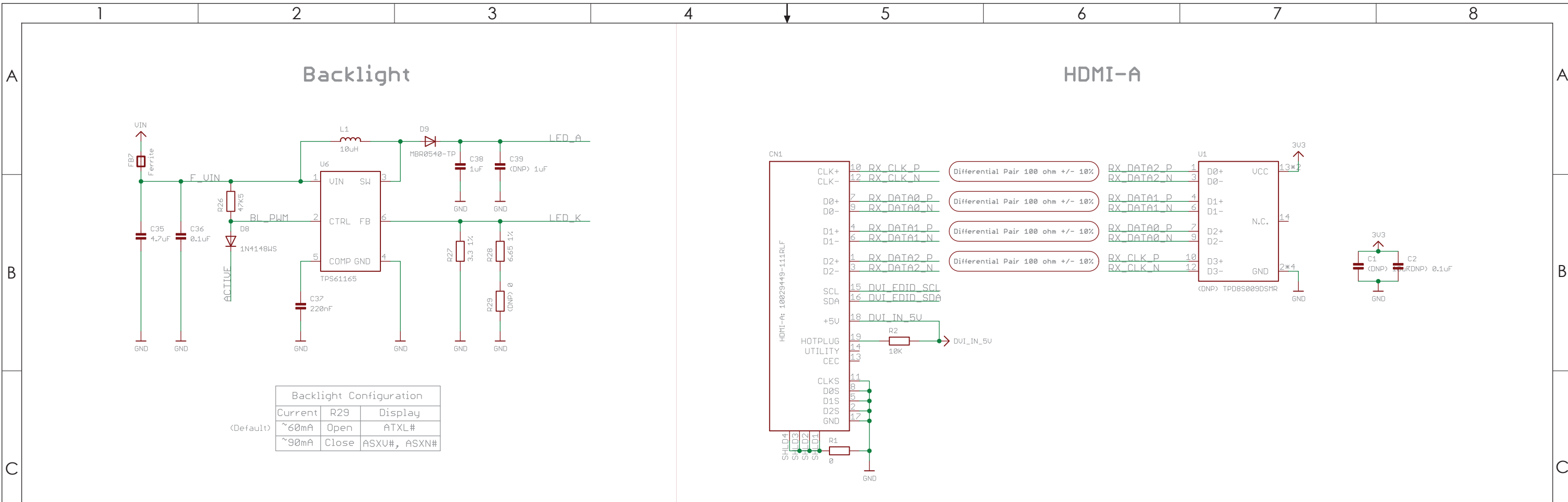
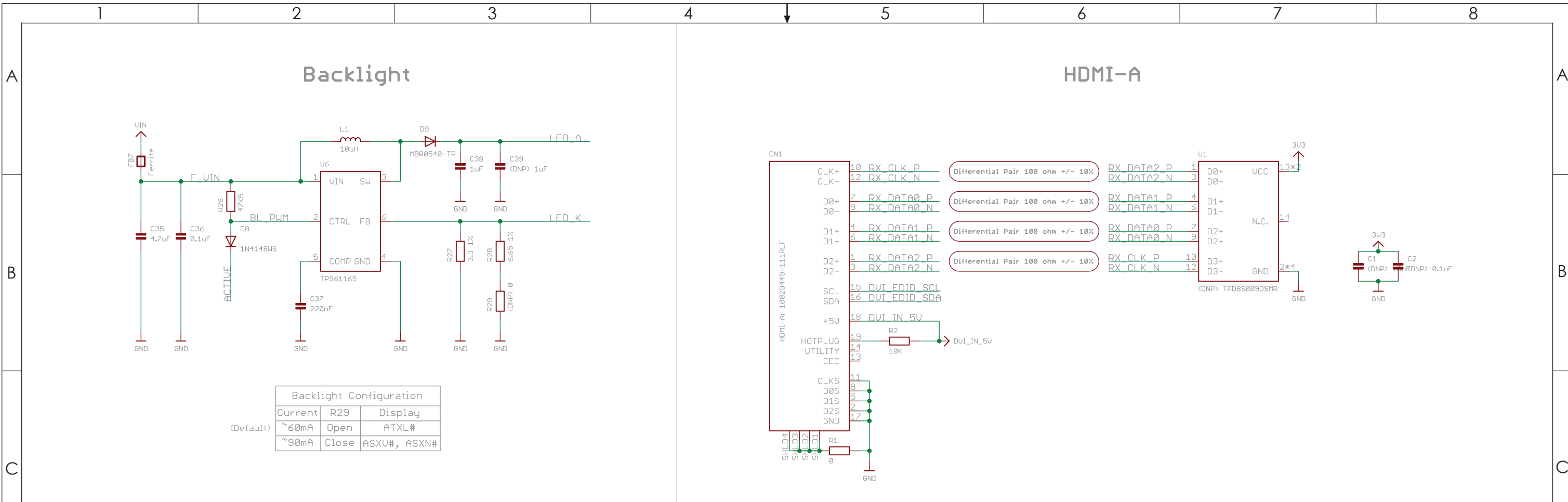
 Improper handling of the FPC connection at the bottom edge of this module may cause damage resulting in display failure. Take special care when handling this area of the display module to make sure this connection is never strained nor creased.

STANDARD TOLERANCE: (UNLESS OTHERWISE SPECIFIED)		 NEWHAVEN DISPLAY INTERNATIONAL	
LINEAR: ±0.3mm		DRAWING/PART NUMBER: NHD-5.0-HDMI-N-RSXP	
UNLESS OTHERWISE SPECIFIED: - DIMENSIONS ARE IN MILLIMETERS - THIRD ANGLE PROJECTION 		REVISION: -	
		SIZE: A3	
		SCALE: NS	
		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.			

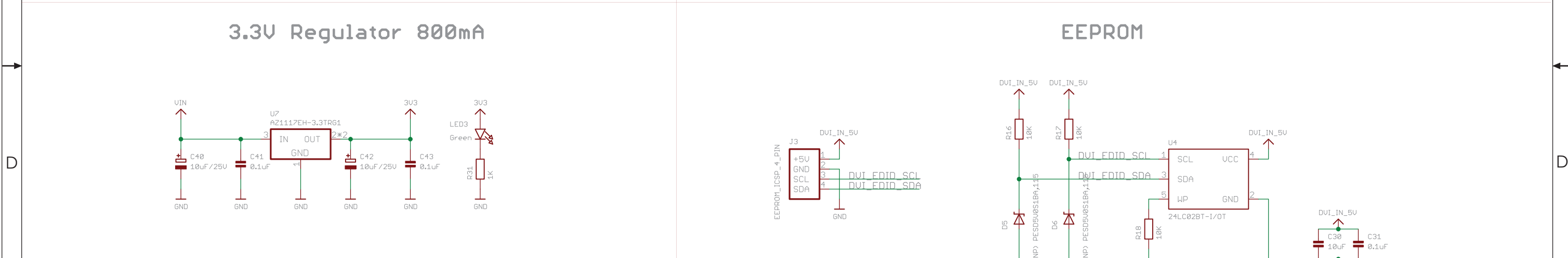
TFP401 (DVI/HDMI Decoder)

LCD Interface



[illegible][illegible][illegible]

The image contains two schematic diagrams. The first, titled "3.3V Regulator 800mA", shows a voltage regulator circuit. It includes an input voltage (VIN) connected to the IN pin of a regulator (U7: AZ1117EH-3.3TRG1). The OUT pin is connected to a 3V3 output. The circuit includes several capacitors (C40, C41, C42, C43) and a resistor (R31) connected to an LED (LED3: Green). The second diagram, titled "EEPROM", shows an I2C interface circuit. It features an EEPROM (U4: 24LC02BT-1/OT) connected to a DVI connector (J3) via SCL and SDA lines. The circuit includes pull-up resistors (R16, R17, R18) and decoupling capacitors (C30, C31) for the DVI_IN_5V supply.



The image contains two schematic diagrams. The first, titled "3.3V Regulator 800mA", shows a voltage regulator circuit. It includes an input voltage (VIN) connected to the IN pin of a 3.3V regulator (U7: AZ1117EH-3.3TRG1). The output (OUT) is connected to a 3V3 output. Input and output capacitors (C40, C41, C42, C43) are shown, along with a green LED (LED3) and a 1K resistor (R31) connected to the output. The second diagram, titled "EEPROM", shows an I2C interface circuit. It features an EEPROM (U4: 24LC02BT-1/OT) connected to a DVI connector (J3) via pull-up resistors (R16, R17, R18) and capacitors (C30, C31). The DVI connector pins are labeled DVI_IN_5V, DVI_FDID_SCL, and DVI_FDID_SDA. The EEPROM pins are labeled SCL, SDA, VCC, and GND.

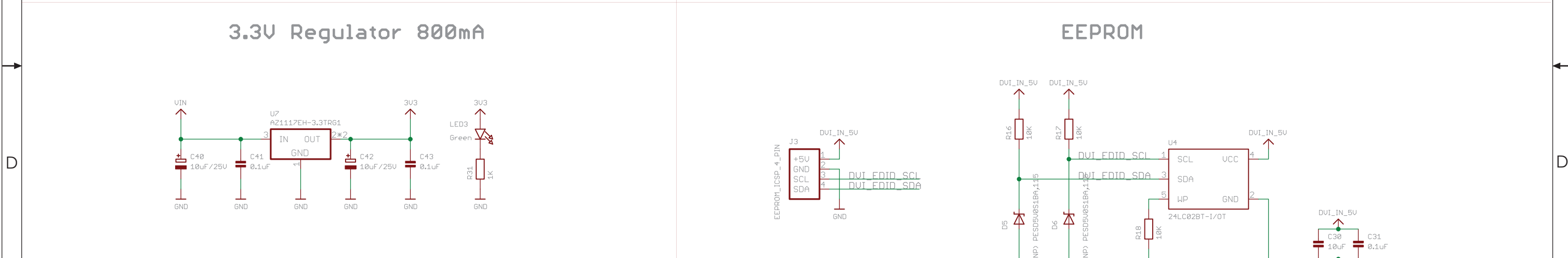


Diagram illustrating the VIN / PWM circuit for the NHD-5.0-HDMI-N display.

The circuit includes a DC-DC converter (CN3, DC0088B-HA9T0A501) connected to the input voltage (VIN). The output of the converter is connected to the display's VIN pin (pin 1) through a diode (D10, MSS1P3L) and a ferrite bead (FB8). The ground connection (pin 2) is connected to the display's GND pin (pin 2) through a diode (D10, MSS1P3L) and a ferrite bead (FB8).

The PWM signal is connected to the display's PWM pin (pin 4) through a diode (D10, MSS1P3L) and a ferrite bead (FB8). The ground connection (pin 2) is connected to the display's GND pin (pin 2) through a diode (D10, MSS1P3L) and a ferrite bead (FB8).

Key components and connections:

- CN3: DC-DC converter (DC0088B-HA9T0A501)
- D10: Diode (MSS1P3L)
- FB8: Ferrite bead
- VIN: Input voltage
- PWM: PWM signal
- GND: Ground

Legend:

- 1: VIN
- 2: GND
- 3: GND
- 4: PWM

Table:

Part	Value
DC-DC converter	DC0088B-HA9T0A501
Diode	MSS1P3L
Ferrite bead	FB8

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NEWHAVEN DISPLAY INTERNATIONAL

SCHEMATIC / PART NUMBER: NHD-5.0-HDMI-N

REVISION: 1.1

SIZE: A3

DRAWN BY: P. Bartek

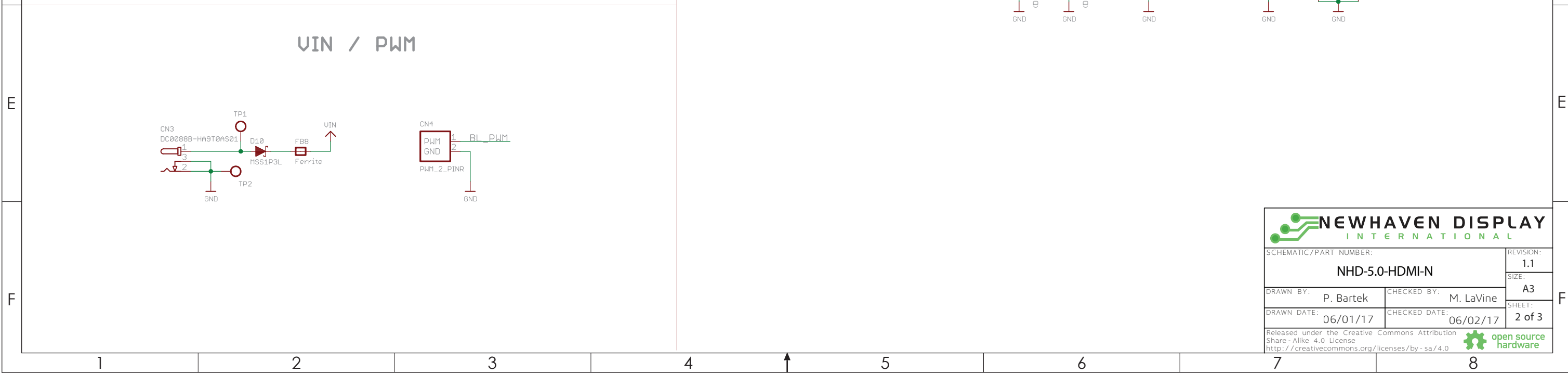
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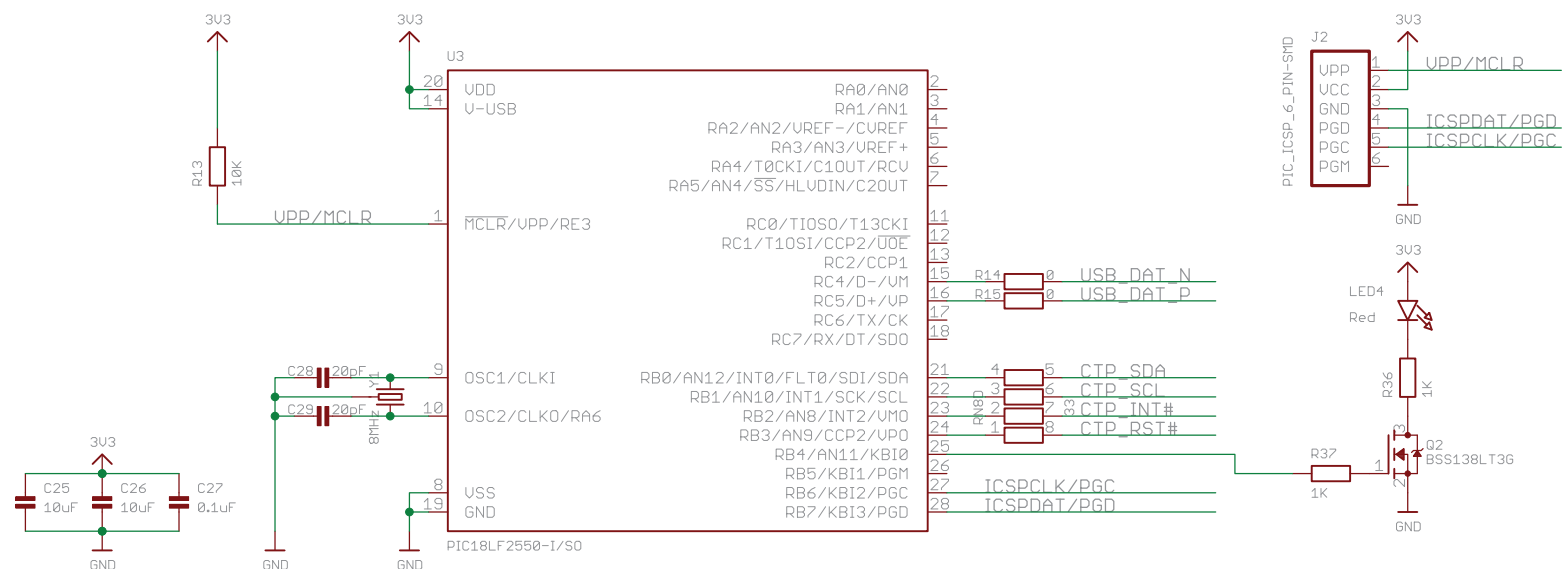
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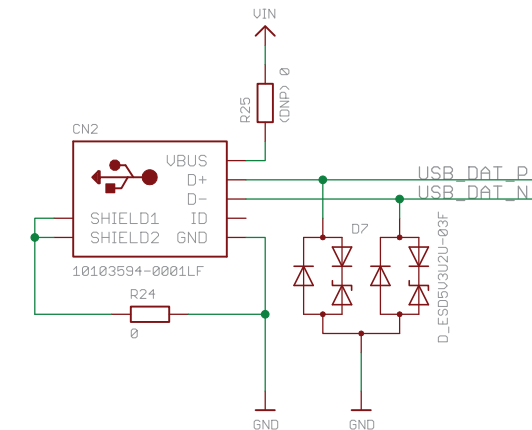
SHEET: 2 of 3

open source hardware

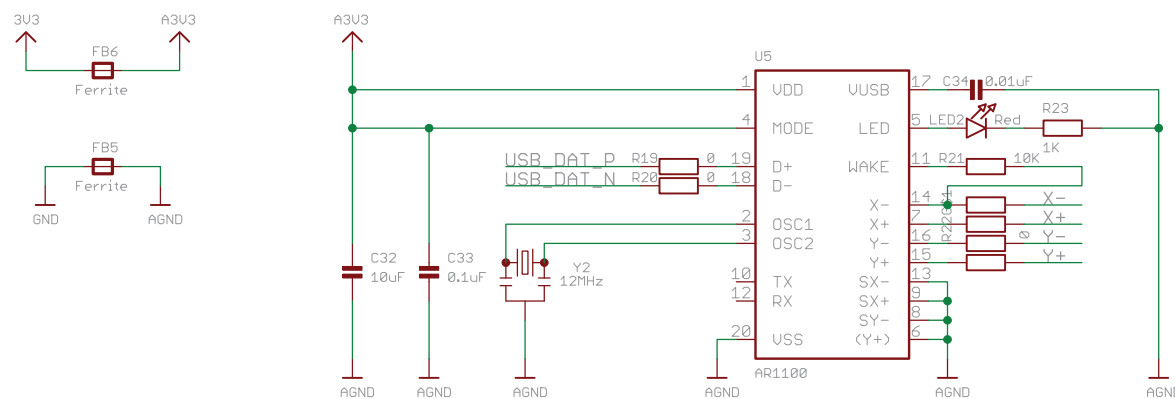




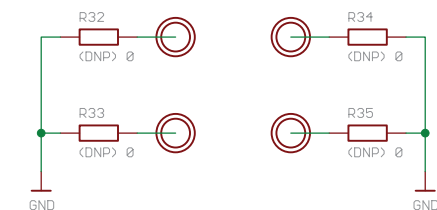
Micro-B USB



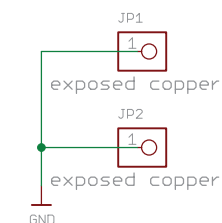
Resistive Touch Screen Controller



Mounting Holes 3.5mm Plated



Exposed Pads to Ground TFT Bezel



BOARD VERSIONS

RTU Version: (DNP) - C1, C20, C25, C26, C2, C22, C27, C28, C29, C39, CTP1, D1, D2, D3, D4, D5, D6, LED4, Q2, R4, R6, R13, R9, R10, R11, R36, R37, R12, R14, R15, R25, R29, R32, R33, R34, R35, RN8, U1, U3, Y1

CTU Version: (DNP) - C1, C32, C2, C33, C23, C24, C34, C39, D1, D2, D3, D4, D5, D6, FB5, FB6, LED2, R4, R6, R21, R19, R20, R25, R29, R22, R23, R32, R33, R34, R35, U1, U5, Y2

Non-Touch Version: (DNP) - C1, C20, C25, C26, C32, C2, C22, C27, C33, C23, C24, C34, C28, C29, C39, CN2, CTP1, D1, D2, D3, D4, D5, D6, D7, FB5, FB6, LED2, LED4, Q2, R4, R6, R13, R21, R9, R10, R11, R23, R36, R37, R12, R14, R15, R19, R20, R24, R25, R29, R22, R32, R33, R34, R35, RN8, U1, U3, U5, Y1, Y2

Electrical Characteristics

Item	Symbol	Condition	Min.	Typical	Max.	Unit
Operating Temperature Range	T _{OP}	Absolute Max	-20	-	+70	°C
Storage Temperature Range	T _{ST}	Absolute Max	-30	-	+80	°C
Backlight PWM Voltage	V _{PWM}	-	2.5	3.3	5.5	V
Backlight PWM Frequency	f _{PWM}	V _{PWM} = 3.3V	5	-	100	kHz
Module Supply Voltage	V _{DD}	-	5.0	-	7.0	V
Module Supply Current	I _{DD}	V _{DD} = 5V	-	1.2	1.5	A
		V _{DD} = 7V	-	0.9	1.2	A

HDMI Receiver Information

On-board Texas Instruments TFP401A Receiver. To view the full TFP401A specification, please download it by accessing the link: <http://www.ti.com/lit/ds/slids190a/slids190a.pdf>

Technical Resource

3D Model	TFT Panel Used	Display Type	Luminance Rating	Optimal Viewing Angle	Touch Panel
NHD-5.0-HDMI-N-RSXP	NHD-5.0-800480AF-ASXP	IPS	1100 cd/m ²	80° all angles	No Touch

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, 96 hrs.	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C, 96 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, 96 hrs.	2
Low Temperature Operation	Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.	-20°C, 96 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.	+60°C, 90% RH, 96 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: $V_s=\pm 8KV$, 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.

