

Product Specification

NHD-5.0-HDMI-N-RSXP-CTU

TFT Liquid Crystal Display

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

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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>

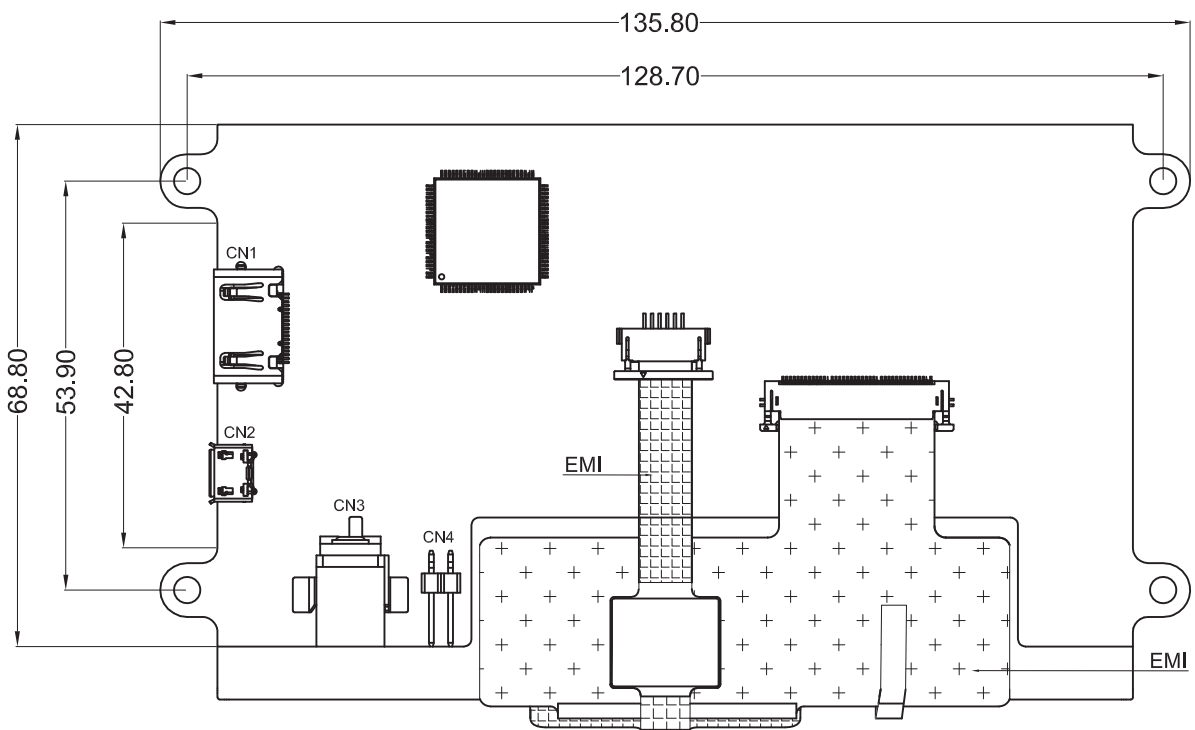
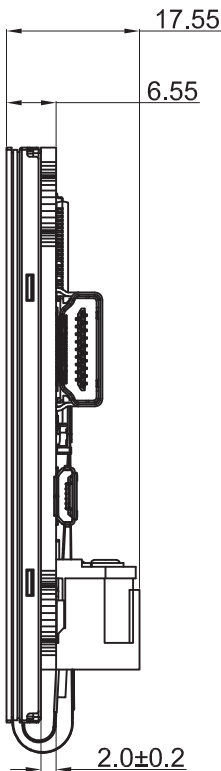
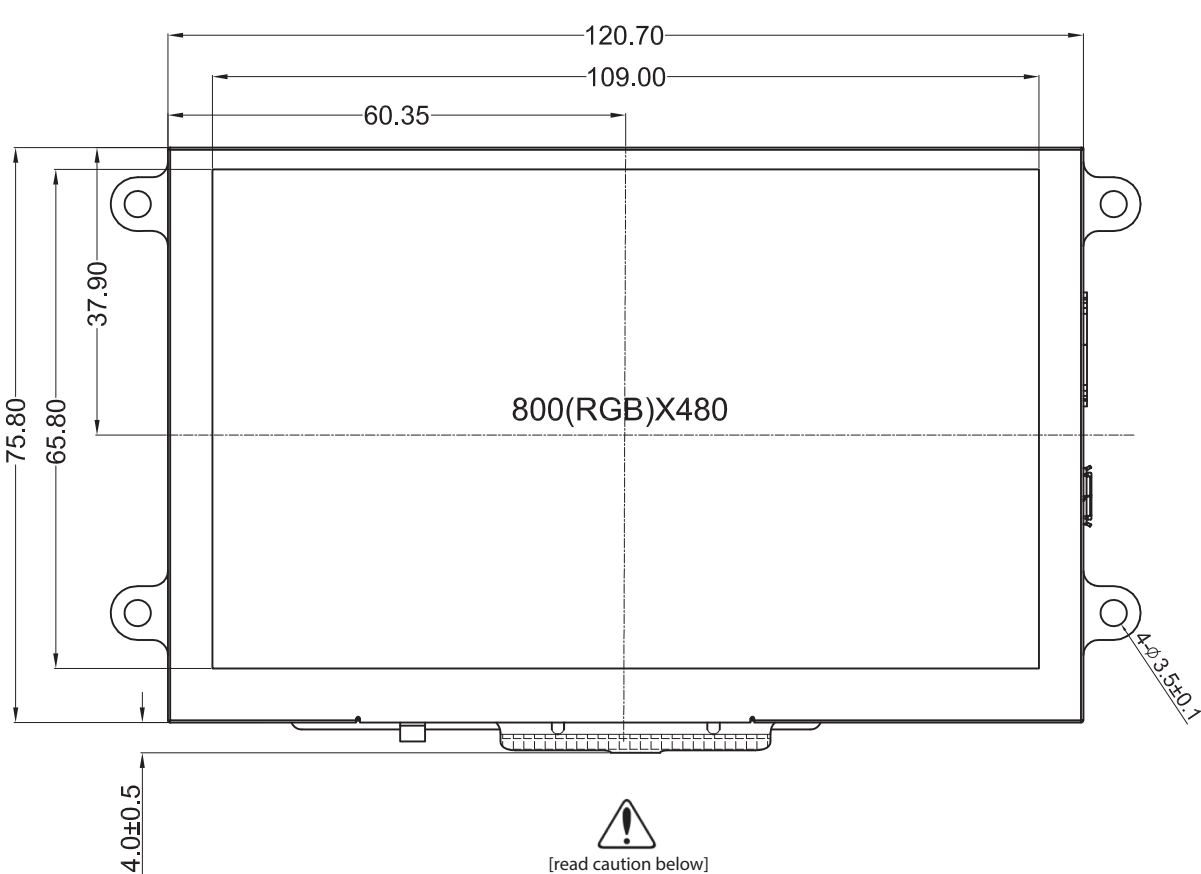


Document Revision History

Revision	Date	Description	Changed By
0	06/15/2022	Initial Release	CJ

Mechanical Drawing

SYMBOL	REVISION	DATE



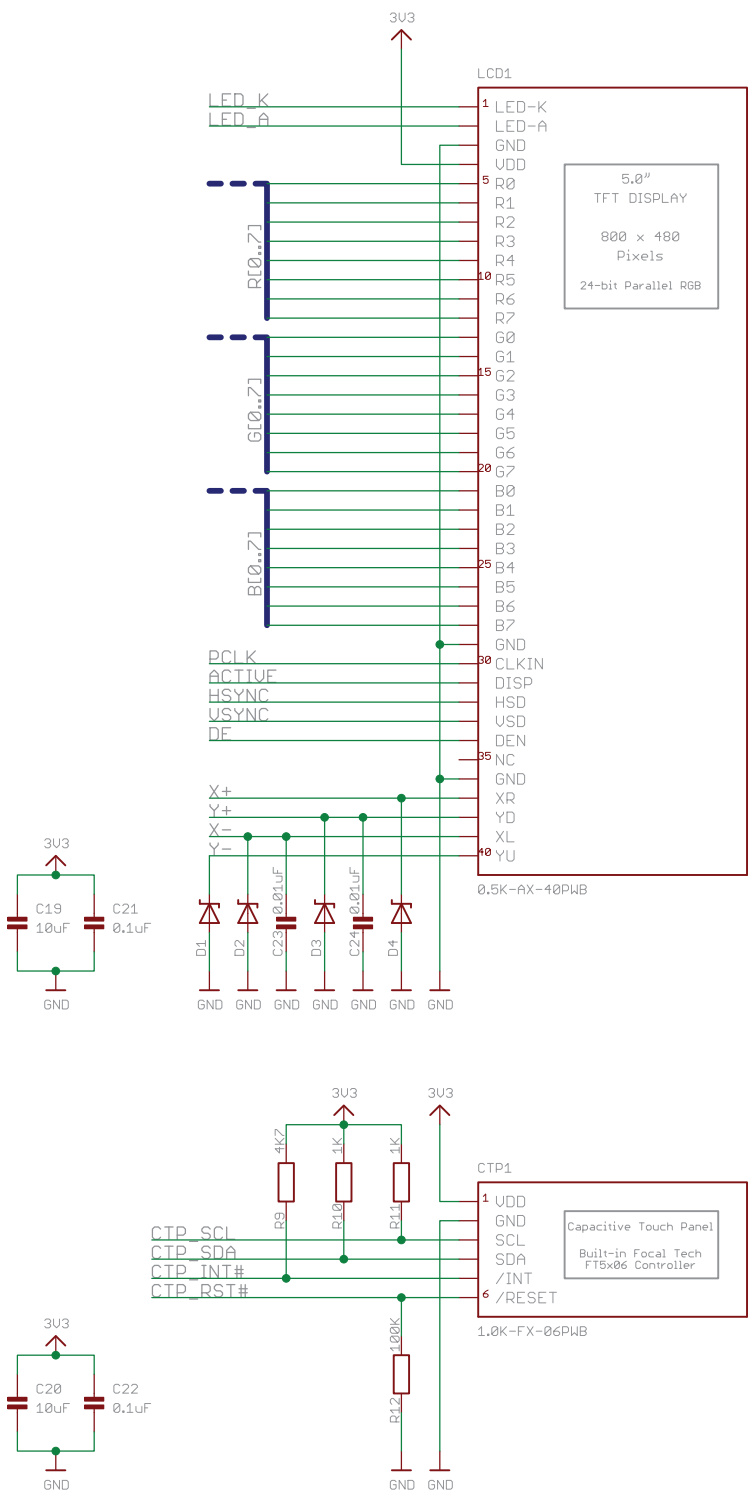
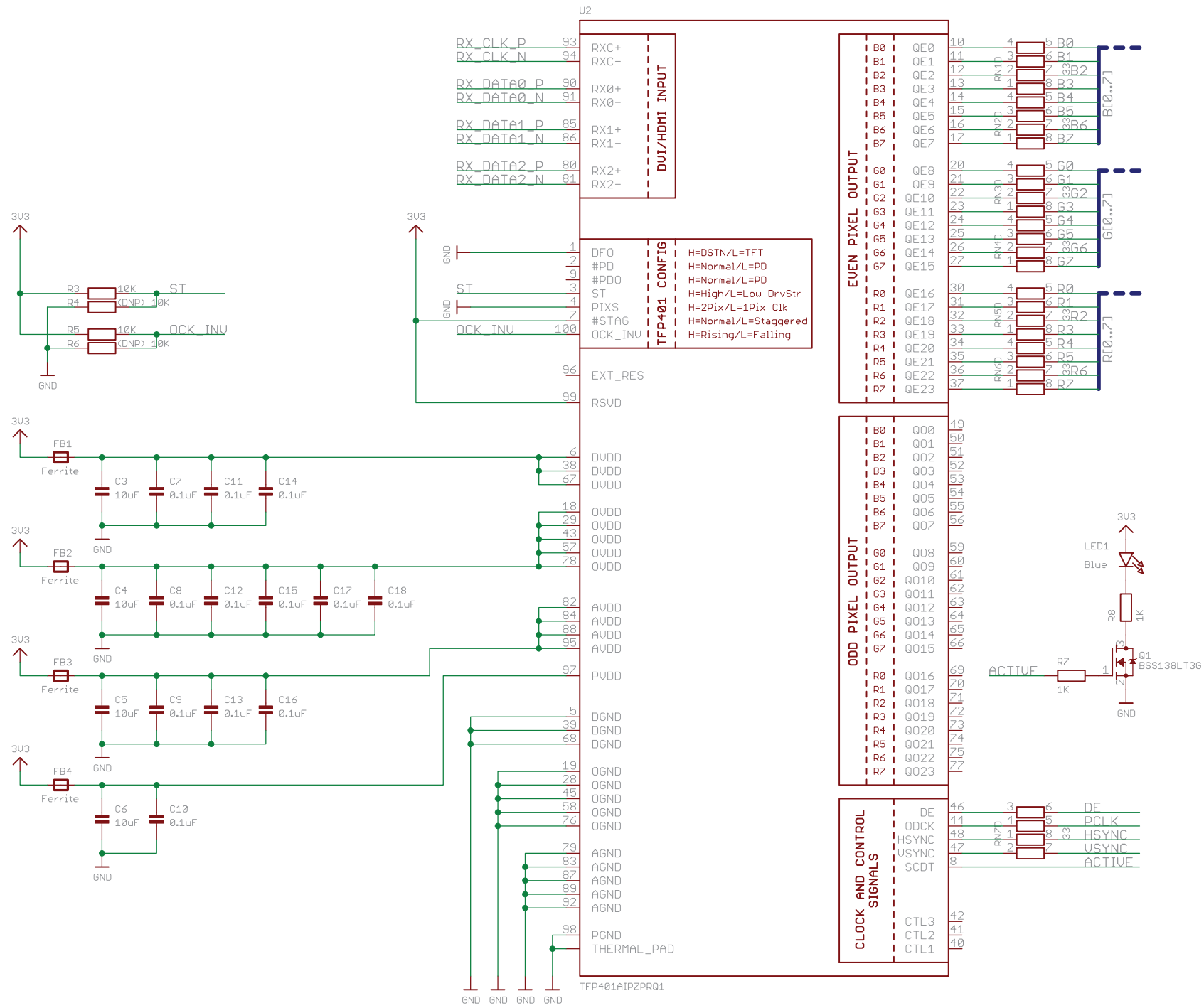
- Product Description: 5.0" IPS HDMI TFT Module w/ Capacitive Touch
1. TFT Driver IC: TFP401A
 2. TFT Interface: 24-Bit RGB
 3. TFT Power Requirement: 5V/1.2A
 4. Optical Features: Normally Black, Transmissive, Anti-Glare, 900 cd/m2

 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 TOLERANCE: (UNLESS OTHERWISE SPECIFIED)		
	DRAWING/PART NUMBER: NHD-5.0-HDMI-N-RSXP-CTU	REVISION: -
UNLESS OTHERWISE SPECIFIED: - DIMENSIONS ARE IN MILLIMETERS - THIRD ANGLE PROJECTION 	DRAWN BY: C. Johnson	APPROVED BY: C. Johnson
	DRAWN DATE: 06/15/2022	APPROVED DATE: 06/15/2022
DO NOT SCALE DRAWING		SHEET 1 OF 1
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TFP401 (DVI/HDMI Decoder)

LCD Interface



[illegible][illegible][illegible]

The image contains two circuit diagrams. The first, titled "3.3V Regulator 800mA", shows a voltage regulator circuit using the AZ1117EH-3.3TRG1 (U7). It includes input capacitors C40 (10uF/25V) and C41 (0.1uF), an output capacitor C43 (0.1uF), and a bypass capacitor C42 (10uF/25V). The output is 3V3, which is connected to an LED3 (Green) through a 1K resistor R31. The second diagram, titled "EEPROM", shows an I2C interface circuit. It features an EEPROM_ICSP_4_PIN (J3) connected to an EEPROM (U4, 24LC02BT-1/OT). The circuit includes pull-up resistors R16, R17, and R18 (all 10K) for the DVI_IN_5V lines, which are connected to the SCL and SDA pins of the EEPROM. Power is provided by D5 and D6 (diodes) connected to the VCC and GND pins of the EEPROM. A 10uF capacitor C30 and a 0.1uF capacitor C31 are shown at the input of the EEPROM.

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UIN / PWM

The schematic diagram illustrates the UIN / PWM circuit. It features a DC-DC converter (CN3) connected to a diode (D10) and a ferrite bead (FB8). The output is connected to a pin header (CN4) labeled PWM_2_PINR. The circuit is powered by VIN and GND. Test points TP1 and TP2 are indicated.

SCHEMATIC / PART NUMBER:		REVISION:
NHD-5.0-HDMI-N		1.1
DRAWN BY: P. Bartek		CHECKED BY: M. LaVine
DRAWN DATE: 06/01/17		CHECKED DATE: 06/02/17
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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) and the GND pin (pin 3). The output is also connected to a test point (TP1) and a diode (D10, MSS1P3L) connected to a test point (TP2). A ferrite bead (FB8) is connected between the output of the converter and the VIN pin.

The PWM signal is connected to the display's PWM pin (pin 2) and the GND pin (pin 3). The PWM signal is also connected to a test point (TP4) and a diode (D10, MSS1P3L) connected to a test point (TP2).

The diagram shows the connection of the input voltage (VIN) and the PWM signal to the display's pins. The VIN is connected to pin 1 and the GND is connected to pin 3. The PWM signal is connected to pin 2 and the GND is connected to pin 3.

Legend:

- TP1: Test Point 1
- TP2: Test Point 2
- TP4: Test Point 4
- FB8: Ferrite Bead
- D10: Diode (MSS1P3L)
- CN3: DC-DC Converter (DC0088B-HA9T0A501)
- CN4: PWM Pin Header

Table 1: Component Values

Component	Value
DC-DC Converter (CN3)	DC0088B-HA9T0A501
Diode (D10)	MSS1P3L
Ferrite Bead (FB8)	Ferrite

Table 2: Pin Connections

Pin	Signal
1	VIN
2	PWM
3	GND

Table 3: Test Point Connections

Test Point	Signal
TP1	VIN
TP2	GND
TP4	PWM

Table 4: Component Values

Component	Value
DC-DC Converter (CN3)	DC0088B-HA9T0A501
Diode (D10)	MSS1P3L
Ferrite Bead (FB8)	Ferrite

Table 5: Pin Connections

Pin	Signal
1	VIN
2	PWM
3	GND

Table 6: Test Point Connections

Test Point	Signal
TP1	VIN
TP2	GND
TP4	PWM

Table 7: Component Values

Component	Value
DC-DC Converter (CN3)	DC0088B-HA9T0A501
Diode (D10)	MSS1P3L
Ferrite Bead (FB8)	Ferrite

Table 8: Pin Connections

Pin	Signal
1	VIN
2	PWM
3	GND

Table 9: Test Point Connections

Test Point	Signal
TP1	VIN
TP2	GND
TP4	PWM

Table 10: Component Values

Component	Value
DC-DC Converter (CN3)	DC0088B-HA9T0A501
Diode (D10)	MSS1P3L
Ferrite Bead (FB8)	Ferrite

Table 11: Pin Connections

Pin	Signal
1	VIN
2	PWM
3	GND

Table 12: Test Point Connections

Test Point	Signal
TP1	VIN
TP2	GND
TP4	PWM

Table 13: Component Values

Component	Value
DC-DC Converter (CN3)	DC0088B-HA9T0A501
Diode (D10)	MSS1P3L
Ferrite Bead (FB8)	Ferrite

Table 14: Pin Connections

Pin	Signal
1	VIN
2	PWM
3	GND

Table 15: Test Point Connections

Test Point	Signal
TP1	VIN
TP2	GND
TP4	PWM

Table 16: Component Values

Component	Value
DC-DC Converter (CN3)	DC0088B-HA9T0A501
Diode (D10)	MSS1P3L
Ferrite Bead (FB8)	Ferrite

Table 17: Pin Connections

Pin	Signal
1	VIN
2	PWM
3	GND

Table 18: Test Point Connections

Test Point	Signal
TP1	VIN
TP2	GND
TP4	PWM

Table 19: Component Values

Component	Value
DC-DC Converter (CN3)	DC0088B-HA9T0A501
Diode (D10)	MSS1P3L
Ferrite Bead (FB8)	Ferrite

Table 20: Pin Connections

Pin	Signal
1	VIN
2	PWM
3	GND

Table 21: Test Point Connections

Test Point	Signal
TP1	VIN
TP2	GND
TP4	PWM

Table 22: Component Values

Component	Value
DC-DC Converter (CN3)	DC0088B-HA9T0A501
Diode (D10)	MSS1P3L
Ferrite Bead (FB8)	Ferrite

Table 23: Pin Connections

Pin	Signal
1	VIN
2	PWM
3	GND

Table 24: Test Point Connections

Test Point	Signal
TP1	VIN
TP2	GND
TP4	PWM

Table 25: Component Values

Component	Value
DC-DC Converter (CN3)	DC0088B-HA9T0A501
Diode (D10)	MSS1P3L
Ferrite Bead (FB8)	Ferrite

Table 26: Pin Connections

Pin	Signal
1	VIN
2	PWM
3	GND

Table 27: Test Point Connections

Test Point	Signal
TP1	VIN
TP2	GND
TP4	PWM

Table 28: Component Values

Component	Value
DC-DC Converter (CN3)	DC0088B-HA9T0A501
Diode (D10)	MSS1P3L
Ferrite Bead (FB8)	Ferrite

Table 29: Pin Connections

Pin	Signal
1	VIN
2	PWM
3	GND

Table 30: Test Point Connections

Test Point	Signal
TP1	VIN
TP2	GND
TP4	PWM

Table 31: Component Values

Component	Value
DC-DC Converter (CN3)	DC0088B-HA9T0A501
Diode (D10)	MSS1P3L
Ferrite Bead (FB8)	Ferrite

Table 32: Pin Connections

Pin	Signal
1	VIN
2	PWM
3	GND

Table 33: Test Point Connections

Test Point	Signal
TP1	VIN
TP2	GND
TP4	PWM

Table 34: Component Values

Component	Value
DC-DC Converter (CN3)	DC0088B-HA9T0A501
Diode (D10)	MSS1P

UIN / PWM

The schematic diagram illustrates the UIN / PWM circuit. It features a DC-DC converter (CN3) connected to a diode (D10) and a ferrite bead (FB8). The output is connected to a pin header (CN4) labeled PWM_2_PINR. The circuit is powered by VIN and GND. Test points TP1 and TP2 are indicated.

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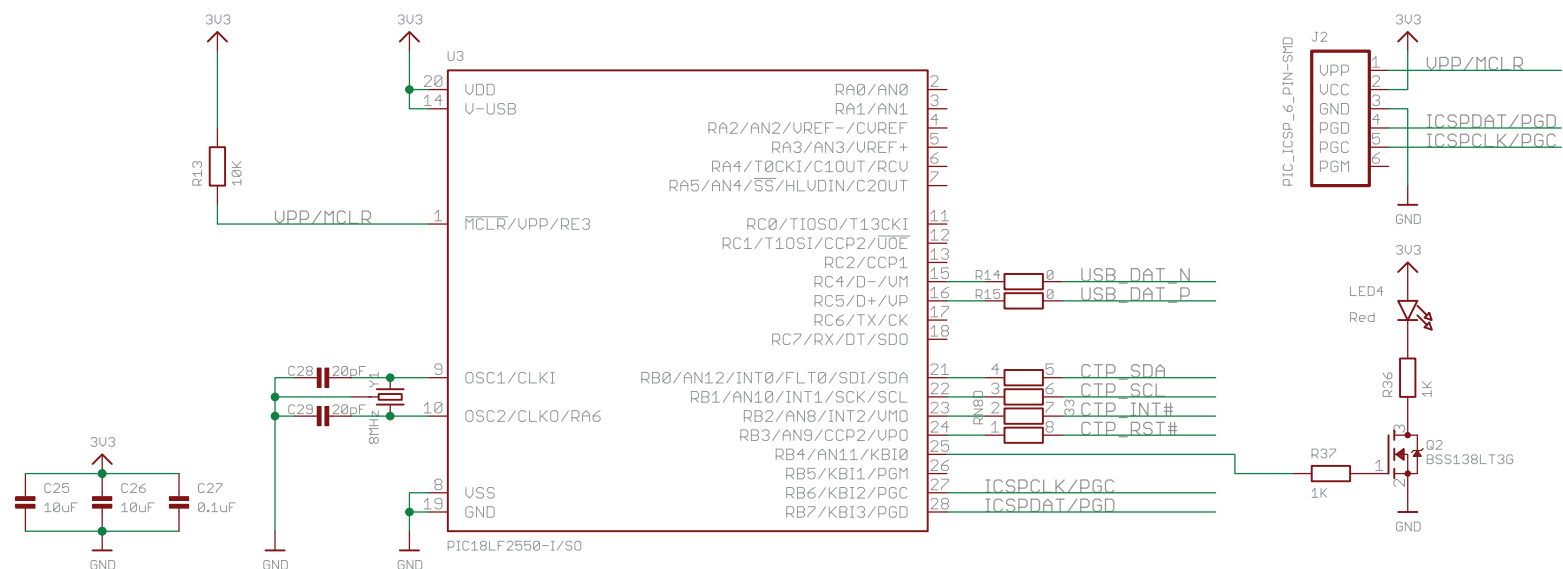
UIN / PWM

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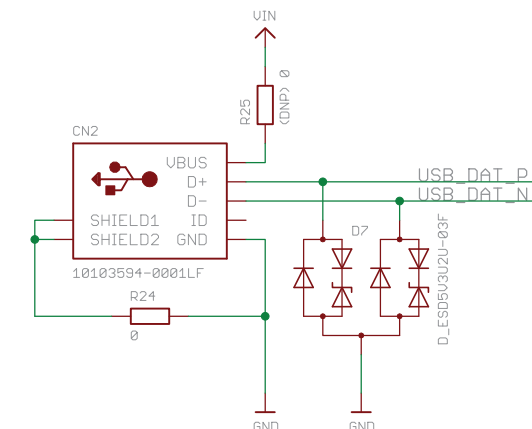
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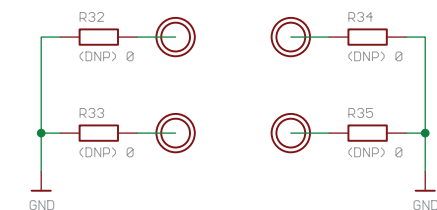
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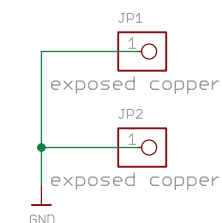
Micro-B USB



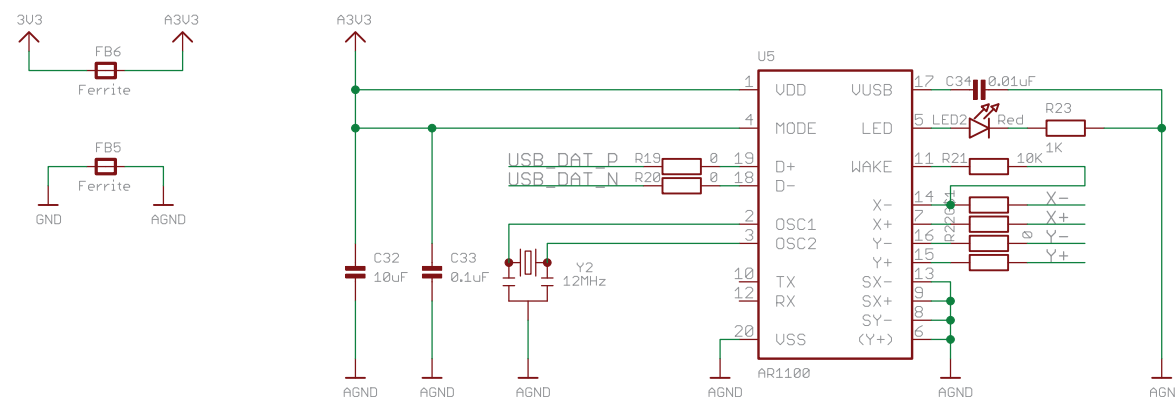
Mounting Holes 3.5mm Plated



Exposed Pads to Ground TFT Bezel



Resistive Touch Screen Controller



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-CTU	NHD-5.0-800480TF-ASXP-CTP	IPS	900 cd/m ²	80° all angles	PCAP (USB-HID)

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.

