

# NHD-TFT40

## 40-pin TFT Breakout

NHD-	Newhaven Display
TFT-	TFT Breakout
40-	40-pin Connector

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## Document Revision History

Revision	Date	Description	Changed by
-	3/20/17	Initial Release	PB
1	4/12/18	Updated Features	TM

## Functions and Features

- Open-Source Hardware
- Configurable LED Driver w/ PWM
- Breadboard Friendly
- Power LED Indicator
- Supports the following TFT displays:

NHD-4.3-480272EF-ATXL#  
NHD-4.3-480272EF-ASXV#  
NHD-4.3-480272EF-ASXN#

NHD-4.3-480272EF-ATXL#-T  
NHD-4.3-480272EF-ASXV#-T  
NHD-4.3-480272EF-ASXN#-T

NHD-4.3-480272EF-ATXL#-CTP  
NHD-4.3-480272EF-ASXV#-CTP  
NHD-4.3-480272EF-ASXN#-CTP

NHD-5.0-800480TF-ATXL#

NHD-5.0-800480TF-ATXL#-T

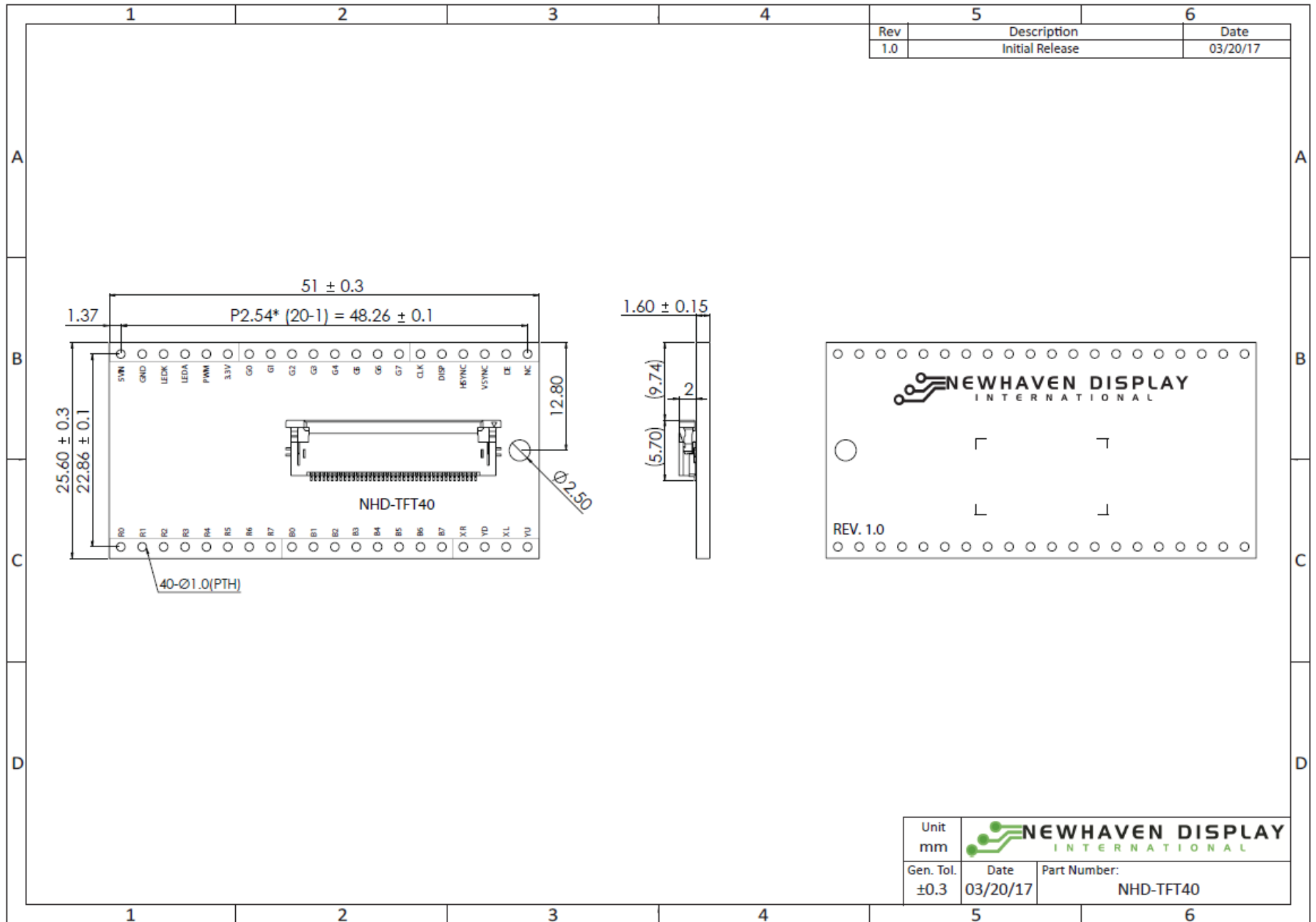
NHD-5.0-800480TF-ATXL#-CTP

NHD-7.0-800480EF-ATXL#  
NHD-7.0-800480EF-ASXV#  
NHD-7.0-800480EF-ASXN#

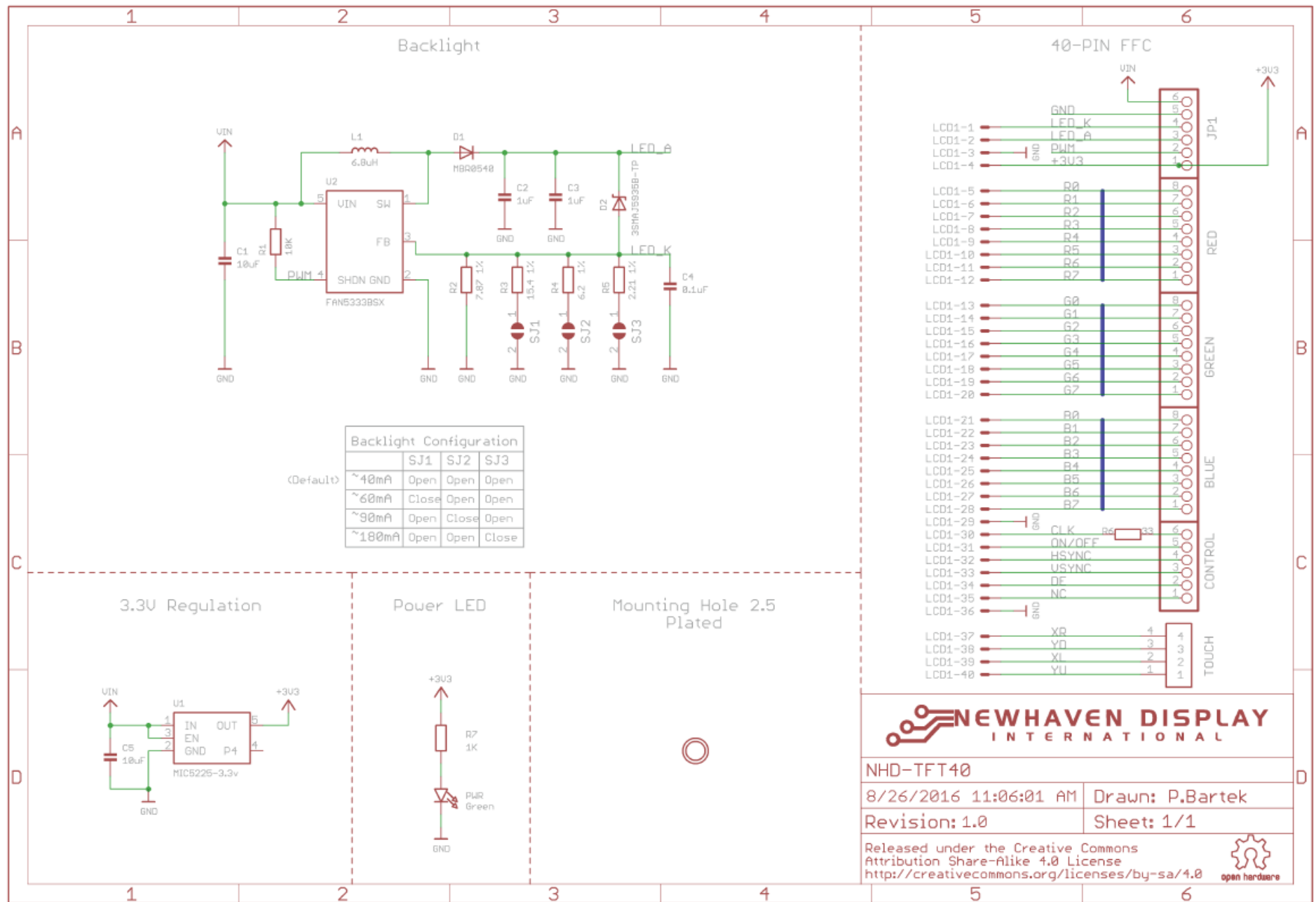
NHD-7.0-800480EF-ATXL#-T  
NHD-7.0-800480EF-ASXV#-T  
NHD-7.0-800480EF-ASXN#-T

NHD-7.0-800480EF-ATXL#-CTP  
NHD-7.0-800480EF-ASXV#-CTP  
NHD-7.0-800480EF-ASXN#-CTP

# Mechanical Drawing



# Schematic



## Pin Description

Pin No.	Symbol	Connection	Function Description
1	5VIN	Power Supply	Supply Voltage (+5.0V)
2	GND	Power Supply	Ground
3	LEDK	N.C. / Power Supply	Backlight Cathode (Can be used to power the display's backlight directly. Please refer to the appropriate display's datasheet for electrical info.)
4	LEDA	N.C. / Power Supply	Backlight Anode (Can be used to power the display's backlight directly. Please refer to the appropriate display's datasheet for electrical info.)
5	PWM	MPU	Pulse Width Modulation input pin
6	3.3V	-	3.3V Output of on-board regulator
7-14	[G0-G7]	MPU	Green Data signals
15	CLK	MPU	Pixel Clock
16	DISP	MPU	Display ON/OFF signal
17	HSYNC	MPU	Horizontal (Line) Synchronization signal
18	VSYNC	MPU	Vertical (Frame) Synchronization signal
19	DE	MPU	Data Enable signal
20	NC	-	No Connect
21-28	[R0-R7]	MPU	Red Data signals
29-36	[B0-B7]	MPU	Blue Data signals
37	XR	-	Touch Panel – Right (Resistive Touch Panel models)
38	YD	-	Touch Panel – Down (Resistive Touch Panel models)
39	XL	-	Touch Panel – Left (Resistive Touch Panel models)
40	YU	-	Touch Panel – Up (Resistive Touch Panel models)

## Electrical Characteristics

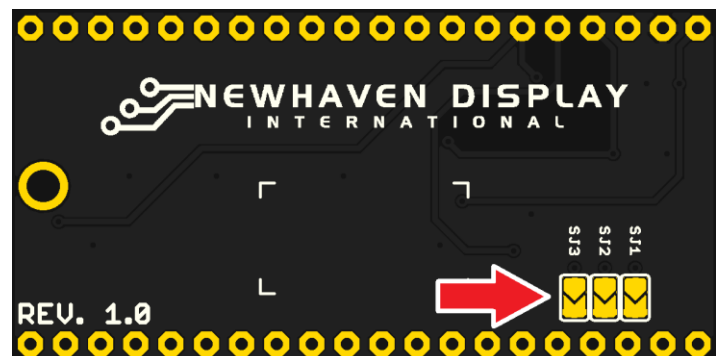
Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Temperature Range	T <sub>OP</sub>	Absolute Max	-40	-	+85	°C
Storage Temperature Range	T <sub>ST</sub>	Absolute Max	-40	-	+85	°C
Supply Voltage	V <sub>IN</sub>	-	-	5.0	5.5	V

**NOTICE:** It is not recommended to apply power to the board without a display connected. Doing so may result in a damaged LED driver circuit. Newhaven Display does not assume responsibility for PCB failures due to this damage.

## Backlight Driver Configuration

The on-board backlight driver circuit is adjustable for various output currents via the three solder jumpers labeled “SJ1 – SJ3”. Consult the datasheet of the LCD to determine the required backlight supply current. The backlight driver defaults to 40mA. Refer to the “Backlight Configuration” table shown below.

Current Output	SJ1	SJ2	SJ3
~40mA (Default)	Open	Open	Open
~60mA	<b>Close</b>	Open	Open
~90mA	Open	<b>Close</b>	Open
~180mA	Open	Open	<b>Close</b>



## Quality Information

Test Item	Content of Test	Test Condition	Note
High Temperature storage	Endurance test applying the high storage temperature for a long time.	+85°C , 96hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-40°C , 96hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (voltage & current) and the high thermal stress for a long time.	+85°C , 96hrs	2
Low Temperature Operation	Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.	-40°C , 96hrs	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 , 96hrs	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, 1.5mm amplitude. 60 sec in each of 3 directions X,Y,Z For 15 minutes	3

**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.

## Precautions for using LCDs/LCMs

See Precautions at [www.newhavendisplay.com/specs/precautions.pdf](http://www.newhavendisplay.com/specs/precautions.pdf)

## Warranty Information

See Terms & Conditions at [http://www.newhavendisplay.com/index.php?main\\_page=terms](http://www.newhavendisplay.com/index.php?main_page=terms)