

NHD-1.8-128160TF-CTXI#

TFT (Thin-Film Transistor) Liquid Crystal Display Module

NHD-	Newhaven Display
1.8-	1.8" diagonal
128160-	128 x 160 pixels (portrait mode)
TF-	Model
C-	Built-in Controller
T-	White LED backlight
X-	Transmissive TFT
I-	Wide Temp (-20C to +70C), 12:00 view direction
#-	RoHS Compliant

Newhaven Display International, Inc.

2511 Technology Drive, Suite 101

Elgin IL, 60124

Ph: 847-844-8795

Fax: 847-844-8796

www.newhavendisplay.com

nhtech@newhavendisplay.com

nhsales@newhavendisplay.com

Document Revision History

Revision	Date	Description	Changed by
0	8/10/2011	Initial Release	-
1	4/13/2012	Pin description updated	AK

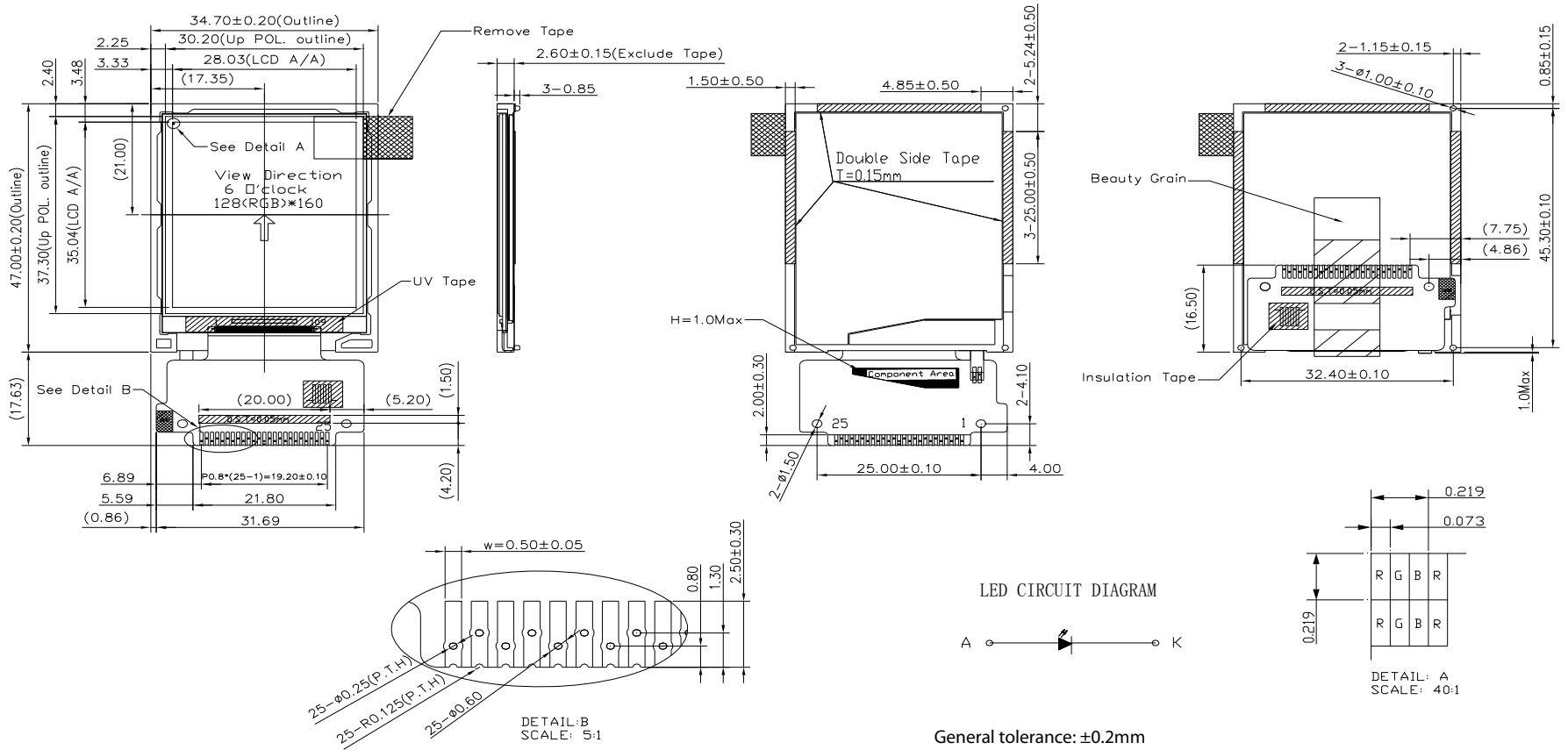
Functions and Features

- 128 x 160 pixels (portrait mode)
- LED backlight
- 2.8V power supply
- 8-bit Parallel interface
- Built-in HX8353D driver

Mechanical Drawing

No.	Symbol
1	GND
2	NC(XR)
3	NC(YU)
4	NC(XL)
5	NC(YD)
6	GND
7	VDD
8	/CS
9	RS
10	/VS
11	/RD
12	D0
13	D1
14	D2
15	D3
16	D4
17	D5
18	D6
19	D7
20	/LCD-RESET
21	GND
22	NC
23	LEDA
24	NC
25	LEDK

REV	DC/EC NUMBER	DESCRIPTION	DATE



- NOTES:
1. Display Type: TFT
 2. Backlight: 1-chips LED
 3. Gray Scale Inversion: 12 o'clock;
 4. Driver IC: HX8353D
 5. General Tolerance: ±0.2
 6. Requirements on Environment Protection: Q/S0002
 7. Suggested case open area: each side out expand 0.5mm of LCD AA dimension

General tolerance: ±0.2mm
*: Critical dimension

	DRAWING NO.			
	NHD-1.8-128160TF-CTXI#			
	UNIT	mm	SCALE	FIT
3rd Angle			SHEET 1 OF 1	

Pin Description

Pin No.	Symbol	External Connection	Function Description
1	GND	Power Supply	Ground
2	NC	-	No Connect
3	NC	-	No Connect
4	NC	-	No Connect
5	NC	-	No Connect
6	GND	Power Supply	Ground
7	VDD	Power Supply	Power Supply for LCD and logic (2.8V)
8	/CS	MPU	Active LOW Chip Select signal
9	RS	MPU	Register Select: 0= write command, 1= write data
10	/WR	MPU	Active low Write signal
11	/RD	MPU	Active low Read signal
12	D0	MPU	Bi-directional data bus lines
13	D1	MPU	
14	D2	MPU	
15	D3	MPU	
16	D4	MPU	
17	D5	MPU	
18	D6	MPU	
19	D7	MPU	
20	/RST	MPU	Active LOW Reset signal
21	GND	Power Supply	Ground
22	NC	-	No Connect
23	LED+	Power Supply	Backlight Anode
24	NC	-	No Connect
25	LED-	Power Supply	Backlight Cathode

LCD connector: Hot-bar solder directly to PCB

Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Temperature Range	Top	Absolute Max	-20	25	+70	°C
Storage Temperature Range	Tst	Absolute Max	-30	25	+80	°C
Supply Voltage	VDD		2.3	2.8	3.3	V
Supply Current	IDD	VCC=2.8V		25.5		mA
"H" Level input	Vih		0.8VDD		VDD	V
"L" Level input	Vil		0		0.2VDD	V
"H" Level output	Voh		0.8VDD		VDD	V
"L" Level output	Vol		0		0.2VDD	V
Backlight Supply Voltage	Vled			3.2		V
Backlight Supply Current	Iled			25		mA
Brightness		Iled=25mA	140	180		cd/m2

Optical Characteristics

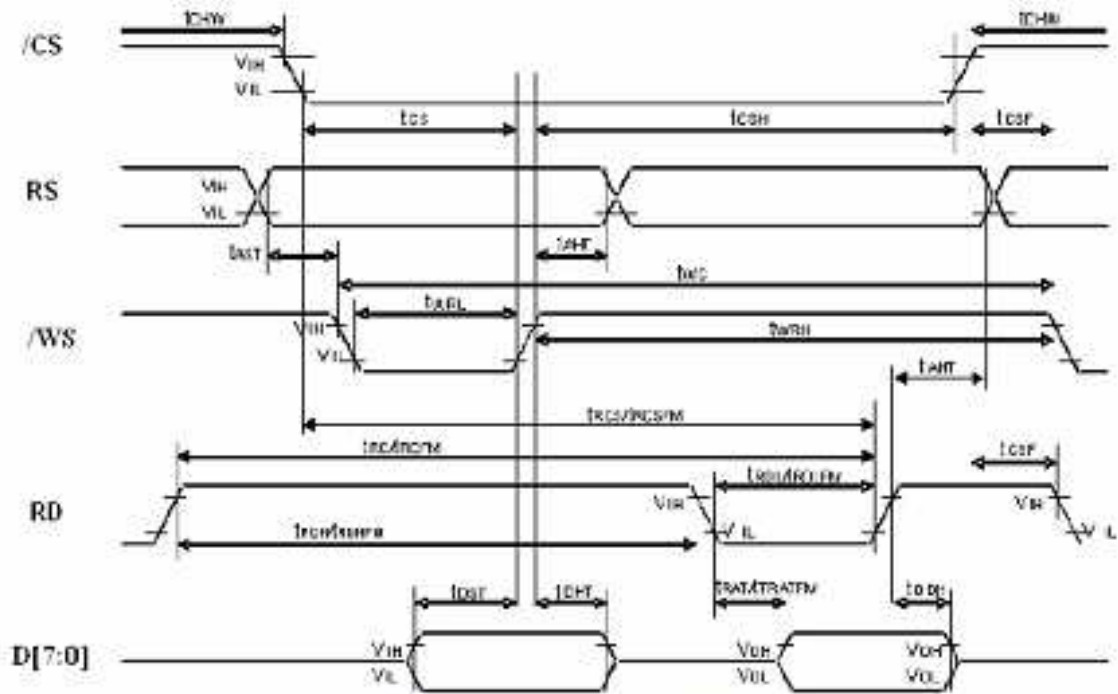
Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Viewing Angle –Top		Cr ≥ 10	-	70	-	°
Viewing Angle –Bottom		Cr ≥ 10	-	55	-	°
Viewing Angle – Left		Cr ≥ 10	-	70	-	°
Viewing Angle –Right		Cr ≥ 10	-	70	-	°
Contrast Ratio	Cr		400	500	-	-
Response Time (rise)	Tr		-	30	-	ms
Response Time (fall)	Tr		-	30	-	ms

Driver Information

Built-in HX8353D driver.

Download specification at http://www.newhavendisplay.com/app_notes/HX8353D.pdf

8080 MPU Parallel Interface:



CPU Interface Characteristics

Timing Parameter

Normal Write Mode

Signal	Symbol	Parameter	Min.	Max.	Unit	Description
RS	t _{RST}	Address setup time	0	-	ns	-
	t _{AHT}	Address hold time (Write/Read)	10	-	ns	-
/CS	t _{CHW}	Chip select "H" pulse width	0	-	-	-
	t _{CS}	Chip select setup time (Write)	15	-	-	-
	t _{RCS}	Chip select setup time (Read ID)	45	-	ns	-
	t _{RCSFM}	Chip select setup time (Read FM)	355	-	-	-
	t _{CSF}	Chip select wait time (Write/Read)	10	-	-	-
/WS	t _{CSH}	Chip select hold time	10	-	-	-
	t _{WC}	Write cycle	66	-	ns	-
	t _{WRH} t _{WRL}	Control pulse "H" duration Control pulse "L" duration	15 15	-	-	-
RD	t _{AC}	Read cycle (ID)	160	-	ns	-
	t _{RCH} t _{RCL}	Control pulse "H" duration (ID) Control pulse "L" duration (ID)	90 45	-	-	When read ID data
	t _{RCFM} t _{RDHFM} t _{RDLFM}	Read cycle (FM) Control pulse "H" duration (FM) Control pulse "L" duration (FM)	450 90 355	-	ns	When read from frame memory
D7 to D0	t _{DST}	Data setup time	10	-	-	-
	t _{DHT}	Data hold time	10	-	-	-
	t _{RAT}	Read access time (ID)	-	40	ns	For maximum C _L =30pF
	t _{RATFM}	Read access time (FM)	-	340	-	For minimum C _L =8pF
	t _{ODH}	Output disable time	20	80	-	-

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 , 240hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C , 240hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (voltage & current) and the high thermal stress for a long time.	+70°C , 240hrs	2
Low Temperature Operation	Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.	-20°C , 240hrs	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 , 240hrs	1,2
Thermal Shock resistance	Endurance test applying the electric stress (voltage & current) during a cycle of low and high thermal stress.	-30°C 30 min~+80°C 30 min, Change time:5min, 20 Cycles	
Vibration test	Endurance test applying vibration to simulate transportation and use.	10-55Hz , 1.5mm amplitude. 2 hours in each of 3 directions X,Y,Z. For 6 hours total	3
Static electricity test	Endurance test applying electric static discharge.	VS=4KV, RS=330kΩ, CS=150pF Five 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.

Precautions for using LCDs/LCMs

See Precautions at www.newhavendisplay.com/specs/precautions.pdf

Warranty Information

See Terms & Conditions at http://www.newhavendisplay.com/index.php?main_page=terms