



User's Guide

NHD-3.5-320240YF-ATXL#-T

LCM

(Liquid Crystal Display Module)

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LCD Module Specification

General Specification

Item	Standard	Unit
No. of Pixels	320(RGB)*240	DOTS
Outline Size	76.9*63.8*4.4	mm
Viewing Area	72.88(W)*55.4(H)	mm
Active Area	70.08(W)*52.56(H)	mm
Pixel Size	0.073(W)*0.212(H)	mm
Pixel Pitch	0.219(W)*0.219(H)	mm
Viewing Direction	12 O'clock	--
LCD Type	TFT、Positive、Transmissive	--
Controller	HX8238	--
LCM	COG	--

LCD Module Specification

Absolute Maximum Ratings

Item		Symbol	Min.	Typ	Max.	Unit
Operating Temp		T _{OP}	-20	-	+70	°C
Storage Temp		T _{ST}	-30	-	+80	°C
Input Voltage		V _I	-0.3	-	+5.0	V
Power Supply for Logic	HX8238 X8615	V _{DD}	-0.3	2.2	+2.7	V

Electrical Characteristic

Item	Symbol	Min.	Typ	Max.	Unit
Power Supply for Logic	V _{DD} -V _{SS}	1.8	--	2.5	V
TFT Driving voltage	V _{GH}	--	15.0	--	V
	V _{GL}		-10		
TFT Common Voltage	V _{COMH}	2.5		4	V
	V _{COML}	-1.5		0	
Input High Voltage	V _{IH}	0.7V _{dd}	--	V _{dd}	V
Input Low Voltage	V _{IL}	0	--	0.3V _{dd}	V
Output High Voltage	V _{OH}	0.8V _{dd}	--	V _{dd}	V
Output Low Voltage	V _{OL}	0	--	0.2V _{dd}	V
Current Consumption	I _{DD}	--	--	13	mA

Electric-Optical characteristics(FSTN)

Item	Symbol	Condition	Min.	Typ	Max.	Unit
Viewing angle(V)	θ	CR ≥ 2	15	--	35	Deg
Viewing angle(H)	Ψ	CR ≥ 2	45	--	45	Deg
Contrast	Cr	--	150	200	--	--
Response Time	t _r	T _a =25°C	--	15	30	ms
	t _d	T _a =25°C	--	35	50	ms

LCD Module Specification

Interface Pin Assignment

Pin No.	Pin Out	Signal	Description
1,2	VBL-	I	Backlight power connect with ground
3,4	VBL+	I	Backlight power supply +19.6V
5,6	NC	NC	No connection
7	POL	O	Polarity for select for the line inversion control signal
8	RESET	I	Reset
9	SPENA	I	Serial Port Data Enable Signal. Normally pull high
10	SPCLK	I	Serial Port Clock. Normally pull high
11	SPDAT	I/O	Data signal of serial connection
12	B0	I	Data bus of parallel connection B
13	B1	I	Data bus of parallel connection B
14	B2	I	Data bus of parallel connection B
15	B3	I	Data bus of parallel connection B
16	B4	I	Data bus of parallel connection B
17	B5	I	Data bus of parallel connection B
18	B6	I	Data bus of parallel connection B
19	B7	I	Data bus of parallel connection B
20	G0	I	Data bus of parallel connection G
21	G1	I	Data bus of parallel connection G
22	G2	I	Data bus of parallel connection G
23	G3	I	Data bus of parallel connection G
24	G4	I	Data bus of parallel connection G
25	G5	I	Data bus of parallel connection G
26	G6	I	Data bus of parallel connection G
27	G7	I	Data bus of parallel connection G
28	R0	I	Data bus of parallel connection R
29	R1	I	Data bus of parallel connection R
30	R2	I	Data bus of parallel connection R
31	R3	I	Data bus of parallel connection R
32	R4	I	Data bus of parallel connection R
33	R5	I	Data bus of parallel connection R
34	R6	I	Data bus of parallel connection R
35	R7	I	Data bus of parallel connection R
36	HSYNC	O	OSD Hsync output signal
37	VSYNC	O	OSD Vsync output signal
38	DCLK	O	OSD Clock Signal
39,40	AVDD	I	Analog power supply (2.5~3.6V)
41,42	DVDD	I	Digital power supply (1.8~2.5V)

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43,44	NC		No connection
45	VGL	I	No connection
46	NC		No connection
47	VGH	I	No connection
48,49,50	NC		No connection
51	VCOM	I	No connection
52	ENB	I	Data enable signal
53,54	GND	I	Ground

