

SPECIFICATION OF LCD MODULE

PRODUCT NO.: LVC75Z779

1. Mechanical Specification

1.1 Description

The part number LVC75Z779 is a transmissive TFT active matrix color liquid crystal display (LCD) comprising an amorphous silicon TFT attached to each signal electrode. This model consists of TFT-LCD module, a driver circuit, a backlight unit, and a Touch Panel. The resolution of a 3.5" contains 320x240 pixels and it can display up to 16.7million colors.

1.2 Features

- Transmissive type with backlight unit of six white LEDs
- Support up to digital 24-bits parallel RGB interface
- Serial Peripheral Interface (SPI) for driver setup
- Source and gate driver IC is Himax HX8238

1.3 Applications

Designed for camcorder, digital camera, PDA, and other electronic products which require high quality flat panel displays.

1.4 General Information

Item	Description	Unit
LCD Type	3.5" TFT-LCD	
Active Area	70.08(H)*52.56(V)	mm
LCD Type	Transmissive	
Driving IC	HX8238	
Display Color	16.7 million	color
Number of Pixel	320(H)*RGB*240(V)	pixel
Pixel Pitch	0.073*3(H)*0.219(V)	mm
Display Mode	Normally white	
Viewing Direction	6	O' clock

1.5 Mechanical Information (Module Size)

Item	Min.	Typ.	Max.	Unit
Horizontal(H)	76.7	76.9	77.1	mm
Vertical(V)	63.7	63.9	64.1	mm
Depth(D)	-	-	4.6	mm
Weight	-	39.7	-	g

2. Absolute Maximum Ratings

2.1 Absolute Rating of Environment

Item	Value	Unit	Note
Operating temperature	-10 to 60	° C	
Storage temperature	-20 to 70	° C	

2.2 Electrical Absolute Ratings ⁽¹⁾

Item	Symbol	Condition	Min.	Max.	Unit
Power Voltage	V_{cc}	GND=0	2.5	3.6	V
Input Signal Voltage	V_{in}	GND=0	2.5	3.6	V
Logic Output Voltage	V_{out}	GND=0	-	5	V

Note (1): Device is subject to be damaged if stressed beyond these absolute maximum ratings

2.3 Backlight Unit

Item	Symbol	Min	Max	Unit	Note
Current	I_F	-	20	mA	

3. Electrical Characteristics

3.1 TFT-LCD Module Operating Conditions

Item	Symbol	Min.	Typ.	Max.	Unit
Power Voltage	V_{CC}	2.5	-	3.6	V
Low Level Input Voltage	V_{IL}	0	-	$0.2V_{CC}$	V
High Level Input Voltage	V_{IH}	$0.8V_{CC}$	-	V_{CC}	V

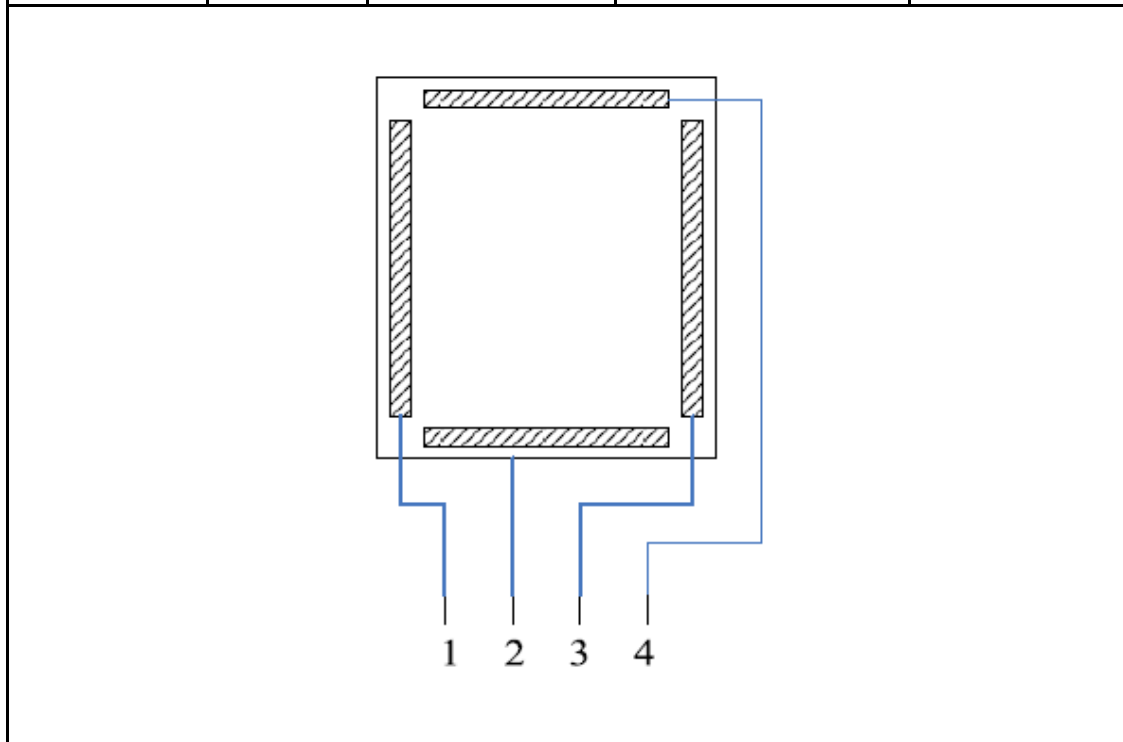
3.2 Backlight Unit Electrical Characteristics (Operating temperature at 25° C)

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V_F	-	19.2	-	V	$I_F = 20\text{mA}$
Power Consumption	P_{WF}	-	384	-	mW	-

3.3 Driving Touch Panel (Analog resistance type)

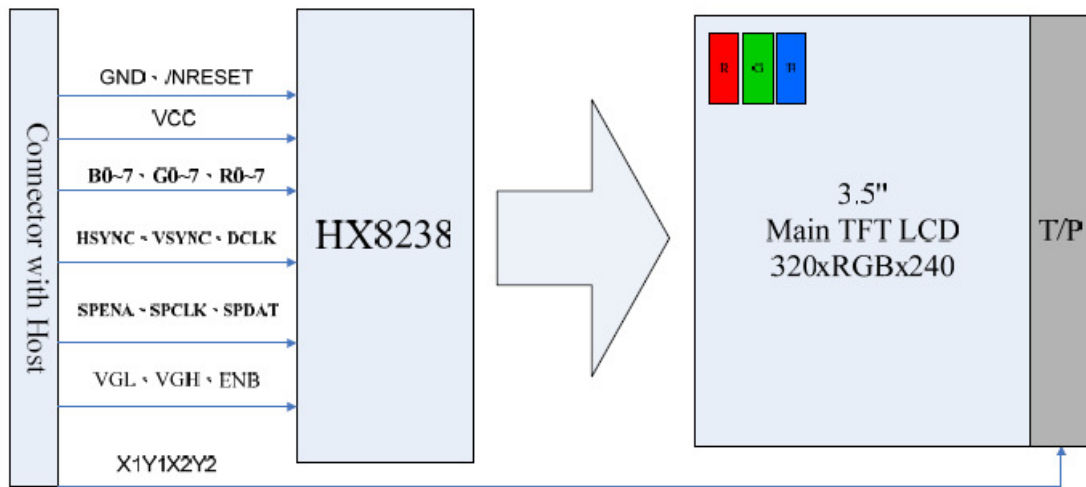
Item	Min.	Typ.	Max.	Unit
Terminal resistance (XL~XR)	200	-	900	Ω
Terminal resistance (YU~YD)	200	-	900	Ω
Operation Voltage	-	5	-	V
Linearity	-1.5	-	1.5	%
Transparency	80	-	-	%

TP Pin No.	Symbol	Module Pin No.	Module Pin. Name	Description
1	XL	11	X2(XL)	Left Side
2	YD	10	Y2(YD)	Lower Side
3	XR	9	X1(XR)	Right Side
4	YU	8	Y1(YU)	Upper Side



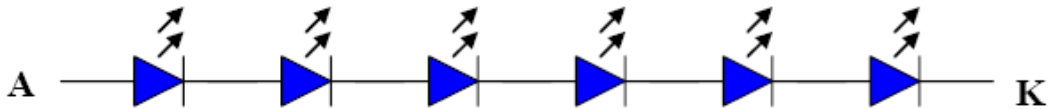
4. Block Diagram

4.1 Logical Diagram for Display Panel



4.2 Backlight Unit

Typical $I_F = 20\text{mA}$

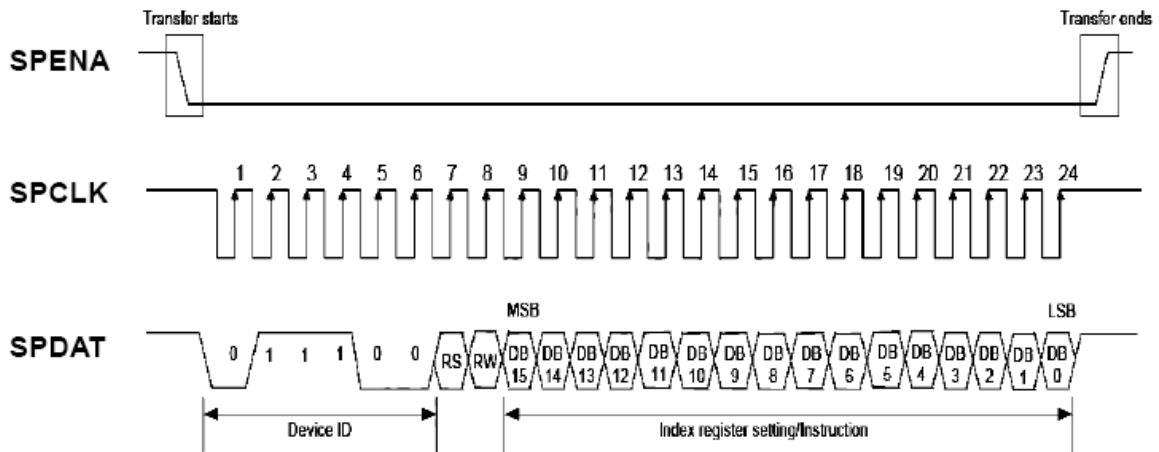


5. Pin Assignment

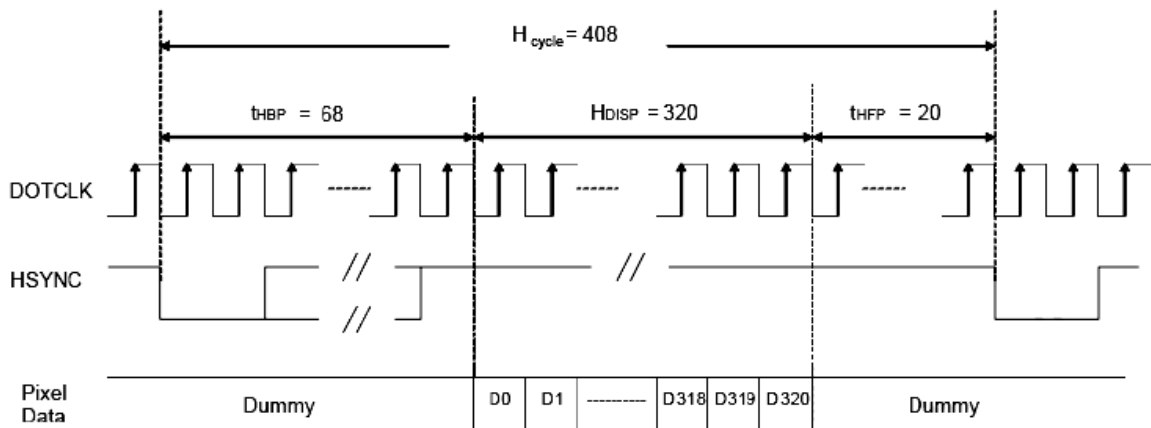
Pin No.	Pin Name	Description	Type of I/O
1	VBL-	LED Cathode	P
2	VBL-	LED Cathode	P
3	VBL+	LED Anode	P
4	VBL+	LED Anode	P
5	NC		
6	/RESET	Reset Signal	I
7	NC		
8	Y1(YU)	Touch Panel Connection	I/O
9	X1(XR)	Touch Panel Connection	I/O
10	Y2(YD)	Touch Panel Connection	I/O
11	X2(XL)	Touch Panel Connection	I/O
12	B0	Blue Data (LSB)	I
13	B1	Blue Data	I
14	B2	Blue Data	I
15	B3	Blue Data	I
16	B4	Blue Data	I
17	B5	Blue Data	I
18	B6	Blue Data	I
19	B7	Blue Data (MSB)	I
20	G0	Green Data (LSB)	I
21	G1	Green Data	I
22	G2	Green Data	I
23	G3	Green Data	I
24	G4	Green Data	I
25	G5	Green Data	I
26	G6	Green Data	I
27	G7	Green Data (MSB)	I
28	R0	Red Data (LSB)	I
29	R1	Red Data	I
30	R2	Red Data	I
31	R3	Red Data	I
32	R4	Red Data	I
33	R5	Red Data	I
34	R6	Red Data	I
35	R7	Red Data (MSB)	I

36	HSYNC	Horizontal Synchronous Signal	I
37	VSYNC	Vertical Synchronous Signal	I
38	DCLK	Data Clock (Dot Clock)	I
39	NC		
40	NC		
41	V _{CC}	Digital Voltage (2.5~3.6V)	P
42	V _{CC}	Digital Voltage (2.5~3.6V)	P
43	SPENA	Chip Select for Serial Port	I
44	NC		
45	NC		
46	NC		
47	NC		
48	GND	Ground	P
49	SPCLK	Serial Port Clock	I
50	SPDAT	Serial Port Data Input/Output	I/O
51	NC		
52	ENB	Data Enable Signal	I
53	GND	GROUND	P
54	GND	GROUND	P

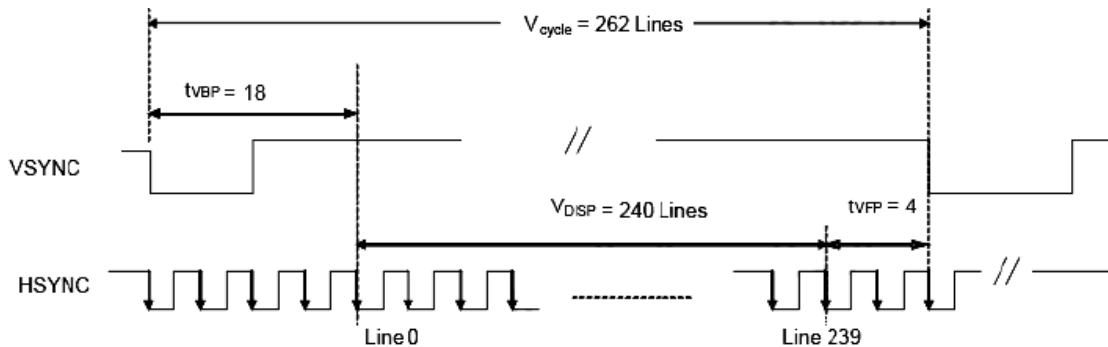
6. Serial Interface



SPI Timing



a) Horizontal Data Transaction Timing



b) Vertical Data Transaction Timing

Data transaction timing in parallel RGB (24 bit) interface (SYNC mode)

6.1 Timing

Characteristics	Symbol	Min		Typ		Max		Unit
		24 bit	8 bit	24 bit	8 bit	24 bit	8 bit	
DOTCLK Frequency	fDOTCLK	-	-	6.5	19.5	10	30	MHz
DOTCLK Period	tDOTCLK	100	33.3	154	51.3	-	-	ns
Horizontal Frequency (Line)	fH	-		14.9		22.35		KHz
Vertical Frequency (refresh)	fV	-		60		90		Hz
Horizontal Back Porch	tHBP	-	-	68	204	-	-	tDOTCLK
Horizontal Front Porch	tHFP	-	-	20	60	-	-	tDOTCLK
Horizontal Data Start Point	tHBP	-	-	68	204	-	-	tDOTCLK
Horizontal Blanking Period	tHBP+tHFP	-	-	88	264	-	-	tDOTCLK
Horizontal Display Area	HDISP	-	-	320	960	-	-	tDOTCLK
Horizontal Cycle	Hcycle	-	-	408	1224	450	1350	tDOTCLK
Vertical Back Porch	tVBP	-		18		-		Lines
Vertical Front Porch	tVFP	-		4		-		Lines
Vertical Data Start Point	tVBP	-		18		-		Lines
Vertical Blanking Period	tVBP+tVFP	-		22		-		Lines
Vertical Display Area	VDISP	-		240		-		Lines
Vertical Cycle	Vcycle	-		262		350		Lines

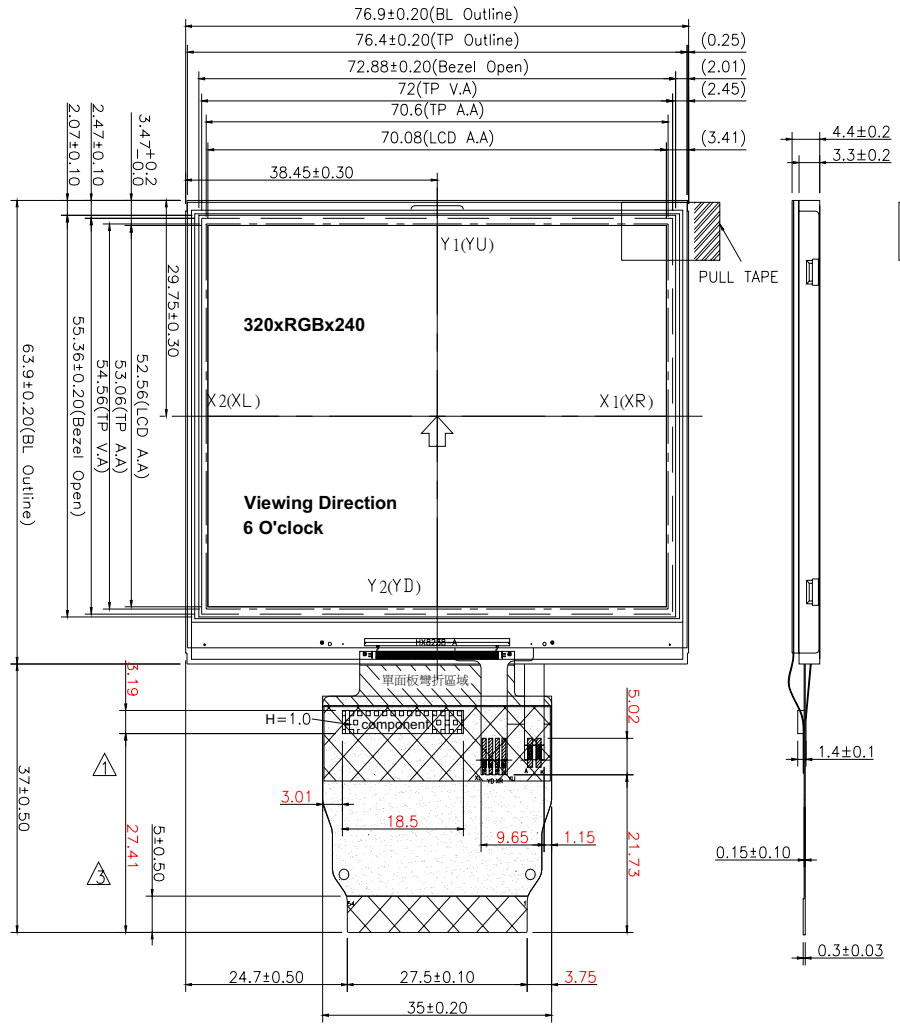
1 2 3 4 5 6

A A

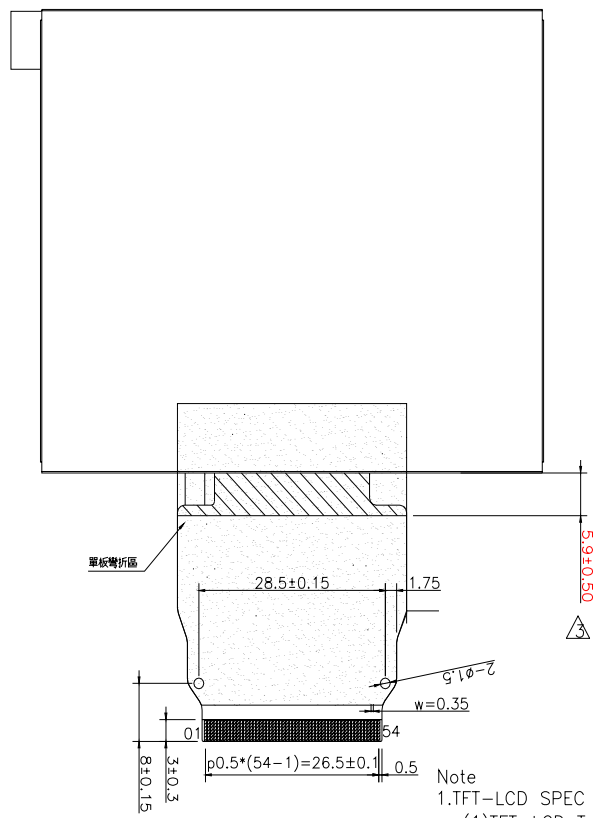
B B

C C

D D



REVISION				
ZONE	REV	DESCRIPTION	DATA	APPR.
△	A2	增加尺寸標註	06/07	Jenny
△	A3	修改PIN DESCRIPTION	06/08	Jenny
△	A4	變更零件區	06/20	Jenny



Note
 1.TFT-LCD SPEC
 (1)TFT-LCD Type: TFT-LCD QVGA Color
 (2)Driver IC: HX8238-A
 (3)Viewing Direction:6 O'Clocks
 2.Backlight Unit SPEC
 (1)White LED 6 CHIP
 3.Operation TEMP: -10°C~60°C
 4.Storage TEMP: -20°C~70°C

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Pin Description											
Pin No	Pin Name	Pin No	Pin Name	Pin No	Pin Name	Pin No	Pin Name	Pin No	Pin Name	Pin No	Pin Name
1	VBL-	11	X2(XL)	21	G1	31	R3	41	VCC	51	NC
2		12	B0	22	G2	32	R4	42	VCC	52	ENB
3	VBL+	13	B1	23	G3	33	R5	43	SPENA	53	GND
4		14	B2	24	G4	34	R6	44	NC	54	GND
5	NC	15	B3	25	G5	35	R7	45	NC		
6	/RESET	16	B4	26	G6	36	HSYNC	46	NC		
7	NC	17	B5	27	G7	37	VSYNC	47	NC		
8	Y1(YU)	18	B6	28	R0	38	DCLK	48	GND	△	
9	X1(XR)	19	B7	29	R1	39	NC	49	SPCLK		
10	Y2(YD)	20	G0	30	R2	40	NC	50	SPDAT		

TP Pin Description	
Pin No	Pin Name
1	XL
2	YD
3	XR
4	YU

1 2 3 4 5 6