CHIMEI INNOLUX DISPLAY CORPORATION

LCD MODULE

APPLICATION NOTE

Customer:	
LCD SIZE:	5.0''H
Date:	2010/01/25
Version:	A

Remark
■ **Without PCB High Resolution**

Approved by	Reviewed by	Prepared by
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2010/01/25	2010/01/25	2010/01/25

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Record of Revision

Version	Revise Date	Page	Content
A	2010/01/25		Initial Release

1. Module Introduction

1.1 Module Photo

Module name	Top side	Bottom side
AT050TN43 V.1		
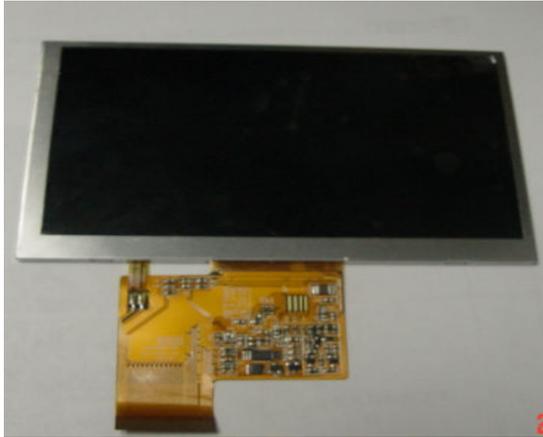
1.2 Module Comparison Table

Module name	TSP	Brightness(nit)	Pin Num.	Recommended Connector
AT050TN43 V.1	Without	350	40 Pin	FH19SC-40S-0.5SH

2. Pin Assignment Comparison Table

Pin No.	Symbol	I/O	Function	Remark
1	V_{LED-}	P	Power for LED backlight cathode	
2	V_{LED+}	P	Power for LED backlight anode	
3	GND	P	Power ground	
4	V_{DD}	P	Power voltage	
5	R0	I	Red data (LSB)	

6	R1	I	Red data	
7	R2	I	Red data	
8	R3	I	Red data	
9	R4	I	Red data	
10	R5	I	Red data	
11	R6	I	Red data	
12	R7	I	Red data (MSB)	
13	G0	I	Green data (LSB)	
14	G1	I	Green data	
15	G2	I	Green data	
16	G3	I	Green data	
17	G4	I	Green data	
18	G5	I	Green data	
19	G6	I	Green data	
20	G7	I	Green data (MSB)	
21	B0	I	Blue data (LSB)	
22	B1	I	Blue data	
23	B2	I	Blue data	
24	B3	I	Blue data	
25	B4	I	Blue data	
26	B5	I	Blue data	
27	B6	I	Blue data	
28	B7	I	Blue data (MSB)	

29	GND	P	Power ground	
30	CLK	I	Pixel clock	
31	DISP	I	Display on/off	
32	NC	-	No connection	
33	NC	-	No connection	
34	DE	I	Data Enable	
35	NC	-	No Connector	
36	GND	P	Power ground	
37	NC	-	No Connector	
38	NC	-	No Connector	
39	NC	-	No Connector	
40	NC	-	No Connector	

3. Power &Timing Characteristic

3.1. Power sequence

Customer should follow our product power sequence, other it would lead to display abnormal, please refer to the figures as below.

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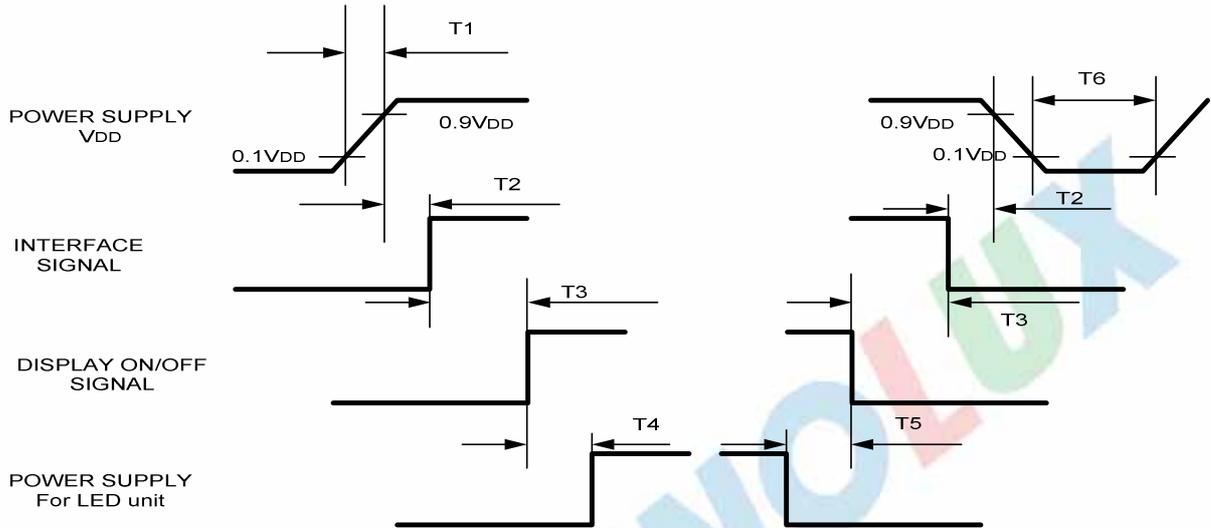
Symbol	Specification	Symbol	Specification
T1	$0 \leq T1 \leq 10$ msec	T4	200 msec $\leq T4$
T2	$16 \leq T2 \leq 100$ msec	T5	100 msec $\leq T5$
T3	$0 \leq T3 \leq 200$ msec	T6	16 msec $\leq T6$

3.2 Power Operation Conditions

Customer should notice the red mark specially, if you do not follow it, it would lead to display abnormal.

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power voltage	V_{DD}	3.1	3.3	3.5	V	
Current for Driver	I_{DD}	-	TBD	TBD	mA	$V_{DD} = 3.3V$
Input logic high voltage	V_{IH}	$0.7\ V_{DD}$	-	V_{DD}	V	Note 1
Input logic low voltage	V_{IL}	GND	-	$0.3\ V_{DD}$	V	

Note: CLK, DE, R0~ R7, G0~ G7, B0~ B7.

3.3 Timing Description

Our LCM has integrated T-con IC into our driver IC, so customer only input DCLK, DE and R/G/B data signals to our LCM from their system solution. But these signals must follow our timing specification. Otherwise the LCM will display abnormally.

We provide the Timing Drawing and Timing Timing Formula for customer to how to set their parameters of LCD controller. About the detail timing parameters of LCD display, please follow the product specification.
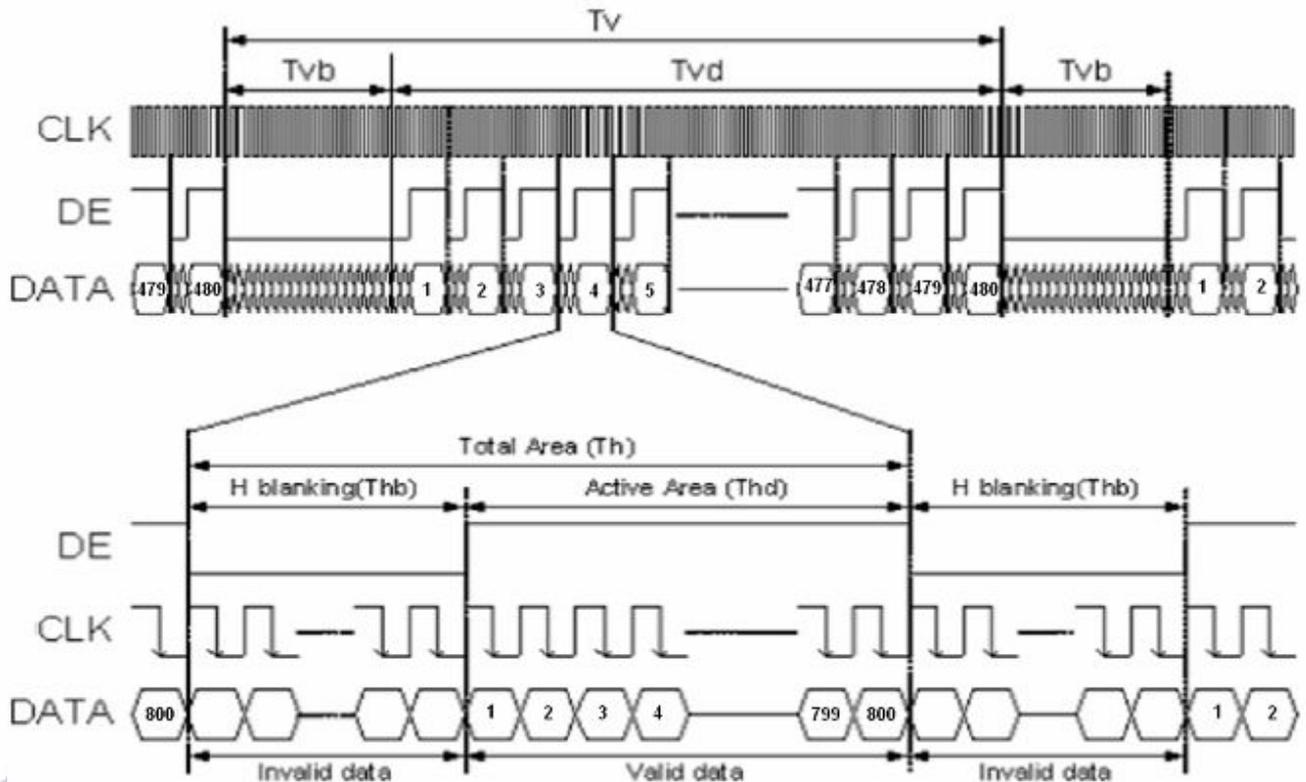
Timing Formula:

DCLK = (Tvd+Tvb)*(Thd+Thd)*Frame Rate   (Unit : Hz)
Fdeh =(Tvd+Tvb)* Frame Rate   (Unit: Hz)
Remark: 1. Fdeh is DEH frequency
        2. Parameter Table .

Parallel DE mode RGB input timing table(pls refr the note ,otherwise the display may be abnormal)

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
CLK frequency	fclk	26.4	33.3	46.8	MHz
DEV period time	Tv	510	525	650	H
DEV display area	Tvd	480 (Note)			H

DEV blanking	Tvb	30	45	170	H
DEH period time	Th	862	1056	1200	CLK
DEH display area	Thd	800			CLK
DEH blanking	Thb	62	256	400	CLK

Note: please set Tvd=481 or 482 for this work sample period. After this period, the setting will be modified.

4. Software Introduction

NA

5. Reference Circuit

5.1 Interface reference circuit

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5.2 Backlight Driver Reference Circuit
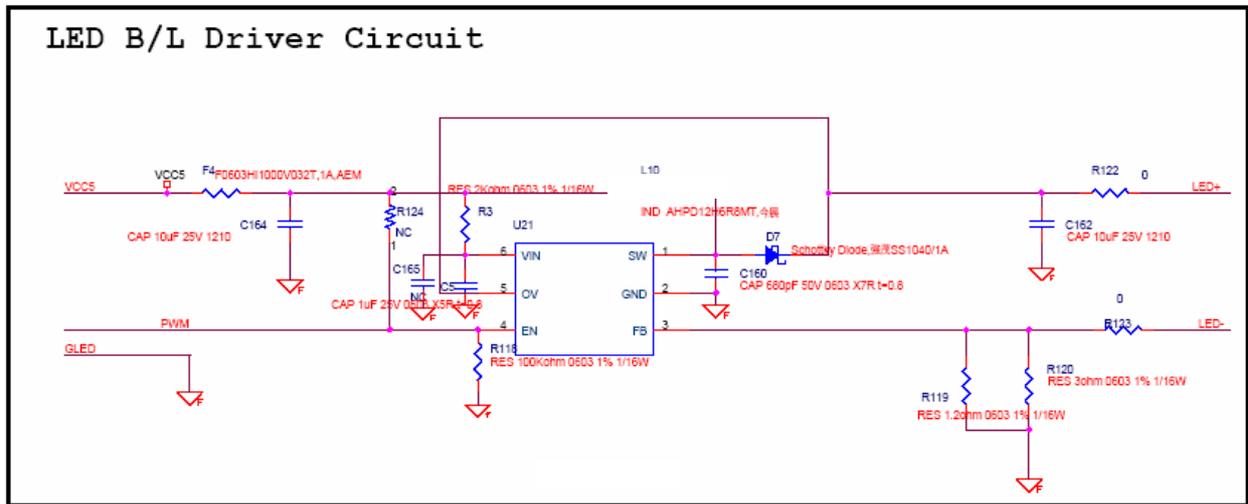
5.3 Vendor Recommend

Item	Vendor	Type	Remark
LED Driver	Fiti	FP6745	1.PWM frequency:100Hz~50KHz 2.Or other IC with the same function

6. Suggestions For Housing Design.

6.1 LCM corner /edge avoidable cutting.

If you design a avoidable cutting as the right drawing. LCM will easier to assemble in the housing.
When you use the LCM with TSP, the cutting will avoid damage the edge or corner of TSP during the assembly.

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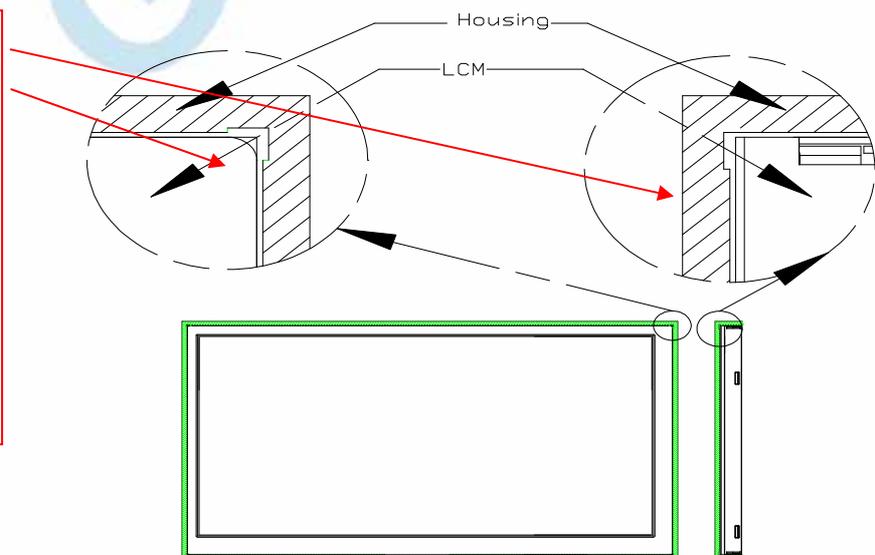
6.2 Housing Opening Design Guide.

6.2.1 With TSP

Because touch film is made of flexible PET, any unexpected touch with it would cause malfunction of touch panel. So here a sponge between touch panel and plastic housing is recommended for users. And the drawing will show you how to design the housing and sponge.
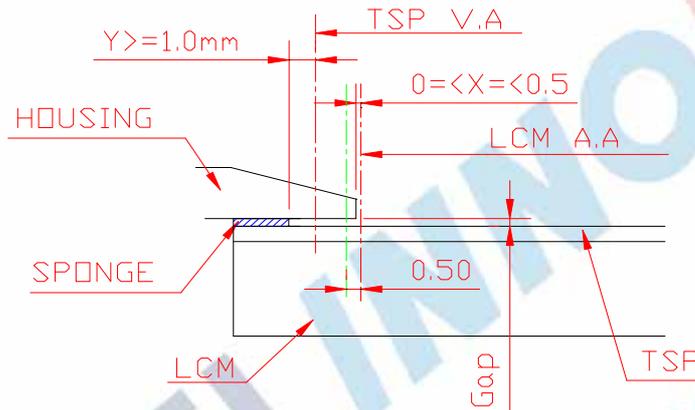
Section sketch (with TSP)

Notes: 1. X is the distance from LCM A.A to housing opening.
2. Y is the distance from TSP V.A to Sponge opening.
3. The active force will be bigger when you touch the area near the housing opening.
4. If you want to provide more protection for LCM, you can add same buffer material on the bottom of LCM.

6.2.2 Without TSP
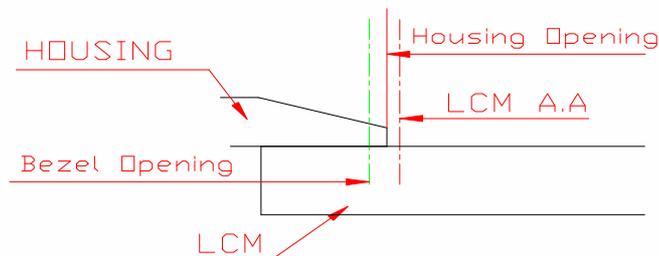
Section sketch(without TSP)

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Notes: 1. Housing opening must bigger than LCM A.A and cover the bezel .

2. If you want to provide more protection for LCM, you can add same buffer material on the top or bottom of LCM.

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