SPECIFICATION

Customer : _____

Model Name: SAT070BO50H18Y0-35100T070ZN

ERP NO. : 1010700532

Spec Vision: V.1

Date: 2020/04/01

■ **Preliminary Specification**

☐ **Final Specification**

Approved by	Comment

Prepared by	Reviewed by	Approved by

Record of Revision

Version	Revise Date	Page	Content	Modified by
V.1	2020.04.01	-	First Issued.	DWH

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Contents

1. General Specifications....4
2. Pin Assignment....5
3. Operation Specifications....6
3.1. Absolute Maximum Ratings....6
3.1.1. Typical Operation Range....6
3.1.2. Current Consumption....7
3.1.3. Backlight Driving Conditions....7
3.2. Power Sequence....8
3.3. Timing Characteristics....9
3.3.1. AC Electrical Characteristics....9
3.3.2. Input Clock and Date Timing Diagram....9
3.3.3. Timing....10
3.3.4. Date Input Format....11
4. Optical Specifications....12
5. Reliability Test Items....13
6. Mechanical Drawing....14
7. Package Drawing....15
8. Numbering System....16

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1. General Specifications

NO.	Item	Specification	Remark
1	Panel Size	7.0 inch(Diagonal)	
2	Resolution	1024 x 3(RGB) x 600	
3	Driver Method	A-Si TFT active matrix	
4	Active Area	154.2144(W) x 85.92(H) mm	
5	Dot Pitch	0.0502(W) x 0.1432(H) mm	
6	Pixel Arrangement	RGB-stripe	
7	Module Size	164.9(W)x100 (H) x3.3(D) mm	
8	Display Mode	Normally White	
9	Display Color	16.7M	
10	Viewing Direction	6 o'clock	
11	Interface	TTL	
12	Driving IC	EK79001+EK73215	
13	Weight	TBD	g

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2. Pin Assignment

No.	Symbol	Function	Remarks
1~2	VLED+	Power for LED backlight (anode)	
3~4	VLED-	Power for LED backlight (Cathode)	
5	GND	Power ground	
6	VCOM	Common Voltage	
7	DVDD	Power for Digital Circuit	
8	MODE	DE/sync mode select	
9	DE	Data input enable	
10	VS	Vertical Sync input	
11	HS	Horizontal Sync input	
12~19	B7~B0	Blue data	
20~27	G7~G0	Green data	
28~35	R7~R0	Red data	
36	GND	Power ground	
37	DCLK	Pixel clock	
38	GND	Power ground	
39	L/R	Left/right selection	
40	U/D	Up/Down selection	
41	VGH	Gate on Voltage	
42	VGL	Gate off Voltage	
43	AVDD	Power for Analog Circuit	
44	RESET	Global reset pin	
45	NC	No connection	
46	VCOM	Common Voltage	
47	DITHB	Dithering function	
48	GND	Power ground	
49~50	NC	No connection	

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3. Operation Specifications

3.1. Absolute Maximum Ratings

Voltage (AGND=GND=0V, Ta = 25℃)

Item	Symbol	Values		Unit	Remark
		Min.	Max.		
Power Voltage	VDD	-0.3	+3.96	V	
	AVDD	-0.5	+14.85	V	
	V_{GH}	-0.3	40	V	
	V_{GL}	-20.0	0.3	V	
	V_{GH}-V_{GL}	12	40.0	V	
Operating Temperature	T_{op}	-20	55	℃	
Storage Temperature	T_{st}	-20	60	℃	

Note: The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings case ,the module may be permanently destroyed.

3.1.1. Typical Operation Range

Item	Symbol	values			Unit
		Min.	Typ.	Max.	
Power Voltage	VDD	3.0	3.3	3.6	V
	AVDD	9.4	9.6	9.8	V
	VGH	17	18	19	V
	VGL	-7	-6	-5.4	V
Input signal voltage	VCOM	3.5	3.8	4.1	V

Note1:Be Sure to apply DVDD and VGL to the LCD first , and then apply VGH.
Note2:Please adjust vcom to make flicker level be minimum.

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3.1.2. Current Consumption

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current for Driver	I_{GH}	-	0.2	14	V	VGH=18.0V
	I_{GL}	-	0.2	50	mA	VGL=-6.0V
	I_{VDD}	-	15	-	mA	VDD=3.3V
	I_{AVDD}	-	15	-	mA	AVDD=9.6V

3.1.3. Backlight Driving Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage of white LED backlight	V_L	9.0	9.6	10.5	V
Current for LED backlight	I_L	90	120	150	mA
Luminance (on the module surface ,BM-7)		-	180	-	cd/m^2
LED life time	-	30000	-	-	Hr

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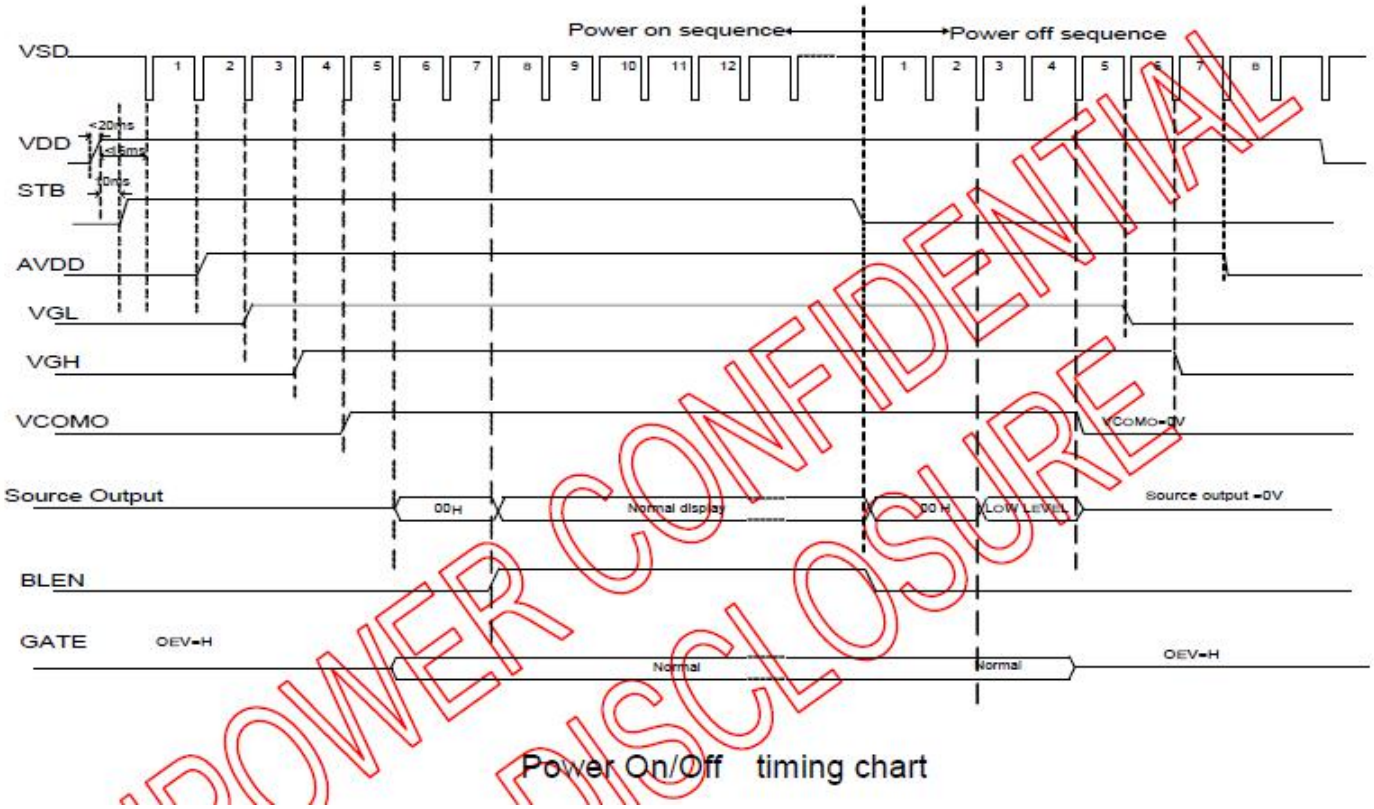
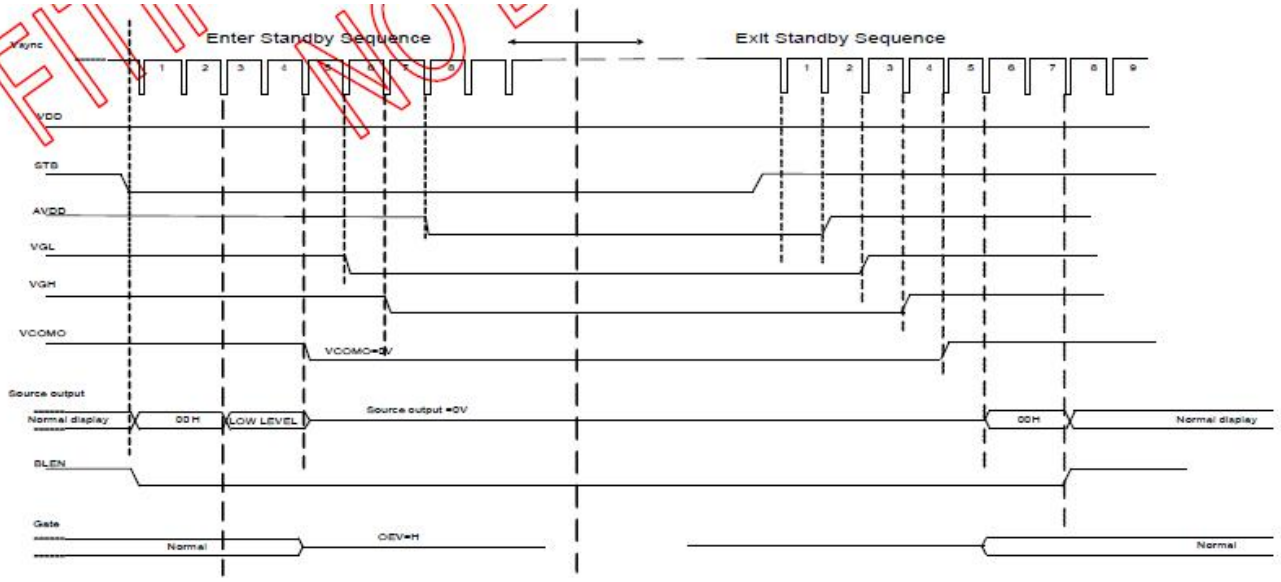
3.2. Power Sequence

In order to prevent IC from power on reset fail, the rising time (TPOR) of the digital power supply VDD should be maintained within the given specifications. Refer to “AC Characteristics” for more detail on timing



Power On/Off timing chart



Enter and Exit Standby Mode timing chart

Note: Low level=3Fh,when NBW=L(Normally white)
Low level=00h,when NBW=H(Normally black)

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3.3. Timing Characteristics

3.3.1. AC Electrical Characteristics

TTL mode

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
VDD Power On Slew rate	TPOR	From 0V to 90% VDD	1	-	20	ms
RST pulse width	TRST	DCLK = 65MHz	50	-	-	us
DCLK cycle time	Tcph	-	14	-	-	ns
DCLK pulse duty	Tcwh	-	40	50	60	%
VSD setup time	Tvst	-	5	-	-	ns
VSD hold time	Tvhd	-	5	-	-	ns
HSD setup time	Thst	-	5	-	-	ns
HSD hold time	Thhd	-	5	-	-	ns
Data set-up time	Tdsu	D0[7:0], D1[7:0], D2[7:0] to DCLK	5	-	-	ns
Data hold time	Tdhd	D0[7:0], D1[7:0], D2[7:0] to DCLK	5	-	-	ns
DE setup time	Tesu	-	5	-	-	ns
DE hold time	Tehd	-	5	-	-	ns
Output stable time	Tsst	Dual gate	-	-	3	us

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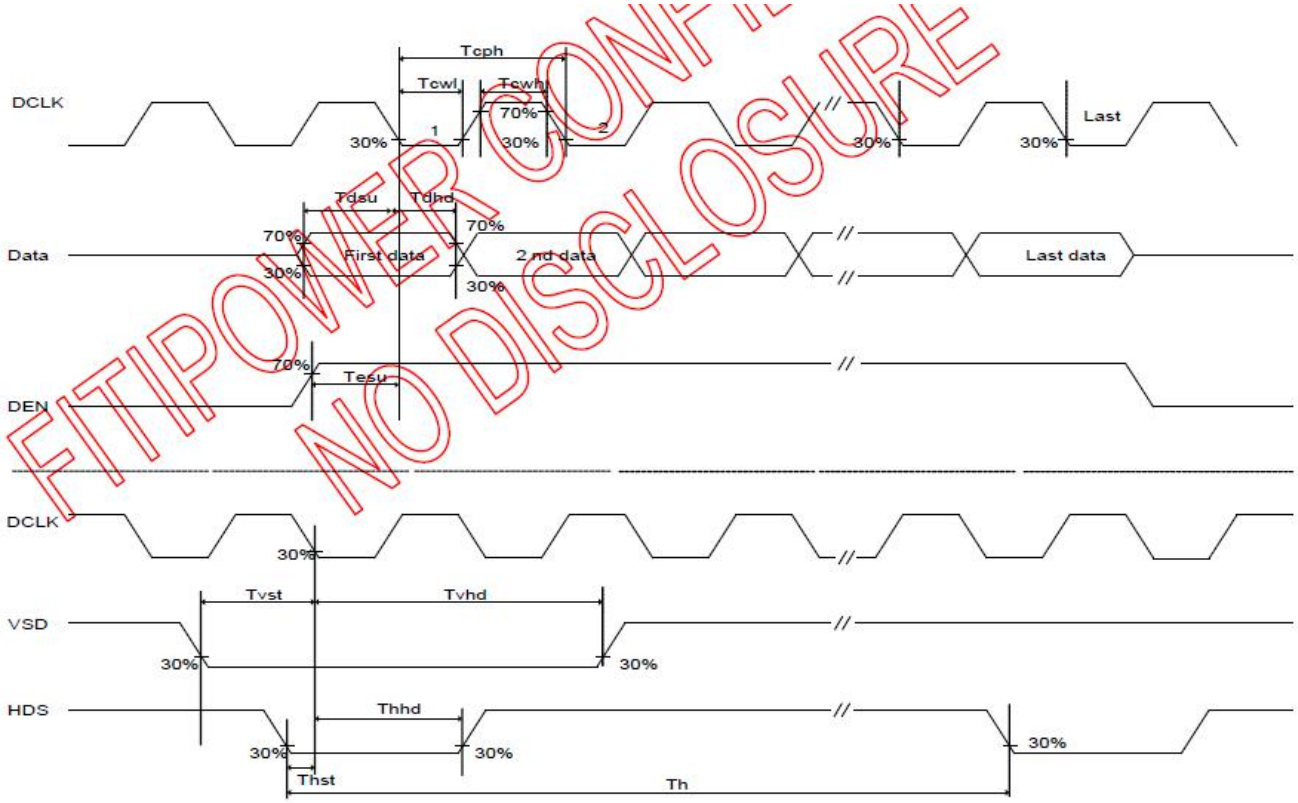
3.3.2. Input Clock and Date Timing Diagram



Parallel Input Clock and Data timing

3.3.3. Timing

DE mode

DE mode					
Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency @Frame rate=60hz	fclk	40.8	51.2	67.2	Mhz
Horizontal display area	thd		1024		DCLK
HSYNC period time	th	1114	1344	1400	DCLK
HSYNC blanking	thb+thfp	90	320	376	DCLK
Vertical display area	tvd		600		H
VSYNC period time	tv	610	635	800	H
VSYNC blanking	tvb+tvfp	10	35	200	H

HV mode(1)

HV mode Horizontal input timing						
Parameter		Symbol	Value			Unit
Horizontal display area		thd	1024			DCLK
DCLK frequency@ Frame rate=60hz		fclk	Min.	Typ.	Max.	
			44.9	51.2	63	Mhz
1 Horizontal Line		th	1200	1344	1400	DCLK
HSYNC pulse width	Min.	thpw	1			
	Typ.		—			
	Max.		140			
HSYNC back porch		thbp	160	160	160	
HSYNC front porch		thfp	16	160	216	

HV mode(2)

Vertical input timing					
Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Vertical display area	tvd		600		H
VSYNC period time	tv	624	635	750	H
VSYNC pulse width	tvpw	1	—	20	H
VSYNC back porch	tvb	23	23	23	H
VSYNC front porch	tvfp	1	12	127	H

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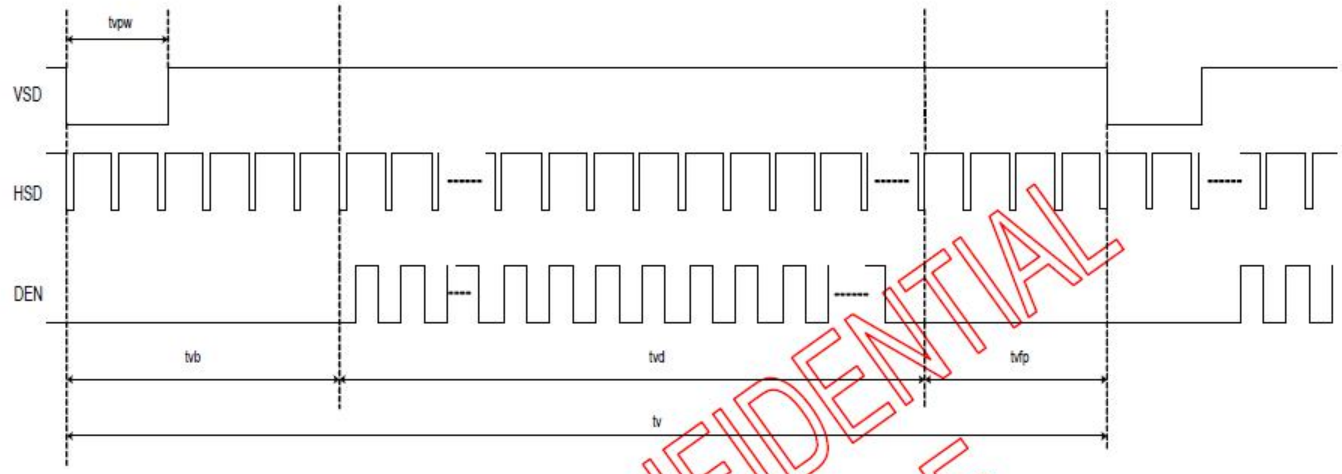
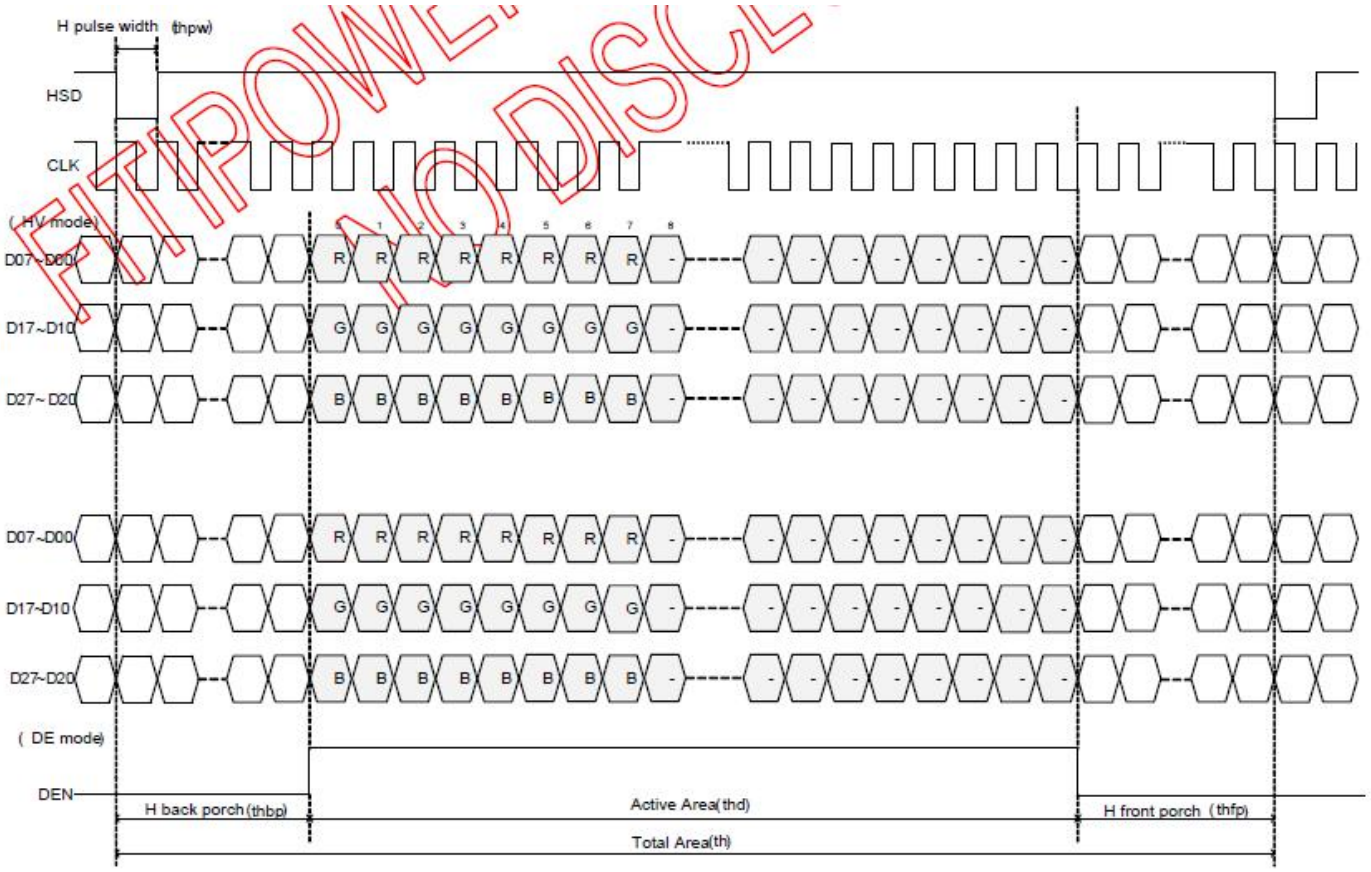
3.3.4. Date Input Format

Vertical input timing



Vertical input timing

Horizontal input timing



Horizontal input timing

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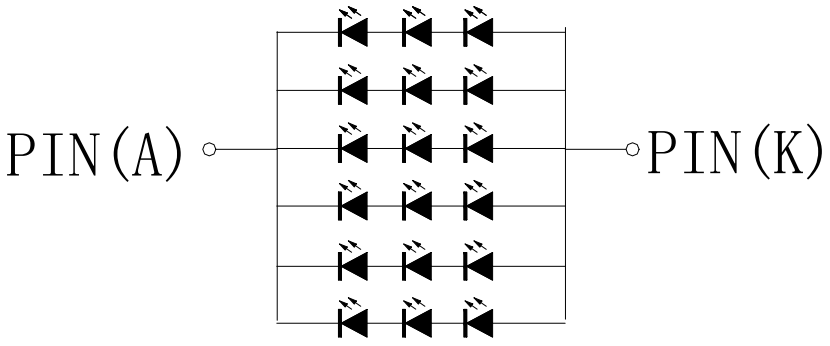
4. Optical Specifications

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Viewing Angle		θT	CR≥10	30	40	-	degree	-
		θB		40	50	-		
		θL		40	50	-		
		θR		40	50	-		
Contrast Ratio		CR	Θ=0°	300	500	-	-	-
Response Time		Ton	25℃	-	10	15	ms	-
		Toff		-	15	25	ms	-
Chromaticity	White	X	Backlight is on	0.255	0.285	0.315	-	-
		Y		0.300	0.330	0.360		
Luminance (center)		L		150	180	-	cd/m2	-
Luminance Uniformity		ΔL		75	80	-	%	-

Test Condition:

1、VDD=3.3V, IL=120mA(Backlight current)，the ambient temperature is 25℃.



电路原理图:
(If=120mA. Vf=9. 6V)

5. Reliability Test Items

Item	Test Conditions	Remark
High Temperature Storage	Ta=60℃ 120h	Note1 ,Note4
Low Temperature Storage	Ta=-20℃ 120h	Note1, Note4
High Temperature Operation	Ts=55℃ 120h	Note2 ,Note4
Low Temperature Operation	Ts=-20℃ 120h	Note4
Operation at High Temperature and Humidity	+60℃,90%RH 120h	Note4
Thermal Shock	-20℃/30min~+60℃/30min for a total 100 cycles， Start with cold temperature and end with high temperature	
Package Drop Test	Height 60cm 1corner ， 3edges ， 6surfaces	
Elector Static Discharge	±2KV,Human Body Mode，150pF/330Ω	

Note1:Ta is the ambient temperature of samples.

Note2: Ts is the temperature of panel's surfaces.

Note3: In the standard condition,there shall be no practical problem that may affect the display function.After the reliability test ,the product only guarantees operation,but don't guarantee all of the cosmetic specification.

Note4: before cosmetic and function test,the product must have enough recovery time,at least 2 hours at room temperature.

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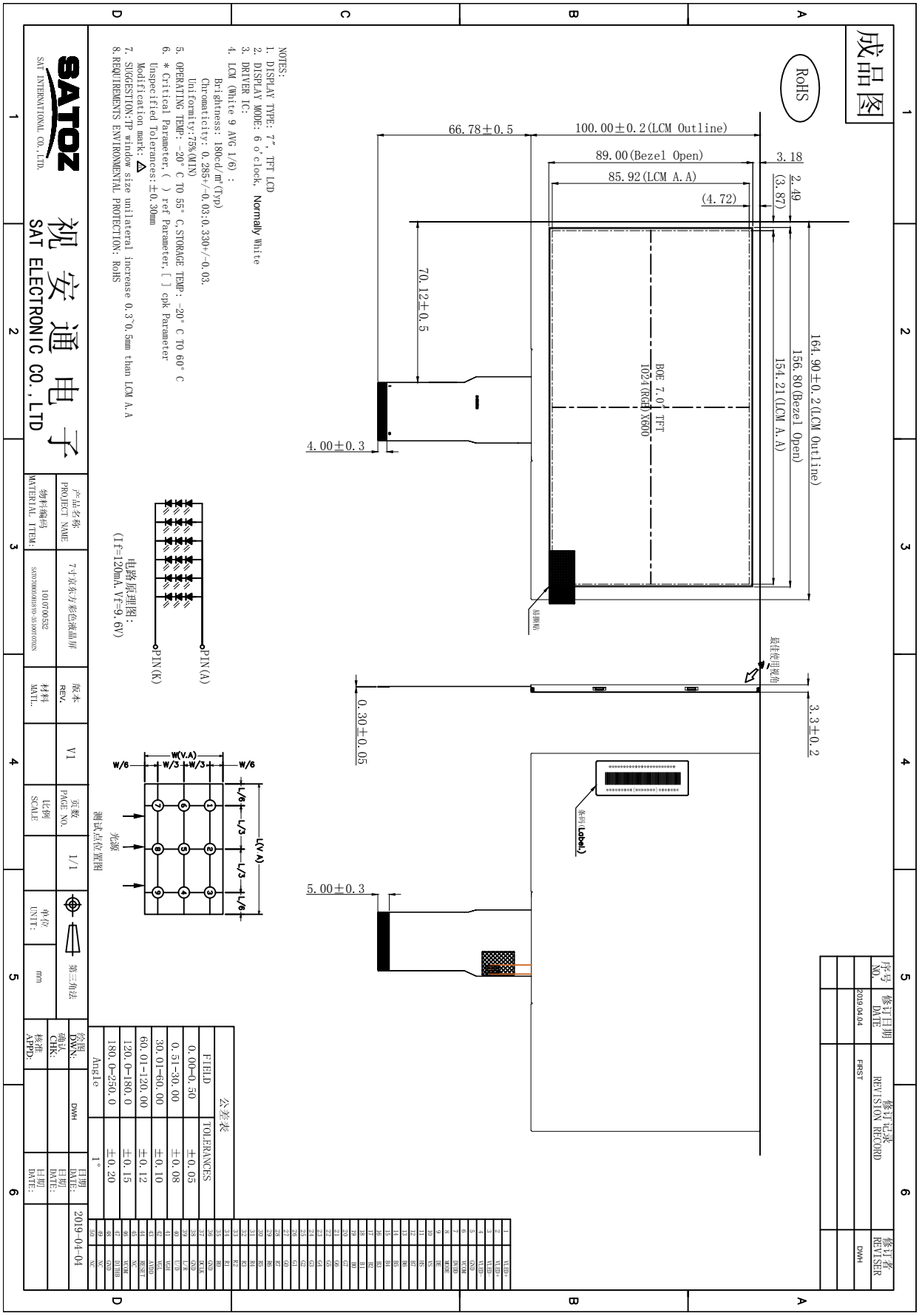
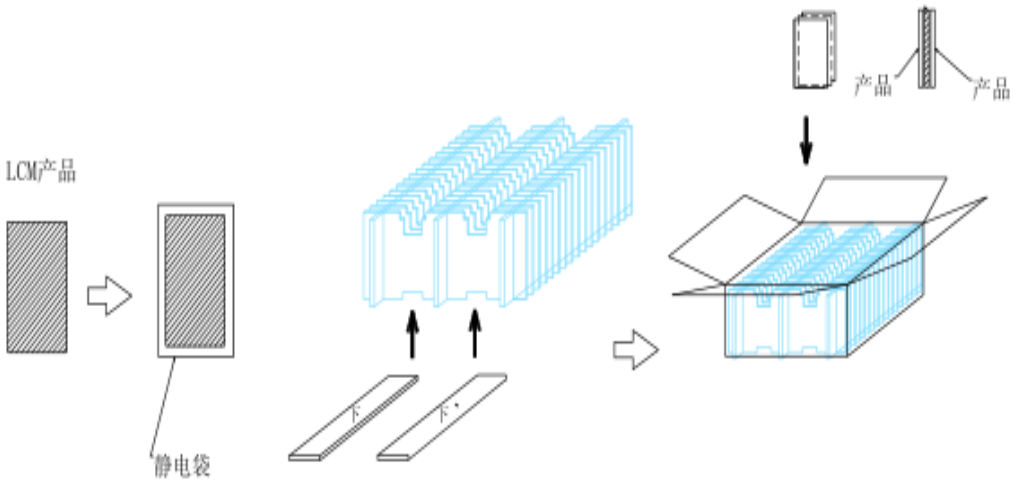
6. Mechanical Drawing



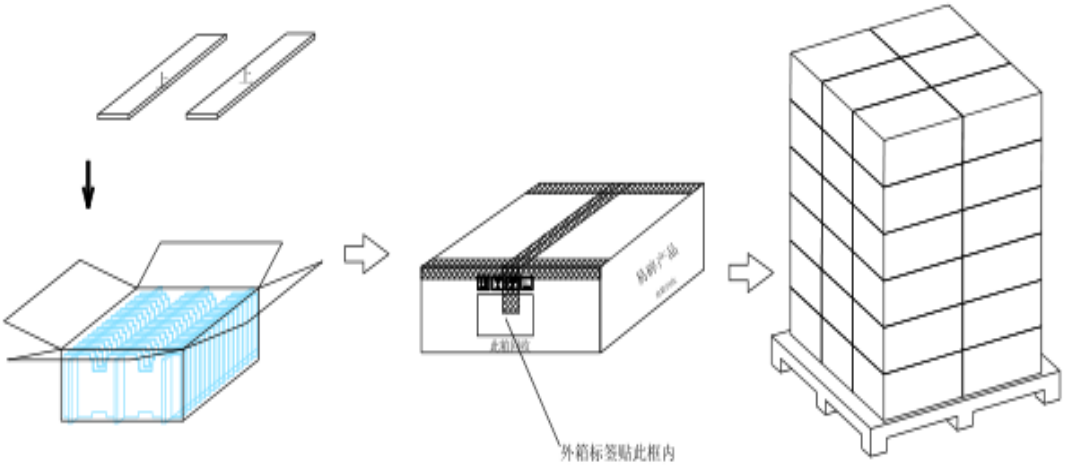
7. Package Drawing



第一步：
LCM产品装入静电袋

第二步：
把长卡，短卡组成卡阵（短卡朝向一致）
形状和数量按照BOM实际物料
卡阵底部放对应的　线刀卡后装箱

第三步：
放产品，每个卡槽内放两片产品；
2PCS产品显示面相对，



第四步：
装箱后，按照BOM实际物料在纸箱内

第五步：
最后胶带封箱，贴外箱标签

第六步：
将每箱整齐摆放在栈板上并包裹
最高可堆叠6层

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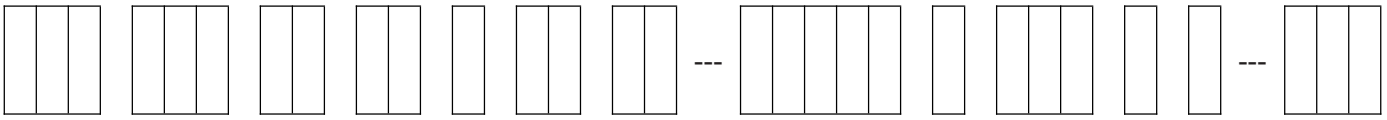
8. Numbering System



A B C D E F G H I J K L M

NO.	Definition	Specifications
A	Company code	SAT INTERNATIONAL CO.LTD.
B	Display monitor opposite angle line size	Unit : inch (size<10inch:take two integers;size>=10inch:takes three integers)
C	LCD Brands	AU-AUO；CP-CPT；IV-IVO；TM-TIANMA；HS-HSD; CM-CMO；BO-BOE；AT--INNOLUX；
D	Interface PIN Number	Arabic numerals from 01 to 99
E	LCD Type	A--Alternated Video Signal; D--Data Video Signal; H--High Definition ; I--IPS
F	Backlight LED Number	Arabic numerals from 01 to 99
G	Backlight Color Are	Include R1、R2、Y0、Y1、B1、B2;
H	Structure Size	Include module length and width size
I	Interface Mode	T:TTL L:LVDS M:MIPI
J	FPC Length	It represents the length of FPC with three figures, divided into long rows ,middle rows and short rows
K	View Angles	Z : represent narrow viewing angle K : represent wide viewing angle I : represent all viewing angle
L	Operating Mode	D: DE mode V: VSD mode F: Inverting mode N: No mode requirements
M	Suffix	1. NULL ; 2. TP/CTP-- Touch panel; 3. other--Insignificance

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