SPECIFICATION

Customer : _____

Model Name: SAT070AT50R04D-FG165100TK-HK01

ERP NO. : 1090700027

Spec Vision: V.1

Date: 2019/10/23

■ **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	2019.10.23	-	First Issued.	DWH

Contents

1. General Specifications

NO.	Item	Specification	Remark
1	Panel Size	7.0 inch(Diagonal)	
2	Resolution	800 x 3(RGB) x 480	
3	Driver Method	A-Si TFT active matrix	
4	Active Area	154.08(W) x 85.92(H) mm	
5	Dot Pitch	0.1926(W) x 0.1790(H) mm	
6	Pixel Arrangement	RGB-stripe	
7	Module Size	165 (W) x 100 (H) x 7.1(D) mm	
8	Display Mode	Normally White	
9	Display Color	16.7M	
10	Viewing Direction	6 o'clock	
11	Interface	TTL RGB-24Bit parallel interface	
12	Driving IC	EK9713CA+EK73002AB	
13	Weight	TBD	g

2. Pin Assignment

No.	Symbol	Function	Remarks
1~2	VLED+	Power for LED backlight (Cathode)	
3~4	VLED-	Power for LED backlight (anode)	
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	

3. Operation Specifications

3.1. Absolute Maximum Ratings

Voltage (AGND=GND=0V, Ta = 25℃)

Item	Symbol	Values		Unit	Remark
		Min.	Max.		
Power Voltage	VDD	-0.5	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}	-	40.0	V	
Operating Temperature	T_{op}	-10	50	℃	
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

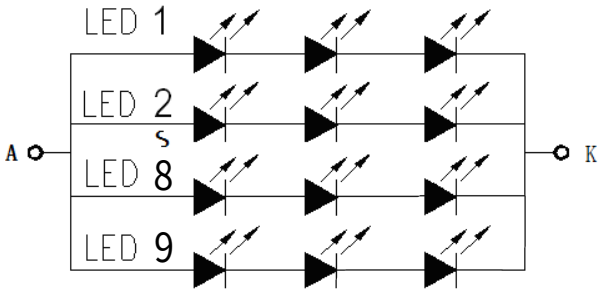
Item	Symbol	values			Unit
		Min.	Typ.	Max.	
Power Voltage	VDD	3.0	3.3	3.6	V
	AVDD	10.2	10.4	10.6	V
	VGH	15	16	17	V
	VGL	-7.7	-7.0	-6.3	V
Input signal voltage	VCOM	3.3	3.6	3.9	V
Input logic high voltage	V_{IH}	0.7 V_{DD}	-	V_{DD}	V
Input logic low voltage	V_{IL}	0	-	0.3 V_{DD}-	V

3.1.2. Current Consumption

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current for Driver	I_{GH}	-	0.2	1	mA	VGH=16.0V
	I_{GL}	-	0.2	1	mA	VGL=-7.0V
	I_{VDD}	-	10	15	mA	VDD=3.3V
	I_{AVDD}	-	10	20	mA	AVDD=10.4V

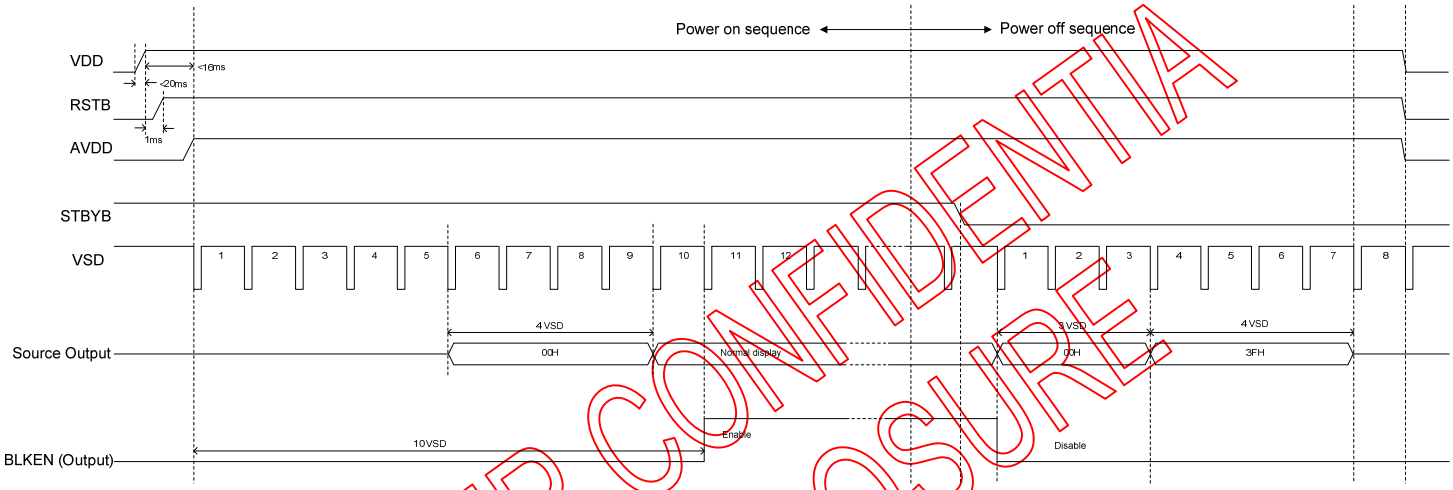
3.1.3. Backlight Driving Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage of white LED backlight	V_L	8.7	9.6	10.5	V
Current for LED backlight	I_L	135	180	225	mA
Luminance (on the module surface ,CA-210)		310	360	-	cd/m^2
LED life time	-	30000	-	-	Hr

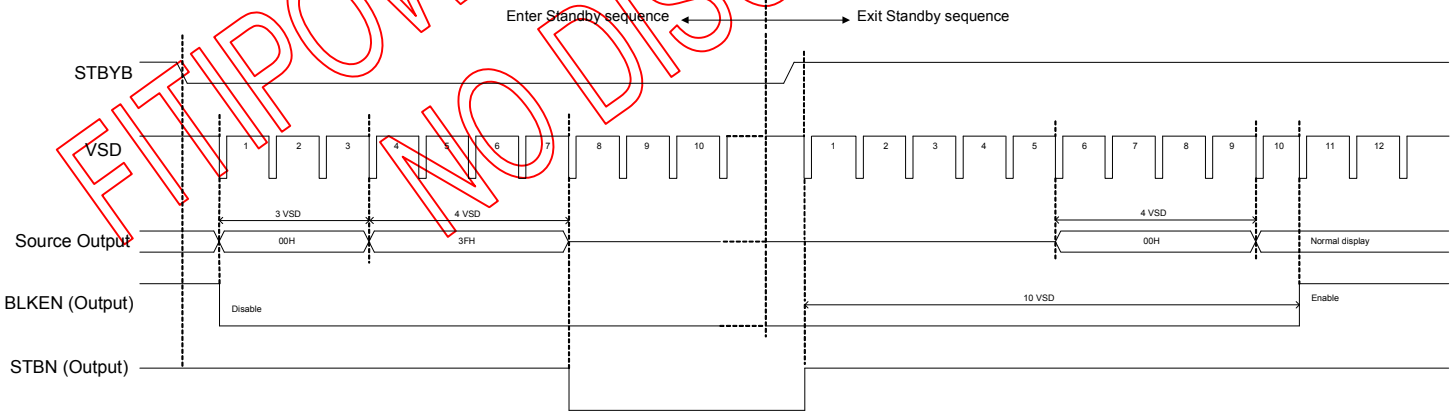


3.2. Power Sequence

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 Sequence



Enter and Exit Standby Mode Sequence

3.3. Timing Characteristics

3.3.1. AC Electrical Characteristics

(TA = -20 to 85°C, VDD = 1.8 to 3.6V, AVDD = 6.5 to 13.5V, GND = AVSS = 0V)

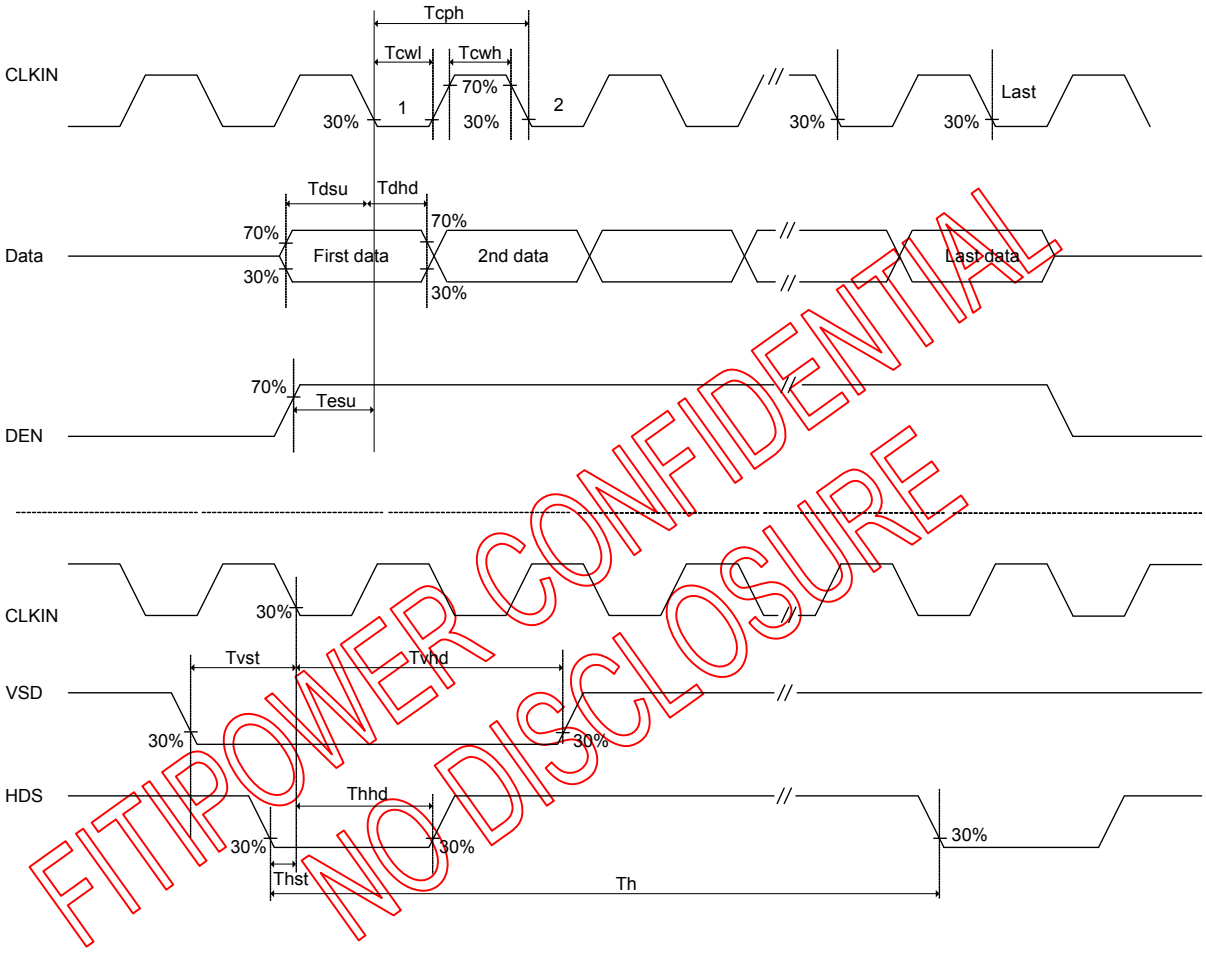
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
VDD Power On Slew rate	TPOR	From 0V to 90% VDD	-	-	20	ms
RSTB pulse width	TRST	CLKIN = 40MHz	1	-	-	ms
CLKIN cycle time	Tcph	-	20	-	-	ns
CLKIN pulse duty	Tcwh	-	40	50	60	%
VSD setup time	Tvst	-	8	-	-	ns
VSD hold time	Tvhd	-	8	-	-	ns
HSD setup time	Thst	-	8	-	-	ns
HSD hold time	Thhd	-	8	-	-	ns
Data set-up time	Tdsu	D0[7:0], D1[7:0], D2[7:0] to CLKIN	8	-	-	ns
Data hold time	Tdhd	D0[7:0], D1[7:0], D2[7:0] to CLKIN	8	-	-	ns
DEN setup time	Tesu	-	8	-	-	ns
DEN hold time	Tehd	-	8	-	-	ns
Output stable time	Tsst	10% to 90% target voltage. CL=120pF, R=10K ohm	-	-	6	us

Timing Table

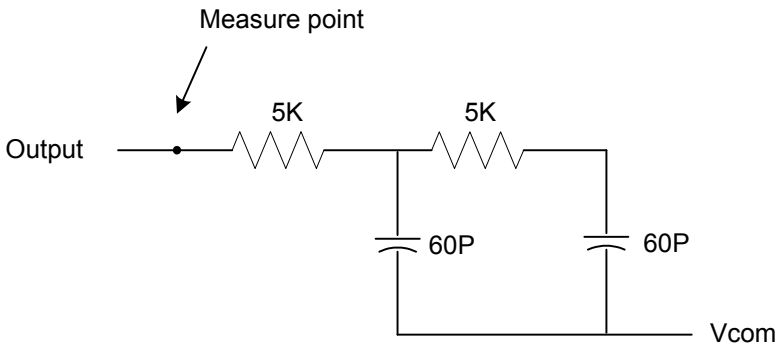
Parallel 24-bit RGB Mode

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
CLKIN Frequency	Fclk	VDD = 1.8V ~3.6V	-	33.3	50	MHz
CLKIN Cycle Time	Tclk	-	20	30	-	ns
CLKIN Pulse Duty	Tcwh	Tclk= Tcwh + cwl	40	50	60	%
	Tcwl		40	50	-60	%
VSD to STV	Tstv	HV mode	-	24	-	H
DEN to STV	Tstv	DE mode	-	4	-	CLKIN
STV pulse width	Twstv	-	-	0.5	-	H
STV to CKV	Tckv	-	-	18	-	CLKIN
STV to OEV	Toev	-	-	2	-	CLKIN
CKV Pulse Width	Twckv	-	-	66	-	CLKIN
OEV Pulse Width	Twoev	-	-	50	-	CLKIN

3.3.2. Timing Waveform



Input Clock and Data Timing Diagram



Output load condition

3.3.3. Timing Characteristic

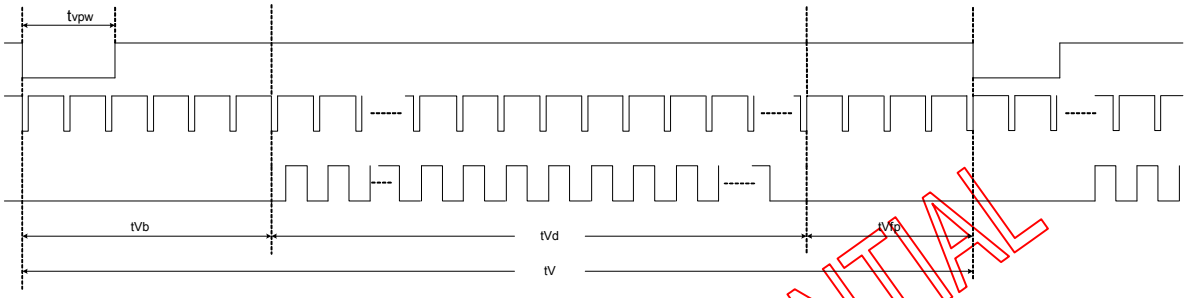
Horizontal input timing

Parameter		Symbol	Value			Unit
Horizontal display area		thd	800			DCLK
DCLK frequency		fclk	Min.	Typ.	Max	
			-	33.3	50	MHz
1 Horizontal Line		th	862	1056	1200	DCLK
HSD pulse width	Min.	thpw	1			
	Typ.		-			
	Max.		40			
HSD Back Porch (Blanking)		thb	46	46	46	
HSD Front Porch		thfp	16	210	354	

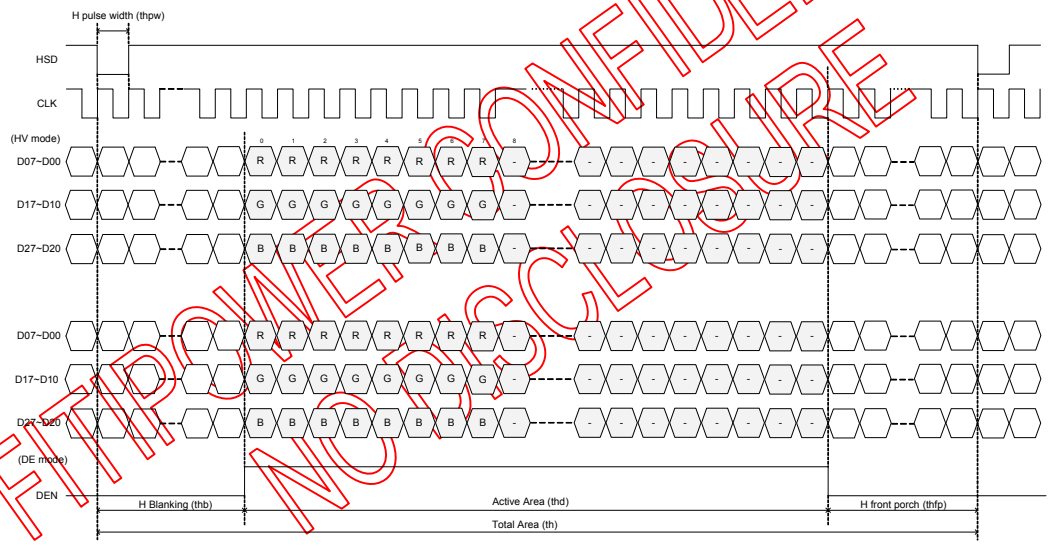
Vertical input timing

Parameter	Symbol	Min.	Typ.	Max.	Unit
Vertical display area	tvd		480		H
VSD period time	tv	510	525	650	H
VSD pulse width	tvpw	1	-	20	H
VSD Back Porch (Blanking)	tvb	23	23	23	H
VSD Front Porch	tvfp	7	22	147	H

3.3.4. Data Input Format



Vertical input timing



Horizontal input timing

4. Optical Specifications

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Viewing Angle		θT	CR≥10	40	50	-	degree	-
		θB		60	70	-		
		θL		60	70	-		
		θR		60	70	-		
Contrast Ratio		CR	Θ=0°	320	400	-	-	-
Response Time		Ton	25℃	-	10	15	ms	-
		Toff		-	15	20	ms	-
Chromaticity	White	X	Backlight is on	0.251	0.281	0.311	-	-
		Y		0.275	0.305	0.335		
Luminance (center)		L		310	360	-	cd/m2	-
Luminance Uniformity		ΔL		75	80	-	%	-

Test Condition:

1、VDD=3.3V, IL=180mA(Backlight current)，the ambient temperature is 25℃.

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=50℃ 120h	Note2 ,Note4
Low Temperature Operation	Ts=-10℃ 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	

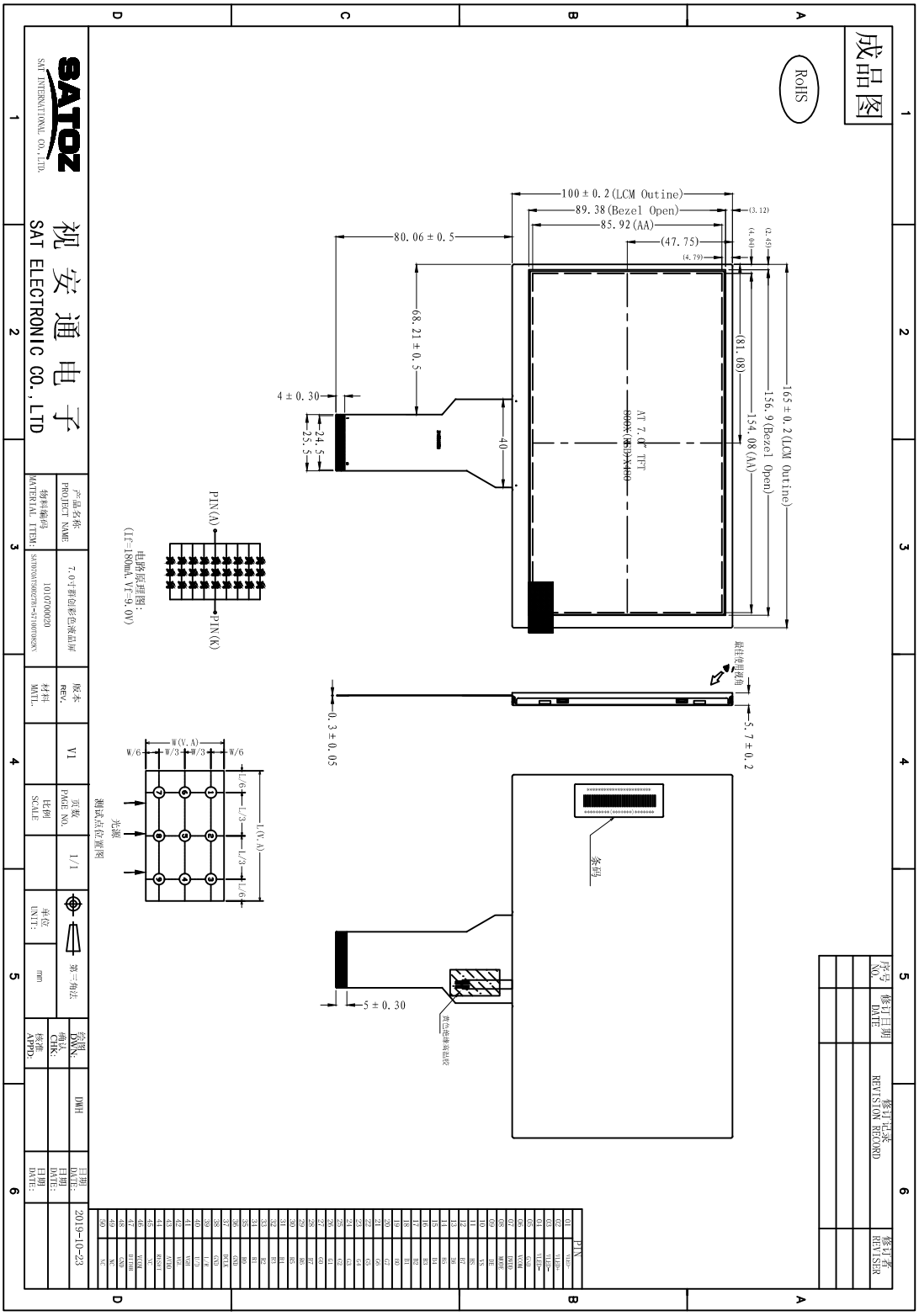
Note1:Ta is the ambient temperature of samples.

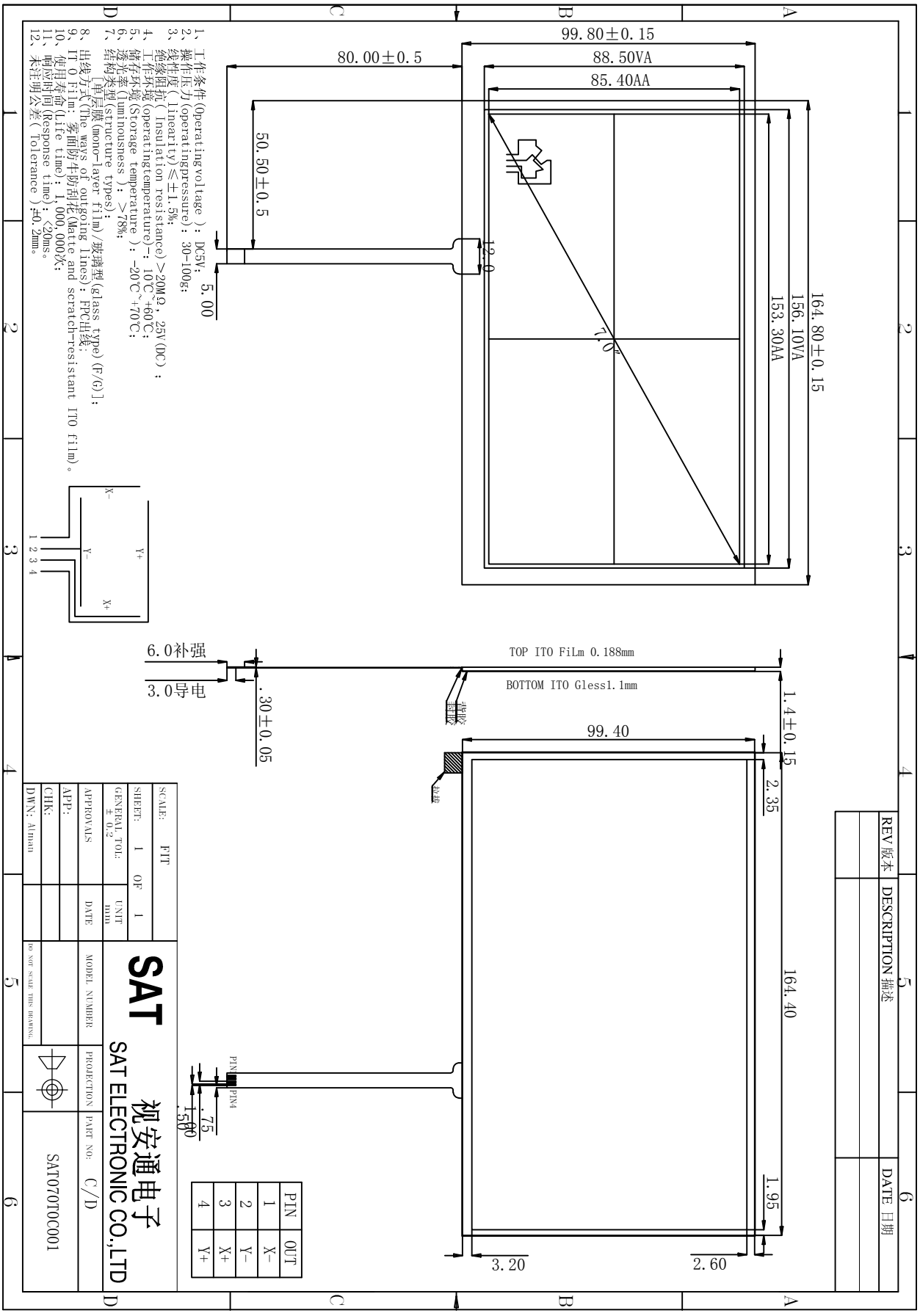
Note2: Ts is the temperature of panel's surfaces.

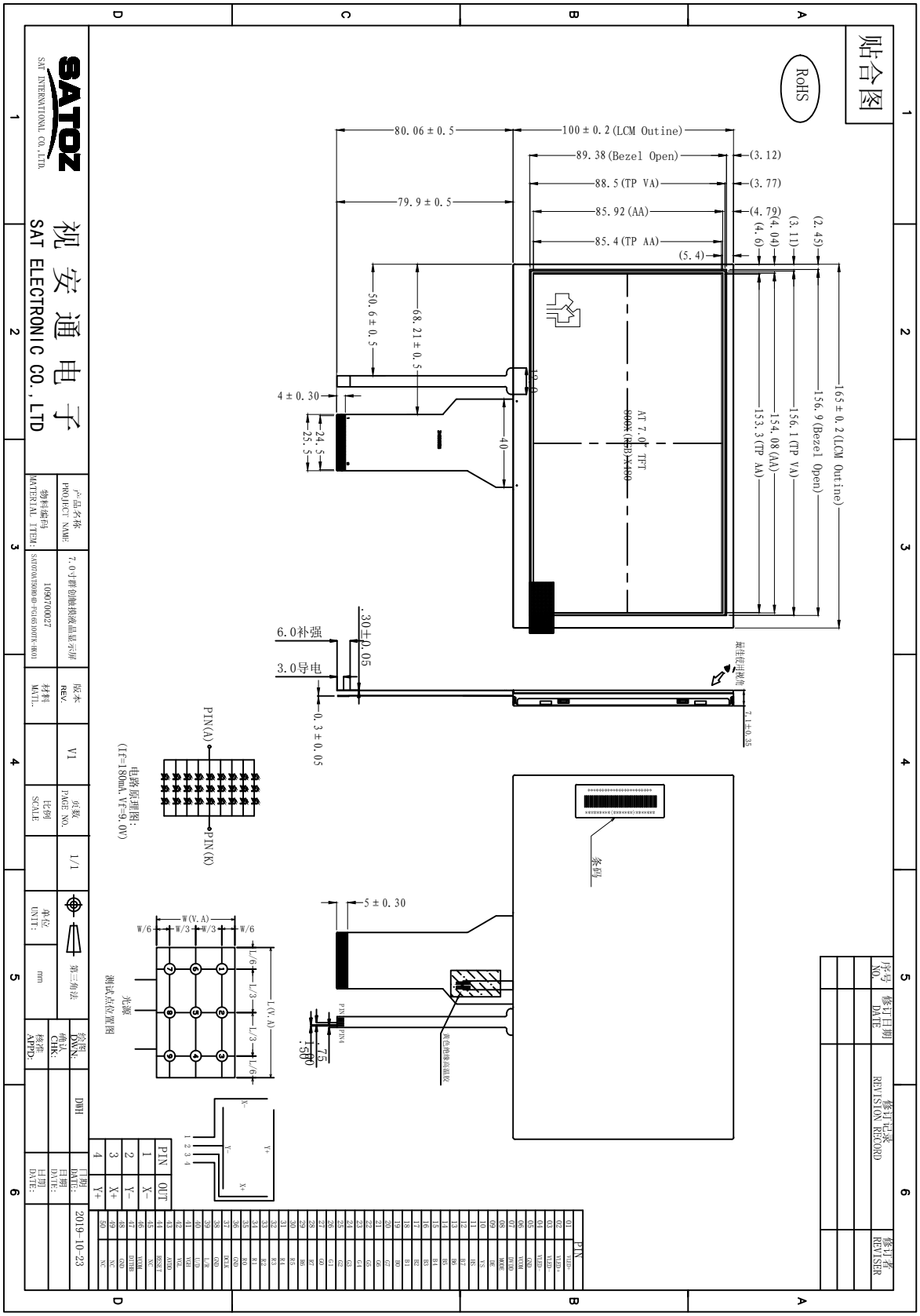
Note3: In the standard condition,there shall be no practical problem that may affect the display function.After the reliability test ,the product only guarantees operation,but don't guarantee all of the cosmetic specification.

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

6. Mechanical Drawing






贴合图
RoHS
80.06 ± 0.5
100 ± 0.2 (LCM Outline)
89.38 (Bezel Open)
88.5 (TP VA)
85.92 (AA)
85.4 (TP AA)
79.9 ± 0.5
(3.12)
(3.77)
(4.79)
(4.04)
(4.6)
(3.11)
(2.45)
(5.4)
50.6 ± 0.5
68.21 ± 0.5
4 ± 0.30
24.5
25.5
40
AT 7.0" TFT
156.9 (Bezel Open)
156.1 (TP VA)
154.08 (AA)
153.3 (TP AA)
165 ± 0.2 (LCM Outline)
6.0补强
3.0导电
.30±0.05
0.3 ± 0.05
7.1±0.35
PIN(A)
PIN(K)
电路保理图：
(If=180mA, Vf=9.0V)
W(V.A)
W/6
W/3
L(V.A)
L/6
L/3
光源
测试点位置图
5 ± 0.30
条码
.75
1.50
PIN1
PIN4
X-
Y-
X+
Y+
PIN
OUT
视安通电子
SAT ELECTRONIC CO.,LTD
SATOZ
SAT INTERNATIONAL CO.,LTD.
产品名称 PROJECT NAME:
7.0寸群创触摸液晶显示屏
物料编码 MATERIAL ITEM:
1090700027
版本 REV.
V1
页数 PAGE NO.
1/1
比例 SCALE
单位 UNIT:
mm
第三角法
绘图 DWN.
DWH
检核 CHK.
核准 APPD.
日期 DATE:
2019-10-23
序号 NO.
修订日期 DATE
修订记录 REVISION RECORD
修订者 REVISER