

# SPECIFICATION

**Customer :** \_\_\_\_\_  
**Model Name:** SAT050CP40D12Y0-80076T048ZV-TP  
**ERP NO. :** \_\_\_\_\_  
**Spec Vision:** V.1  
**Date:** 2017/12/15

- Preliminary Specification
- Final Specification

Approved by	Comment

Prepared by	Reviewed by	Approved by



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# 1. General Specifications

NO.	Item	Specification	Remark
1	Panel Size	5.0 inch(Diagonal)	
2	Resolution	480 x 3(RGB) x 272	
3	Driver Method	A-Si TFT active matrix	
4	Active Area	110.88(W) x 62.832(H) mm	
5	Dot Pitch	0.231(W) x 0.231(H) mm	
6	Pixel Arrangement	RGB-stripe	
7	Module Size	120.7(H) X 76(V) X 8.3(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	ILI6482C	
13	Weight	TBD	g

## 2. Pin Assignment

No.	Symbol	Function	Remarks
1	VLED-	Power for LED backlight (Cathode)	
2	VLED+	Power for LED backlight (anode)	
3	GND	Power ground	
4	VDD	Power for digital circuit	
5-12	R0~R7	Red data	
13-20	G0~G7	Green data	
21~28	B0~B7	Blue data	
29	GND	Power ground	
30	PCLK	Pixel clock	
31	DISP	DISP=0,Standby mode ; Normally pull high	
32	HSYNC	Horizontal Sync input	
33	VSYNC	Vertical Sync input	
34	DE	Data input enable	
35	NC	No connection	
36	GND	Power ground	
37	XR	Right electrode-differential analog	When this pin not used,please leave it open
38	YD	Bottom electrode-differential analog	
39	XL	Left electrode-differential analog	
40	YU	Top electrode-differential analog	

## 3. Operation Specifications

### 3.1. Absolute Maximum Ratings

Logic supply voltage, VDDIO	-0.5V to 5V
Analog supply voltage, VINT1	-0.3V to 7.0V
VGL	-16V to 0.3V
VGH~VGL	-0.3V to 35V
Operating Ambient Temperature, TA	-20°C to 55°C
Storage Temperature, TSTR	-20°C to 60°C

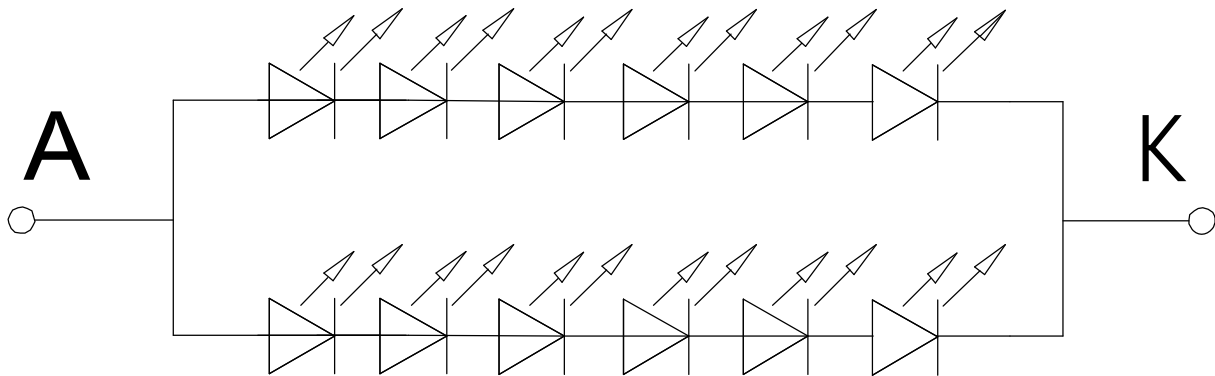
The device stressed above those lists under "Absolute Maximum Ratings" operation may cause a permanent damage. The functional operation of the device at these or any other condition above those indicated in the operational sections of this specification is not implied and exposed to absolute maximum rating conditions for extended periods may affect device reliability.

#### 3.1.1. Recommended Operation Range

Parameter	Symbol	values			Unit
		Min.	Typ.	Max.	
Digital Supply Voltage	V <sub>DD</sub>	3.0	3.3	3.6	V
I/O Supply Voltage	V <sub>DDIO</sub>	1.8	-	V <sub>DD</sub>	V
Charge Pump Supply Voltage	P <sub>VDD</sub>	3.0	3.3	3.6	V
Digital Input Voltage	D <sub>in</sub>	0	-	V <sub>DDIO</sub>	V
OTP Supply Voltage	V <sub>PP-OTP</sub>	-	6	-	V
V <sub>COM</sub> AC Voltage	V <sub>COMH</sub> - V <sub>COML</sub>	2.96	-	6.2	V

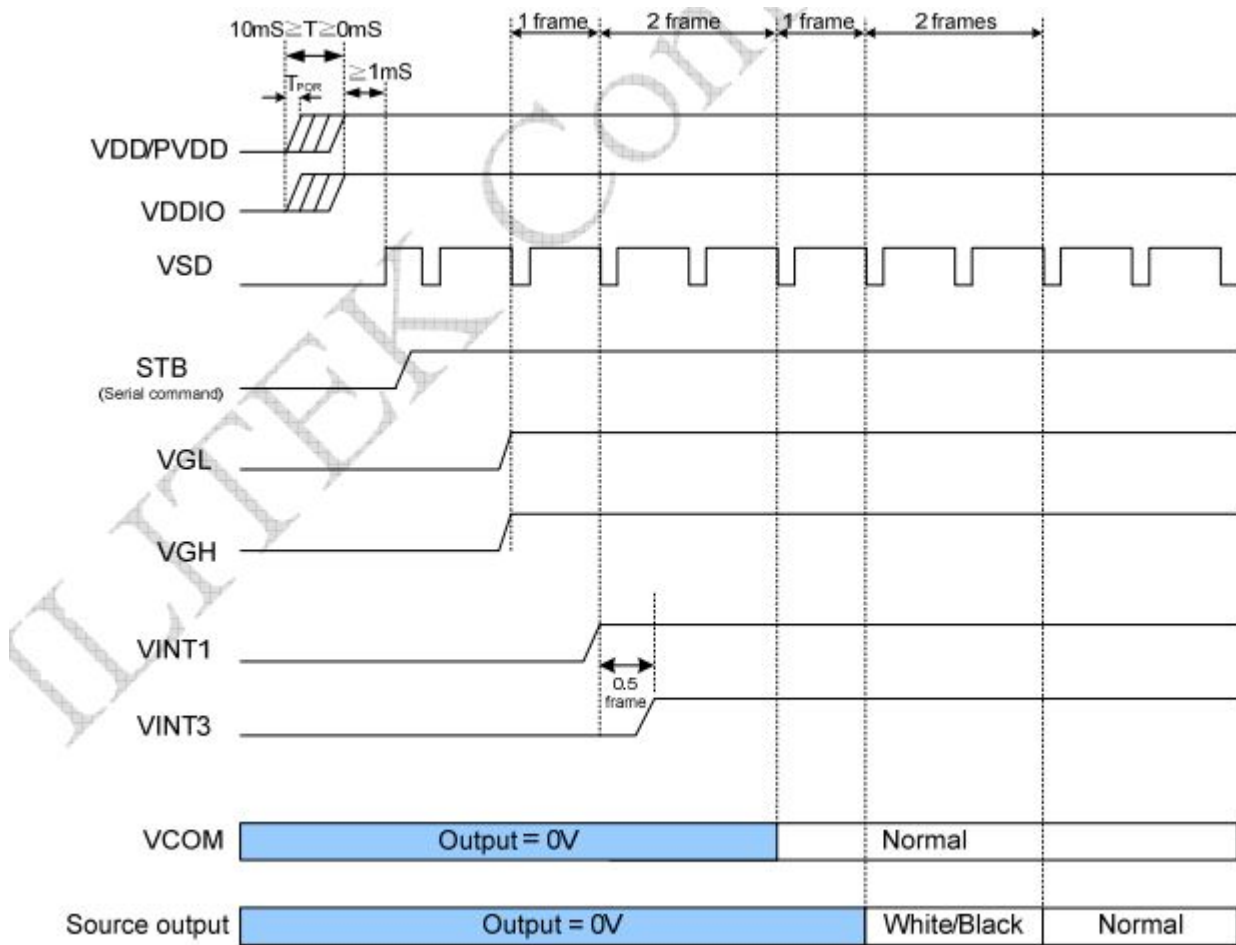
### 3.1.2. Backlight Driving Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage of white LED backlight	$V_L$	17.4	19.2	-	V
Current for LED backlight	$I_L$	30	40	50	mA
Luminance (on the module surface ,BM-7)		300	350	-	cd/m <sup>2</sup>
LED life time	-	50000	-	-	Hr



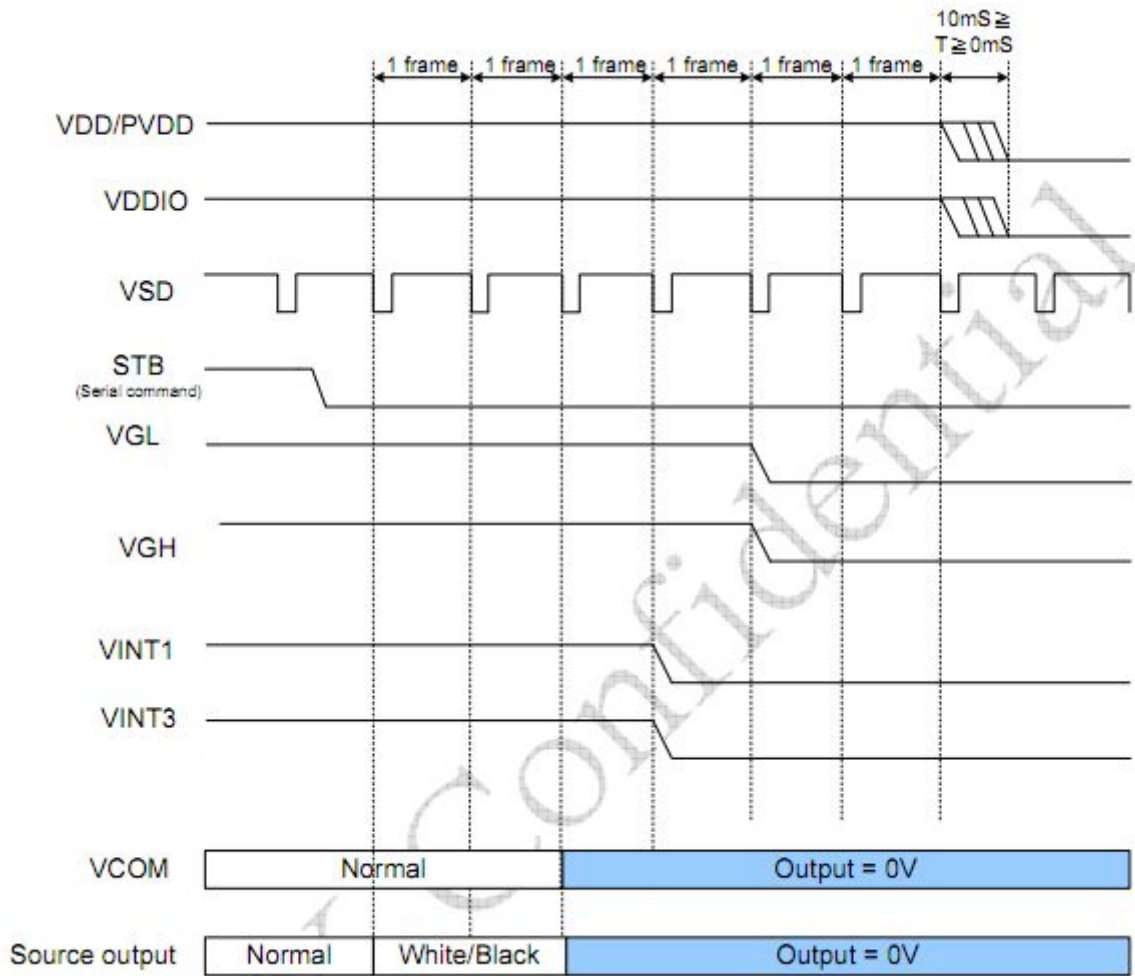
## 3.2. Power Sequence

### 3.2.1. Power On Sequence



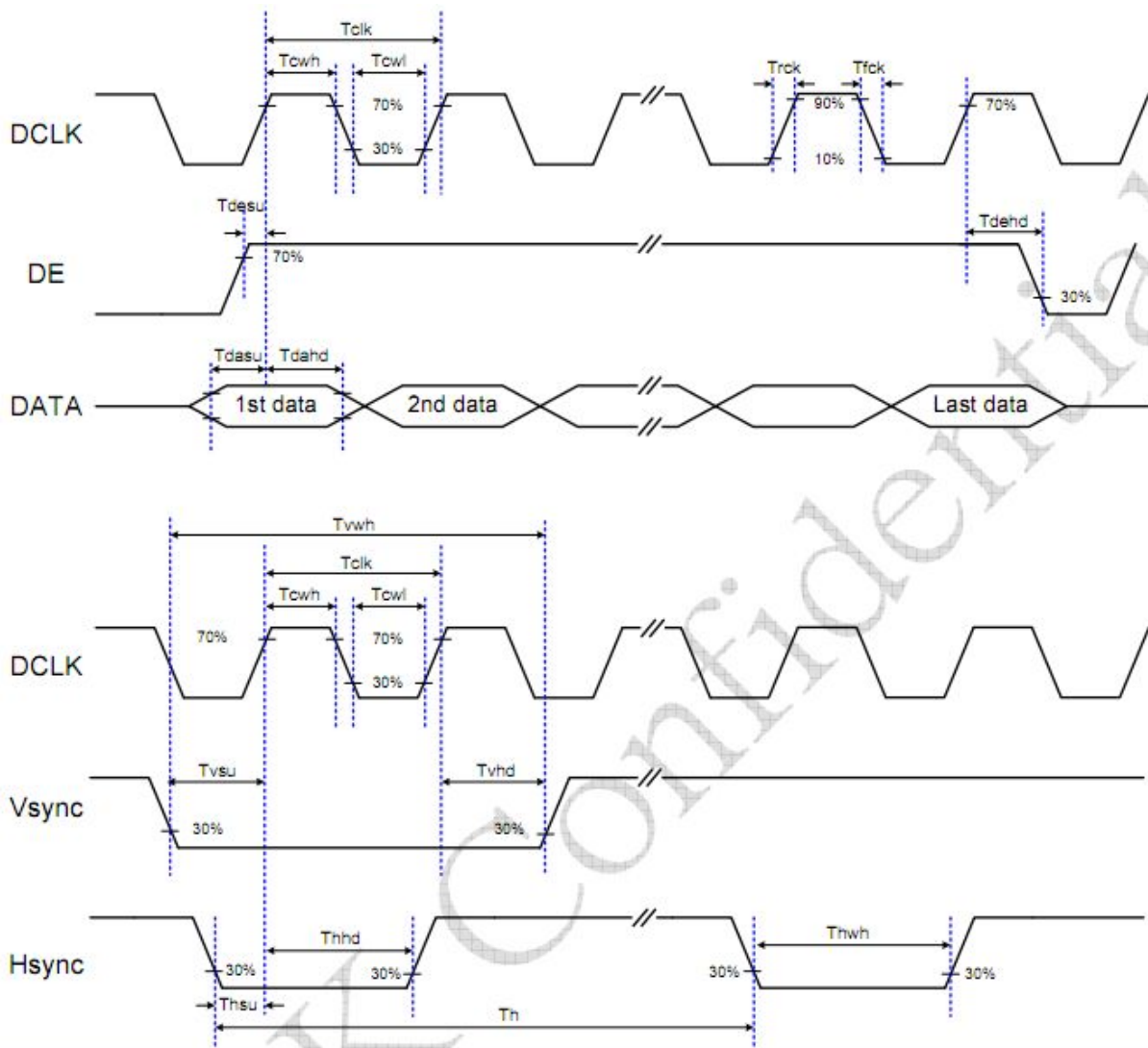


## 3.2.2. Power Off Sequence



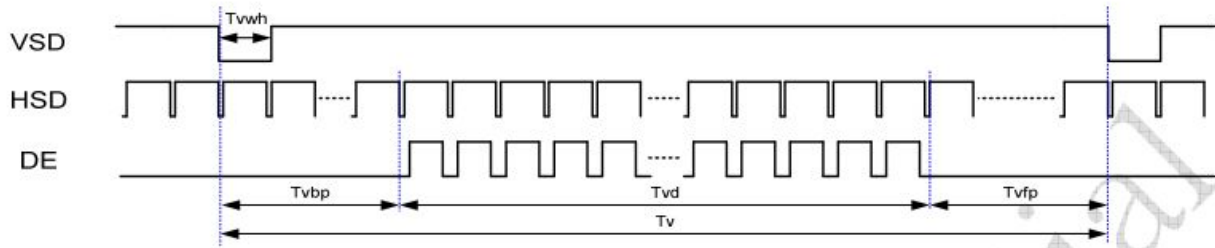
## 3.3. Timing Characteristics

### 3.3.1. Clock and Input Data Waveforms



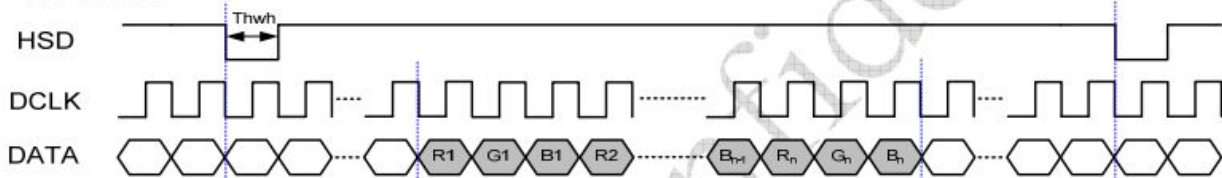
### 3.3.2. Data Input Format

#### Vertical Input Timing

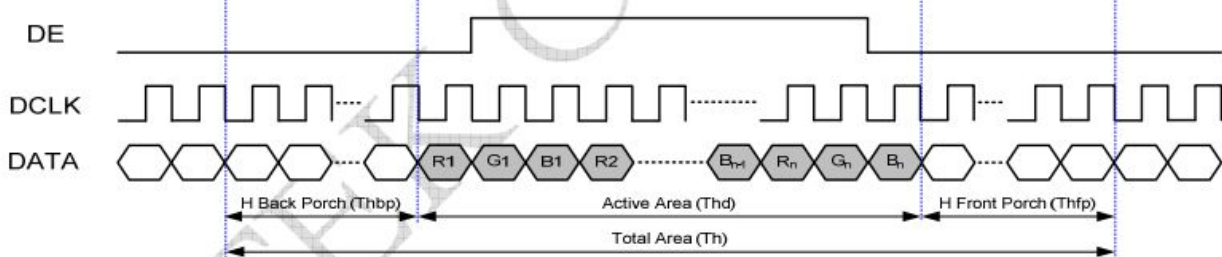


#### Serial 8bit RGB Mode Data Format

##### HV Mode



##### DE Mode

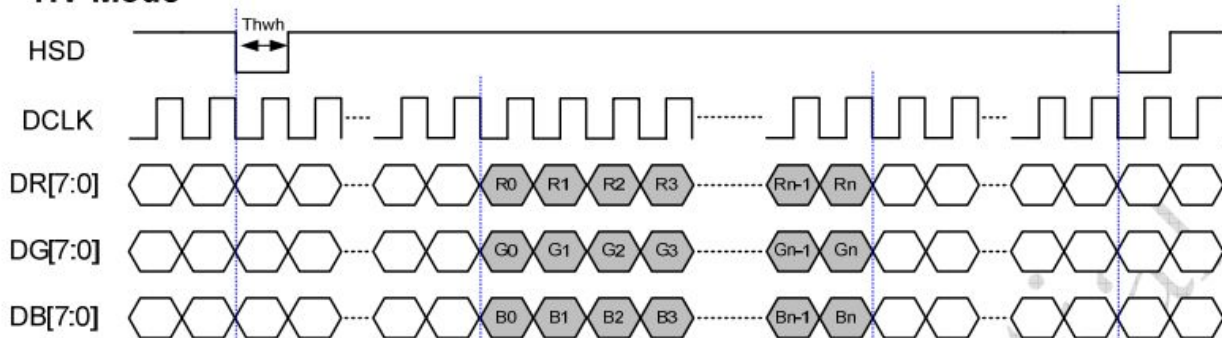


#### Serial RGB input timign table

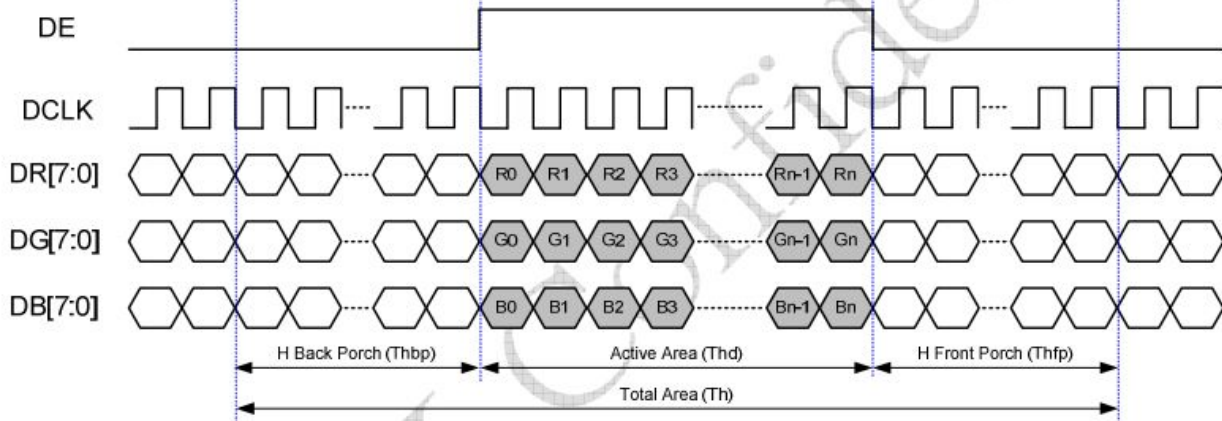
Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency	fclk	-	27	-	MHz
VSD period time	Tv	277	288	400	H
VSD display area	Tvd	272			H
VSD back porch	Tvb	3	8	31	H
VSD front porch	Tvfp	2	8	97	H
HSD period time	Th	-	1728	-	DCLK
HSD display area	Thd	1440			DCLK
HSD back porch	Thbp	-	120	-	DCLK
HSD front porch	Thfp	-	168	-	DCLK

## Parallel RGB mode data format

### HV Mode



### DE Mode



## Parallel RGB input timign table

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency	fclk	5	9	12	MHz
VSD period time	$T_v$	277	288	400	H
VSD display area	$T_{vd}$	272			H
VSD back porch	$T_{vb}$	3	8	31	H
VSD front porch	$T_{vfp}$	2	8	97	H
HSD period time	$T_h$	520	525	800	DCLK
HSD display area	$T_{hd}$	480			DCLK
HSD back porch	$T_{hbp}$	36	40	255	DCLK
HSD front porch	$T_{hfp}$	4	5	65	DCLK

Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
DCLK frequency	Fclk	24	27	30	MHz	
DCLK cycle time	Tclk	83	110	200	ns	
DCLK pulse duty	Tcwh	40	50	60	%	
Time from HSD to source output	Thso	-	13	-	DCLK	
Time from HSD to gate output	Thgo	-	27	-	DCLK	
Time from HSD to gate output off	Thgz	-	3	-	DCLK	
Time from HSD to VCOM	Thvc	-	12	-	DCLK	

## 4. Optical Specifications

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Contrast Ratio	CR	350	500	-	-	
Color gamut (NTSC ratio)	-	-	53	-	%	
Response Time	Rising + Falling	-	30	50	ms	
Viewing Angle	Horizontal	$\theta_{x^+}$	40	50	-	degree
		$\theta_{x^-}$	45	55	-	
	Vertical	$\theta_{y^+}$	50	60	-	
		$\theta_{y^-}$	50	60	-	
Color Filter Chromaticity (CIE1931)	Red	X	-0.02	0.608	+0.02	-
		Y		0.316		
	Green	X		0.305		
		Y		0.556		
	Blue	X		0.135		
		Y		0.137		
	White	X		0.285		
		Y		0.335		
Luminance (center)	L	300	350	-	cd/m <sup>2</sup>	
Luminance Uniformity	$\Delta L$	75	80		%	

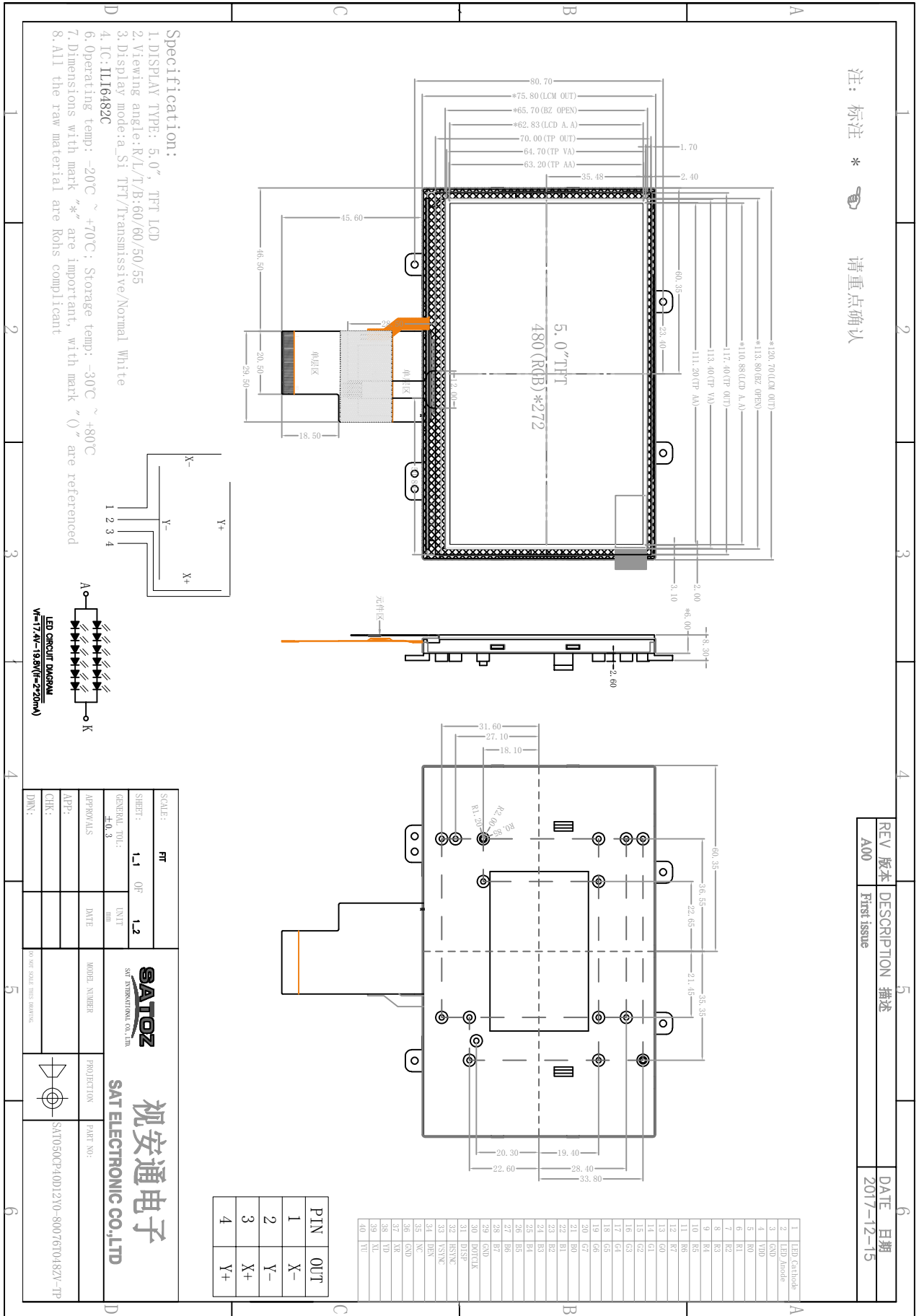
### Test Condition:

- VDD=3.3V, IL=40mA (Backlight current), the ambient temperature is 25°C.



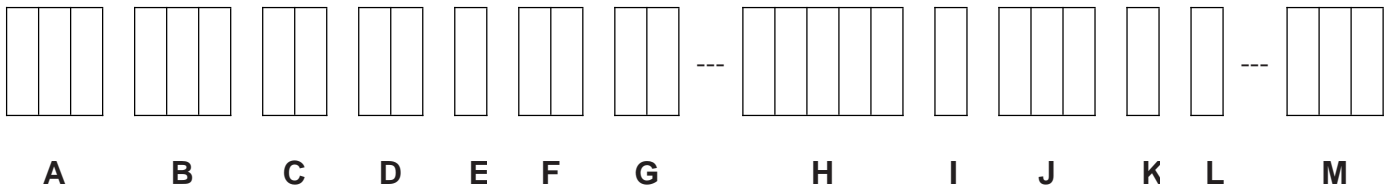








## 8. Numbering System



NO.	Definition	Specifications
A	LCM Product NO.	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