

SPECIFICATION

Customer : _____
Model Name: SAT043HS40I12B4-30671T051ID
ERP NO. : 1010430214
Spec Vision: V.2
Date: 2018/12/10

- 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	4.3 inch(Diagonal)	
2	Resolution	800 x 3(RGB) x 480	
3	Driver Method	A-Si TFT active matrix	
4	Active Area	95.04(W) x 53.856(H) mm	
5	Dot Pitch	0.1188 (W) x 0.1122 (H) mm	
6	Pixel Arrangement	RGB-stripe	
7	Module Size	105.5(W) x 67.1(H) x3.0(D) mm	
8	Display Mode	Normally Black	
9	Display Color	16.7M	
10	Viewing Direction	all o'clock	
11	Interface	TTL RGB-24Bit parallel interface	
12	Driving IC	EK9716BE3+EK73002AB	
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 pull low is 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

Parameter	Symbol	values			Unit
		Min.	Typ.	Max.	
Supply Voltage	V _{DD}	-0.3	3.3	4.5	V
Operation Temperature	T _{op}	-10	+60	-	°C
Storage Temperature	T _{st}	-20	+70	-	°C
LED Reverse Voltage	VR	-	3.2	3.5	V
LED Forward Current	IF	-	20	25	mA

3.1.1. Recommended Operation Range

Parameter	Symbol	values			Unit	Note
		Min.	Typ.	Max.		
TFT Gate ON Voltage	V _{GH}	--	15	--	V	*1
TFT Gate OFF Voltage	V _{GL}	--	-10	--	V	*2
TFT Common Voltage	V _{com}	3.5	--	5.2	V	*3
Power supply for analog	AVDD	12	12.5	13	V	

*1. V_{GH} is TFT Gate operating Voltage.

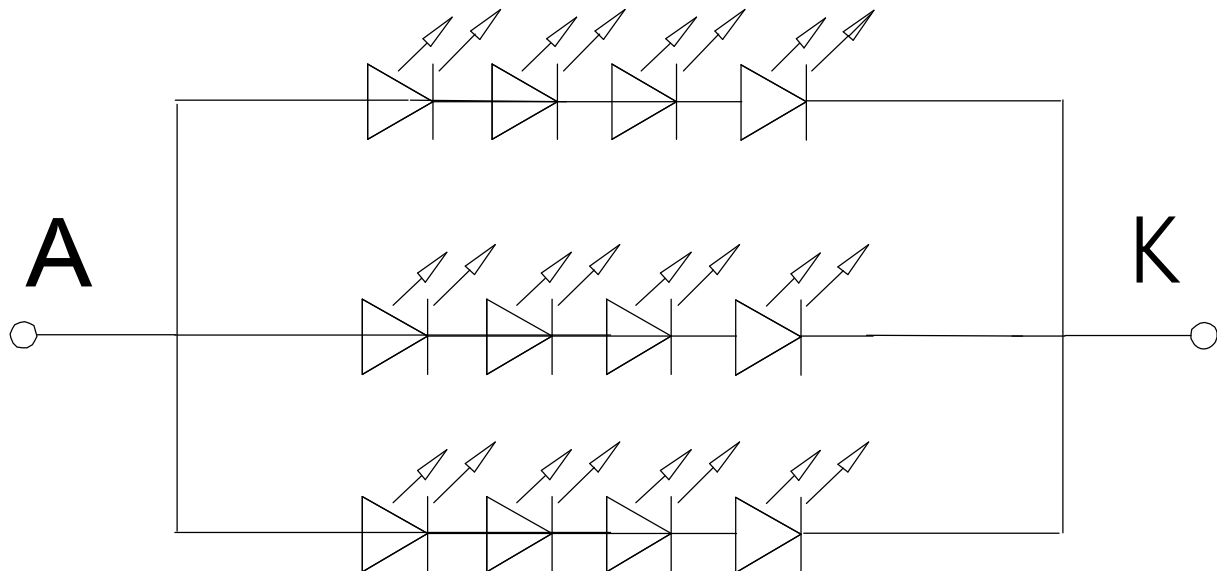
*2. V_{GL} is TFT Gate operating Voltage.

The storage structure of this model is C_{ST}(Storage on Common)

*3. V_{com} must be adjusted to optimize display quality _Cross talk, Contrast Ratio and etc.

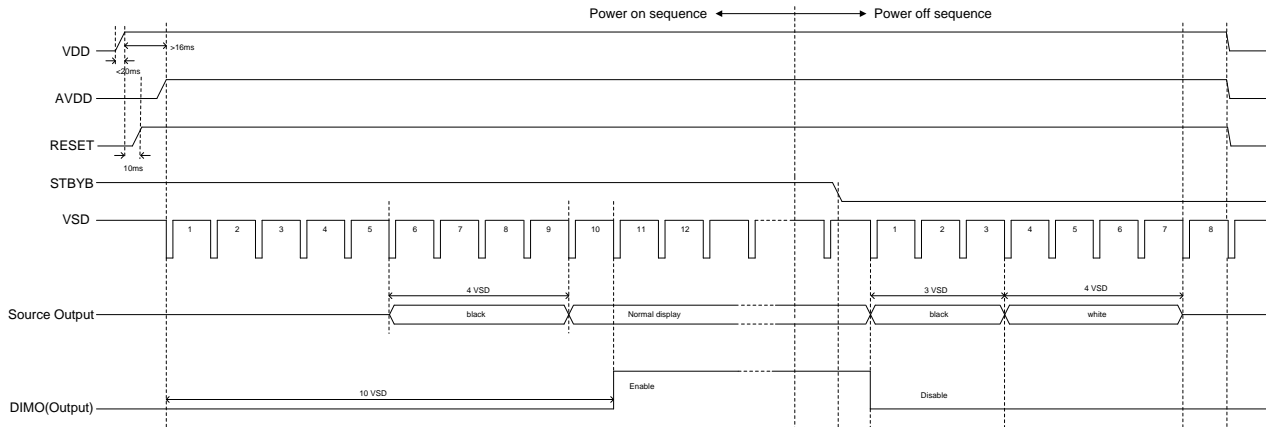
3.1.2. Backlight Driving Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage of white LED backlight	V_L	-	13.2	-	V
Current for LED backlight	I_L	45	60	75	mA
Luminance (on the module surface ,BM-7)		-	380	-	cd/m ²
LED life time	-	30000	-	-	Hr

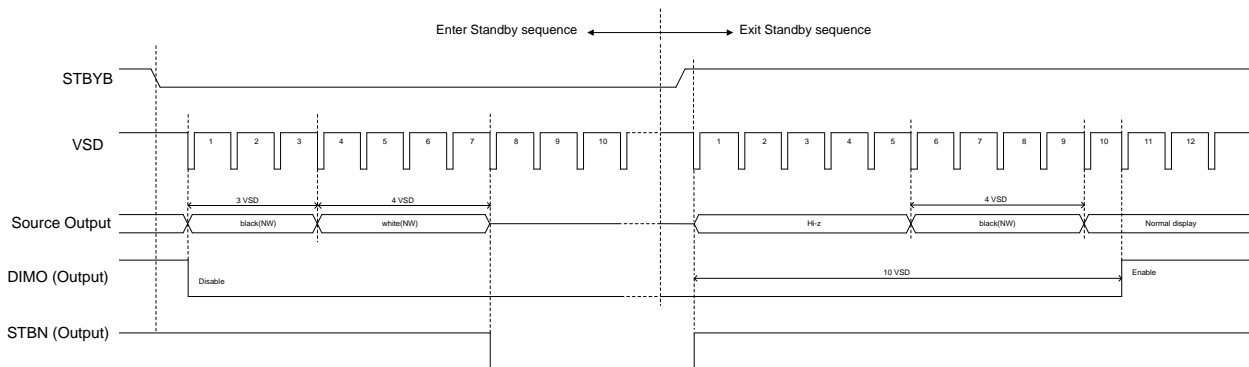


3.2. Power Sequence

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



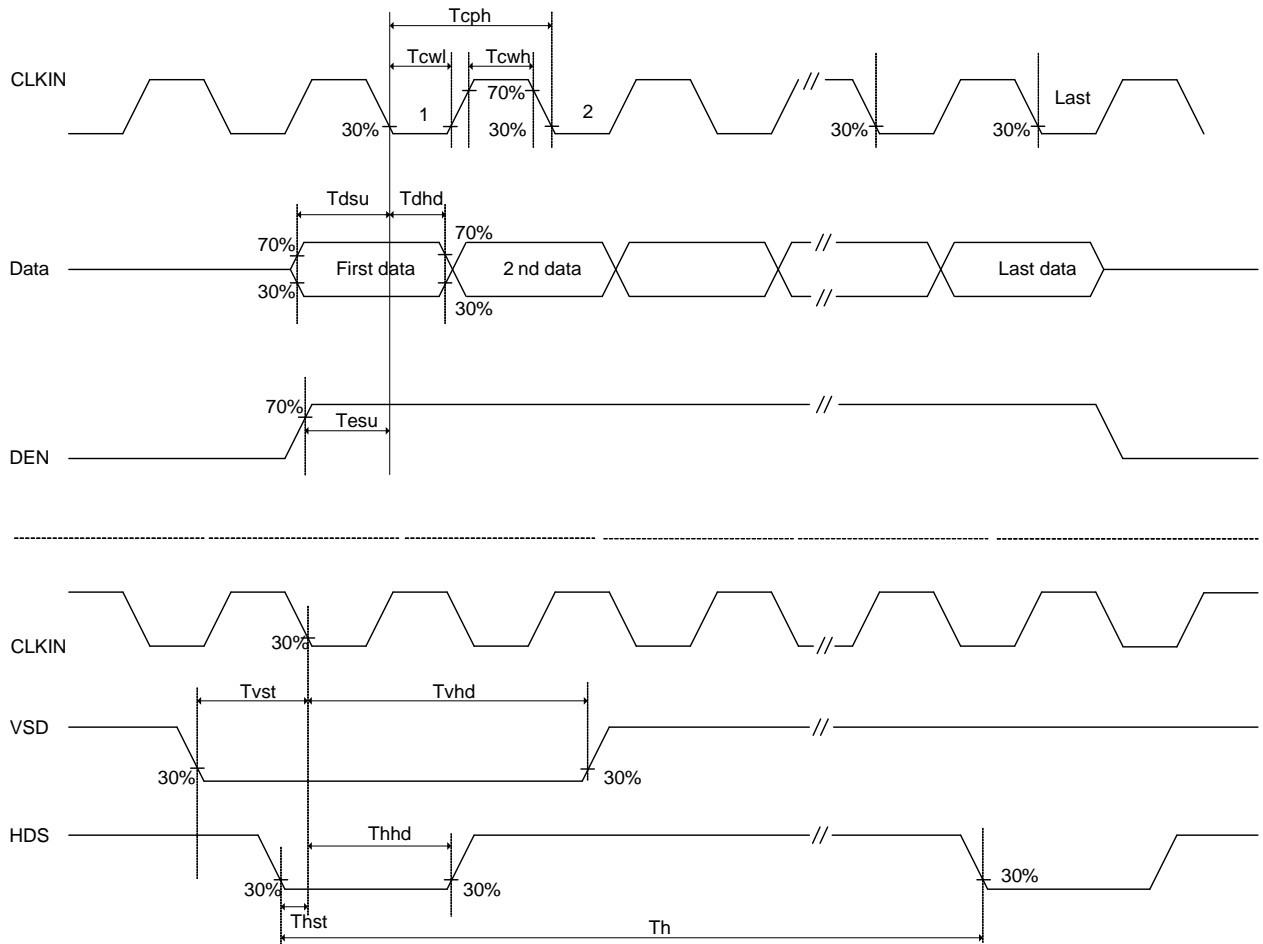
Power-On/Off Timing Sequence



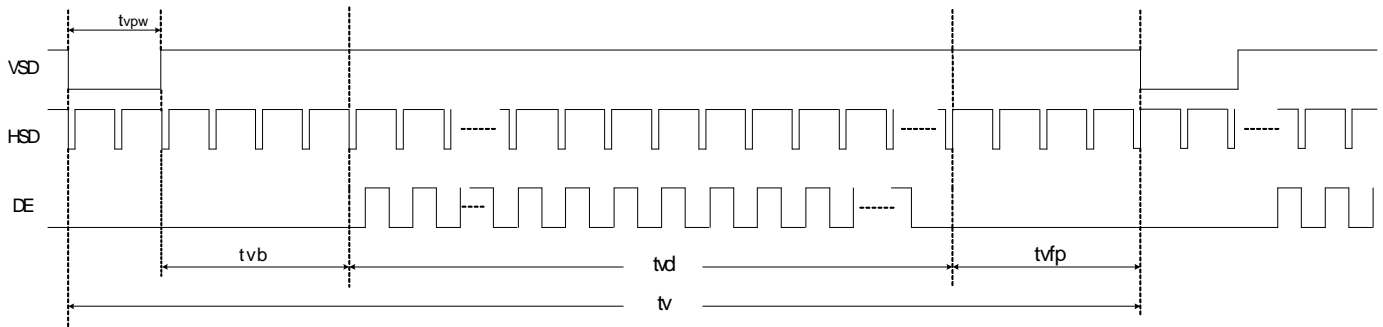
Enter and Exit Standby Mode Sequence

3.3. Timing Characteristics

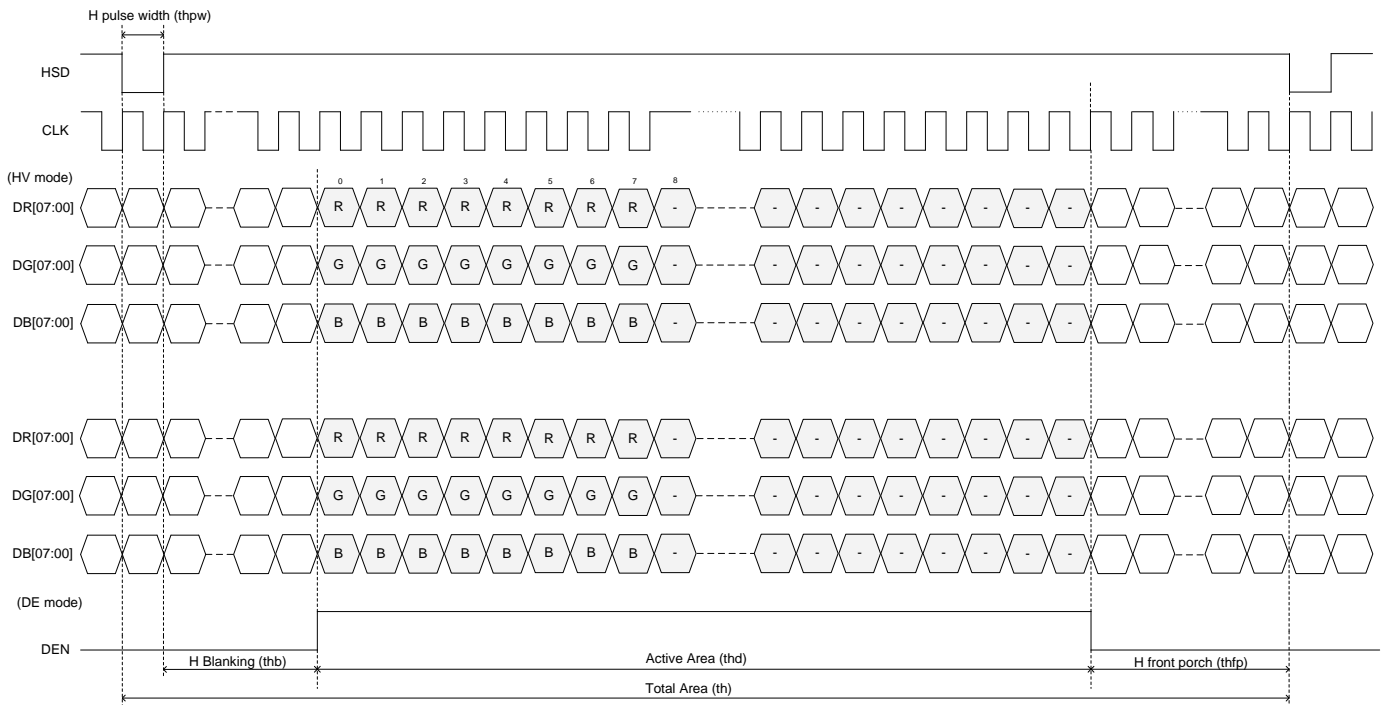
3.3.1. Input Clock and Data Timing Diagram



3.3.2. Data Input Format



Vertical input timing



Horizontal input timing

3.3.3 Timing Diagram

Horizontal input timing

Parameter	Symbol	Value			Unit	Note
Horizontal display area	thd	800			DCLK	
DCLK frequency	fclk	Min.	Typ.	Max		
		20	33.3	50	MHz	
1 Horizontal Line	th	908	928	1088	DCLK	thb+thpw=88 DCLK is fixed.
HSD pulse width	thpw	1	48	87		
HSD Back Porch (Blanking)	thb	87	40	1		
HSD Front Porch	thfp	20	40	200		

Vertical input timing

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Vertical display area	tvd	480			H	
VSD period time	tv	517	525	712	H	tvpw+tvb=32H Is fixed
VSD pulse width	tvpw	1	1	3	H	
VSD Back Porch (Blanking)	tvb	31	31	29	H	
VSD Front Porch	tvfp	5	13	200	H	

4. Optical Specifications

Item		Symbol	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR	-	800	-	-	
Color gamut (NTSC ratio)		-	-	50	-	%	
Response Time		Rising + Falling	-	30	40	ms	
Viewing Angle	Horizontal	θ_{x^+}	70	80	-	degree	
		θ_{x^-}	70	80	-		
	Vertical	θ_{y^+}	70	80	-		
		θ_{y^-}	70	80	-		
Color Filter Chromaticity (CIE1931)	Red	X	-0.02	0.631	+0.02	-	
		Y		0.329			
	Green	X		0.328			
		Y		0.548			
	Blue	X		0.136			
		Y		0.141			
	White	X		0.255			
		Y		0.280			
Luminance (center)		L	-	380	-	cd/m ²	
Luminance Uniformity		ΔL	75	80		%	

Test Condition:

- 1、VDD=3.3V,IL=60mA(Backlight current), the ambient temperature is 25°C.

5. Reliability Test Items

Item	Test Conditions	Remark
High Temperature Storage	Ta=70°C 120h	Note1 ,Note4
Low Temperature Storage	Ta=-20°C 120h	Note1, Note4
High Temperature Operation	Ts =60°C 120h	Note2 ,Note4
Low Temperature Operation	Ts=-10°C 120h	Note4
Operation at High Temperature and Humidity	+60°C,90%RH 120h	Note4
Thermal Shock	-20°C/30min~+70°C/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/330 Ω	

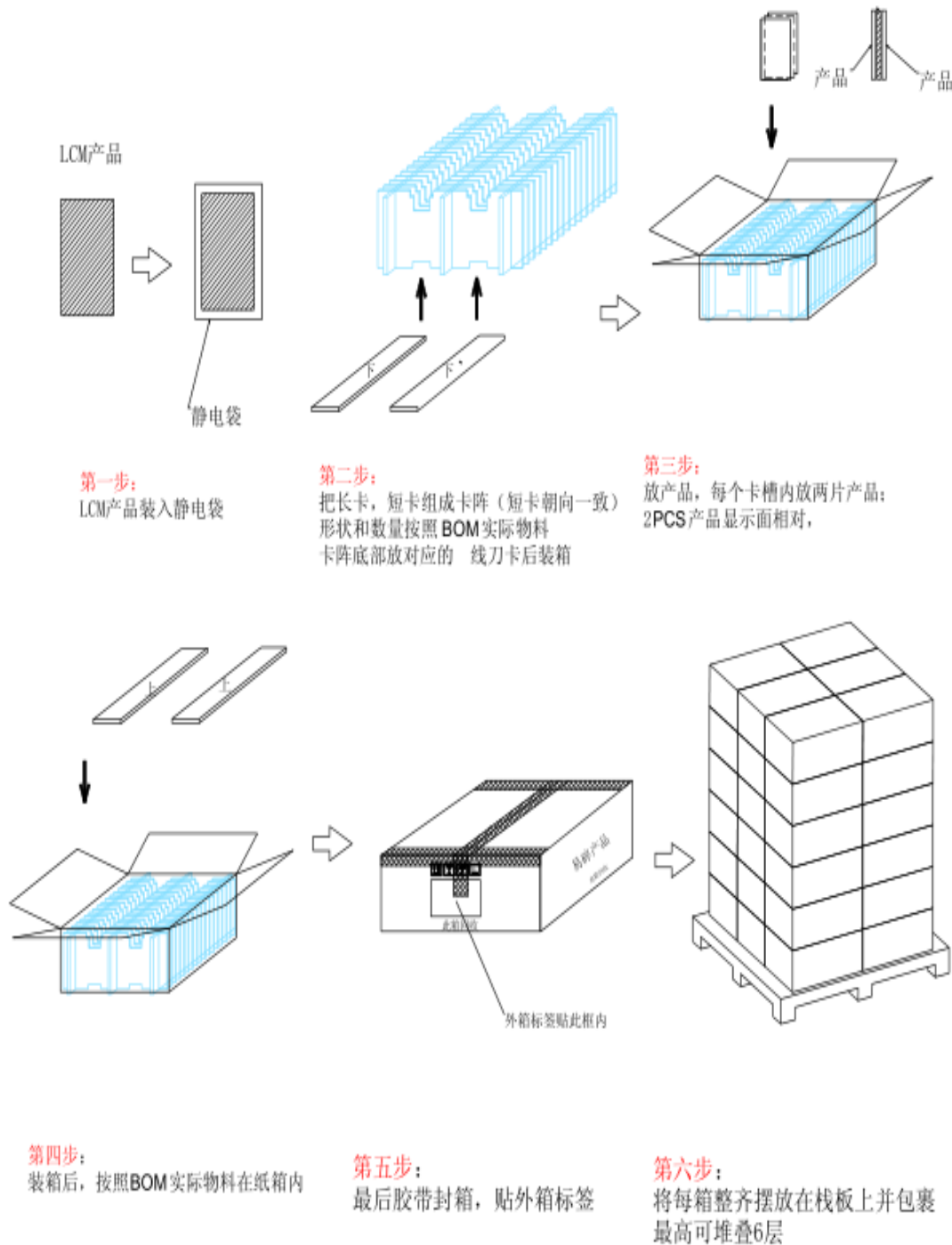
Note1: Ta is the ambient temperature of samples.

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

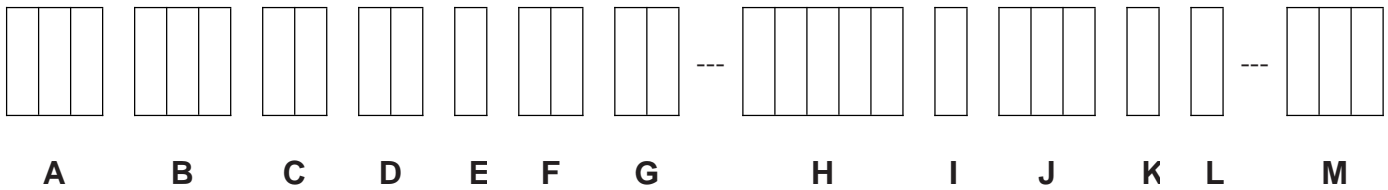
Note3: In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but doesn't guarantee all of the cosmetic specification.

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

7. Package Drawing



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