SAT ELECTRONIC CO.LTD

SPECIFICATION

Customer: _____

Model Name: SAT043CP40D07R2-30671T051ZN-TP

SPEC NO.: _____

Date: _____

Version: _____

■ Preliminary Specification

□ Final Specification

Approved by	Comment

RePrepared by	Reviewed by	Approved by

Record of Revision

Version	Revise Date	Page	Content
Pre-spec.A	2016/12/06		Initial Release

Contents

1. General Specifications

No.	Item	Specification	Remark
1	LCD Size	4.3 inch(Diagonal)	
2	Driver element	a-Si TFT active matrix	
3	Resolution	480 × 3(RGB) ×272	
4	Display mode	Normally White, Transmissive	
5	Dot pitch	0.066(W) X 0.198(H) mm	
6	Active area	95.04(W) X 3(RGB) X 53.856(H) mm	
7	Outline dimensions	105.5(H) X 67.1(V) X 4.2(D) mm	
8	Surface treatment	Anti-Glare	
9	Color arrangement	RGB-stripe	
10	Interface	TTL RGB-24bit parallel interface	
11	Backlight Power consumption	TBD	
12	Panel Power consumption	TBD	
13	Weight	TBD	

2. Pin Assignment

FPC connector is used for electronics interface. The recommended model is FH19SC-40S-0.5SH (05) manufactured by HIROSE.

No.	Symbol	I/O	Function
1	VLED-	P	Power for LED backlight cathode
2	VLED+	P	Power for LED backlight anode
3	GND	P	Power ground
4	VDD	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	DCLK	I	Pixel clock
31	NC	-	No connect
32	HSYNC	I	Horizontal sync signal
33	VSYNC	I	Vertical sync signal
34	DE	I	Data enable
35	NC	-	No connect
36	GND	P	Power ground
37	X_R	I/O	Right electrode - differential analog

38	Y_B	I/O	Bottom electrode - differential analog
39	X_L	I/O	Left electrode - differential analog
40	Y_T	I/O	Top electrode - differential analog

I/O: I: input, O: output, P: power

3. Operation Specifications

3.1. Absolute Maximum Ratings

(Note 1)

Item	Symbol	Rating	Unit
Power Supply Voltage	VDD	- 0.3 ~ +4.6	V
IO Supply Voltage	VDDI	- 0.3 ~ +4.6	V
Charge Pump Supply Voltage	PVDD	- 0.3 ~ +4.6	V
Logic Input Voltage Range	VIN	-0.3 ~ VDDI + 0.3	V
Logic Output Voltage Range	VO	-0.3 ~ VDDI + 0.3	V
Operating Temperature Range	TOPR	-20 ~ +70	℃
Storage Temperature Range	TSTG	-30 ~ +80	℃

Note 1: 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 exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

3.1.1. Typical Operation Conditions

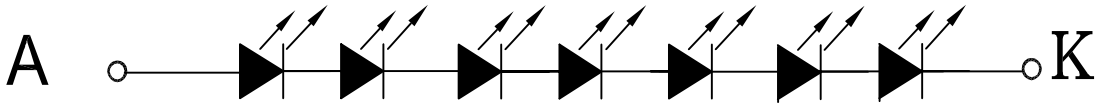
Parameter	Symbol	Value	Unit	Remarks
POWER SUPPLY	VDD/PVDD	3.3	V	
TFT Gate ON Voltage	VGH	15	V	
TFT Gate OFF Voltage	VGL	-7~ -10	V	
TFT Common Electrode Voltage	VCOMH	/	V	
	VCOML	/	V	

Notes :
1. VGH is TFT Gate operating voltage.
2. VGL is TFT Gate operating voltage. The low voltage level of VGL signal must be fluctuates with same phase as Vcom.
3. Vcom must be adjusted to optimize display quality, as Crosstalk and Contrast Ratio etc..

different D-IC.

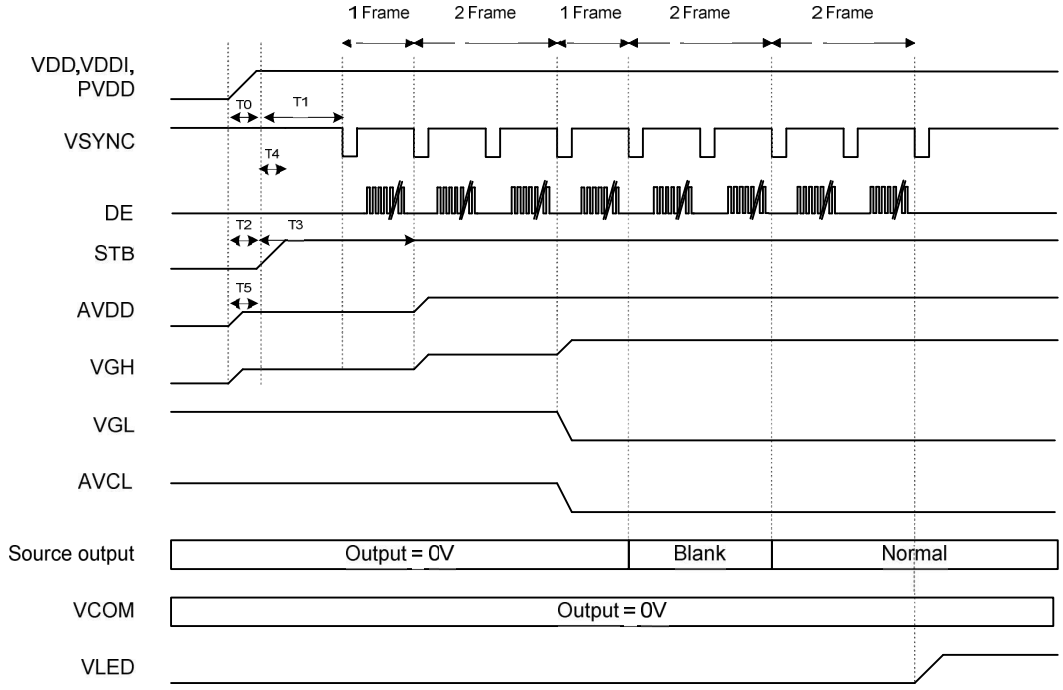
3.1.2. Backlight Driving Conditions (7 White Chips)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Supply voltage of white LED backlight	VL	20.3	23.1	24.5	V	Note 1
Current for LED backlight	IL	15	20	25	mA	
Luminance (on the module surface,BM-7)		230	260	-	cd/m^2	
LED life time	-	50,000	-	-	Hr	Note 2



3.2. Power Sequence

Power On Sequence



	Description	Min. Time
T0	Determined by the external power	
T1	Time from stable VDD, VDDI, PVDD set-up to the first VSYNC	T1=0
T2	Time from AVDD=0V to AVDD=3.3V	T2=T0
T3	Time from AVDD=3.3V to AVDD=6.0V	T3=T1+ (1*Frame)
T4	Time from stable VDD, VDDI, PVDD set-up to DISP asserted	T4=0
T5	Time from VGH=0V to VGH=3.3V	T5=T0

3.3. Timing Characteristics

3.3.1 RGB Timing Table

Parallel 24-bit RGB Timing Table

Item		Symbol	Min.	Typ.	Max.	Unit	Remark
DCLK Frequency		Fclk	8	9	12	MHz	
DCLK Period		Tclk	83	111	125	Ns	
HSYNC	Period Time	Th	485	531		DCLK	
	Display Period	Thdisp		480		DCLK	
	Back Porch	Thbp	3	43		DCLK	By H_Blanking setting
	Front Porch	Thfp	2	8		DCLK	
	Pulse Width	Thw	2	4		DCLK	
VSYNC	Period Time	Tv	276	292		H	
	Display Period	Tvdisp		272		H	
	Back Porch	Tvbp	2	12		H	By V_Blanking setting
	Front Porch	Tvfp	2	8		H	
	Pulse Width	Tvw	2	4		H	

Note: It is necessary to keep Tvbp =12 and Thbp =43 in sync mode. DE mode is unnecessary to keep it.

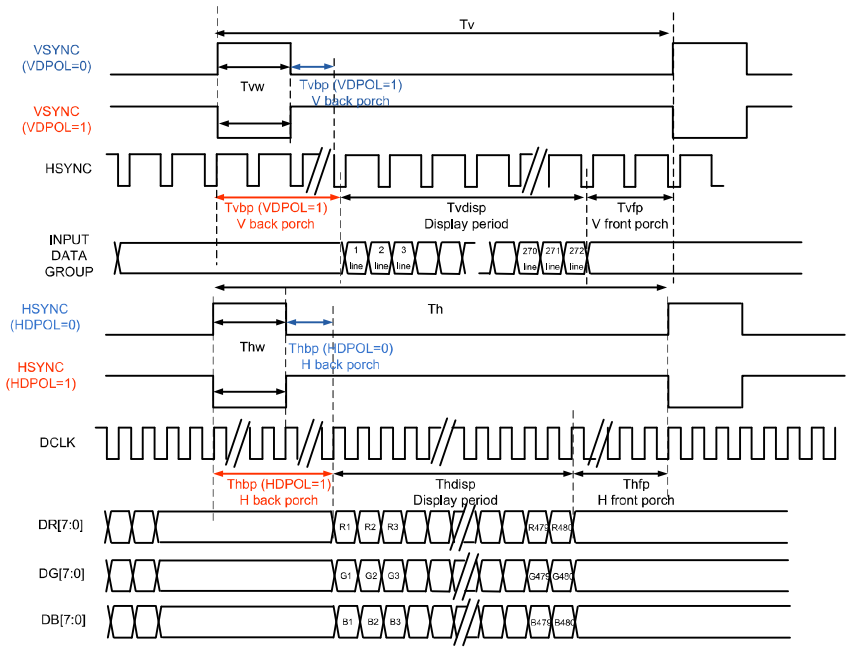
Serial 8-bit RGB Timing Table

Item		Symbol	Min.	Typ.	Max.	Unit	Remark
DCLK Frequency		Fclk	24	27	30	MHz	
DCLK Period		Tclk	33	37	42	Ns	
HSYNC	Period Time	Th	1445	1491		DCLK	
	Display Period	Thdisp		1440		DCLK	
	Back Porch	Thbp	3	43		DCLK	By H_Blanking setting
	Front Porch	Thfp	2	8		DCLK	
	Pulse Width	Thw	2	4		DCLK	
VSYNC	Period Time	Tv	276	292		H	
	Display Period	Tvdisp		272		H	
	Back Porch	Tvbp	2	12		H	By V_Blanking setting
	Front Porch	Tvfp	2	8		H	
	Pulse Width	Tvw	2	4		H	

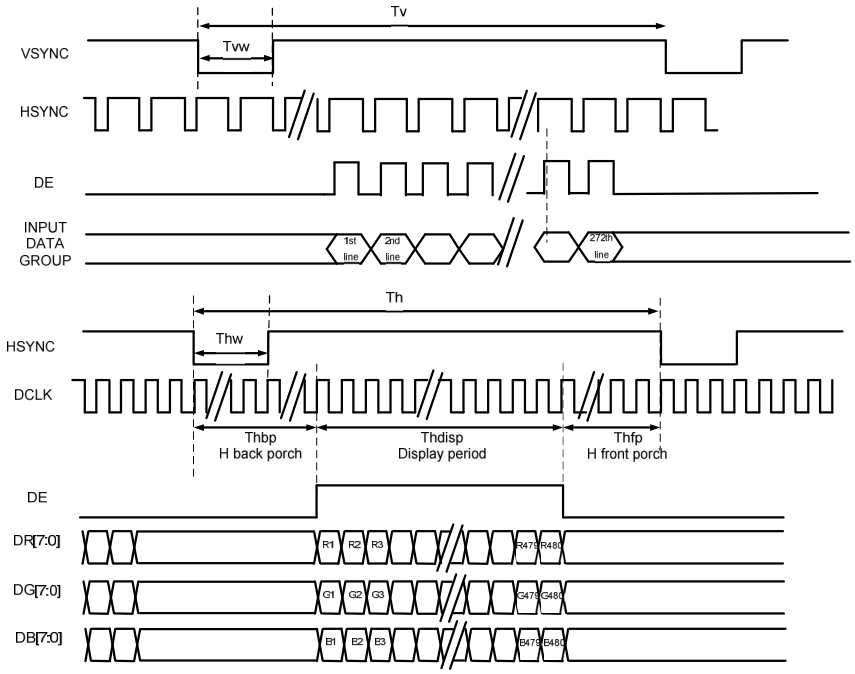
Note: It is necessary to keep Tvbp =12 and Thbp =43 in sync mode. DE mode is unnecessary to keep it.

3.3.2 Timing Diagram

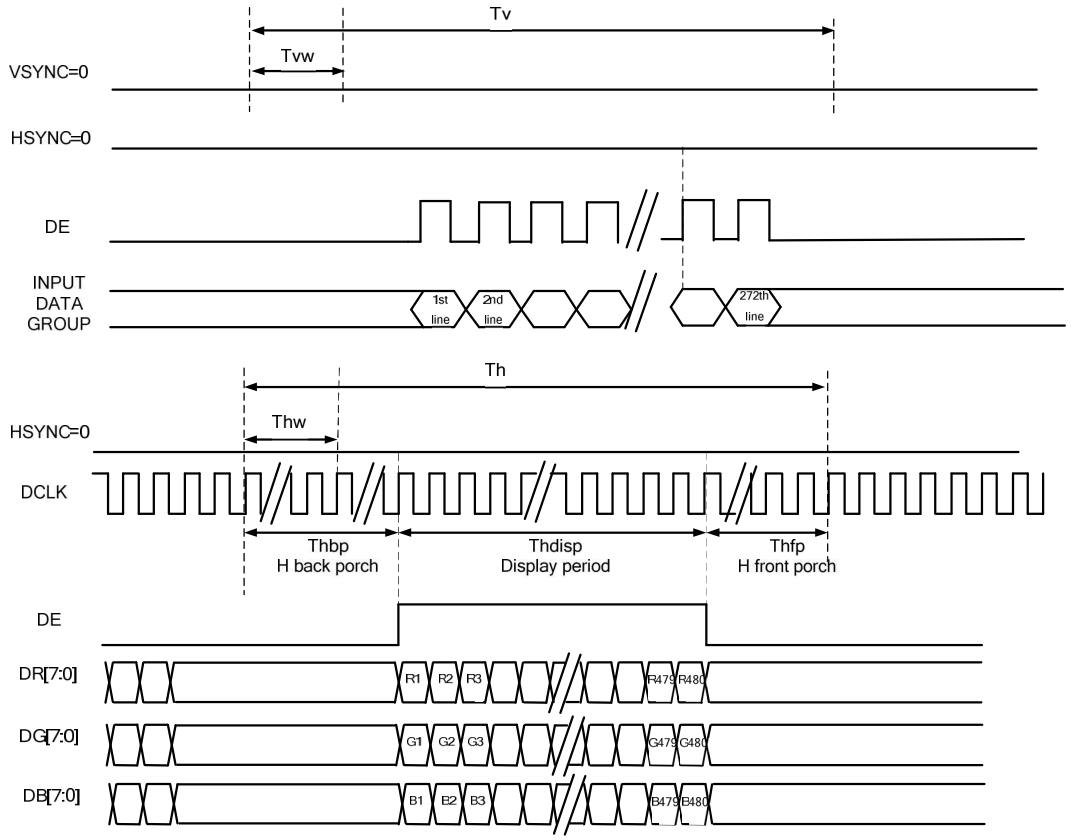
SYNC Mode Timing Diagram



SYNC-DE Mode Timing Diagram



DE Mode Timing Diagram



4. Optical Specifications

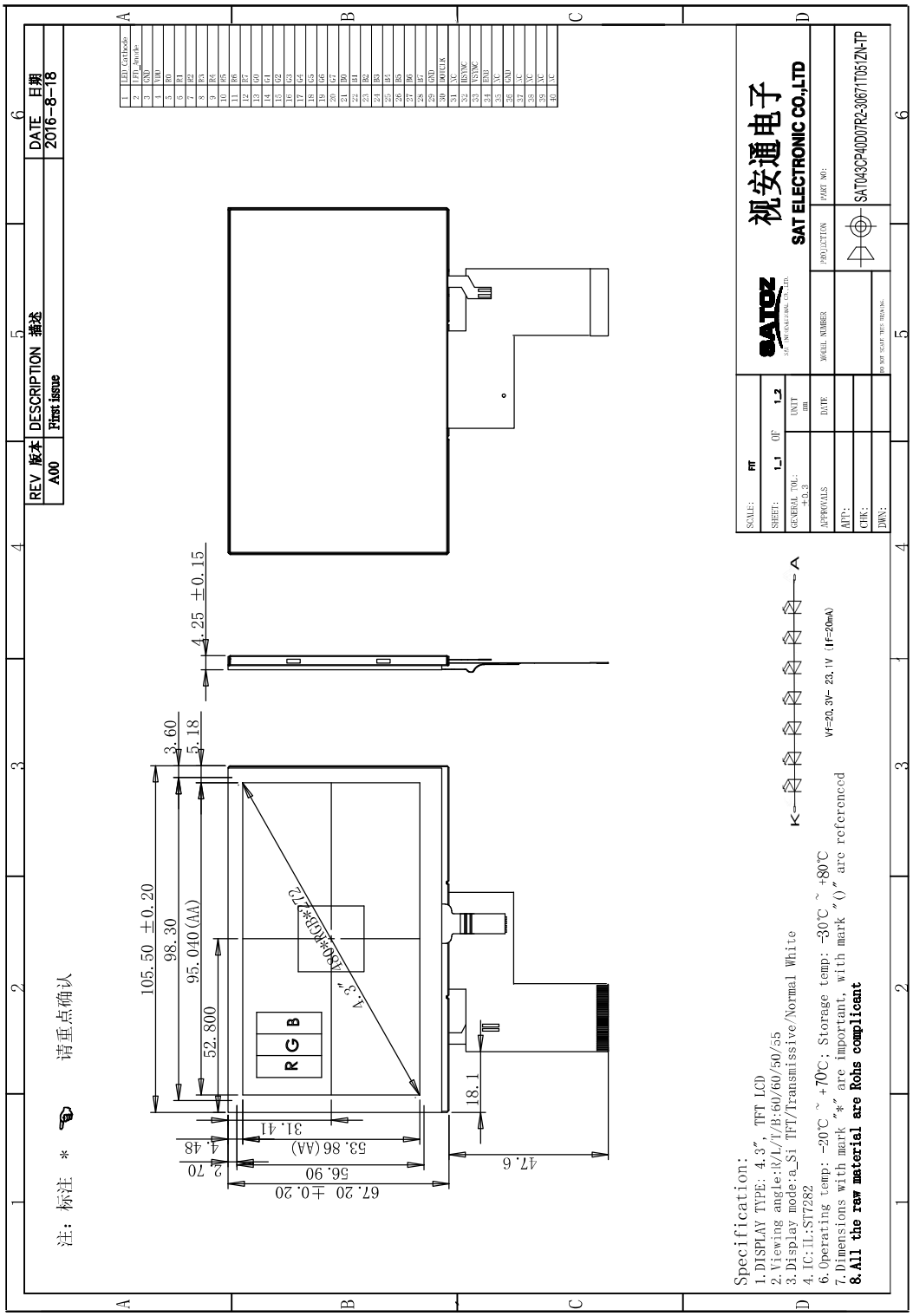
Ta=25 ℃

ITEM		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	REMARK
Transmittance		T		6.0	6.4		%	Note 2
Contrast Ratio		CR	*1)	250	350	--	--	Note 3
Response Time		Tr+ Tf	*3)	-	30	45	ms	Note 4
Viewing Angle	Vertical	θ*2)	CR≧10	90	110	--		
						--		Note 5
	Horizontal	ψ*2)		110	130	--		
						--		
Color Filter Chromacicity with C light	White	x	θ=ϕ= 0°	0.272	0.292	0.312		Note 6
		y		0.315	0.335	0.355		
	Red	x	θ=ϕ= 0°	0.589	0.609	0.629		
		y		0.297	0.317	0.337		
	Green	x	θ=ϕ= 0°	0.297	0.317	0.337		
		y		0.523	0.543	0.563		
	Blue	x	θ=ϕ= 0°	0.117	0.137	0.157		
		y		0.141	0.161	0.181		
	NTSC			-	48.1%	-		

Test Conditions:

1. DV_{DD}=3.3V, I_L=20mA(Backlight current),the amblent temperature is 25℃.
2. The test systems refer to Note 2.

5. Mechanical Drawing



6.Touch Panel Specification

6.1 Electrical Characteristics

Item	Value			Unit	Remark
	Min.	Typ.	Max.		
Lineanty	-1.5	-	+1.5	%	Afterenvinronment andlifelest
TerminalResistance	500	-	950	Ω	X(Glassside)
	160	-	330	Ω	Y(Glassside)
Insulation Resistance	20	-	-	MΩ	DC25V1min
OperatingVoltage	-	5	-	V	DC

6.2 Optical Characteristcs

Item	Value			Unit	Remark
	Min.	Typ.	Max.		
ResponseTime	-	-	10	ms	100KΩ pull-up
LightTransparency	75	-	-	%	-

6.3 Mechanical Characteristics

Item	Value			Unit	Remark
	Min.	Typ.	Max.		
ActiveForce	30	-	80	g	
SurfaceHardness	3	-	-	H	
PenSlidingDurability	100.000	-	-	time	
HittingDurability	1.000.000	-	-	time	

6.4 Mechanical Drawing