Specification for Approval

Customer:_____

Model Name:_____

Supplier Approval			Customer approval
R&D Designed	R&D Approved	QC Approved	
Peter	Peng Jun		

Table of Contents

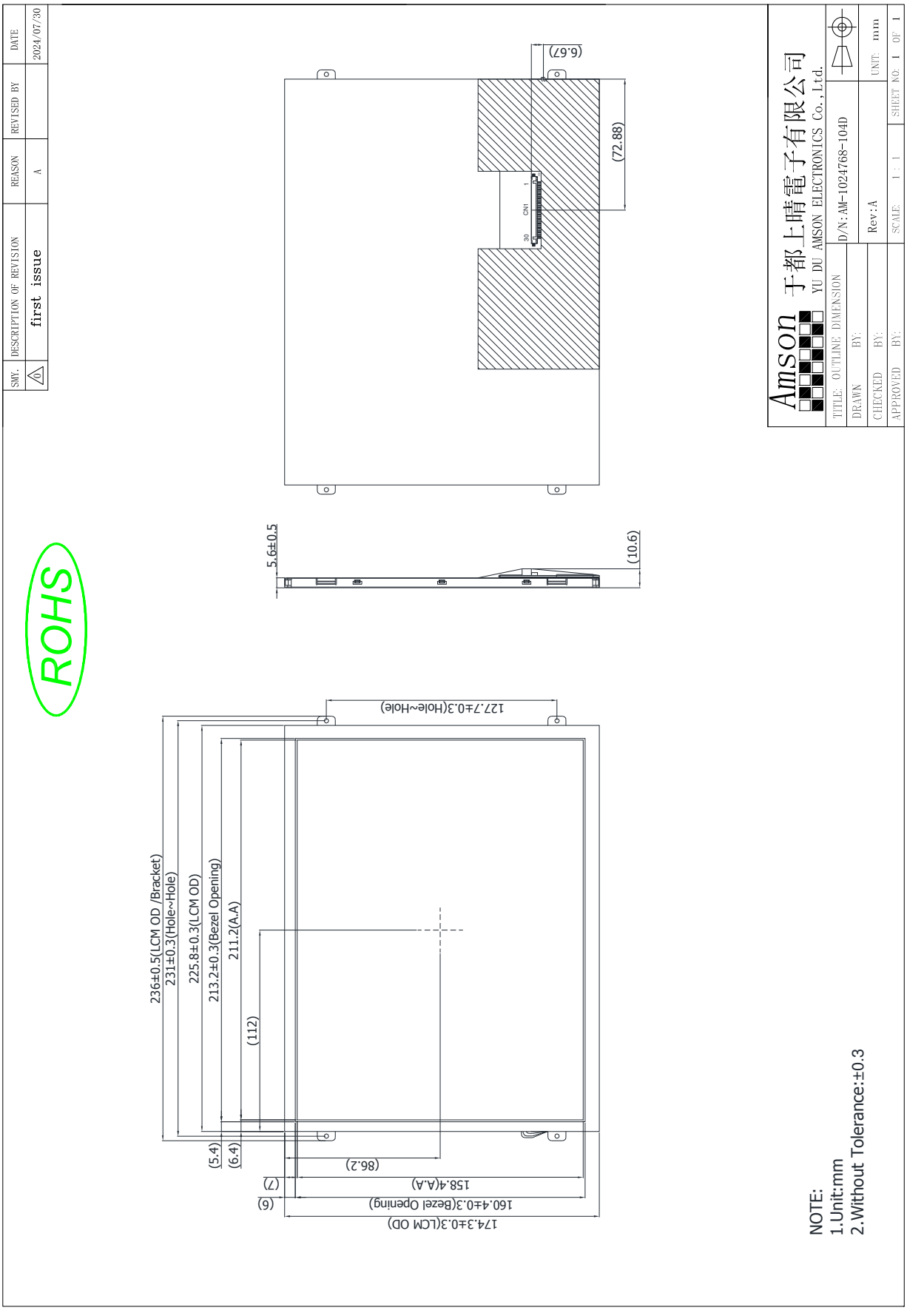
1. RECORD OF REVISION

REV NO.	REV DATE	CONTENTS	Note
A	2024-07-30	NEW ISSUE	

2.MECHANICAL SPECIFICATIONS

(1)	Number Of Dots (Dots)	1024(H) × 768(V)
(2)	Module Size(mm)	236.0(W) X174.3(H) X 10.6 (D)
(3)	Active Area(mm)	211.2(W) X158.4(H)
(4)	Pixel Pitch(mm)	0.20625(W) X0.20625(H)
(5)	LCD / Polarizer Model	TFT , Transmissive , Normally Black Anti-glare ,Hard coating
(6)	LED Backlight Color	White
(7)	Viewing Direction(Typ.)	Wide viewing angle Horizontal :Right side 85°,Left side85° Vertical : Up side 85°,Down side 85°
(8)	Color Configuration	R.G.B Vertical Stripe
(9)	Interface	LVDS
(10)	Module Weight(g)	340± 5%

3. OUTLINE DIMENSIONS



4. INTERFACE PIN CONNECTION

CN1 Connector：STM MSBK2407P30 RF:HB or Equivalent

PIN NO.	SYMBOL	I/O	FUNCTION	REMARK
1	GND	P	Ground	
2	VDD	P	Power supply for LCD	
3	VDD	P	Power supply for LCD	
4	SELB	I	6/8 bits LVDS data input selection	Note 1
5	UPDN	I	Vertical display mode select signal (Up/Down)	Note 2
6	SHLR	I	Horizontal display mode select signal (Left/Right)	Note 2
7	GND	P	Ground	
8	RxIN0_N	I	Negative LVDS differential Data input	
9	RxIN0_P	I	Positive LVDS differential Data input	
10	GND	P	Ground	
11	RxIN1_N	I	Negative LVDS differential Data input	
12	RxIN1_P	I	Positive LVDS differential Data input	
13	GND	P	Ground	
14	RxIN2_N	I	Negative LVDS differential Data input	
15	RxIN2_P	I	Positive LVDS differential Data input	
16	GND	P	Ground	
17	RxCLK_N	I	Negative LVDS differential Clock input	
18	RxCLK_P	I	Positive LVDS differential Clock input	
19	GND	P	Ground	
20	RxIN3_N	I	Negative LVDS differential Data input	
21	RxIN3_P	I	Positive LVDS differential Data input	
22	GND	P	Ground	
23	EN	I	Enable control for backlight	
24	PWM	I	Brightness control for backlight	
25	GND	P	Ground for backlight	
26	GND	P	Ground for backlight	
27	GND	P	Ground for backlight	
28	VLED	P	Power supply for backlight	
29	VLED	P	Power supply for backlight	
30	VLED	P	Power supply for backlight	

Note： ‘P’ stand for Power, ‘ I ‘ stand for Input

Note 1：

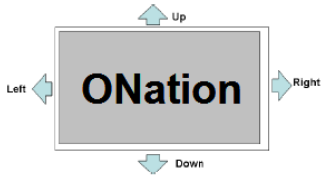
SELB = “0”, LVDS input data is 8bits

SELB = “1” or NC, LVDS input data is 6bits

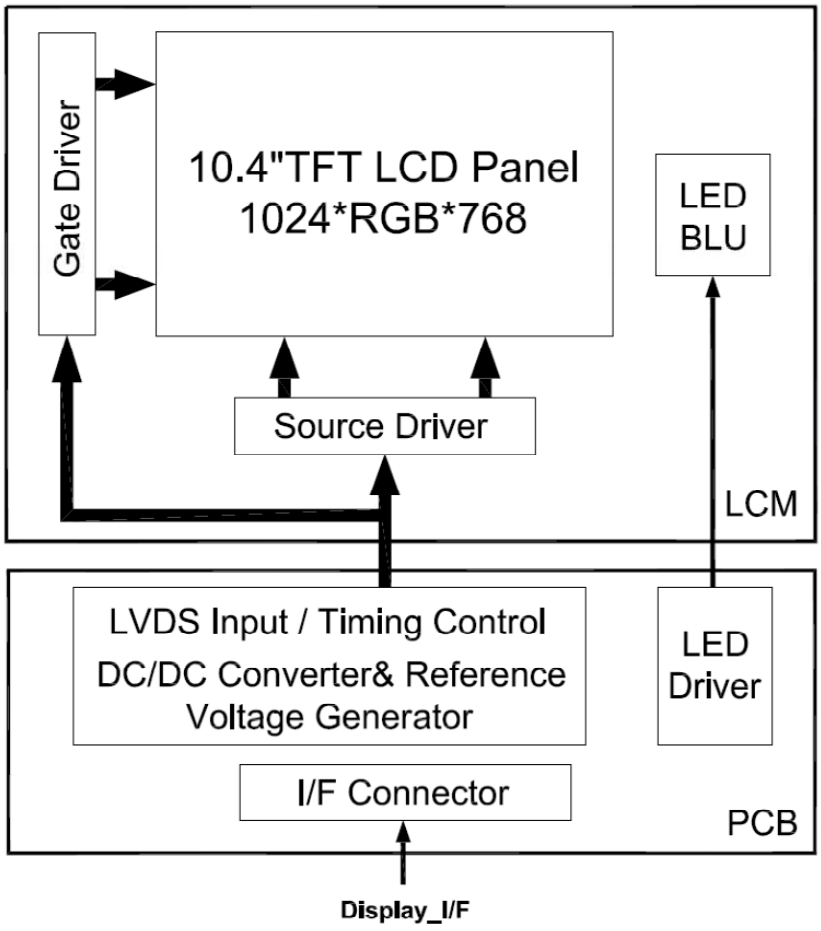
Note 2：UPDN=0 / SHLR=1 (Normally Display)

UPDN and SHLR control function

UPDN	SHLR	Data shifting
0	1	Normally display
0	0	Inverse Left and Right
1	1	Inverse Up and Down
1	0	Inverse Left and Right Inverse Up and Down



5. BLOCK DIAGRAM



6.ABSOLUTE MAXIMUM RATINGS

6.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	REMARK
Supply Voltage	VCC	-0.3	+5.0	V	
	VLED	+5.0	+28.0	V	

Note: The absolute maximum rating values of this product not allowed to be exceeded at any times. Should be module be used with any of absolute maximum ratings exceeded. The characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

6.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	OPERATING		STORAGE		REMARK
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature(℃)	-20	70	-30	80	Note 1、2
Humidity(% RH)	90%(Max)		90%(Max)		Note 3

Note 1 : The response time will become lower when operated at low temperature.
Note 2 : Background color changes slightly depending on ambient temperature.
Note 3 : Operating Ta=(+60℃) & RH=90%.

7.ELECTRICAL CHARACTERISTICS

7.1 ELECTRICAL CHARACTERISTICS OF LCD

Ta=25℃

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Power supply Voltage for LCD	VDD	3.0	3.3	3.6	V	
	IDD	-	380	-	mA	Note 1
Input signal Voltage	Vih	0.8VDD	-	VDD	V	
	Vil	0	-	0.2VDD	V	

Note 1：Test condition：VDD=3.3V；Test Pattern：White

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	Condition
Differential Input Threshold Voltage	Vth			100	mV	VCM =1.2
	Vtl	-100			mV	
Differential Input Voltage	|VID|	200		600	mV	
Common Mode Voltage	VCM	0.7	1.2	1.6	V	

7.2 BACKLIGHT UNITS

Ta=25℃

		SYMBOL	MIN.	TYP.	MAX.	UNIT	Condition
LED Driving Voltage		VLED	9.0	12.0	15.0	V	
		ILED	-	710	760	mA	VLED=12V
PWM Control Level	High Level	-	1.5	3.3	3.6	V	
	Low Level	-	0	-	0.6	V	
PWM Control Frequency		f_{PWM}	200	-	2K	Hz	
LED Life Time		-	30,000	50,000	-	Hrs	Note 1.2

Note 1: The LED of B/L is drive by current only, drive voltage is for reference only. drive voltage can make driving current under safety area(current between minimum and maximum). 50,000 hours is only an estimate for reference.

Note 2: The life time of LED is defined as the time when it continues to operate under the conditions at Ta= 25 ±2℃ and PWM=100% until the brightness becomes ≦50% of its original value.

8.OPTICAL CHARACTERISTICS

Ta=25℃

ITEM		SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT	REMARK
Contrast Ratio		CR	Viewing Normal Angle Θx=Θy=0°	600	900	-	-	Note 1
Response Time		TR+TF		-	30	40	ms	Note 2
Color chromaticity	White	x		0.273	0.313	0.353	-	
		y		0.289	0.329	0.369	-	
Viewing Angle	Hor.	θL	Viewing Angle Θx=Θy=0° CR≧10	80	85	-	Deg.	Note 3
		θR		80	85	-		
	Ver.	θT		80	85	-		
		θB		80	85	-		
Luminance		L	PWM=100%	-	1200	-	cd/m2	
Luminance Uniformity		YU		70	80	-	%	Note 5

Note 1：Definition of Contrast Ratio (CR)：

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L63/L0

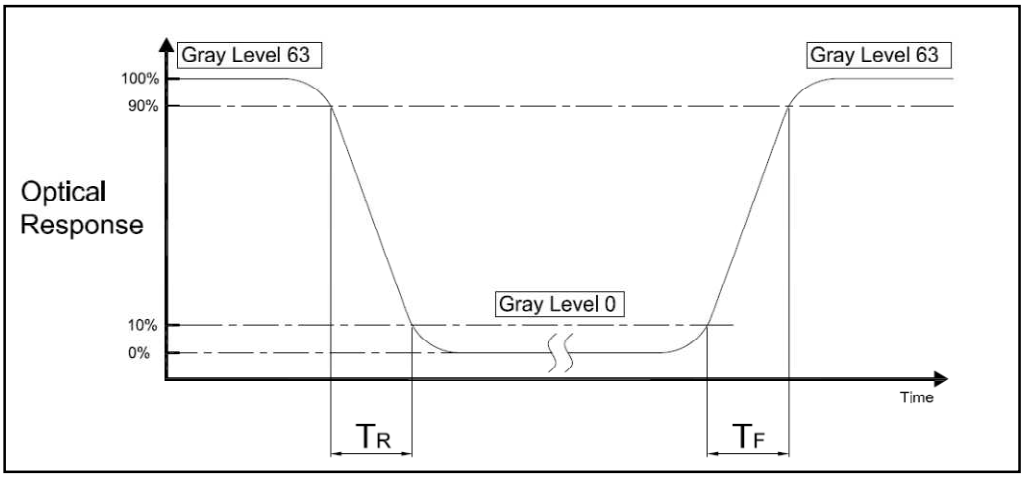
L63：Luminance of gray level 63

L0：Luminance of gray level 0

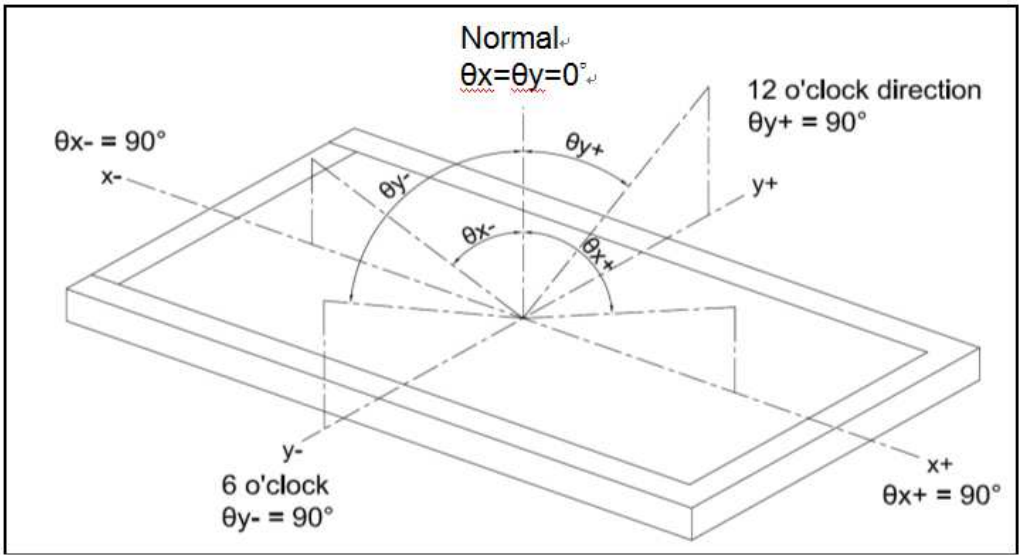
CR = CR(5)

CR(X) is corresponding to the Contrast Ratio of the point X at Figure in Note 5

Note 2：Definition of Response Time (TR.TF)

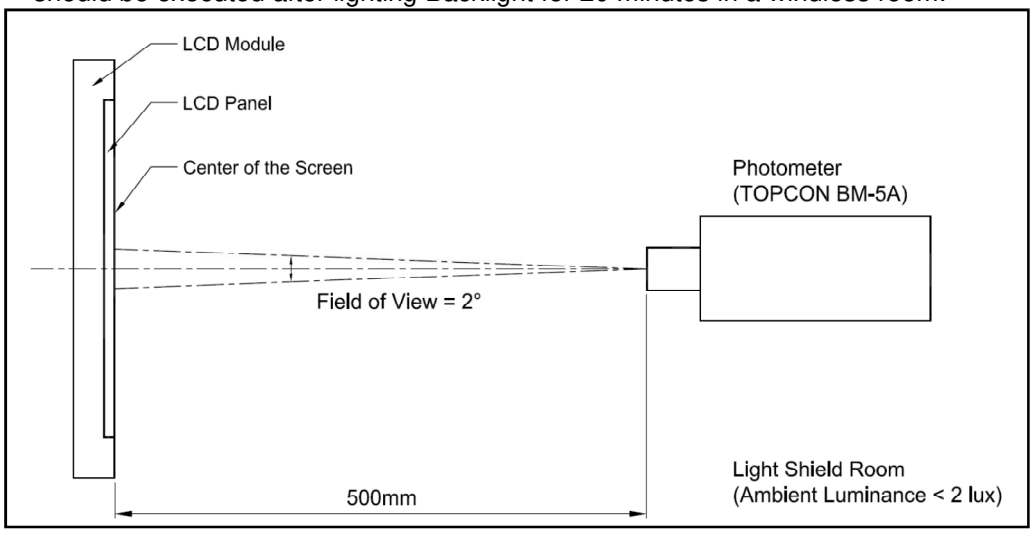


Note 3：Definition of Viewing Angle

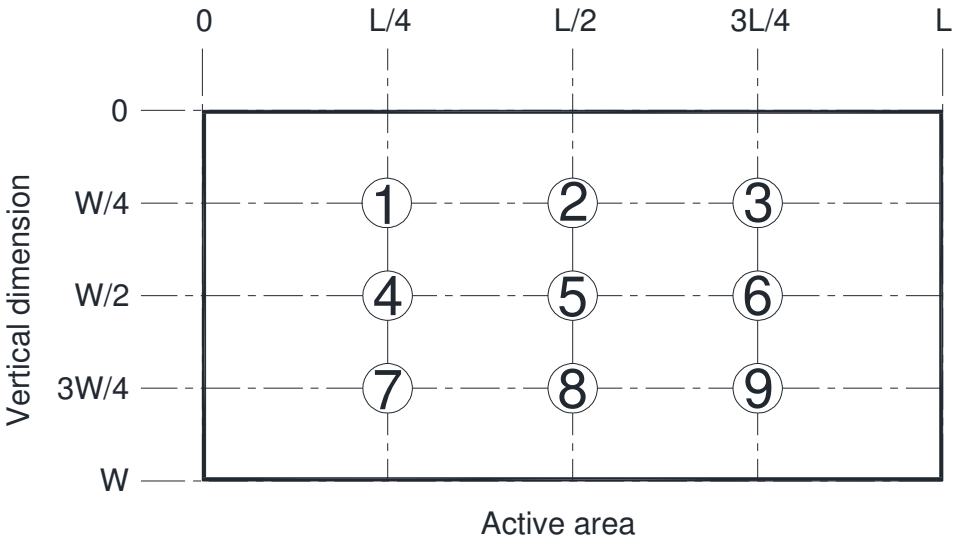


Note 4：Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.



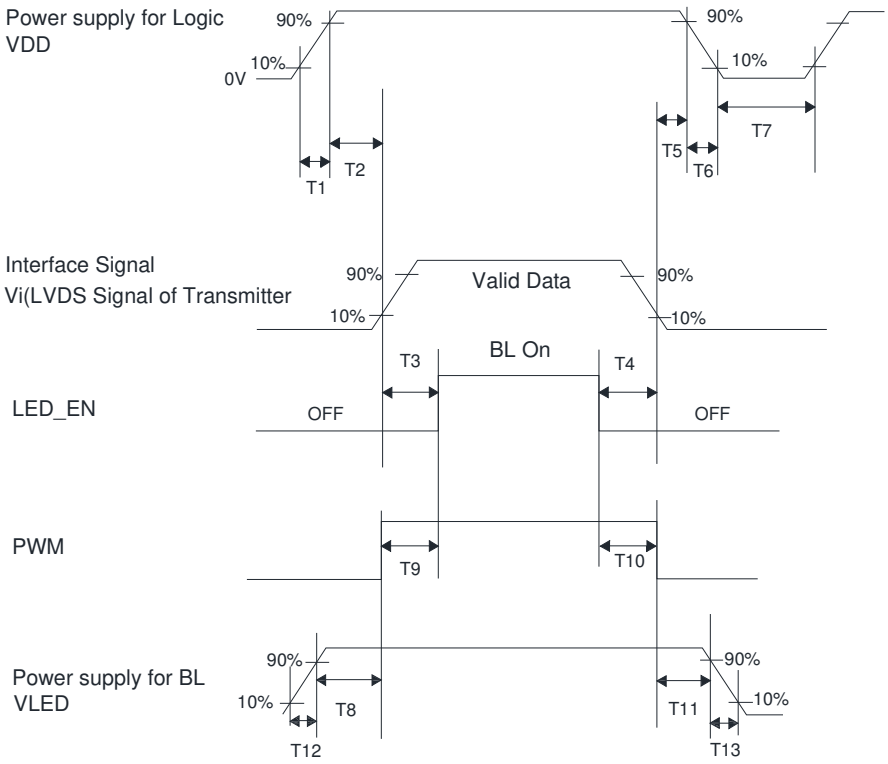
Note 5 :



$$\left(1 - \frac{\text{MAX Luminance - Average Luminance}}{\text{Average Luminance}}\right) \text{X } 100\% = \text{YU}$$

9. TIMING SPECIFICATIONS

9.1 Power On/Off Sequence



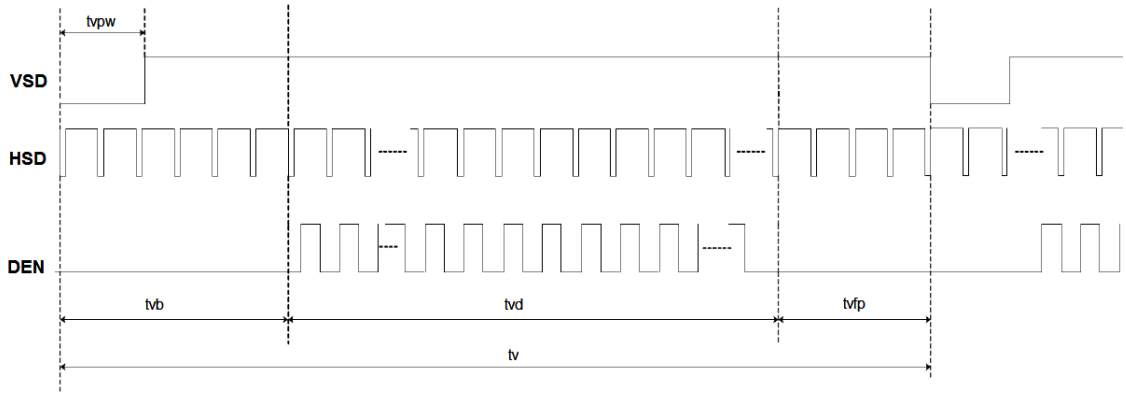
Parameter	Value			Unit
	Min.	Typ.	Max.	
T1,T6	0.5		10	ms
T2	50			ms
T3,T4 T9,T10	50			ms
T5	50			ms
T7	200			ms
T8	50			ms
T11	50			ms
T12,T13	0.5		10	ms

9.2 Interface Timing (DE mode)

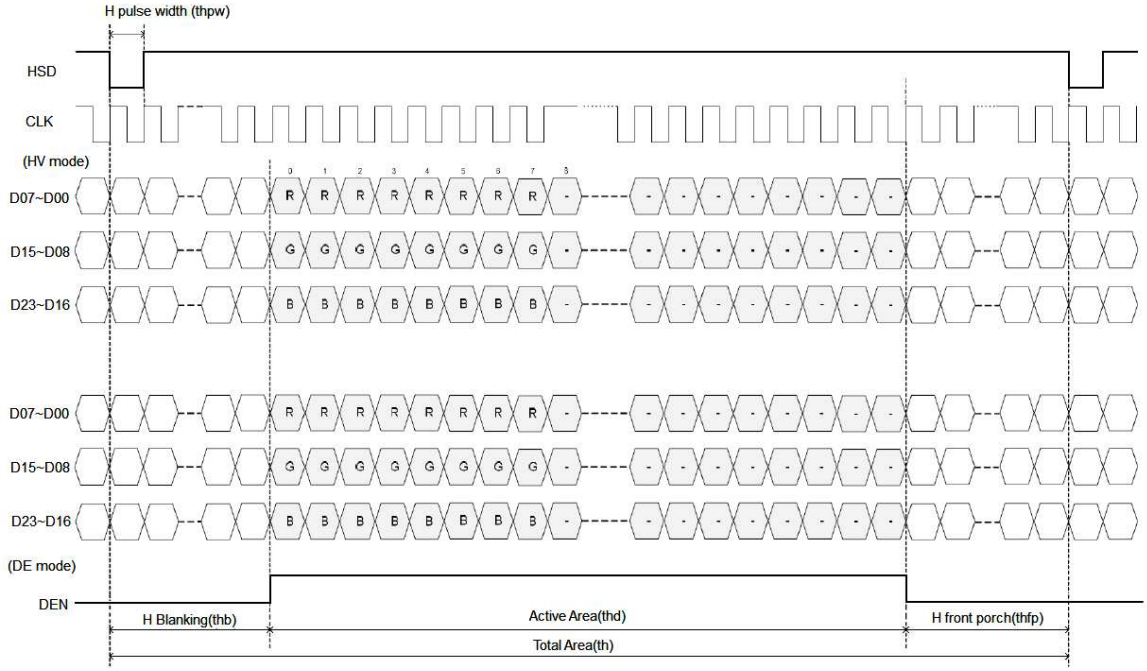
DE mode					
Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency @Frame rate=60hz	fclk	52	65	71	Mhz
Horizontal display area	thd		1024		DCLK
HSYNC period time	th	1114	1344	1400	DCLK
HSYNC blanking	thb+thfp	90	320	376	DCLK
Vertical display area	tvd		768		H
VSYNC period time	tv	778	806	845	H
VSYNC blanking	tvb+tvfp	10	38	77	H

9.3 Timing Diagram of Interface Signal (DE mode)

Vertical input timing

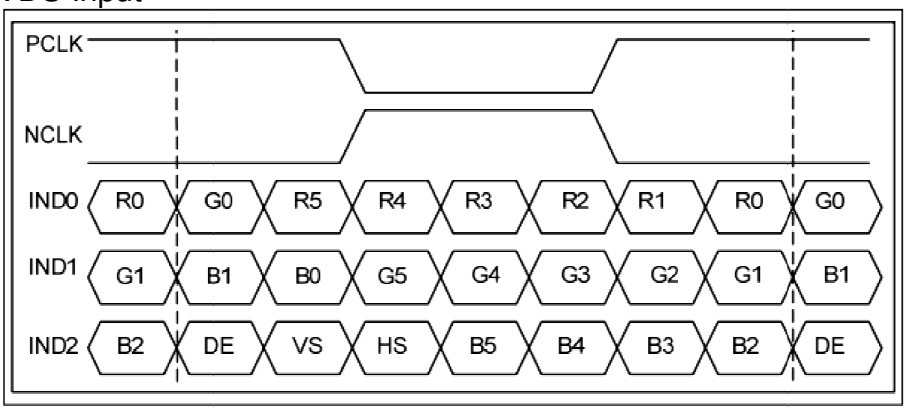


Horizontal input timing

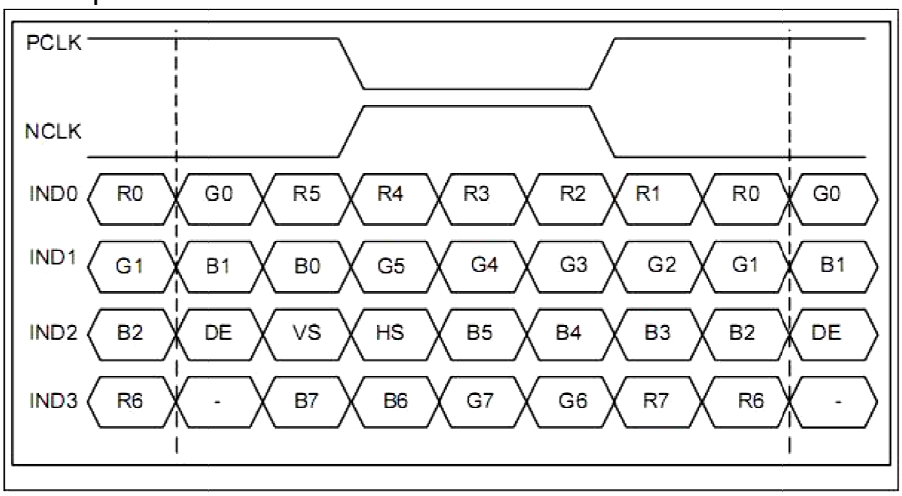


9.4 Bit LVDS Input

6 bits LVDS Input



8 bits LVDS Input



10. RELIABILITY TEST

ENVIRONMENTAL TEST				
NO.	ITEM	CONDITIONS	TIME PERIOD	REMARK
1	High Temperature Storage	Ta=80℃	(240hrs)	Note 1,3
2	Low Temperature Storage	Ta=-30℃	(240hrs)	Note 1,3
3	High Temperature High Humidity Storage	Ta=60℃,90%RH	(240hrs)	Note 3
4	High Temperature Operation	Ts=70℃	(240hrs)	Note 2,3
5	Low Temperature Operation	Ta=-20℃	(240hrs)	Note1,3
6	Temperature Cycle Operation	Ta=-20℃~ Ts=70℃ (30min)~(30min)	100 cycle	Note2,4

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.
Note 1: Ta is the ambient temperature of samples.
Note 2: Ts is the temperature of panel's surface.
Note 3: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.
Note 4: Star with cold temperature and end with high temperature.

11. PACKAGE INFORMATION

LCM Model	Quantity in the box	Outer Size (mm)	Weight (kg)	REMARK
AM-1024768-104D	20	530x350x250	9±5%	

12.PRECAUTIONS FOR USE

12.1 SAFETY

(1) Do not swallow any liquid crystal, even if there is no proof that liquid crystal is poisonous.
(2) If the LCD panel breaks, be careful not to get liquid crystal to touch your skin.
(3) If skin is exposed to liquid crystal, wash the area thoroughly with alcohol or soap.

12.2 STORAGE CONDITIONS

(1) Store the panel or module in a dark place where the temperature is 23±5°C and the humidity is below 50±20%RH.
(2) Store in anti-static electricity container.
(3) Store in clean environment, free from dust, active gas, and solvent.
(4) Do not place the module near organics solvents or corrosive gases.
(5) Do not crush, shake, or jolt the module.

12.3 HANDLING PRECAUTIONS

(1) Avoid static electricity which can damage the CMOS LSI.
(2) The polarizing plate of the display is very fragile. So, please handle it very carefully.
(3) Do not give external shock.
(4) Do not apply excessive force on the surface.
(5) Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the Surface of plate.
(6) Do not use ketonics solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.
(7) Do not operate it above the absolute maximum rating.
(8) Do not remove the panel or frame from the module.
(9) When the module is assembled, it should be attached to the system firmly, Be careful not to twist and bend the module.
(10) Wipe off water droplets or oil immediately . If you leave the droplets for a long time, staining and discoloration may occur.
(11) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, legs or clothes, it must be washed away thoroughly with soap.

12.4 WARRANTY

(1) Acceptance inspection period
The period is within one month after the arrival of contracted commodity at the buyer's factory site.
(2) Applicable warrant period
The period is within 12 months since the date of shipping out under normal using and storage conditions.