晶采光電科技股份有限公司
AMPIRE CO., LTD.

Specifications for LCD module

Customer	
Customer part no.	
Ampire part no.	**AM-4001280A3TZQW-00H-A**
Approved by	
Date	

☐ **Preliminary Specification**
■ **Formal Specification**

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Approved by	Checked by	Organized by
Patrick	Jessica	Simon

This Specification is subject to change without notice.

RECORD OF REVISION

Revision Date	Page	Contents	Editor
2025/05/26	-	New Release	Simon

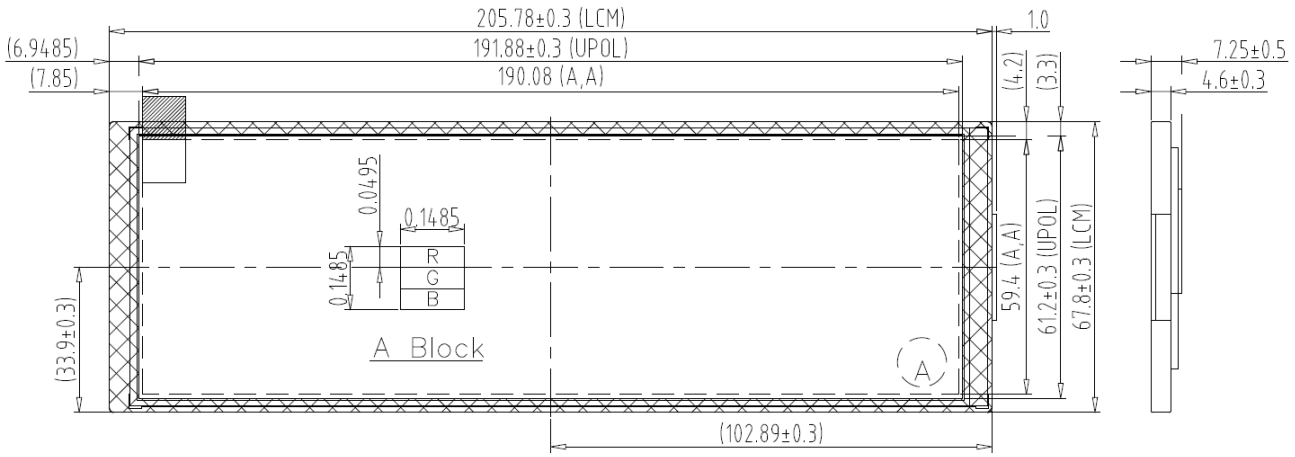
1. Features

The AM-4001280A3TZQW-00H is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This TFT LCD panel has an active display area with WXGA- resolution (400 horizontal by 1280 vertical pixels array).

(1) 7.84” TFT-LCD Panel
(2) Supported WXGA Resolution
(3) Interface: MIPI
(4) New IC
(5) Change to new tape for display frame
(6) ROHS compliant

2. Physical Specifications

Item	Specifications	Remark
LCD size	7.84 inch(Diagonal)	
Driver element	a-Si TFT active matrix	
Display resolution	400 (W) × 3(RGB) x 1280(H) dots	
Display mode	Normally Black	
Pixel pitch	0.1485 (W) x0.1485 (H) mm	
Color arrangement	R.G.B Vertical stripe	



3. Absolute Maximum Ratings

Item	Symbol	MIN	MAX	Unit	Remark
LC Operating Voltage (Ta = 25℃)	VOP	-4.5	4.5	V	(1),(2),(3)
Operating Temperature	TOP	**-30**	**85**	℃	
Storage Temperature	TST	**-30**	**85**	℃	

Note(1) Liquid Crystal driving voltage due to the characteristics of LC Material, this voltage varies with environmental temperature.

Note(2) Maximum Wet-Bulb should be 39 ℃. No condensation of water

Note(3) When the LCD Panel is working Please make sure to keep the temperature of LCD panel is less than 85℃

3.1 Electrical Absolute Maximum Ratings

No.	Item	Min.	Typ.	Max.	Unit
1	Frame Rate	TBD	60.0	TBD	Hz

Note(1) Environmental condition: 25±5 ºC

3.2 Typical Operation Conditions

Item		Symbol	Values			Unit	Remark
			Min.	Typ.	Max		
Power Voltage		VDD	3.0	3.3	3.6	V	25℃
Power Current		IDD	--	200	--	mA	25℃ For white pattern only VDD=3.3V
		Inrush current	--	0.8	1.2	A	25℃ VDD=3.3V
Logic Input Voltage	Input Voltage	VIN	0	-	VDD	V	25℃
	Logic input high voltage	VTH	0.7VDD	-	VDD	V	25℃
	Logic input low voltage	VTL	GND	-	0.3VDD	V	25℃

Above values are for reference only.

4. Optical Characteristics

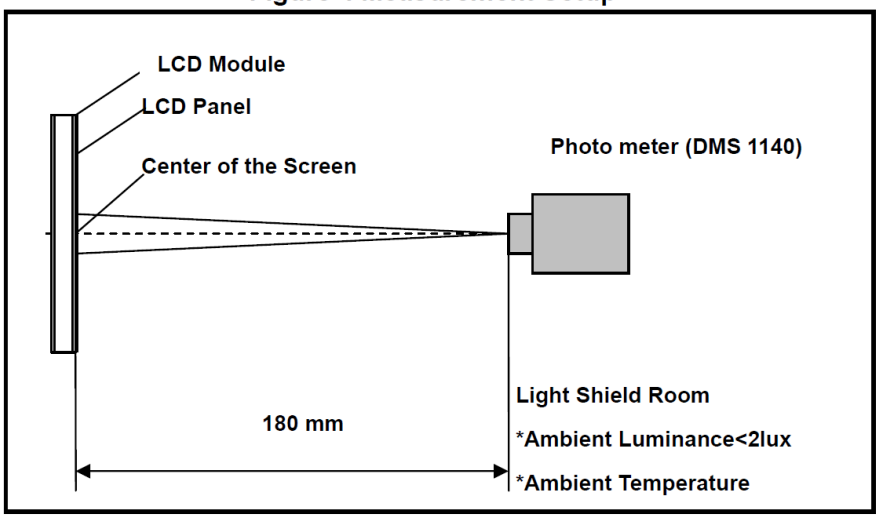
4.1 Characteristics

Item	Conditions		Min.	Typ.	Max.	Unit	Note
Viewing Angle （CR>10）	Horizontal	θ x+	(80)	(85)	-	degree	(1),(2)
		θ x -	(80)	(85)	-		
	Vertical	θ y+	(80)	(85)	-		
		θ y-	(80)	(85)	-		
Contrast Ratio	Center		TBD	(900)	-	-	(1),(3)
Response Time	Rising + Falling		-	35	-	ms	(1),(4)
CF Color Chromaticity (CIE1931)	Red	x	Typ. -0.05	TBD	Typ. +0.05	-	Under C-light
	Red	y		TBD		-	
	Green	x		TBD		-	
	Green	y		TBD		-	
	Blue	x		TBD		-	
	Blue	y		TBD		-	
	White	x		0.30		-	
	White	y		0.38		-	
NTSC	CIE1931		TBD	60		%	(1)
White luminance	Center		**560**	**700**	-	cd/m2	(IAK=160mA)

Note(1) Measurement Setup

The LCD module should be stabilized at given temperature(25℃) for 15 minutes to Avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 15 minutes in a windless room.

Figure 4 Measurement Setup



Note(2) Definition of Viewing Angle

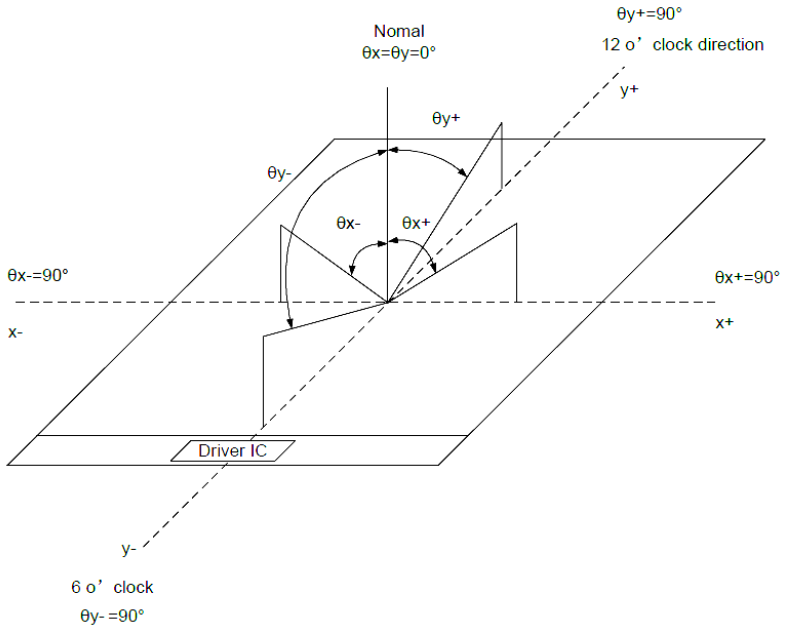


Figure 2 Definition of Viewing Angle

Note(3) Definition Of Contrast Ratio (CR)

The contrast ratio can be calculated by the following expression

Contrast Ratio (CR) = L255 / L0

L255: Luminance of gray level 255, L0: Luminance of gray level

Note(4) Definition Of Response Time

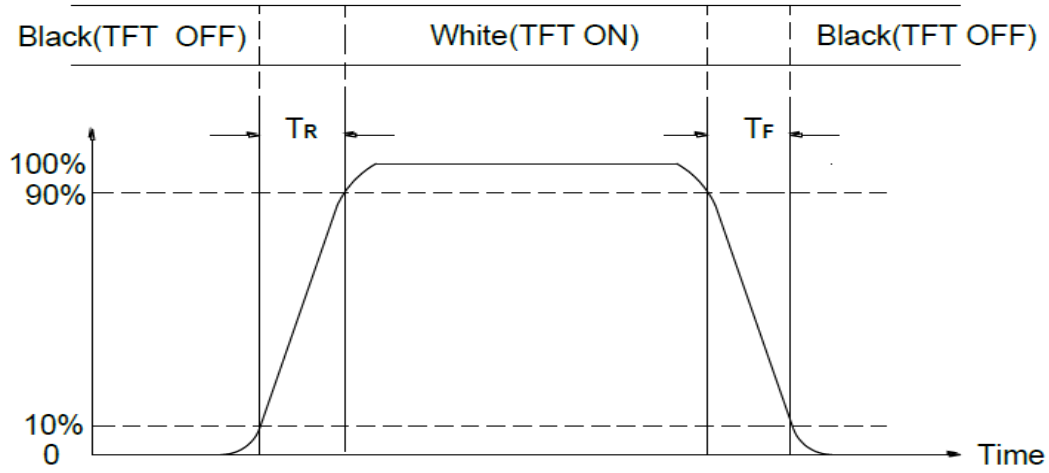


Figure 3 Definition of Response Time

Note(5) C-light Spectrum Based on VESA-1931

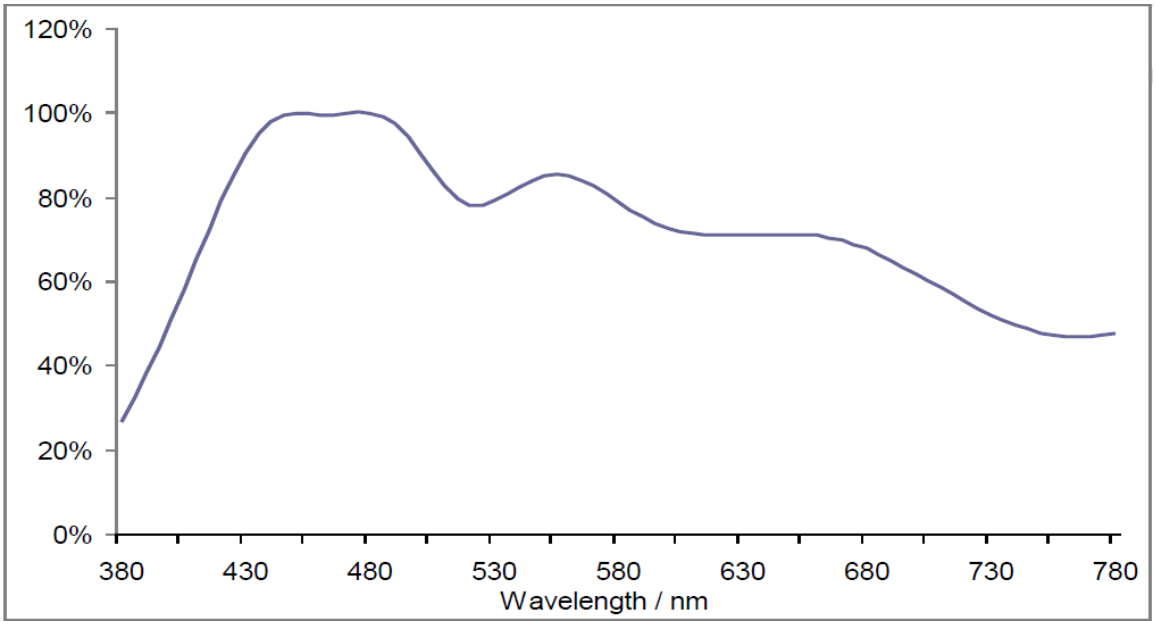
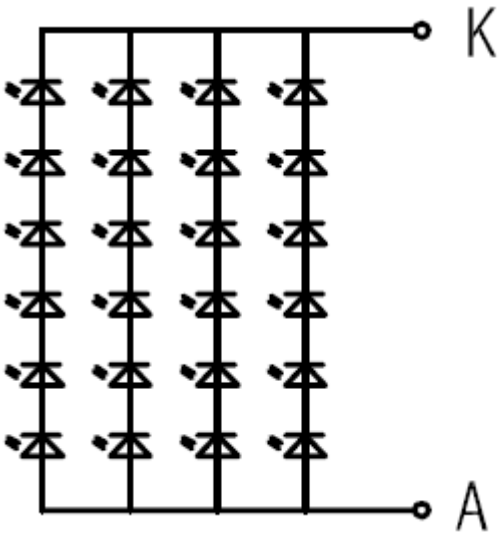


Figure 4 C-Light Spectrums

5. LED Driving Conditions

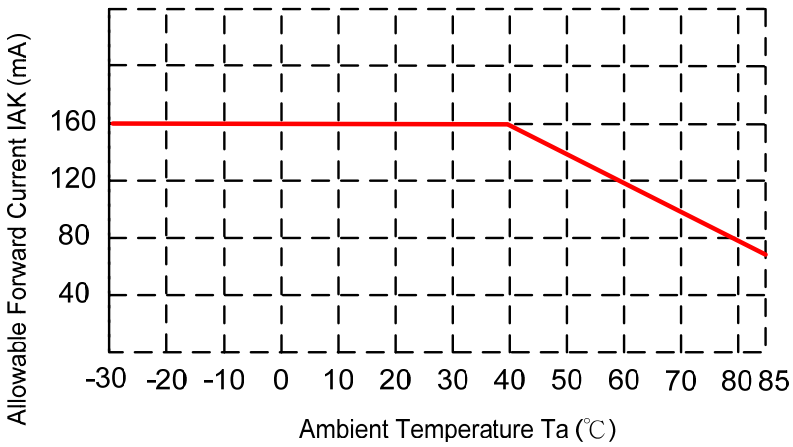
Item	Symbol	Min.	Typ.	Max	Unit	Condition
LED Backlight Voltage	VAK	15.9	17.4	20.4	V	IAK=160mA
LED Backlight Current	IAK	-	160	--	mA	Ta=25℃
LED Life Time		--	50K	-	Hrs.	Note*

Note(1) The LED Supply Voltage is defined by the number of LED , at Ta=25℃ and IAK=160 mA.



Note(2) The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25℃ and IAK =160mA. The LED lifetime could be decreased if operating IAK is larger than 160mA.

Note(3) When LCM is operated over 40℃ ambient temperature, the IAK should be follow :



6. Interface

Pin No.	Symbol	I/O	Function
1	GND	P	Ground
2	D0P	I	MIPI Data Input Lane0 positive-end
3	D0N	I	MIPI Data Input Lane0 negtive-end
4	GND	P	Ground
5	D1P	I	MIPI Data Input Lane1 positive-end
6	D1N	I	MIPI Data Input Lane1 negtive-end
7	GND	P	Ground
8	CLKP	I	MIPI Clock Input positive-end
9	CLKN	I	MIPI Clock Input negtive-end
10	GND	P	Ground
11	D2P	I	MIPI Data Input Lane2 positive-end
12	D2N	I	MIPI Data Input Lane2 negtive-end
13	GND	P	Ground
14	D3P	I	MIPI Data Input Lane3 positive-end
15	D3N	I	MIPI Data Input Lane3 negtive-end
16	GND	P	Ground
17	GND	P	Ground
18	NC	--	No connection
19	NC	--	No connection
20	NC	--	No connection
21	NC	--	No connection
22	NC	--	No connection
23	NC	--	No connection
24	RESET	I	Global reset
25	STBYB	I	Standby mode Normally pulled high, Standby mode pulled low
26	NC	--	No connection
27	GND	P	Ground
28	K	P	LED Cathode
29	K	P	LED Cathode
30	GND	P	Ground
31	NC	--	No connection

32	GND	P	Ground
33	GND	P	Ground
34	NC	--	No connection
35	A	P	LED Anode
36	A	P	LED Anode
37	GND	P	Ground
38	VDD-3V3	P	Power supply for digital circuits
39	VDD-3V3	P	Power supply for digital circuits
40	NC	--	No connection

7. Pixel Format

The figure shows the relationship of the input signals and LCD panel pixel format.

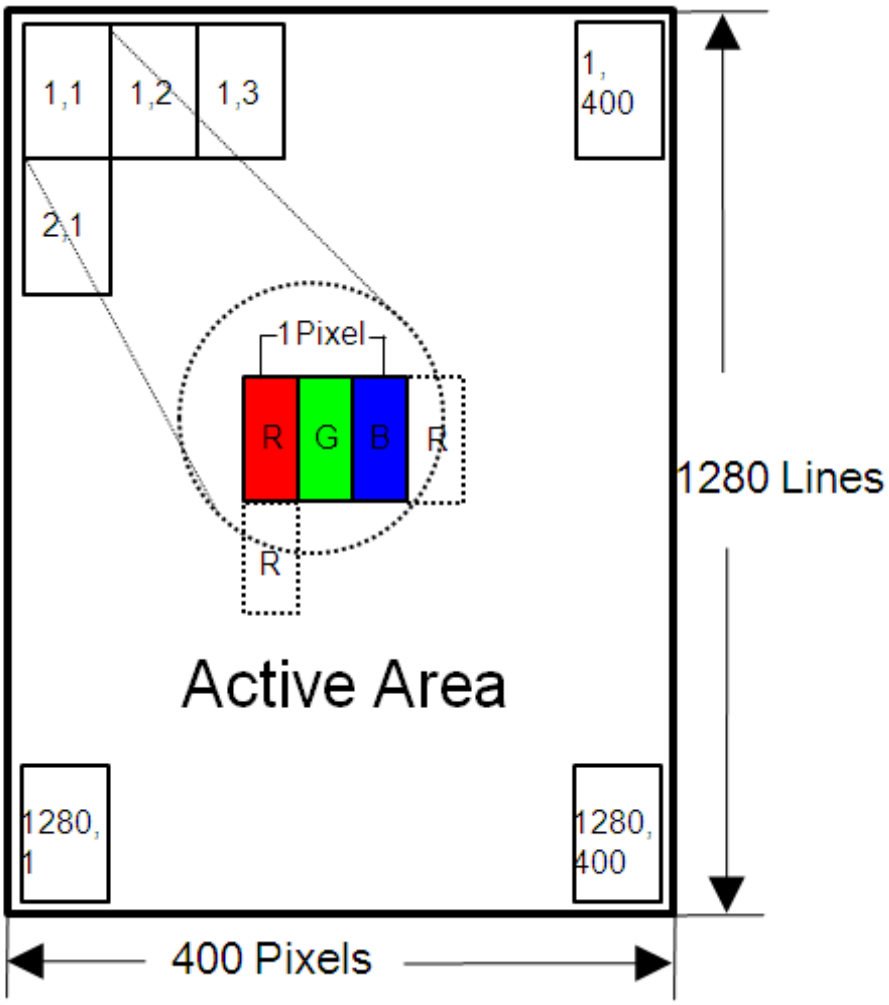
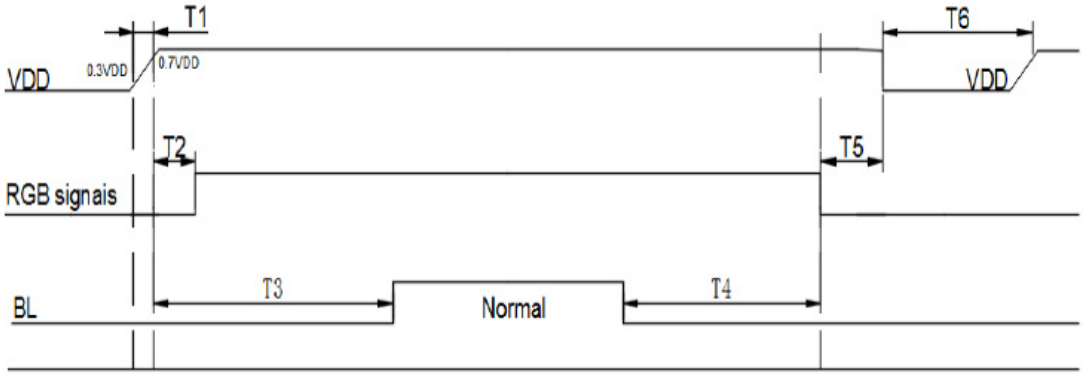


Figure 7 Pixel Format

8. Interface Timing

Item	Symbol	Min.	Typ.	Max.	Unit
MIPI data Frequency	FDATA	280	300	999	Mbps
Horizontal display area	THD		400		Pixel
HS period time	TH	475	530	750	Pixel
HS pulse width	THPW	5	30	50	Pixel
HS Back Porch	THBP	35	50	100	Pixel
HS Front Porch	THFP	35	50	200	Pixel
Vertical display area	TVD		1280		
VS period time	TV	1330	1360	1630	H
VS pulse width	TVPW	10	20	50	H
VS Back Porch	TVBP	20	30	100	H
VS Front Porch	TVFP	20	30	200	H

9. Power On / Off Sequence



Symbol	Spec			Unit
	Min	Typ	Max	
T1	1	-	10	ms
T2	16	-	-	ms
T3	184	200	-	ms
T4	120	-	-	ms
T5	16.6	-	-	ms
T6	500	-	-	ms

10. Reliability Test Conditions

Test Item	Test Conditions	Note
High Temperature Operation	85±3°C , t=240 hrs	
Low Temperature Operation	-30±3°C , t=240 hrs	
High Temperature Storage	85±3°C , t=240 hrs	1,2
Low Temperature Storage	-30±3°C , t=240 hrs	1,2
Storage at High Temperature and Humidity	60°C, 90% RH , 240 hrs	1,2
Vibration Test (Packing)	Sweep frequency : 10 ~ 55 ~ 10 Hz/1min Amplitude : 0.75mm Test direction : X.Y.Z/3 axis Duration : 30min/each axis	2

Note(1) Condensation of water is not permitted on the module.

Note(2) The module should be inspected after 1 hour storage in normal conditions (15-35°C, 45-65%RH).

Note(3) 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(4) Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

11. General Precautions

11.1 Safety

(1) Liquid crystal is poisonous. Do not put it your month. If liquid crystal touches your skin or clothes, wash it off immediately by using soap and water.

11.2 Handling

(1) The LCD panel is plate glass. Do not subject the panel to mechanical shock or to excessive force on its surface.
(2) The polarizer attached to the display is easily damaged. Please handle it carefully to avoid scratch or other damages.
(3) To avoid contamination on the display surface, do not touch the module surface with bare hands.
(4) Keep a space so that the LCD panels do not touch other components.
(5) Put cover board such as acrylic board on the surface of LCD panel to protect panel from damages.
(6) Transparent electrodes may be disconnected if you use the LCD panel under environmental conditions where the condensation of dew occurs.
(7) Do not leave module in direct sunlight to avoid malfunction of the ICs.

11.3 Static Electricity

(1) Be sure to ground module before turning on power or operation module.
(2) Do not apply voltage which exceeds the absolute maximum rating value.

11.4 Storage

(1) Store the module in a dark room where must keep at +25±10℃ and 65%RH or less.
(2) Do not store the module in surroundings containing organic solvent or corrosive gas.
(3) Store the module in an anti-electrostatic container or bag.

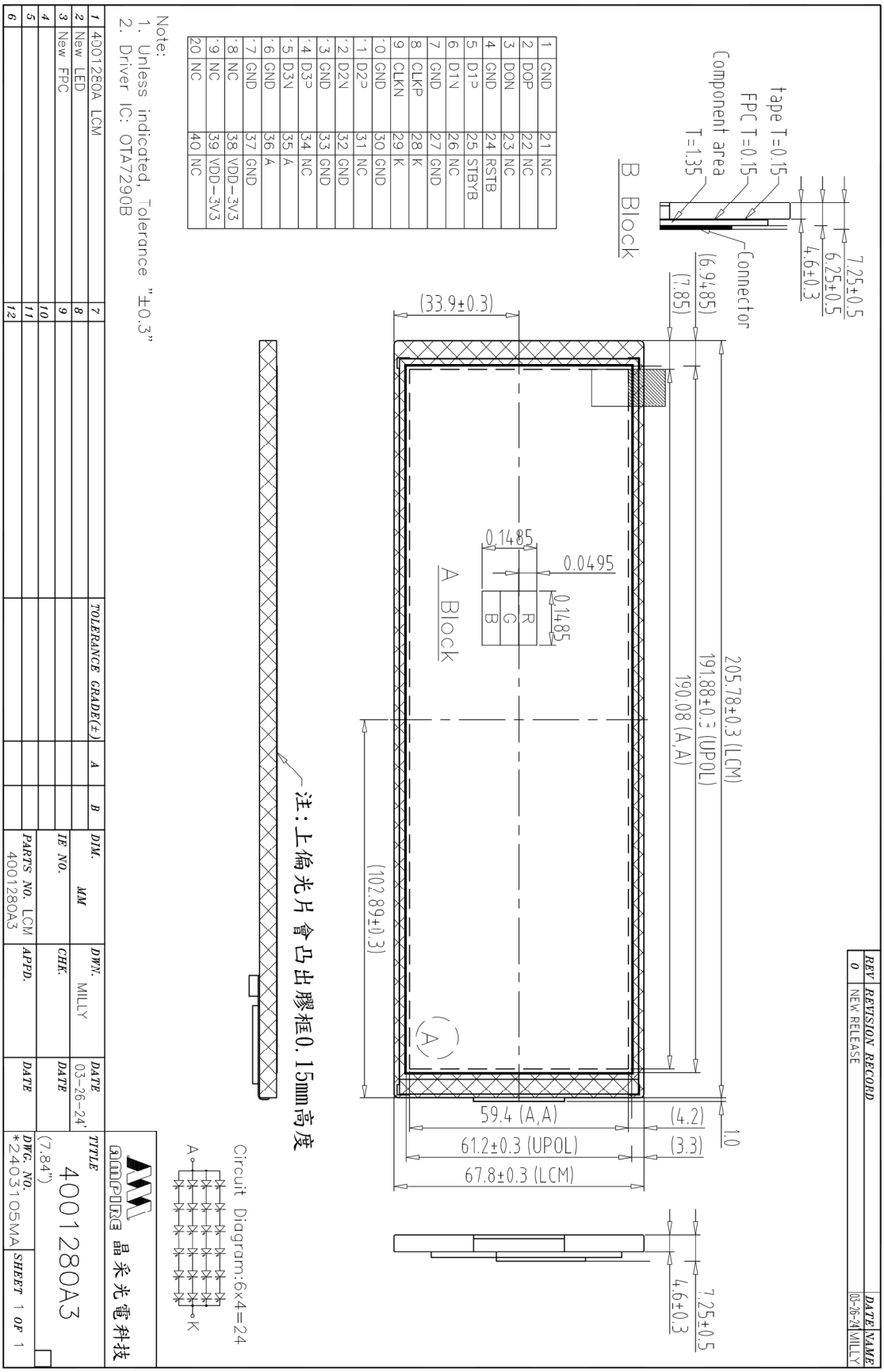
11.5 Cleaning

(1) Do not wipe the polarizer with dry cloth. It might cause scratch.
(2) Only use a soft sloth with IPA to wipe the polarizer, other chemicals might permanent damage to the polarizer.

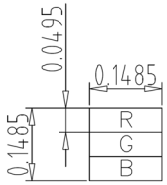
11.6 Others

(1) AMIPRE will provide one year warrantee for all products and three months warrantee for all repairing products.
(2) Do not keep the LCD at the same display pattern continually. The residual image will happen and it will damage the LCD. Please use screen saver.

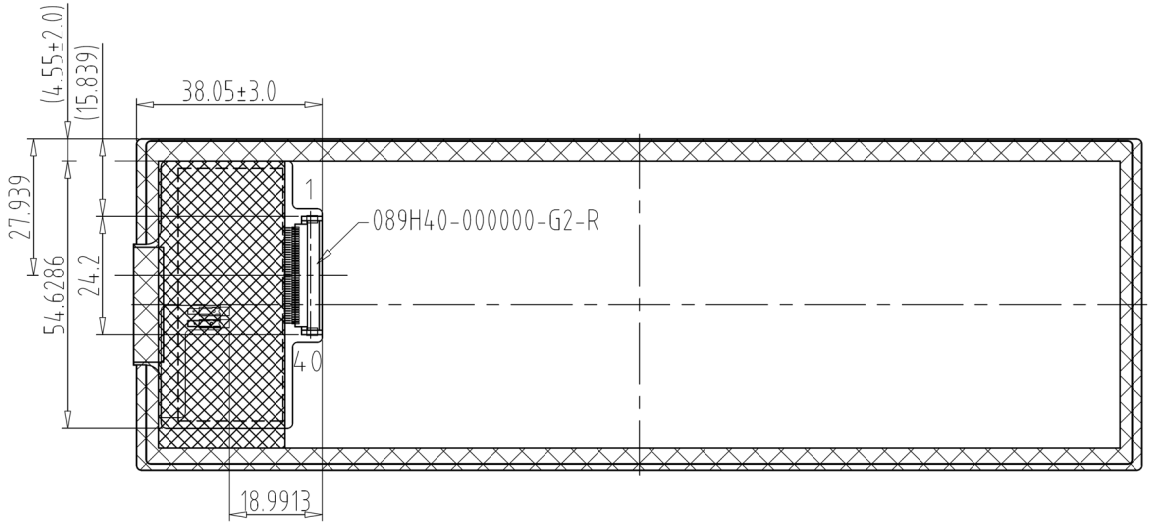
12. Outline Dimension



REV	REVISION RECORD	DATE	NAME
0	NEW RELEASE	03-26-24	MILLY



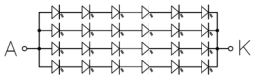
A Block



Back View

1	GND	21	NC
2	DOP	22	NC
3	DON	23	NC
4	GND	24	RSTB
5	D1P	25	STBYB
6	D1N	26	NC
7	GND	27	GND
8	CLKP	28	K
9	CLKN	29	K
10	GND	30	GND
11	D2P	31	NC
12	D2N	32	GND
13	GND	33	GND
14	D3P	34	NC
15	D3N	35	A
16	GND	36	A
17	GND	37	GND
18	NC	38	VDD-3V3
19	NC	39	VDD-3V3
20	NC	40	NC

Circuit Diagram:6x4=24



Note:
1. Unless indicated, Tolerance "±0.3"
2. Driver IC: OTA7290B

				TOLERANCE GRADE(±)	A	B	DIM. MM	DWN. MILLY	DATE 03-26-24'	TITLE 4001280A3 (7.84")
1	4001280A LCM	7								
2	New LED	8					IE NO.	CHK.	DATE	
3	New FPC	9								
4		10								
5		11					PARTS NO.LCM-1 4001280A3	APPD.	DATE	DWG. NO. *2403106MA
6		12								SHEET 1 OF 1

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13. Package

TBD