Tailorpixels

A Professional Manufacturer of Display

Manufacturer Certificated

9001 CERT. No.: 282Q19070712006

14001 CERT. No.: 282E19070712007

Product Specification

Model: TTC028BRS-01

2.8″TFT Display Module(480*480）

This module uses RoHS material

Tailor Pixels Technology Co., Ltd.
www.tailorpixels.com
tailor@tailorpixels.com
Ph: 86-755-8821 2653

Table of Contents

Revision History 3
1 General Specifications 4
2 Pin Assignment 5
3 Absolute Maximum Ratings 6
4 Electrical Characteristics 6
5 INTERFACE TIMING 8
5.1 System Bus Read/Write Characteristics. 8
5.2 Power ON/OFF Timing 9
6 Optical Characteristics 10
7 Environmental / Reliability Test 14
8 Mechanical Drawing 15
9 Precautions For Use of LCD Modules 16

Revision History

Rev	Issued Date	Description	Page	Editor
1.0	July 01, 2024	First release	All	

1 General Specifications

Feature		Specifications
Display Spec.	LCD type	2.76 inch
	Resolution (H*V)	480(RGB)×480
	Technology Type	a-Si TFT
	Pixel Configuration	R.G.B. Vertical Stripe
	Display Mode	Normally Black
	Surface Treatment	Glare
	Viewing Direction	ALL
Mechanical Characteristics	OutlineDimensions (W x H x T) (mm)	73.03*76.48*2.34
	Active Area(mm)	70.13*70.13
	With /Without Touch screen	Without CTP
	Match Connector	0.5pitch, 30pin
	Backlight Type	White LED
	Weight (g)	TBD
Electrical Characteristics	Interface	MIPI
	Number of color	16.7M
	Driver IC	ST7701S

Note 1: Viewing direction for best image quality is different from TFT definition. There is a 180 degree shift.

2 Pin Assignment

NO.	PIN NAME	Description
1	LEDA	LED anode
2	LEDK1	LED Cathode
3	LEDK2	LED Cathode
4	VCI	Power Supply 3.3V
5	IOVCC	Power Supply 3.3V
6	RESET	LCM reset signals
7	TE	Tearing effect output
8	PWM	The PWM frequency output for LCD driver control.
9	GND	Ground
10	D0P	DSI-D0+ data signals
11	D0N	DSI-D0- data signals
12	GND	Ground
13	D1P	DSI-D1+ data signals
14	D1N	DSI-D1- data signals
15	GND	Ground
16	CLKP	DSI-Clock+
17	CLKN	DSI-Clock-
18	GND	Ground
19	NC	NC
20	NC	NC
21	GND	Ground
22	VCI	Power Supply 3.3V
23	VCI	Power Supply 3.3V
24	GND	Ground
25	TP_INT	Touch Interrupt
26	TP_SDA	Touch IIC Data signal
27	TP_SCL	Touch IIC Clock signal
28	TP_RESET	Touch Reset Signal
29	TP_VCI	Touch Power supply
30	TP_IOVCC	Touch Power supply

Note1: I/O definition: I-----Input O---Output P----Power/Ground

3 Absolute Maximum Ratings

GND=0V, Ta= 25℃

Item	Symbol	Value	Unit
Power supply voltage for logic	V_{DD}	2.8~3.3	V
Input voltage	Vin	V_{DD}+0.3	V
Operating temperature	Topr	-20 to 70	°C
Storage temperature	Tstg	-30 to 80	°C

4 Electrical Characteristics

4.1 Driving TFT LCD Panel

GND=0V, Ta=25℃

Item	Symbol	Min	Type	Max	Unit	Test condition
Operating voltage	V_{DD}	-	2.8	3.3	V	-
Supply current	I_{DD}	-	TBD	-	mA	V_{DD}=2.8V,Ta=25°C
Input voltage	V_{IH}	0.8VDD	-	VDD	V	-
	V_{IL}	0	-	0.2VDD	V	
Input leakage current	I_{IL}	-1.0	-	1.0	μA	V_{IN}=V_{DD} or V_{SS}

Note: Voltage greater than above may damage the module.

All voltages are specified relative to VSS=0V.

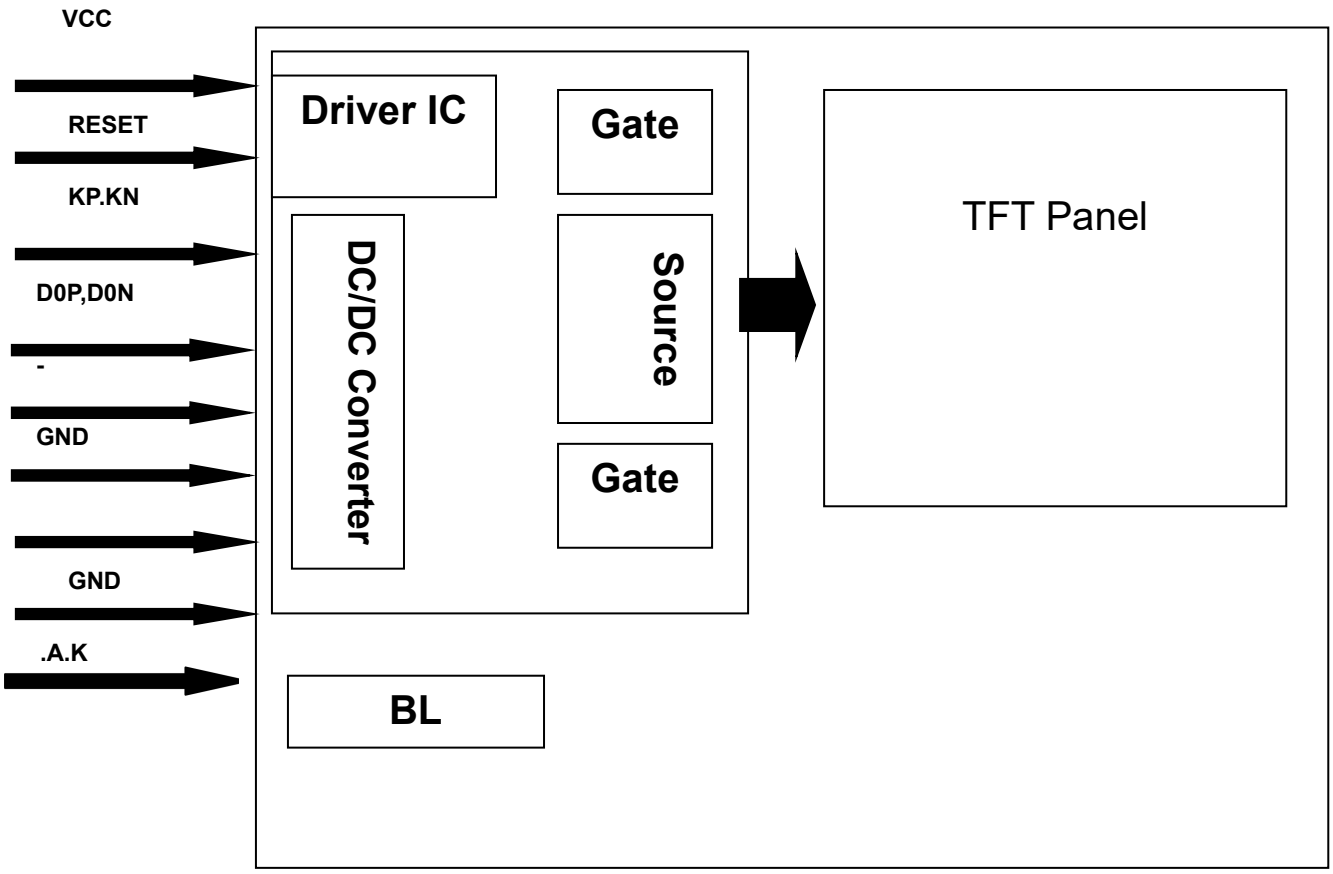
4.2 Driving Backlight

Ta=25℃

Item	Symbol	Min	Typ	Max	Unit	Remark
Forward Current	I_F	--	80	-	mA	
Forward Voltage	V_F	2.7	3.0	3.3	V	
Connection mode	P	-	4P	-		
LED number	/	-	4	-	pcs	

Note1: Optical performance should be evaluated at Ta=25℃ only .If LED is driven by high current, high ambient temperature & humidity condition. The life time of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.

4.3 Block Diagram



5 INTERFACE TIMING

5.1 System Bus Read/Write Characteristics.

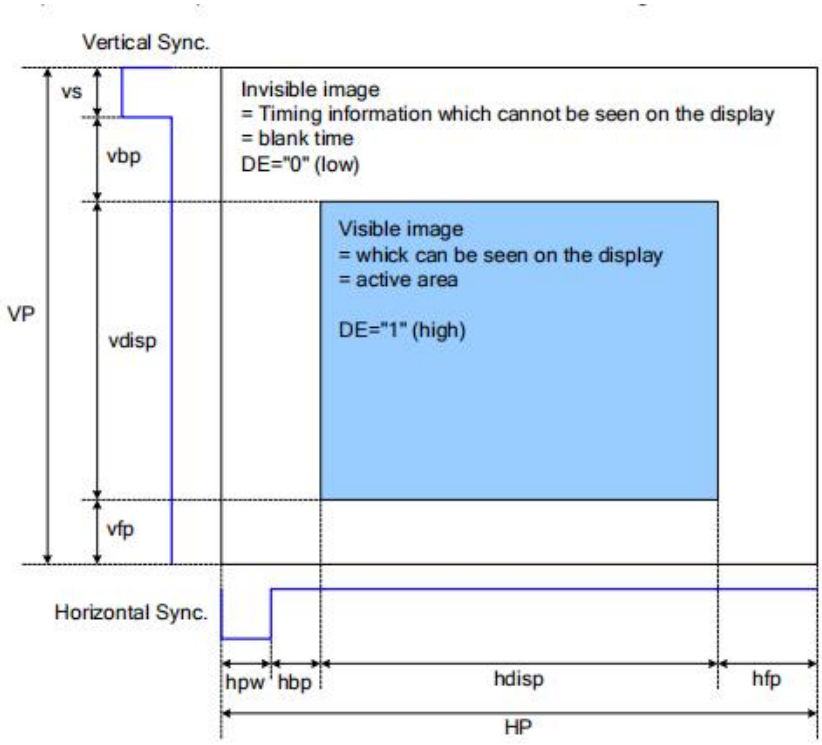


Figure 22 Access Area by RGB Interface

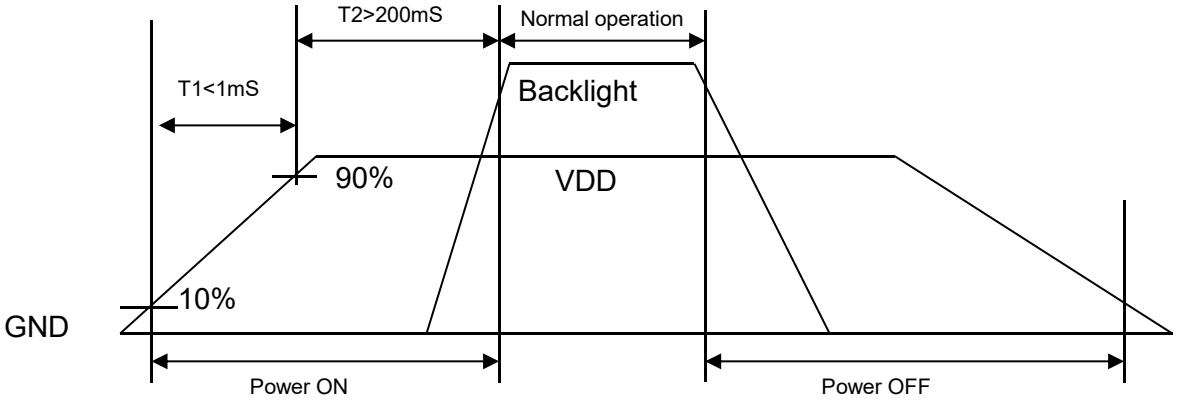
Please refer to the following table for the setting limitation of RGB interface signals.

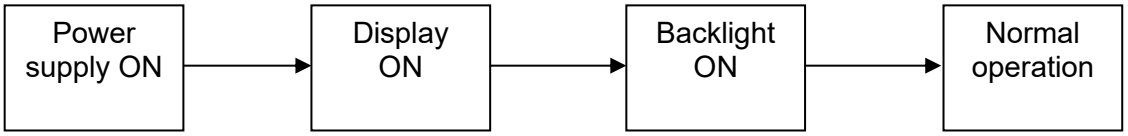
Parameter	Symbol	Min.	Typ.	Max.	Unit
Horizontal Sync. Width	hpw	1	-	255	Clock
Horizontal Sync. Back Porch	hbp	1	--	255	Clock
Horizontal Sync. Front Porch	hfp	1	--	-	Clock
Vertical Sync. Width	vs	1	--	254	Line
Vertical Sync. Back Porch	vbp	1	--	254	Line
Vertical Sync. Front Porch	vfp	2	--	--	Line

Note:

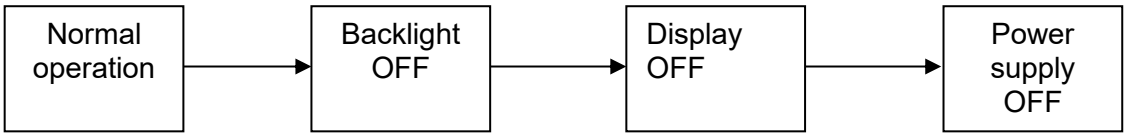
1. Typical value are related to the setting frame rate is 60Hz..

5.2 Power ON/OFF Timing





Power ON sequence



Power OFF sequence

6 Optical Characteristics

Ta=25℃

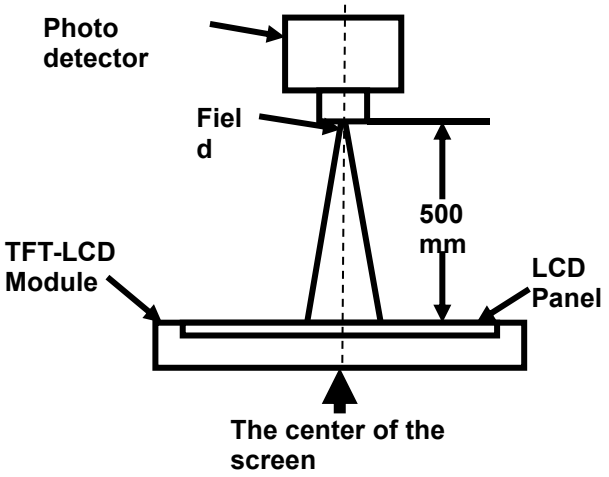
Item	Symbol	Condition	Min	Typ	Max	Unit	Remark
View Angles	θT	CR≧10	80	85	-	Degree	Note 2
	θB		80	85	-		
	θL		80	85	-		
	θR		80	85	-		
Contrast Ratio	CR	θ=0°	1000	1200	-	-	Note1 Note3
Response Time	T_{ON}	25℃	-	35	40	ms	Note1 Note4
	T_{OFF}						
Uniformity	U	-	70	80	-	%	Note1 Note6
NTSC	-	-	60	65	-	%	Note 5
Luminance	L		300	350	-	cd/m^2	Note1 Note7

Test Conditions:

1. V_F=3.0V, I_F=80mA , the ambient temperature is 25℃.
2. The test systems refer to Note 1 and Note 2.

Note 1: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



Item	Photo detector	Field
Contrast Ratio	SR-3A	1°
Luminance		
Chromaticity		
Lum Uniformity		
Response Time	BM-7A	2°

Note 2: Definition of viewing angle range and measurement system.

viewing angle is measured at the center point of the LCD by CONOSCOPE(ergo-80)。

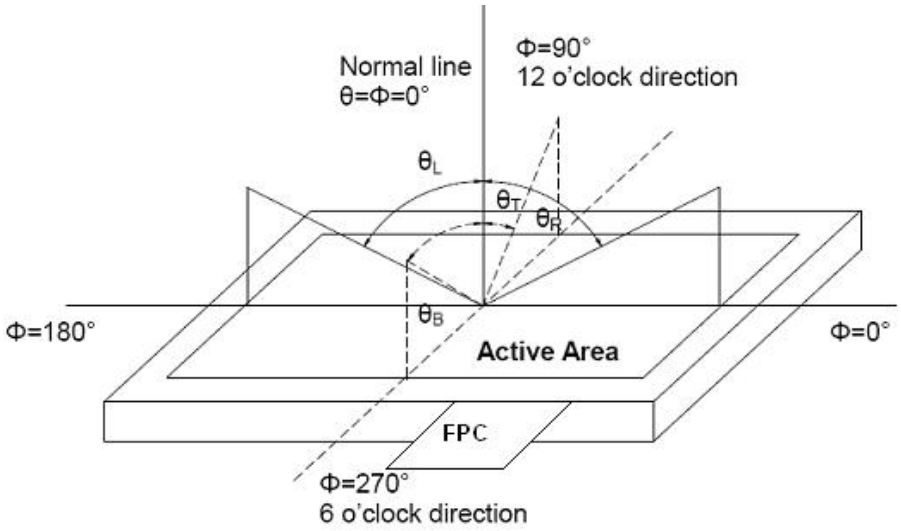


Fig. 1 Definition of viewing angle

Note 3: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD is on the "White" state}}{\text{Luminance measured when LCD is on the "Black" state}}$$

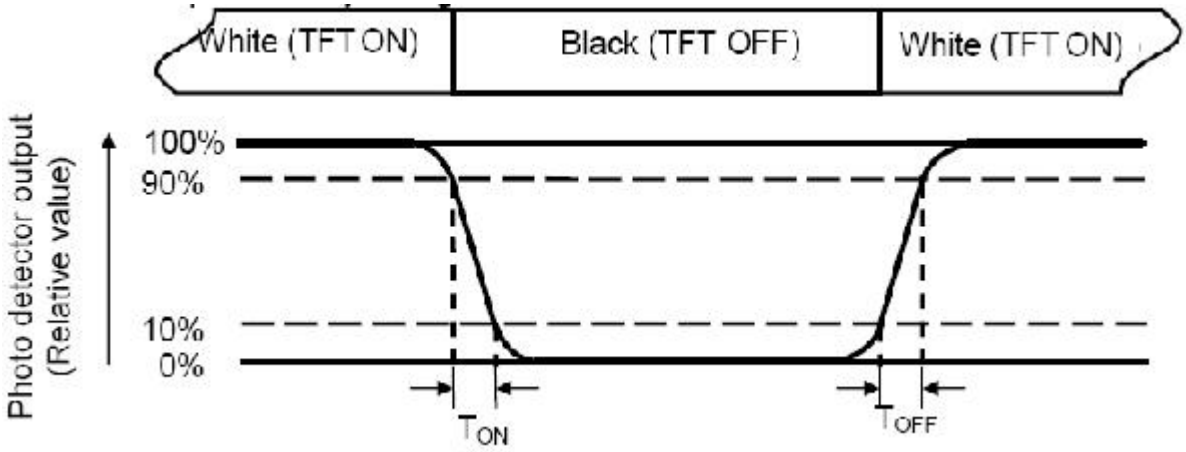
“White state “:The state is that the LCD should be driven by Vwhite.

“Black state”: The state is that the LCD should be driven by Vblack.

Vwhite: To be determined Vblack: To be determined.

Note 4: Definition of Response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (TON) is the time between photo detector output intensity changed from 90% to 10%. And fall time (TOFF) is the time between photo detector output intensity changed from 10% to 90%.



Note 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.

Note 6: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer Fig. 2). Every measuring point is placed at the center of each measuring area.

Luminance Uniformity (U) = Lmin/ Lmax

L-------Active area length W----- Active area width

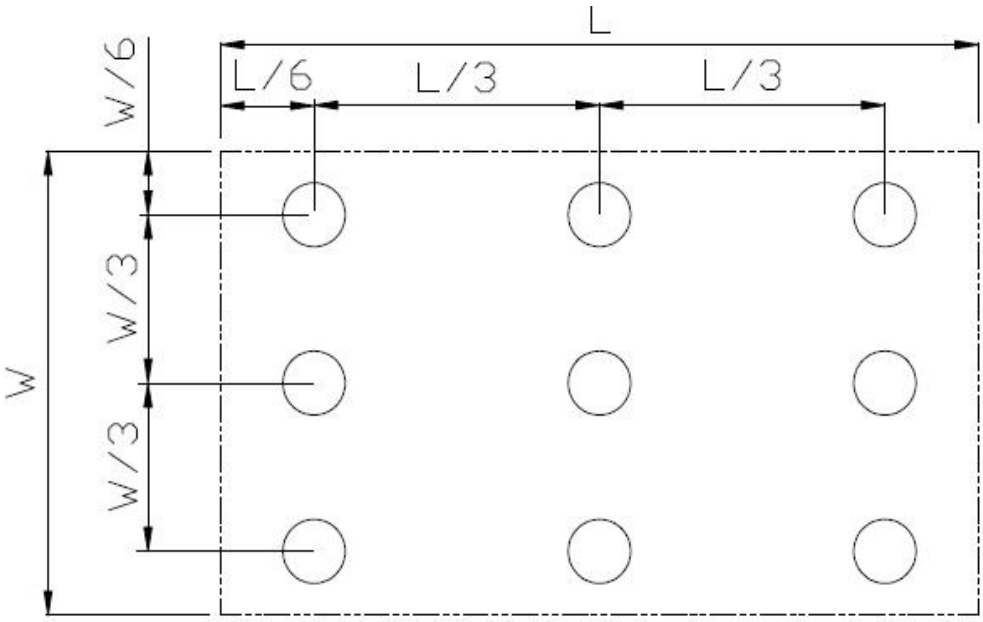


Fig. 2 Definition of uniformity

Lmax: The measured maximum luminance of all measurement position.

Lmin: The measured minimum luminance of all measurement position.

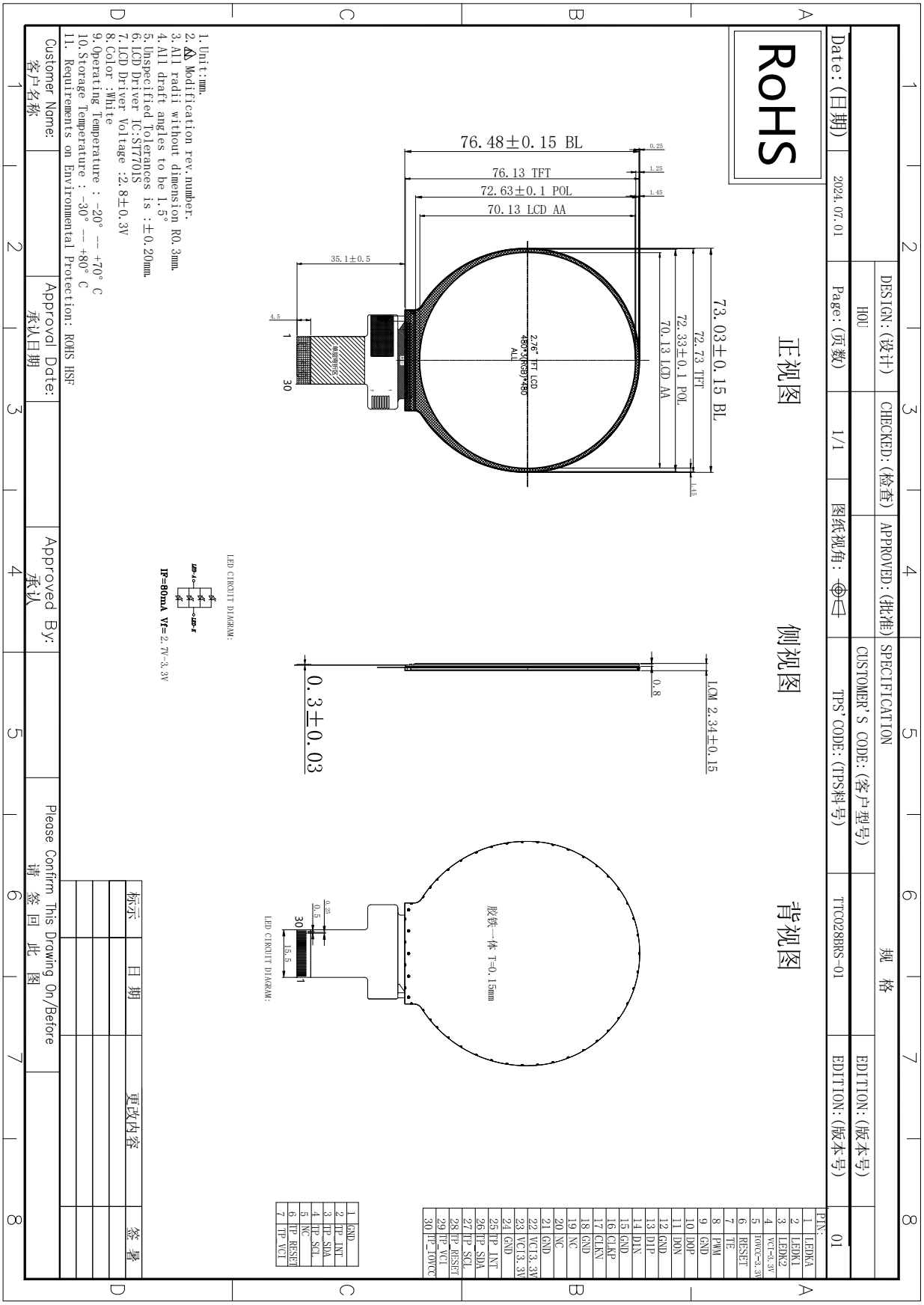
Note 7: Definition of Luminance:

Measure the luminance of white state at center point.

7 Environmental / Reliability Test

Item	Condition	Time (hrs)	Assessment
High temp. Storage	80°C	72	No abnormalities in functions and appearance
High temp. Operating	70°C	72	
Low temp. Storage	-30°C	72	
Low temp. Operating	-20°C	72	
Humidity	40°C/ 90%RH	72	
Thermal Shock(Non-operation)	-20°C ← 25°C →70°C (0.5 hour ← 5 min → 0.5 hour)	10cycles	

8 Mechanical Drawing



PIN:	
1	LEDKA
2	LEDK1
3	LEDK2
4	VCI-3.3V
5	IOVCC-3.3V
6	RESET
7	TE
8	PWM
9	GND
10	DOP
11	DON
12	GND
13	D1P
14	D1N
15	GND
16	CLKP
17	CLKN
18	GND
19	NC
20	NC
21	GND
22	VCI3.3V
23	VCI3.3V
24	GND
25	TP_INT
26	TP_SDA
27	TP_SCL
28	TP_RESET
29	TP_VCI
30	TP_IOVCC

1	GND
2	TP_INT
3	TP_SDA
4	TP_SCL
5	NC
6	TP_RESET
7	TP_VCI

9 Precautions For Use of LCD Modules

9.1 Handling Precautions

9.1.1.1 The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

9.1.1.2 If the display panel is damaged and the liquid crystal substance inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.

9.1.1.3 Do not apply eHLessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

9.1.1.4 The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

9.1.1.5 If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:

- Isopropyl alcohol
- Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer. Especially, do not use the following:

- Water
- Ketone
- Aromatic solvents

9.1.1.6 Do not attempt to disassemble the LCD Module.

9.1.1.7 If the logic circuit power is off, do not apply the input signals.

9.1.1.8 To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

9.1.1.9 Be sure to ground the body when handling the LCD Modules.

9.1.1.10 Tools required for assembly, such as soldering irons, must be properly ground.

9.1.1.11 To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.

9.1.1.12 The LCD Module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

9.1.1.13 Storage precautions

9.1.1.14 When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

9.1.1.15 The LCD modules should be stored under the storage temperature range. If the LCD modules will be stored for a long time, the recommend condition is:

9.1.1.16 The LCD modules should be stored in the room without acid, alkali and harmful gas.

9.2 Transportation Precautions

The LCD modules should be no falling and violent shocking during transportation, and also should avoid eHLessive press, water, damp and sunshine.