SPECIFICATIONS

CUSTOMER	:	
SAMPLE CODE	:	SH102600T013-ZHA
MASS PRODUCTION CODE	:	PH102600T013-ZHA
SAMPLE VERSION	:	01
SPECIFICATIONS EDITION	:	004
DRAWING NO. (Ver.)	:	LMD-PH102600T013-ZHA(Ver.002)
PACKAGING NO. (Ver.)	:	PKG-PH102600T013-ZHA(Ver.001)

Customer Approved

Date:

Approved	Checked	Designer
廖志豪 Rex Liao	陳宗淇 Howard Chen	張慶源 Yuan Chang

POWERTIP
2023.12.21
TW RD APR

☐ Preliminary specification for design input

■ Specification for sample approval

POWERTIP TECH. CORP.

Represented by:

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SPECIFICATIONS

Features

Item	Standard Value
Display Type	1024 * 3 (RGB) * 600 Dots
LCD Type	Full Viewing Angle , Normally Black , Transmissive type
Screen size(inch)	7.0 inch
Color configuration	RGB-Strip
Weight	175g
Backlight Type	LED B/L
Interface	RGB Interface (SYNC mode)
Other(controller/driver IC)	ST5021-G3-1 + ST5651CB-G3-1 (Or Compatible IC)
ROHS	THIS PRODUCT CONFORMS THE ROHS OF PTC

Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	164.9(W) * 100.0(L) * 5.7(H)	mm

LCD panel

Item	Standard Value	Unit
Viewing Area	155.21(W) x 86.92 (L)	mm
Active Area	154.2144(W) * 85.92 (L)	mm

Note : For detailed information please refer to LCM drawing

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Absolute Maximum Ratings

Module

Item	Symbol	Condition	Min.	Max.	Unit
Power Supply for TFT Panel	V_{DD}	GND=0V	-0.3	3.96	V
Power Supply for Backlight Unit	V_{CC}	GND=0V	-0.3	+20.0	V
Operating Temperature	TOP (Ts)	Note 1	-20	+70	°C
Storage Temperature	TST (Ta)	Note 2	-30	+80	°C
Storage Humidity	H_D	Ta ≦ 60 °C	10	90	%RH

The absolute maximum rating values of this product are not allowed to be exceeded at any time. 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.

Note 1: Ts is the temperature of panel's surface

Note 2: Ta is the ambient temperature of samples

DC Electrical Characteristics

Module

GND = 0V, Ta = 25°C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply for TFT Panel	VDD	GND=0V	3.0	3.3	3.6	V
Power Supply for Backlight Unit	VCC	GND=0V	5	12	15	V
Input Signal Voltage	VIH	-	0.7V_{DD}	-	V_{DD}	V
	VIL	-	0	-	0.3 V_{DD}	V
Supply Current for TFT Panel	IDD	IDD@VDD=3.3V	-	170	240	mA
Supply Current for Backlight Unit	ICC	ICC@VCC=5V	-	1.5	2	A
Supply Current for Backlight Unit	ICC	ICC@VCC=12V	-	0.4	0.6	A
Input Voltage for PWM Signal	VPH	GND=0V	1.2	-	-	V
	VPL	GND=0V	-	-	0.4	V
Dimming Clock Rate	fP	GND=0V	0.1	-	8	KHz

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Optical Characteristics

TFT LCD Module VDD = 3.3 V, Ta=25°C

Item		Symbol	Condition	Min.	Typ.	Max.	unit	
Response time	Tr + Tf		Ta = 25°C θX, θY = 0°	-	32	48	ms	Note 2
Viewing angle	Top	θY+	CR ≥ 10	-	80	-	Deg.	Note 4
	Bottom	θY-		-	80	-		
	Left	θX-		-	80	-		
	Right	θX+		-	80	-		
Contrast ratio		CR	-	650	800		-	Note 3
Color of CIE Coordinate (With B/L)	White	X	VCC=12.0V PWM="High" (Duty=100%)	0.26	0.31	0.36	-	Note1
		Y		0.30	0.35	0.40		
	Red	X		0.56	0.61	0.66		
		Y		0.31	0.36	0.41		
	Green	X		0.27	0.32	0.37		
		Y		0.53	0.58	0.63		
	Blue	X		0.08	0.13	0.18		
		Y		0.07	0.12	0.17		
Average Brightness Pattern=white display (With LCD)*1		IV	VCC=12.0V PWM="High" (Duty=100%)	800	1000	-	cd/m^2	Note1
Uniformity (With LCD)*2		△B	VCC=12.0V PWM="High" (Duty=100%)	70	-	-	%	Note1

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Backlight Characteristics

Maximum Ratings

Item	Symbol	Conditions	Min.	Max.	Unit
LED Forward Current	IF	Ta =25℃	-	360	mA
LED Reverse Voltage	VR	Ta =25℃	-	5	V
Power Dissipation	PD	Ta =25℃	-	4.824	W

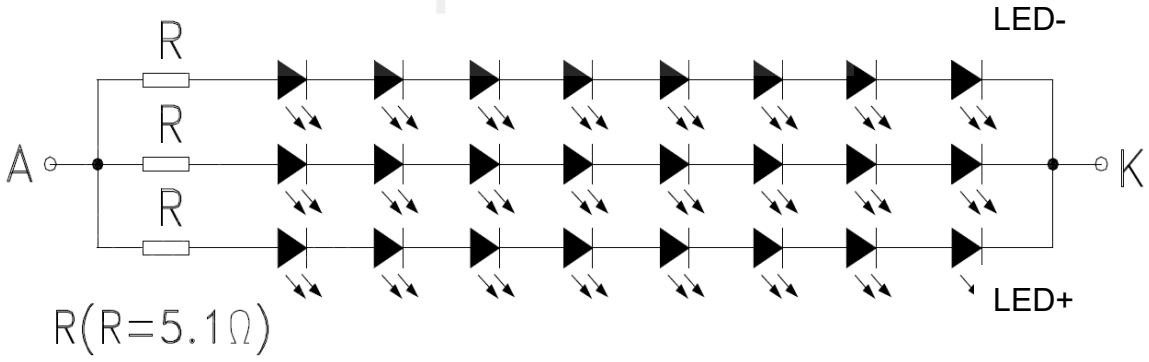
Backlight Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	VF	IF=180mA	22.0	24.0	26.8	V
Average Brightness (Without LCD)	IV		11500	13000	16900	cd/m^2
CIE Color Coordinate (Without LCD)	X		0.25	0.28	0.31	-
	Y		0.26	0.29	0.32	
Uniformity *1	△B		80	-	-	*2
Color	White					

*1：This value will be changed while mass production.

*2：△B=B(min) / B(max)%

B/L Internal Circuit Diagram



Other Description

Item	Conditions	Description
Life Time	Ta =25℃ IF=180mA	50000 hrs

Interface Pin Description

Pin#	Name	Description
1	GND	Power ground.
2	VDD	Power for Digital Circuit.
3	VDD	Power for Digital Circuit.
4	VCC	Power For LED backlight.
5	VCC	Power For LED backlight.
6	PWM	Shutdown & Dimming control input for backlight. Do not allow this pin to float. “Hi” =100%, “Low” = 0%.
7	GND	Power ground.
8	R0	Red Data.
9	R1	Red Data.
10	R2	Red Data.
11	R3	Red Data.
12	GND	Power ground.
13	R4	Red Data.
14	R5	Red Data.
15	R6	Red Data.
16	R7	Red Data.
17	GND	Power ground.
18	G0	Green Data.
19	G1	Green Data.
20	G2	Green Data.
21	G3	Green Data.
22	GND	Power ground.
23	G4	Green Data.
24	G5	Green Data.
25	G6	Green Data.
26	G7	Green Data.
27	GND	Power ground.
28	B0	Blue Data.
29	B1	Blue Data.

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Pin#	Name	Description
30	B2	Blue Data.
31	B3	Blue Data.
32	GND	Power ground.
33	B4	Blue Data.
34	B5	Blue Data.
35	B6	Blue Data.
36	B7	Blue Data.
37	GND	Power ground.
38	HS(HSD)	Line synchronization signal. Horizontal Sync Input.
39	VS(VSD)	Frame synchronization signal. Vertical Sync Input.
40	GND	Power ground.
41	DE(DEN)	Please connect this pin to GND
42	GND	Power ground.
43	DCLK(CLKIN)	Sample clock. Data will be latched at the falling edge of DCLK.
44	GND	Power ground.
45	CS / ID1	Serial communication chip selection/ID[4:1]These pins select LCM
46	SDIN / ID2	Serial communication data/ ID[4:1]These pins select LCM type.
47	SCK / ID3	Serial communication clock/ ID[4:1]These pins select LCM type.
48	DISPLAY	Display Enable(Hi Active)./ ID[4:1]These pins select LCM type.
49	/RESET	Global Reset (Low Active).
50	GND	Power ground.

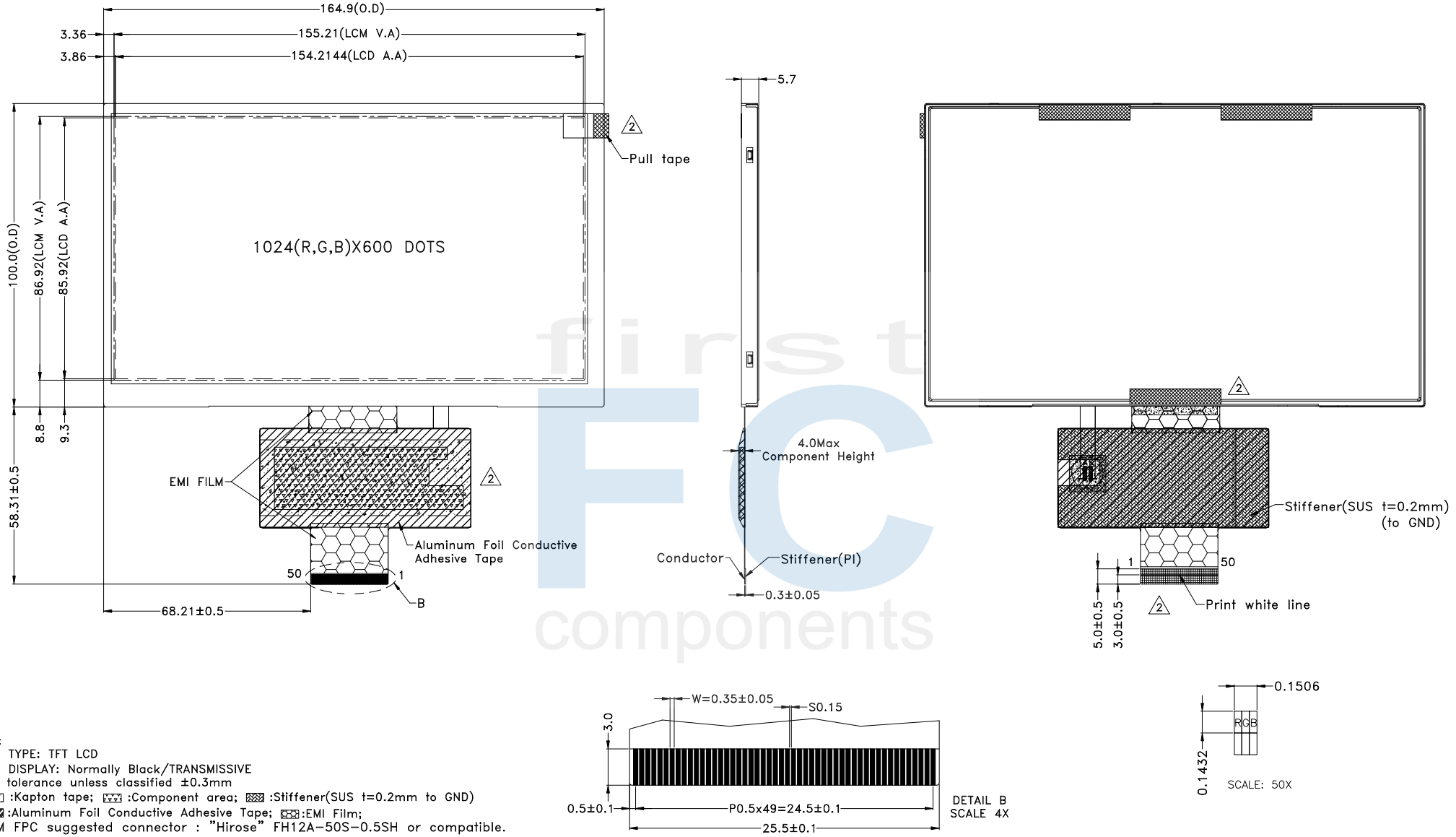
Note1:

D[07:00] = R[7:0] data; D[17:10] = G[7:0] data; D[27:20] = B[7:0] data.

ID Pins Definition:

	PIN 45 ID1	PIN 46 ID2	PIN 47 ID3	PIN 48 ID3
3.5” Module	X	0	0	X
4.3” Module	X	1	0	X
5.0” Module	X	0	1	X
7.0” Module	X	1	1	X

1. Resistor = 10k ohm
2. “X” = No use



NOTES:
1.LCD TYPE: TFT LCD
2.LCD DISPLAY: Normally Black/TRANSMISSIVE
3.The tolerance unless classified ±0.3mm
4. :Kapton tape; :Component area; :Stiffener(SUS t=0.2mm to GND)
:Aluminum Foil Conductive Adhesive Tape; :EMI Film;
5.LCM FPC suggested connector : "Hirose" FH12A-50S-0.5SH or compatible.

REV	REV BY	REVISER	DATE
007			
006			
005			
004			
003			
002	Modify DRAWING	Clare	2023/12/14
001	NEW DRAWING	Crystal	2020/7/1

sales@first-components.com

PART NO: PH102600T013-ZHA

DRAWING NAME : LMD-PH102600T013-ZHA

TITLE: LCD MODULE DRAWING PH102600T013-ZHA

久正光電股份有限公司
POWERTIP TECHNOLOGY CORPORATION

Design	Clare	(3)	Surface		
Check	Tina	Unit	MM	Material	
Approve	Bright	Scale	1:1	Thickness	
		Page	1/1	Quantity	

Length(Min) (mm) \ Tolerance \ Precision	Precision Level
1 ~ 4	-
4 ~ 16	-
16 ~ 63	-
63 ~ 250	-
250 ~ 1000	-