TFT DISPLAY SPECIFICATION



WINSTAR Display Co.,Ltd.

華凌光電股份有限公司

Represented by:

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SPECIFICATION

CUSTOMER : _____

MODULE NO.: WF70-1024600A8M#CSP3-FC

APPROVED BY: **(FOR CUSTOMER USE ONLY)**	**PCB VERSION:** **DATA:**

SALES BY	APPROVED BY	CHECKED BY	PREPARED BY
ISSUED DATE: 2024/05/14			

3.General Specification

Item	Dimension	Unit
Size	7.0	inch
Dot Matrix	1024 x RGBx600(TFT)	dots
Module dimension	202.0(W) x 135.5(H) x 8.4(D)	mm
Active area	154.2144 x 85.92	mm
Pixel pitch	0.1506 x 0.1432	mm
LCD type	TFT, Normally Black, Transmissive	
Viewing Angle	85/85/85/85	
Aspect Ratio	16:9	
Driver IC	EK79007AD3 + EK73217BCGA or equivalent	
Interface	4-Lanes MIPI	
CTP IC	GT911 or equivalent	
CTP Interface	I2C	
CTP FW Version	67	
CTP Resolution	1024*600	
Backlight Type	LED, Normally White	
With /Without TP	With CTP	
Surface	Glare	

*Color tone slight changed by temperature and driving voltage.

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4.Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	TOP	-20	—	+70	℃
Storage Temperature	TST	-30	—	+80	℃

Note: Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above

1. Temp. 60℃, 90% RH MAX. Temp.＞60℃, Absolute humidity shall be less than 90% RH at 60℃

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5.Electrical Characteristics

5.1. Typical Operation Conditions

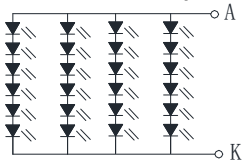
Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power voltage	VDD	1.71	1.8	1.89	V	
Analog Power	AVDD	8.9	9.0	9.1	V	
TFT Gate ON Voltage	VGH	17	18	19	V	Note1
TFT Gate OFF Voltage	VGL	-6.5	-6.0	-5.5	V	Note2
TFT Common Voltage	VCOMIN	3.0	3.15	3.3	V	Note3
Current for Driver	IDD	--	16	24	mA	VDD=1.8V
Power Current	IAVDD	--	19	28.5	mA	AVDD=9V
TFT Gate ON Current	IVGH	--	1.6	2.4	mA	VGH=18V
TFT Gate OFF Current	IVGL	--	0.6	0.9	mA	VGL=-6.0V
TFT Common Current	IVCOMIN	--	0	--	mA	VCOM=3.15V
Supply CTP	VDDT	3.1	3.3	3.5	V	
	I_{CTP}	—	16	24	mA	

Note:
Note 1. VGH is TFT Gate operating Voltage.
Note 2. VGL is TFT Gate operating Voltage.
The storage structure of this model is CST (Storage on Common)
Note 3. Vcom must be adjusted to optimize display quality Crosstalk, Contrast Ratio and etc.

5.2. Backlight Driving Conditions

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED backlight	VL	16.8	19.2	21.0	V	Note 1
Current for LED backlight	IL	--	290	--	mA	
LED life time	-	-	50,000	-	Hr	Note 2

Note 1 : There are 1 Groups LED



Backlight 24LED Circuit

Note 2 : Ta = 25 ℃
Note 3 : Brightness to be decreased to 50% of the initial value
Note 4 : The single LED lamp case

6.DC Electrical Characteristics

6.1. Parameter	Symbol	Rating			Unit	Condition
		Min	Typ	Max		
Low level input voltage	VIL	0	-	0.3VDD	V	Note 1
High level input voltage	VIH	0.7VDD	-	VDD	V	

Note 1:RESET,STBYB, UPDN, SHLR

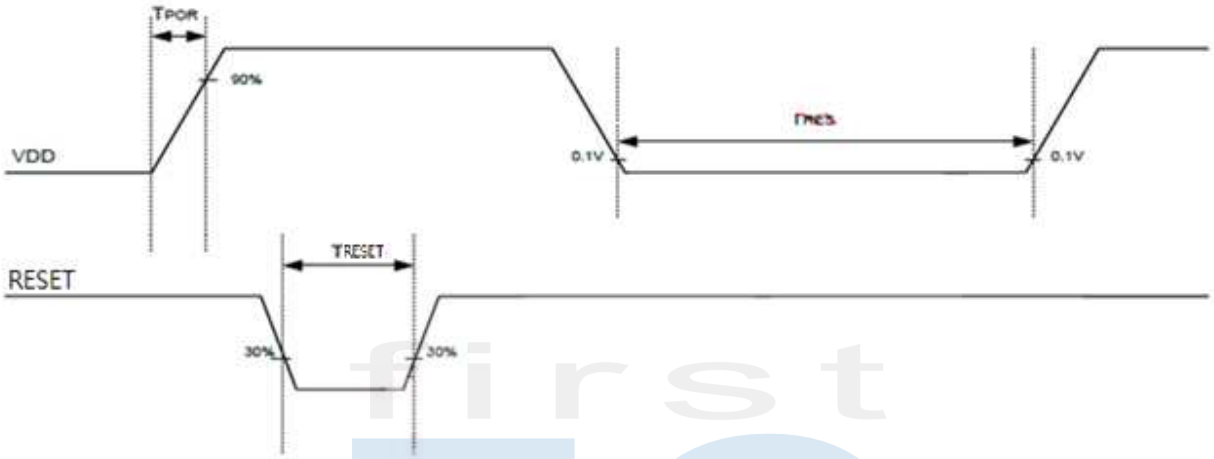
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7.AC Electrical Characteristics

7.1. Basic AC Characteristic

VDD/RESET AC characteristic

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
VDD power slew rate	T_{POR}	-	-	20	ms	From 0 to 90% VDD
RESETactive pulse width	T_{RESET}	1	-	-	ms	VDD=1.8V
VDD resettle time	T_{RES}	1	-	-	s	



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10.Optical Characteristics

Item		Symbol	Condition.	Min	Typ.	Max.	Unit	Remark
Response time		Tr	θ=0°、Φ=0°	-	13	20	.ms	Note 3
		Tf		-	15	25		
Contrast ratio		CR	At optimized viewing angle	600	800	-	-	Note 4
Color Chromaticity	White	Wx	θ=0°、Φ=0	0.269	0.319	0.369	-	Note 2,5,6
		Wy		0.291	0.341	0.391	-	
Viewing angle	Hor.	ΘR	CR≧10	80	85	-	Deg.	Note 1
		ΘL		80	85	-		
	Ver.	ΦT		80	85	-		
		ΦB		80	85	-		
Brightness		-	-	800	850	-	cd/m2	Center of display
Uniformity		(U)	-	75	-	-	%	Note 5

Ta=25±2℃,

Note 1: Definition of viewing angle range

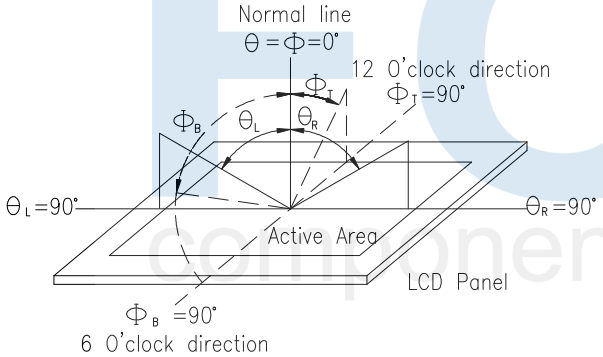
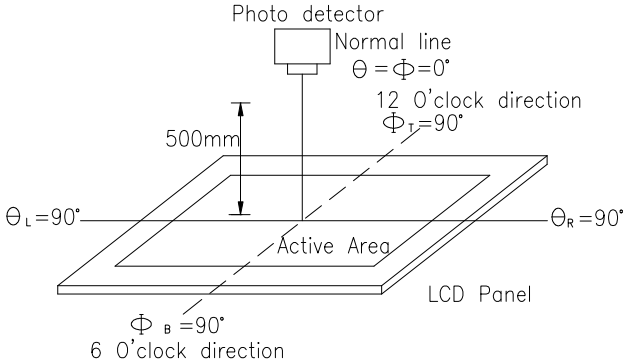


Fig. 10.1. Definition of viewing angle

Note 2: Test equipment setup:

After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7orBM-5 luminance meter 1.0° field of view at a distance of 50cm and normal direction.



11.Interface

11.1. LCM PIN Definition

Pin No.	Symbol	Function	Remark
1	VLED+	LED Anode	
2	VLED+	LED Anode	
3	VGH	Positive power for TFT	
4	VGL	Negative power for TFT	
5	UPDN	Gate up or down scan control. UPDN = ”L”, STV2 output vertical start pulse and UD pin output logical “L” to Gate driver. (default) UPDN = ”H”, STV1 output vertical start pulse and UD pin output logical “H” to Gate driver	
6	SHLR	Source right or left sequence control. SHLR = ”L“, shift left: last data = S1←S2←S3…….←S1536 = first data. SHLR = ”H“, shift right: first data = S1→S2→S3……..→S1536 = last data.(default)	
7	VLED-	LED Cathode	
8	VLED-	LED Cathode	
9	AVDD	Power for Analog Circuit	
10	GND	Ground	
11	D3P	MIPI data input.	
12	D3N	MIPI data input.	
13	GND	Ground	
14	D2P	MIPI data input.	
15	D2N	MIPI data input.	
16	GND	Ground	
17	CLKP	MIPI clock input	
18	CLKN	MIPI clock input	
19	GND	Ground	
20	D1P	MIPI data input.	
21	D1N	MIPI data input.	
22	GND	Ground	

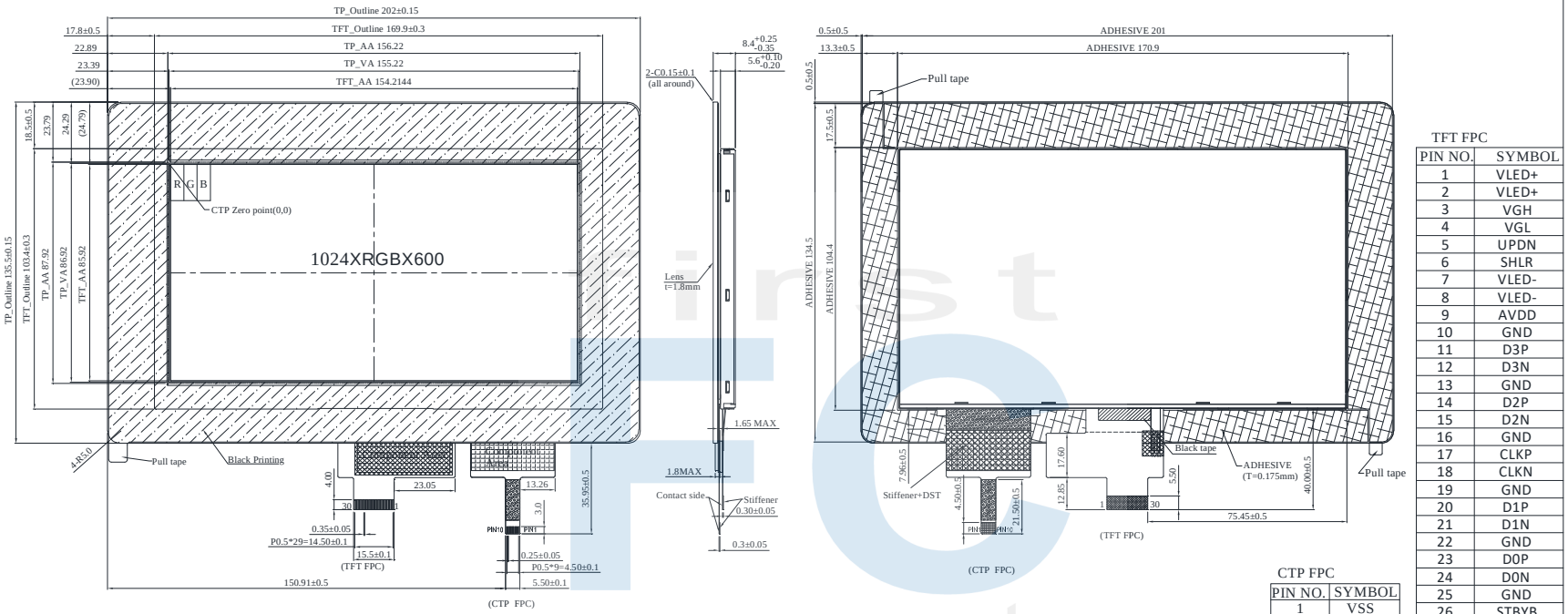
23	D0P	MIPI data input.	
24	D0N	MIPI data input.	
25	GND	Ground	
26	STBYB	Standby mode. STBYB = ”H“,normal operation(default) STBYB = ”L”, timing controller, source driver will turn off, all output are GND.	
27	RESET	Global reset pin. Active Low to enter Reset State. Normally pull high. Connecting with an RC reset circuit for stability.	
28	VDD(1.8V)	Digital circuit	
29	VDD(1.8V)	Digital circuit	
30	VCOMIN	Common voltage	

Note
When L/R=”0”,set right to left scan direction.
When L/R=”1”,set left to right scan direction.
When U/D=”0”,set top to bottom scan direction.
When U/D=”1”,set bottom to top scan direction.

11.2. CTP PIN Definition

Pin	Symbol	Function	Remark
1	VSS	Ground	
2	VDDT	Power Supply : +3.3V	
3	SCL	I2C clock input	
4	NC	No connect	
5	SDA	I2C data input and output	
6	NC	No connect	
7	RST	External Reset, Low is active	
8	NC	No connect	
9	INT	External interrupt to the host	
10	VSS	Ground	

14.Contour Drawing



TFT FPC

PIN NO.	SYMBOL
1	VLED+
2	VLED+
3	VGH
4	VGL
5	UPDN
6	SHLR
7	VLED-
8	VLED-
9	AVDD
10	GND
11	D3P
12	D3N
13	GND
14	D2P
15	D2N
16	GND
17	CLKP
18	CLKN
19	GND
20	D1P
21	D1N
22	GND
23	D0P
24	D0N
25	GND
26	STBYB
27	RESET
28	VDD (1.8V)
29	VDD (1.8V)
30	VCOMIN

VDD:1.8V
RESET: H:1.8V L:0V
STBYB:H:1.8V L:0V
SHLR:H:1.8V L:0V
UPDN:H:1.8V L:0V

CTP FPC

PIN NO.	SYMBOL
1	VSS
2	VDDT
3	SCL
4	NC
5	SDA
6	NC
7	RST
8	NC
9	INT
10	VSS

The non-specified tolerance of dimension is ±0.3mm.

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