



福建福盛达电子有限公司

Fujian Fushengda Electronics Co., LTD

APPROVAL SHEET 承认书

Customer 客户名称	
Part NO. 产品型号	LCM-FSD686H7006-A
Product type 产品内容	Mode: Transmissive type .NormallyBlack. TFT LCD Module LCD Module: Graphic480RGB*1280 Dot-matrix
Remarks 备注栏	☐ APPROVAL FOR SEPCIFICATIONS ONLY ☒ APPROVAL FOR SEPCIFICATIONS AND SAMPLE
Signature by Customer: 客户确认签章	

LEAGEND LCM R&D CENTER:

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RevisedHistory

Part Number	Revision	Revision Content	Revised on
LCM_FSD686H7006-A	A	New	2025.12.10



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1. General Description

1.1 Description

FSD686H7006-A is a 480RGB*1280 dot-matrix TFT LCD module. This module is composed of a TFT LCD Panel, driver ICs, FPC and a Backlight unit.

1.2 Features

NO.	Item	Contents	Unit
1	LCD Size	6.86 inch(Diagonal)	-
2	Display Mode	Normally Black	-
3	Resolution	480(H)RGB x1280(V)	-
4	Dot pitch	0.1254(H) x 0.1254(V) mm	-
5	Active area	60.19 (H) x 160.51(V) mm	-
6	Module size	66.41(H) x174.19(V) x4.5 (D) mm	-
7	Color arrangement	RGB Vtertical stripe	-
8	Interface	MIPI-4L	-
9	Drive IC	-	-
10	Luminance(cd/m2)	TBD	
11	Viewing Direction	ALL	
12	Backlight	9 White LED	
13	Operating Temp.	-20℃~ + 70℃	℃
14	Storage Temp.	-30℃~+ 80℃	℃
15	Weight	TBD	g



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3. PIN DESCRIPTION.

Pin No.	Symbol	Function
1	NC	No Connect
2	IOVCC	Power Supply for I/O System 1.8V
3	IOVCC	Power Supply for I/O System 1.8V
4	NC	No Connect
5	RESET	The external reset input 1.8V
6	NC	No Connect
7	GND	Ground
8	D0N	MIPI DSI differential data 0 negative
9	D0P	MIPI DSI differential data 0 positive
10	GND	Ground
11	D1N	MIPI DSI differential data 1 negative
12	D1P	MIPI DSI differential data 1 positive
13	GND	Ground
14	CLKN	MIPI DSI differential clock negative
15	CLKP	MIPI DSI differential clock positive
16	GND	Ground
17	D2N	MIPI DSI differential data 2 negative
18	D2P	MIPI DSI differential data 2 positive
19	GND	Ground
20	D3N	MIPI DSI differential data 3 negative
21	D3P	MIPI DSI differential data 4 positive
22	GND	Ground
23	NC	No Connect
24	AVDD	Power Supply for Analog
25~29	NC	No Connect
30	GND	Ground



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4. ABSOLUTE MAXIMUM RATINGS

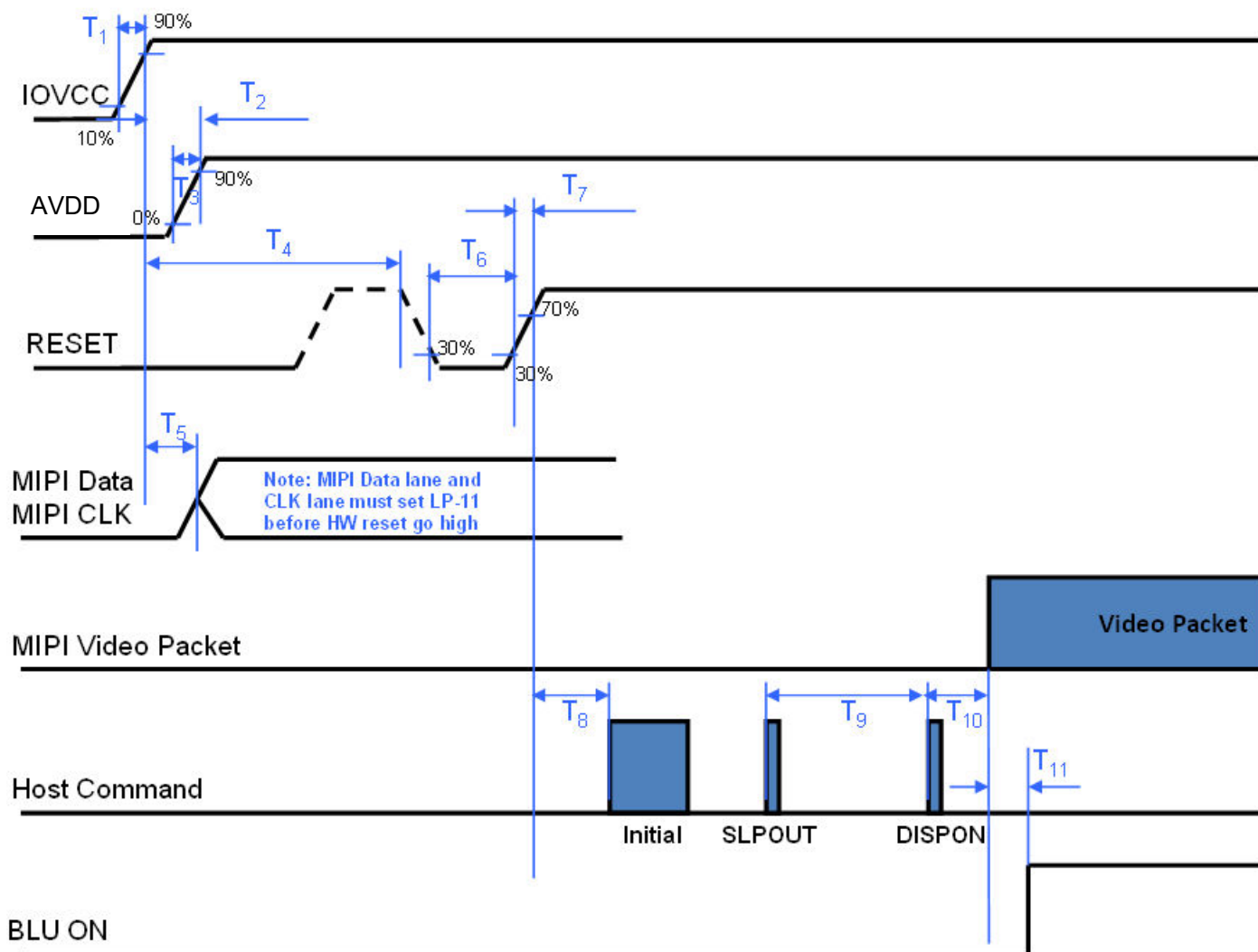
Parameter	Symbol	Min	Max	Unit
Supply voltage for logic	AVDD - GND	-0.3	12	V
I/O voltage for logic	IOVCC - GND	-0.3	3.3	V
Supply Black light voltage for logic	LEDA - LEDK	0	10.5	V
Operating temperature	TOP	-20	+70	°C
Storage temperature	TST	-30	+80	°C

5. ELECTRICAL CHARACTERISTICS

Item	Symbol	Min	Typ	Max	Unit	Applicable terminal
Supply voltage for logic	AVDD	9	10	12	V	
I/O voltage for logic	IOVCC	1.65	1.8	1.8	V	
Supply voltage current	IAVDD	20	50	150	mA	VDD=10.0V
I/O voltage current	IIOVCC	10	50	100	mA	IOVCC=1.8V
Input voltage	VIL	-0.3	-	0.2 VDD	V	
	VIH	0.8 VDD	-	VDD	V	
LED backlight voltage	Vf	9	9.6	10.5	V	--
Input backlight current	ILED	2	60	60	mA	Vf=9.6V
backlight LED quantity	LED	3series 3parallel				9LED



6. POWER ON



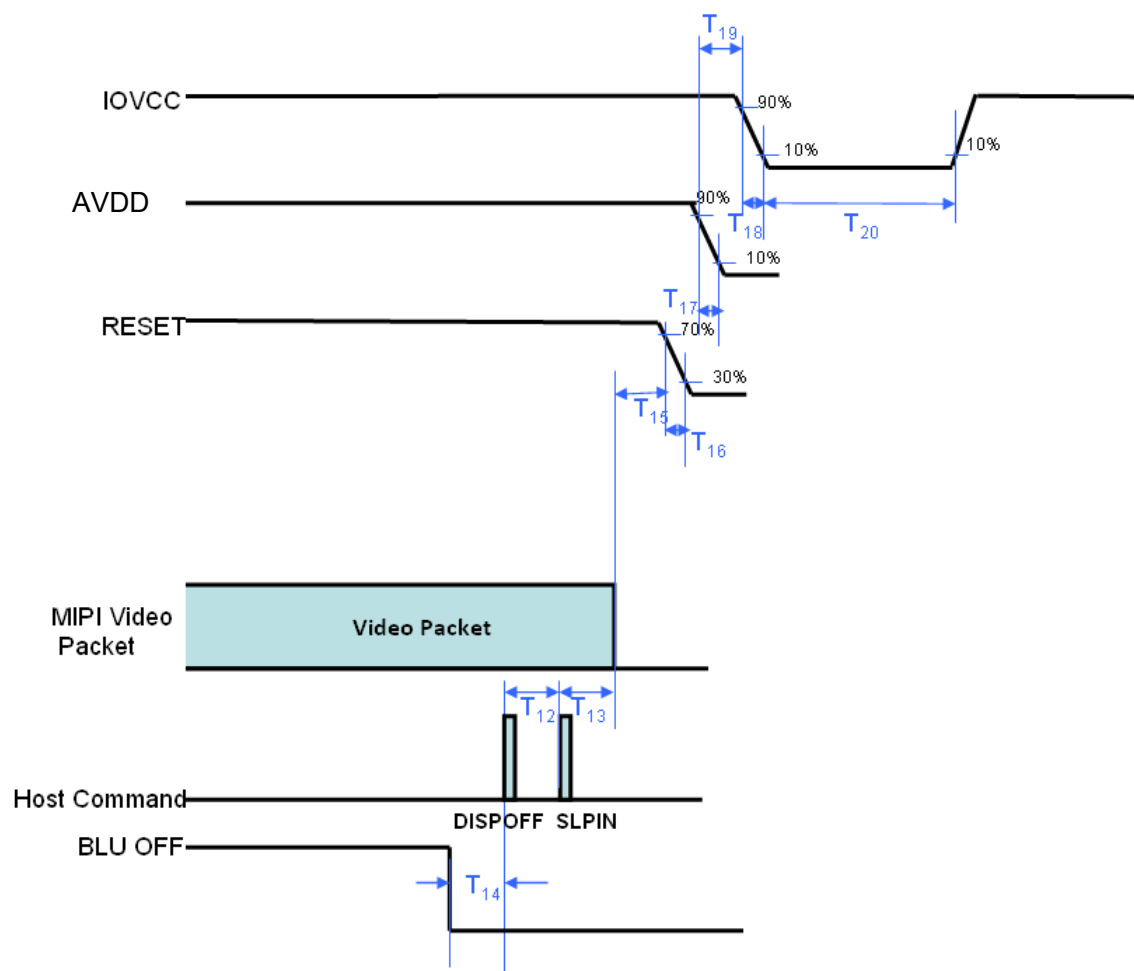
	Min.	Typ.	Max.	Unit
T1	0.01	-	10	ms
T2	No Limit			ms
T3	0.01	-	10	ms
T4	1	-	-	ms
T5	1	-	-	ms
T6	10	-	-	us
T7	No Limit			ns
T8	15	-	-	ms
T9	120	-	-	ms
T10	No Limit			ms
T11	100	150	-	ms



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7. POWER OFF.



	Min.	Typ.	Max.	Unit
T12	2	-	-	Frame
T13	2	-	-	Frame
T14	40	100	-	ms
T15	10	-	-	ms
T16	No Limit			ms
T17	No Limit			ms
T18	No Limit			ms
T19	No Limit			ms
T20	100			ms



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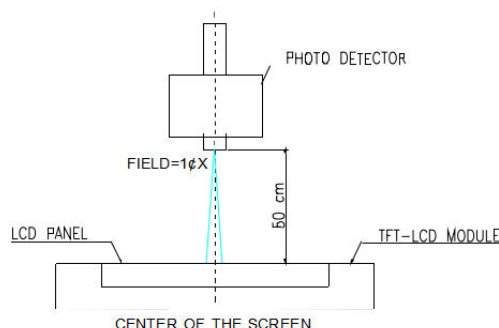
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8. LCM Optical Characteristics

Item of electro-optical characteristics 项目	Symbol 符号	Condition 条件	Min 最小值	Typ 典型值	Max 最大值	Unit 单位	Note 备注
Transmittance 透光率	Tr	$\phi=0^\circ$	4.19	4.9	--	%	1. Panel W/O APCF 2. C-LIGHT,W/BSITO 3. Note 7
NTSC色域		$\phi=0^\circ$	50	55	--	%	1. C-LIGHT,W/BSITO 2. Note 7
Contrast Ratio对比度	CR	$\phi=0^\circ$	1000	1200	--	--	Note 4,7
Response time响应时间	Tr+Tf		--	30	35	ms	Note 3
Color chromaticity (CIE 1931) 色彩饱和度	White	X	$\phi=0^\circ$ $T_a=25^\circ\text{C}$	TBD	+0.03		Note 7
		Y		TBD			
	Red	X		TBD			
		Y		TBD			
	Green	X		TBD			
		Y		TBD			
	Blue	X		TBD			
		Y		TBD			
Viewing angle 视角范围	Ver.	Y+	$CR \geq 10$	80	85	--	deg Note 5,7 $\phi=0, 90, 180, 270$
		Y-		80	85	--	
	Hor.	X-		80	85	--	
		X+		80	85	--	
Cross-talk Ratio		57~63HZ	--	--	3	%	Note 8
Flicker		57~63HZ	--	--	-30	dB	Note 6
Cross Talk	Ct	$\phi=0^\circ$ $T_a=25^\circ\text{C}$	--	--	3	%	Note 7
Module brightness 模组亮度	LM	$\phi=0^\circ$ $T_a=25^\circ\text{C}$	--	TBD	--	CD/M2	Note 7
Uniformity 均匀度	UL	$\phi=0^\circ$ $T_a=25^\circ\text{C}$	80	85	--	%	Note 7

Note 1: Measured under Ambient temperature =25C, and LED lightbar current IL = 20mA in the dark room.

Note 2: To be measured on the center area of panel with a viewing cone of 1° by luminance meter, after 15 minutes operation.



Note 3: Definition of response time

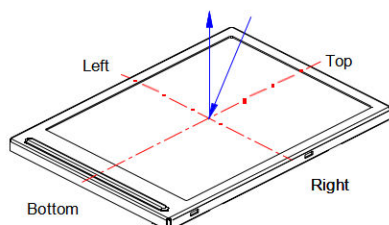
The output signals of photo detector are measured when the input signals are changed from “black” to “white” (rising time) and from “white” to “black” (falling time), respectively.

The response time is defined as the time interval between the 10% and 90% of amplitudes. Refer to figure as below.



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Note 4. Definition of contrast ratio:

Contrast ratio is calculated with the following formula.

$$\text{Contrast ratio (CR)} = \frac{\text{Photo detector output when LCD is at "White" status}}{\text{Photo detector output when LCD is at "Black" status}}$$

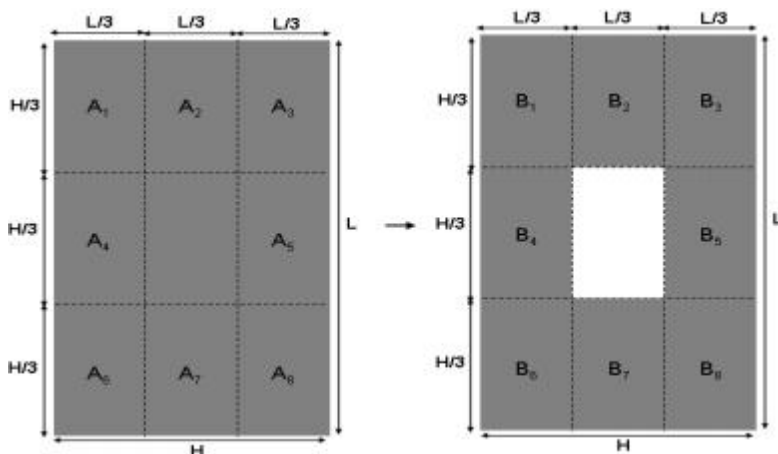
Note 5. Definition of viewing angle, θ , Refer to figure as below.

Note 6: It is strongly recommended VCOM setting by piece by piece OTP technology to get best display quality.

Note 7: The spec in table is for reference, different polarizer and APCF would make different performance for it.

Note 8: Cross-talk ratio is measuring by follow pattern and formula

The test pattern of cross-talk is 128L gray around one white block, size is defined as picture.



$$\text{Cross talk Ratio} = \max_{i=1 \text{ to } 8} \frac{|A_i - B_i| \text{ (Photo detector output when LCD is at test pattern)}}{A_i \text{ (Photo detector output when LCD is at 128L gray pattern)}}$$



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9. Reliability Test Items

Test Item 测试项目	Test Condition 测试条件	Test result determinant gist 实验结果判定
高温存储	80±3℃, 96H;	试验结束后,已测试的LCD 样品必须在室内正常温湿度环境下放置2~4个小时以上才能进行功能和外观检查, 样品不允许有以下缺陷: 1.模块中有气泡; 2.; 不显示; 3; 玻璃破碎; 4.需要满足模块电气性能。
低温存储	-30±3℃, 96H;	
高温运行测试	70±3℃, 96H;	
低温运行测试	-20±3℃, 96H;	
高温高湿	50℃±3℃,90%±3%RH, 120H;	
冷热冲击	-20℃/0.5h~25℃/10MIN~+70℃/0.5h for a total 10 cycles;	

Remark: 注意:

- 1:每个被测试的模块只能用于其中的一个测试项目。
2. 每个测试项目的样品数量为2片。
- 3.故障判断标准:基本规格,电气特性,机械特性,光电特性。