

BOCEN Bocen Display Technology Co., Ltd.

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Address: 808 Esun Tech Building, No.22 Jia'an South Road, Bao'an District, 518101 Shenzhen, China.

SPECIFICATION FOR LCM MODULE 产品规格书

MODULE NO.料号: BF8050-01E

REVISION NO.版本号: A

Customer Approval 客户确认:

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	SIGNATURE 签名
PREPARED BY 制作	Sylar
VERIFIED BY 审核	William
APPROVED BY 批准	Rio

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2、 OTHERS:

History of revision

Revision	Contents	Date	Note
01	New Revision	2024-09-02	1.0

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1. Introduction And General Specifications

Liquid crystal Displays (LCDS) have widely used in many applications such as industrial measurements, office mechanisms, and household electronic–equipment etc. LCM (LCD Module) integrates with LCD and driving circuit that is easily to be interfaced by user. This LCM contains a standard built-in dot –matrix font set.

1.1 Applications of LCM

- Telephone
- Facsimile mechanism
- Electronic Typewriter
- Word processor
- Electronic memo pads
- Remote controller

1.2 Features of LCM

- Compact, thin and light
- Wide view angle
- Low power consumption
- High contrast image
- Wide operating temperature
- High reliability

1.2 General specification

Parameter	Value	Unit
Display Mode	Normal white	-
Display Resolution	800*RGB*600	pixels
Pixel Arrangement	RGB-stripe	-
Viewing Direction	ALL	
Display Mode	Normally white	
IC Package Type	COG	-
MPU Interface	24-bit parallel RGB interface	-
Power Supply Voltage	2.8~3.3	V
Back-light	White LED*27	pcs

1.3 Absolute Maximum Ratings

Item	Symbol	Min	Max	Unit	Remark
Power Voltage	VDD	-0.05	3.3	V	
Operating Temperature	T _{OPR}	-20.0	70.0	°C	
Storage Temperature	T _{STG}	-30.0	80.0	°C	

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1.4 Electrical Characteristics

Item	Symbol	Specification			Unit
		Min.	Typ.	Max.	
TFT Gate On Voltage	VGH	--	20	--	V
TFT Gate Off Voltage	VGL	--	-7.0	--	V
TFT Common Electrode Voltage	Vcom	--	3.9	--	V
AVDD	Avdd	--	10.6	--	V

Note:

(1) Vcom must be adjusted to optimize display quality: cross talk, contrast ratio and etc.

(2) VGH is TFT gate on voltage

(3) VGL is TFT gate off voltage

The storage capacitance structure of this product is Cst(Storage on Common).

The low voltage level of VGL signal must be fluctuated with same phase as Vcom, in case of Storage on Gate structure.

(4) Environmental condition : 25°C

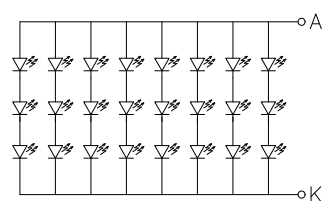
1.5 LCM And Backlight Driving Conditions

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
LED forward voltage	VL	-	9.0	9.6	V	Note 2,3
LED forward current	IL	-	180	-	mA	Note 3
LCD forward current	IL	-	78	-	mA	
LED life time	-	20,000	-	-	Hr	Note 1
LED Luminance	Lv	3500	-	-	cd/m ²	
LCM Luminance	Lv		250	280	cd/m ²	

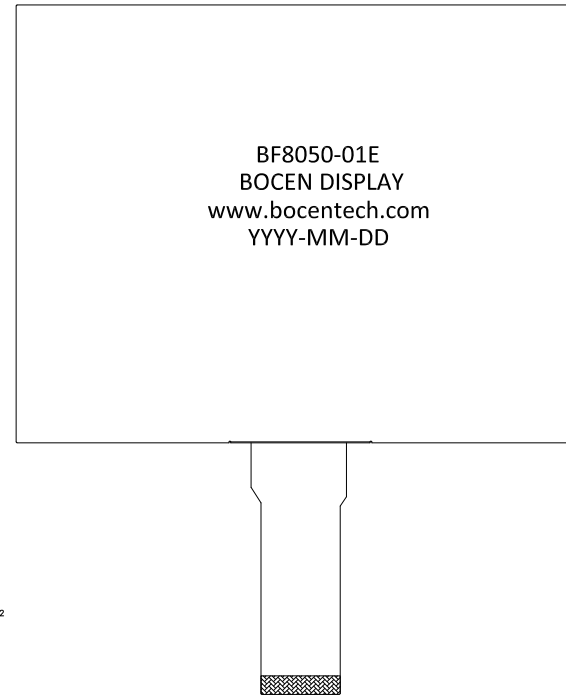
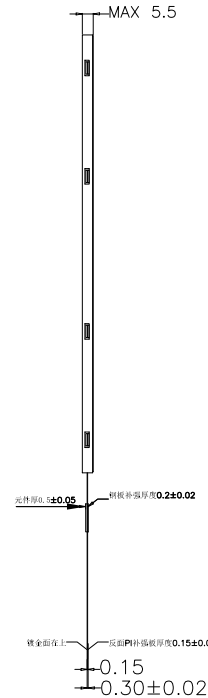
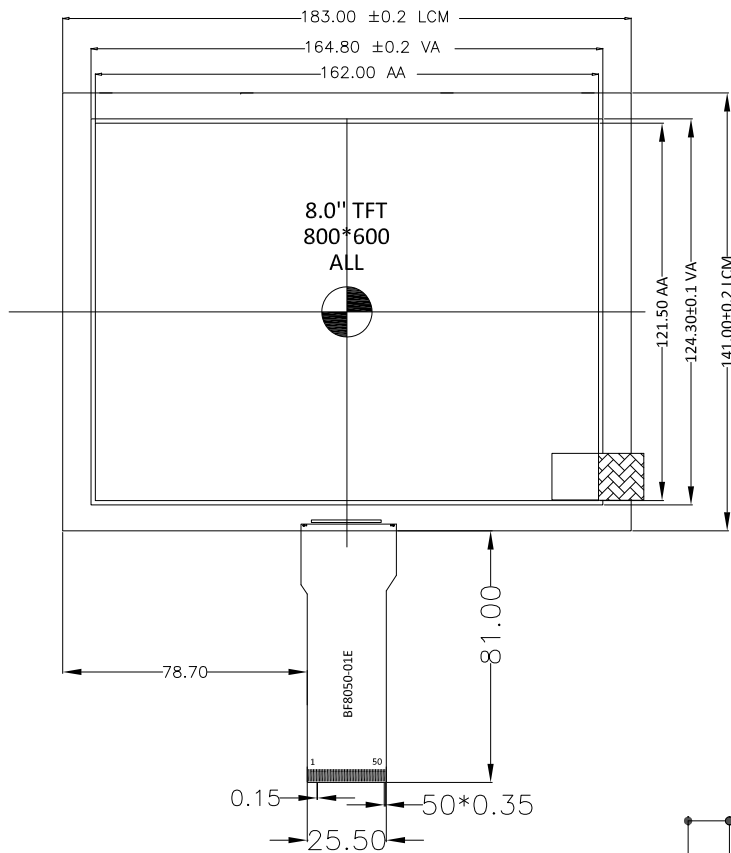
Note 1: The "LED life time" is defined as the module brightness decrease to 50% original brightness that the ambient temperature is 25°C and IL =20mA. The LED lifetime could be decreased if operating IL is lager than 20 mA.

Note 2: The LED Supply Voltage is defined by the number of LED at Ta=25°C and IL =20mA. In the case of 3pcs LED , VL=3.2*3=9.6V

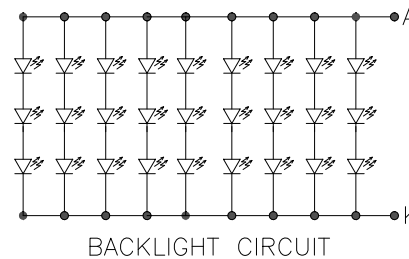
Note 3: The LED driving condition is defined for each LED module (3LED Serial 9 parallel).



BACKLIGHT CIRCUIT



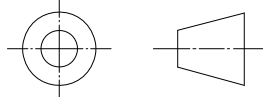
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LEDA	26	G1
2	LEDA	27	G0
3	LEDK	28	R7
4	LEDK	29	R6
5	GND	30	R5
6	VCOM	31	R4
7	VCC	32	R3
8	MODE	33	R2
9	DE	34	R1
10	VS	35	R0
11	HS	36	GND
12	B7	37	DCLK
13	B6	38	GND
14	B5	39	L/R
15	B4	40	U/D
16	B3	41	VGH
17	B2	42	VGL
18	B1	43	AVDD
19	B0	44	RESET
20	G7	45	NC
21	G6	46	VCOM
22	G5	47	DITHB
23	G4	48	GND
24	G3	49	NC
25	G2	50	NC



SPECIFICATIONS:

- 1. DISPLAY TYPE: 8.0"/ 800*600 IPS
- 2. OPERATING TEMPERATURE: -20 ~ 70°C
- 3. STORAGE TEMPERATURE: -30 ~ 80°C
- 4. VIEWING ANGLE: ALL
- 5. DRIVE IC: JD9165
- 6. BACKLIGHT: 27 WHITE LED, VF=9V, If=180mA
- 7. BRIGHTNESS: 250 CD/M² (TYP)
- 8. CUSTOMER PART NO.: BOCEN STANDARD PRODUCT

BOCEN DISPLAY TECHNOLOGY CO., LTD.

DESIGNED BY: sylar	BF8050-01E	VERSION: 1.0
CHECKED BY: William		NO.: 1 OF 1
APPROVED BY: Rio		UNIT: mm
Website: http://www.bocentech.com		DATE: 024-09-02

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3. 24-bit Interface pin Connections Circuit Block Diagram

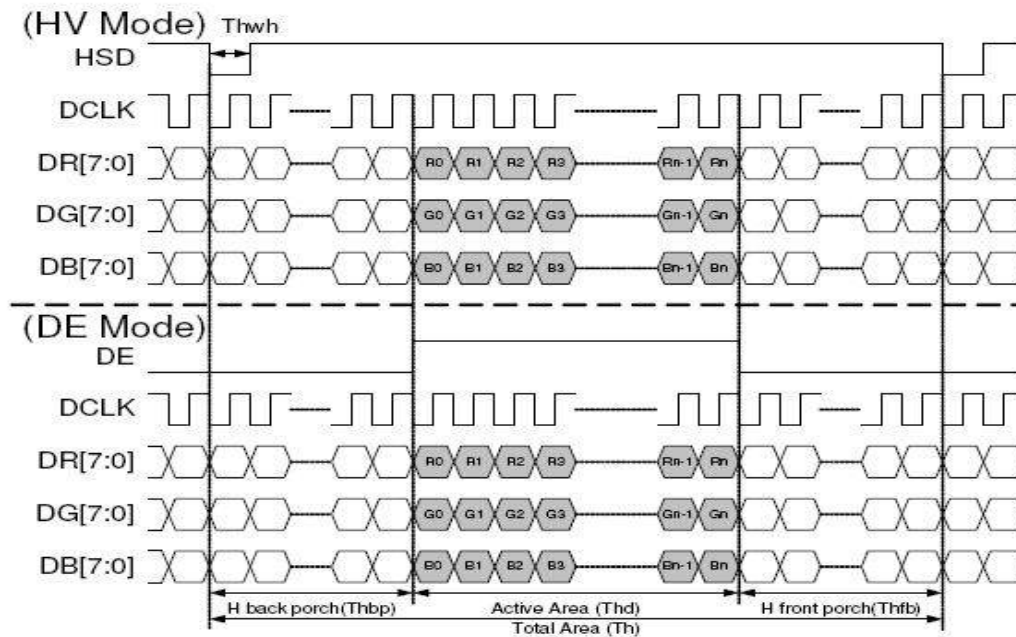
PIN NO.	SYMBOL	DESCRIPTION
1	LED+	Power for LED backlight(Anode)
2	LED+	Power for LED backlight(Anode)
3	LED-	Power for LED backlight(Cathode)
4	LED-	Power for LED backlight(Cathode)
5	GND	Power ground
6	VCOM	Common voltage
7	DVDD	Powre for Digital Circuit
8	MODE	DE/SYNC mode select
9	DE	Data Input Enable
10	VS	Vertical Sync Input
11	HS	Horizontal Sync Input
12-19	B7-B0	Blue data
20-27	G7-G0	Green data
28-35	R7-R0	Red data
36	GND	Power ground
37	DCLK	Sample clock
38	GND	Power ground
39	L/R	Left/right selection
40	U/D	Up/down selection
41	VGH	Gate ON Voltage
42	VGL	Gate OFF Voltage
43	AVDD	Power for Analog Circuit
44	RESET	Global reset pin.
45	NC	Not connect
46	VCOM	Common Voltage
47	DITHB	Dithering function
48	GND	Power ground
49	NC	Not connect
50	NC	Not connect

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4. 24-bit parallel RGB interface

Parallel RGB Mode Data format



Resolution:800x600

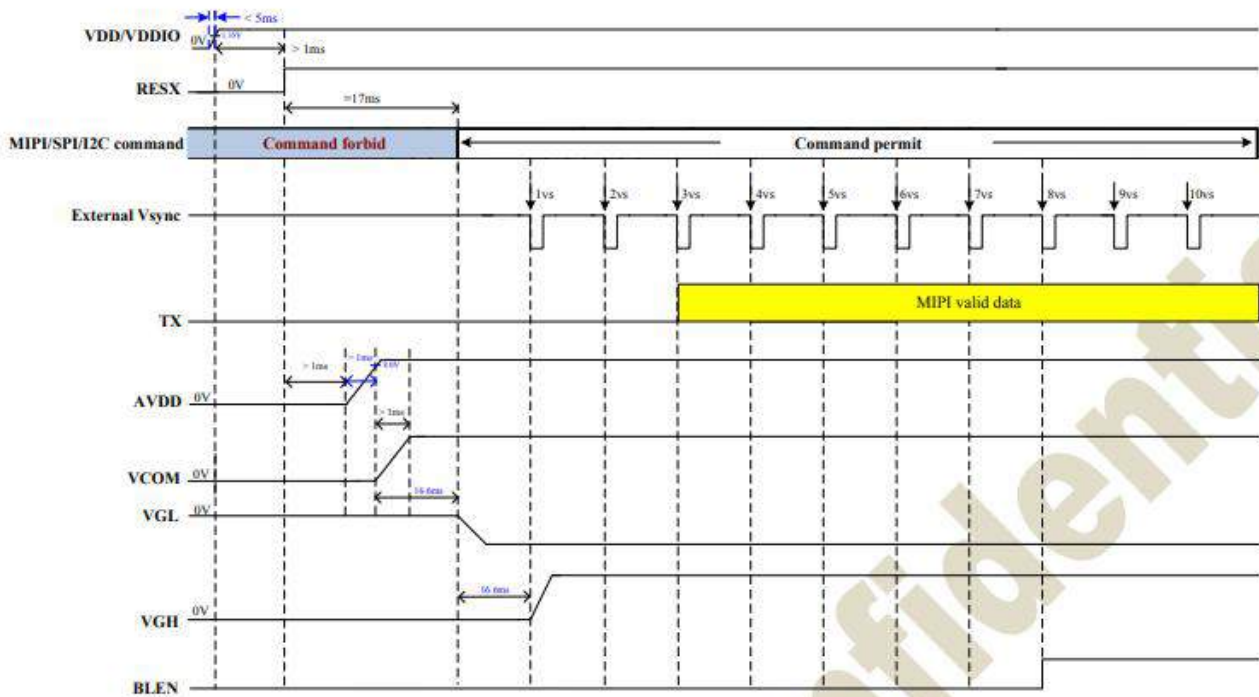
MIPI Input Timing	Symbol	1024RGBx768			1024RGBx600			800RGBx600			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
MIPI 24-bit RGB@ 2 lane Operating Frequency	-	500	-	750	400	-	750	330	-	750	Mbps
MIPI 24-bit RGB@ 4 lane Operating Frequency	-	250	-	500	200	-	500	165	-	500	Mbps
Horizontal Total	tht	1114	1344	1400	1114	1344	1400	890	1000	1300	DCLK
Hsync Pulse width	ths	1	24	HBP-1	1	24	HBP-1	1	24	HBP-1	DCLK
Horizontal Back Porch	thb	60	160	160	60	160	160	60	88	250	DCLK
Horizontal Valid Data	thd	1024			1024			800			DCLK
Horizontal Front Porch	thfp	30	160	216	30	160	216	30	112	250	DCLK
Vertical Total	tv	788	806	845	620	635	800	620	660	800	THT
Vsync Pulse Width	tv	1	2	VBP-1	1	2	VBP-1	1	2	VBP-1	THT
Vertical Back Porch	tvb	8	23	33	8	23	100	8	39	100	THT
Vertical Valid Data	tvd	768			600			600			THT
Vertical Front Porch	tvfp	12	15	44	12	12	100	12	21	100	THT

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5. Power sequence

5.1 Power On Sequence



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5.2 Power Off Sequence

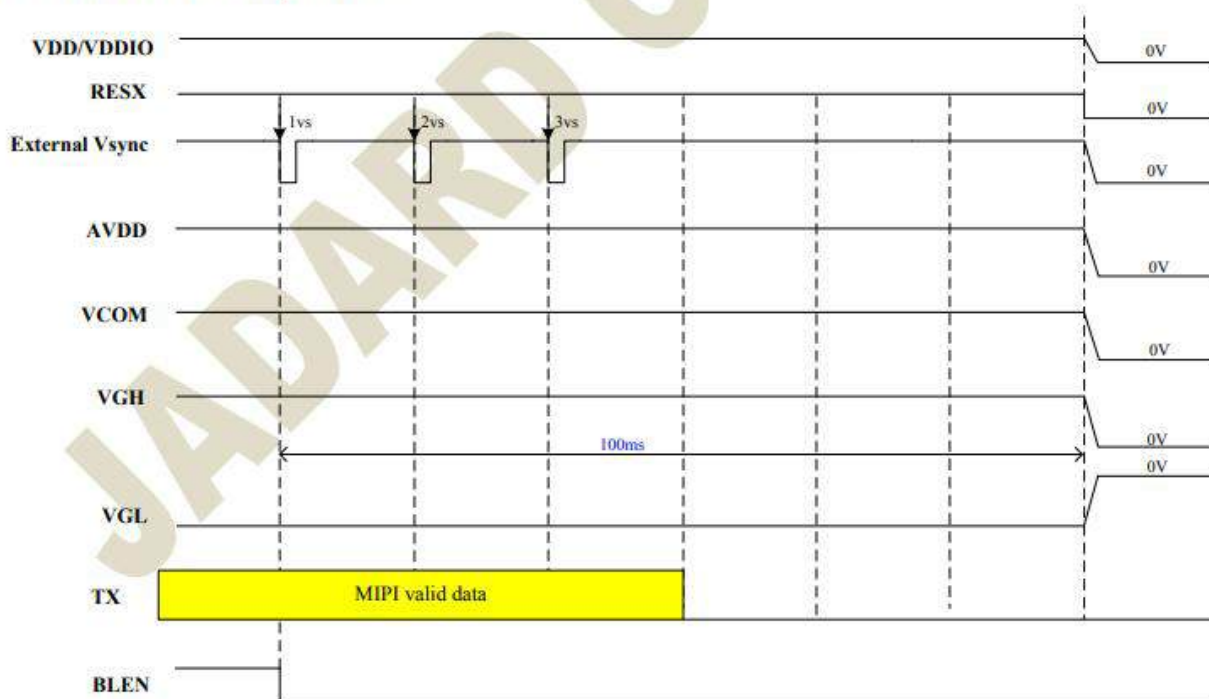


Figure 5.2: Power Off timing chart

6. Notice packing method

- Pack the products so that they may not touch each other.
- Put the inner cartons containing module into outer carton.
- Attach the display label on the visible location on the outer carton.