



SPECIFICATION FOR LCD MODULE

Customer : _____

Customer P/N _____

Model No. : GX123-40MB-A1+INCELL

Version : V00

Date : 2026/05/29

Final Approval by Customer

LCM Machinery OK ☐	Checked By	
LCM Display OK ☐	Checked By	
LCM NG ☐ LCM OK ☐	Approved By	

ShenZhen GX Confirmed :

DESIGN	CHECK	APPROVAL

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DOCUMENT REVISION HISTORY

Version	DATE	DESCRIPTION	CHANGED BY
V00	2026.5.29	New design	HF



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1.Features & Mechanical Specifications

Item	Contents	Unit
	GB+LCD	
LCD Type	TFT Transmissive Normal Black	--
Viewing direction	ALL.O'CLOCK	--
Backlight	White LED x28in Parallel/ Series	--
Interface	MIPI 4 Lanes	--
Driver IC	JD9366	--
Surface Hardness (Contact S)	6H	
Outline Dimension	121.11(H)x309.59(V) x6.47(T) ± 0.4	mm
Glass area (W×H×T)	113.512(H) x302.282(V) x 0.8(T) (Typ.)	mm
Active area (W×H)	109.512(H) x 292.032(V)	mm
Number of Dots	720RGB (H) x 1920 (V)	--
Pixel pitch (W×H)	0.1521 (H) x 0.1521(V)	mm
Operating Temperature	-20 ~ +70	°C
Storage temperature	-30 ~ +80	°C



3. Power On/Off Sequence

8.2. Power on sequence for display initial code by Host

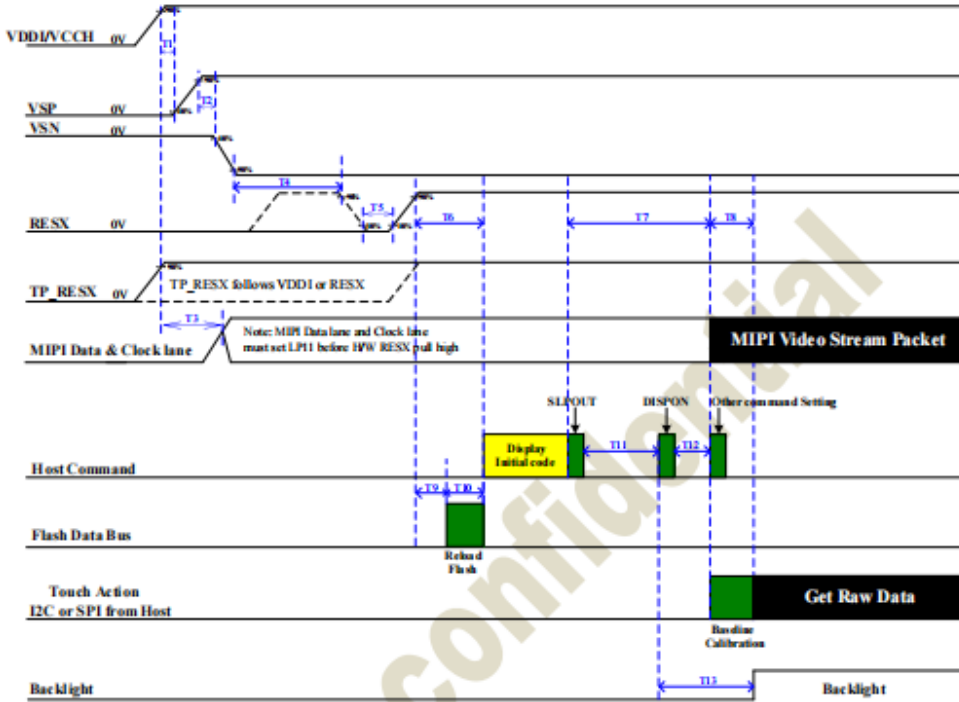


Figure 8.2: Power on sequence by Host

Symbol	Description	Min	Max	Unit	Note
T1	VDD1 to VSP	1	-	ms	
T2	VSP to VSN	1	-	ms	
T3	VDD1 to MIPI Lane	1	-	ms	
T4	Power Ready to Global Reset	1	-	ms	
T5	Global Reset Keep Low	15	-	us	TP Reset is the same
T6	Global Reset to Display Initial Code by Host	55	-	ms	
T7	Video Stream Start and Host TP Data Bus Active	140	-	ms	
T8	AP Start to Get Raw Data	30	-	ms	
T9	Reset to Flash Reload	-	5	ms	
T10	Flash Reload Time	-	50	ms	Default: 6MHz
T11	Sleep Out to Display On	10	-	ms	
T12	Display On to IC Ready	20	-	ms	
T13	Display On Command to BL On time	40	-	ms	



8.4. Power off sequence for external power

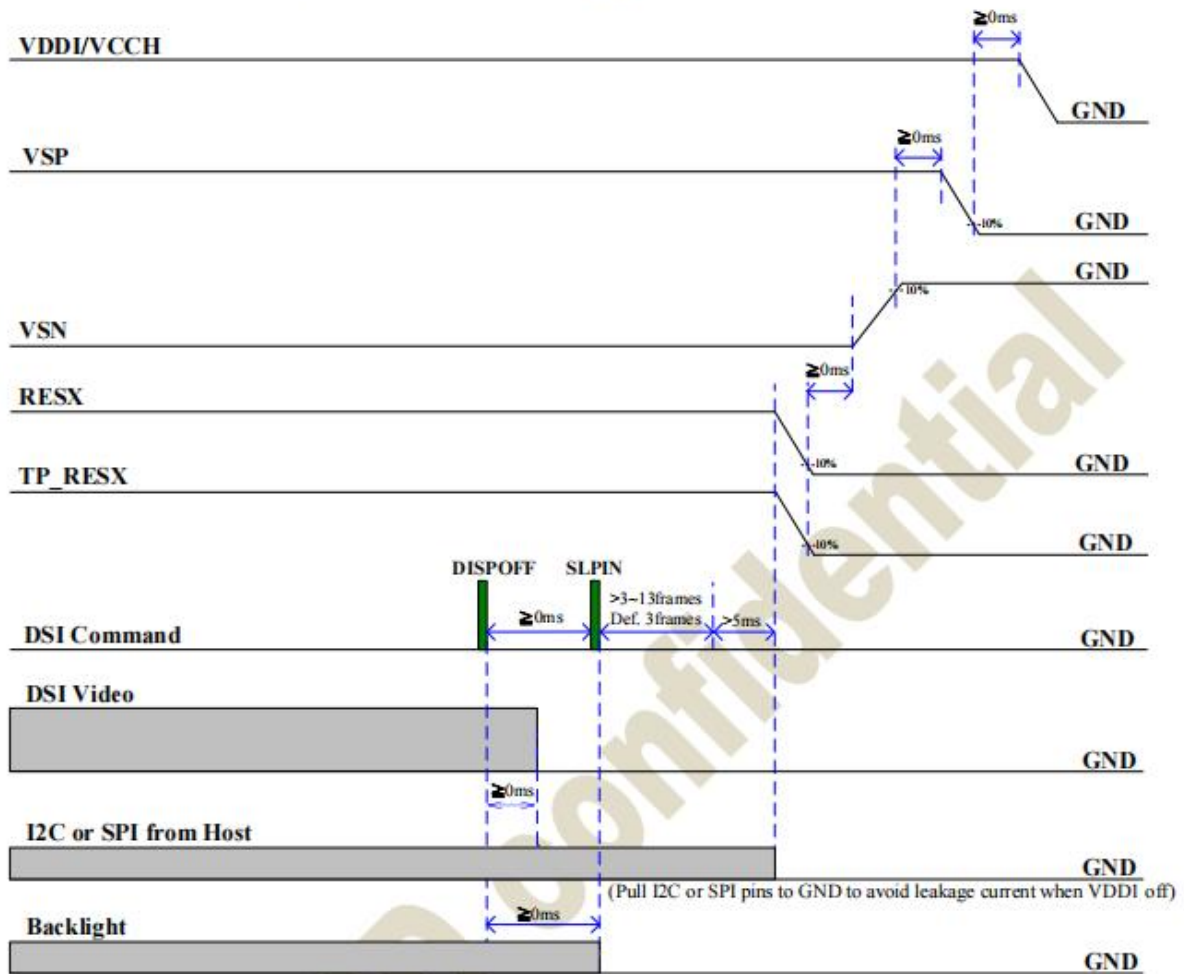


Figure 8.4: Power off sequence for external power



4. Pin Description

LCM:

PIN No.	SYMBOL	Function
1	GND	Ground
2	DSI-D0P	DSI Data differential signal input pins. (Data lane0)
3	DSI-D0N	DSI Data differential signal input pins. (Data lane 0)
4	GND	Ground
5	DSI-D1P	DSI Data differential signal input pins. (Data lane 1)
6	DSI-D1N	DSI Data differential signal input pins. (Data lane 1)
7	GND	Ground
8	DSI-CLK P	DSI CLOCK differential signal input pins
9	DSI-CLK N	DSI CLOCK differential signal input pins
10	GND	Ground
11	DSI-D2P	DSI Data differential signal input pins. (Data lane 2)
12	DSI-D2N	DSI Data differential signal input pins. (Data lane 2)
13	GND	Ground
14	DSI-D3P	DSI Data differential signal input pins. (Data lane 3)
15	DSI-D3N	DSI Data differential signal input pins. (Data lane 3)
16-17	GND	Ground
18-19	IOVCC	I/O Supply Voltage (1.8V~3.3V)
20-23	NC	NC
24	RESET	Reset Signal pin (“Low” is enable)(1.8V~3.3V)
25-26	NC	NC
27	GND	Ground
28-29	LEDK	Backlight LED Cathode
30	GND	Ground
31	NC	NC
32-33	GND	Ground
34	NC	NC
35-36	LEDA	Backlight LED Anode.
37	GND	Ground
38-39	VCC	Logic Power supply (2.8V~3.3V)
40	NC	NC



TP:

PIN No.	SYMBOL	Function
1	TP-SCL	Touch Synchronous clock signal (1.8V~3.3V)
2	TP-SDA	Touch Serial input signal (1.8V~3.3V)
3	TP-VDD/NC	NC
4	TP-RST	Touch Reset Signal pin (1.8V~3.3V)
5	TP-INT	Touch Interrupt (1.8V~3.3V)
6	TP-GND	Ground

5. Absolute Maximum Ratings

Item	Symbol	Rating			Unit
		MIN.	TYP.	MAX	
Operating Temperature range	TOP	-20	-	+70	°C
Storage Temperature range	TST	-30	-	+80	°C

6. Electrical Characteristics

DC Characteristics

Item	Symbol	Min.	Type.	Max.	Unit
Logic Supply Voltage	VCC	2.8	-	3.3	V
I/O Supply Voltage	IOVCC	1.8	-	3.3	V
RESET Supply Voltage	RESET	1.8	-	3.3	V
TP I/ O Supply Voltage	TP I/ O	1.8	-	3.3	V

7. Backlight Characteristics

White LED × 28 in Parallel/ Series

(Ta = 25°C)

Item	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage	VF	IF=180mA	19.6	-	23.1	V
Uniformity	△Bp	-	80	-	-	%
Luminance for GB+LCD	Lv	IF=180mA	350	400	-	cd/m ²



8. Electro-Optical Characteristics

Using LC+ Normal Polarizer+Corresponding Backlight, reference only (Note 1,Note 2)

4.0 OPTICAL CHARACTERISTICS

4.1 Optical Specification

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Transmittance (with Polarizer)		T (%)	Θ=0 Normal viewing angle	(4.33)	(4.82)	—	%	Measuring with normal polarizer , Reference Only Base on Vop=5.2V
Transmittance (without Polarizer)		T (%)		(15.80)	(17.56)		%	
Contrast Ratio		CR			1000		—	(1)(2)
Response Time		T _R +T _F		—	25	30	msec	(1)(3)
Color Gamut	(%)					—	%	C-light
Color Chromaticity (CIE1931)	White	W _x		-0.02	(0.308)	+0.02	—	(1)(4) CF glass C-light
		W _y	(0.340)					
	Red	R _x	(0.652)		—			
		R _y	(0.314)					
	Green	G _x	(0.341)		—			
		G _y	(0.573)					
	Blue	B _x	(0.135)		—			
		B _y	(0.132)					
Viewing Angle	Hor.	Θ _L	CR>10	80	85	—	—	(1)(4) Measuring with normal polarizer , Reference Only
		Θ _R		80	85	—		
	Ver.	Θ _U		80	85	—		
		Θ _D		80	85	—		
Optima View Direction		Free						(5)



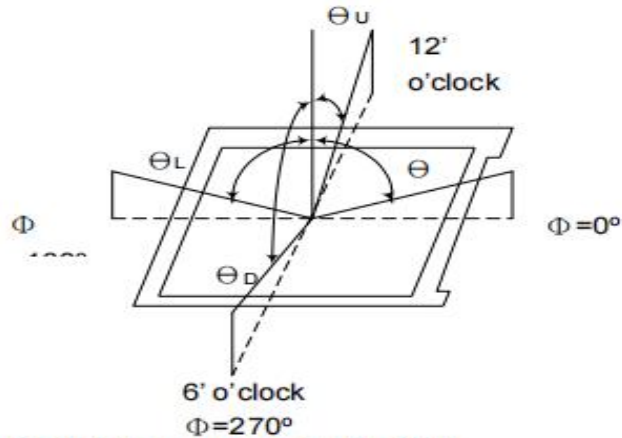
4.2 Measuring Condition

- Measuring surrounding : dark room
- Ambient temperature : $25 \pm 2^\circ\text{C}$
- 15min. warm-up time.

4.3 Measuring Equipment

- FPM520 of Westar Display technologies, INC., which utilized SR-3 for Chromaticity and BM-5A for other optical characteristics.

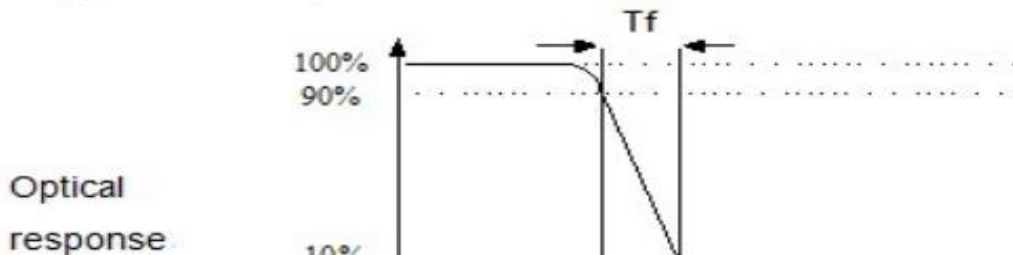
Note (1) Definition of Viewing Angle:



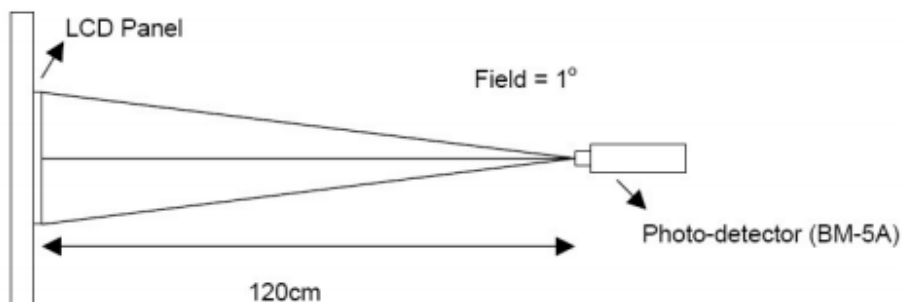
Note (2) Definition of Contrast Ratio (CR) :
measured at the center point of panel

$$\text{CR} = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$

Note (3) Definition of Response Time : Sum of T_R and T_F



Note (4) Definition of optical measurement setup



9. Instruction Description

Please refer to JD9366

详见IC规格书

10. AC Characteristics

7.1.48.High Speed Data Transmission

Figure 7.29 shows the sequence of events during the transmission of a Data Burst. Transmission can be started and ended independently for any Lane by the protocol. However, for most applications the Lanes will start synchronously but may end at different times due to an unequal amount of transmitted bytes per Lane.

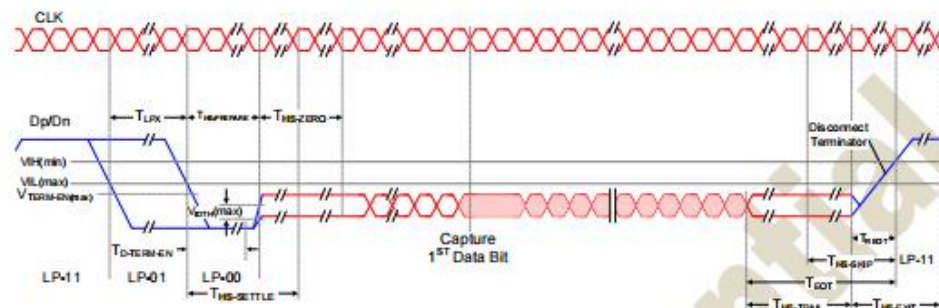


Figure 7.29: High-Speed Data Transmission in Bursts

7.1.49.High Speed Clock Transmission

In High-Speed mode the Clock Lane provides a low-swing, differential DDR (half-rate) clock signal from Master to Slave for High-Speed Data Transmission. The Clock signal shall have quadrature-phase with respect to a toggling bit sequence on a Data Lane in the Forward direction and a rising edge in the center of the first transmitted bit of a burst. The detail Clock Start and Stop procedures are shown in Figure 7.30.

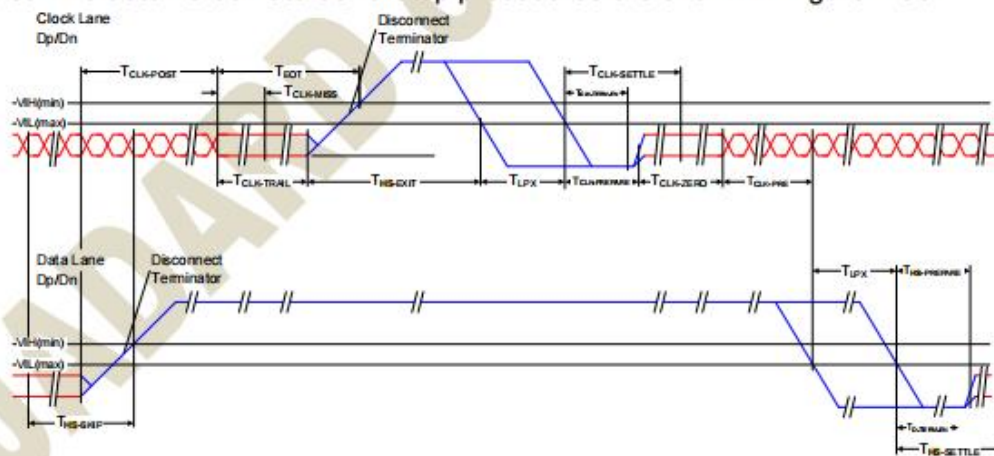


Figure 7.30: Switching the Clock Lane between Clock Transmission and Low-Power Mode



11. Reliability of LCM

Reliability test condition:

Item	Condition	Time (hrs)	Assessment
High temp. Storage	80°C	48	No abnormalities in functions and appearance
High temp. Operating	70°C	48	
Low temp. Storage	-30°C	48	
Low temp. Operating	-20°C	48	
Humidity	60°C/ 90%RH	48	
Temp. Cycle	-20°C ← 25°C → 70°C (60 min ← 5 min → 60min)	10cycles	

Recovery time should be 24 hours minimum. Moreover, functions, performance and appearance shall be free from remarkable deterioration within 50,000 hours under ordinary operating and storage conditions room temperature ($20 \pm 8^\circ\text{C}$), normal humidity (below 65% RH), and in the area not exposed to direct sun light.



12. Precaution for using LCD/LCM

LCD/LCM is assembled and adjusted with a high degree of precision. Do not attempt to make any alteration or modification. The followings should be noted.

General Precautions:

- A. LCD panel is made of glass. Avoid excessive mechanical shock or applying strong pressure onto the surface of display area.
- B. The polarizer used on the display surface is easily scratched and damaged. Extreme care should be taken when handling. To clean dust or dirt off the display surface, wipe gently with cotton, or other soft material soaked with isopropyl alcohol, ethyl alcohol or trichlorotrifluoroethane, do not use water, ketone or aromatics and never scrub hard.
- C. Do not tamper in any way with the tabs on the metal frame.
- D. Do not make any modification on the PCB without consulting LX.
- E. When mounting a LCM, make sure that the PCB is not under any stress such as bending or twisting. Elastomer contacts are very delicate and missing pixels could result from slight dislocation of any of the elements.
- F. Avoid pressing on the metal bezel, otherwise the elastomer connector could be deformed and lose contact, resulting in missing pixels and also cause rainbow on the display.
- G. Be careful not to touch or swallow liquid crystal that might leak from a damaged cell. Any liquid crystal adheres to skin or clothes, wash it off immediately with soap and water.

Static Electricity Precautions:

- H. CMOS-LSI is used for the module circuit; therefore operators should be grounded whenever he/she comes into contact with the module.
- I. Do not touch any of the conductive parts such as the LSI pads; the copper leads on the PCB and the interface terminals with any parts of the human body.
- J. Do not touch the connection terminals of the display with bare hand; it will cause disconnection or defective insulation of terminals.
- K. The modules should be kept in anti-static bags or other containers resistant to static for storage.
- L. Only properly grounded soldering irons should be used.
- M. If an electric screwdriver is used, it should be grounded and shielded to prevent sparks.
- N. The normal static prevention measures should be observed for work clothes and working benches.
- O. Since dry air is inductive to static, a relative humidity of 50-60% is recommended.



Soldering Precautions:

- P. Soldering should be performed only on the I/O terminals.
- Q. Use soldering irons with proper grounding and no leakage.
- R. Soldering temperature: $280^{\circ}\text{C} \pm 10^{\circ}\text{C}$
- S. Soldering time: 3 to 4 second.
- T. Use eutectic solder with resin flux filling.
- U. If flux is used, the LCD surface should be protected to avoid spattering flux.
- V. Flux residue should be removed.

Operation Precautions:

- W. The viewing angle can be adjusted by varying the LCD driving voltage V_o .
- X. Since applied DC voltage causes electro-chemical reactions, which deteriorate the display, the applied pulse waveform should be a symmetric waveform such that no DC component remains. Be sure to use the specified operating voltage.
- Y. Driving voltage should be kept within specified range; excess voltage will shorten display life.
- Z. Response time increases with decrease in temperature.
- AA. Display color may be affected at temperatures above its operational range.
- 6. Keep the temperature within the specified range usage and storage. Excessive temperature and humidity could cause polarization degradation, polarizer peel-off or generate bubbles.
- 7. For long-term storage over 40°C is required, the relative humidity should be kept below 60%, and avoid direct sunlight.

Limited Warranty

LX LCDs and modules are not consumer products, but may be incorporated by LX's customers into consumer products or components thereof, LX does not warrant that its LCDs and components are fit for any such particular purpose.

- AB. The liability of LX is limited to repair or replacement on the terms set forth below. LX will not be responsible for any subsequent or consequential events or injury or damage to any personnel or user including third party personnel and/or user. Unless otherwise agreed in writing between LX and the customer, LX will only replace or repair any of its LCD which is found defective electrically or visually when inspected in accordance with LX general LCD inspection standard.
(Copies available on request)
- AC. No warranty can be granted if any of the precautions state in handling liquid crystal display above has been disregarded. Broken glass, scratches on polarizer mechanical damages as well as defects that are caused accelerated environment tests are excluded from warranty.
- AD. In returning the LCD/LCM, they must be properly packaged; there should be detailed description of the failures or defect.