

**SPECIFICATION
FOR
LCM MODULE**

MODULE NO.: BG12864-26

REVISION NO.: V0

Customer Approval:

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	SIGNATURE
PREPARED BY	Shawn
VERIFIED BY	William
APPROVED BY	Rio

2. CONTENTS

NO.	ITEM	PAGE
0	APPROVAL	1
1	REVISION HISTORY	2
2	CONTENT	3
3	FEATURES	4
4	GENERAL SPECIFICATIONS	4
5	OUTLINE DIMENSIONS	5
6	PIN CONNECTIONS	6
7	BLOCK DIAGRAM	7
8	APPLICATION CIRCUIT EXAMPLE	8
9	ABSOLUTE MAXIMUM RATING	9
10	ELECTRICAL CHARACTERISTICS	9
11	ELECTRO-OPTICAL CHARACTERISTICS	10
12	CONTROLLER ELECTRICAL CHARACTERISTICS	12
13	TIMING CHARACTERISTICS	13
14	DISPLAY COMMANDS	18
15	QUALITY LEVEL	19
16	PRECAUTIONS	21
17	PACKAGING INFORMATION	22

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.

3. FEATURES

Abundant Functions

- Display ON/OFF, Normal/Reverse Display Mode, Set Display Start Line, Read IC Status, Set all Display Points ON, Set LCD Bias, Electronic Volume Control, Read-modify-Write, Select Segment Driver Direction, Power Saving Mode, Select Common Driver Direction, Select Voltage Regulator Resistor Ratio (for V0).

External Hardware Reset Pin (RSTB)

Built-in Oscillation Circuit

- No external component required

Low Power Consumption Analog Circuit

- Voltage Booster (4X, 5X)
- High-accuracy Voltage Regulator for LCD Vop: (Thermal Gradient: -0.05%/°C)
- Voltage Follower for LCD Bias Voltage

4. GENERAL SPECIFICATIONS

ITEM	DESCRIPTION	UNIT
Outline Size	67.3(L) × 45.7(W) × 12.1(T)	mm
LCD Type	STN, Blue, Negative/Transmissive, 1/65Duty, 1/9Bias	---
Display type	128 × 64 dots	---
View Area	61.0 × 31.4	mm
Display Area	54.99 × 27.47	mm
Dots size	0.38 × 0.38	mm
Dots pitch	0.43 × 0.43	mm
Controller & driver	ST7567A	---
View Direction	6 O'Clock	---
Interface mode	I2C	---
VDD&VOP(Type)	3.0V & 8.0 V	V
Backlight(Type)	white, 3.0V, 45mA, 3pcs	---
Operation Temp.	-20~+70	°C
Storage Temp.	-30~+80	°C

5. OUTLINE DIMENSIONS

Version	1.0	2023-08-11	New Issue				
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PIN	SYMBOL
1	LED-A
2	LED-K
3	NC
4	NC
5	RST
6	SCK
7	SDA
8	VDD
9	VSS
10	V0
11	XV0
12	VG

SPECIFICATIONS:

1. DISPLAY TYPE:	STN / NEGATIVE (BLUE) / TRANSMISSIVE
2. DRIVE IC:	ST7567A or EQV.
3. CONNECTOR:	FPC
4. OPERATING VOLTAGE:	VLCD = 8.0±0.2V, VDD = 3.0V
5. OPERATING TEMPERATURE:	-20 ~ +70°C
6. STORAGE TEMPERATURE:	-30 ~ +80°C
7. DRIVE MODE:	1/65 DUTY, 1/9 BIAS
8. VIEWING ANGLE:	6 O'CLOCK
9. BACKLIGHT:	3PCS WHITE LED, I = 45mA, VBL = 3.1±0.2V
10. CUSTOMER PART NO.:	UNKNOWN

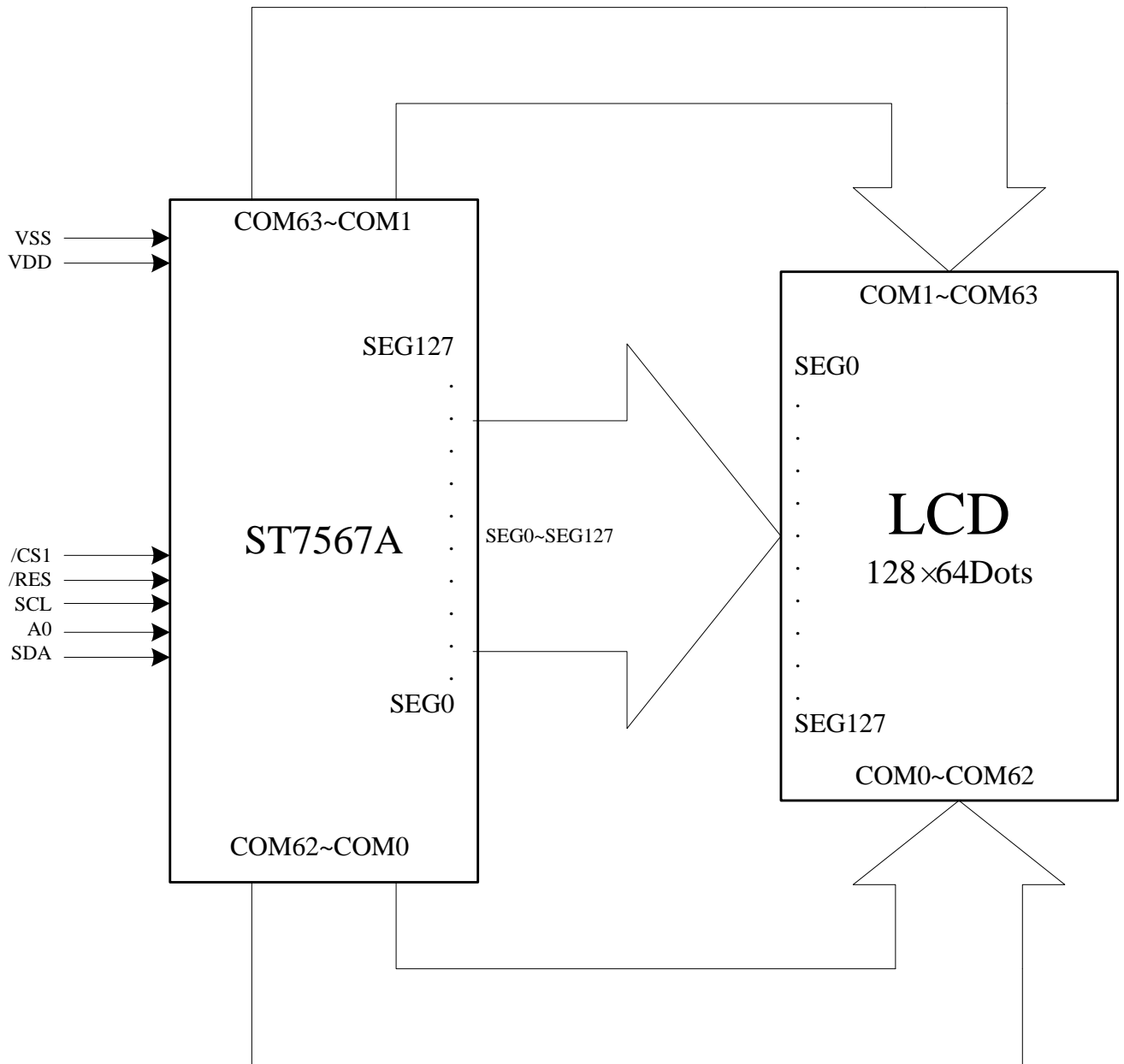
BOCEN DISPLAY TECHNOLOGY CO., LTD.

DESIGNED BY: Shawn	BG12864-26	VERSION: 1.0
CHECKED BY: William		NO.: 1 OF 1
APPROVED BY: Rio		UNIT: mm
Website: http://www.bocentech.com		DATE: 2023-08-11

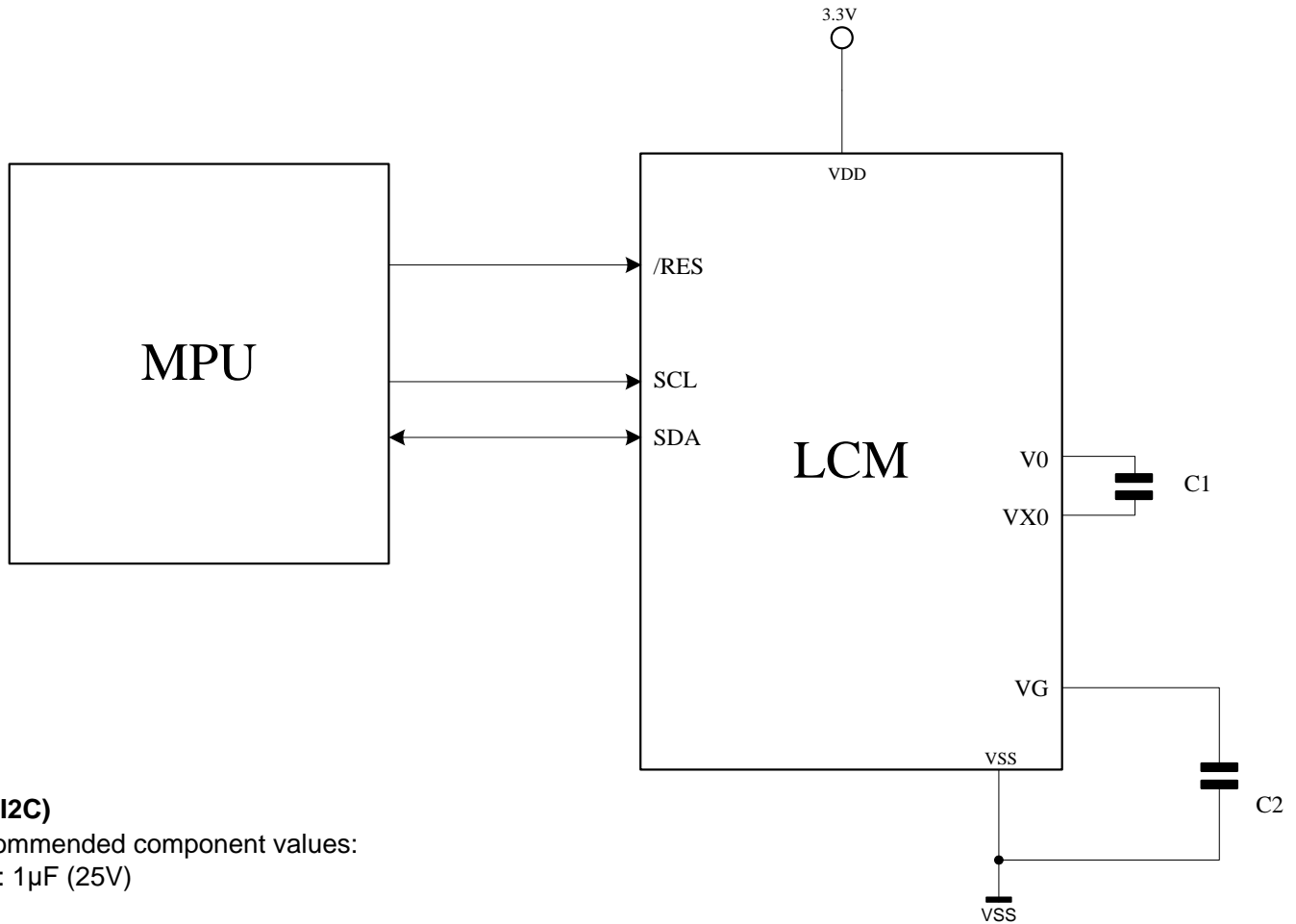
6. PIN CONNECTIONS

Pin No.	Pin Out	Description
1	LEDA	LED backlight +.
2	LEDK	LED backlight -.
3	NC	No connection.
4	NC	No connection.
5	/RES	Reset input pin; When /RES is set to "L", Settings are initialized.
6	SCL	I2C Serial data input.
7	SDA	I2C Serial clock input.
8	VDD	Power supply.
9	VSS	Ground.(0V)
10	V0	V0 is the LCD driving voltage for common circuits at negative frame.
11	XV0	XV0 is the LCD driving voltage for common circuits at positive frame.
12	VG	VG is the LCD driving voltage for segment circuits.

7. BLOCK DIAGRAM



8. APPLICATION CIRCUIT EXAMPLE



注意： SDA, SCL 要接 4.7K 上拉电阻到 VDD

9. ABSOLUTE MAXIMUM RATING

ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY FOR LOGIC	VDD-VSS	-0.3	4.0	V
POWER SUPPLY FOR LCD DRIVE	VLCD	-0.3	14.0	V
INPUT VOLTAGE	VIN	-0.3	VDD+0.3	V
POWER SUPPLY FOR LED	VA-VK	-0.3	3.3	V

ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	OPERATING		STORAGE		UNIT	COMMENT
	MIN	MAX	MIN	MAX		
AMBIENT TEMPERATURE	-20	+70	-30	+80	°C	
HUMIDITY	NOTE(1)		NOTE(1)		--	WITHOUT CONDENSATION
VIBRATION (M/S ²)	/	/	/	/	--	SEE "ITEMS OF RELIABILITY"
TEMPERATURE CYCLING TEST	/	/	/	/	--	SEE "ITEMS OF RELIABILITY"

10. ELECTRICAL CHARACTERISTICS (V_{SS}=0V)

Item	Symbol	Condition	Min.	Typ	Max.	Unit	note
Power Supply for Analog	V _{DD2} -V _{SS}	T _a =25°C	2.4	3.0	3.3	Volt	
Power Supply for Digital	V _{DD1} -V _{SS}		1.8	-	3.3	Volt	
Power Supply for LED	A-K	T _a =25°C	2.7	2.9	3.1	Volt	
Input Voltage	V _{IL}	V _{DD} =3V ± 5%	V _{SS}		0.2 V _{DD}	Volt	
	V _{IH}		0.8 V _{DD}	-	V _{DD}	Volt	
Output Voltage	V _{OL}	V _{DD} =3V ± 5%	V _{SS}	-	0.2 V _{DD}	Volt	
	V _{OH}		0.8 V _{DD}	-	V _{DD}	Volt	
LCD drive Voltage (recommended Voltage)	V ₀ -XV ₀	T _a = 0°C	--	--	--	Volt	1/9Bias
		T _a = 25°C	7.8	8.0	8.2		
		T _a = 50°C	--	--	--		
Power Supply Current for LCM	I _{DD}	V _{DD} = 3.0V	--	90	--	uA	-
	I _{LED}	V _{LED} = 3.0 V	--	30	45	mA	None 1

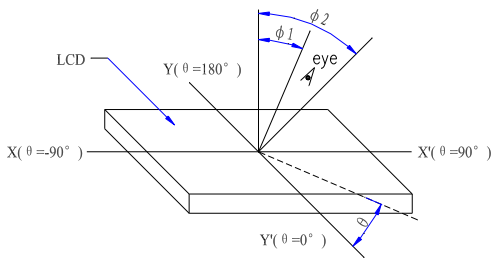
Note 1: Backlight Electrical-Optical Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Conditon
Luminance	L _v	200	300	--	CD/m ²	If=45 mA
Range		--	--	--	-	
Brightness uniformity	△%	70	-	-	%	

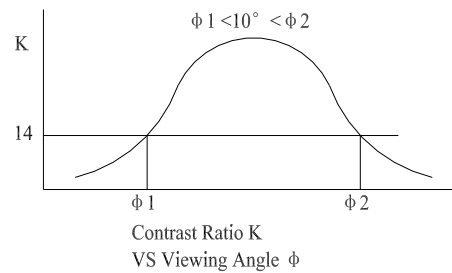
11. ELECTRO-OPTICAL CHARACTERISTICS

Item	Symbol	Condition	Min.	Typ	Max.	Unit	note
Viewing angle range	$\Theta 2-\Theta 1$	$T_a=25^\circ\text{C}$	20	-	-	Deg	K=1.4 A,B
	Φ		-	-	-		
Rise Time	T_r	$T_a=25^\circ\text{C}$	-	200	300	ms	$\Phi = 10$ $\Theta = 0$ C
		$T_a=0^\circ\text{C}$	-	-	-		
Fall Time	T_f	$T_a=25^\circ\text{C}$	-	230	350		
		$T_a=0^\circ\text{C}$	-	-	-		
Contrast	Cr	$T_a=25^\circ\text{C}$	-	5	-	-	$\Phi = 10$ $\Theta = 0$ D

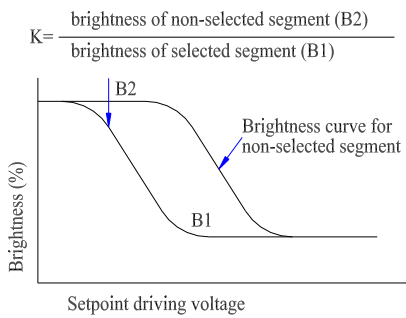
11.1 Definition of angle θ and ϕ



11.2 Definition of viewing angle $\phi 1$ and $\phi 2$

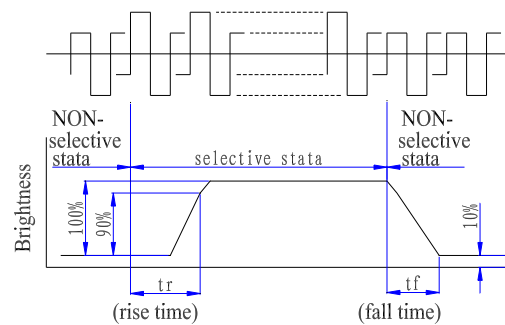


11.3 Definition of contrast "K"



POSITIVE TYPE

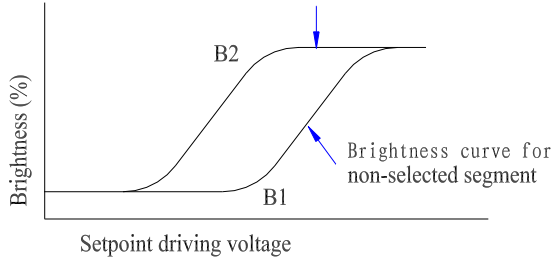
11.4 Definition of optical response



POSITIVE TYPE

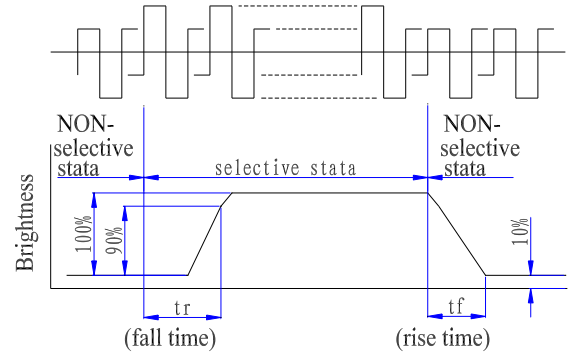
11.5 Definition of contrast "K"

$$K = \frac{\text{brightness of selected segment (B1)}}{\text{brightness of non-selected segment (B2)}}$$



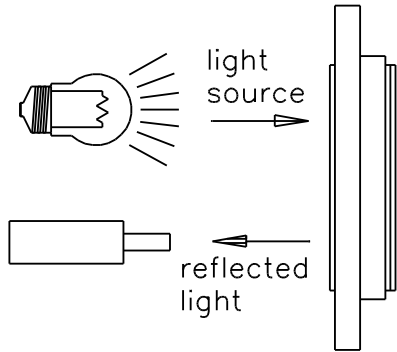
NEGATIVE TYPE

11.6 Definition of optical response

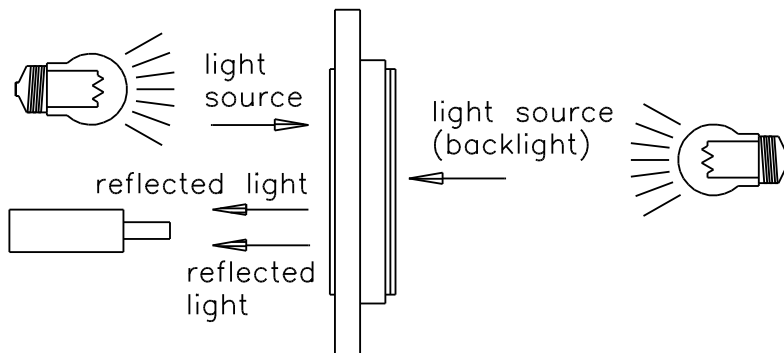


NEGATIVE TYPE

11.7 DESCRIPTION OF MEASURING EQUIPMENT



Reflective type



Transflective type

12. CONTROLLER ELECTRICAL CHARACTERISTICS

DC CHARACTERISTICS

VSS=0V; Temp=-30°C to +85°C; unless otherwise specified.

Item	Symbol	Condition	Rating			Unit	Applicable Pin	
			Min.	Typ.	Max.			
Operating Voltage (1)	VDD1		1.7	—	3.6	V	VDD1	
Operating Voltage (2)	VDD2		2.0	—	3.6	V	VDD2	
Operating Voltage (3)	VDD3		2.0	—	3.6	V	VDD3	
Input High-level Voltage	V _{IHC}		0.7 x VDD1	—	VDD1	V	MPU Interface	
Input Low-level Voltage	V _{ILC}		VSS1	—	0.3 x VDD1	V	MPU Interface	
Output High-level Voltage	V _{OHC}	I _{OUT} =1mA, VDD1=1.8V	0.8 x VDD1	—	VDD1	V	D[7:0]	
Output Low-level Voltage	V _{OLC}	I _{OUT} =-1mA, VDD1=1.8V	VSS1	—	0.2 x VDD1	V	D[7:0]	
Input Leakage Current	I _{LI}		-1.0	—	1.0	μA	MPU Interface	
Output Leakage Current	I _{LO}		-3.0	—	3.0	μA	MPU Interface	
Liquid Crystal Driver ON Resistance	R _{ON}	Ta=25°C	V _{op} =8.5V, ΔV=0.85V	—	0.6	0.8	KΩ	COMx
			V _G =1.9V ΔV=0.19V	—	1.3	1.5	KΩ	SEGx
Frame Frequency	FR	Duty=1/65, V _{op} =8.5V Ta = 25°C	70	75	80	Hz		
LCD Power Supply Voltage	VLCD	Ta = 25°C	4.0	—	13.65	V	V0-XV0	

Current consumption: During Display, with internal power system, current consumed by whole IC (bare die), Temp=-20°C to +70°C.

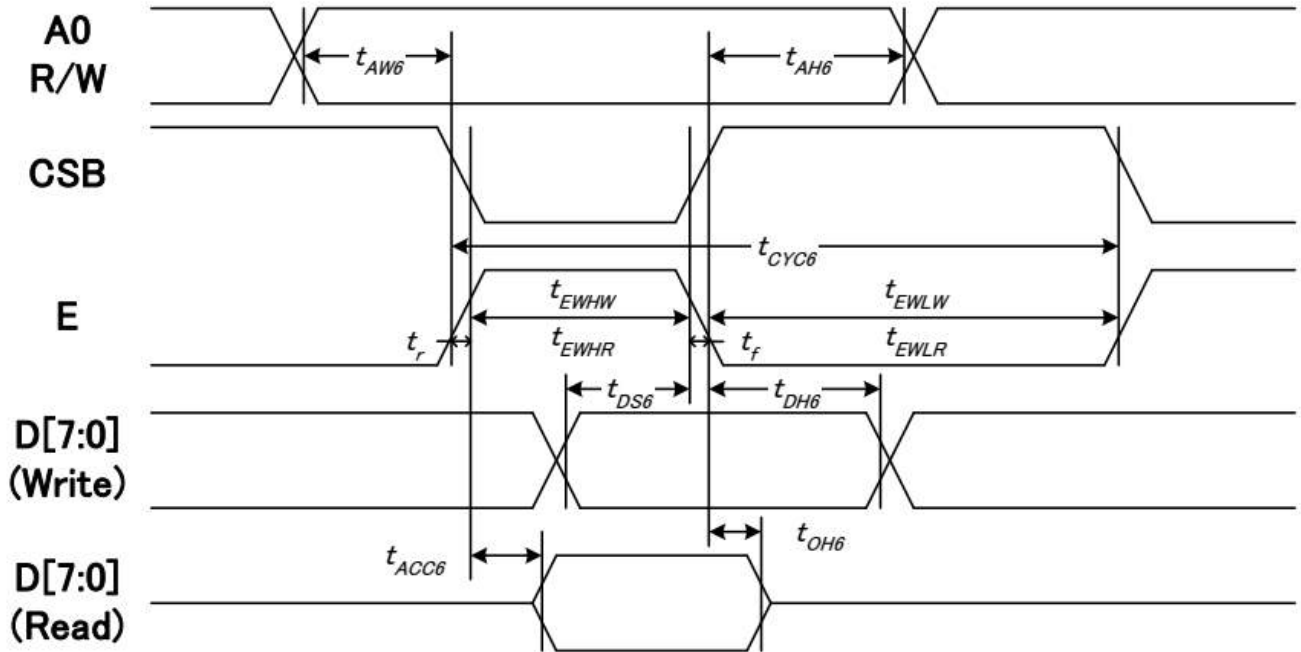
Test Pattern	Symbol	Condition	Rating			Unit	Note
			Min.	Typ.	Max.		
Display Pattern: Black (Static)	ISS	VDD1=VDD2=VDD3=3.3V, Booster X5 V _{OP} = 8.5V, Bias = 1/9	—	80	130	μA	
Display OFF	ISS	VDD1=VDD2=VDD3=3.3V, Booster X5 V _{OP} = 8.5V, Bias = 1/9	—	70	110	μA	
Power Down	ISS	VDD1=VDD2=VDD3=3.3V	—	1.0	3.0	μA	

Note:

The Current Consumption is DC characteristics

13. TIMING CHARACTERISTICS

System Bus Timing for 6800 Series MPU



(VDD1 = 3.3V , Ta = 25°C)

Item	Signal	Symbol	Condition	Min.	Max.	Unit
Address setup time	A0	tAW6		0	—	ns
Address hold time		tAH6		10	—	
System cycle time	E	tCYC6		240	—	
Enable L pulse width (WRITE)		tEHLW		80	—	
Enable H pulse width (WRITE)		tEHWLW		80	—	
Enable L pulse width (READ)		tEHLR		80	—	
Enable H pulse width (READ)	tEHWHR		140	—		
Write data setup time	D[7:0]	tDS6		40	—	
Write data hold time		tDH6		10	—	
Read data access time		tACC6	CL = 16 pF	—	70	
Read data output disable time		tOH6	CL = 16 pF	5	50	

*1 The input signal rise time and fall time (t_r , t_f) is specified at 15 ns or less. When the system cycle time is extremely fast, $(t_r + t_f) \leq (t_{CYC6} - t_{EHLW} - t_{EHWLW})$ for $(t_r + t_f) \leq (t_{CYC6} - t_{EHLR} - t_{EHWHR})$ are specified.

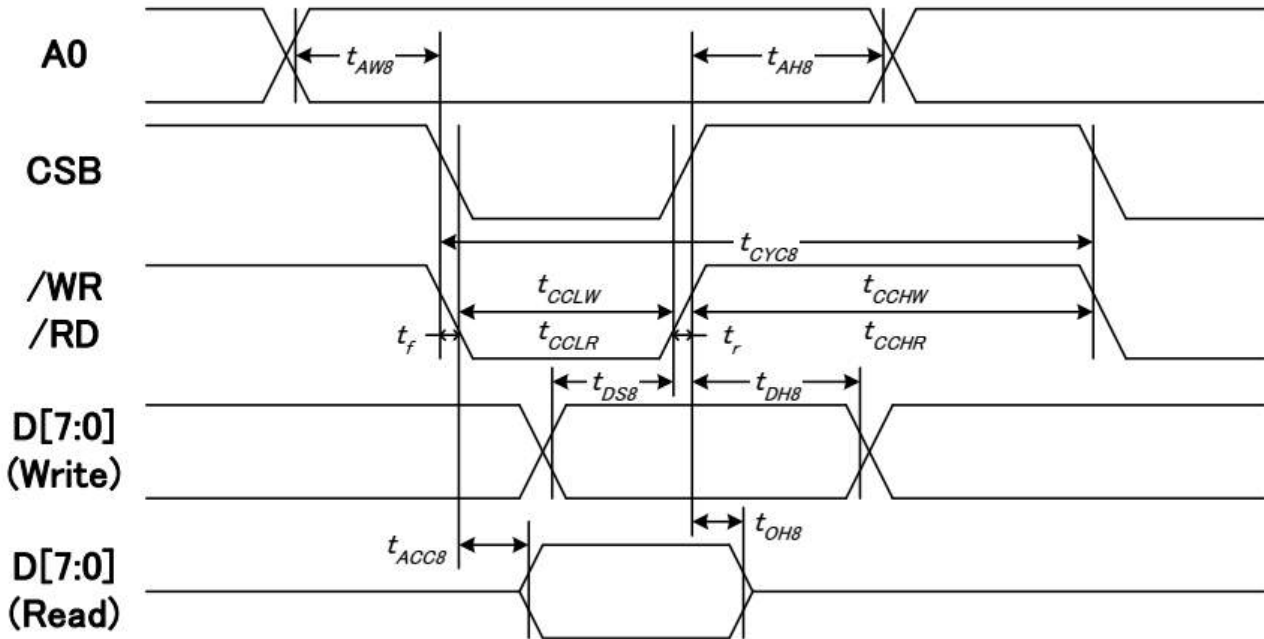
*2 All timing is specified using 20% and 80% of VDD1 as the reference.

*3 tEHLW and tEHLR are specified as the overlap between CSB being —L || and E.

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System Bus Timing for 8080 Series MPU



(VDD1 = 3.3V , Ta = 25°C)

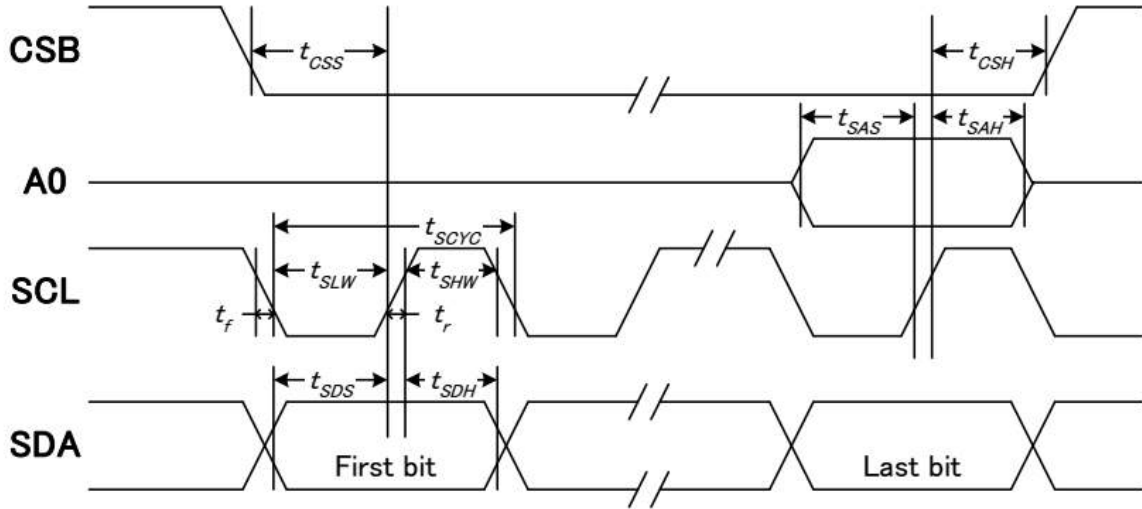
Item	Signal	Symbol	Condition	Min.	Max.	Unit
Address setup time	A0	tAW8		0	—	ns
Address hold time		tAH8		10	—	
System cycle time		tCYC8		240	—	
/WR L pulse width (WRITE)	/WR	tCCLW		80	—	
/WR H pulse width (WRITE)		tCCHW		80	—	
/RD L pulse width (READ)	RD	tCCLR		140	—	
/RD H pulse width (READ)		tCCHR		80	—	
WRITE Data setup time	D[7:0]	tDS8		40	—	
WRITE Data hold time		tDH8		20	—	
READ access time		tACC8	CL = 16 pF	—	70	
READ Output disable time		tOH8	CL = 16 pF	5	50	

*1 The input signal rise time and fall time (tr, tf) is specified at 15 ns or less. When the system cycle time is extremely fast, (tr + tf) ≦ (tCYC8 – tCCLW – tCCHW) for (tr + tf) ≦ (tCYC8 – tCCLR – tCCHR) are specified.

*2 All timing is specified using 20% and 80% of VDD1 as the reference.

*3 tCCLW and tCCLR are specified as the overlap between CSB being —L || and WR and RD being at the —L || level.

System Bus Timing for 4-Line Serial Interface



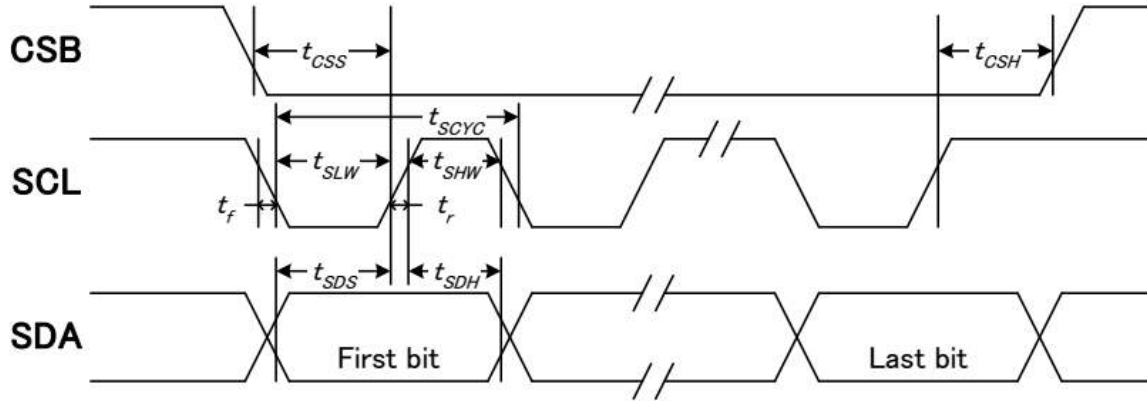
(VDD1 = 3.3V, Ta = 25°C)

Item	Signal	Symbol	Condition	Min.	Max.	Unit
Serial clock period	SCL	tSCYC		50	—	ns
SCL "H" pulse width		tSHW		25	—	
SCL "L" pulse width		tSLW		25	—	
Address setup time	A0	tSAS		20	—	
Address hold time		tSAH		10	—	
Data setup time	SDA	tSDS		20	—	
Data hold time		tSDH		10	—	
CSB-SCL time	CSB	tCSS		20	—	
CSB-SCL time		tCSH		40	—	

*1 The input signal rise and fall time (tr, tf) are specified at 15 ns or less.

*2 All timing is specified using 20% and 80% of VDD1 as the standard

SERIAL INTERFACE (3Line-SPI Interface)



(VDD1 = 3.3V , Ta = 25°C)

Item	Signal	Symbol	Condition	Min.	Max.	Unit
Serial clock period	SCL	tSCYC		50	—	ns
SCL "H" pulse width		tSHW		25	—	
SCL "L" pulse width		tSLW		25	—	
Data setup time	SDA	tSDS		20	—	
Data hold time		tSDH		10	—	
CSB-SCL time	CSB	tCSS		20	—	
CSB-SCL time		tCSH		40	—	

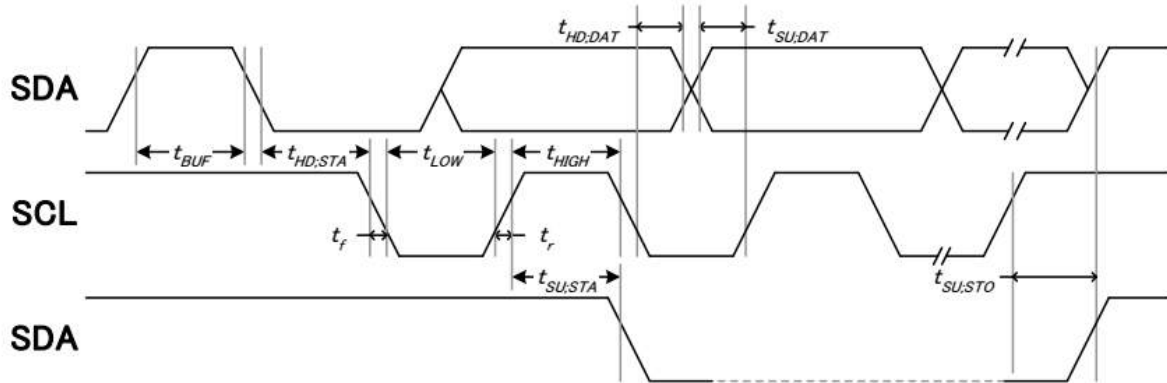
*1 The rise and fall time (tr, tf) of the input signal are specified at 15 ns or less.

*2 All timings take 20% and 80% of VDD1 as standard.

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SERIAL INTERFACE (I2C Interface)



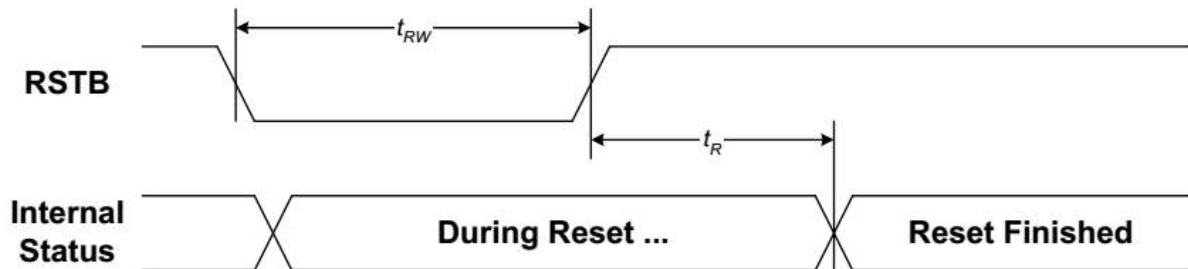
(VDD1 = 2.8V, Ta = 25°C)

Item	Signal	Symbol	Condition	Min.	Max.	Unit
SCL clock frequency	SCL	fSCL		-	400	kHz
SCL clock low period		tLOW		160	-	
SCL clock high period		tHIGH		60	-	
Data set-up time	SDA	tSU;Data		80	-	ns
Data hold time		tHD;Data		40	-	
Setup time for a repeated START condition	SDA	tSU;STA		90	-	
Start condition hold time		tHD;STA		220	-	
Setup time for STOP condition		tSU;STO		110	-	
Bus free time between a STOP and START		tBUF		150	-	

*1 The rise and fall time (tr, tf) of the input signal are specified at 15 ns or less.

*2 All timings take 20% and 80% of VDD1 as standard.

Hardware Reset Timing



(VDD1 = 3.3V, Ta = 25°C)

Item	Symbol	Condition	Min.	Max.	Unit
Reset time	tR		—	1.0	us
Reset "L" pulse width	tRW		1.0	—	

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14. DISPLAY COMMANDS

The display commands shown below control the internal state of the LCD driver ICs. Commands are sent from CPU to LCD module for the display control.(please to visit the web: <http://www.sitronix.com.tw>)

INSTRUCTION	A0	R/W (RWR)	COMMAND BYTE								DESCRIPTION
			D7	D6	D5	D4	D3	D2	D1	D0	
(1) Display ON/OFF	0	0	1	0	1	0	1	1	1	D	D=1, display ON D=0, display OFF
(2) Set Start Line	0	0	0	1	S5	S4	S3	S2	S1	S0	Set display start line
(3) Set Page Address	0	0	1	0	1	1	Y3	Y2	Y1	Y0	Set page address
(4)Set Column Address	0	0	0	0	0	1	X7	X6	X5	X4	Set column address (MSB)
	0	0	0	0	0	0	X3	X2	X1	X0	Set column address (LSB)
(5) Read Status	0	1	0	MX	D	RST	0	0	0	0	Read IC Status
(6) Write Data	1	0	D7	D6	D5	D4	D3	D2	D1	D0	Write display data to RAM
(7) Read Data	1	1	D7	D6	D5	D4	D3	D2	D1	D0	Read display data from RAM
(8) SEG Direction	0	0	1	0	1	0	0	0	0	MX	Set scan direction of SEG MX=1, reverse direction MX=0, normal direction
(9) Inverse Display	0	0	1	0	1	0	0	1	1	INV	INV =1, inverse display INV =0, normal display
(10) All Pixel ON	0	0	1	0	1	0	0	1	0	AP	AP=1, set all pixel ON AP=0, normal display
(11) Bias Select	0	0	1	0	1	0	0	0	1	BS	Select bias setting 0=1/9; 1=1/7 (at 1/65 duty)
(12) Read-modify-Write	0	0	1	1	1	0	0	0	0	0	Column address increment: Read:+0 , Write:+1
(13) END	0	0	1	1	1	0	1	1	1	0	Exit Read-modify-Write mode
(14) RESET	0	0	1	1	1	0	0	0	1	0	Software reset
(15) COM Direction	0	0	1	1	0	0	MY	-	-	-	Set output direction of COM MY=1, reverse direction MY=0, normal direction
(16) Power Control	0	0	0	0	1	0	1	VB	VR	VF	Control built-in power circuit ON/OFF
(17) Regulation Ratio	0	0	0	0	1	0	0	RR2	RR1	RR0	Select regulation resistor ratio
(18) Set EV	0	0	1	0	0	0	0	0	0	1	Double command!! Set electronic volume (EV) level
	0	0	0	0	EV5	EV4	EV3	EV2	EV1	EV0	
(19) Set Booster	0	0	1	1	1	1	1	1	0	0	Double command!! Set booster level: BL=0: 4X BL=1: 5X
	0	0	0	0	0	0	0	0	0	BL	
(20) Power Save	0	0	Compound Command								Display OFF + All Pixel ON
(21) NOP	0	0	1	1	1	0	0	0	1	1	No operation
(22) Set N-Line	0	0	1	0	0	0	0	1	0	1	Set N-Line inversion
	0	0	0	0	0	NL4	NL3	NL2	NL1	NL0	
(23) Release N-Line	0	0	1	0	0	0	0	1	0	0	Exit N-Line inversion
(24) SPI Read Status	0	1	1	1	1	1	1	1	0	0	SPI read status command
	0	1	0	MX	D	RST	ID3	ID2	ID1	ID0	SPI read status
(25) SPI Read DDRAM	0	1	1	1	1	1	1	1	0	1	SPI read DDRAM command
	1	1	D7	D6	D5	D4	D3	D2	D1	D0	SPI read DDRAM

Note: 1. Symbol "-" means this bit can be "H" or "L".

2. Do not use instructions not listed in these tables (Instruction Table).

15. QUALITY LEVEL

Inspection conditions

Environmental conditions

The environmental conditions for inspection shall be as follows: Room temperature: 22 ± 3 °C; Humidity: $50 \pm 10\%$ RH

The external visual inspection

The inspection shall be performed by using a single 20W fluorescent lamp for illumination and the distance from LCD to eyes of the inspector should be 30cm or more.

Classification of defects

A major defect

A major defect refers to A defect which may substantially degrade usability for product applications.

Minor defect

A Minor defect refers to A defect which is not considered to substantially degrade product application or A defect which deviates from existing standards almost unrelated to the effective use of the product or its operation

Sampling procedures for each items acceptance level table

Defect type	Sampling procedures	AQL
Major defect	MIL-STD-105D Inspection level1 normal inspection Single sample inspection	1.0
Minor defect	MIL-STD-105D Inspection level1 normal inspection Single sample inspection	2.5

Life time

50,000Hrs(25°C in the room without ray of sun)

Items of reliability

ITEM	CONDITIONS	CRITERION
High temperature operation test	+70°C \ 120 hours	1. It judged at room temperature after 1 hours to be good as appearance and electrical test is normal after the experiment. 2. Current consumption should within the specification of Approval sheet Electro-optical characteristics
Low temperature operation test	-20°C \ 120 hours	5-10pcs
High temperature/humidity storage test	+80°C, 80% ± 10% RH \ 120 hours	
High temperature storage test	+80°C \ 120 hours	
Low temperature storage test	-30°C \ 120 hours	

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Temperature cycling test	-20°C (30 min) ↓ ↑ 25°C (5 min) ↓ ↑ 70°C (30 min) CYCLES: 10	
Vibration	Random Wave: 10 ~ 50 Hz Each Direction (x, y, z): 30 Min.	

Cosmetic criteria of LCD screen

DEFECT	JUDGEMENT CRITERION		
	Size d (mm)	Acceptable quantity in active area	
Spots	$d \leq 0.1$	Disregard	
	$0.1 < d \leq 0.2$	6	
	$0.2 < d \leq 0.3$	2	
	$d > 0.3$	0	
Note: $d = (\text{Length} + \text{Width})/2$			
Polarizer Bubbles	$d \leq 0.3$	Disregard	
	$0.3 < d \leq 1.0$	3	
	$1.0 < d \leq 1.5$	1	
	$d > 1.5$	0	
Note: $d = (\text{Length} + \text{Width})/2$			
Lines	Width W (mm) Length L (mm)	Acceptable quantity in active area	
	$W \leq 0.02$	Disregard	
	$0.02 < W \leq 0.05$	$L \leq 5.0$	6
		$L > 5.0$	0
	$0.05 < W \leq 0.1$	$L \leq 2.0$	6
		$L > 2.0$	0
$W > 0.1$	See criteria for spots		
Testing conditions: 20W fluorescent lamp at 30 cm distance at normal viewing angle			

16. PRECAUTIONS

Static charge

Since this LCD module contains CMOS LSI that are sensitive to static charge, care must be taken when handling it.

Power on sequence

1. Input signals should not be applied to the LCD module before the logic system voltage has reached the specified voltage. If the above sequence is not kept, the LCD module might be permanently damaged.
2. When connecting the power supply, connect the LCD bias voltage after connecting the logic system voltage.
3. When disconnecting the power supply, disconnect the logic system voltage after the LCD bias voltage.
4. It is recommended to connect a serial resistor or fuse to the LCD bias power supply of the system as a current limiter. The value of the resistor depends on the kind of LCD used, but is typically 50~100Ω

Operation

1. It is essential to drive the LCD within the specified voltage limits, since a higher driving voltage than allowed causes a shorter LCD lifetime. Under these circumstances, electrochemical reactions will result in undesirable deterioration of the LCD.
2. The response time of the LC fluid is considerably longer at low temperature than in the normal operating temperature range. On the other hand, the LCD will show a dark blue color at high temperatures. Those phenomena do not indicate a malfunction or defect of the LCD. Back at normal temperatures, the LCD will return to its original behavior.
3. If the display area is pressed hard during operation, some abnormal display patterns might appear. However, the display will resume normal operation after turning the module off and on.
4. Moisture on the terminals could cause an electrochemical reaction resulting in an open terminal connection. If the environmental temperature is higher than 50°C, it is required that the relative humidity is 50% or less.

Long-time storage

For long-term storage the following methods are highly recommended:

1. Store the product in a polyethylene bag with a sealed opening to prevent fresh air entering from the outside. Placing it with a desiccant is not necessary.
2. Store the product in a dark place, with the temperature in the range from -10°C to 5°C.
3. Keep the sensitive polarizer surface of the LCD panels clear of any contact. We recommend using the container that was used by Bocen to deliver the products.

Cleaning of product

To clean the product make sure to use absorbent cotton cloth or other soft material like chamois. Make sure to rub it gently and do not use chemicals when cleaning.

17. PACKAGING INFORMATION

Packaging Material				
No.	Item	Model	Dimensions (mm)	Quantity
1	LCM	-	-	--
2	POF	-	-	--
3	TRAY	-	-	--
4	SMALL BOX	-	385.0×315.0×200.0	2
5	BIG BOX	-	398.0×331.0×430.0	1

