

BOLYMIN

**SPECIFICATIONS FOR
LCD MODULE**

MODEL NO.
BL128128C2 series
VER01

OR MESSRS:

ON DATE OF:

APPROVED BY:

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History of Version

Version	Contents	Date	Note
01	NEW VERSION	2008/06/23	SPEC.

C O N T E N T S

1. Numbering System
2. General Specification
3. Absolute Maximum Ratings
4. Electrical Characteristics
5. Optical Characteristics
6. Interface Pin Function
7. Timing Characteristics
8. POWER ON / OFF SEQUENCE & APPLICATION CIRCUIT
9. Appendix

1. Numbering System

<u>B</u>	<u>L</u>	<u>128128</u>	<u>C2</u>	-	-	-	-	-	<u>xxx</u>
0	1	2	3	4	5	6	7	8	9

0	Brand	Bolymin	
1	Module Type	C= character type G= graphic type P= TAB/TCP type	O= COG type F= COF type L=PLED/OLED
2	Format	2002=20 characters, 2 lines 12232= 122 x 32 dots	
3	Version No.	A type	
4	LCD Color	G=STN/gray Y=STN/yellow-green PLED/yellow-green C=color STN,OLED/RGB	B=STN/blue,OLED/blue F=FSTN T=TN D=OLED/blue+yellow A=OLED/blue+yellow+green
5	LCD Type	R=positive/reflective P=positive/transflective	M=positive/transmissive N=negative/transmissive
6	Backlight type/color	L=LED array/ yellow-green H=LED edge/white R=LED array/red G=LED edge/yellow-green F=RGB array I=RGB edge Q=LED edge/red N=No backlight	D=LED edge/blue E=EL/white B=EL/blue C=CCFL/white Y=LED Bottom/yellow O=LED array/orange K=LED edge/green A=LED edge/amber
7	CGRAM Font (applied only on character type)	J=English/Japanese Font E=English/European Font G=Chinese(simple) F=Chinese(traditional)	C=English/Cyrillic Font H=English/Hebrew Font A=English/Arabic Font
8	View Angle/ Operating Temperature	B=Bottom/Normal Temperature H=Bottom/Wide Temperature U=Bottom/Ultra wide Temperature	T=Top/Normal Temperature W=Top/Wide Temperature C=9H/Normal Temperature E=Top/ultra wide temperature
9	Special Code	3=3 volt logic power supply n=negative voltage for LCD c=cable/connector xxx=to be assigned on datasheet	t=temperature compensation for LCD p=touch panel \$=RoHS

2. General Specification

(1) Mechanical Dimension

Item	Standard Value	Unit
Number of dots	128x128xRGB	dots
Module dimension (L*W*H)	33.5*71.5*1.625(MAX)	mm
Active area	26.279*26.284	mm
Dot size	0.0435(W)×0.1855(H)	mm
Dot pitch	0.0685(W)×0.2055 (H)	mm

(2) Controller IC: SSD1355 Controller

(3) Temperature Range

Operating	-40 ~ +70
Storage	-40 ~ +85

3. Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	TOP	-40	-	+70	
Storage Temperature	TST	-40	-	+85	
Input Voltage	VI	-	-	VDD	V
Operating lifetime			13000(*)		Hrs

*:80cd/m² light on

**:Ta=25 ,50%RH

4. Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply Voltage For Logic	V _{DD} -V _{SS}	-	2.4	3.3	3.5	V
Supply Voltage For Analog	V _{CC} -V _{SS}	-	16	16.5	17	V
Input High Vol	V _{IH}	-	0.8V _{DD}	-	V _{DD}	V
Input Low Vol	V _{IL}	-	0	-	0.2V _{DD}	V
Output High Vol	V _{OH}	-	2.4	-	-	V
Output Low Vol.	V _{OL}	-	0.9V _{DD}	-	0.1V _{DD}	V
Supply Current For Logic (with built-in positive voltage)	I _{DD}	-	-	193	-	mA

5. Optical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
View Angle	(V) θ	CR 20	85		85	deg
	(H) φ	CR 20	85		85	deg
Contrast Ratio	CR	-		100		-
Response Time 25	T rise	-		40		ms
	T fall	-		40		ms

6. Interface Pin Function

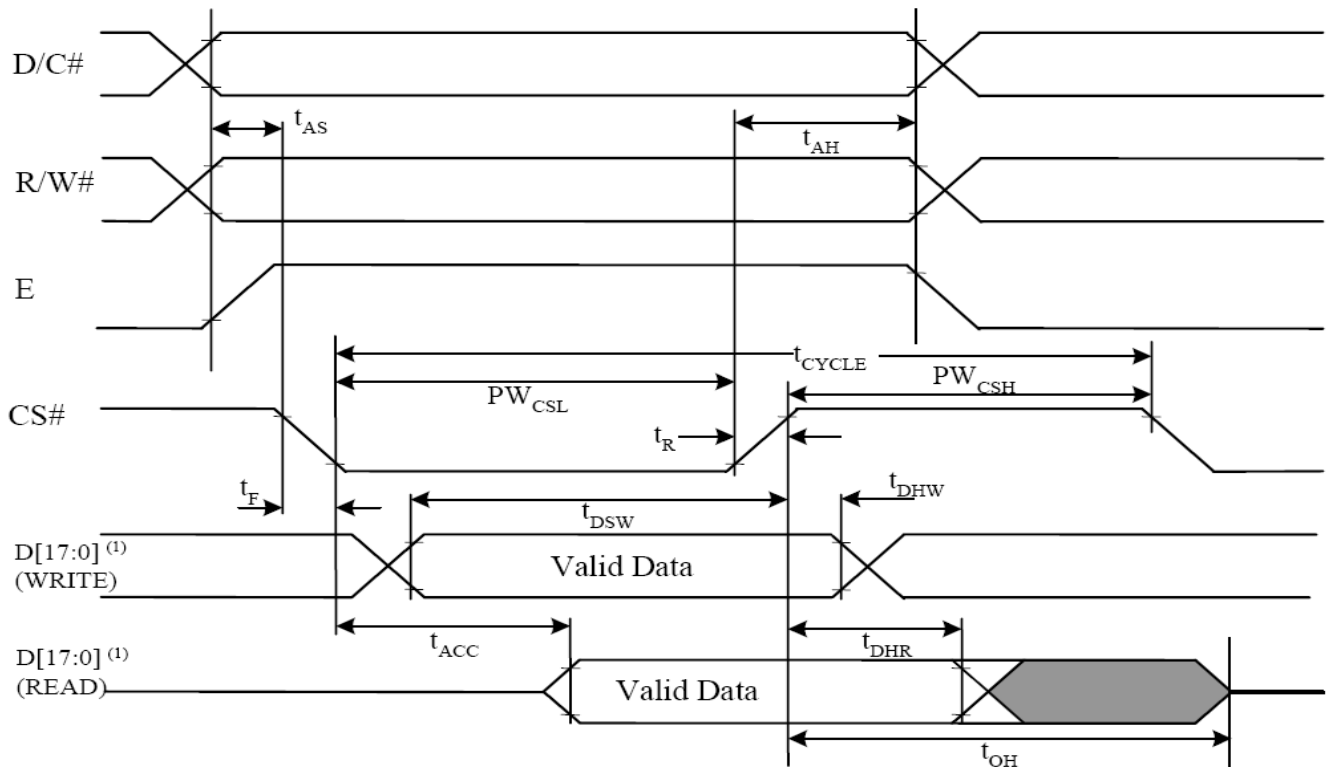
Pin No.	Symbol	Level	Description
1	Vss	0V	Ground
2	Vdd	3.3V	Supply voltage for logic
3	CS	H/L	Chip select pin
4	/RES	H/L	Hardware Reset pin
5	D/C	H/L	H: Data; L: Command.
6	RW	H/L	8080: data write enable pin 6800: Read/Write select pin
7	E	H/L	8080: data read enable pin 6800: Read/Write enable pin
8	DB0	H/L	Data bus line
9	DB1	H/L	Data bus line
10	DB2	H/L	Data bus line
11	DB3	H/L	Data bus line
12	DB4	H/L	Data bus line
13	DB5	H/L	Data bus line
14	DB6	H/L	Data bus line
15	DB7	H/L	Data bus line
16	DISPOFF/ VCC	- H/L	DISPOFF: Active L VCC: Analog power control (DC 17V)

Default:8080 series interface

7. Timing Characteristics

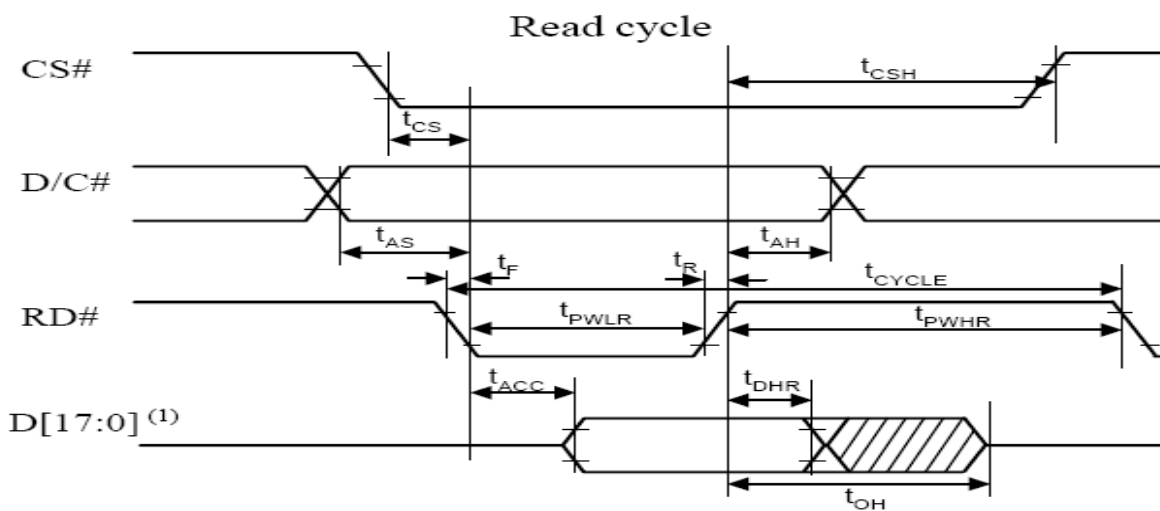
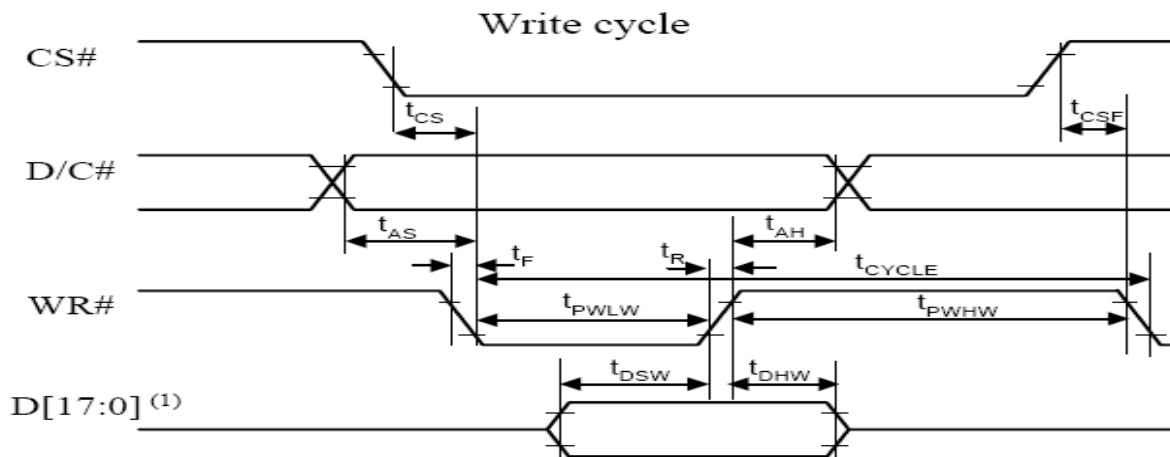
7-1.6800 MPU Interfac

Symbol	Parameter	Min	Typ	Max	Unit
t_{CYCLE}	Clock Cycle Time	300	-	-	ns
t_{AS}	Address Setup Time	10	-	-	ns
t_{AH}	Address Hold Time	0	-	-	ns
t_{DSW}	Write Data Setup Time	40	-	-	ns
t_{DHW}	Write Data Hold Time	7	-	-	ns
t_{DHR}	Read Data Hold Time	20	-	-	ns
t_{OH}	Output Disable Time	-	-	70	ns
t_{ACC}	Access Time	-	-	140	ns
PW_{CSL}	Chip Select Low Pulse Width (read) Chip Select Low Pulse Width (write)	120 60	-	-	ns
PW_{CSH}	Chip Select High Pulse Width (read) Chip Select High Pulse Width (write)	60 60	-	-	ns
t_{R}	Rise Time	-	-	15	ns
t_{F}	Fall Time	-	-	15	ns



7-2.8080 MPU Interface

Symbol	Parameter	Min	Typ	Max	Unit
t_{CYCLE}	Clock Cycle Time	300	-	-	ns
t_{AS}	Address Setup Time	10	-	-	ns
t_{AH}	Address Hold Time	0	-	-	ns
t_{DSW}	Write Data Setup Time	40	-	-	ns
t_{DHW}	Write Data Hold Time	7	-	-	ns
t_{DHR}	Read Data Hold Time	20	-	-	ns
t_{OH}	Output Disable Time	-	-	70	ns
t_{ACC}	Access Time	-	-	140	ns
t_{PWLW}	Read Low Time	150	-	-	ns
t_{PWLW}	Write Low Time	60	-	-	ns
t_{PWHR}	Read High Time	60	-	-	ns
t_{PWHW}	Write High Time	60	-	-	ns
t_{R}	Rise Time	-	-	15	ns
t_{F}	Fall Time	-	-	15	ns
t_{CS}	Chip select setup time	0	-	-	ns
t_{CSH}	Chip select hold time to read signal	0	-	-	ns
t_{CSF}	Chip select hold time	20	-	-	ns

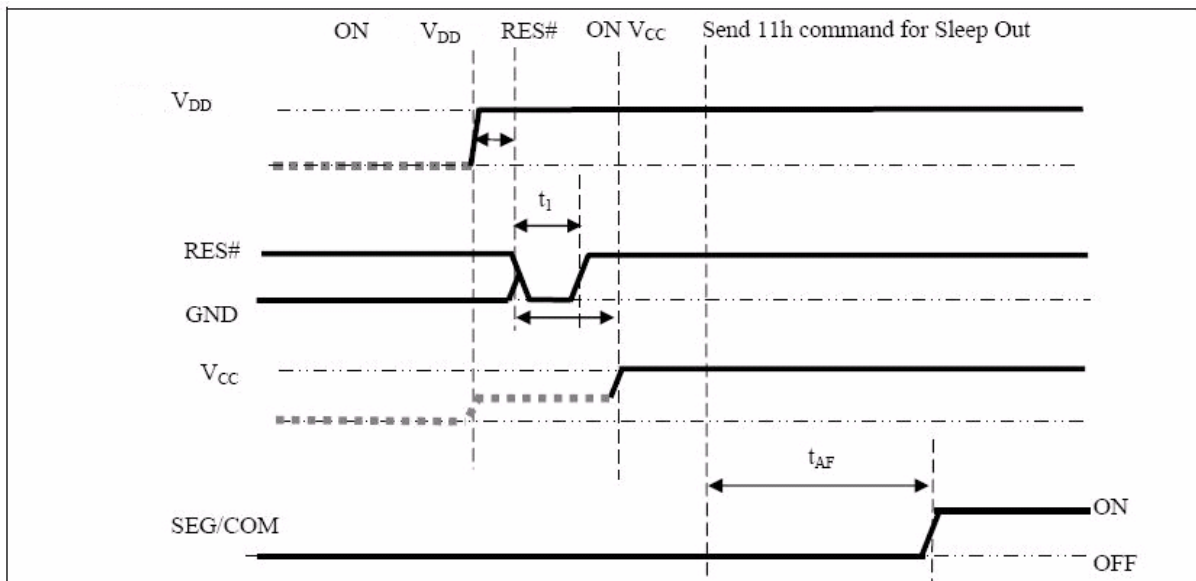


8. POWER ON / OFF SEQUENCE & APPLICATION CIRCUIT

8.1 POWER ON / OFF SEQUENCE

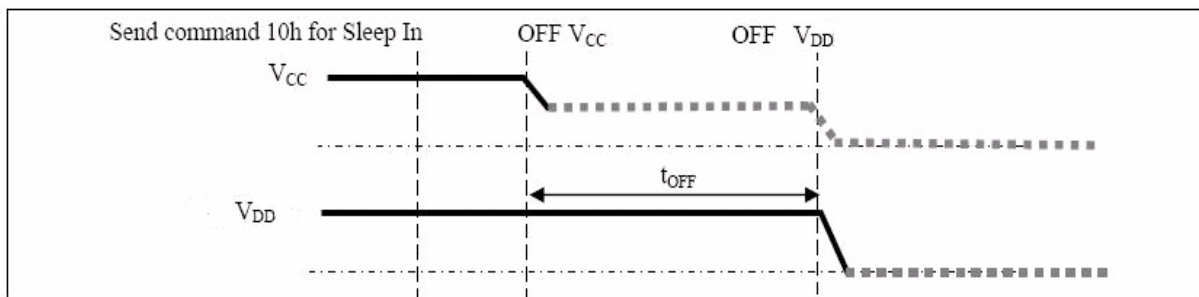
8.1.1 Power ON Sequence

1. Power ON V_{DD} ,
2. After V_{CI} , V_{DDIO} become stable, set wait time at least 1ms (t_0) for internal V_{DD} become stable. Then set $RES\#$ pin LOW (logic low) for at least 2us (t_1) and then HIGH (logic high).
3. After set $RES\#$ pin LOW (logic low), wait for at least 2us (t_2). Then Power ON V_{CC} .(1)
4. After V_{CC} become stable, send command 11h for Sleep Out. SEG/COM will be ON after 200ms (t_{AF}).



8.1.2 Power OFF Sequence

1. Send command 10h for sleep In.
2. Power OFF V_{CC} . (1), (2)
3. Wait for t_{OFF} . Power OFF V_{DD} (where Minimum $t_{OFF}=0ms$, Typical $t_{OFF}=100ms$)



Note:

- (1) Since an ESD protection circuit is connected between V_{DD} and V_{CC} , V_{CC} becomes lower than V_{CI} whenever V_{CI} , V_{DDIO} is ON and V_{CC} is OFF as shown in the dotted line of V_{CC} in above figures.
- (2) V_{CC} should be disabled when it is OFF.

8.2 COMMAND TABLE

Refer to IC Spec.: SSD1355

8.3 GAMMA LOOK UP TABLE (BEh)

This command is used to define three programmable gamma look-up tables for color A, B and C respectively in terms of Gray Scale (GS).

Gamma Table

Following the command BEh, the Gamma Setting for Parameter1, Parameter2, Parameter3... Parameter96, should be set one by one in sequence for color A, B and C		
Color A (Red)	Color B (Green)	Color C (Blue)
1	1	1
1	1	2
2	2	3
4	4	4
6	6	6
8	8	8
10	10	10
12	12	12
14	14	14
17	17	17
20	20	20
23	23	24
27	27	28
33	33	33
35	35	36
37	37	39
41	41	43
47	47	49
51	51	51
57	57	54
65	65	57
70	70	65
75	75	70
81	81	75
86	86	81
91	91	86
97	97	91
101	101	97
113	113	101
119	119	113
123	123	119
127	127	127

9. Appendix (Drawing)

