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Specification

MCT057BB6W320240LML

A large, faded version of the MIDAS logo is centered on the page. It consists of the word "MIDAS" in a yellow, sans-serif font, set within a light blue, oval-shaped background with a wavy, textured pattern.

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MIDAS

1. Revision History

DATE	VERSION	REVISED PAGE NO.	Note
2009/5/18	1		First issue

The logo for MIDAS, featuring the word "MIDAS" in a bold, yellow, sans-serif font. The text is centered within a light blue, horizontally-oriented oval shape that has a subtle, wavy, textured background.

2. General Specification

This product is composed of a TFT LCD panel, driver ICs, FPC, Control Board and a backlight unit. The following table described the features of T ÔVÉĪ Ĩ ÓÓĪ Y HĚĚI ĚŠT Š.

- Dot Matrix: 320 x RGB x240
- Module dimension:126.0 x 101.55 x 5.8 (max.) mm³
- View area: 117.9x89.1 mm²
- Dot pitch: 0.12 x 0.36 mm²
- LCD type: TFT, Negative, Transmissive
- View direction: 6 o'clock
- Backlight Type: LED, Normally White
- Controller IC: SSD1963
- Driving IC package: COG

*Expose the IC number blaze (Luminosity over than 1 cd) when using the LCM may cause IC operating failure.

*Color tone slight changed by temperature and driving voltage.



Midas Active Matrix Display Part Number System

MC T 057 A 6 * W 320240 L M L * * * * *
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

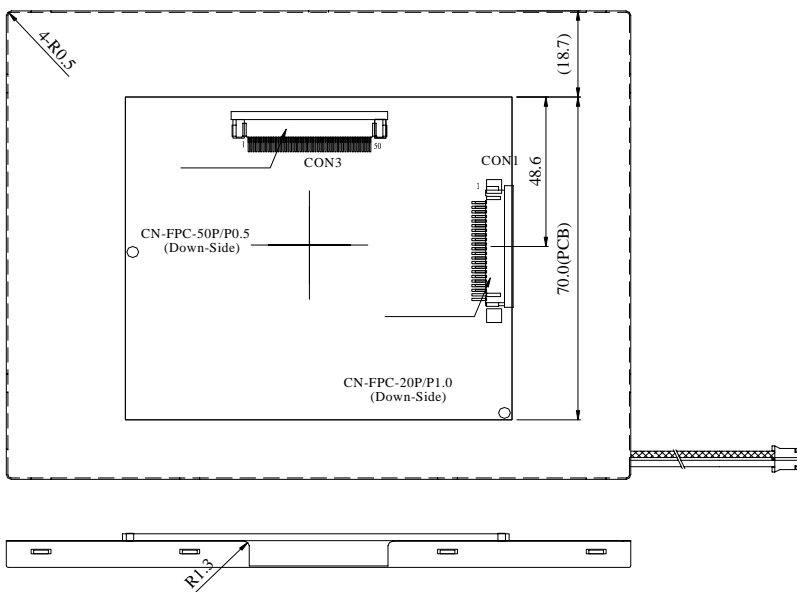
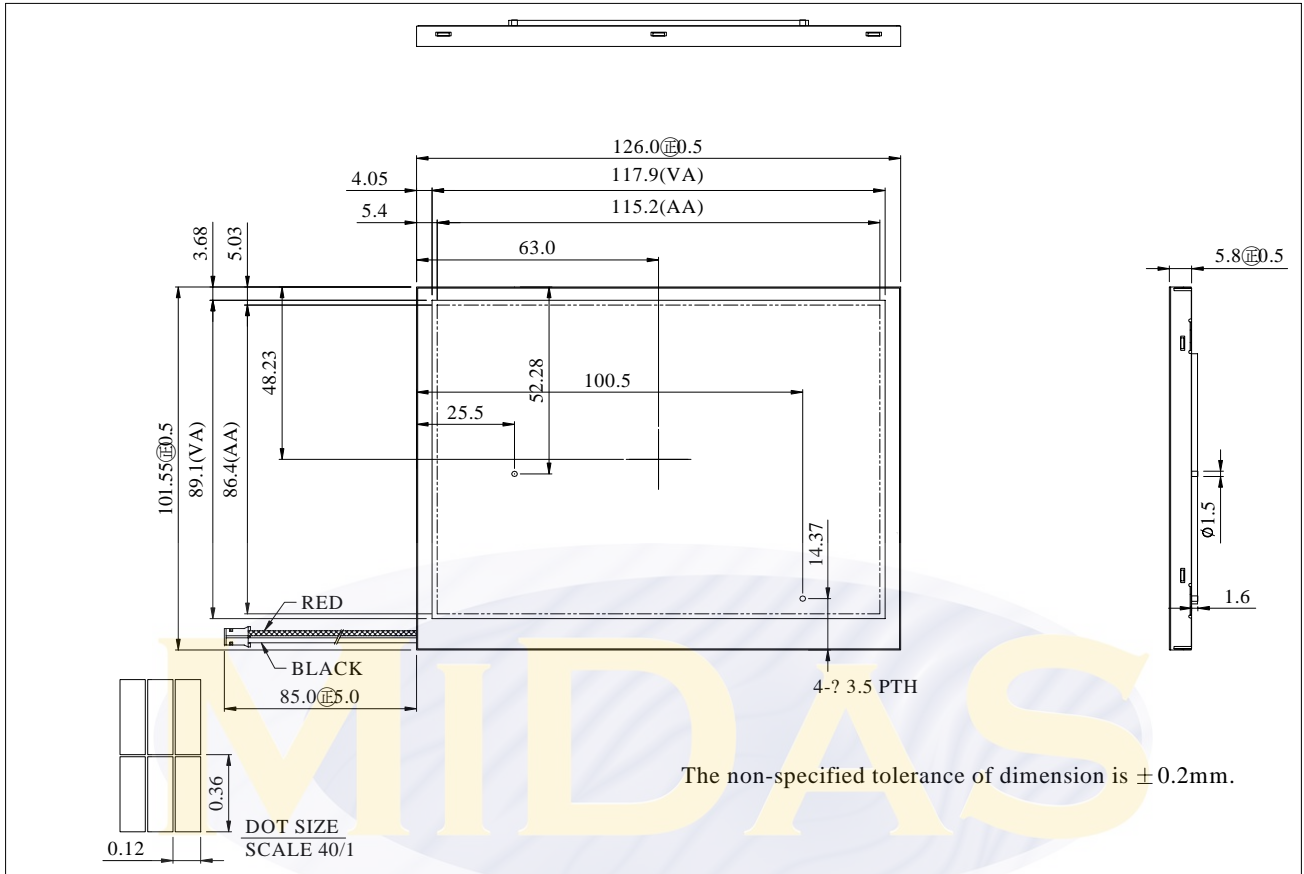
- 1 = **MC:** Midas Components
- 2 = **T:** TFT **A:** Active Matrix OLED
- 3 = **Size**
- 4 = **Series**
- 5 = **Viewing Angle:** **6:** 6 O'clock **12:** 12 O'clock
- 6 = **Blank:** No Touch **T:** Touchscreen
- 7 = **Operating Temp Range:** **S:** 0 to 50Deg C **B:** -20+60Deg C
W: -20+70Deg C **E:** -30+85Deg C
- 8 = **No of Pixels**
- 9 = **Orientation:** **P:** Portrait **L:** Landscape
- 10 = **Mode:** **R:** Reflective **M:** Transmissive **T:** Transflective
S: Sunlight Readable (transmissive)
- 11 = **Backlight:** **Blank:** None **L:** LED **C:** CCFL
- 12 = **Blank:** No Module/board **C:** Controller board module
- 13 = **Blank:** None **V:** Video
- 14 = **Blank:** None **B:** Bracket
- 15 = **Blank:** None **H:** Host Cable
- 16 = **Blank:** None **K:** Keyboard

4. Interface Pin Function

Pins Connection to Control Board

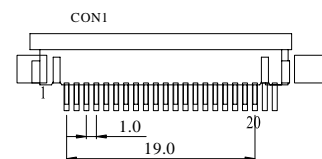
P/N	Symbol	8 B IT Function
1	GND	Ground
2	VCC	Power supply for Logic
3	NC	No connection
4	RS	Command/Data select
5	WR	8080 family MPU interface : Write signal
6	RD	8080 family MPU interface: Read signal
7	DB0	Data bus
8	DB1	
9	DB2	
10	DB3	
11	DB4	
12	DB5	
13	DB6	
14	DB7	
15	CS	Chip select
16	RST	RESET
17	NC	No connection
18	RL	Scan direction
19	UD	Scan direction
20	NC	No connection

5. Outline Dimension & Block Diagram

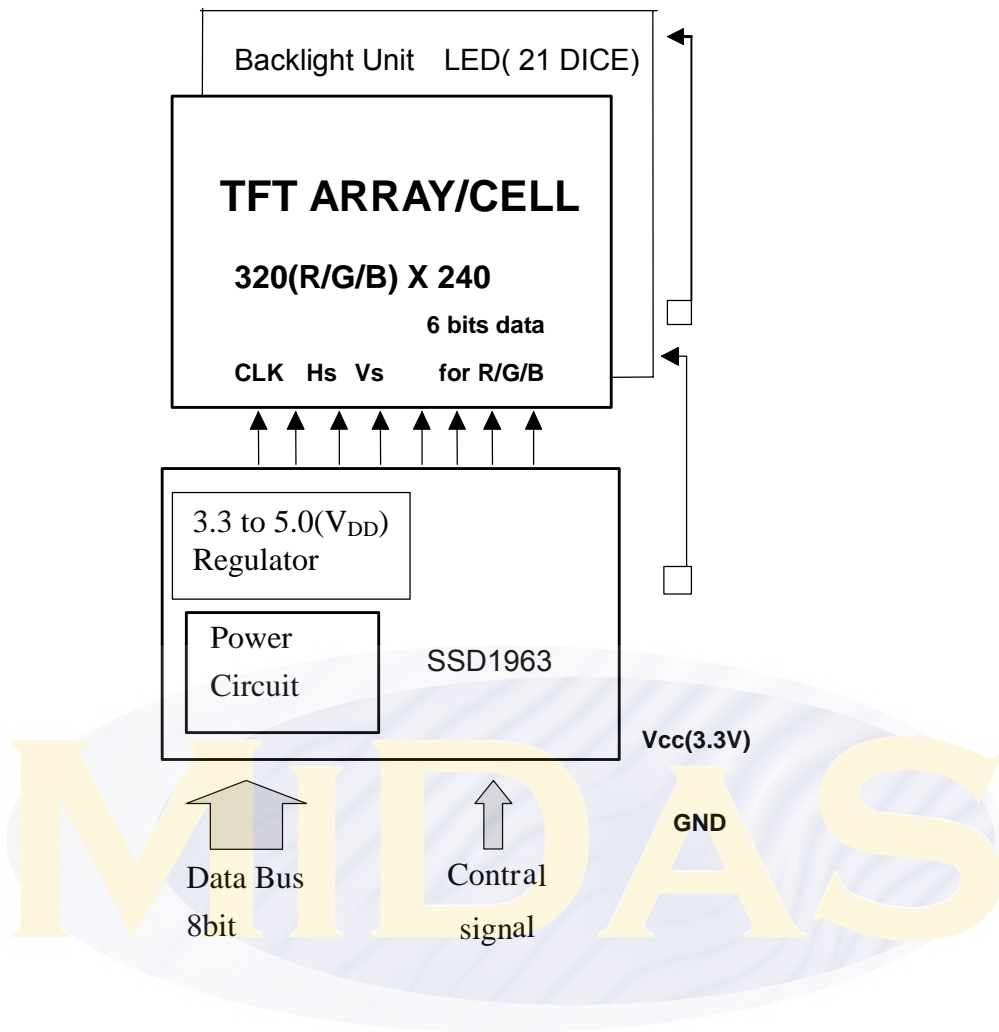


8bit mode

PIN NO	SYMBOL	PIN NO	SYMBOL
1	GND	17	NC
2	VCC	18	RL
3	NC	19	UD
4	RS	20	NC
5	WR		
6	RD		
7	DB0		
8	DB1		
9	DB2		
10	DB3		
11	DB4		
12	DB5		
13	DB6		
14	DB7		
15	CS		
16	RST		



The non-specified tolerance of dimension is $\pm 0.2\text{mm}$.



6. Display Control Instruction

6.1 Data transfer order Setting

Pixel Data Format

Both 6800 and 8080 support 8-bit, 9-bit, 16-bit, 18-bit and 24-bit data bus. Depending on the width of the data bus, the display data are packed into the data bus in different ways.

Pixel Data Format :

Interface	Cycle	D[23]	D[22]	D[21]	D[20]	D[19]	D[18]	D[17]	D[16]	D[15]	D[14]	D[13]	D[12]	D[11]	D[10]	D[9]	D[8]	D[7]	D[6]	D[5]	D[4]	D[3]	D[2]	D[1]	D[0]	
24 bits	1 st	R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0	
18 bits	1 st							R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0	
16 bits (565 format)	1 st									R5	R4	R3	R2	R1	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	
16 bits	1 st									R5	R4	R3	R2	R1	R0	X	X	G5	G4	G3	G2	G1	G0	X	X	
	2 nd									B5	B4	B3	B2	B1	B0	X	X	R5	R4	R3	R2	R1	R0	X	X	
	3 rd									G5	G4	G3	G2	G1	G0	X	X	B5	B4	B3	B2	B1	B0	X	X	
9 bits	1 st																	R5	R4	R3	R2	R1	R0	G5	G4	G3
	2 nd																	G2	G1	G0	B5	B4	B3	B2	B1	B0
8 bits	1 st																	R5	R4	R3	R2	R1	R0	X	X	
	2 nd																	G5	G4	G3	G2	G1	G0	X	X	
	3 rd																	B5	B4	B3	B2	B1	B0	X	X	

X: Don't Care

6.2 Register Depiction

Please consult the spec of SSD1963

7. Optical Characteristics

Ta=25±2°C, ILED=20mA

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Response time	Tr	$\theta = 0^\circ$ 、 $\Phi = 0^\circ$	-	10		ms	Note 3,5
	Tf		-	15		ms	
Contrast ratio	CR	At optimized viewing angle	300	400	-	-	Note 4,5
Color Chromaticity	White	Wx	$\theta = 0^\circ$ 、 $\Phi = 0^\circ$	(0.26)	(0.31)	(0.36)	Note 2,6,7
		Wy		(0.28)	(0.33)	(0.38)	
	Red	Rx	$\theta = 0^\circ$ 、 $\Phi = 0^\circ$				
		Ry					
	Green	Gx	$\theta = 0^\circ$ 、 $\Phi = 0^\circ$				
		Gy					
Blue	Bx	$\theta = 0^\circ$ 、 $\Phi = 0^\circ$					
	By						
Viewing angle	Hor.	Θ_R	CR ≥ 10	(50)	(60)	Deg.	Note 1
		Θ_L		(50)	(60)		
	Ver.	Φ_T		(40)	(50)		
		Φ_B		(45)	(55)		
Brightness	-	-	200	250	-	cd/m ²	Center of display

Ta=25±2°C, IL=20mA

Note 1: Definition of viewing angle range

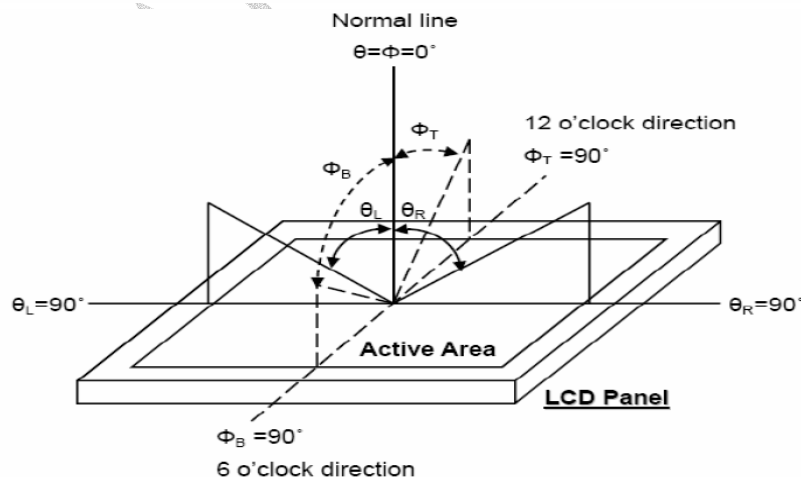


Fig. 8-1 Definition of viewing angle

Note 2: Test equipment setup:

After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7 luminance meter 1.0° field of view at a distance of 50cm and normal direction.

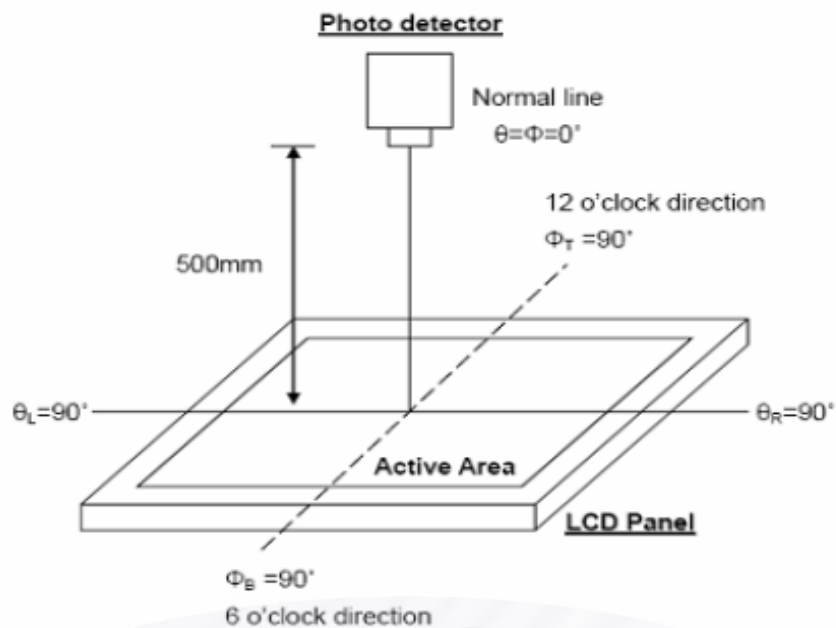
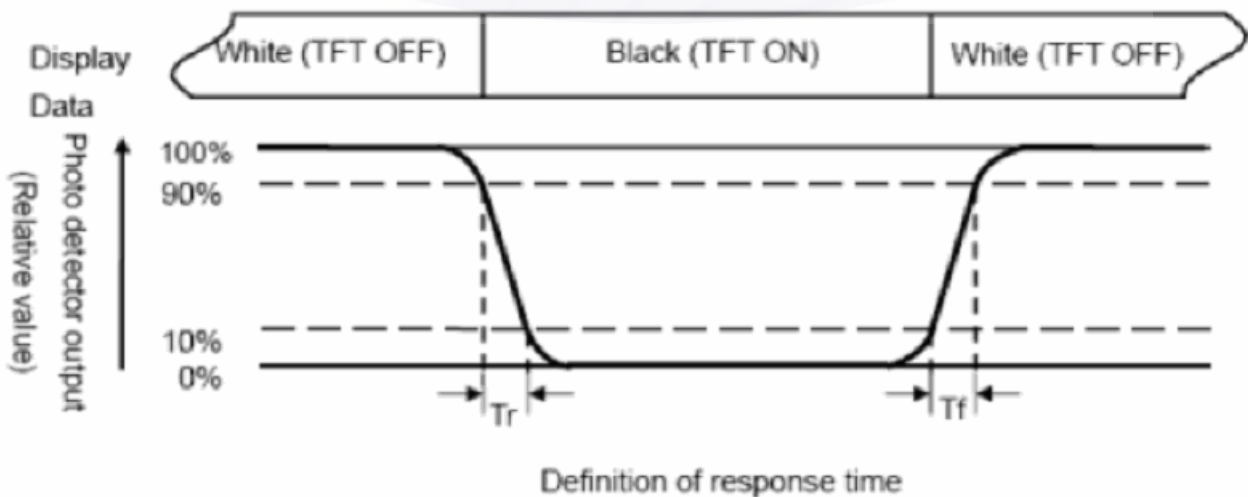


Fig. 8-2 Optical measurement system setup

Note 3: Definition of Response time:

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time, T_r , is the time between photo detector output intensity changed from 90% to 10% . And fall time, T_f , is the time between photo detector output intensity changed from 10% to 90% .



Note 4: Definition of contrast ratio:

The contrast ratio is defined as the following expression.

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

Note 5: White $V_i = V_{i50} \pm 1.5V$

Black $V_i = V_{i50} \pm 2.0V$

“±” means that the analog input signal swings in phase with VCOM signal.

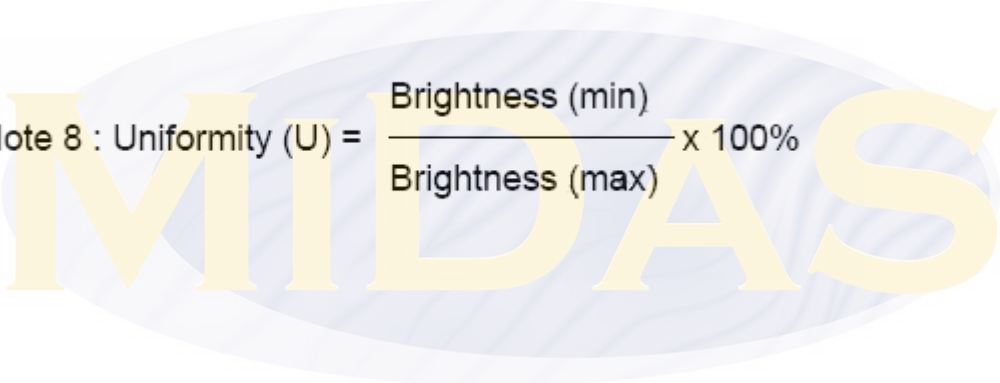
“±” means that the analog input signal swings out of phase with VCOM signal.

The 100% transmission is defined as the transmission of LCD panel when all the input terminals of module are electrically opened.

Note 6: Definition of color chromaticity (CIE 1931)

Color coordinates measured at the center point of LCD

Note 7: Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.



Note 8 : Uniformity (U) = $\frac{\text{Brightness (min)}}{\text{Brightness (max)}} \times 100\%$

8. Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	T_{OP}	-20	—	+70	°C
Storage Temperature	T_{ST}	-30	—	+80	°C
Power Supply Voltage	V_{GH}	-0.3	—	18	V
	V_{GL}	-15	—	0.3	V
	VCC	-0.3	—	6.0	V

9. Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	VCC	—	3.0	3.3	3.6	V
Input High Volt.	V_{IH}	—	0.8VDD IO	—	VDDIO + 0.5	V
Input Low Volt.	V_{IL}	—	—	—	0.2VDDIO	V
LCD Driving Supply Voltage	$V_{GH} *1$	$T_a=25^{\circ}C$		15		V *3
	$V_{GL} *2$			-10		V
	Vcom		—	3.7	—	
Supply Current	I_{VDD}	$V_{DD}=3.3V$	—	121	—	mA

Notes:

*1) V_{GH} is TFT Gate on operating Voltage.

*2) V_{GL} is TFT Gate off operating Voltage, V_{GL} signal must be fluctuates with same phase as Vcom when Storage on Gate structure.

*3) Vcom must be adjusted to optimize display quality_Crosstalk, Contrast Ratio and etc.

■ DC CHARACTERISTICS

Conditions:

Voltage referenced to VSS

VDDD, VDDPLL = 1.2V

VDDIO, VDDLCD = 3.3V

TA = 25°C

DC Characteristics

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
PSTY	Quiescent Power				300	uW
IIZ	Input leakage current		-1		1	uA
IOZ	Output leakage current		-1		1	uA
VOH	Output high voltage		0.8VDDIO			V
VOL	Output low voltage				0.2VDDIO	V
VIH	Input high voltage		0.8VDDIO		VDDIO + 0.5	V
VIL	Input low voltage				0.2VDDIO	V

■ AC Characteristics

Conditions:

Voltage referenced to V_{SS}

$V_{DDD}, V_{DDPLL} = 1.2V$

$V_{DDIO}, V_{DDLCD} = 3.3V$

$T_A = 25\text{ }^{\circ}\text{C}$

$C_L = 50\text{pF}$ (Bus/CPU Interface)

$C_L = 0\text{pF}$ (LCD Panel Interface)

9.1 Clock Timing

Clock Input Requirements for CLK (PLL-bypass)

Symbol	Parameter	Min	Max	Units
FCLK	Input Clock Frequency (CLK)		120	MHz
TCLK	Input Clock period (CLK)	1/fCLK		ns

Clock Input Requirements for CLK (Using PLL)

Symbol	Parameter	Min	Max	Units
FCLK	Input Clock Frequency (CLK)	2.5	50	MHz
TCLK	Input Clock period (CLK)	1/fCLK		ns

Clock Input Requirements for crystal oscillator XTAL (Using PLL)

Symbol	Parameter	Min	Max	Units
FXTAL	Input Clock Frequency	2.5	10	MHz
TXTAL	Input Clock period	1/fXTAL		ns

9.2 MCU Interface Timing

9.2.1 6800 Mode

6800 Mode Timing

Symbol	Parameter	Min	Typ	Max	Unit
t _{cyc}	Reference Clock Cycle Time	9	-	-	ns
t _{PWCSL}	Pulse width CS# or E low	1	-	-	t _{CYC}
t _{PWCSH}	Pulse width CS# or E high	1	-	-	t _{CYC}
t _{FDRD}	First Data Read Delay	5	-	-	t _{CYC}
t _{AS}	Address Setup Time	1	-	-	ns
t _{AH}	Address Hold Time	1	-	-	ns
t _{DSW}	Data Setup Time	4	-	-	ns
t _{DHW}	Data Hold Time	1	-	-	ns
t _{DSR}	Data Access Time	-	-	5	ns
t _{DHR}	Output Hold time	1	-	-	ns

Figure9-1: 6800 Mode Timing Diagram (Use CS# as Clock)

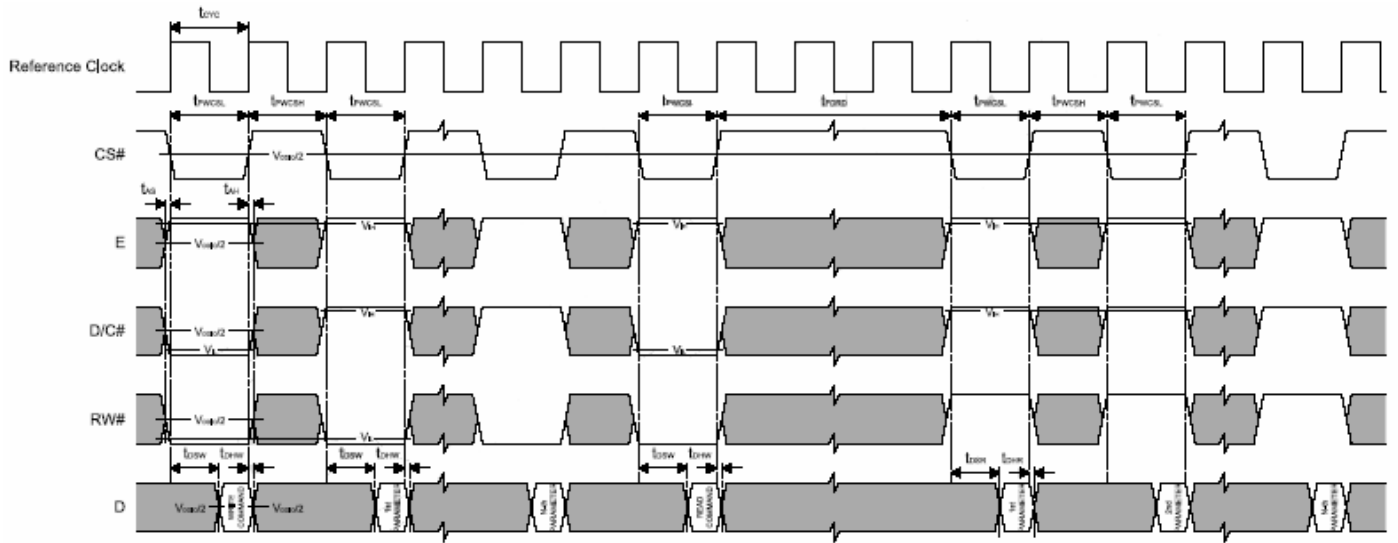
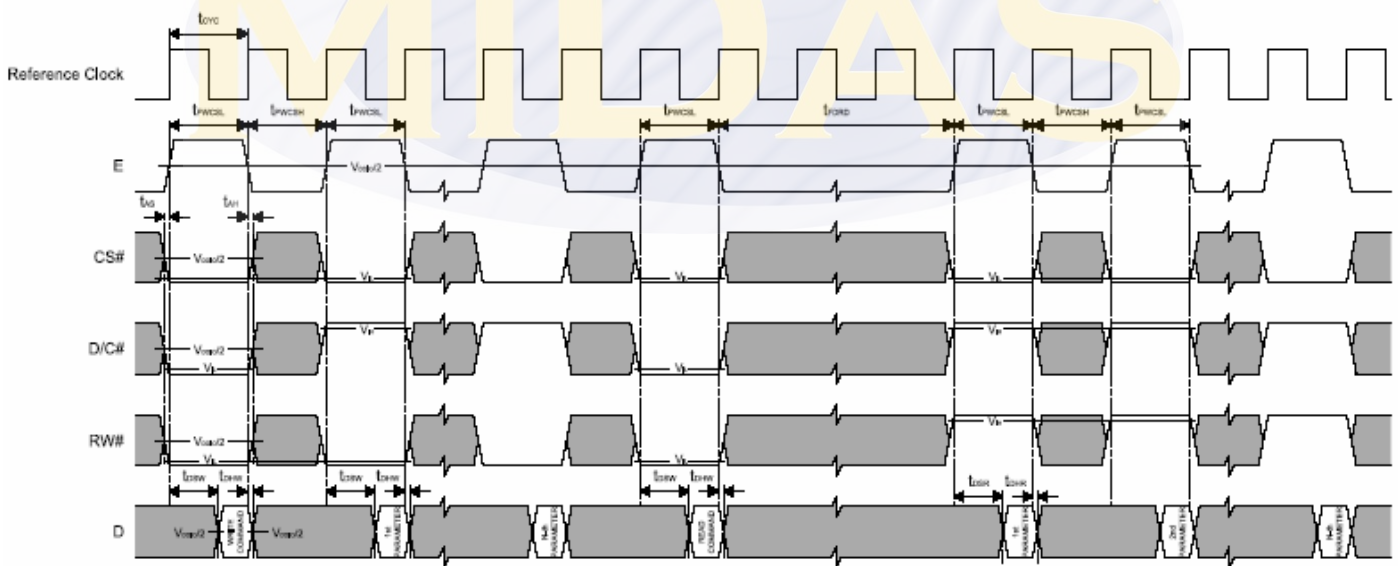


Figure 9-2: 6800 Mode Timing Diagram (Use E as Clock)

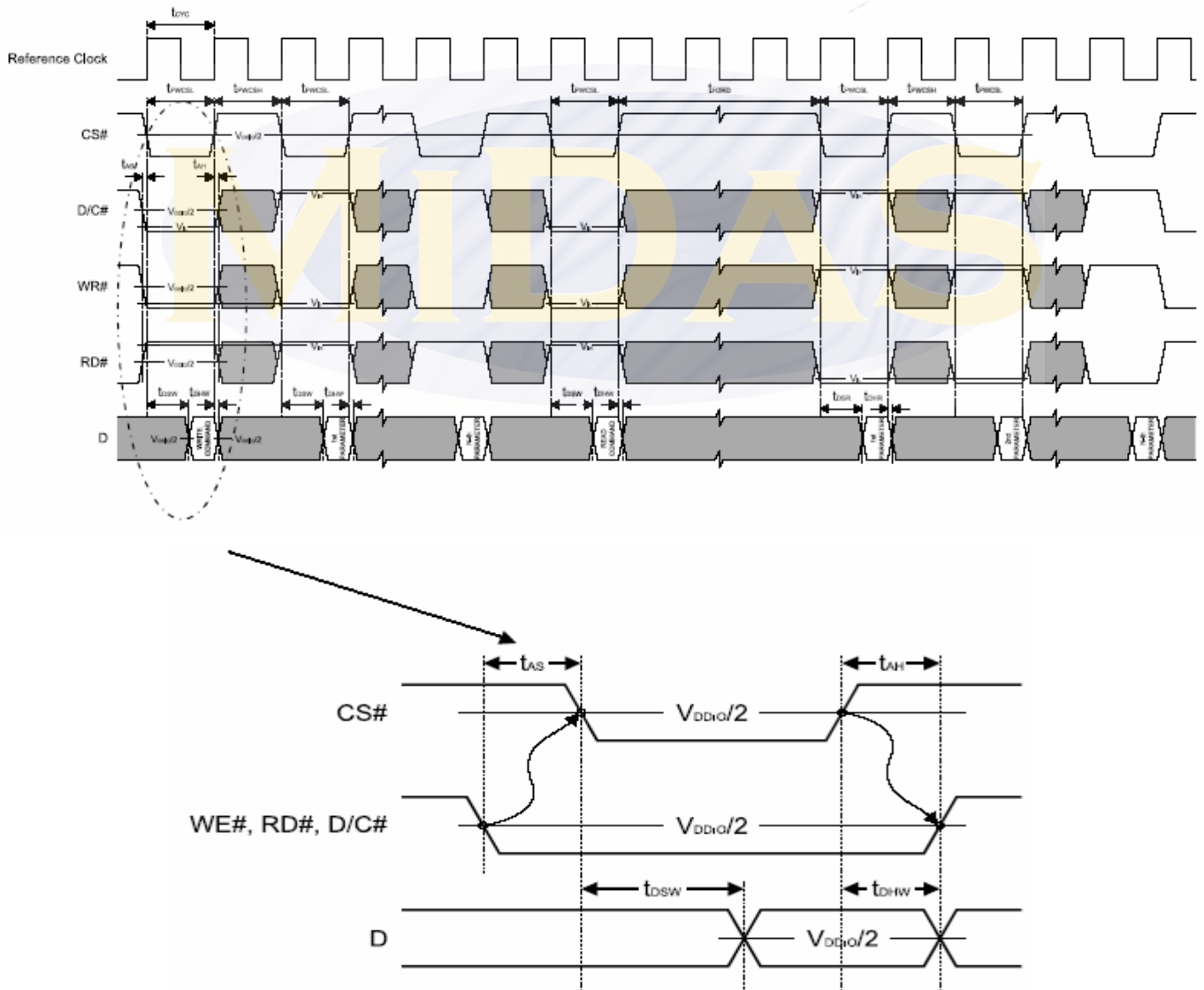


9.2.2 8080 Mode Write Cycle

Table 9-5: 8080 Mode Timing

Symbol	Parameter	Min	Typ	Max	Unit
t _{cy}	Reference Clock Cycle Time	9	-	-	ns
t _{PWCSL}	Pulse width CS# low	1	-	-	t _{CYC}
t _{PWCSH}	Pulse width CS# high	1	-	-	t _{CYC}
t _{FDRD}	First Read Data Delay	5	-	-	t _{CYC}
t _{AS}	Address Setup Time	1	-	-	ns
t _{AH}	Address Hold Time	1	-	-	ns
t _{DSW}	Data Setup Time	4	-	-	ns
t _{DHW}	Data Hold Time	1	-	-	ns
t _{DSR}	Data Access Time	-	-	5	ns
t _{DHR}	Output Hold time	1	-	-	ns

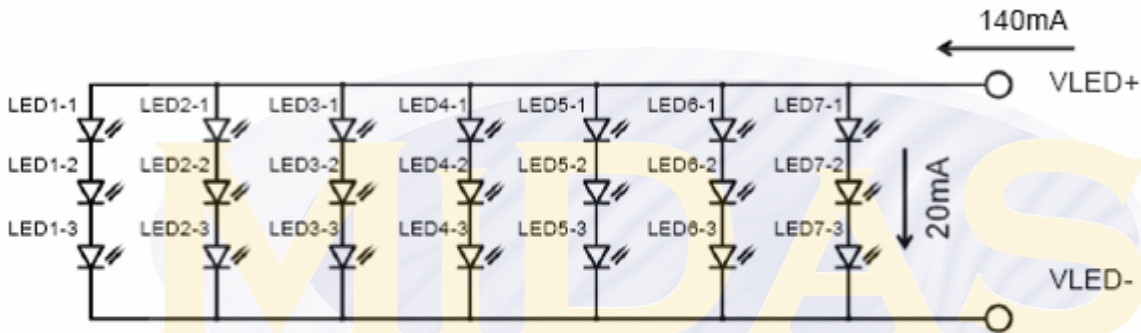
Figure9-3: 8080 Mode Timing Diagram



10. Backlight Information

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
LED Current	I_{LED}	----	140	210	mA	Note1
LED voltage	V_{LED}	9.0	10.2	10.5	V	
LED life Time	-	(10,000)	----	----	-	Note 2,3
Luminous Intensity	IV	----	300	----	CD/M ²	Note 4

Note 1: There are 7 Groups LED shown as below, =9.9 V(Min)

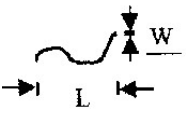


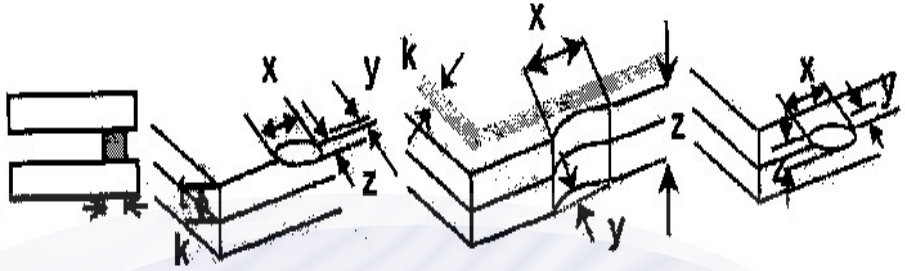
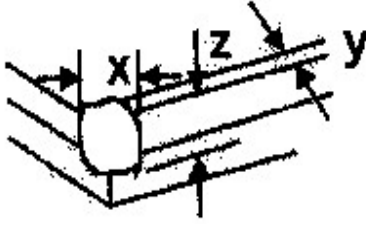
Note 2 : $T_a = 25^{\circ}C$,

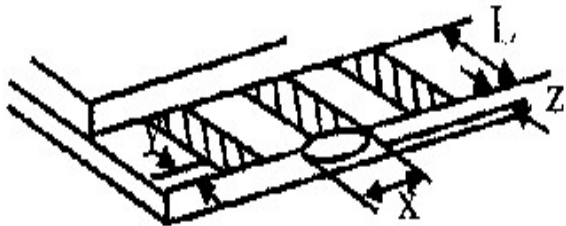
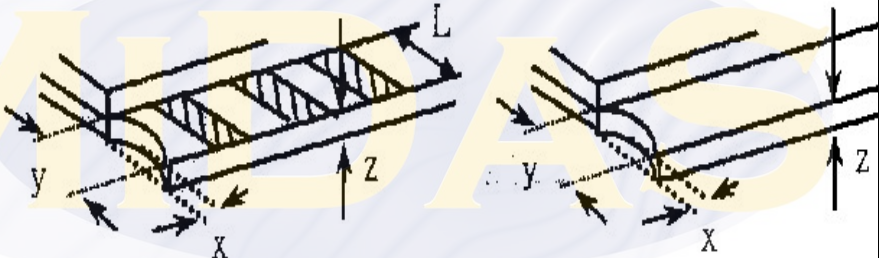
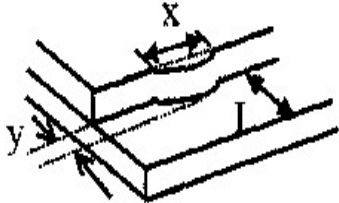
Note 3 : Brightness to be decreased to 50% of the initial value.

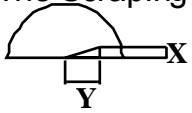
Note 4: The luminous is measured through LCD panel.

11. Inspection specification

NO	Item	Criterion	AQL												
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle defect. 1.7 Mixed product types. 1.8 Contrast defect.	0.65												
02	Black or white spots on LCD (display only)	2.1 White and black spots on display $\leq 0.25\text{mm}$, no more than three white or black spots present. 2.2 Densely spaced: No more than two spots or lines within 3mm	2.5												
03	LCD black spots, white spots, contamination (non-display)	3.1 Round type : As following drawing $\Phi = (x + y) / 2$	2.5												
		3.2 Line type : (As following drawing)  <table border="1"> <thead> <tr> <th>Length</th> <th>Width</th> <th>Acceptable QTY</th> </tr> </thead> <tbody> <tr> <td>---</td> <td>$W \leq 0.02$</td> <td>Accept no dense</td> </tr> <tr> <td>$L \leq 3.0$</td> <td>$0.02 < W \leq 0.03$</td> <td rowspan="2">2</td> </tr> <tr> <td>$L \leq 2.5$</td> <td>$0.03 < W \leq 0.05$</td> </tr> <tr> <td>---</td> <td>$0.05 < W$</td> <td>As round type</td> </tr> </tbody> </table>	Length	Width	Acceptable QTY	---	$W \leq 0.02$	Accept no dense	$L \leq 3.0$	$0.02 < W \leq 0.03$	2	$L \leq 2.5$	$0.03 < W \leq 0.05$	---	$0.05 < W$
Length	Width	Acceptable QTY													
---	$W \leq 0.02$	Accept no dense													
$L \leq 3.0$	$0.02 < W \leq 0.03$	2													
$L \leq 2.5$	$0.03 < W \leq 0.05$														
---	$0.05 < W$	As round type													
04	Polarizer bubbles	If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction. <table border="1"> <thead> <tr> <th>Size Φ</th> <th>Acceptable QTY</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.20$</td> <td>Accept no dense</td> </tr> <tr> <td>$0.20 < \Phi \leq 0.50$</td> <td>3</td> </tr> <tr> <td>$0.50 < \Phi \leq 1.00$</td> <td>2</td> </tr> <tr> <td>$1.00 < \Phi$</td> <td>0</td> </tr> <tr> <td>Total QTY</td> <td>3</td> </tr> </tbody> </table>	Size Φ	Acceptable QTY	$\Phi \leq 0.20$	Accept no dense	$0.20 < \Phi \leq 0.50$	3	$0.50 < \Phi \leq 1.00$	2	$1.00 < \Phi$	0	Total QTY	3	2.5
Size Φ	Acceptable QTY														
$\Phi \leq 0.20$	Accept no dense														
$0.20 < \Phi \leq 0.50$	3														
$0.50 < \Phi \leq 1.00$	2														
$1.00 < \Phi$	0														
Total QTY	3														

NO	Item	Criterion	AQL																		
05	Scratches	Follow NO.3 LCD black spots, white spots, contamination																			
06	Chipped glass	<p>Symbols Define: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length:</p> <p>6.1 General glass chip : 6.1.1 Chip on panel surface and crack between panels:</p>  <table border="1" data-bbox="443 1041 1353 1198"> <thead> <tr> <th>z: Chip thickness</th> <th>y: Chip width</th> <th>x: Chip length</th> </tr> </thead> <tbody> <tr> <td>$Z \leq 1/2t$</td> <td>Not over viewing area</td> <td>$x \leq 1/8a$</td> </tr> <tr> <td>$1/2t < z \leq 2t$</td> <td>Not exceed 1/3k</td> <td>$x \leq 1/8a$</td> </tr> </tbody> </table> <p>⊙ If there are 2 or more chips, x is total length of each chip.</p> <p>6.1.2 Corner crack:</p>  <table border="1" data-bbox="443 1579 1353 1736"> <thead> <tr> <th>z: Chip thickness</th> <th>y: Chip width</th> <th>x: Chip length</th> </tr> </thead> <tbody> <tr> <td>$Z \leq 1/2t$</td> <td>Not over viewing area</td> <td>$x \leq 1/8a$</td> </tr> <tr> <td>$1/2t < z \leq 2t$</td> <td>Not exceed 1/3k</td> <td>$x \leq 1/8a$</td> </tr> </tbody> </table> <p>⊙ If there are 2 or more chips, x is the total length of each chip.</p>	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$	$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 1/8a$	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$	$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 1/8a$	2.5
z: Chip thickness	y: Chip width	x: Chip length																			
$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$																			
$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 1/8a$																			
z: Chip thickness	y: Chip width	x: Chip length																			
$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$																			
$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 1/8a$																			

NO	Item	Criterion	AQL								
06	Glass crack	<p>Symbols :</p> <p>x: Chip length y: Chip width z Chip thickness</p> <p>k: Seal width t: Glass thickness a: OLED side length</p> <p>L: Electrode pad length</p> <p>6.2 Protrusion over terminal :</p> <p>6.2.1 Chip on electrode pad :</p>  <table border="1" data-bbox="443 842 1118 958"> <thead> <tr> <th>y: Chip width</th> <th>x: Chip length</th> <th>z Chip thickness</th> </tr> </thead> <tbody> <tr> <td>$y \leq 0.5\text{mm}$</td> <td>$x \leq 1/8a$</td> <td>$0 < z \leq t$</td> </tr> </tbody> </table>	y: Chip width	x: Chip length	z Chip thickness	$y \leq 0.5\text{mm}$	$x \leq 1/8a$	$0 < z \leq t$			
		y: Chip width	x: Chip length	z Chip thickness							
$y \leq 0.5\text{mm}$	$x \leq 1/8a$	$0 < z \leq t$									
<p>6.2.2 Non-conductive portion:</p>  <table border="1" data-bbox="496 1285 1118 1402"> <thead> <tr> <th>y: Chip width</th> <th>x: Chip length</th> <th>z Chip thickness</th> </tr> </thead> <tbody> <tr> <td>$y \leq L$</td> <td>$x \leq 1/8a$</td> <td>$0 < z \leq t$</td> </tr> </tbody> </table> <p>⊙ If the chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications.</p> <p>⊙ If the product will be heat sealed by the customer, the alignment mark not be damaged.</p> <p>6.2.3 Substrate protuberance and internal crack.</p>  <table border="1" data-bbox="852 1644 1230 1720"> <thead> <tr> <th>y: width</th> <th>x: length</th> </tr> </thead> <tbody> <tr> <td>$y \leq 1/3L$</td> <td>$x \leq a$</td> </tr> </tbody> </table>	y: Chip width	x: Chip length	z Chip thickness	$y \leq L$	$x \leq 1/8a$	$0 < z \leq t$	y: width	x: length	$y \leq 1/3L$	$x \leq a$	2.5
y: Chip width	x: Chip length	z Chip thickness									
$y \leq L$	$x \leq 1/8a$	$0 < z \leq t$									
y: width	x: length										
$y \leq 1/3L$	$x \leq a$										

NO	Item	Criterion	AQL
07	Cracked glass	The OLED with extensive crack is not acceptable.	2.5
08	Bezel	8.1 Bezel may not have rust, be deformed or have fingerprints, stains or other contamination. 8.2 Bezel must comply with job specifications.	2.5 0.65
9	PCB、COB	9.1 COB seal may not have pinholes larger than 0.2mm or contamination. 9.2 COB seal surface may not have pinholes through to the IC. 9.3 The height of the COB should not exceed the height indicated in the assembly diagram. 9.4 There may not be more than 2mm of sealant outside the seal area on the PCB. And there should be no more than three places. 9.5 No oxidation or contamination PCB terminals. 9.6 Parts on PCB must be the same as on the production characteristic chart. There should be no wrong parts, missing parts or excess parts. 9.7 The jumper on the PCB should conform to the product characteristic chart. 9.8 If solder gets on bezel tab pads, zebra pad or screw hold pad, make sure it is smoothed down. 9.9 The Scraping testing standard for Copper Coating of PCB  $X * Y \leq 2\text{mm}^2$	2.5 2.5 0.65 2.5 0.65 0.65 2.5 2.5
10	Soldering	10.1 No un-melted solder paste may be present on the PCB. 10.2 No cold solder joints, missing solder connections, oxidation or icide. 10.3 No residue or solder balls on PCB. 10.4 No short circuits in components on PCB.	2.5 2.5 2.5 0.65

NO	Item	Criterion	AQL
12	General appearance	12.1 No oxidation, cont interface Pin (OLB) of	2.5
		12.2 No cracks on interface pin (OLB) of	0.65
		12.3 No contamination, solder product.	2.5
		12.4 The IC on the	2.5
		12.5 The uppermost edge of t interface pin must be present or interface pin to sever	2.5
		12.6 The residual rosin or tin oil of soldering (component or chip component) is not burned into brown or black color	2.5
		12.7 Sealant on top of the IT	0.65
		12.8 Pin type must match type in specification sheet.	0.65
		12.9 LCD pin loose or missing pins.	0.65
		12.10 Product p packaging specification sheet.	0.65
		12.11 Product dimension and st product specification sheet.	

12. Precautions in use of LCD Modules

1. Avoid applying excessive shocks to the module or making any alterations or modifications to it.
2. Don't make extra holes on the printed circuit board, modify its shape or change the components of LCD module.
3. Don't disassemble the LCM.
4. Don't operate it above the absolute maximum rating.
5. Don't drop, bend or twist LCM.
6. Soldering: only to the I/O terminals.
7. Storage: please storage in anti-static electricity container and clean environment.

13. Material List of Components for RoHs

1. Tãæ hereby declares that all of or part of products, including, but not limited to, the LCM, accessories or packages, manufactured and/or delivered to your company (including your subsidiaries and affiliated company) directly or indirectly by our company (including our subsidiaries or affiliated companies) do not intentionally contain any of the substances listed in all applicable EU directives and regulations, including the following substances.

Exhibit A : The Harmful Material List

Material	(Cd)	(Pb)	(Hg)	(Cr6+)	PBBs	PBDEs
Limited Value	100 ppm	1000 ppm	1000 ppm	1000 ppm	1000 ppm	1000 ppm
Above limited value is set up according to RoHS.						

2. Process for RoHS requirement :

- (1) Use the Sn/Ag/Cu soldering surface ; the surface of Pb-free solder is rougher than we used before.
- (2) Heat-resistance temp. :
 - Reflow : 250°C, 30 seconds Max. ;
 - Connector soldering wave or hand soldering : 320°C, 10 seconds max.
- (3) Temp. curve of reflow, max. Temp. : 235±5°C ;
 - Recommended customer’s soldering temp. of connector : 280°C, 3 seconds.