RAYSTAR

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RG12864H1-BIW-V

SPECIFICATION

CUSTOMER:

APPROVED BY	
PCB VERSION	
DATE	

FOR CUSTOMER USE ONLY

SALES BY	APPROVED BY	CHECKED BY	PREPARED BY

ISSUED DATE:

Contents

1. Revision History

DATE	VERSION	REVISED PAGE NO.	Note
2008/10/17	1		First issue

2. General Specification

The Features is described as follow:

- Module dimension: 55.0 x 50.0 x 10.0 (max.) mm^3
- View area: 43.5 x 29.0 mm^2
- Active area: 40.92 x 26.92 mm^2
- Number of dots: 128 x 64
- Dot size: 0.28 x 0.35 mm^2
- Dot pitch: 0.32 x 0.39 mm^2
- LCD type: STN Negative, Blue, Transmissive
- Duty: 1/64
- View direction: 6 o’clock
- Backlight Type: LED ,White

3. Module Coding System

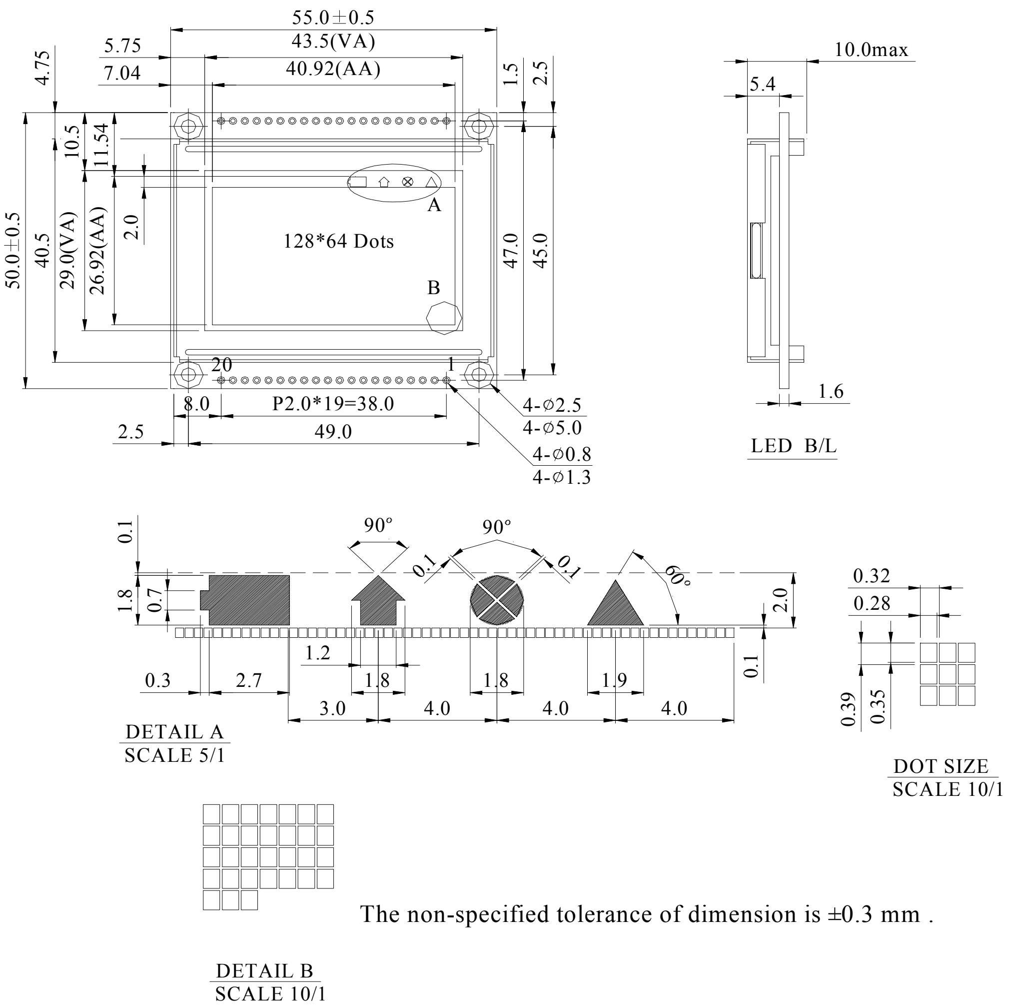
R	G	12864	H1	-	B	I	W	-	V
1	2	3	4	-	5	6	7	-	8

Item	Description		
1	**R：Raystar Optronics Inc.**		
2	Display	C：Character Type,	
		G：Graphic Type	
3	Number of dots：**128 x64 Dots**		
4	Serials code		
5	LCD	P：TN Positive, Gray	
		N：TN Negative,	
		G：STN Positive, Gray	
		Y：STN Positive, Yellow Green	
		B：STN Negative, Blue	
		F：FSTN Positive	
		T：FSTN Negative	
6	Polarizer Type, Temperature range, View direction	A：Reflective, N.T, 6:00	K：Transflective, W.T,12:00
		D：Reflective, N.T, 12:00	1：Transflective, U.T,6:00
		G：Reflective, W. T, 6:00	4：Transflective, U.T.12:00
		J：Reflective, W. T, 12:00	C：Transmissive, N.T,6:00
		0：Reflective, U. T, 6:00	F：Transmissive, N.T,12:00
		3：Reflective, U. T, 12:00	**I：Transmissive, W. T, 6:00**
		B：Transflective, N.T,6:00	L：Transmissive, W.T,12:00
		E : Transflective, N.T.12:00	2：Transmissive, U. T, 6:00
		H：Transflective, W.T,6:00	5：Transmissive, U.T,12:00
7	Backlight	N：Without backlight	Y：LED, Yellow Green
		P：EL, Blue green	A：LED, Amber
		T：EL, Green	**W：LED, White**
		D：EL, White	H：LED, High light White
		F：CCFL, White	G：LED, Green
8	Special code	V: Build-in Negative Voltage	

4. Interface Pin Function

Pin #	Symbol	Level	Description
1	Vss	0V	Ground
2	V_{dd}	5.0V	Supply voltage for logic
3	V_O	(Variable)	Operating voltage for LCD
4	D/I	H/L	H: Data , L: Instruction
5	R/ $\overline{W}$	H/L	H: Read(MPU←Module) , L :Write(MPU→Module)
6	E	H	Enable signal
7	DB0	H/L	Data bus line
8	DB1	H/L	Data bus line
9	DB2	H/L	Data bus line
10	DB3	H/L	Data bus line
11	DB4	H/L	Data bus line
12	DB5	H/L	Data bus line
13	DB6	H/L	Data bus line
14	DB7	H/L	Data bus line
15	CS1	H	Chip Enable (Select Column 1 ~ Column 64)
16	CS2	H	Chip Enable (Select Column 65 ~ Column 128)
17	/RST	L	Reset signal
18	V_{EE}		Negative Voltage output
19	A	—	Power supply for B/L(+)
20	K	—	Power supply for B/L(-)

5. Outline Dimension & Block Diagram



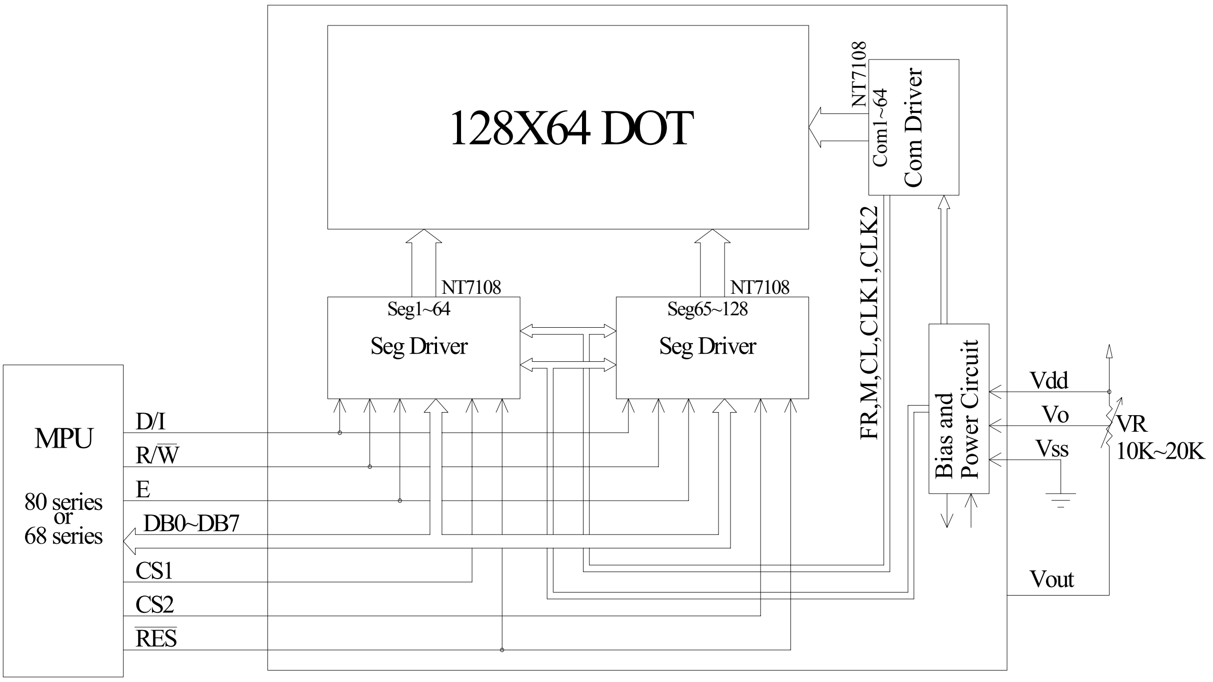
DETAIL A
SCALE 5/1

DOT SIZE
SCALE 10/1

The non-specified tolerance of dimension is ±0.3 mm .

DETAIL B
SCALE 10/1

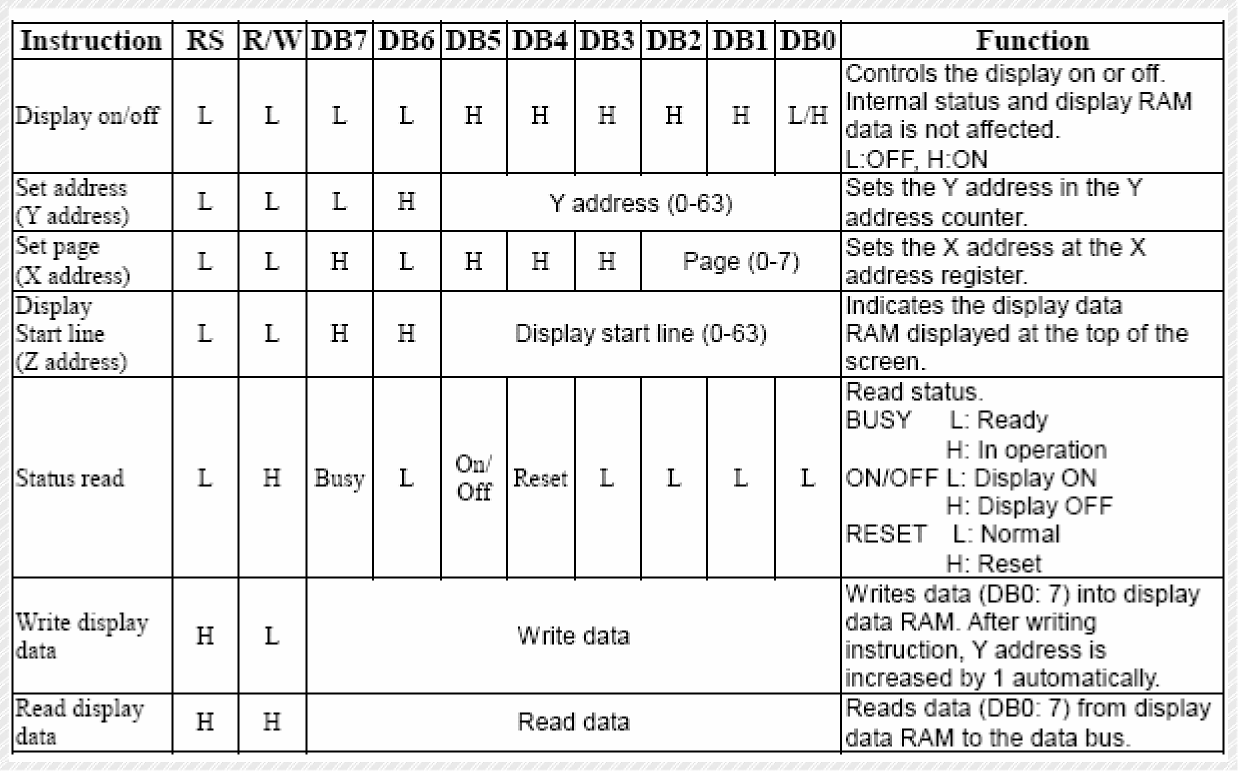
PIN NO.	SYMBOL
1	Vss
2	Vdd
3	Vo
4	D/I
5	R/W
6	E
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7
15	CS1
16	CS2
17	RST
18	Vee
19	A
20	K



External contrast adjustment.

6. Display Control Instruction

The internal state of NT7108 is defined by Display Control Instruction, sent by MPU, shown in the table below.



Instruction	RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0	Function
Display on/off	L	L	L	L	H	H	H	H	H	L/H	Controls the display on or off. Internal status and display RAM data is not affected. L:OFF, H:ON
Set address (Y address)	L	L	L	H	Y address (0-63)						Sets the Y address in the Y address counter.
Set page (X address)	L	L	H	L	H	H	H	Page (0-7)			Sets the X address at the X address register.
Display Start line (Z address)	L	L	H	H	Display start line (0-63)						Indicates the display data RAM displayed at the top of the screen.
Status read	L	H	Busy	L	On/ Off	Reset	L	L	L	L	Read status. BUSY L: Ready H: In operation ON/OFF L: Display ON H: Display OFF RESET L: Normal H: Reset
Write display data	H	L	Write data								Writes data (DB0: 7) into display data RAM. After writing instruction, Y address is increased by 1 automatically.
Read display data	H	H	Read data								Reads data (DB0: 7) from display data RAM to the data bus.

Instruction

Display ON/OFF

RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
0	0	0	0	1	1	1	1	1	D

D gives the value of DB0. The Display Data appears as D is 1, and disappears as D is 0. The Display Data still remains in Display Data RAM as D is 0, though the data is not shown on the screen. The Display Data can reappear by switching D from 0 to 1.

SET ADDRESS (Y ADDRESS)

RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
0	0	0	1	AC5	AC4	AC3	AC2	AC1	AC0

The Y addresses (AC0-AC5) of Display Data RAM are set in the Y address counter. Each address is set by instruction and incremented by 1 automatically by read or write operations.

SET PAGE (X ADDRESS)

RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
0	0	1	0	1	1	1	AC2	AC1	AC0

The X address (AC0-AC2) of Display Data RAM is set in the X address counter. Writing or reading to or from MPU is executed in this specified page until the next page is set.

DISPLAY START LINE (Z ADDRESS)

RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
0	0	1	1	AC5	AC4	AC3	AC2	AC1	AC0

Z addresses (AC0-AC5) of the Display Data RAM are set in the display start line register and displayed at the top of the screen. When the display duty cycle is 1/64 or others (1/32-1/64), the data of total line number of LCD screen are displayed from the line specified by display start line instruction.

STATUS READ

RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
0	1	BUSY	0	ON/OFF	RESET	0	0	0	0

- BUSY

As BUSY is 1, the Chip is executing internal operation and can not accept any instruction.
As BUSY is 0, the Chip is ready to accept any instruction.

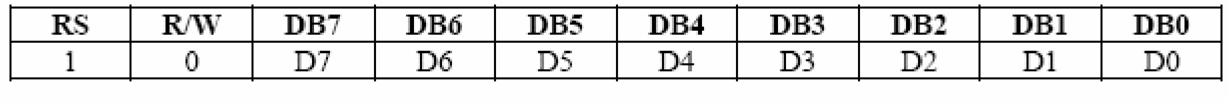
- ON/OFF

As ON/OFF is 1, the display is OFF.
As ON/OFF is 0, the display is ON.

- RESET

When RESET is 1, the system is being initialized.
In this condition, no instructions can be accepted except for the Status Read instruction.
As RESET is 0, initializing has finished and the system is in its normal operation condition.

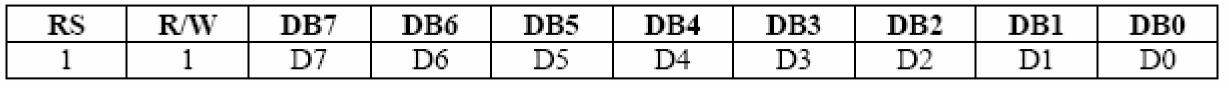
WRITE DISPLAY DATA



RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
1	0	D7	D6	D5	D4	D3	D2	D1	D0

The Write Display Data (D0-D7) are written into the Display Data RAM. Completing the writing instruction, Y address is increased by 1 automatically.

READ DISPLAY DATA



RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
1	1	D7	D6	D5	D4	D3	D2	D1	D0

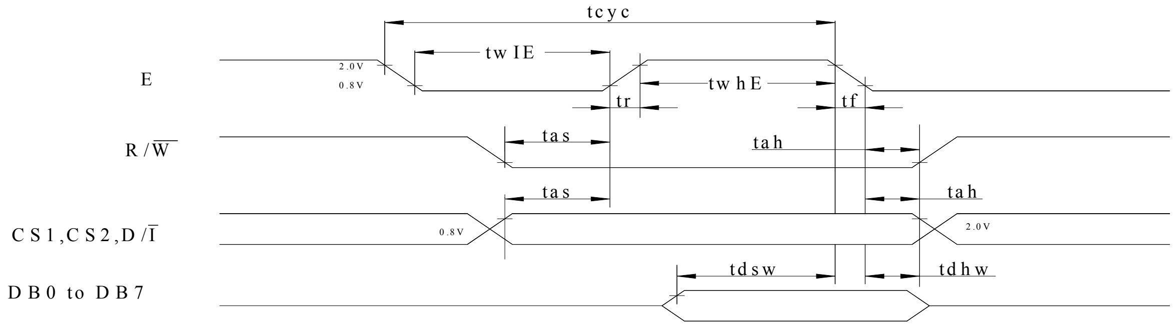
The Read Display Data (D0-D7) are read from the display data RAM. Completing the reading instruction, Y address is increased by 1 automatically.

7. Timing Characteristics

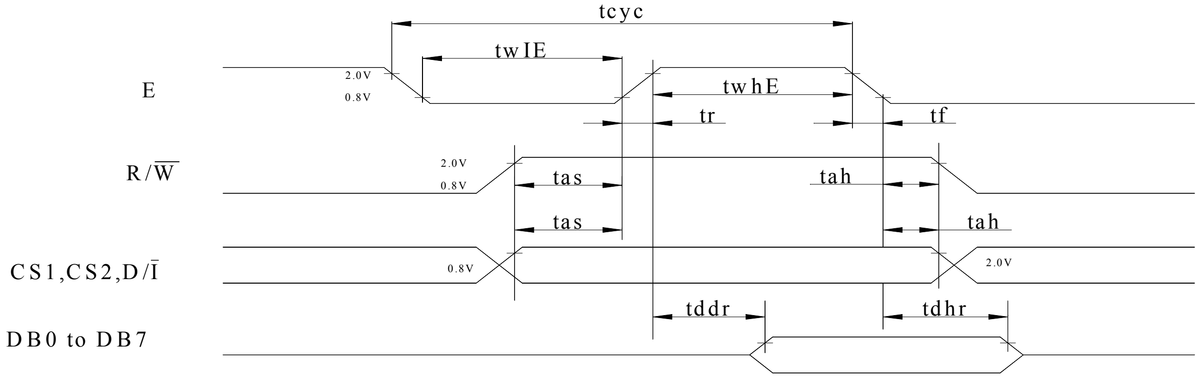
MPU Interface

(T=25℃, VDD=+5.0V±0.5)

Characteristic	Symbol	Min	Type	Max	Unit
E cycle	tcyc	1000	—	—	ns
E high level width	twh E	450	—	—	ns
E low level width	tw IE	450	—	—	ns
E rise time	tr	—	—	25	ns
E tall time	tf	—	—	25	ns
Address set-up time	tas	140	—	—	ns
Address hold time	tah	10	—	—	ns
Data set-up time	tdsw	200	—	—	ns
Data delay time	tddr	—	—	320	ns
Data hold time (write)	tdhw	10	—	—	ns
Data hold time (read)	tdhr	20	—	—	ns



MPU Write Timing

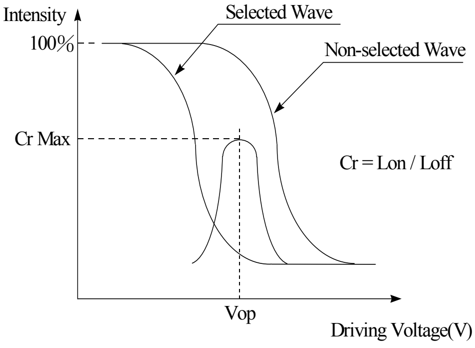


MPU Read Timing

8. Optical Characteristics

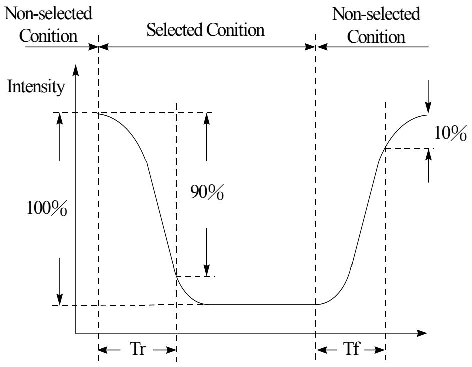
ITEM	SYMBAL	CONDITION	MIN	TYP	MAX	UNIT
View Angle	(V)θ	CR≧2	20		40	deg.
	(H)φ	CR≧2	-30		30	deg.
Contrast Ratio	CR	—		3		—
Response Time	T rise	—		135	270	ms
	T fall	—		265	400	ms

Definition of Operation Voltage, Vop.



[positive type]

Definition of Response Time, Tr and Tf.



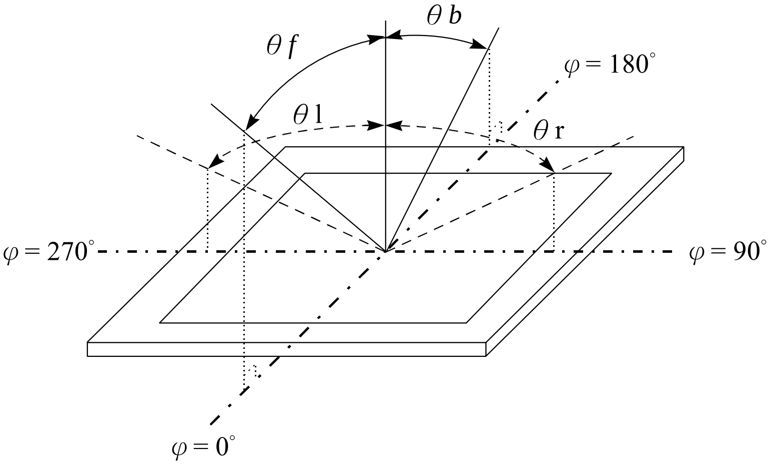
[positive type]

Conditions:

Operating Voltage : Vop　　Viewing Angle(θ，φ) : 0°，0°

Frame Frequency: 64 HZ　　Driving Waveform: 1/N duty, 1/a bias

Definition of viewing angle (CR≧2)



9. Absolute Maximum Ratings

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNNIT
Operating Temperature	T_{OP}	-20	—	+70	℃
Storage Temperature	T_{ST}	-30	—	+80	℃
Input Voltage	V_I	0	—	V_{DD}	V
Supply Voltage For Logic	V_{DD}	0	—	6.7	V

10. Electrical Characteristics

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage For Logic	V_{DD}-V_{SS}	—	4.5	5.0	5.5	V
Supply Voltage For LCD	V_{DD}-V_0	Ta=-20℃	—	—	9.8	V
		Ta=25℃	—	8.7	—	V
		Ta=+70℃	7.0	—	—	V
Input High Vol	V_{IH}	—	2.0	—	V_{DD}	V
Input Low Vol	V_{IL}	—	0	—	0.8	V
Output High Vol	V_{OH}	—	2.4	—	V_{DD}	V
Output Low Vol.	V_{OL}	—	0	—	0.4	V
Supply Current	I_{DD}	V_{DD}=5V	1.0	1.2	1.5	mA

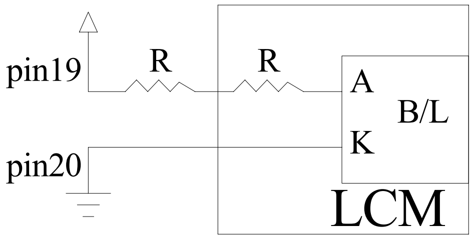
11. Backlight Information

Specification

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITION
Supply Current	**I_{LED}**	54.4	64	80	mA	V=3.5V
Supply Voltage	**V**	3.4	3.5	3.6	V	—
Reverse Voltage	**VR**	—	—	5	V	—
Luminous Intensity	**IV**	184	230	—	cd/m^2	I_{LED}=64mA
Life Time	—	—	10K	—	hr.	I_{LED}≦64mA
Color	**White**					

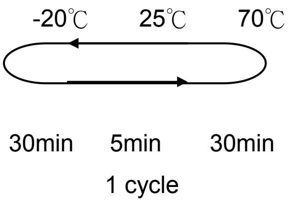
Note: The LED of B/L is drive by current only, drive voltage is for reference only. drive voltage can make driving current under safety area (current between minimum and maximum).

Drive from pin19,pin20



12. Reliability

Content of Reliability Test (wide temperature, -20℃~70℃)

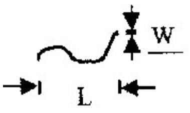
Environmental Test			
Test Item	**Content of Test**	**Condition**	**Note**
High Temperature storage	Endurance test applying the high storage temperature for a long time.	80℃ 200hrs	2
Low Temperature storage	Endurance test applying the high storage temperature for a long time.	-30℃ 200hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	70℃ 200hrs	-
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	-20℃ 200hrs	1
High Temperature/ Humidity Operation	The module should be allowed to stand at 60℃,90%RH max For 96hrs under no-load condition excluding the polarizer, Then taking it out and drying it at normal temperature.	60℃,90%RH 96hrs	1,2
Thermal shock resistance	The sample should be allowed stand the following 10 cycles of operation 	-20℃/70℃ 10 cycles	-
Vibration test	Endurance test applying the vibration during transportation and using.	fixed amplitude: 15mm Vibration. Frequency: 10~55Hz. One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes	3
Static electricity test	Endurance test applying the electric stress to the terminal.	VS=800V,RS= 1.5kΩ CS=100pF 1 time	——

Note1: No dew condensation to be observed.

Note2: The function test shall be conducted after 4 hours storage at the normal temperature and humidity after remove from the test chamber.

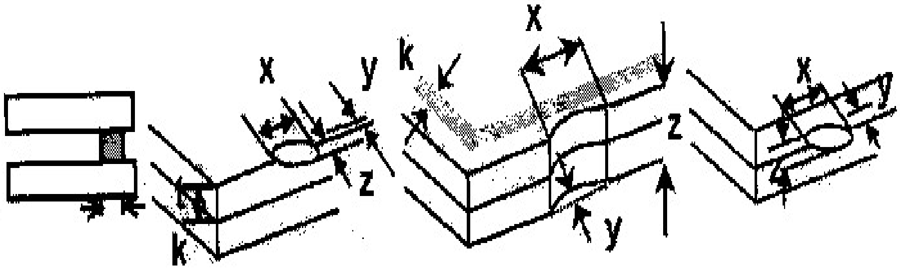
Note3: Vibration test will be conducted to the product itself without putting it in a container.

13. Inspection specification

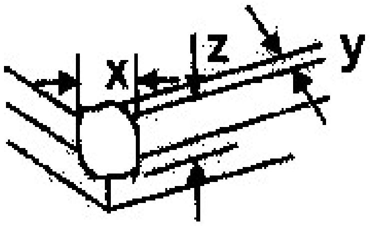
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>01</td><td>Electrical Testing</td><td>1.1 Missing vertical, horizontal segment, segment contrast defect.
1.2 Missing character, dot or icon.
1.3 Display malfunction.
1.4 No function or no display.
1.5 Current consumption exceeds product specifications.
1.6 LCD viewing angle defect.
1.7 Mixed product types.
1.8 Contrast defect.</td><td>0.65</td></tr>
<tr><td>02</td><td>Black or white spots on LCD (display only)</td><td>2.1 White and black spots on display ≦0.25mm, no more than three white or black spots present.
2.2 Densely spaced: No more than two spots or lines within 3mm</td><td>2.5</td></tr>
<tr><td rowspan="2">03</td><td rowspan="2">LCD black spots, white spots, contamination (non-display)</td><td>3.1 Round type : As following drawing
Φ=(x + y) / 2</td><td>2.5</td></tr>
<tr><td>3.2 Line type : (As following drawing)


<table>
<tr><th>Length</th><th>Width</th><th>Acceptable Q TY</th></tr>
<tr><td>---</td><td>W≦0.02</td><td>Accept no dense</td></tr>
<tr><td>L≦3.0</td><td>0.02＜W≦0.03</td><td rowspan="2">2</td></tr>
<tr><td>L≦2.5</td><td>0.03＜W≦0.05</td></tr>
<tr><td>---</td><td>0.05＜W</td><td>As round type</td></tr>
</table></td><td>2.5</td></tr>
<tr><td>04</td><td>Polarizer bubbles</td><td>If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction.
<table>
<tr><th>Size Φ</th><th>Acceptable Q TY</th></tr>
<tr><td>Φ≦0.20</td><td>Accept no dense</td></tr>
<tr><td>0.20＜Φ≦0.50</td><td>3</td></tr>
<tr><td>0.50＜Φ≦1.00</td><td>2</td></tr>
<tr><td>1.00＜Φ</td><td>0</td></tr>
<tr><td>Total Q TY</td><td>3</td></tr>
</table></td><td>2.5</td></tr>
</table>

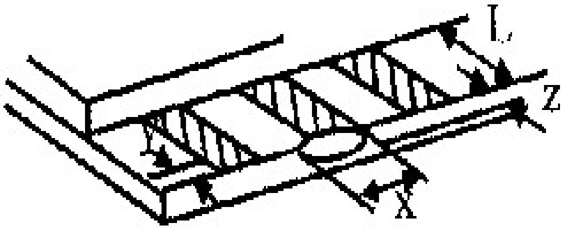
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>05</td><td>Scratches</td><td>Follow NO.3 LCD black spots, white spots, contamination</td><td></td></tr>
<tr><td>06</td><td>Chipped glass</td><td>
Symbols Define:
x: Chip length y: Chip width z: Chip thickness
k: Seal width t: Glass thickness a: LCD side length
L: Electrode pad length:

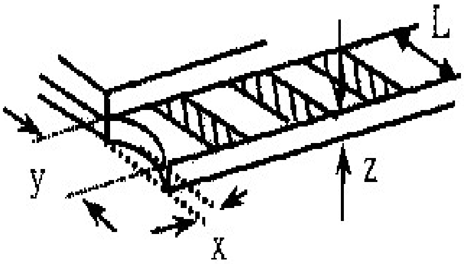
6.1 General glass chip :
6.1.1 Chip on panel surface and crack between panels:


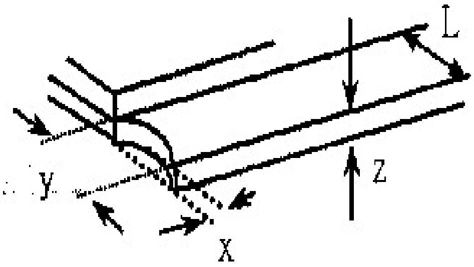
<table>
<tr><th>z: Chip thickness</th><th>y: Chip width</th><th>x: Chip length</th></tr>
<tr><td>Z≦1/2t</td><td>Not over viewing area</td><td>x≦1/8a</td></tr>
<tr><td>1/2t＜z≦2t</td><td>Not exceed 1/3k</td><td>x≦1/8a</td></tr>
</table>
⊙If there are 2 or more chips, x is total length of each chip.

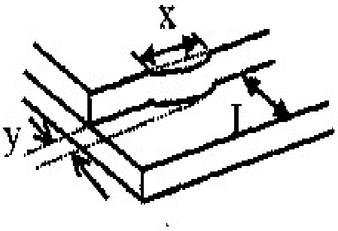
6.1.2 Corner crack:


<table>
<tr><th>z: Chip thickness</th><th>y: Chip width</th><th>x: Chip length</th></tr>
<tr><td>Z≦1/2t</td><td>Not over viewing area</td><td>x≦1/8a</td></tr>
<tr><td>1/2t＜z≦2t</td><td>Not exceed 1/3k</td><td>x≦1/8a</td></tr>
</table>
⊙If there are 2 or more chips, x is the total length of each chip.
</td><td>2.5</td></tr>
</table>

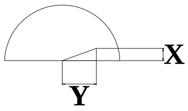
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>06</td><td>Glass crack</td><td>
Symbols :
x: Chip length y: Chip width z: Chip thickness
k: Seal width t: Glass thickness a: LCD side length
L: Electrode pad length
6.2 Protrusion over terminal :
6.2.1 Chip on electrode pad :


<table>
<tr><th>y: Chip width</th><th>x: Chip length</th><th>z: Chip thickness</th></tr>
<tr><td>y≦0.5mm</td><td>x≦1/8a</td><td>0 ＜ z ≦ t</td></tr>
</table>
6.2.2 Non-conductive portion:




<table>
<tr><th>y: Chip width</th><th>x: Chip length</th><th>z: Chip thickness</th></tr>
<tr><td>y≦ L</td><td>x≦1/8a</td><td>0 ＜ z ≦ t</td></tr>
</table>
⊙If the chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications.
⊙If the product will be heat sealed by the customer, the alignment mark not be damaged.
6.2.3 Substrate protuberance and internal crack.


<table>
<tr><th>y: width</th><th>x: length</th></tr>
<tr><td>y≦1/3L</td><td>x ≦ a</td></tr>
</table>
</td><td>2.5</td></tr>
</table>

NO	Item	Criterion	AQL
07	Cracked glass	The LCD with extensive crack is not acceptable.	2.5
08	Backlight elements	8.1 Illumination source flickers when lit. 8.2 Spots or scratched that appear when lit must be judged. Using LCD spot, lines and contamination standards. 8.3 Backlight doesn't light or color wrong.	0.65 2.5 0.65
09	Bezel	9.1 Bezel may not have rust, be deformed or have fingerprints, stains or other contamination. 9.2 Bezel must comply with job specifications.	2.5 0.65
10	PCB、COB	10.1 COB seal may not have pinholes larger than 0.2mm or contamination. 10.2 COB seal surface may not have pinholes through to the IC. 10.3 The height of the COB should not exceed the height indicated in the assembly diagram. 10.4 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. 10.5 No oxidation or contamination PCB terminals. 10.6 Parts on PCB must be the same as on the production characteristic chart. There should be no wrong parts, missing parts or excess parts. 10.7 The jumper on the PCB should conform to the product characteristic chart. 10.8 If solder gets on bezel tab pads, LED pad, zebra pad or screw hold pad, make sure it is smoothed down. 10.9 The Scraping testing standard for Copper Coating of PCB  **X * Y<=2mm^2**	2.5 2.5 0.65 2.5 2.5 0.65 0.65 2.5 2.5
11	Soldering	11.1 No un-melted solder paste may be present on the PCB. 11.2 No cold solder joints, missing solder connections, oxidation or icicle. 11.3 No residue or solder balls on PCB. 11.4 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, contamination, curves or, bends on interface Pin (OLB) of TCP. 12.2 No cracks on interface pin (OLB) of TCP. 12.3 No contamination, solder residue or solder balls on product. 12.4 The IC on the TCP may not be damaged, circuits. 12.5 The uppermost edge of the protective strip on the interface pin must be present or look as if it causes the interface pin to sever. 12.6 The residual rosin or tin oil of soldering (component or chip component) is not burned into brown or black color. 12.7 Sealant on top of the ITO circuit has not hardened. 12.8 Pin type must match type in specification sheet. 12.9 LCD pin loose or missing pins. 12.10 Product packaging must the same as specified on packaging specification sheet. 12.11 Product dimension and structure must conform to product specification sheet.	2.5 0.65 2.5 2.5 2.5 2.5 2.5 0.65 0.65 0.65 0.65

14. 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.

15. Material List of Components for RoHs

1. RAYSTAR Optronics Co., Ltd. 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℃, 30 seconds Max.；

Connector soldering wave or hand soldering：320℃, 10 seconds max.

(3) Temp. curve of reflow, max. Temp.：235±5℃；

Recommended customer’s soldering temp. of connector：280℃, 3 seconds.

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LCM Sample Estimate Feedback Sheet

Module Number：____________________

1、Panel Specification：		
1. Panel Type：	☐ Pass	☐ NG ,______________________________
2. View Direction：	☐ Pass	☐ NG ,_____________________________
3. Numbers of Dots：	☐ Pass	☐ NG ,______________________________
4. View Area：	☐ Pass	☐ NG ,_____________________________
5. Active Area：	☐ Pass	☐ NG ,_____________________________
6.Operating Temperature：	☐ Pass	☐ NG ,____________________________
7.Storage Temperature：	☐ Pass	☐ NG ,___________________________
8.Others：____		
2、Mechanical Specification：		
1. PCB Size：	☐ Pass	☐ NG ,______________________________
2.Frame Size：	☐ Pass	☐ NG ,______________________________
3.Materal of Frame：	☐ Pass	☐ NG ,______________________________
4.Connector Position：	☐ Pass	☐ NG ,______________________________
5.Fix Hole Position：	☐ Pass	☐ NG ,______________________________
6.Backlight Position：	☐ Pass	☐ NG ,______________________________
7. Thickness of PCB：	☐ Pass	☐ NG ,__________________________
8. Height of Frame to PCB：	☐ Pass	☐ NG ,_________________________
9.Height of Module：	☐ Pass	☐ NG ,_____________________________
10.Others：	☐ Pass	☐ NG ,_____________________________
3、Relative Hole Size：		
1.Pitch of Connector：	☐ Pass	☐ NG ,_____________________________
2.Hole size of Connector：	☐ Pass	☐ NG ,______________________________
3.Mounting Hole size：	☐ Pass	☐ NG ,_____________________________
4.Mounting Hole Type：	☐ Pass	☐ NG ,_____________________________
5.Others：	☐ Pass	☐ NG ,_____________________________
4、Backlight Specification：		
1.B/L Type：	☐ Pass	☐ NG ,_____________________________
2.B/L Color：	☐ Pass	☐ NG ,_____________________________
3.B/L Driving Voltage (Reference for LED Type)：☐ Pass ☐ NG ,_____________		
4.B/L Driving Current：	☐ Pass	☐ NG ,______________________________
5.Brightness of B/L：	☐ Pass	☐ NG ,_____________________________
6.B/L Solder Method：	☐ Pass	☐ NG ,____________________________
7.Others：	☐ Pass	☐ NG ,_____________________________

＞＞ **Go to page 2** ＜＜

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Module Number：________________________

5、Electronic Characteristics of Module：

1.Input Voltage：	☐ Pass	☐ NG ,________________________________
2.Supply Current：	☐ Pass	☐ NG ,________________________________
3.Driving Voltage for LCD：	☐ Pass	☐ NG ,_________________________________
4.Contrast for LCD：	☐ Pass	☐ NG ,_________________________________
5.B/L Driving Method：	☐ Pass	☐ NG ,________________________________
6.Negative Voltage Output：	☐ Pass	☐ NG ,_______________________________
7.Interface Function：	☐ Pass	☐ NG ,________________________________
8.LCD Uniformity：	☐ Pass	☐ NG ,________________________________
9.ESD test：	☐ Pass	☐ NG ,________________________________
10.Others：	☐ Pass	☐ NG ,_______________________________

6、Summary：

Sales signature：_____________________

Customer Signature：_______________ **Date：___/___/___**