LIQUID CRYSRAL DISPLAY MODULE

CUSTOMER		
PRODUCT NUMBER	**LDG320240C-FMC-V8**	
CUSTOMER APPROVAL		**Date**

INTERNAL APPROVALS			
Quality Mgr	Product Mgr	Mech. Eng	Electr. Eng
KOBIN	JAMES	JASON	VINCENT

☐ **Approval for Specification only**

☑ **Approval for Specification and Sample**

C O N T E N T S

1. Record of Revision

Revision	Comment	Date	Page
0	Specification	2008/1/24	ALL

2. General Specification

(1) Mechanical Dimension

Item	Standard Value	Unit
Number of dots	320x240	dots
Outline dimension	148.0(W)x 120.2(H)x 10.5 max(T)	mm
View area	122.0(W)x 92.0(H)	mm
Active area	115.18(W)x 86.38(H)	mm
Dot size	0.34(W)x 0.34(H)	mm
Dot pitch	0.36(W)x 0.36(H)	mm

(2) Controller IC: RA8835

(3) Temperature Range :Normal

(4) LCD: STN,Transmissive,6H view,Blue

	Normal
Operating	0 ~+50℃
Storage	-30 ~+80℃

3.Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	T_{OP}	0	—	+50	℃
Storage Temperature	T_{ST}	-30	—	+80	℃
Input Voltage	V_I	0	—	V_{DD}	V
Supply Voltage For Logic	V_{DD}	0	—	5.5	V
Supply Voltage For LCD	V_{DD}-V_0	0	—	28	V

4.Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Logic Voltage	V_{DD}-V_{SS}	—	3.0	5.0	5.5	V
Supply Voltage For LCD	V_{DD}-V_O	Ta=0℃	—	24.5	—	V
		Ta=25℃	—	23.5	—	V
		Ta=+50℃	—	21.5	—	V
Input High Volt.	V_{IH}	—	0.8V_{DD}	—	V_{DD}	V
Input Low Volt.	V_{IL}	—	0	—	0.2V_{DD}	V
Output High Volt.	V_{OH}	—	V_{DD} -0.4	—	—	V
Output Low Volt.	V_{OL}	—	—	—	0.4	V
Supply Current	I_{DD}	—	—	100	150	mA

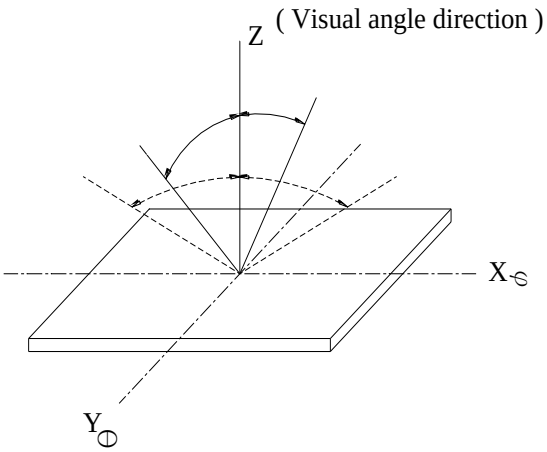
5.Optical Characteristics

STN

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
View Angle	(V) θ	CR≧3	10		45	deg
	(H) φ	CR≧3	-45		45	deg
Contrast Ratio	CR	—		3		—
Response Time 25℃	T rise	—		100	150	ms
	T fall	—		150	200	ms

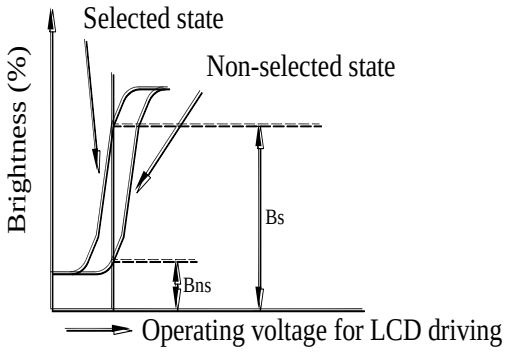
5.1 Definitions

■View Angles

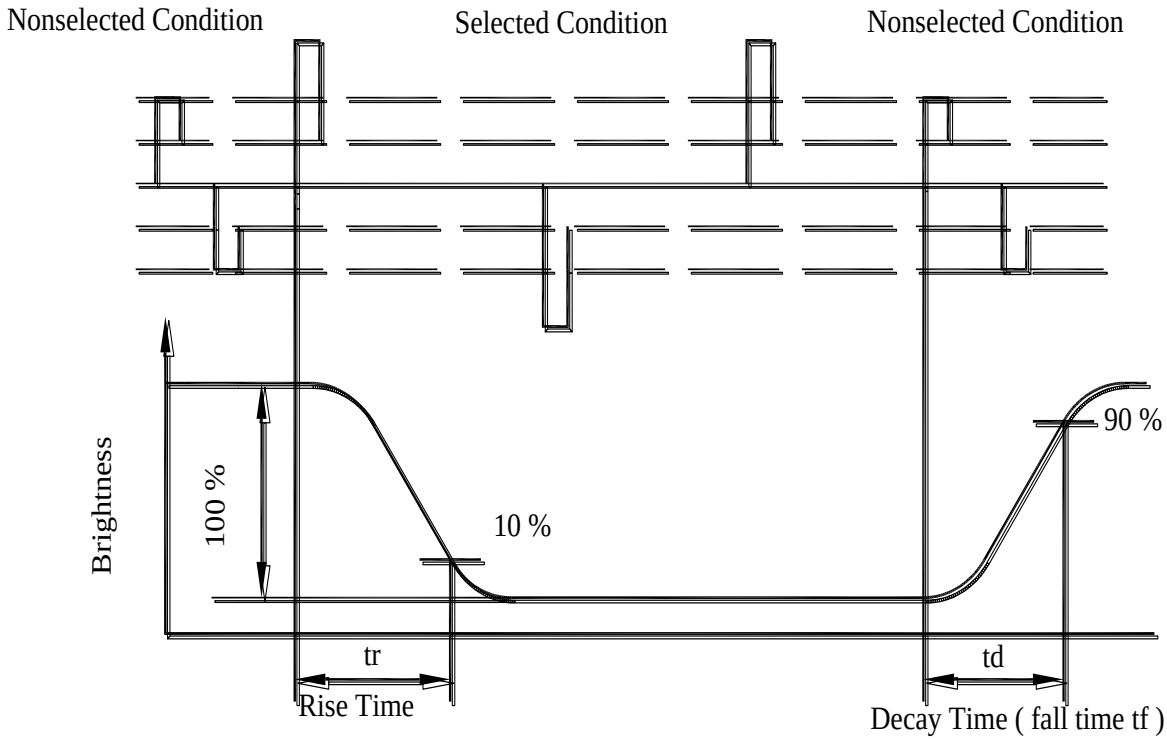


■Contrast Ratio

$$CR = \frac{\text{Brightness at selected state (BS)}}{\text{Brightness at non-selected state (Bns)}}$$



■Response time



6. Interface Description

Pin No.	Symbol	Level	Description
1	V_{SS}	0V	Ground
2	V_{DD}	5.0V	Power supply for Logic
3	V_O	(Variable)	Driving voltage for LCD
4	/RD	H/L	Read Signal
5	/WR	H/L	Write Signal
6	A0	H/L	Data or Command Select
7	D0	H/L	data, bit0
8	D1	H/L	data, bit1
9	D2	H/L	data, bit2
10	D3	H/L	data, bit3
11	D4	H/L	data, bit4
12	D5	H/L	data, bit5
13	D6	H/L	data, bit6
14	D7	H/L	data, bit7
15	/CS	H / L	Chip Select
16	/RES	H / L	RESET Signal
17	V_{EE}	-22V	-24 Output For LCD Drive
18	NC		
19	NC		
20	NC		

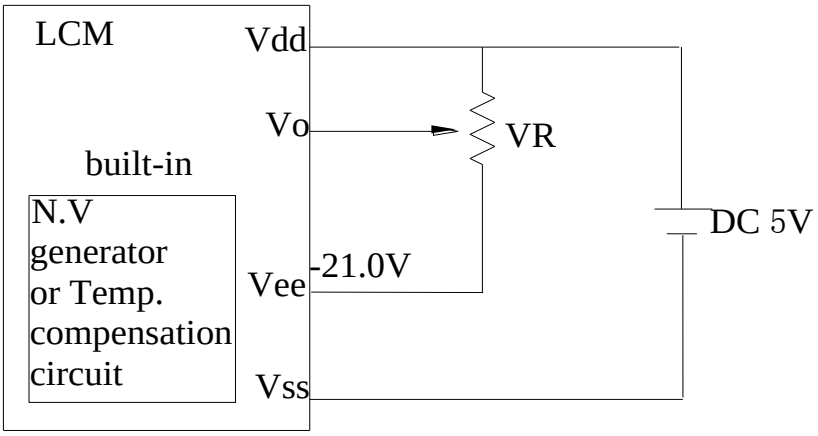
7. RA8835(SED1335)　Controller DATA

付件 **RA8835 Datasheet**

8. Power Supply for LCD Module and LCD Operating Voltage a Adjustment

DC5V with built-in negative voltage

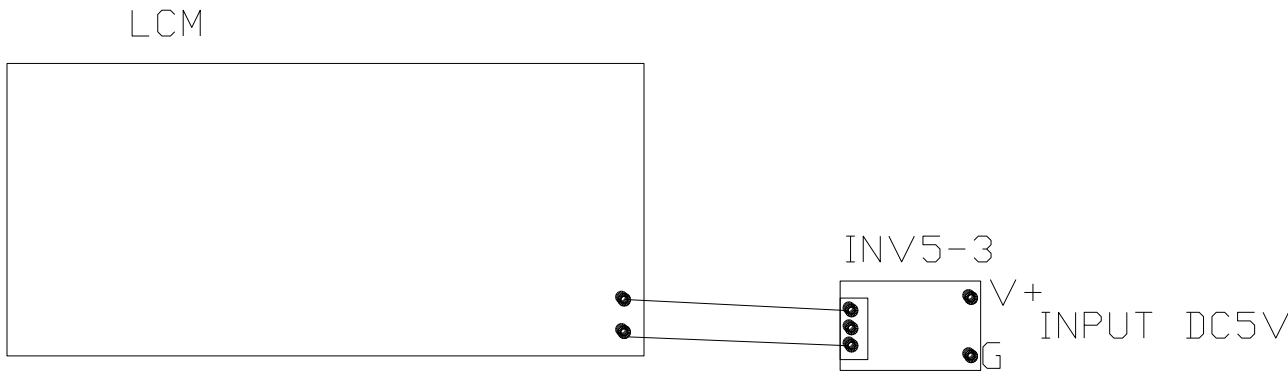
VR 建議 10 K 歐姆



9. Backlight Information

燈管式 CCFL　Backlight driving methods

輸入 DC5.0V 到 INV5 變壓器的”V+ “ , GND 接 0V 可點亮背光



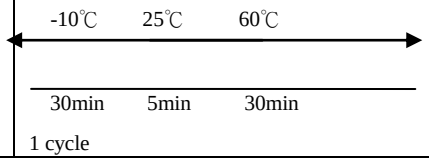
10. Quality Assurance

◆ Screen Cosmetic Criteria

No.	Defect	Judgement Criterion	Partition
1	Spots	A)Clear Size: d mm — Acceptable Qty in active area d ≦0.1 — Disregard 0.1<d≦0.2 — 6 0.2<d≦0.3 — 2 0.3<d — 0 Note: Including pin holes and defective dots which must be within one pixel size. B)Unclear Size: d mm — Acceptable Qty in active area d ≦0.2 — Disregard 0.2<d≦0.5 — 6 0.5<d≦0.7 — 2 0.7<d — 0	Minor
2	Bubbles in Polarize	Size: d mm — Acceptable Qty in active area d≦0.3 — Disregard 0.3<d≦1.0 — 3 1.0<d≦1.5 — 1 1.5<d — 0	Minor
3	Scratch	In accordance with spots cosmetic criteria. When the light reflects on the panel surface, the scratches are not to be remarkable.	Minor
4	Allowable Density	Above defects should be separated more than 30mm each other.	Minor
5	Coloration	Not to be noticeable coloration in the viewing area of the LCD panels. Back-light type should be judged with back-light on state only.	Minor

11.Reliability

■Content of Reliability Test

Environmental Test				
No.	Test Item	Content of Test	Test Condition	Applicable Standard
1	High Temperature storage	Endurance test applying the high storage temperature for a long time.	60℃ 200hrs	——
2	Low Temperature storage	Endurance test applying the high storage temperature for a long time.	-10℃ 200hrs	——
3	High Temperature Operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	50℃ 200hrs	——
4	Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	0℃ 200hrs	——
5	High Temperature/ Humidity Storage	Endurance test applying the high temperature and high humidity storage for a long time.	60℃,90%RH 96hrs	——
6	High Temperature/ Humidity Operation	Endurance test applying the electric stress (Voltage & Current) and temperature / humidity stress to the element for a long time.	50℃,90%RH 96hrs	——
7	Temperature Cycle	Endurance test applying the low and high temperature cycle.  1 cycle	-10℃/60℃ 10 cycles	——
Mechanical Test				
8	Vibration test	Endurance test applying the vibration during transportation and using.	10~22Hz→1.5mmp-p 22~500Hz→1.5G Total 0.5hrs	——
9	Shock test	Constructional and mechanical endurance test applying the shock during transportation.	50G Half sign wave 11 msedc 3 times of each direction	——
10	Atmospheric pressure test	Endurance test applying the atmospheric pressure during transportation by air.	115mbar 40hrs	——
Others				
11	Static electricity test	Endurance test applying the electric stress to the terminal.	VS=800V,RS=1.5kΩ CS=100pF 1 time	——

***Supply voltage for logic system=5V. Supply voltage for LCD system =Operating voltage at 25℃

12.Outline drawing

13.Outline drawing