



富相科技股份有限公司

SOLOMON Goldentek Display Corp.

KAOHSIUNG FACTORY : 18 TA-YEH STREET , TA-FA INDUSTRIAL PARK,
TA-LIAO HSIANG , KAOHSIUNG HSIEN 831
TAIWAN , R.O.C.

TEL : 886-7-7886800

FAX : 886-7-7886806~8

PART NO : LM1112SYL2
FOR MESSRS : _____

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Accepted by : _____

Proposed by :  _____

Date : 02,19,2002

RECORD OF REVISION

DATE	PAGE	SUMMARY

3. GENERAL SPECIFICATIONS AND MECHANICAL DATA

3.1 GENERAL SPECIFICATIONS

PLEASE REFER TO :

"CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (SP-10-001)".

3.2 THIS INDIVIDUAL SPECIFICATIONS IS PRIOR TO GENERAL SPECIFICATIONS.

3.3 MECHANICAL DATA

- | | |
|-----------------------------|---|
| (1) NUMBER OF DOTS ----- | 16CH*4LINES |
| (2) MODULE SIZE ----- | 87.0W*60.0H*13.5T (MAX) mm |
| (3) VIEWING AREA ----- | 61.8W*25.2H mm |
| (4) CHARACTER PATTERN ----- | 5 * 7dots + CURSOR |
| (5) CHARACTER SIZE ----- | 2.95W * 4.75H mm |
| (6) CHARACTER PITCH ----- | 3.55W * 5.35H mm |
| (7) DOT SIZE ----- | 0.55W * 0.55H mm |
| (8) DOT PITCH ----- | 0.60W * 0.60H mm |
| (9) LCD TYPE ----- | STN , YELLOW-GREEN
TRANSFLECTIVE,6 O'CLOCK |
| (10) LED COLOR ----- | YELLOW-GREEN |

4. ABSOLUTE MAXIMUM RATINGS

4.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS.

ITEM	SYMBOL	MIN.	MAX.	UNIT	COMMENT
POWER SUPPLY FOR LOGIC	VDD-VSS	—	6.0	V	
POWER SUPPLY FOR LCD DRIVE	VDD-VO	—	6.0	V	
INPUT VOLTAGE	VI	VSS	VDD	V	
STATIC ELECTRICITY	—	—	100	V	NOTE (1)
POWER SUPPLY FOR LED	V _{LED+} -V _{LED-}	—	6.0	V	

NOTE(1) : TEST METHOD AND CONDITIONS AFTER CHARGING UP 200PF CAPACITOR BY STATED VOLTAGE , THE CAPACITOR IS CONNECTED WITH INTERFACE PINS OF THE MODULE.

4.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS.

ITEM	OPERATING		STORAGE		COMMENT
	MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	0°C	50°C	-20°C	60°C	NOTE(2)
HUMIDITY	NOTE (3)		NOTE (3)		WITHOUT CONDENSATION
VIBRATION	—	4.9 m/s ² (0.5G)	—	19.6 m/s ² (2G)	10~300HZ XYZ DIRECTIONS 1 Hr.EACH
SHOCK	—	29.4 m/s ² (3G)	—	49.0 m/s ² (5G)	XYZ DIRECTIONS
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

NOTE(2) : Ta AT -20°C : 48 HR MAX.
60 °C : 168 HR MAX.

NOTE(3) : Ta ≤ 40°C : 90% RH MAX.
Ta > 40°C : ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 90%RH AT 40°C.

5. ELECTRICAL CHARACTERISTICS.

		Ta = 25°C	VDD = 5.0 ± 0.25V			
ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
INPUT VOLTAGE (H LEVEL)	VIH	—	2.2	—	—	V
INPUT VOLTAGE (L LEVEL)	VIL	—	—	—	0.6	V
OUTPUT VOLTAGE (H LEVEL)	VOH	-IOH = 0.2mA	2.4	—	—	V
OUTPUT VOLTAGE (L LEVEL)	VOL	IOL = 1.2mA	—	—	0.4	V
POWER SUPPLY CURRENT (LOGIC)	IDD	VDD = 5.0V	—	1.0	3.0	mA
RECOMMENDED LCD DRIVING VOLTAGE NOTE (1)	VDD-VO DUTY=1/16 Φ = 10°	Ta = 0°C	—	4.7	—	V
		Ta = 25 °C	—	4.4	—	V
		Ta = 50 °C	—	3.9	—	V
CLOCK OSCILLATION FREQUENCY	FOSC	Ta = 25°C	—	270	—	KHz
POWER SUPPLY CURRENT FOR LED	ILED	VLED+-VLED-=5.0V	—	220	—	mA

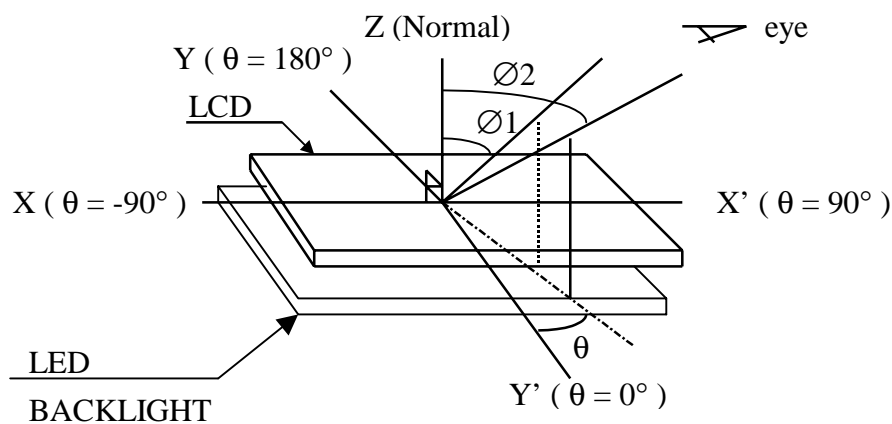
NOTE(1) : RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE
ABOUT ± 0.5V BY EACH MODULE.

6. OPTICAL CHARACTERISTICS

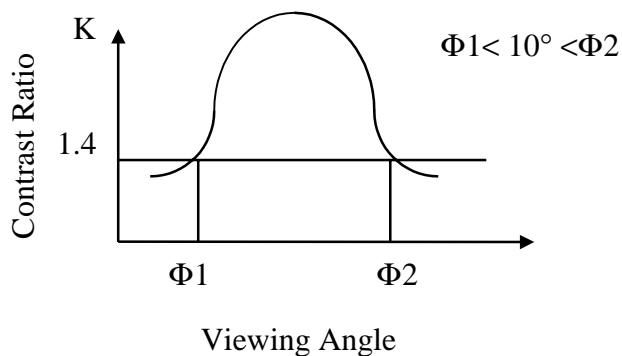
 $T_a = 25^\circ\text{C}$
 $V_{DD} = 5.0\text{V} \pm 0.25\text{V}$

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING AREA	$\Phi 2 - \Phi 1$	$K = 1.4$	—	40	—	deg.	1
CONTRAST RATIO	K	$\Phi = 10^\circ$ $\theta = 0^\circ$	—	1.8	—	—	2,3
RESPONSE TIME	tr(rise)	$\Phi = 10^\circ$ $\theta = 0^\circ$	—	250	400	ms	4
	tf(fall)	$\Phi = 10^\circ$ $\theta = 0^\circ$	—	350	450	ms	4
THE BRIGHTNESS OF BACKLIGHTING SURFACE	B	(*) $\Phi = 0^\circ$ $\theta = 0^\circ$	—	20	—	cd/m^2	5
	λp	—	565	570	575	nm	

NOTE (1) : DEFINITION OF θ AND Φ

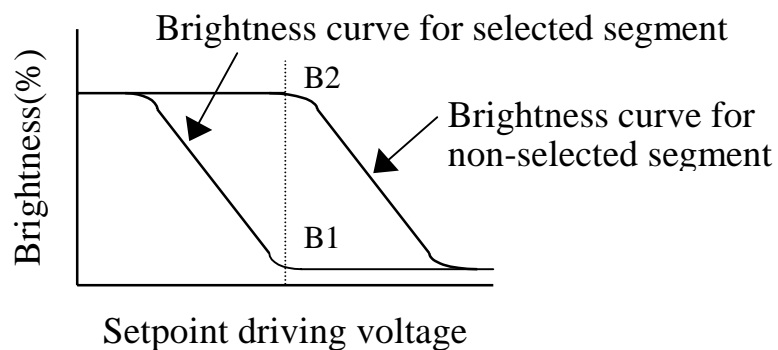
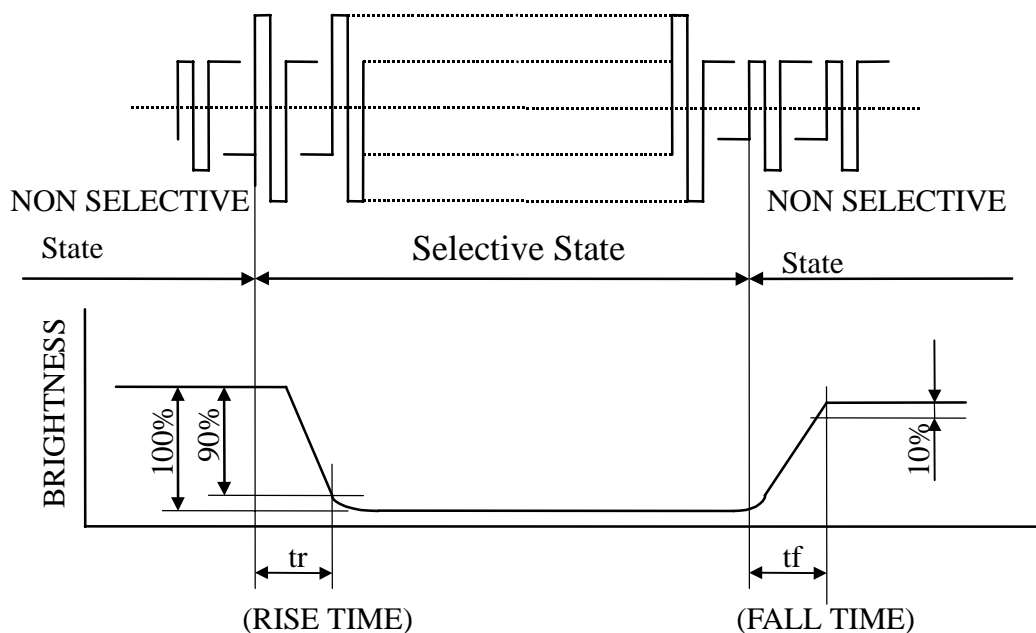
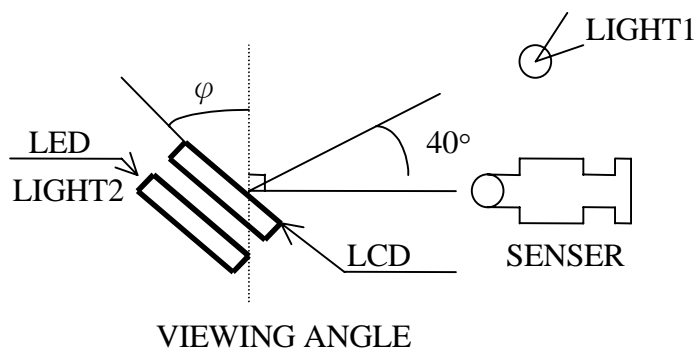


NOTE (2) : DEFINITION OF VIEWING ANGLE $\Phi 1$ AND $\Phi 2$

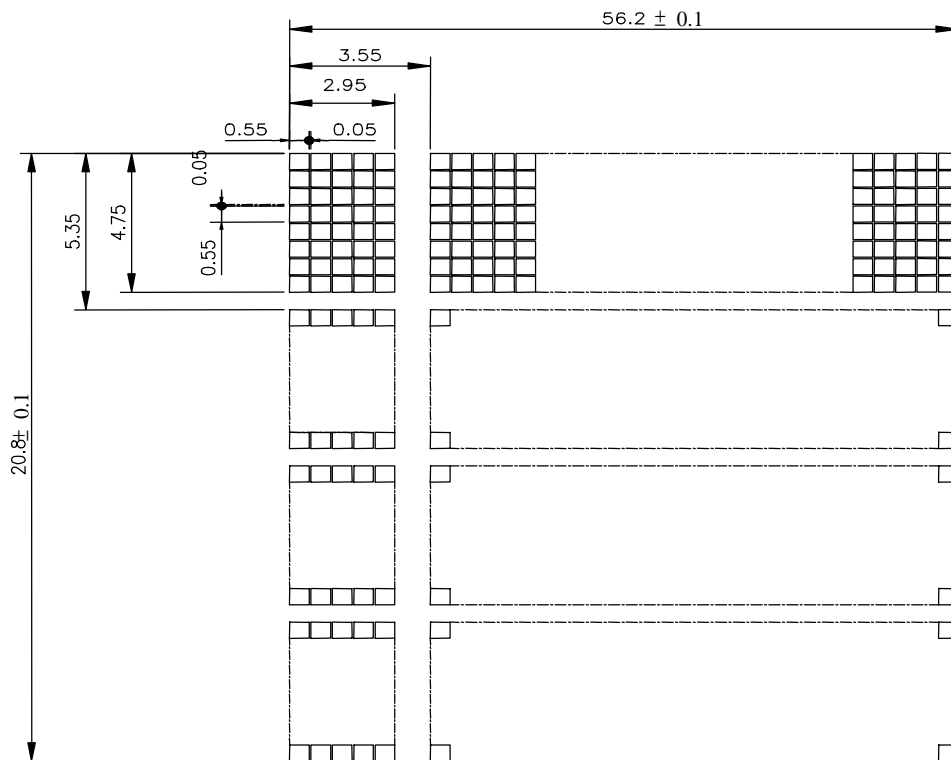


NOTE (3) : DEFINITION OF CONTRAST“K”

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

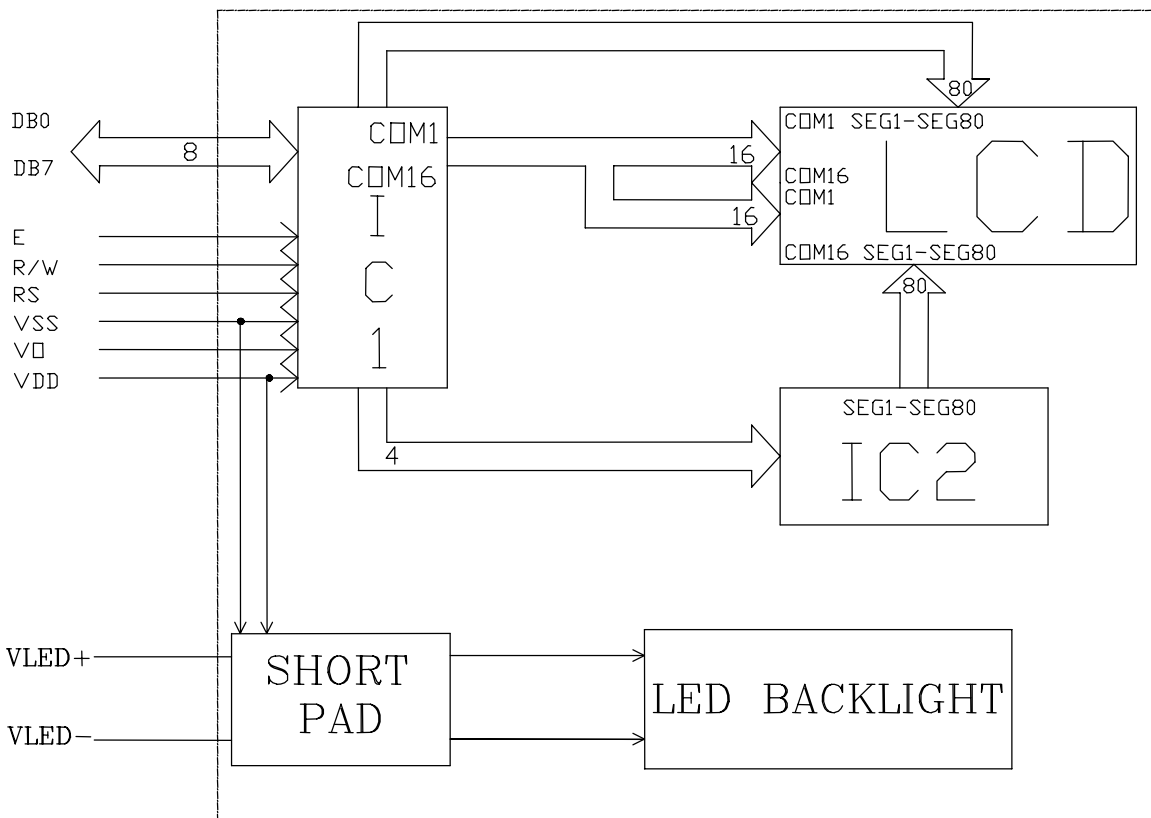
**NOTE(4) : DEFINITION OF OPTICAL RESPONSE****NOTE(5) : POSITION OF LIGHT**

7.1 DETAIL DRAWING OF MATRIX PATTERN.



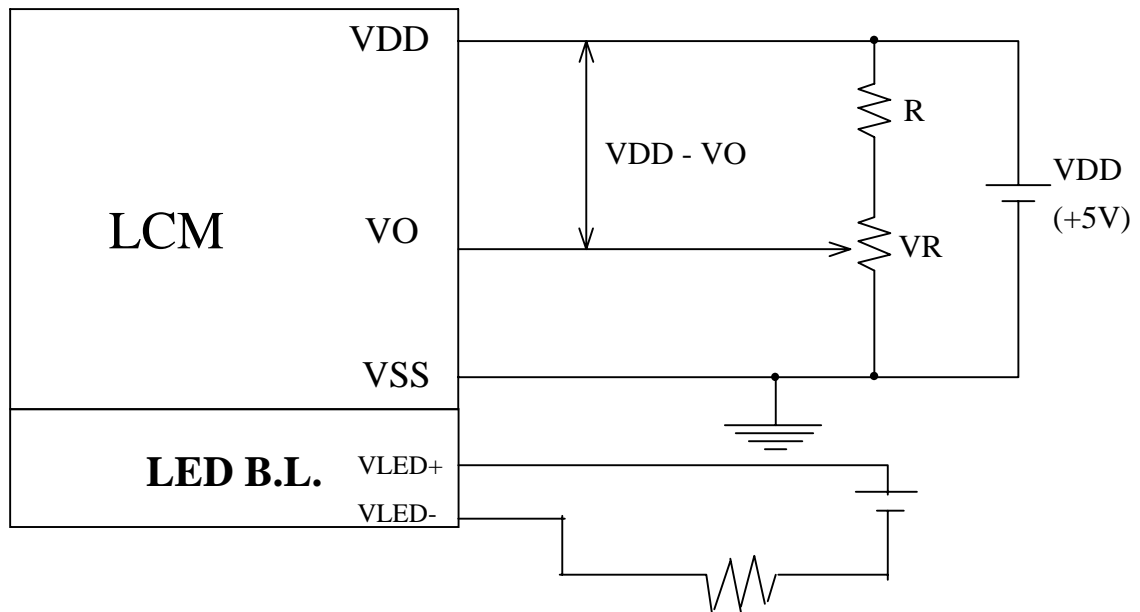
NOT SPECIFIED TOLERANCE: ± 0.01mm

7.2 BLOCK DIAGRAM



8. POWER SUPPLY.

8.1 POWER SUPPLY FOR LCM AND LED BACKLIGHT.



VDD - VO : LCD DRIVING VOLTAGE

VR : 10KΩ ~ 20KΩ