

PART NO. : DG320240A-SBF

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2. General specifications

2.1 General specifications

We are opened to customer specifics.

3. Mechanical data

- (1) NUMBER OF DOTS ----- 320 W * 240 H DOTS
- (2) MODULE SIZE ----- 167.5 W * 109.0 H * 13.0 T (max) mm
- (3) EFFECTIVE AREA ----- 120.5 W(min) * 92.0 H mm
- (4) ACTIVE AREA ----- 115.17 W * 86.37 H mm
- (5) DOT SIZE----- 0.33 W * 0.33 H mm
- (6) DOT PITCH ----- 0.36 W * 0.36 H mm
- (7) VIEWING DIRECTION----- 6 O'CLOCK
- (8) LCD TYPE----- STN.BLUE/NEGATIVE.TRANSMISSIVE
- (9) CCFL COLOR ----- WHITE

4. Absolute maximum ratings

4.1 Electrical absolute maximum ratings

<i>I T E M</i>	<i>SYMBOL</i>	<i>MIN.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>COMMENT</i>
POWER SUPPLY FOR LOGIC	V _{DD} -V _{SS}	0	6.0	V	-----
INPUT VOLTAGE	V _I	V _{SS}	V _{DD}	V	-----
STATIC ELECTRICITY	-----	-----	100	V	NOTE (1)
POWER SUPPLY FOR CCFL BACKLIGHT	V _S	-----	AC1000	V _{rms}	-----
	f _{FL}	-----	55.0	KHz	-----
STARTING VOLTAGE FOR CCFL BACKLIGHT	V _{start1}	AC550	-----	V _{rms}	Ta = 25?
	V _{start2}	AC700	-----	V _{rms}	Ta = 25?
POWER SUPPLY FOR LCD	V _{DD} -V _{EE}	-----	30.0	V	-----

NOTE (1): ELECTRO-STATIC DISCHARGE RESISTANCE IS TESTED BY CHARGING A 200PF CAPACITOR AND DISCHARGING IT BY CONTACT WITH A INTERFACE CONNECTOR PIN.

4.2 Environmental absolute maximum ratings

<i>I T E M</i>	<i>OPERATING</i>		<i>STORAGE</i>		<i>COMMENT</i>
	<i>MIN.</i>	<i>MAX.</i>	<i>MIN.</i>	<i>MAX.</i>	
AMBIENT TEMPERATURE	-20?	70?	-20?	70?	-----
HUMIDITY	NOTE (2)		NOTE (2)		NO CONDENSATION
VIBRATION NOTE (3)	-----	0.5G	-----	2G	10~300Hz XYZ DIRECTIONS 1 Hr EACH
SHOCK NOTE (3)	-----	3G	-----	50G	10 msec XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		-----

NOTE (2): Ta ? 70? : 75% RH MAX.

Ta > 70? : ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 75% RH AT 70? .

NOTE (3): 1G = 9.8 m/s²

5. Electrical characteristics

Ta = 25? VDD = 5.0 ± 0.25 V

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Power supply voltage for circuit	VDD-VSS	-----	4.75	5.0	5.25	V
Power supply voltage for LCD drive	VEE-VSS	-----	-21.0	-22.0	-22.5	V
Input voltage, NOTE (1)	V _{IH}	H LEVEL	0.8V _{DD}	-----	V _{DD}	V
	V _{IL}	L LEVEL	V _{SS}	-----	0.2V _{DD}	V
Power supply current, NOTE (2)	I _{DD}	V _{DD} -V _{SS} = 5.0V	-----	5.5	7.5	mA
LCD display duty ratio	DUTY	-----	-----	1/240	-----	-----
Recommended LCD driving voltage, NOTE (3)	V _{DD} -V _O F = 10° ? = 0°	Ta = 70?	-----	20.4	-----	V
		Ta = 25?	-----	22.3	-----	V
		Ta = -20?	-----	23.8	-----	V
CCFL LAMP	V _{FL}	f _{FL} = 35KHz	-----	270	-----	V _{rms}
	I _{FL}	V _{FL} = 270 V _{rms} f _{FL} = 35 KHz	-----	5.0	-----	mArms
CCFL Lifetime	-----	V _{FL} =270V _{rms} f _{FL} =35KHz	-----	30,000	-----	Hr
Power supply LCD current	I _{EE}	V _{DD} -V _O =22.3V	-----	5.0	7.0	mA
FLM frequency	f _{FLM}	-----	70	75	80	Hz

NOTE (1): APPLIED TO TERMINALS D0~D3, LOAD, CP, DISP OFF

NOTE (2): THE DISPLAY PATTERN IS ALL "ON", OR ALL "OFF"

NOTE (3): RECOMMENDED LCD DIRVING VOLTGE MAY FLUCTUATE ABOUT ± 0.5V BY EACH MODULE.

6. Optical characteristics

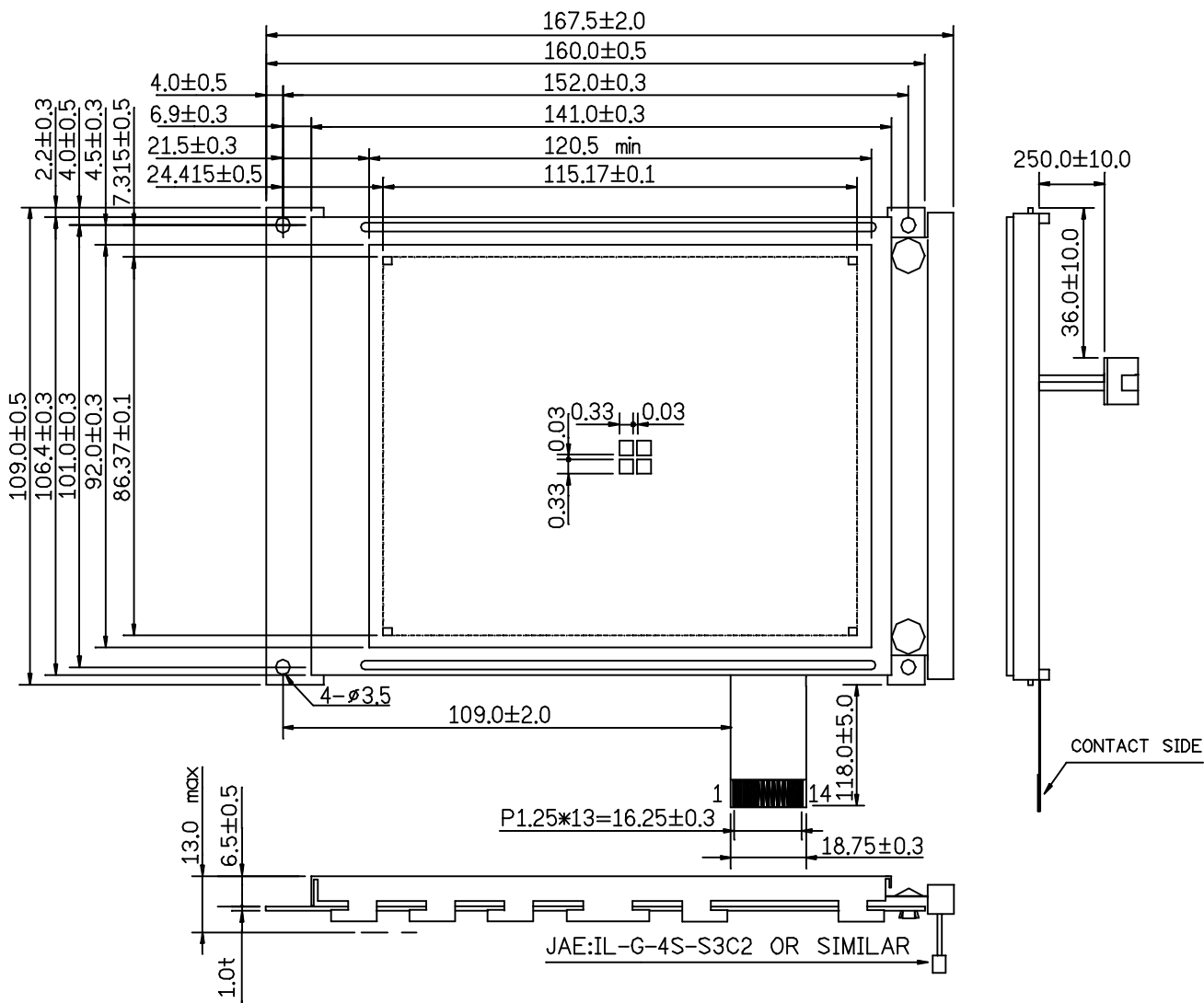
Ta = 25? VDD-V_O = 22.3V

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Viewing angle	F 2-F 1	K ? 2.0	40	50	-----	deg.	1
Contrast ratio	K	F = 10° ? = 0°	5.0	6.0	-----	-----	1
Response time (at 25?)	tr (rise)	F = 10° ? = 0°	-----	215	-----	ms	1
	tf (fall)	F = 10° ? = 0°	-----	150	-----	ms	1
The brightness of backlighting source	B	DOTS ALL ON V _{FL} =270V _{rms} f _{FL} =35KHz	-----	60	-----	cd/m ²	2

NOTE (1): SEE CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR DEFINITION OF OPTICAL CHARACTERISTICS

NOTE (2): UNDER NORMAL TEMPERATURE AND HUMIDITY IN A DARK ROOM

7. Outline dimension



UNIT:mm

SCALE:NTS

NOT SPECIFIED OLERANCE: 0.01

7.1 Interface

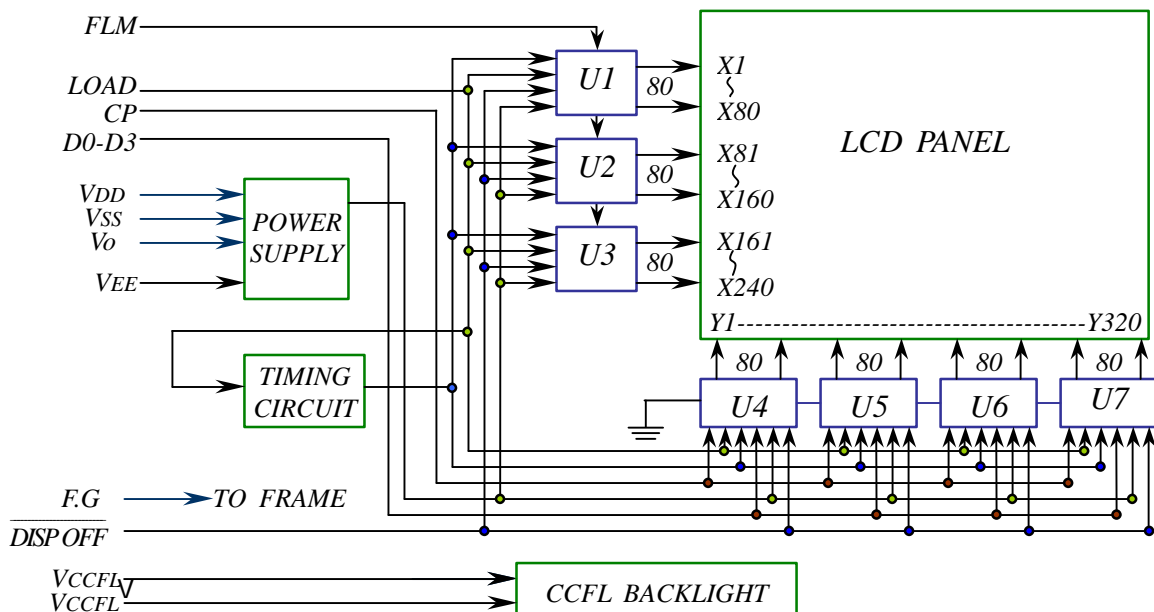
(a) Pin Assignment

PIN NO.	SYMBOL	FUNCTION
1	D0	DISPLAY DATA
2	D1	DISPLAY DATA
3	D2	DISPLAY DATA
4	D3	DISPLAY DATA
5	$\overline{\text{DISPOFF}}$	L: DISPLAY OFF H: DISPLAY ON
6	FLM	FRAME PULSE
7	N.C	NO CONNECTION
8	LOAD	DATA LATCH PULSE
9	CP	DATA SHIFT CLOCK PULSE
10	V _{DD}	POWER SUPPLY FOR LOGIC
11	V _{SS}	GRAND
12	V _{EE}	POWER SUPPLY FOR LCD
13	V _O	LCD DRIVING VOLTAGE
14	F.G	FRAME GRAND

(b) CCFL Connector

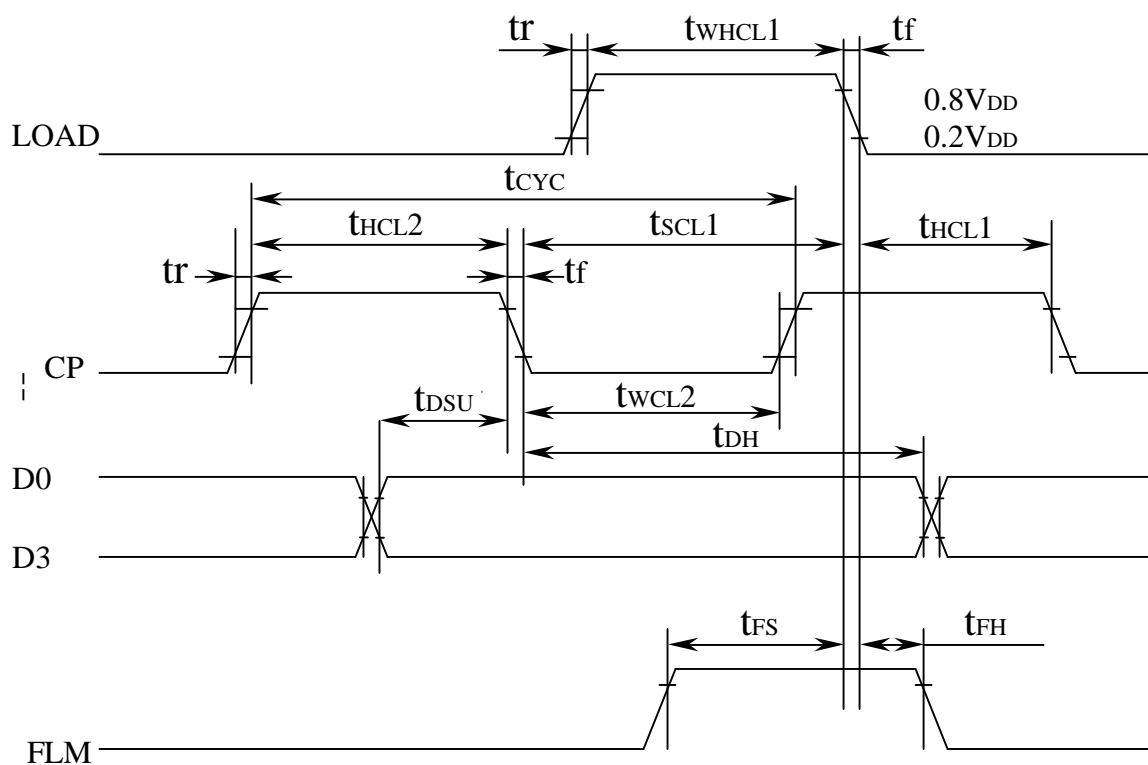
PIN NO.	SYMBOL	FUNCTION
1	V _{CCFL}	POWER SUPPLY VOLTAGE FOR CCFL
2	N.C	NO CONNECTED
3	N.C	NO CONNECTED
4	V _{CCFL}	POWER SUPPLY VOLTAGE FOR CCFL

8. Block diagram

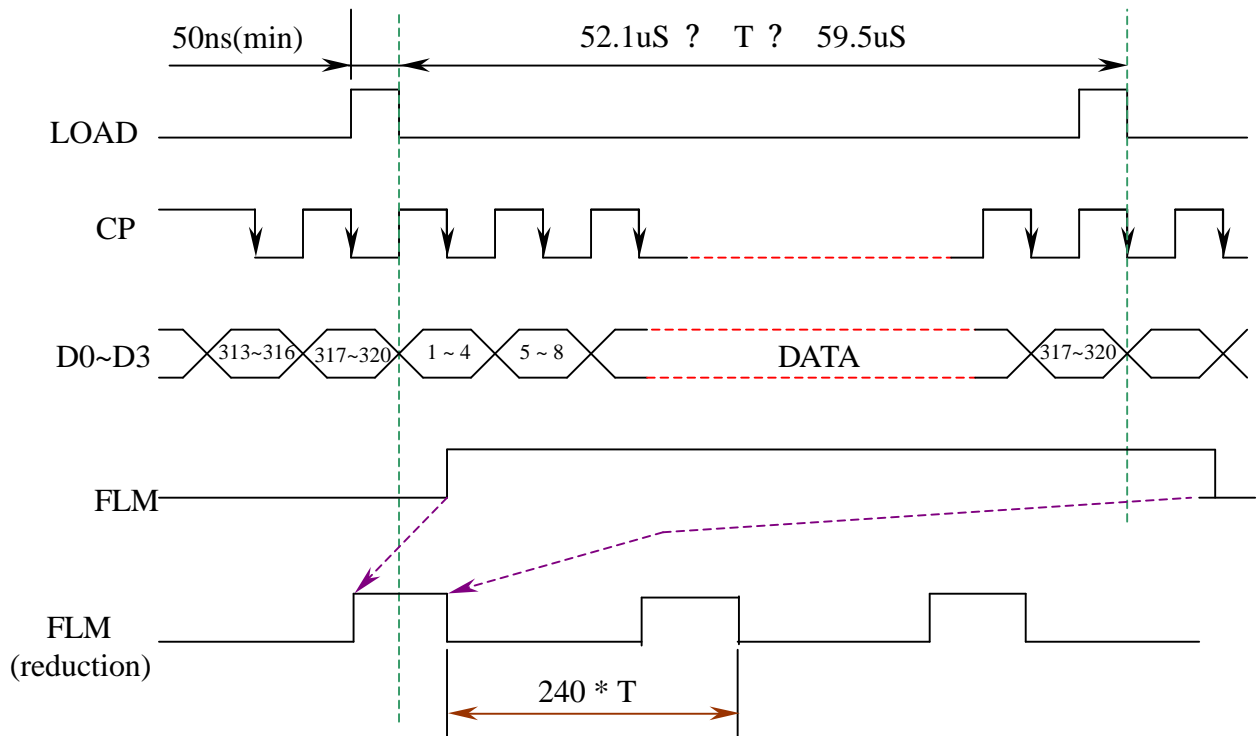


9. Timing characteristic

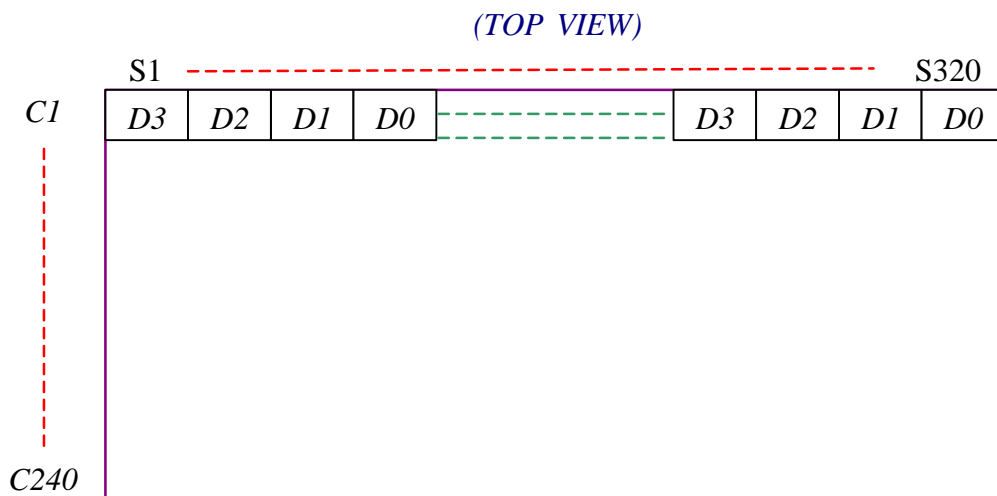
<i>ITEM</i>	<i>SYMBOL</i>	<i>MIN</i>	<i>MAX</i>	<i>UNIT</i>
LOAD PULSE WIDTH "H"	t_{WHCL1}	50	-----	ns
CP PULSE WIDTH	t_{HCL2}	50	-----	ns
CLOCK SET UP TIME	t_{SCL1}	80	-----	ns
CLOCK HOLD TIME	t_{HCL1}	80	-----	ns
CLOCK RISE/FALL TIME	$t_{r/f}$	-----	50	ns
DATA SET UP TIME	t_{DSU}	30	-----	ns
DATA HOLD TIME	t_{DH}	30	-----	ns
FLM DATA SET UP TIME	t_{FS}	100	-----	ns
FLM DATA HOLD TIME	t_{FH}	100	-----	ns
CLOCK CYCLE TIME	t_{CYC}	125	-----	ns



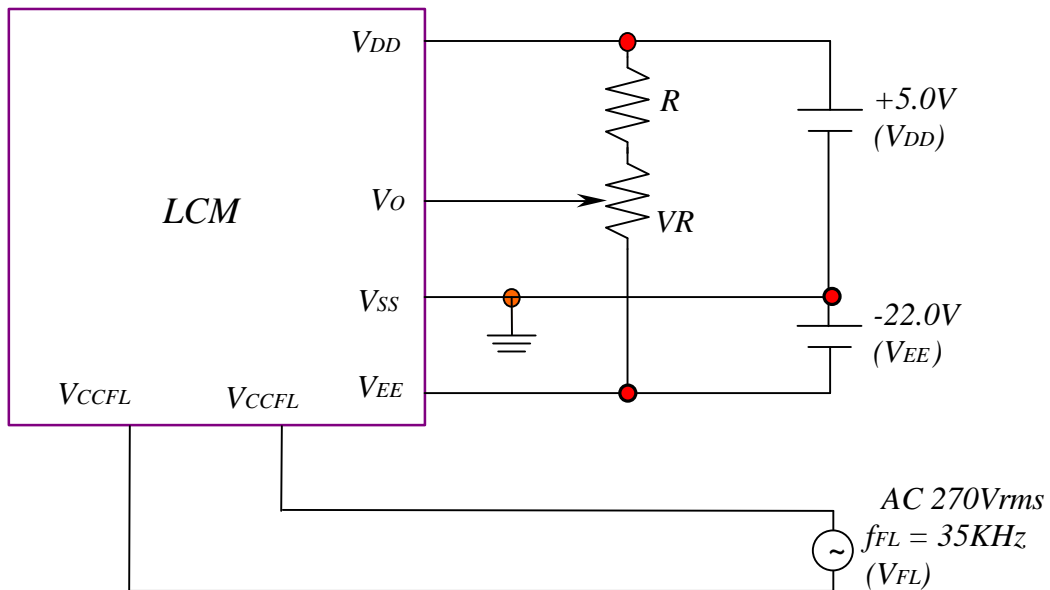
9.1 Interface timing chart



9.2 Comparison between display and data



10. Power supply for LCM

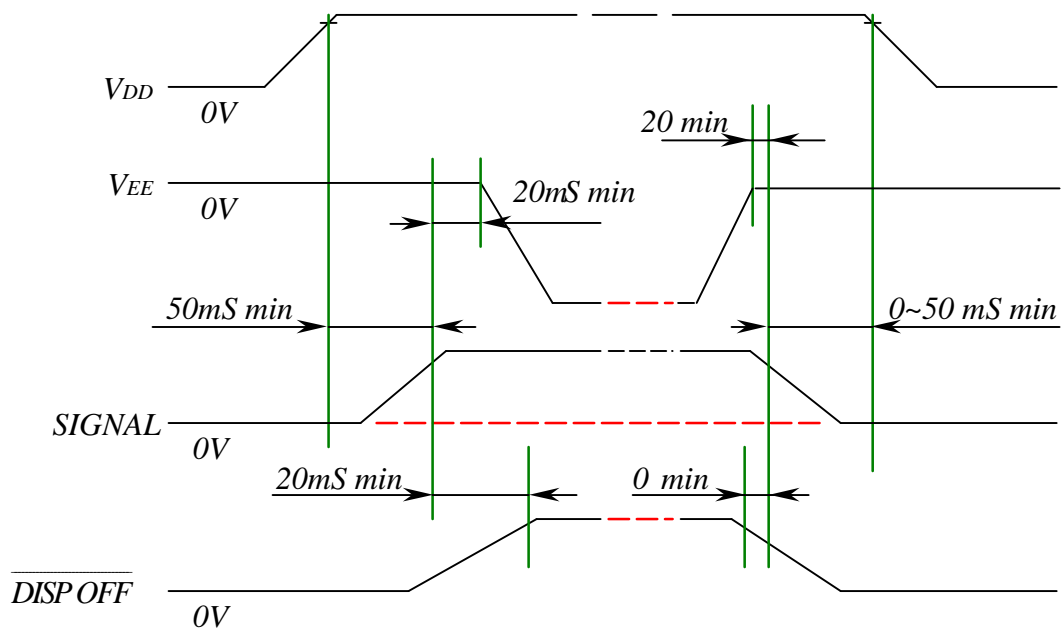


$V_{DD}-V_o$: LCD DRIVING VOLTAGE

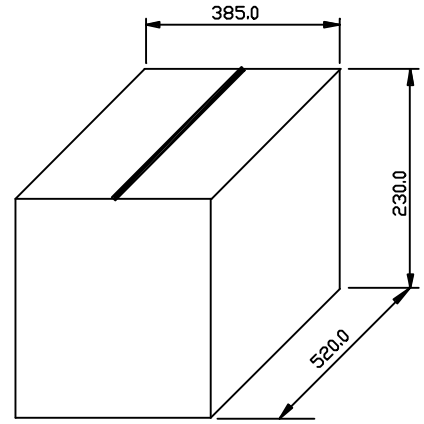
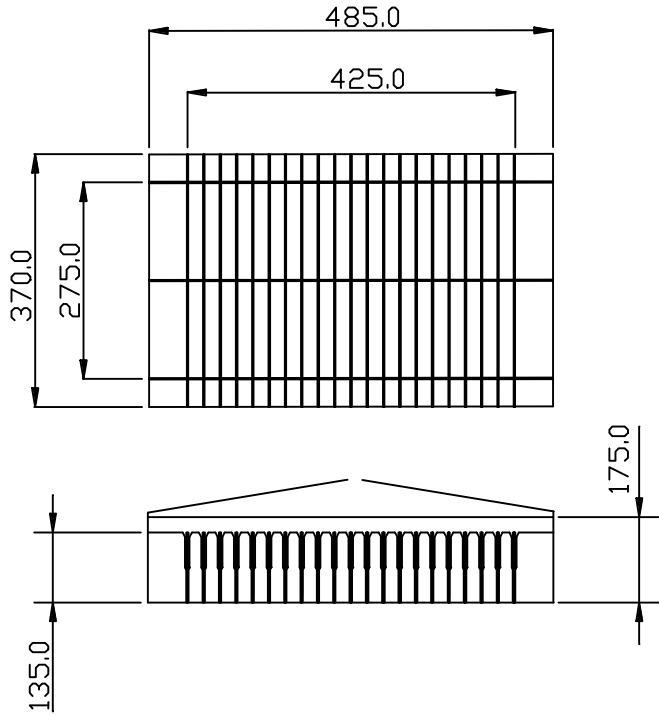
RECOMMEND RESISTOR R: $V_{DD}-V_o \times 1.5V$

VR: 200KO

Power supply sequency



11. PACKAGE DIAGRAM



NOTE:

- a. t=5.0
- b. Inside package : 40PCS
- c. Outside package :
inside package*1 =40PCS
- d. Total weight : 11.0kg

↙ Outside package



↗ Inside package