



SOLOMON

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PART NO : LM7811FBL
FOR MESSRS : Overland Data

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Accepted by : _____

Proposed by : _____

RECORD OF REVISION

DATE	PAGE	SUMMARY
90/3/30	12	ADD 9-1 OUTLINE DIMENSION (BOTTOM VIEW) °
	13	CHANGED PAGE 12 → 13 °
	14	CHANGED PAGE 13 → 14 °
	15	CHANGED PAGE 14 → 15 °
90.05.25	12	CHANGED DIMENSION : 20.3→20.3± 1.3 7.6→7.6± 1.3 17.8→12.7± 1.3 35.6± 2.5→35.6± 1.3
90.06.13	3	ADD TOUCH PANEL TYPE-----ANALOG °
	11	ADD FPC CODE:AMP#1-487550-2 °
	12	ADD FERRITE CODE:P/N#28R-1127-000 AND TOUCH PANEL CODE:PN#973087-101 °

3. GENERAL SPECIFICATIONS AND MECHANICAL DATA

3.1 GENERAL SPECIFICATIONS

PLEASE REFER TO :

”CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (SP-10-000)”.

3.2 THIS INDIVIDUAL SPECIFICATIONS IS PRIOR TO GENERAL SPECIFICATIONS.

3.3 MECHANICAL DATA

- (1) NUMBER OF DOTS ----- 320W*240H DOTS
- (2) MODULE SIZE ----- 146.98W*107.98H*15.0T (MAX.) mm
- (3) VIEWING AREA ----- 99.98W*73.5H mm
- (4) DISPLAY AREA ----- 95.98W*71.98H mm
- (5) DOT SIZE ----- 0.28W*0.28H mm
- (6) DOT PITCH ----- 0.30W*0.30H mm
- (7) VIEWING DIRECTION----- 3 O’CLOCK
- (8) LCD TYPE ----- FSTN,B/W,NEGATIVE,TRANSMISSIVE
- (9) LED COLOR ----- WHITE
- (10) TOUCH PANEL TYPE ----- ANALOG

4. ABSOLUTE MAXIMUM RATINGS

4.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	COMMENT
POWER SUPPLY FOR LOGIC	VDD-VSS	-0.3	7.0	V	
POWER SUPPLY FOR LCD DRIVE	VDD-VEE	0	30	V	
INPUT VOLTAGE	VI	VSS	VDD	V	
STATIC ELECTRICITY	-----	-----	100	V	NOTE (1)
POWER SUPPLY FOR LED	V _{LED+} -V _{LED-}	-----	4.0	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)	---	490.0 m/s ² (50G)	10 mSEC XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

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

NOTE(3) : Ta ≤ 40°C : 85% RH MAX.
Ta > 40°C : ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 85%RH AT 40°C . (50%RH AT 50°C)

5. ELECTRICAL CHARACTERISTICS

VDD = 5.0 ± 0.25V

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
LOGIC CIRCUIT POWER SUPPLY VOLTAGE	VDD-VSS	-----	4.75	5.0	5.25	V
LCD DRIVER CIRCUIT POWER SUPPLY VOLTAGE	VEE-VSS	-----	-11.0	-----	-24.0	V
INPUT VOLTAGE NOTE (1)	VIH	H LEVEL	V _{GND}	-----	0.2*VDD	V
	VIL	L LEVEL	0.8*VDD	-----	VDD	V
LOGIC CIRCUIT POWER SUPPLY CURRENT NOTE (2)	IDD	VDD-VSS=5.0V VEE-VSS =-14.6V	-----	7.0	-----	mA
LCD DRIVER CIRCUIT POWER SUPPLY CURRENT NOTE (2)	IEE	VDD-VSS=5.0V VEE-VSS =-14.6V	-----	4.0	-----	mA
RECOMMENDED LCD DRIVING VOLTAGE NOTE (3)	VDD - VO Φ=10° θ=0° DUT = 1/240	Ta = 0°c	-----	-----	-----	v
		Ta = 25°c	-----	19.6	-----	v
		Ta = 50°c	-----	-----	-----	v
FLM FREQUENCY	fFLM	-----	70.0	75.0	80.0	HZ
THE POWER SUPPLY FOR LED	VLED	-----	-----	3.6	4.0	V
	ILED	V _{LED+} -V _{LED-}	-----	200	-----	mA

NOTE(1) : APPEND TO TERMINALS FLM,CL1,CL2,D0~D3

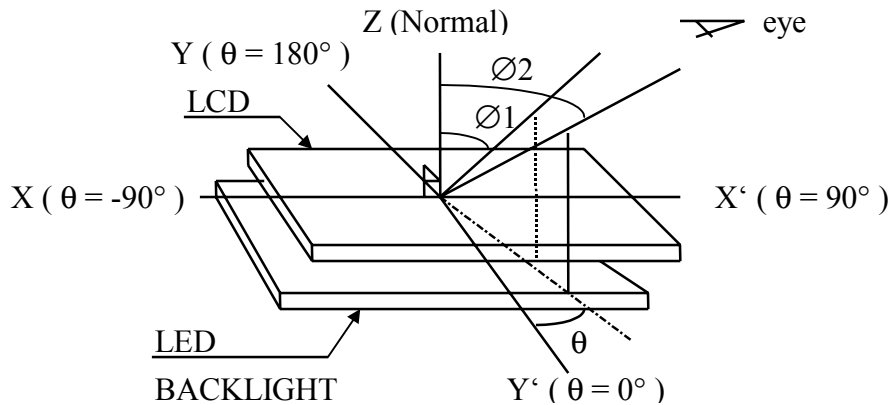
NOTE(2) : THE DISPLAY PATTERN IS ALL "Q"

NOTE(3) : RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE
TO LERANCE ± 0.5V BY EACH MODULE

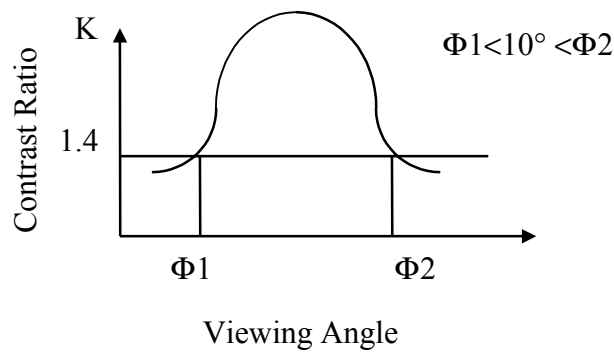
Ta = 25°C VDD = 5.0±10%

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING ANGLE	$\Phi 2-\Phi 1$	$K \geq 1.4$	-----	(40)	-----	deg.	1,2
CONTRAST RATIO	k	$\Phi = 10^\circ$ $\theta = 0^\circ$	(10)	-----	-----	-----	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 BRIGHTNESS SOURCE	B	DOTS ON $\Phi = 10^\circ \theta = 0^\circ$	-----	24	-----	cd/m ²	5
		DOTS OFF $\Phi = 10^\circ \theta = 0^\circ$	-----	1.6	-----	cd/m ²	5

NOTE (1) : DEFINITION OF θ AND Φ



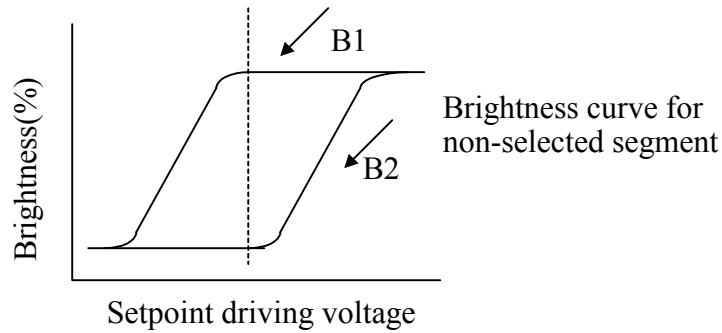
NOTE (2) : DEFINITION OF VIEWING ANGLE $\Phi 1$ AND $\Phi 2$



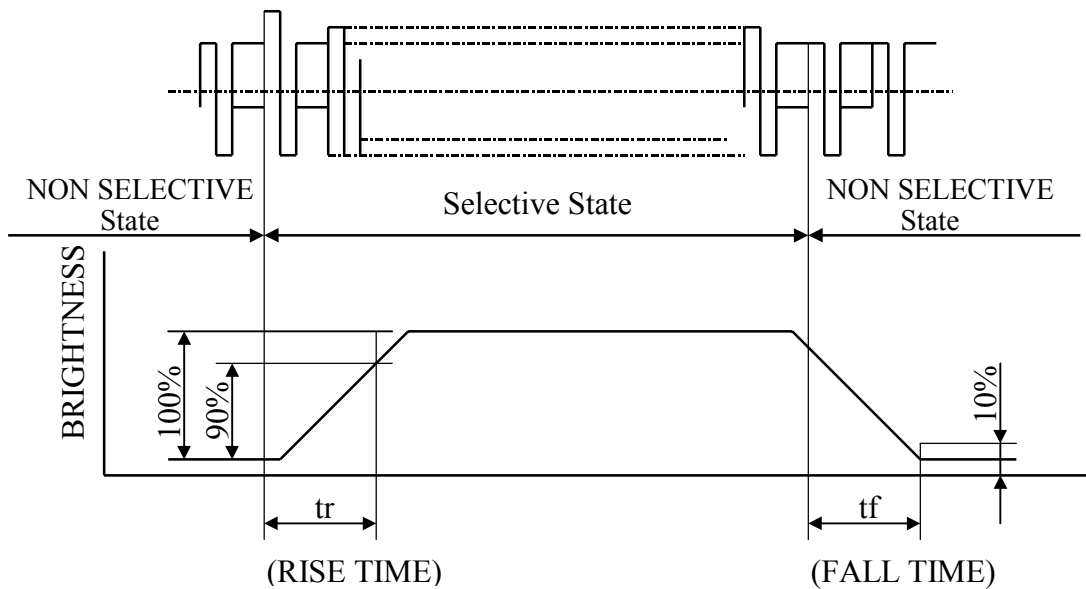
NOTE (3) : DEFINITION OF CONTRAST“K”

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

Brightness curve for selected segment

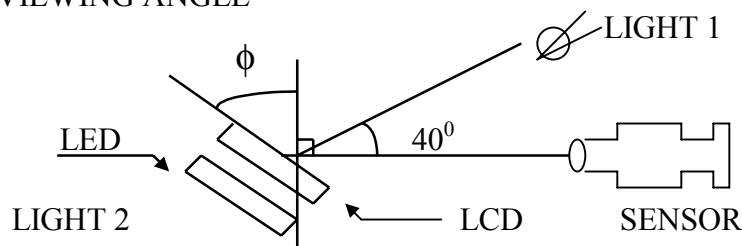


NOTE(4) : DEFINITION OF OPTICAL RESPONSE

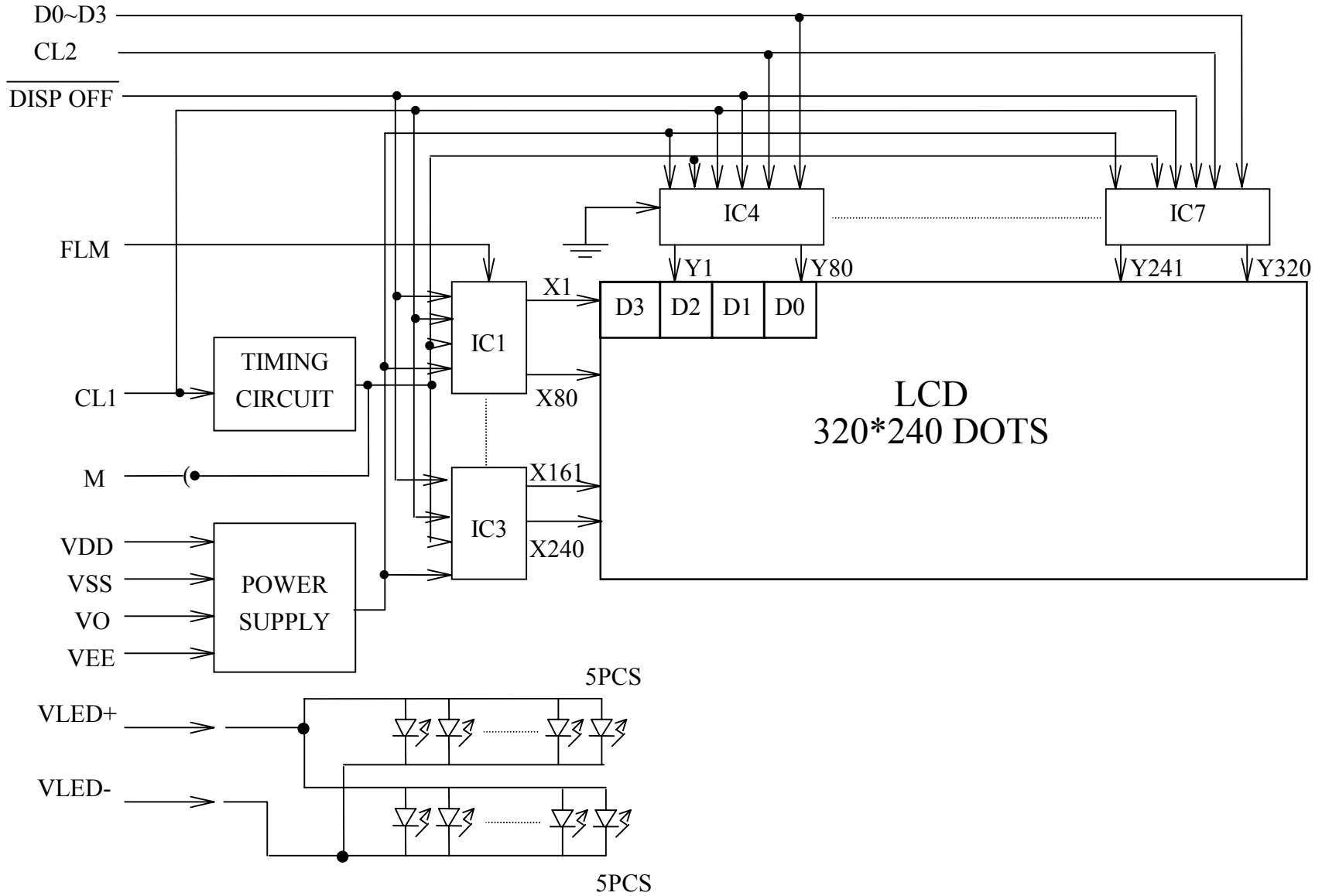


NOTE(5) : OPTICAL OF LIGHT

VIEWING ANGLE

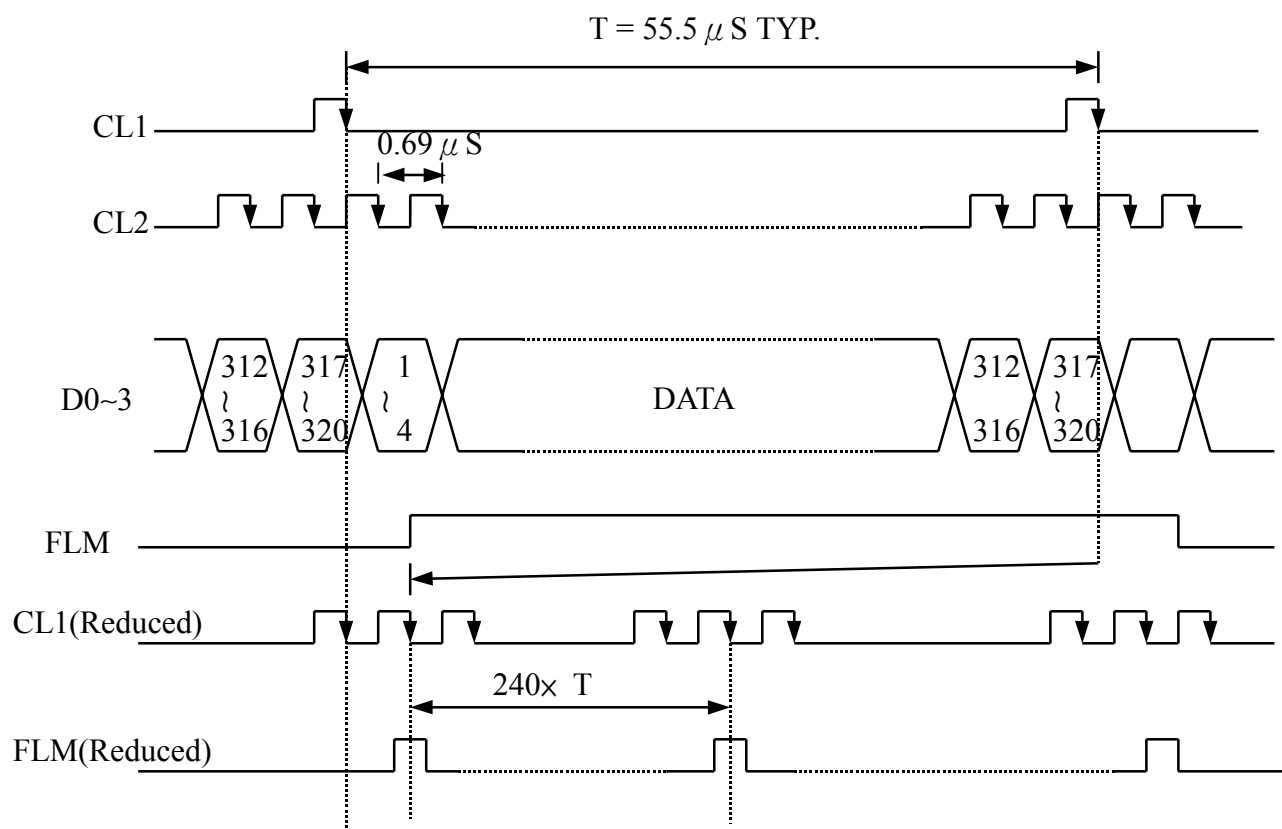


7.BLOCK DIAGRAM



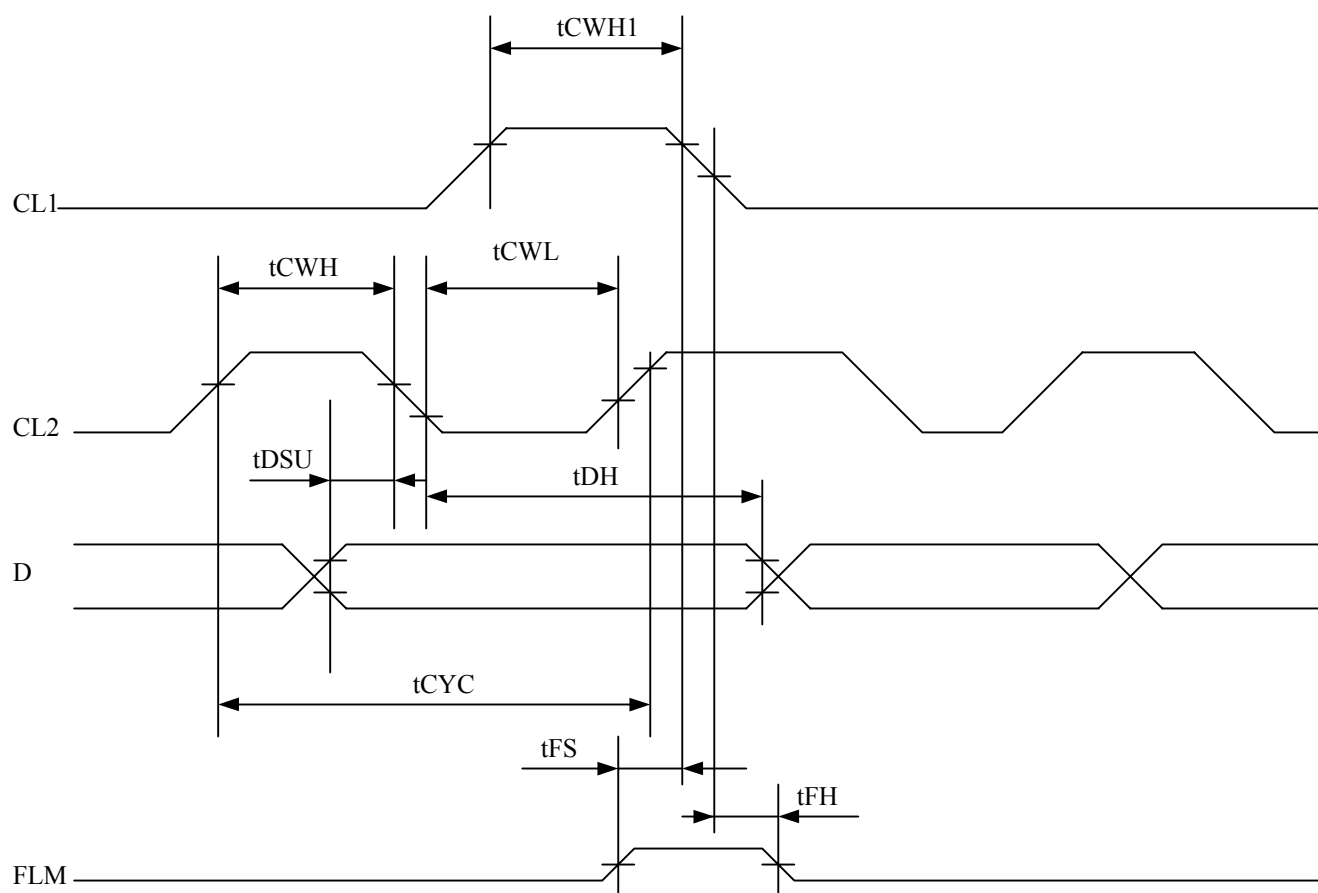
8. TIMING CHARACTERISTICS

8.1 INTERFACE TIMING.

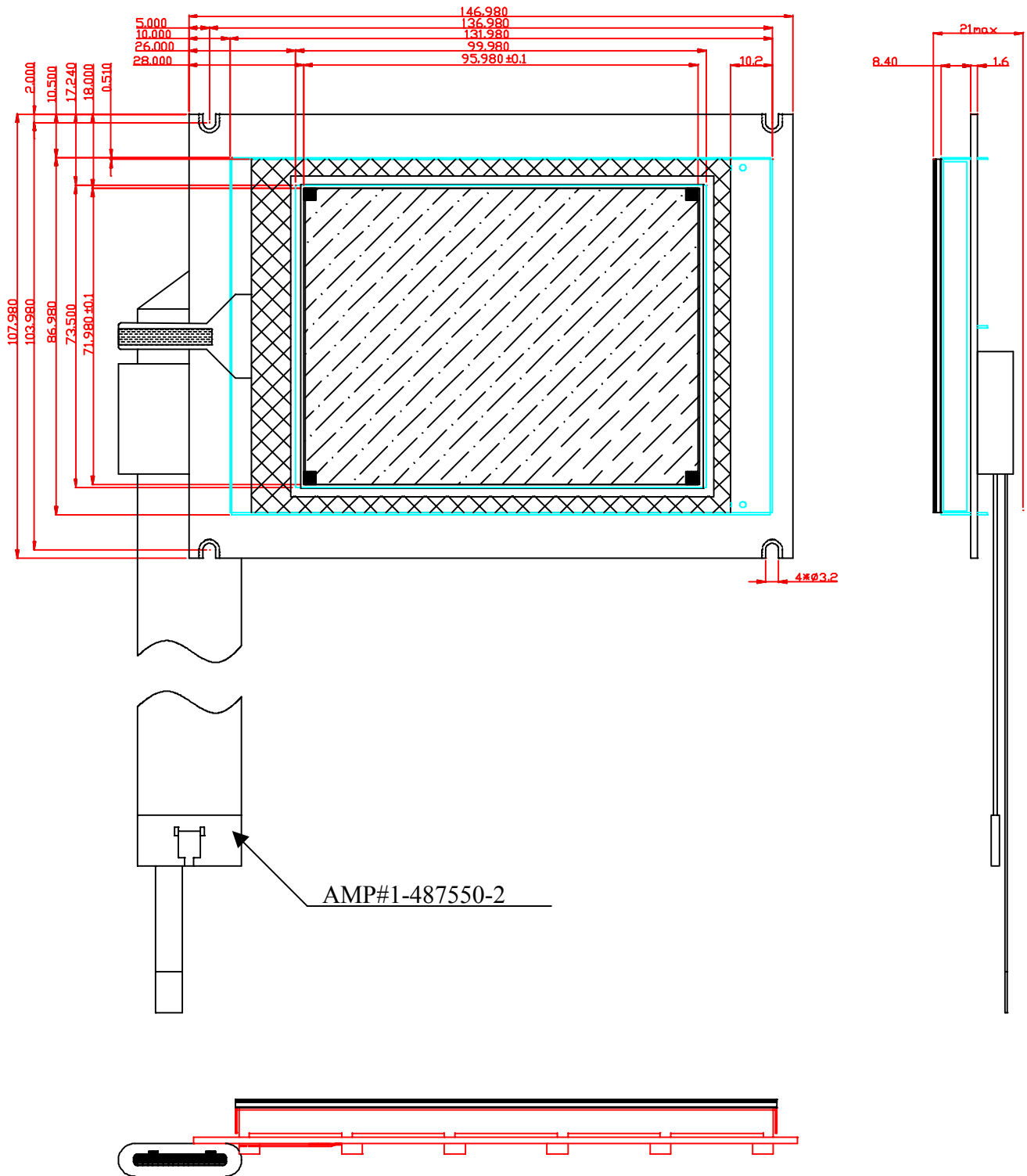


8.2 INTERFACE TIMING

ITEM	SYMBOL	MIN.	TYP	MAX.	UNIT
CL2 cycle time	tCYC	125	-----	-----	ns
CL2 pulse width (H)	tCWH	50	-----	-----	ns
CL2 pulse width (L)	tCWL	50	-----	-----	ns
CL1 pulse width (H)	tCWH1	90	-----	-----	ns
Data set up time	tDSU	50	-----	-----	ns
Data hold time	tDH	30	-----	-----	ns
CL1 delay time	tCL	200	-----	-----	ns
FLM set up time	tFS	200	-----	-----	ns
FLM hold time	tFH	200	-----	-----	ns



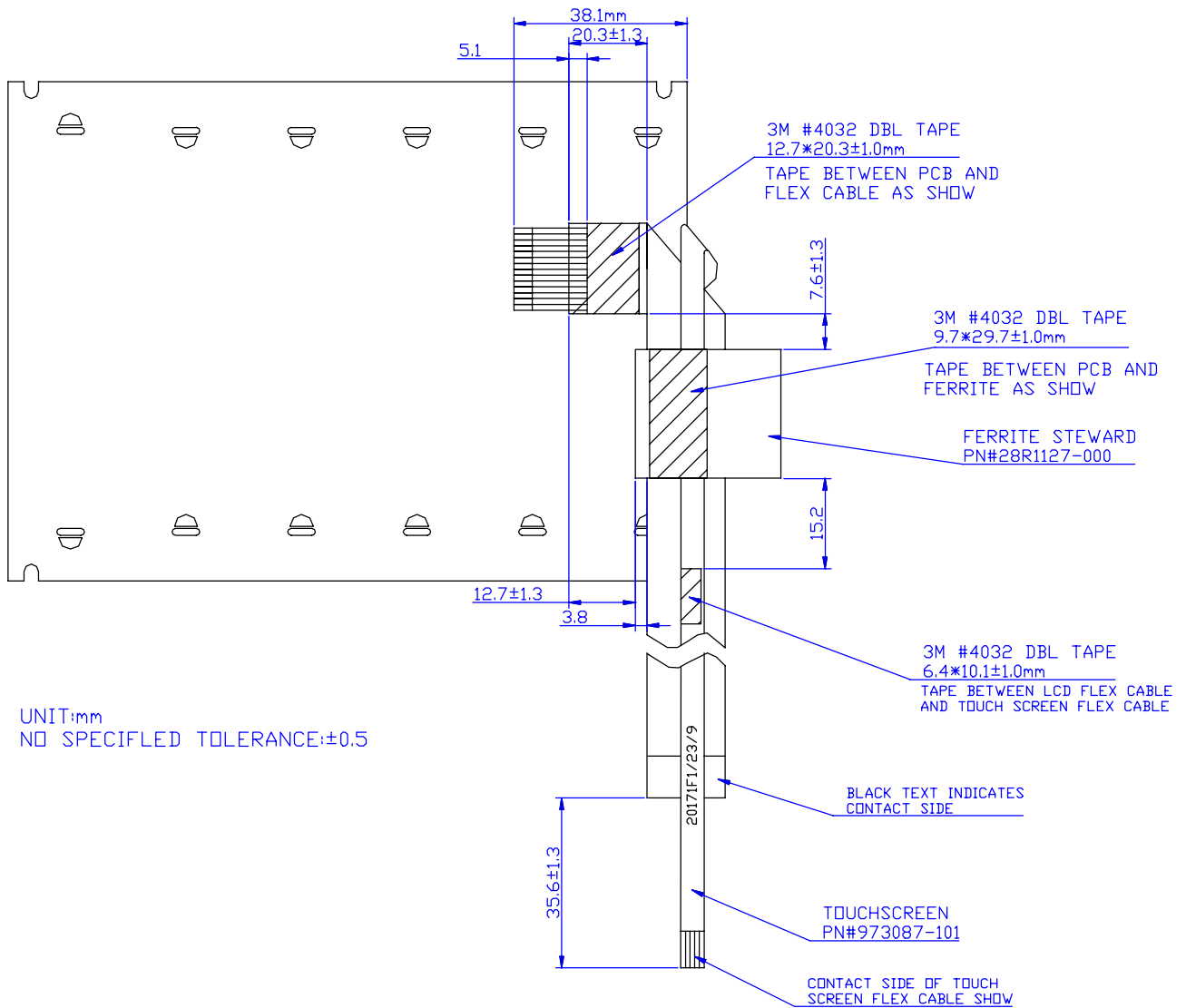
9. OUT LINE DIMENSION (TOP VIEW)



UNIT : mm

NO SPECIFIED TOLERANCE : ± 0.3

9-1. OUTLINE DIMENSION (BOTTOM VIEW)

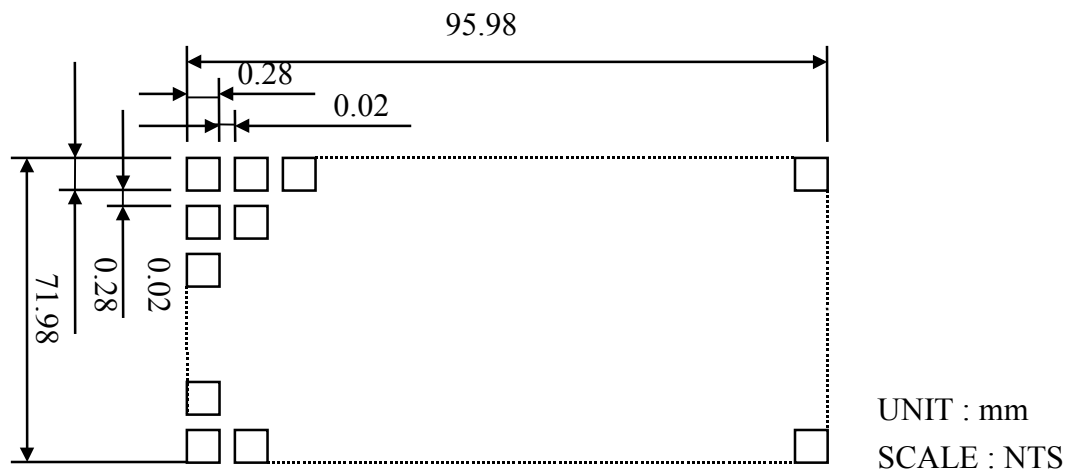


UNIT:mm
NO SPECIFIED TOLERANCE:±0.5

9.2 INTERFACE PIN CONNECTION

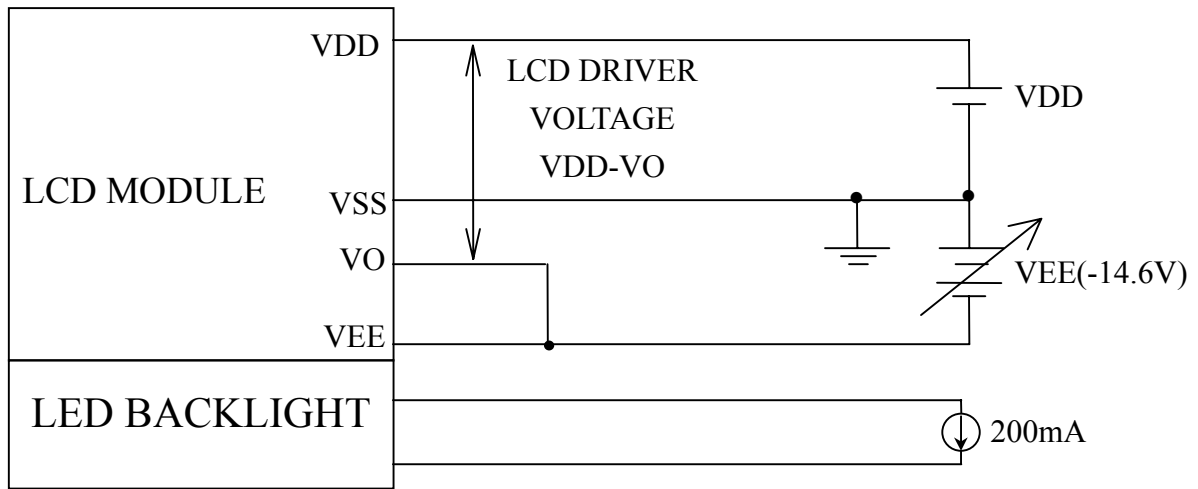
INTERFACE PIN CONNECTION			
PIN NO.	SYMBOL	LEVEL	FUNCTION
1	FLM	H/L	FRAME SIGNAL
2	CL1	H → L	DATA LATCH SIGNAL
3	CL2	H → L	DATA SHIFT CLOCK SIGNAL
4	NC	-----	NC
5	VO	-----	POWER SUPPLY FOR LCD CONTROL
6	VDD	-----	POWER SUPPLY FOR LOGIC CIRCUIT
7	VSS	-----	GROUND
8	VEE	-----	POWER SUPPLY FOR LCD DRIVING
9	DO	H/L	DISPLAY DATA
10	D1	H/L	
11	D2	H/L	
12	D3	H/L	
13	$\overline{\text{DISPOFF}}$	H/L	H : DISPLAY ON L : DISPLAY OFF
14	V _{LED+}	-----	POWER SUPPLY FOR LED(ANODE)
15	V _{LED-}	-----	POWER SUPPLY FOR LED(CATHOD)

9.2 DISPLAY PATTERN

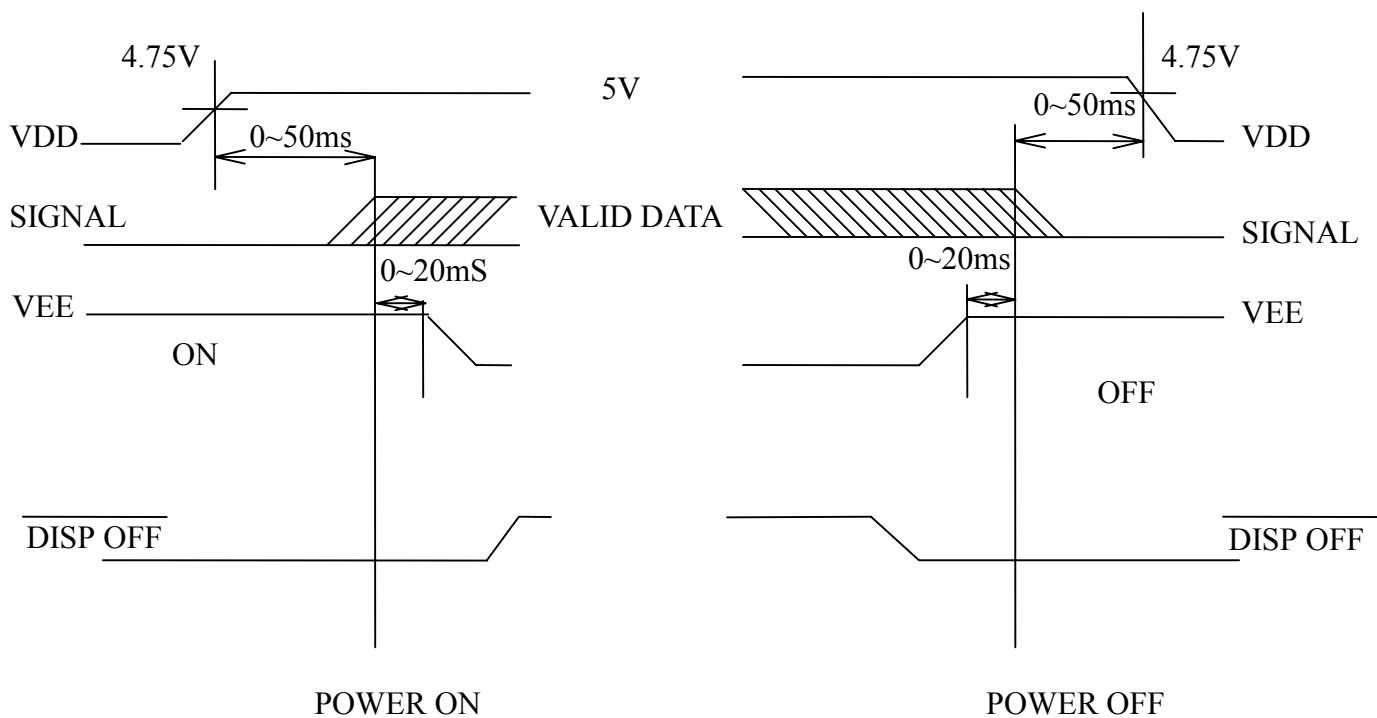


10. POWER SUPPLY FOR LCD MODULE

10.1 POWER SUPPLY FOR LCM



10.2 POWER AND INTERFACE TIMING SEQUENCE



10.4 SUGGEST CONTROLLER

