SOLOMON

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PART NO : LM7811FBL
FOR MESSRS : Overland Data

CONTENTS

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) VIEWIHG 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℃	50℃	-20℃	60℃	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℃ : 48HR MAX.
60℃ : 168HR MAX.

NOTE(3) : Ta ≦ 40℃ : 85% RH MAX.
Ta ＞ 40℃ : ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF85%RH AT 40℃. (50%RH AT 50°C)

5. ELECTRICAL CHARACTERISTICS

VDD = 5.0 ± 0.25V

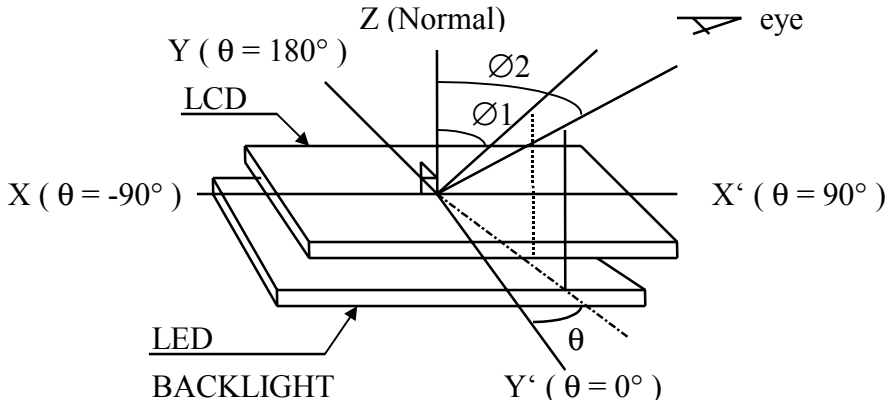
ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
LOGIC CIRCUIT POWER SUPPLY VOLTAGE	VDD-VSS	----------	4.75	5.0	5.25	V
LCD DRIVER CIRCUIT POWER SUPPLY VOLTAGE	VEE-VSS	----------	-11.0	--------	-24.0	V
INPUT VOLTAGE NOTE (1)	VIH	H LEVEL	V_{GND}	--------	0.2*VDD	V
	VIL	L LEVEL	0.8*VDD	--------	VDD	V
LOGIC CIRCUIT 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° DUIT = 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

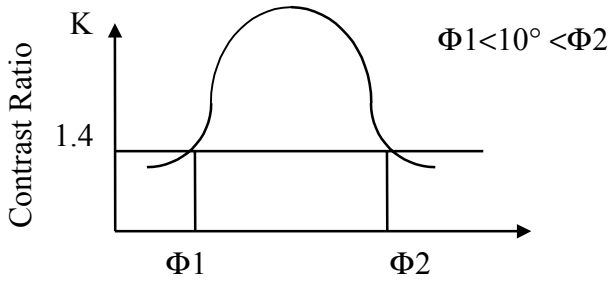
Ta = 25°C VDD = 5.0±10%

I T E M	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING ANGLE	Φ2-Φ1	K≧ 1.4	-------	(40)	-------	deg.	1,2
CONTRAST RATIO	k	Φ = 10° θ = 0°	(10)	------	-------	------	3
RESPONSE TIME	tr (rise)	Φ = 10° θ = 0°	------	250	400	ms	4
	tf (fall)	Φ = 10° θ = 0°	------	350	450	ms	4
THE BRIGHTNESS OF BRIGHTNESS SOURCE	B	DOTS ON Φ = 10° θ = 0°	------	24	------	cd/m^2	5
		DOTS OFF Φ = 10° θ = 0°	------	1.6	------	cd/m^2	5

NOTE (1) : DEFINITION OF θ AND Φ



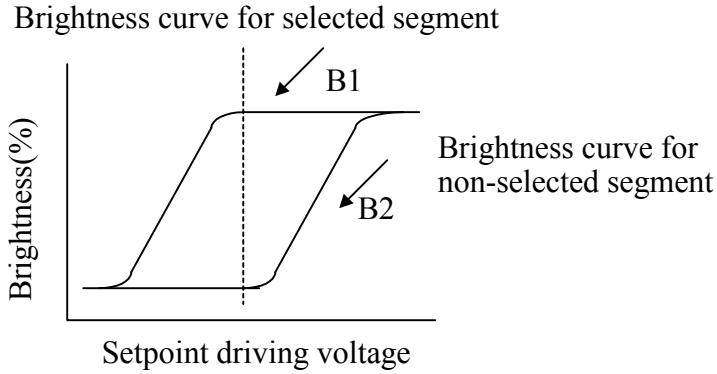
NOTE (2) : DEFINITION OF VIEWING ANGLE Φ1 AND Φ2



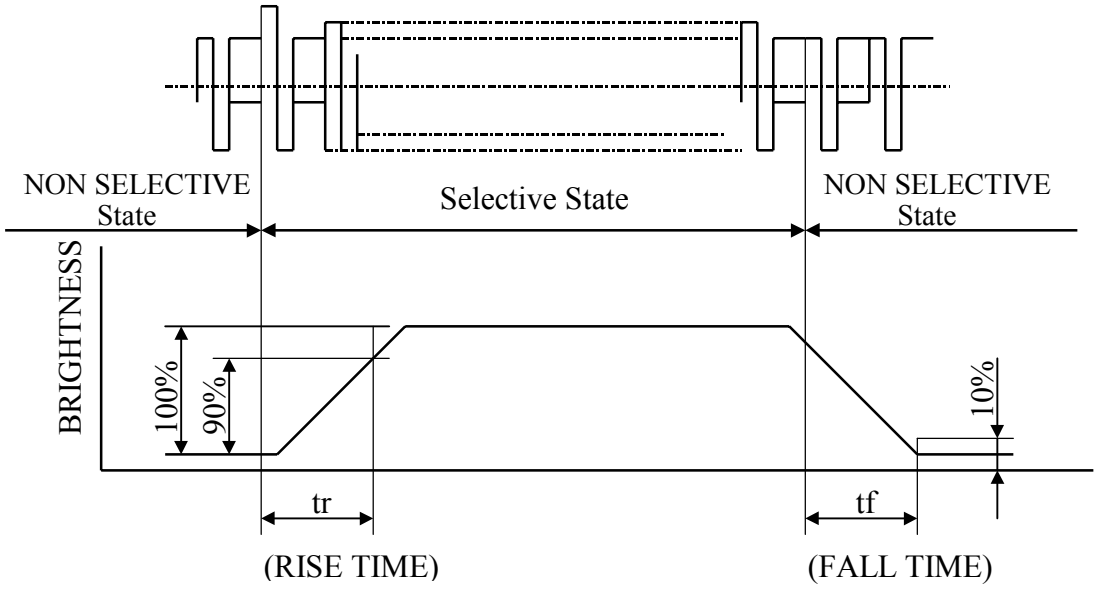
Viewing Angle

NOTE (3) : DEFINITION OF CONTRAST"K"

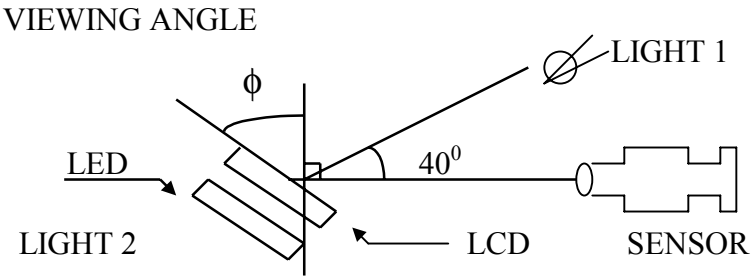
$$K = \frac{\text{Brightness of selected segment(B1)}}{\text{Brightness of non-selected segment (B2)}}$$



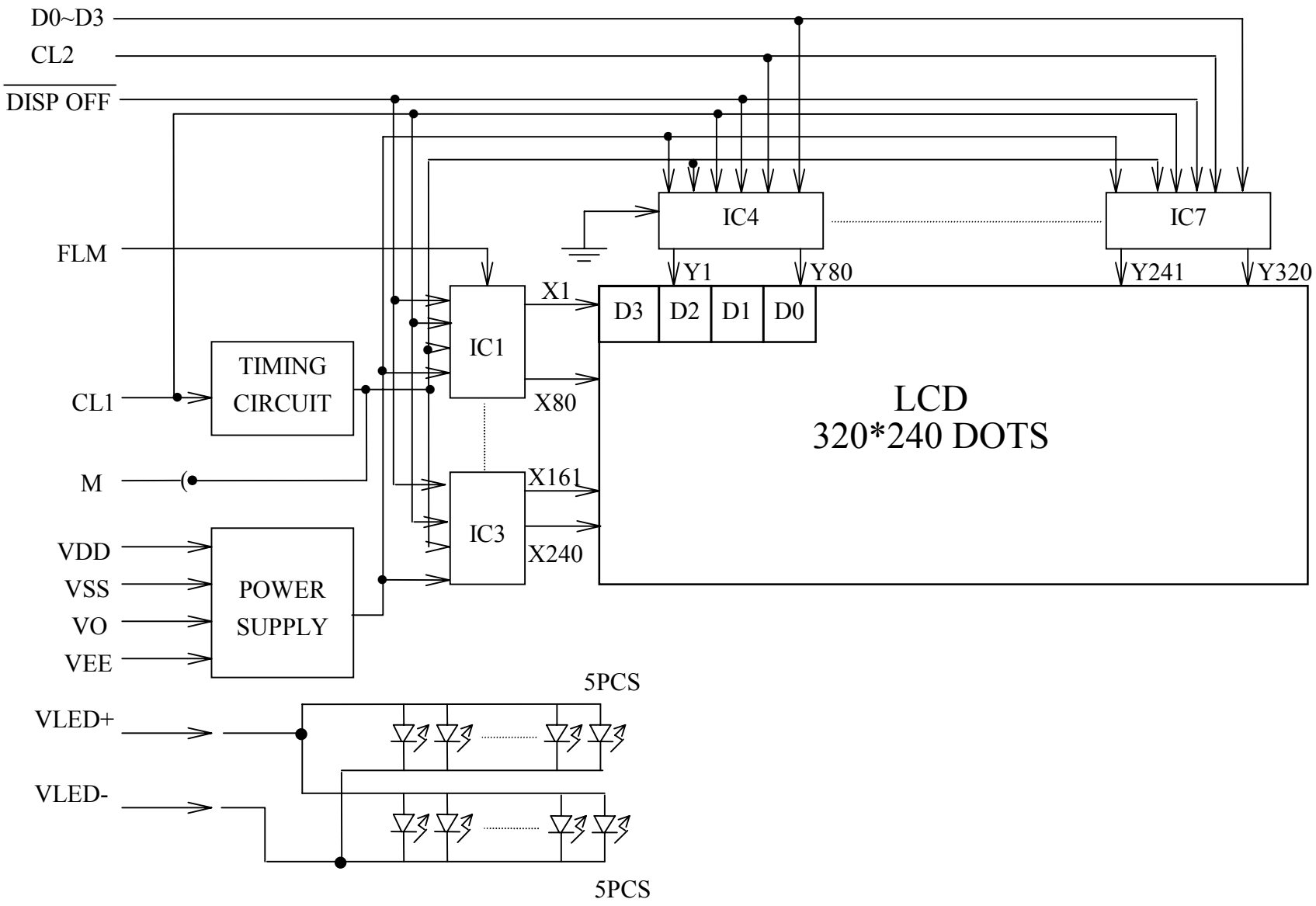
NOTE(4) : DEFINITION OF OPTICAL RESPONSE



NOTE(5) : OPTICAL OF LIGHT

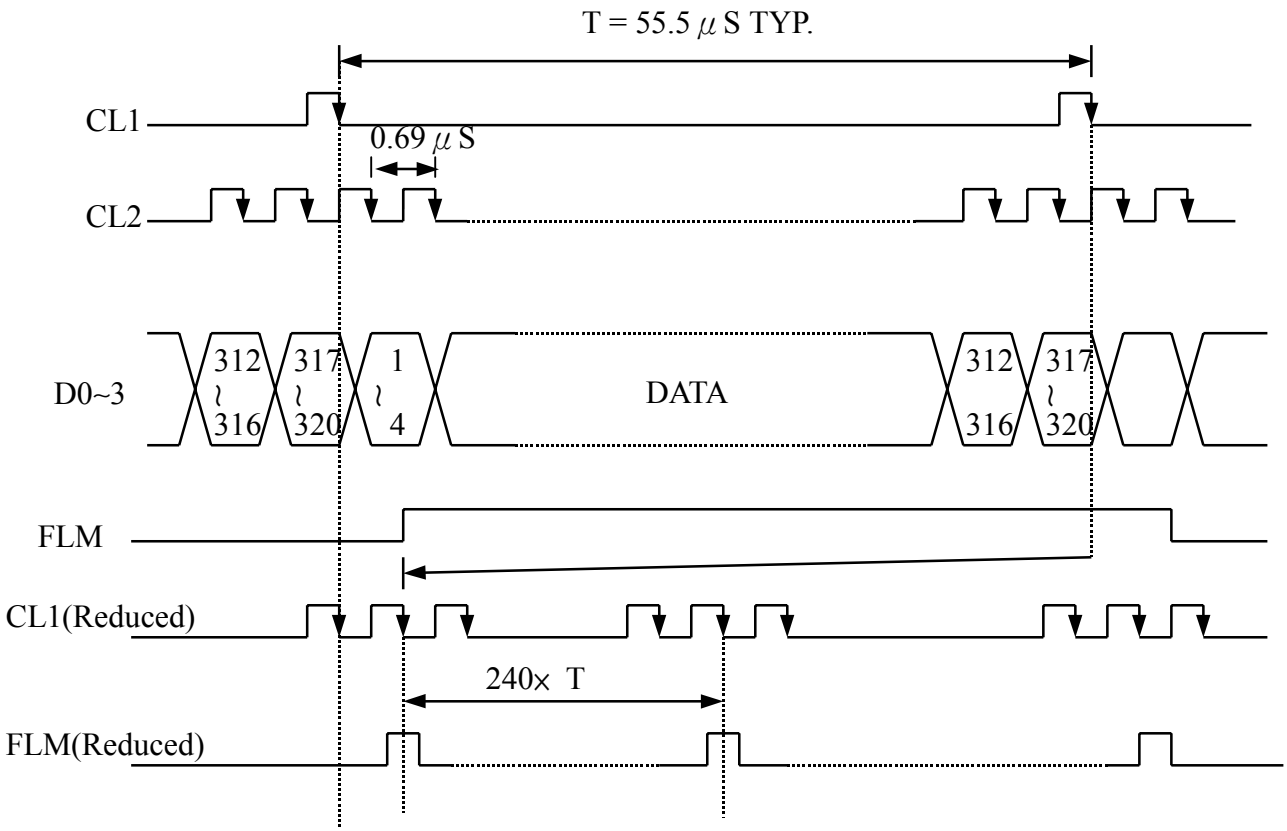


7.BLOCK DIAGRAM



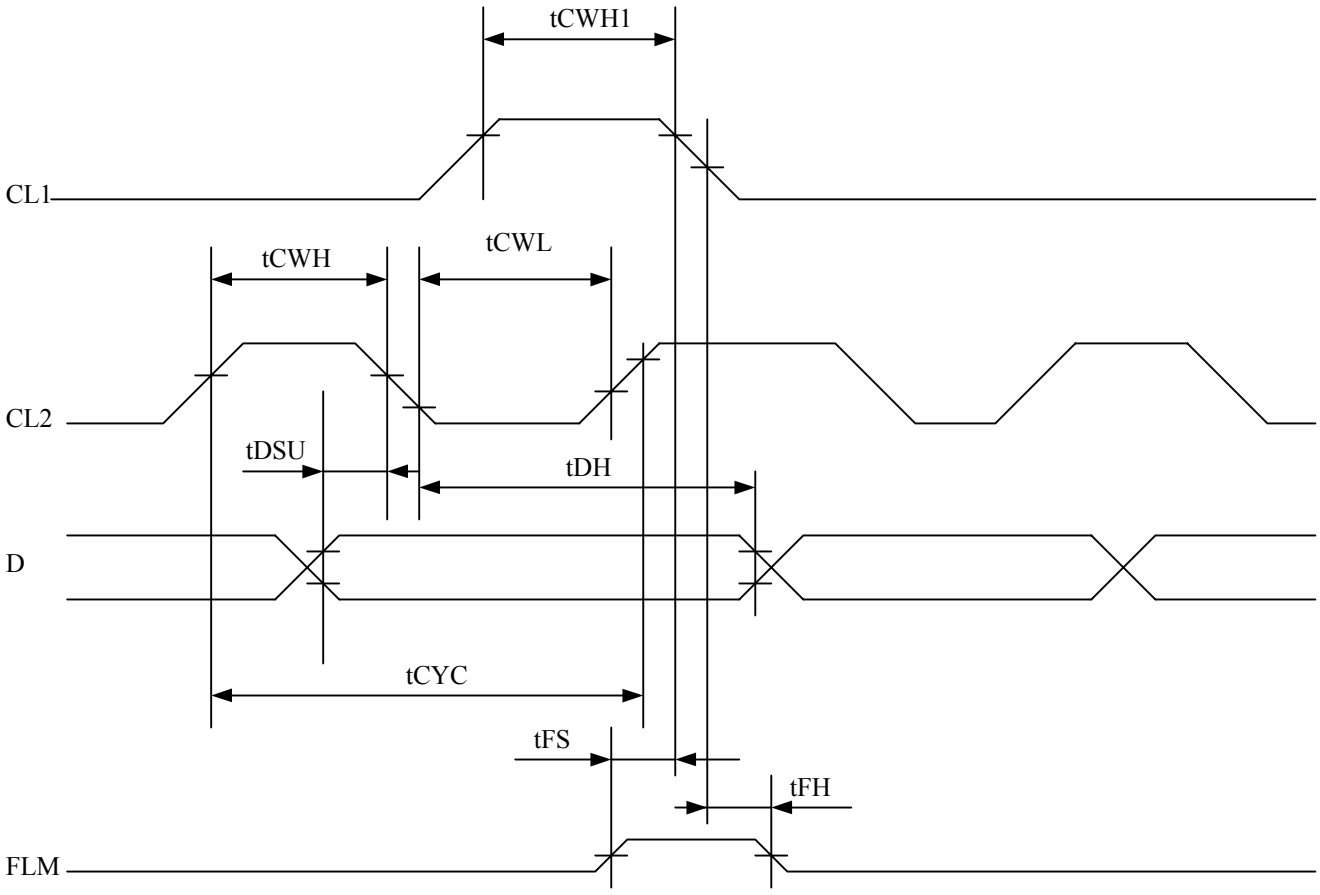
8. TIMING CHARACTERISTICS

8.1 INTERFACE TIMING.

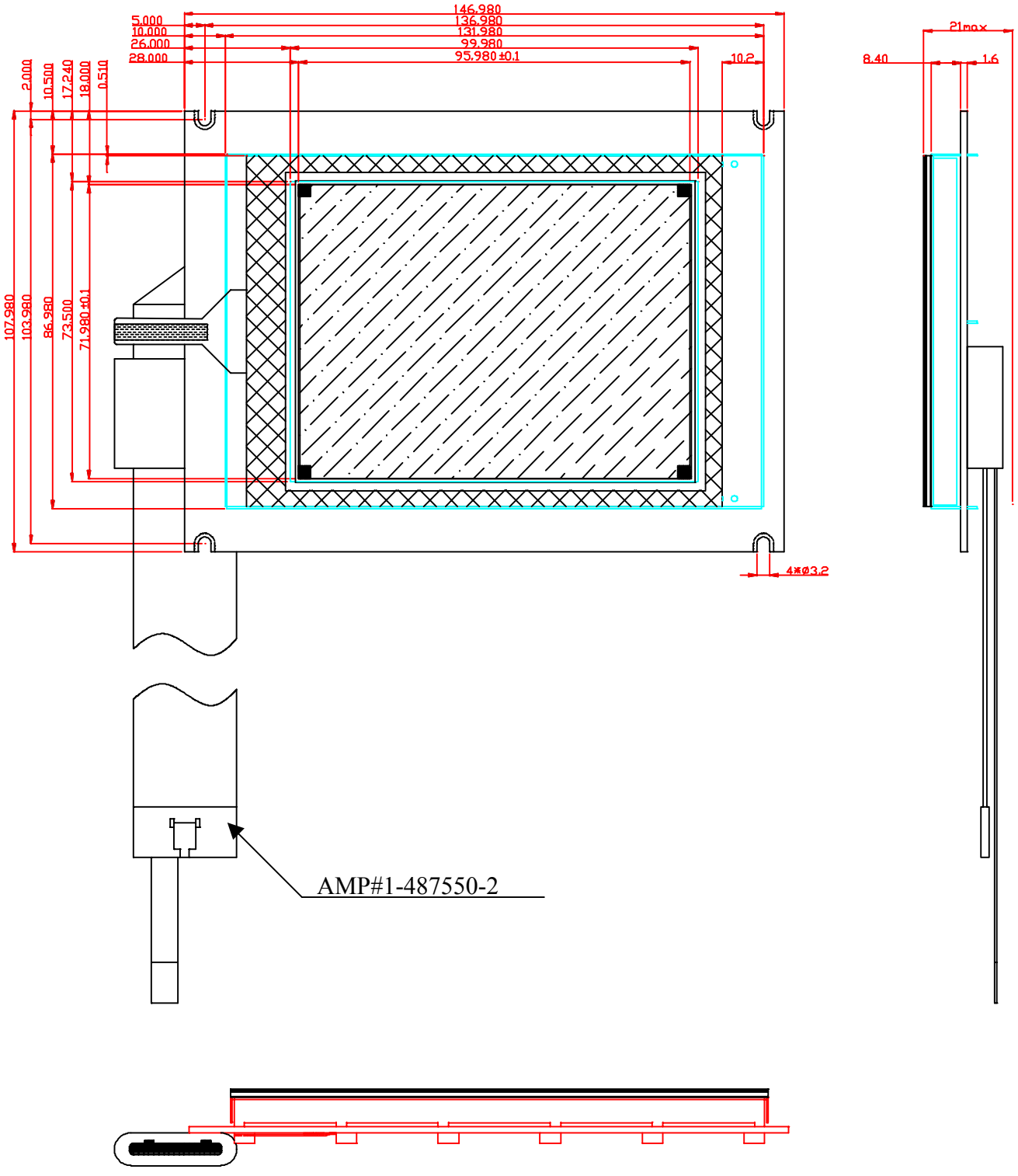


8.2 INTERFACE TIMING

I T E N	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
CL1pulse 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



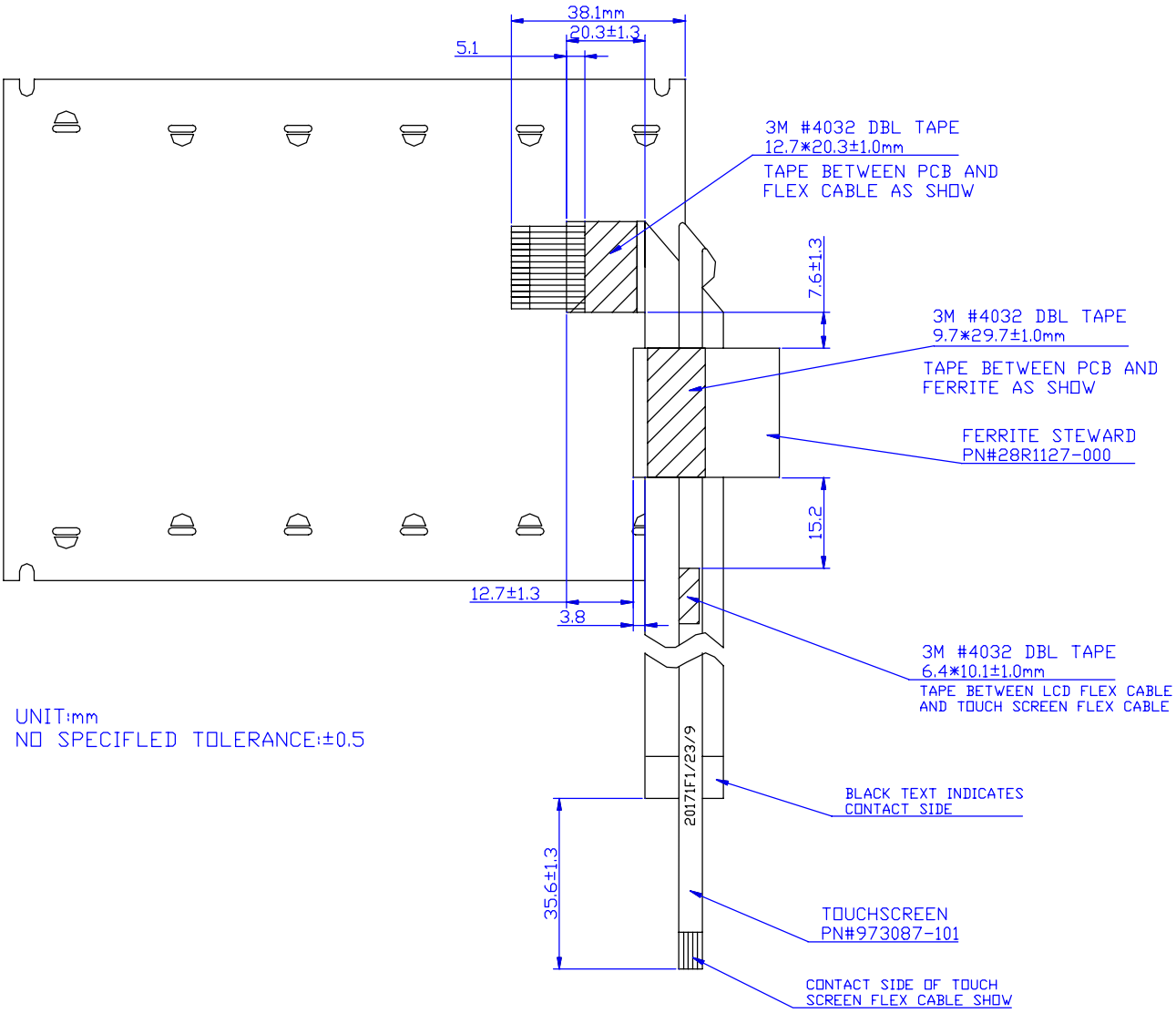
9. OUT LINE DIMENSION (TOP VIEW)



UNIT : mm

NO SPECIFLED TOLERANCE : ± 0.3

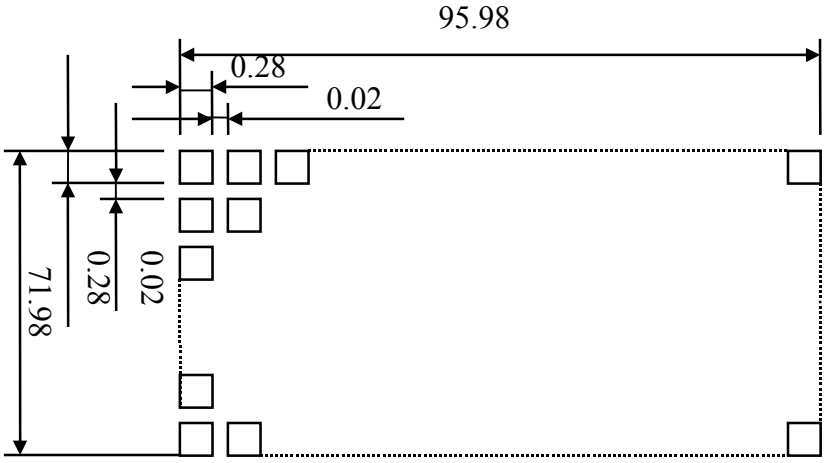
9-1. OUTLINE DIMENSION (BOTTOM VIEW)



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)

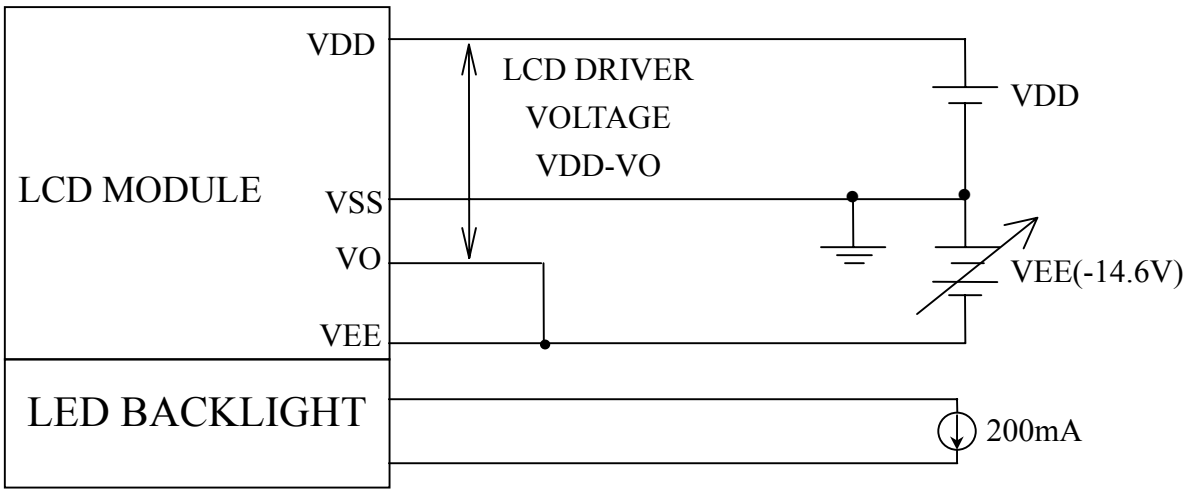
9.2 DISPLAY PATTERN



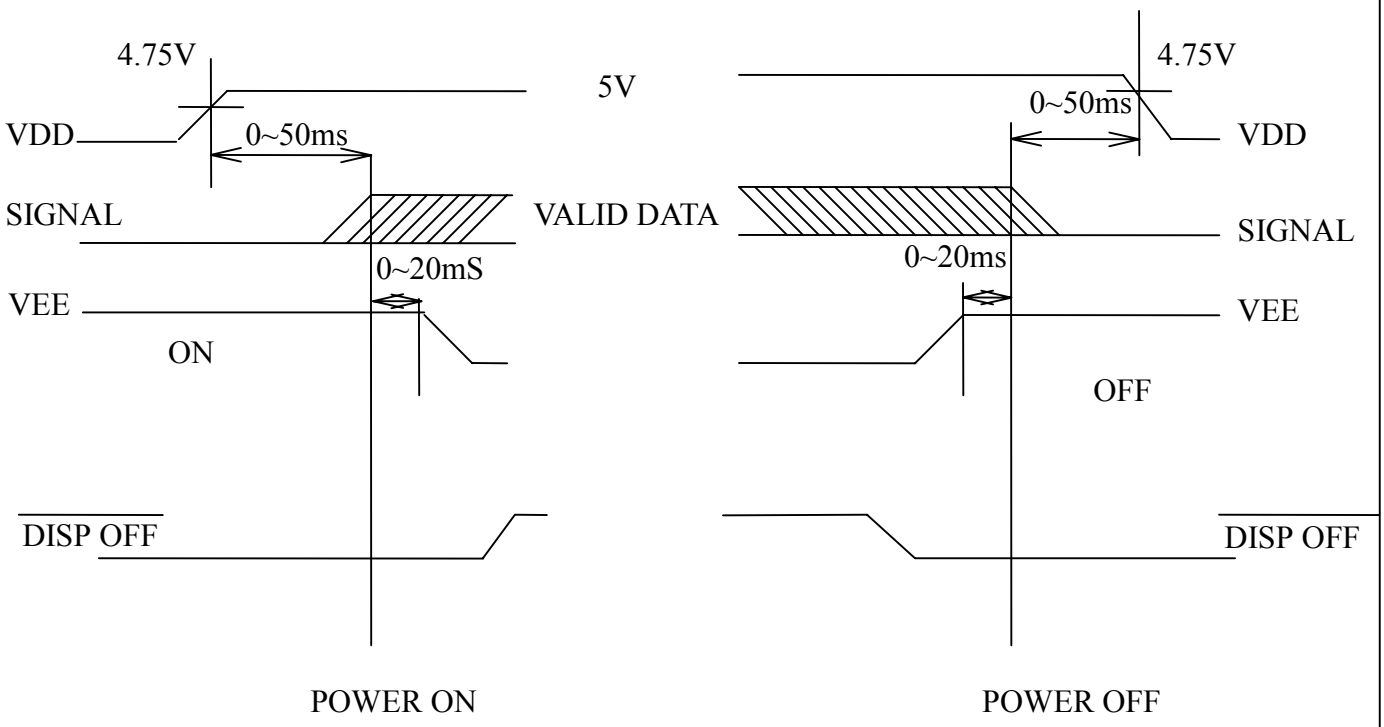
UNIT : mm
SCALE : NTS

10. POWER SUPPLY FOR LCD MODULE

10.1 POWER SUPPLY FOR LCM



10.2POWER AND INTERFACE TIMING SEQUENCE



10.4 SUGGEST CONTROLLER