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The LCD(M) Specialist

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PART NO. : PMG1203D-SYR

FOR MESSRS. : _____

CONTENTS

ACCEPTED BY : _____ PROPOSED BY : _____

龐誼科技 91.12.10 發行

RECORD OF REVISION

DATE	PAGE	SUMMARY

3. General specifications

3.1 General specifications

PLEASE REFER TO:

"CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-1520S)".

3.2 This individual specification is prior to general specifications

4. Mechanical data

(1) NUMBER OF DOTS ---------- 122 W * 32 H DOTS

(2) MODULE SIZE ---------- 68.0 W * 31.75 H * 8 .0 T (max) mm

(3) EFFECTIVE AREA ---------- 57.2 W * 17.7 H mm

(4) ACTIVE AREA ---------- 52.42 W * 13.72 H mm

(5) DOT SIZE ---------- 0.39 W * 0.39 Hmm

(6) DOT PITCH ---------- 0.43 W * 0.43 H mm

(7) VIEWING DIRECTION ---------- 6 O'CLOCK

(8) LCD TYPE ---------- STN,YELLOW-GREEN, REFLECTIVE

(9) LED COLOR ---------- YELLOW-GREEN

5. Absolute maximum ratings

5.1 Electrical absolute maximum ratings

I T E M	SYMBOL	MIN.	MAX.	UNIT	COMMENT
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)

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

5.2 Environmental absolute maximum ratings

I T E M	OPERATING		STORAGE		COMMENT
	MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	0°C	50°C	-20°C	70°C	-------
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 ≦ 50°C: 90% RH MAX.

Ta ＞ 50°C: ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 90% RH AT 50°C. (80% RH AT 60 °C)

NOTE (3): 1G = 9.8 m/s^2

6. Electrical characteristics

Ta = 25°C V_{DD} = 5.0±0.25 V

I T E M	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
POWER SUPPLY VOLTAGE FOR CIRCUIT	V_{DD}-V_{SS}	-------	4.75	5.0	5.25	V
INPUT VOLTAGE NOTE (1)	V_{IH}	H LEVEL	Vss+2.0	-------	V_{DD}	V
	V_{IL}	L LEVEL	0	-------	Vss+0.8	
POWER SUPPLY CURRENT, NOTE (2)	I_{DD}	V_{DD}-V_{SS} = 5.0V	-------	1.5	2.0	mA
LCD DISPLAY DUTY RATIO	DUTY	-------	-------	1/32	-------	-------
CLOCK OSCILLATION FREQUENCY	f_{OSC}	FOR LCD MODULE	15	18	21	KHz
RECOMMENDED LCD DRIVING VOLTAGE, NOTE (3)	V_{DD}-V_O Φ=10° θ = 0°	Ta = 50°C	-------	4.1	-------	V
		Ta = 25°C	-------	4.5	-------	V
		Ta = 0°C	-------	4.9	-------	V

NOTE (1): APPLIED TO TERMINALS DB0~DB7

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

NOTE (3): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT±0.5V EACH MODULE.

7. Optical characteristics

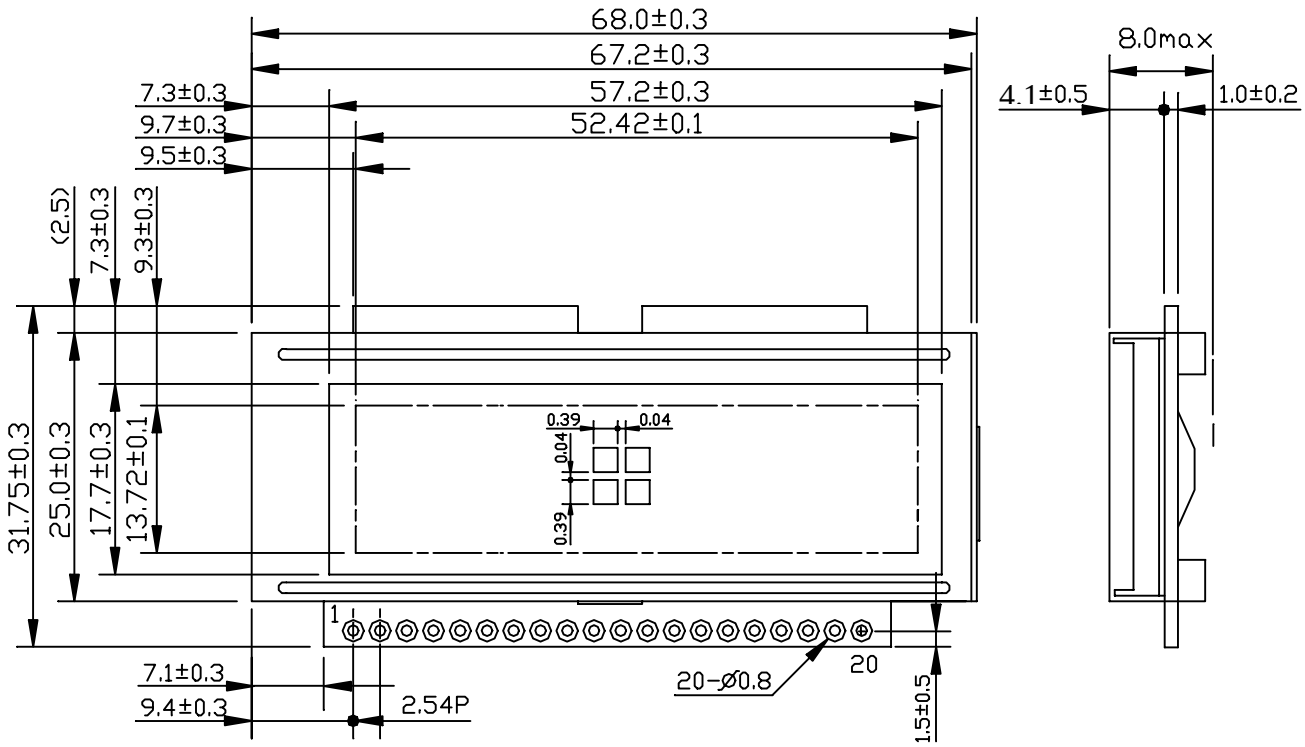
Ta = 25°C V_{DD} = 5.0V

I T E M	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING ANGLE	Φ2-Φ1	K = 2.0	30	40	-------	deg.	1
CONTRAST RATIO	K	Φ = 10° θ = 0°	3	4	-------	-------	1
RESPONSE TIME	tr (rise)	Φ = 10° θ = 0°	-------	200	350	ms	1
	tf (fall)	Φ = 10° θ = 0°	-------	300	400	ms	1

(*UNDER NORMAL TEMPERATURE AND HUMIDITY IN A DARK ROOM)

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

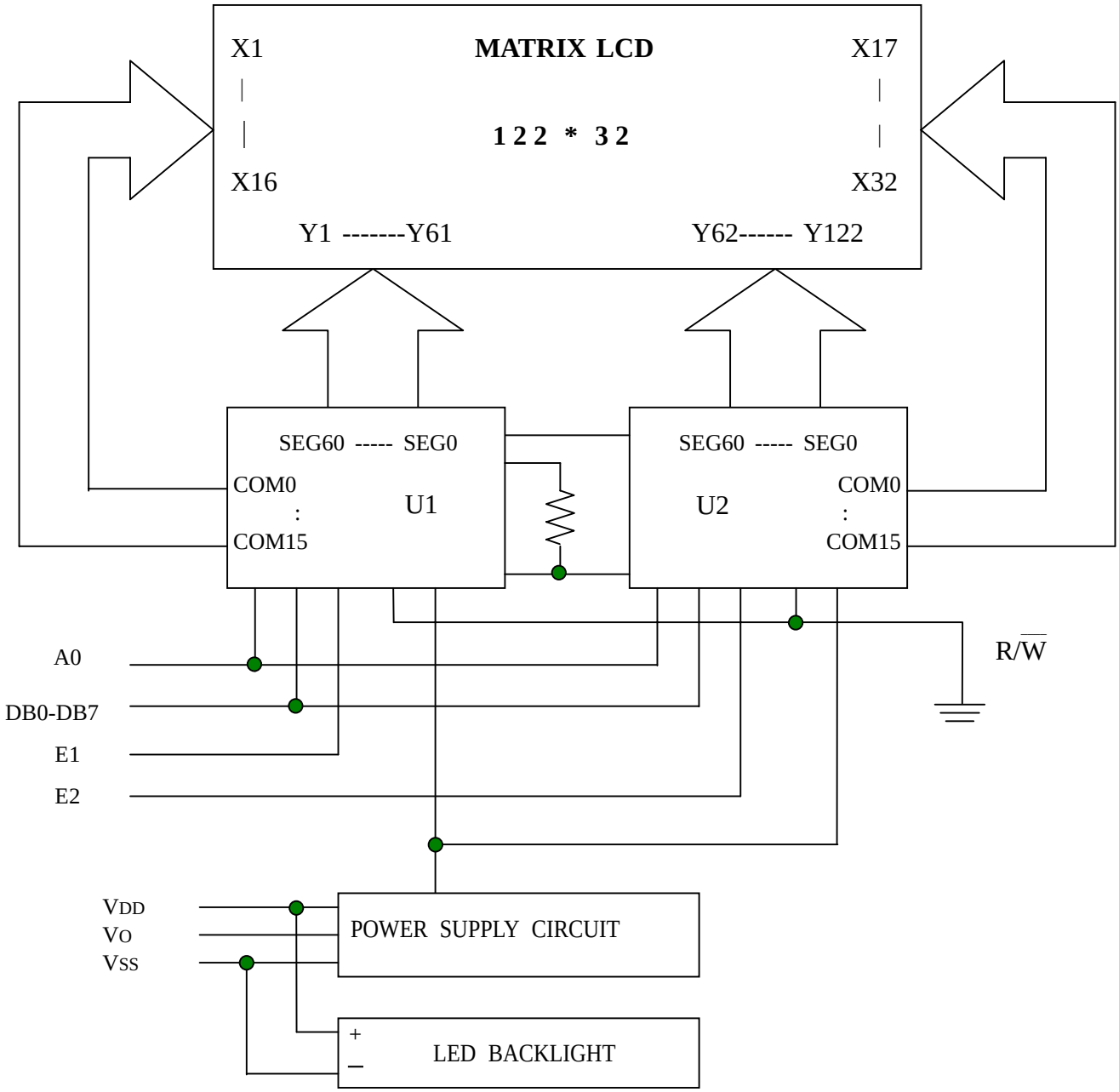
8. Dimension outline



Interface pin connection

PIN NO.	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***
SYMBOL	V_{SS}	V_{DD}	V_O	NC	A0	E1	E2	DB0	DB1	NC
PIN NO.	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***
SYMBOL	NC	DB2	DB3	DB4	DB5	DB6	DB7	NC	NC	NC

9. Block diagram



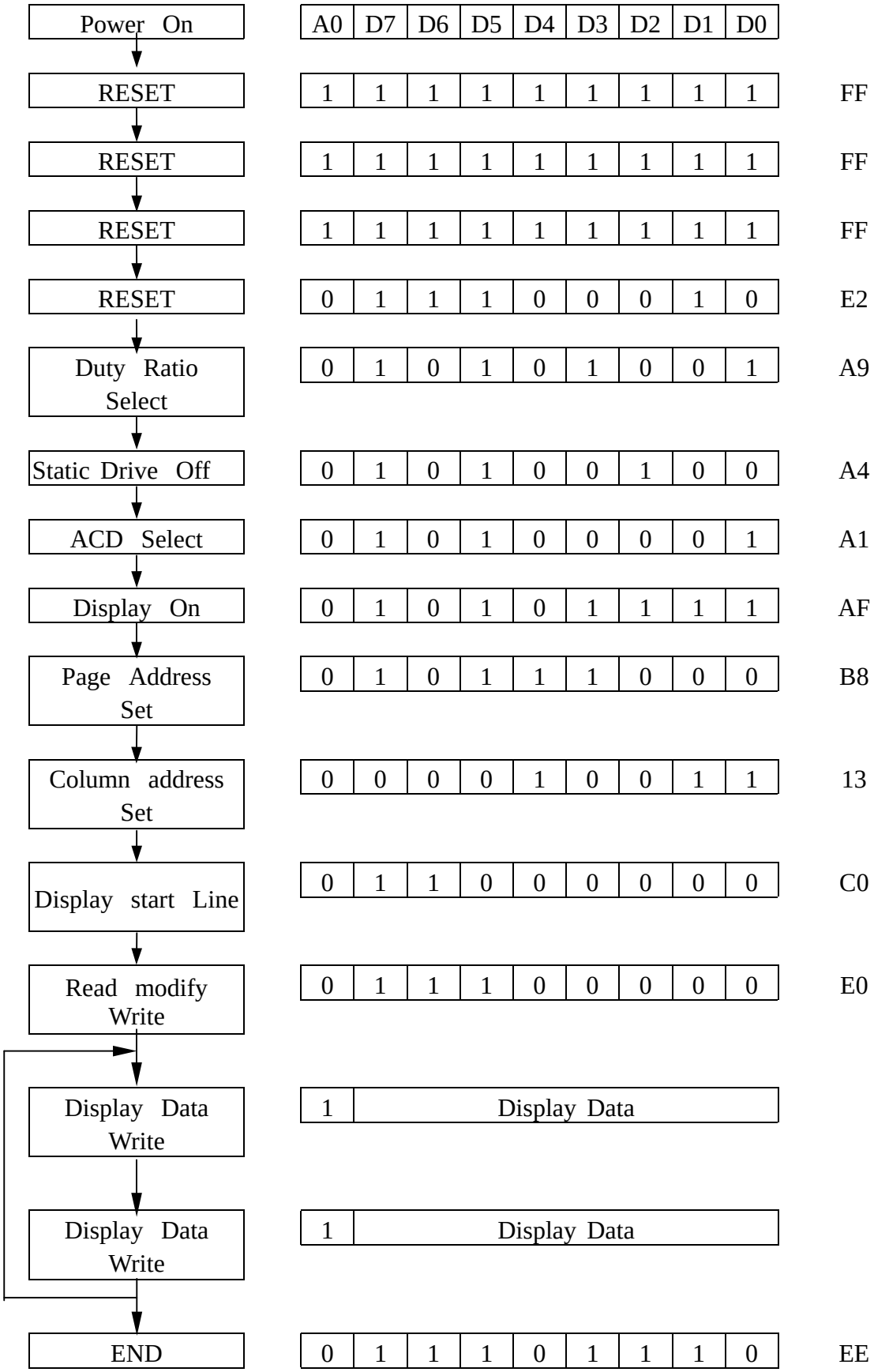
10. Display data RAM

Page Address D1,D2=	DATA	Display Pattern	Line Address
0, 0	D0		00H
	D1		01
	D2		02
	D3	0 Page	03
	D4		04
	D5		05
	D6		06
	D7		07
0, 1	D0		08
	D1		09
	D2		0A
	D3	1 Page	0B
	D4		0C
	D5		0D
	D6		0E
	D7		0F
1, 0	D0		10
	D1		11
	D2		12
	D3	2 Page	13
	D4		14
	D5		15
	D6		16
	D7		17
1, 1	D0		18
	D1		19
	D2		1A
	D3	3 Page	1B
	D4		1C
	D5		1D
	D6		1E
	D7		1F

Column Address	ADC										
		DO=0	3C	3B	3A	39	38	37	36	35	◄----------	00	
		DO=1	13	14	15	16	17	18	19	1A	----------►	4F	normal ◄
Segment Term.			60	59	58	57	56	55	54	53	----------	0	

Fig.1. Correspondence with Display Data RAM and address

11. Initialization by instructions



	A0	D7	D6	D5	D4	D3	D2	D1	D0	
Power On										
RESET	1	1	1	1	1	1	1	1	1	FF
RESET	1	1	1	1	1	1	1	1	1	FF
RESET	1	1	1	1	1	1	1	1	1	FF
RESET	0	1	1	1	0	0	0	1	0	E2
Duty Ratio Select	0	1	0	1	0	1	0	0	1	A9
Static Drive Off	0	1	0	1	0	0	1	0	0	A4
ACD Select	0	1	0	1	0	0	0	0	1	A1
Display On	0	1	0	1	0	1	1	1	1	AF
Page Address Set	0	1	0	1	1	1	0	0	0	B8
Column address Set	0	0	0	0	1	0	0	1	1	13
Display start Line	0	1	1	0	0	0	0	0	0	C0
Read modify Write	0	1	1	1	0	0	0	0	0	E0
Display Data Write	1	Display Data								
Display Data Write	1	Display Data								
END	0	1	1	1	0	1	1	1	0	EE

12. Power supply for LCM