EVERBOUQUET INTERNATIONAL CO., LTD.

EVER — CATCHER
GROUP

WE CATCH THE
BEST TECH. FOREVER

PART NO. :   MC1602X-SYR

FOR MESSRS. :

CONTENTS

89.10.25

ACCEPTED BY :   PROPOSED BY :

RECORD OF REVISION

DATE	PAGE	SUMMARY

3. General specifications

3.1 General specifications

PLEASE REFER TO:
"CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-12780)".

3.2 This individual specification is prior to general specifications

4. Mechanical data

(1) NUMBER OF CHARACTERS ----------------- 16 CH * 2 LINE

(2) MODULE SIZE ----------------------------------- 59.0 W * 29.3 H * 4.5 T (Max) mm

(3) EFFECTIVE AREA ------------------------------ 52.0 W * 15.0 H mm

(4) CHARACTER PATTERN ----------------------- 5 * 7 DOTS + CURSOR

(5) CHARACTER SIZE ------------------------------ 2.45 W * 4.08 H mm

(6) CHARACTER PITCH --------------------------- 2.95 mm

(7) DOT SIZE -- 0.45 W * 0.54 H mm

(8) DOT PITCH -- 0.50 W * 0.59 H mm

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

(10) LCD TYPE --------------------------------------- STN.YELLOW-GREEN.REFLECTIVE.

	MC1602X-SYR-1	PAGE: 3/7

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℃	50℃	-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 $\leqq$ 50℃: 85% RH MAX.

Ta $>$ 50℃: ABSOLUTE HUMIDITY MUST BE LOWER THAN THE
HUMIDITY OF 85% RH AT 50℃. (50% RH AT 60℃)

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

MC1602X-SYR-1 PAGE: 4/7

6. Electrical characteristics

Ta = 25℃   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	V_{IH}	--------		2.2	--------	--------	V
	V_{IL}	--------		--------	--------	0.6	V
OUTPUT VOLTAGE	V_{OH}	$-I_{OH} = 0.2$ mA		2.4	--------	--------	V
	V_{OL}	$I_{OL} = 1.2$ mA		--------	--------	0.4	V
POWER SUPPLY CURRENT	I_{DD}	$V_{DD} = 5.0V$		--------	1.5	2.0	mA
RECOMMENDED LCD DRIVING VOLTAGE	$V_{DD}-V_{O}$	DUTY= 1/16 Φ=10°	Ta= 0℃	--------	4.9	--------	V
			Ta=25℃	--------	4.5	--------	V
			Ta=50℃	--------	4.1	--------	V

NOTE (1): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT

± 0.5V BY EACH MODULE.

7. Optical characteristics

Ta = 25℃   V_{DD} = 5.0V

I T E M	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT.	NOTE
VIEWING ANGLE	$\Phi2-\Phi1$	K = 2.0	30	40	--------	deg.	2
CONTRAST RATIO	K	$\Phi = 10°$ $\theta = 0°$	3	4	--------	--------	2
RESPONSE TIME	tr (rise)	$\Phi = 10°$ $\theta = 0°$	--------	200	350	ms	2
	tf (fall)	$\Phi = 10°$ $\theta = 0°$	--------	300	400	ms	2

NOTE (2): SEE CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR
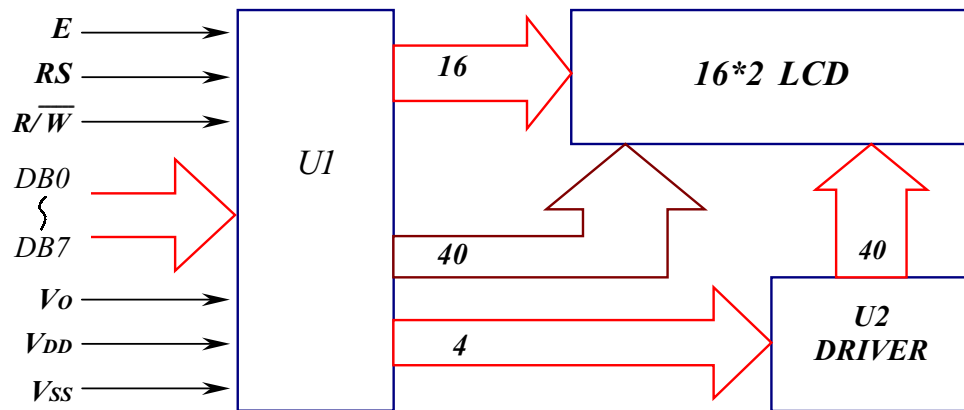
DEFINITION OF OPTICAL CHARACTERISTICS.

MC1602X-SYR-1   PAGE: 5/7

8. Outline dimension
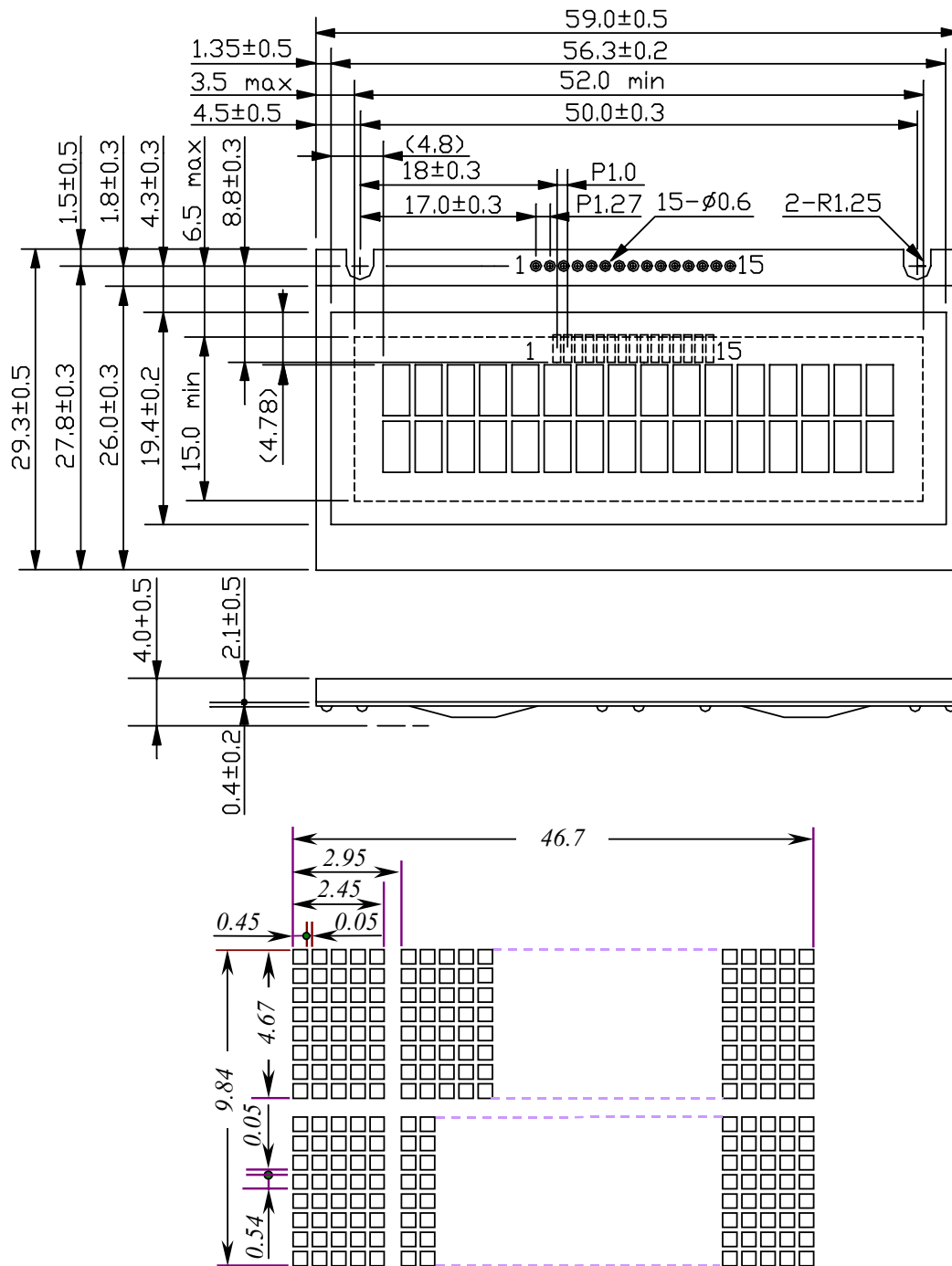
Interface pin connection

PIN NO.	1	2	3	4	5	6	7	8
SYMBOL	N.C	V_{SS}	V_{DD}	V_O	RS	$R/\overline{W}$	E	DB0
PIN NO.	9	10	11	12	13	14	15	
SYMBOL	DB1	DB2	DB3	DB4	DB5	DB6	DB7	

MC1602X-SYR-1   PAGE: 6/7

9. Block diagram

Display data address charts

Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE 1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
LINE 2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF

10. Power supply for LCM
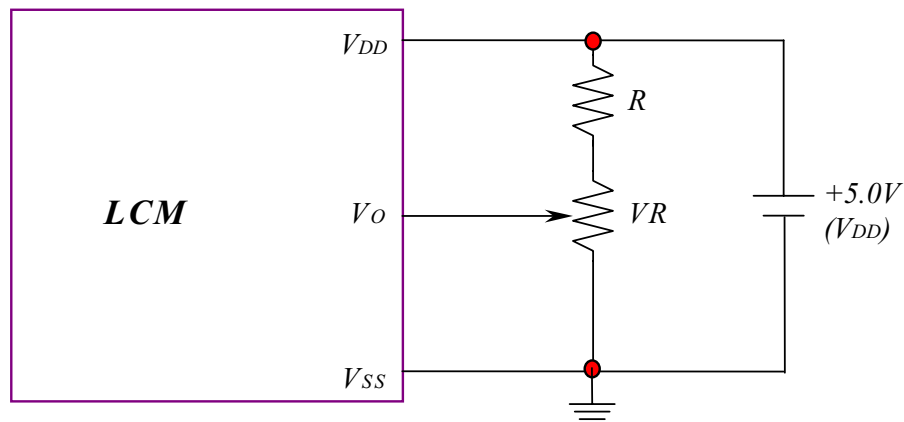
RECOMMENDED RESISTOR R: $V_{DD} - V_O \geqq 1.5V$

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

VR: $10K\Omega \sim 20K\Omega$

MC1602X-SYR-1   PAGE: 7/7