



ALL SHORE INDUSTRIES, INC.

SPECIFICATION FOR LIQUID CRYSTAL DISPLAY MODULE

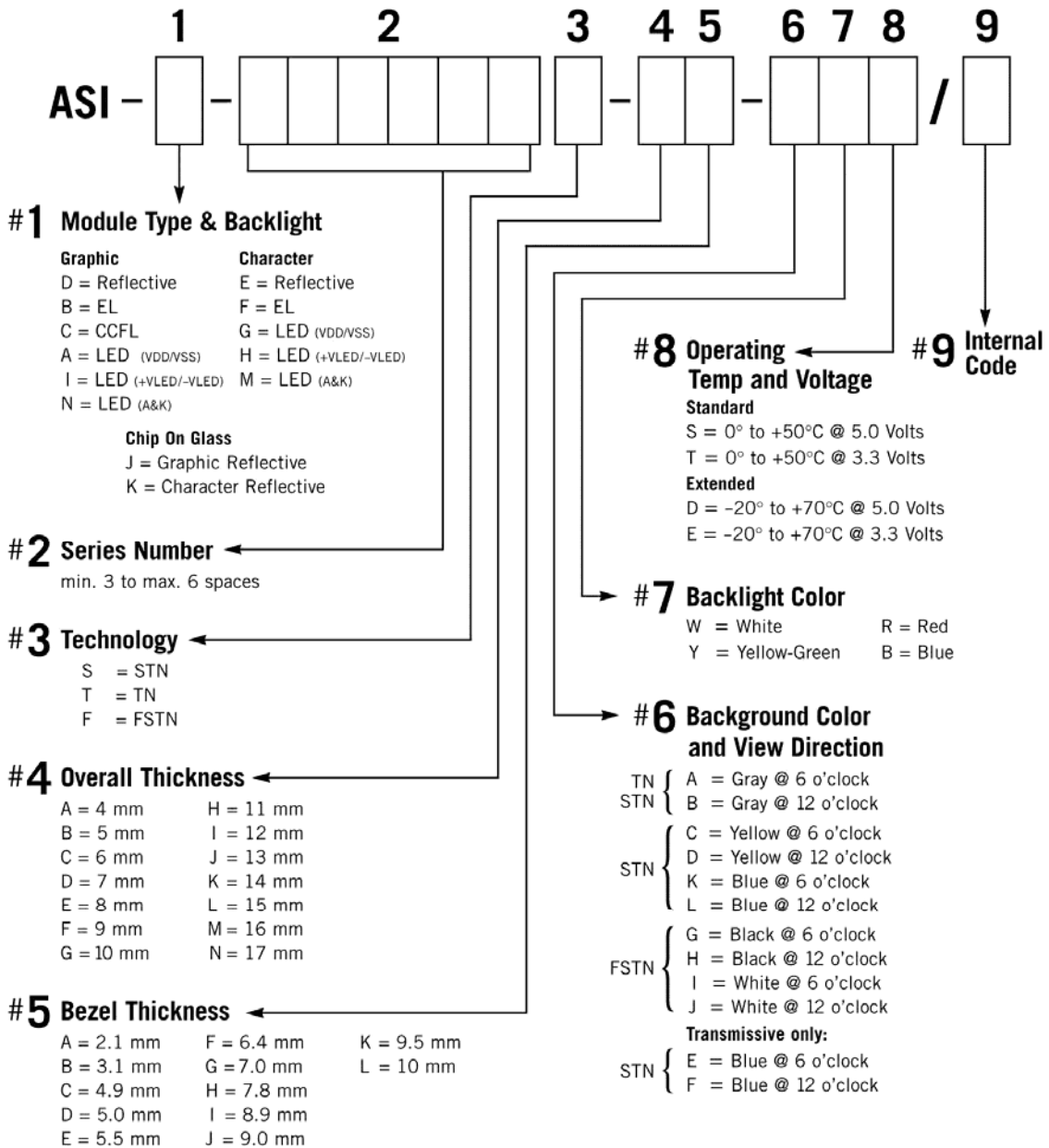
MODULE # : ASI-D-1223AS-EN-_S/W

- (1) NUMBER OF DOTS-----122 W * 32 H DOTS
- (2) MODULE SIZE -----68.0 W * 31.75 H * "C" 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 H mm
- (6) DOT PITCH-----0.43 W * 0.43 H mm



MODEL NO : ASI-D-1223AS-EN-_S/W

LCD MODULE PART NUMBERING SYSTEM



NOTE: Some options may not be available in specific modules. Please contact your Sales Representative to check availability.



MODEL NO : ASI-D-1223AS-EN-_S/W

1. GENERAL SPECIFICATIONS

1.1 GENERAL SPECIFICATIONS

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

AS - 10-1000

1.2 APPLICATION NOTES FOR CONTROLLER / DRIVER : SED1520

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

AS-SED1520D0A

1.3 THIS INDIVIDUAL SPECIFICATIONS IS PRIOR TO GENERAL SPECIFICATIONS .

2. MECHANICAL SPECIFICATIONS

- (1) NUMBER OF DOTS -----122 W * 32 H DOTS
- (2) MODULE SIZE -----68.0 W * 31.75 H * "C" 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 H mm
- (6) DOT PITCH-----0.43 W * 0.43 H mm



MODEL NO : ASI-D-1223AS-EN-_S/W

3. ABSOLUTE MAXIMUM RATINGS

3.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS (AT Ta = 25°C)

<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 LED	V _{DD} - K(-)	-----	6.0	V	-----

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

3.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS.

<i>I T E M</i>	<i>CONDITION</i>	<i>OPERATING</i>		<i>STORAGE</i>		<i>COMMENT</i>
		<i>MIN.</i>	<i>MAX.</i>	<i>MIN.</i>	<i>MAX.</i>	
AMBIENT TEMPERATURE	NORMAL	0°C	50°C	-20°C	70°C	-----
	WIDE	-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/s²



MODEL NO : ASI-D-1223AS-EN-_S/W

4. ELECTRICAL CHARACTERISTICS

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>	
POWER SUPPLY VOLTAGE FOR CIRCUIT	V _{DD} -V _{SS}	-----	4.75	5.0	5.25	V	
INPUT VOLTAGE NOTE (2)	V _{IH}	H LEVEL	2.0	-----	V _{DD}	V	
	V _{IL}	L LEVEL	0	-----	0.8		
OUTPUT VOLTAGE NOTE (1)	V _{OH}	I _{OH} = -3.0 mA	2.4	-----	-----	V	
	V _{OL}	I _{OL} = 3.0 mA	-----	-----	0.4	V	
POWER SUPPLY CURRENT, NOTE (3)	I _{DD}	V _{DD} -V _{SS} = 5.0V	-----	1.5	2.0	mA	
RECOMMENDED LCD DRIVING VOLTAGE, NOTE (4)	V _{DD} -V _O	STN/ FSTN DUTY =1/32 Φ=10° NOTE(5)	Ta=-20°C	-----	5.0	-----	V
		Ta= 0°C	-----	4.8	-----	V	
		Ta= 25°C	-----	4.6	-----	V	
		Ta= 50°C	-----	4.4	-----	V	
		Ta= 70°C	-----	4.2	-----	V	
POWER SUPPLY CURRENT FOR LED	I _{LED}	V _{DD} -K(-)=5.0V	-----	NOTE(3)	NOTE(3)	mA	

NOTE (1): APPLIED TO TERMINALS DB0~DB7

NOTE (2): APPLIED TO TERMINALS E, A0, DB0~DB7

NOTE (3): THE DISPLAY PATTERN IS ALL "ON", OR ALL "OFF"

NOTE (4): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT ±0.5V EACH MODULE.NOTE

(5): $\theta = 0^\circ$: VIEWING DIRECTION AT 6 O'CLOCK

$\theta = 180^\circ$: VIEWING DIRECTION AT 12 O'CLOCK

(6): LED CURRENT FOR DIFFERENT LED BACKLIGHT TYPE

<i>V_{DD}-K(-)</i>	<i>I_{LED}</i>				<i>LED COLOR</i>
	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT.</i>	
5.0V	-----	30	40	mA	BLUE · WHITE · PURE-GREEN



MODEL NO : ASI-D-1223AS-EN-_S/W

5. OPTICAL CHARACTERISTICS

STN TYPE LCD

 $T_a = 25^{\circ}\text{C} \quad V_{DD}-V_O = 4.6\text{V}$

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING ANGLE	$\Phi 2-\Phi 1$	K = 2.0 NOTE(1)	30	40	----	deg.	NOTE(2)
CONTRAST RATIO	K	$\Phi = 10^{\circ}$ NOTE(1)	3.0	4.0	----	----	NOTE(2)
RESPONSE TIME	tr (rise)	$\Phi = 10^{\circ}$ NOTE(1)	----	200	350	ms	NOTE(2)
	tf (fall)	$\Phi = 10^{\circ}$ NOTE(1)	----	300	400	ms	NOTE(2)

FSTN、STN BLUE TYPE LCD

 $T_a = 25^{\circ}\text{C} \quad V_{DD}-V_O = 4.6\text{V}$

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING ANGLE	$\Phi 2-\Phi 1$	K = 2.0 NOTE(1)	30	40	----	deg.	NOTE(2)
CONTRAST RATIO	K	$\Phi = 10^{\circ}$ NOTE(1)	4.0	5.0	----	----	NOTE(2)
RESPONSE TIME	tr (rise)	$\Phi = 10^{\circ}$ NOTE(1)	----	200	350	ms	NOTE(2)
	tf (fall)	$\Phi = 10^{\circ}$ NOTE(1)	----	300	400	ms	NOTE(2)

Brightness for LED backlight

SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	LED TYPE	NOTE
B	$\Phi = 0^{\circ}$ $\theta = 0^{\circ}$	5.0	----	----	cd/m ²	BLUE、WHITE、 PURE-GREEN	NOTE(2) NOTE(3)

NOTE (1): $\theta = 0^{\circ}$: VIEWING DIRECTION AT 6 O'CLOCK

$\theta = 180^{\circ}$: VIEWING DIRECTION AT 12 O'CLOCK

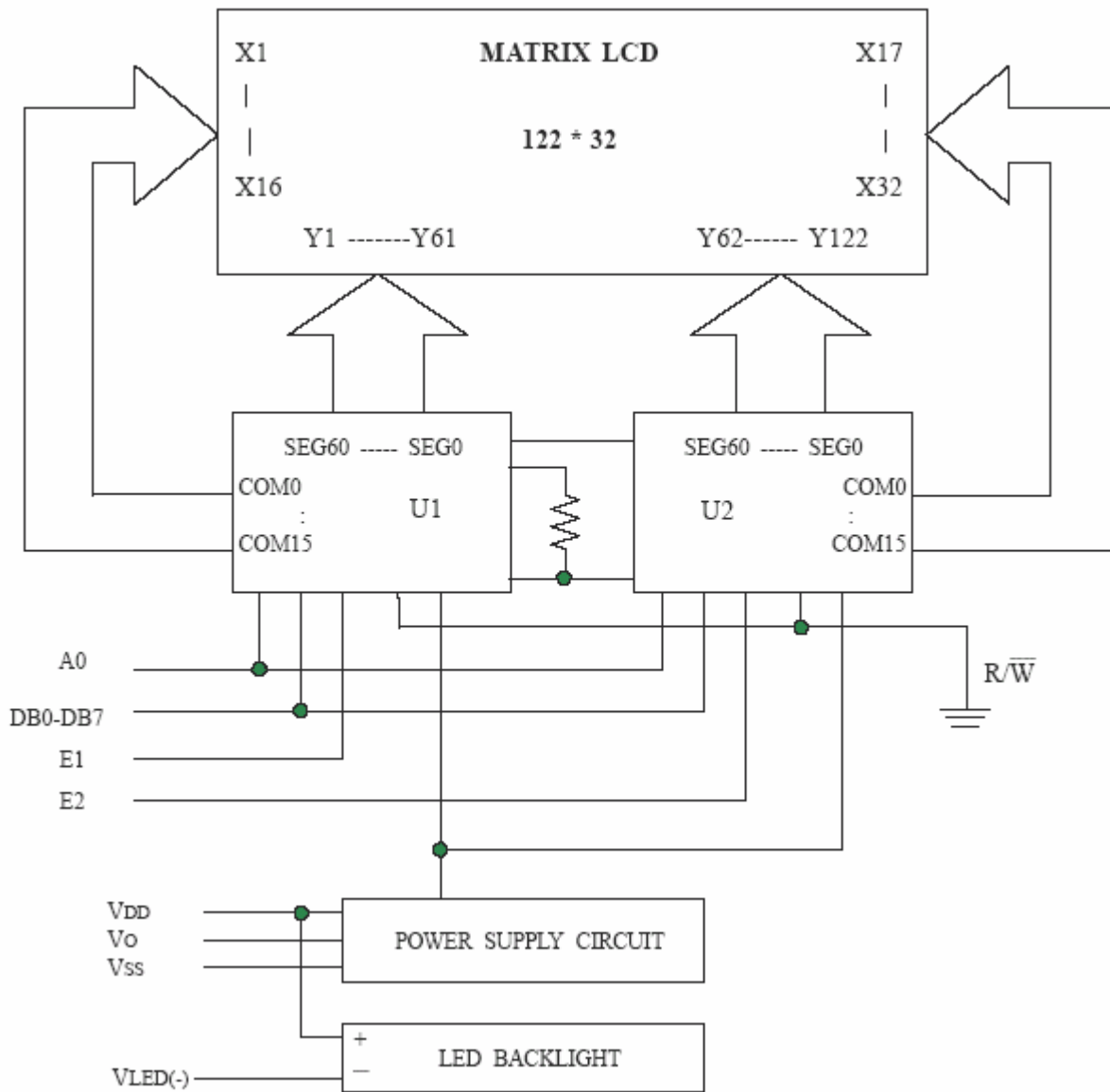
NOTE (2): SEE CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR DEFINITION OF OPTICAL CHARACTERISTICS.

NOTE (3): UNDER NORMAL TEMPERATURE AND HUMIDITY IN A DARK ROOM. DEFINITION OF OPTICAL CHARACTERISTICS.



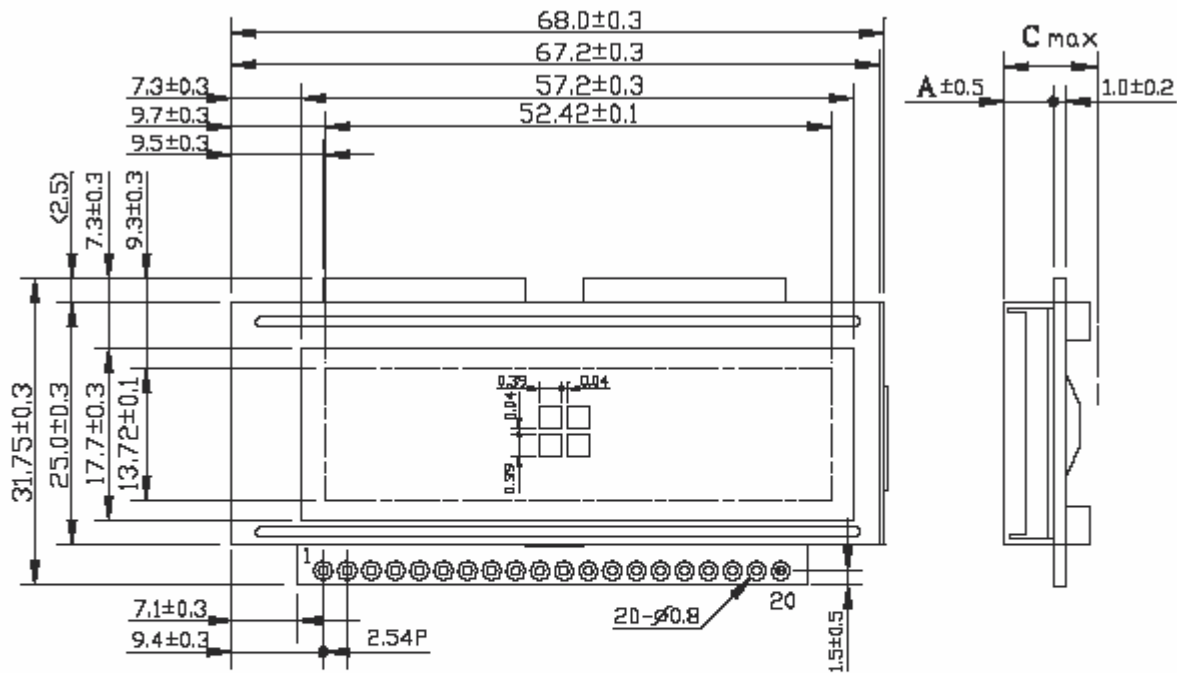
MODEL NO : ASI-D-1223AS-EN-_S/W

6. BLOCK DIAGRAM



MODEL NO : ASI-D-1223AS-EN-_S/W

7. OUTLINE DIMENSION



TYPE	A	C
LED B.L	5.1	10.0
NO B.L	4.1	8.0

NOTE :
 1.UNIT : mm
 2.SCALE : NTS

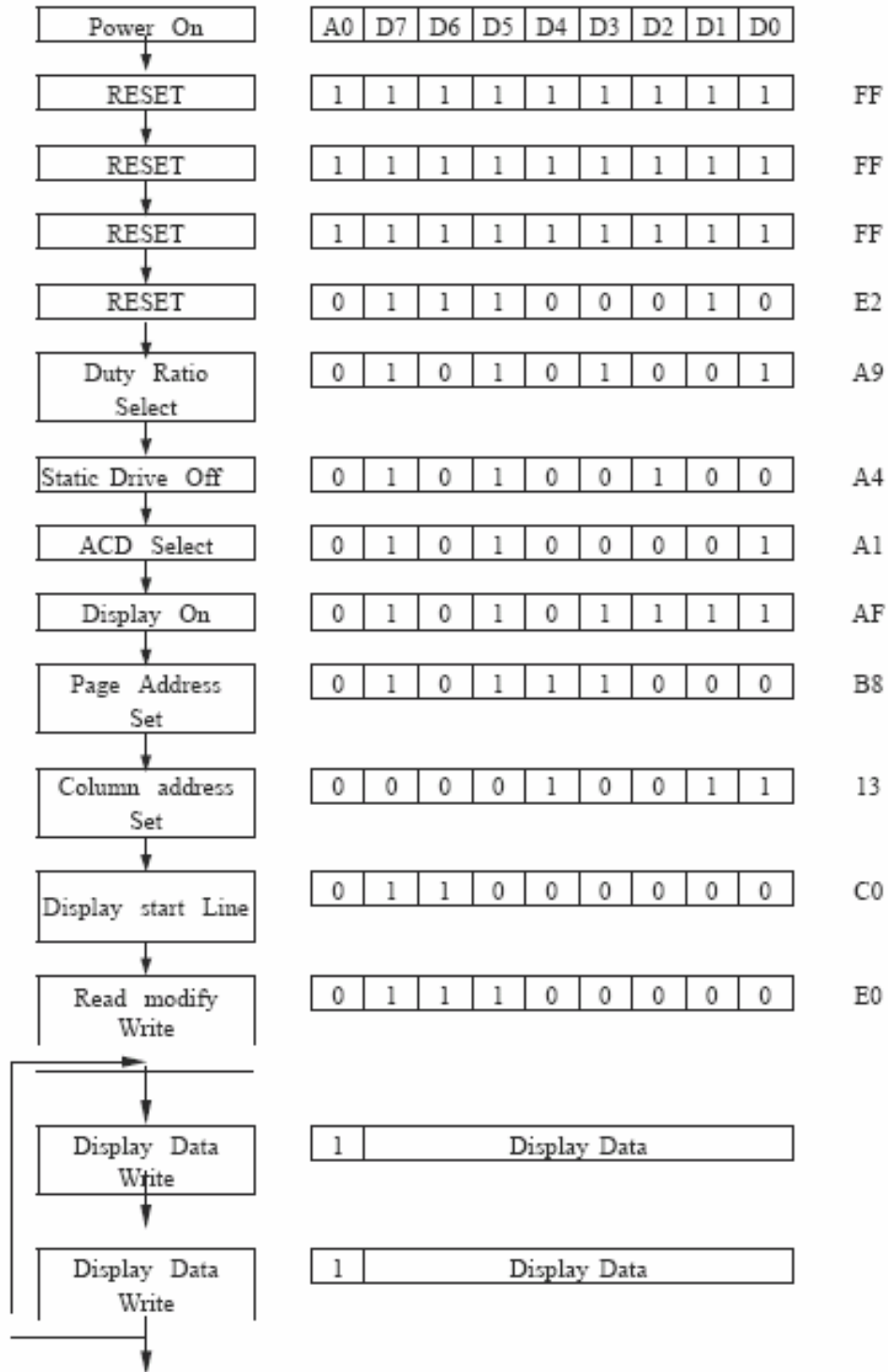
Interface pin connection

<i>PIN NO.</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
SYMBOL	V _{SS}	V _{DD}	V ₀	V _{LED(-)}	A ₀	E ₁	E ₂	DB ₀	DB ₁	NC
<i>PIN NO.</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>14</i>	<i>15</i>	<i>16</i>	<i>17</i>	<i>18</i>	<i>19</i>	<i>20</i>
SYMBOL	NC	DB ₂	DB ₃	DB ₄	DB ₅	DB ₆	DB ₇	NC	NC	NC



MODEL NO : ASI-D-1223AS-EN-_S/W

Initialization by instructions





MODEL NO : ASI-D-1223AS-EN-_S/W

Display data RAM

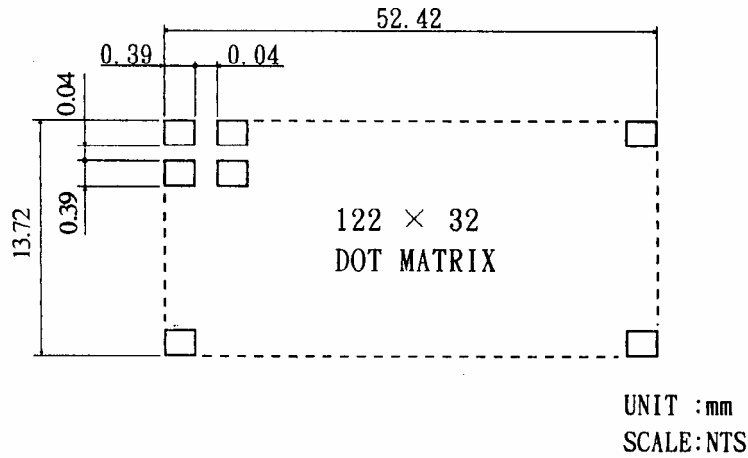
Page Address D1,D2=	DATA	Display Pattern	Line Address
0, 0	D0	██████████	00H
	D1	█ █	01
	D2	█ █	02
	D3	██████████	0 Page
	D4		03
	D5	█ █	04
	D6	██████████	05
	D7		06
0, 1	D0		07
	D1		08
	D2		09
	D3		0A
	D4		1 Page
	D5		0B
	D6		0C
	D7		0D
1, 0	D0		0E
	D1		0F
	D2		10
	D3		11
	D4		12
	D5		2 Page
	D6		13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

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

Fig.1. Correspondence with Display Data RAM and address

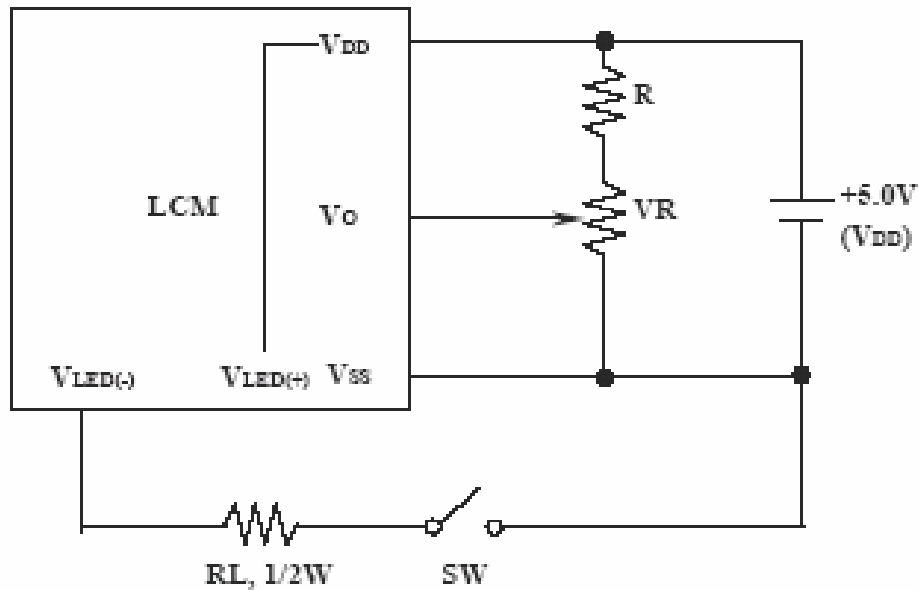
MODEL NO : ASI-D-1223AS-EN-_S/W

8. DETAIL DRAWING OF DOT MATRIX



9. POWER SUPPLY

9.1 POWER SUPPLY FOR LCM



RECOMMENDED RESISTOR R: $V_0 - V_{out} \geq 1.5V$

VDD - V₀: LCD DRIVING VOLTAGE

VR: 10KΩ~ 20KΩ