



ALL SHORE INDUSTRIES, INC.

SPECIFICATION FOR LIQUID CRYSTAL DISPLAY MODULE

MODULE # : ASI-_-1223BS-GE-_WS/W

- (1) NUMBER OF DOTS-----122 W * 32 H DOTS
- (2) MODULE SIZE -----84.0 W * 44.0 H * 10.0 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 H mm
- (6) DOT PITCH-----0.43 W * 0.43 H mm
- (7) VIEWING DIRECTION -----6 O'CLOCK
- (8) LCD TYPE -----FSTN.POSITIVE.TRANSFLECTIVE
- (9) LED BACKLIGHT COLOR-----WHITE



MODEL NO : ASI_-1223BF-GE-_WS/W

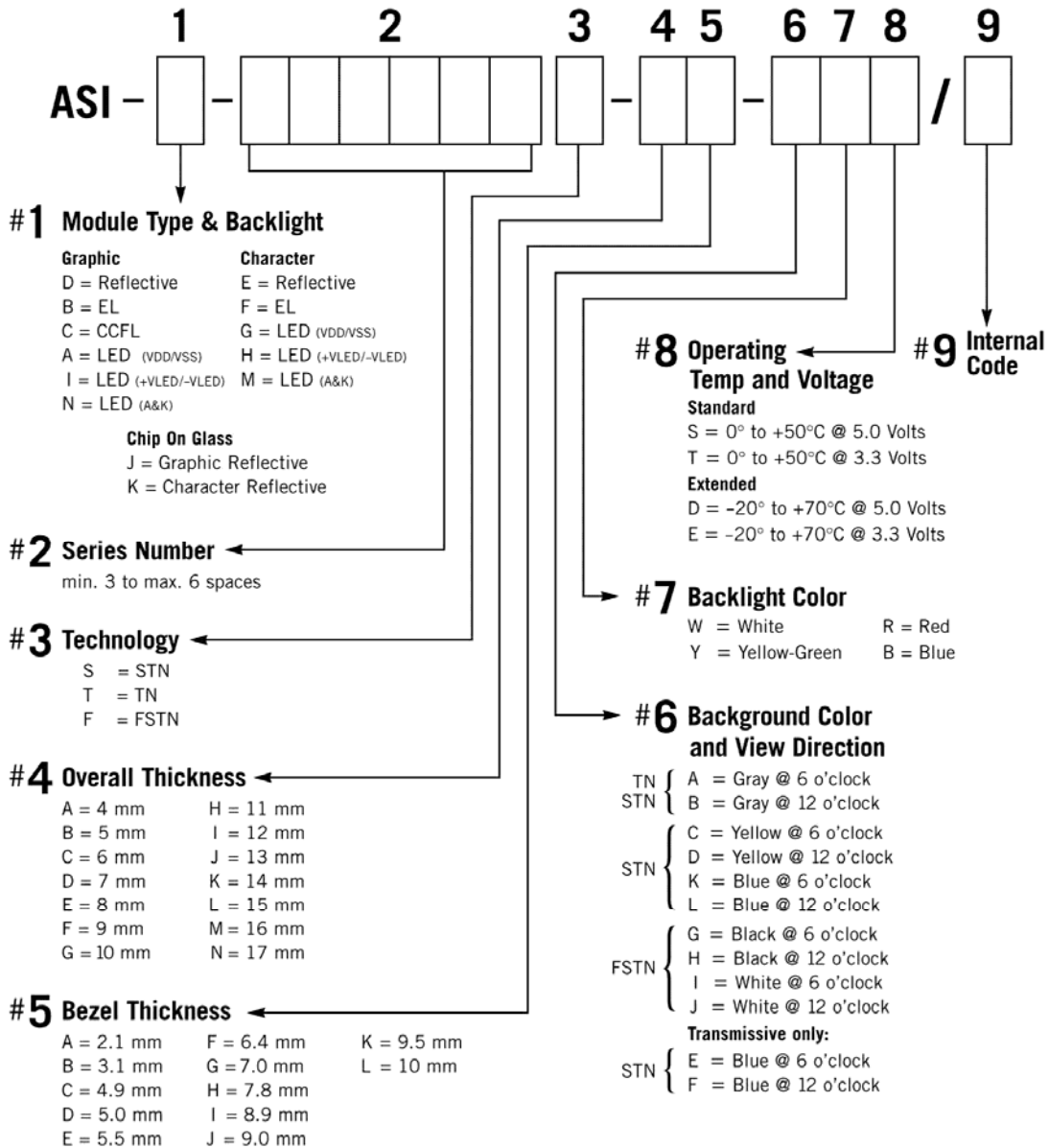
RECORD OF REVISION

DATE	PAGE	SUMMARY



MODEL NO : ASI-_-1223BF-GE-_WS/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-_-1223BF-GE-_WS/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

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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 _{LED}		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>OPERATING</i>		<i>STORAGE</i>		<i>COMMENT</i>
	<i>MIN.</i>	<i>MAX.</i>	<i>MIN.</i>	<i>MAX.</i>	
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/s²


MODEL NO : ASI_-1223BF-GE_-WS/W
Electrical characteristics
 $T_a = 25^{\circ}\text{C}$ $V_{DD} = 5.060.25 \text{ V}$

<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-VSS}	-----	4.75	5.0	5.25	V	
INPUT VOLTAGE NOTE (1)	V_{IH}	H LEVEL	2.0	-----	V_{DD}	V	
	V_{IL}	L LEVEL	0	-----	0.8		
OUTPUT VOLTAGE NOTE (2)	V_{OH}	$I_{OH} = -3.0 \text{ mA}$	2.4	-----	-----	V	
	V_{OL}	$I_{OL} = 3.0 \text{ mA}$	-----	-----	0.4	V	
POWER SUPPLY CURRENT, NOTE (3)	I_{DD}	$V_{DD-VSS} = 5.0\text{V}$	-----	1.5	2.0	mA	
CLOCK OSCILLATION FREQUENCY	f_{osc}	FOR LCD MODULE	15	18	21	KHz	
RECOMMENDED LCD DRIVING VOLTAGE, NOTE (4)	V_{DD-Vo}	DUTY = 1/32 $\Phi = 10^{\circ}$ $\theta = 0^{\circ}$	$T_a = 50^{\circ}\text{C}$	-----	4.2	-----	V
			$T_a = 25^{\circ}\text{C}$	-----	4.6	-----	V
			$T_a = 0^{\circ}\text{C}$	-----	4.8	-----	V
POWER SUPPLY CURRENT FOR LED	I_{LED}	$V_{LED} = 4.8\text{V}$	-----	30	40	mA	

NOTE (1): APPLIED TO TERMINALS E, A0, DB0 ~DB7

NOTE (2): APPLIED TO TERMINALS DB0 ~ DB7

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

NOTE (4): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT 60.5V EACH MODULE.

Optical characteristics
 $T_a = 25^{\circ}\text{C}$ $V_{DD-Vo} = 4.6\text{V}$

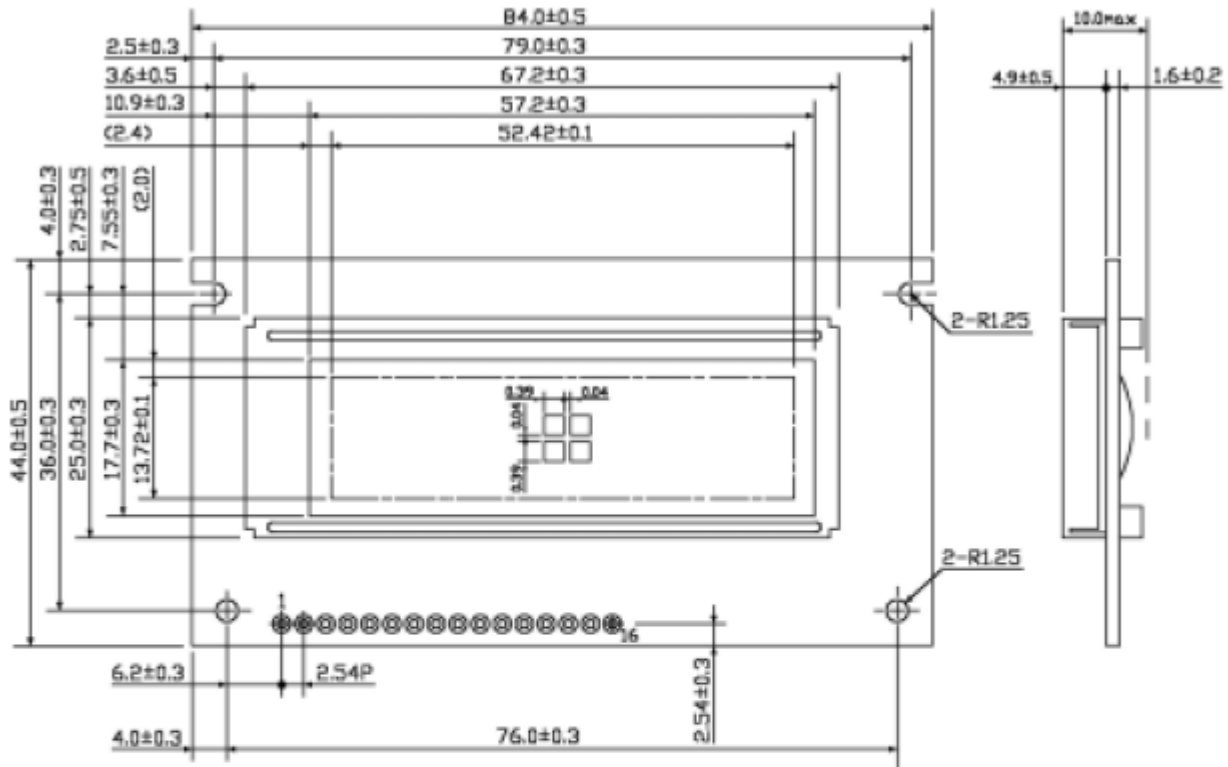
<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>NOTE</i>
VIEWING ANGLE	$\Phi 2-\Phi 1$	$K = 2.0$ $\theta = 0^{\circ}$	30	40	-----	deg.	1
CONTRAST RATIO	K	$\Phi = 10^{\circ}$ $\theta = 0^{\circ}$	4	5	-----	-----	1
RESPONSE TIME	t_r (rise)	$\Phi = 10^{\circ}$ $\theta = 0^{\circ}$	-----	200	350	ms	1
	t_f (fall)	$\Phi = 10^{\circ}$ $\theta = 0^{\circ}$	-----	300	400	ms	1
BRIGHTNESS FOR LED BACKLIGHT	B	$\Phi = 0^{\circ}$ $\theta = 0^{\circ}$	4.0	-----	-----	cd/m ²	1,2

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

NOTE (2): UNDER NORMAL TEMPERATURE AND HUMIDITY IN A DARK ROOM.

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Dimension outline



UNIT:mm
SCALE:NTS

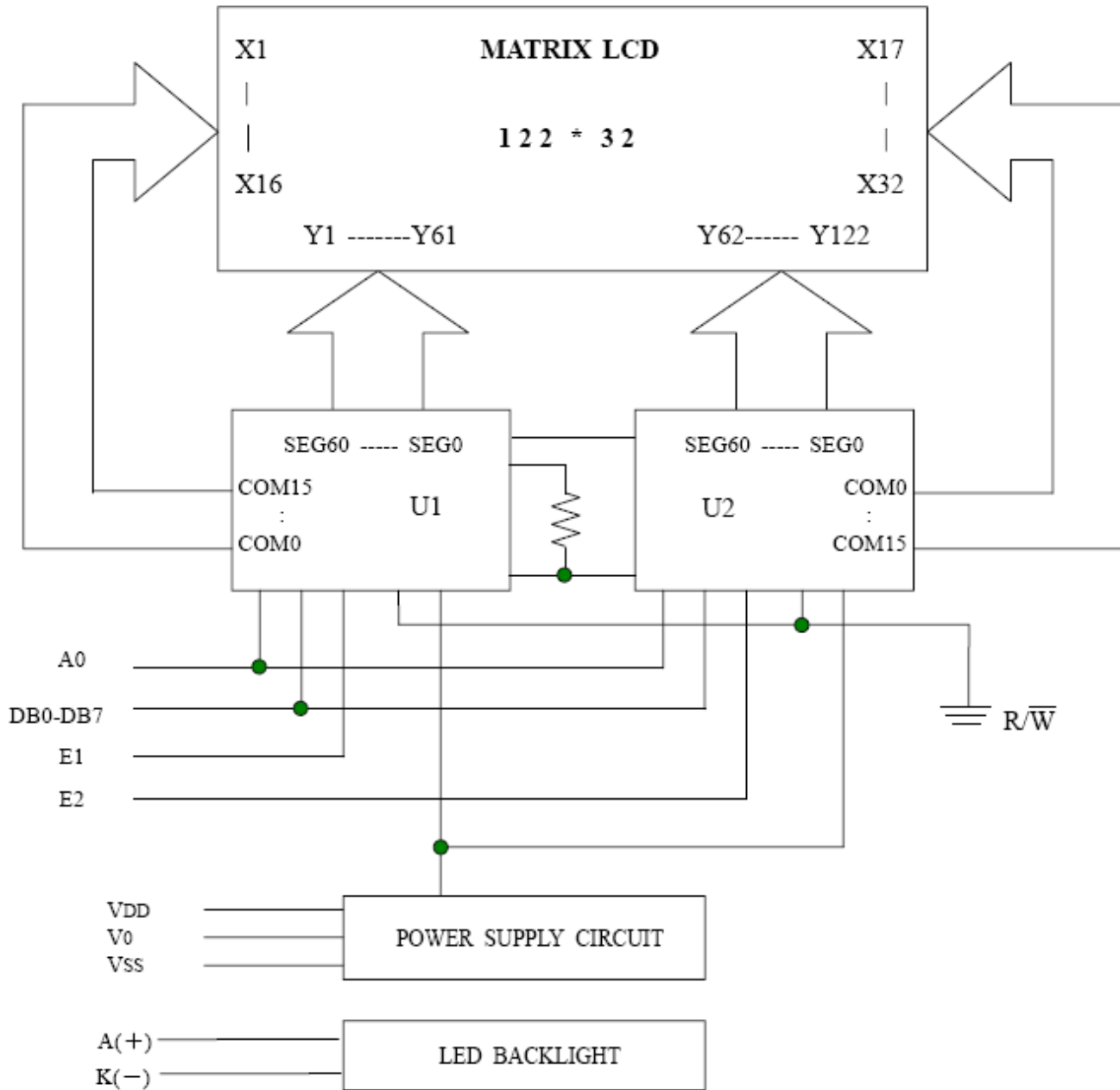
Interface pin connection

1	2	3	4	5	6	7	8
V _{SS}	V _{DD}	V _O	A0	E1	E2	DB0	DB1
9	10	11	12	13	14	15	16
DB2	DB3	DB4	DB5	DB6	DB7	A (+)	K (-)



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Block diagram





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Display data RAM

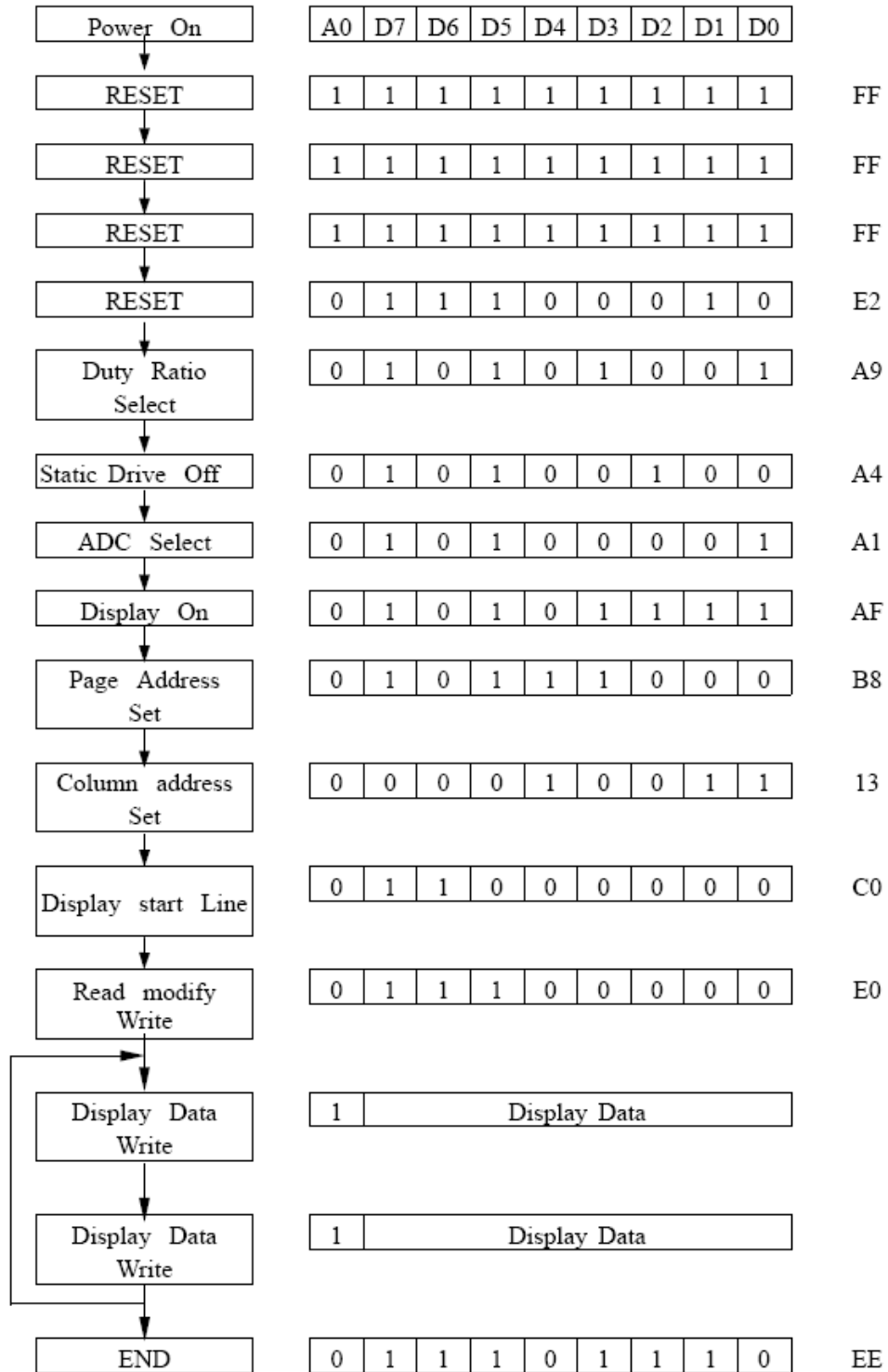
Page Address D1,D2=	DATA	Display Pattern										Line Address
0, 0	D0	[Pattern]										00H
	D1	[Pattern]										01
	D2	[Pattern]										02
	D3	[Pattern]										0 Page
	D4	[Pattern]										04
	D5	[Pattern]										05
	D6	[Pattern]										06
	D7	[Pattern]										07
0, 1	D0	[Pattern]										08
	D1	[Pattern]										09
	D2	[Pattern]										0A
	D3	[Pattern]										1 Page
	D4	[Pattern]										0C
	D5	[Pattern]										0D
	D6	[Pattern]										0E
	D7	[Pattern]										0F
1, 0	D0	[Pattern]										10
	D1	[Pattern]										11
	D2	[Pattern]										12
	D3	[Pattern]										2 Page
	D4	[Pattern]										14
	D5	[Pattern]										15
	D6	[Pattern]										16
	D7	[Pattern]										17
1, 1	D0	[Pattern]										18
	D1	[Pattern]										19
	D2	[Pattern]										1A
	D3	[Pattern]										3 Page
	D4	[Pattern]										1B
	D5	[Pattern]										1C
	D6	[Pattern]										1D
	D7	[Pattern]										1E
Column Address	A	DO=0	3C	3B	3A	39	38	37	36	35	←-----	00
	D	DO=1	13	14	15	16	17	18	19	1A	-----→	4F
C											← normal	
Segment Term.		60	59	58	57	56	55	54	53	-----	0	

Fig.1. Correspondence with Display Data RAM and address



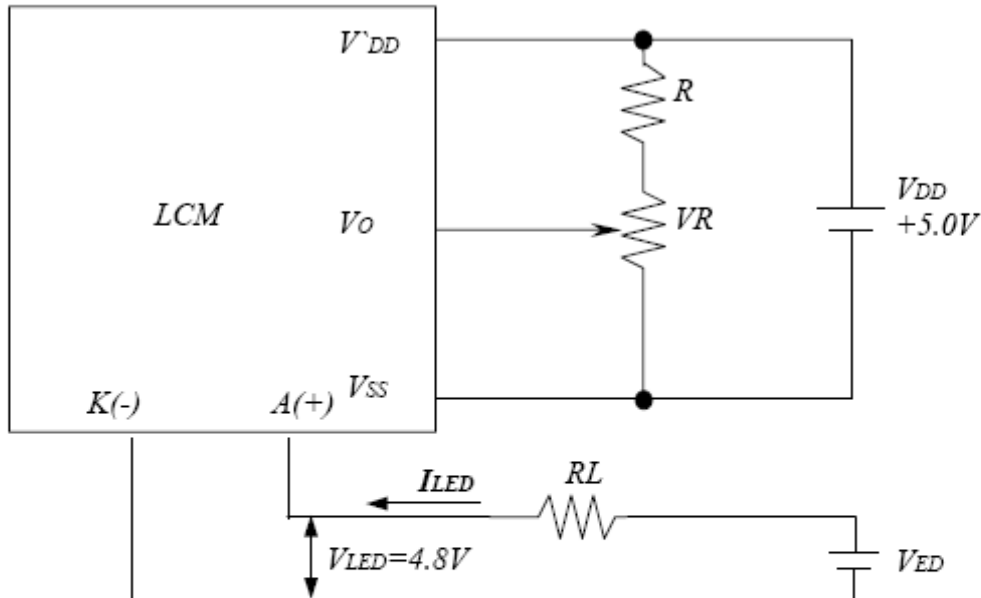
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Initialization by instructions



MODEL NO : ASI-_-1223BF-GE-_WS/W

Power supply for LCM



RECOMMENDED RESISTOR R: $V_{DD}-V_{O} \geq 1.5V$

$R_L \geq ((V_{ED}-4.8V) / I_{LED})$, $I_{LED} \leq 25mA$

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

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

The information presented in this datasheet has been carefully checked and is believed to be accurate; however, no responsibility is assumed for inaccuracies. Information contained herein is for selection purposes only, and is subject to change without notice. Please contact ASI for current datasheets prior to designing.