ALL SHORE INDUSTRIES, INC.

SPECIFICATION FOR
LIQUID CRYSTAL DISPLAY MODULE

MODULE # : ASI-_-161DAS-GC-_YS/W

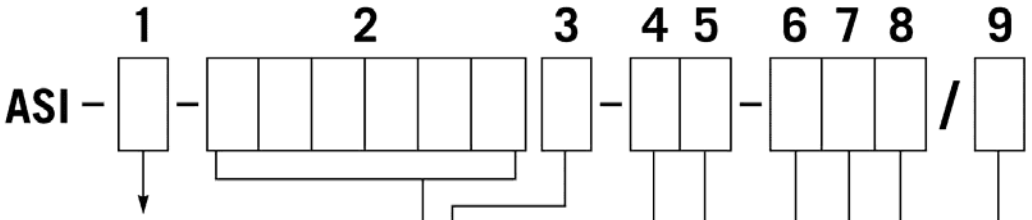
(1) NUMBER OF CHARACTER ---------- 16 CH * 1 LINE
(2) MODULE SIZE ----------80.0 W * 36.0 H * 10.0 T (max) mm
(3) EFFECTIVE AREA ----------64.5 W * 16.0 H mm
(4) CHARACTER PATTERN ----------5 * 7 DOTS + CURSOR
(5) CHARACTER SIZE---------- 3.07 W *5.73 H mm
(6) CHARACTER PITCH ----------3.77 mm
(7) DOTS SIZE----------0.55 W * 0.75 H mm
(8) DOTS PITCH----------0.63 W * 0.83 H mm

All Shore Industries, Inc. One Edgewater Plaza, Staten Island, NY 10305

ALL SHORE INDUSTRIES

MODEL NO : ASI-_-161DAS-GC-_YS/W

LCD MODULE PART NUMBERING SYSTEM



#1 Module Type & Backlight

Graphic	Character
D = Reflective	E = Reflective
B = EL	F = EL
C = CCFL	G = LED (VDD/VSS)
A = LED (VDD/VSS)	H = LED (+VLED/–VLED)
I = LED (+VLED/–VLED)	M = LED (A&K)
N = LED (A&K)	

Chip On Glass
J = Graphic Reflective
K = Character Reflective

#2 Series Number
min. 3 to max. 6 spaces

#3 Technology
S = STN
T = TN
F = FSTN

#4 Overall Thickness

A = 4 mm	H = 11 mm
B = 5 mm	I = 12 mm
C = 6 mm	J = 13 mm
D = 7 mm	K = 14 mm
E = 8 mm	L = 15 mm
F = 9 mm	M = 16 mm
G = 10 mm	N = 17 mm

#5 Bezel Thickness

A = 2.1 mm	F = 6.4 mm	K = 9.5 mm
B = 3.1 mm	G = 7.0 mm	L = 10 mm
C = 4.9 mm	H = 7.8 mm	
D = 5.0 mm	I = 8.9 mm	
E = 5.5 mm	J = 9.0 mm	

#6 Background Color and View Direction

TN / STN	A = Gray @ 6 o'clock
	B = Gray @ 12 o'clock
STN	C = Yellow @ 6 o'clock
	D = Yellow @ 12 o'clock
	K = Blue @ 6 o'clock
	L = Blue @ 12 o'clock
FSTN	G = Black @ 6 o'clock
	H = Black @ 12 o'clock
	I = White @ 6 o'clock
	J = White @ 12 o'clock
Transmissive only:	
STN	E = Blue @ 6 o'clock
	F = Blue @ 12 o'clock

#7 Backlight Color

W = White	R = Red
Y = Yellow-Green	B = Blue

#8 Operating Temp and Voltage

Standard
S = 0° to +50°C @ 5.0 Volts
T = 0° to +50°C @ 3.3 Volts
Extended
D = –20° to +70°C @ 5.0 Volts
E = –20° to +70°C @ 3.3 Volts

#9 Internal Code

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

MODEL NO : ASI-_-161DAS-GC-_YS/W

General specifications

General specifications

PLEASE REFER TO:
"CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-0069)"

Mechanical data

(1) NUMBER OF CHARACTER ---------- 16 CH * 1 LINE
(2) MODULE SIZE ----------80.0 W * 36.0 H * 10.0 T (max) mm
(3) EFFECTIVE AREA ----------64.5 W * 16.0 H mm
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(6) CHARACTER PITCH ----------3.77 mm
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MODEL NO : ASI-_-161DAS-GC-_YS/W

Absolute maximum ratings

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)
POWER SUPPLY FOR LED	V_{LED}	------	NOTE(2)	V	------

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

NOTE (2):

SYMBOL	V_{LED} MAX.	LED TYPE
V_{LED}	5.5V	YELLOW-GREEN,AMBER,ORANGE,RED
	5.0V	BLUE,PURE GREEN,WHITE

Environmental absolute maximum ratings

I T E M	CONDITION	OPERATING		STORAGE		COMMENT
		MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	NORMAL	0℃	50℃	-20℃	70℃	------
	WIDE	-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 ≦ 50℃: 90% RH MAX.

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

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

MODEL NO : ASI-_-161DAS-GC-_YS/W

Electrical characteristics

Ta = 25℃ VDD = 5.0±0.25 V

I T E M	*SYMBOL*	*CONDITION*		*MIN.*	*TYP.*	*MAX.*	*UNIT*
INPUT VOLTAGE	VIH	----------		2.2	------	------	V
	VIL			------	------	0.6	V
OUTPUT VOLTAGE	VOH	-IOH =0.205 mA		2.4	------	------	V
	VOL	IOL = 1.2 mA		------	------	0.4	V
POWER SUPPLY CURRENT	IDD	VDD = 5.0V		------	1.0	1.5	mA
RECOMMENDED LCD DRIVING VOLTAGE, NOTE(1)	VDD-VO	STN/ FSTN DUTY =1/16 Φ=10° NOTE(2)	Ta=-20°C	------	4.8	------	V
			Ta= 0°C	------	4.7	------	V
			Ta= 25°C	------	4.5	------	V
			Ta= 50°C	------	4.3	------	V
			Ta= 70°C	------	4.2	------	V
		TN DUTY =1/16 Φ=25° NOTE(2)	Ta=-20°C	------	4.7	------	V
			Ta= 0°C	------	4.6	------	V
			Ta= 25°C	------	4.2	------	V
			Ta= 50°C	------	3.8	------	V
			Ta= 70°C	------	3.7	------	V
POWER SUPPLY CURRENT FOR NOTE(3)	ILED	VLED NOTE(3)		------	30	40	mA

NOTE (1): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT ±0.5V BY EACH MODULE.

(2): $\theta = 0°$: VIEWING ANGLE AT 6 O'CLOCK

$\theta = 180°$: VIEWING ANGLE AT 12 O'CLOCK

(3): LED CURRENT OF DIFFERENT LED TYPE

LED B.L TYPE	*V_{LED}*	*I_{LED}*				*LED COLOR*
		MIN.	*TYP.*	*MAX.*	*UNIT.*	
A	4.8V	-----	30	40	mA	YELLOW-GREEN、AMBER、ORANGE、RED
B	4.0V	-----	30	40	mA	BLUE、WHITE、PURE GREEN

MODEL NO : ASI-_-161DAS-GC-_YS/W

Optical characteristics

TN TYPE LCD

Ta = 25℃ V_{DD}-V_O =4.2V

I T E M	*SYMBOL*	*CONDITION*	*MIN.*	*TYP.*	*MAX.*	*UNIT*	*NOTE*
VIEWING ANGLE	Φ2-Φ1	K = 1.4 NOTE(1)	20	30	----	deg.	NOTE(2)
CONTRAST RATIO	K	Φ = 25° NOTE(1)	2.0	3.0	----	----	NOTE(2)
RESPONSE TIME	tr (rise)	Φ = 25° NOTE(1)	----	150	250	ms	NOTE(2)
	tf (fall)	Φ = 25° NOTE(1)	----	150	250	ms	NOTE(2)

STN TYPE LCD

Ta = 25℃ V_{DD}-V_O =4.5V

I T E M	*SYMBOL*	*CONDITION*	*MIN.*	*TYP.*	*MAX.*	*UNIT*	*NOTE*
VIEWING ANGLE	Φ2-Φ1	K = 2.0 NOTE(1)	30	40	----	deg.	NOTE(2)
CONTRAST RATIO	K	Φ = 10° NOTE(1)	3.0	4.0	----	----	NOTE(2)
RESPONSE TIME	tr (rise)	Φ = 10° NOTE(1)	----	200	350	ms	NOTE(2)
	tf (fall)	Φ = 10° NOTE(1)	----	300	400	ms	NOTE(2)

FSTN /STN BLUE TYPE LCD

Ta = 25℃ V_{DD}-V_O =4.5V

I T E M	*SYMBOL*	*CONDITION*	*MIN.*	*TYP.*	*MAX.*	*UNIT*	*NOTE*
VIEWING ANGLE	Φ2-Φ1	K = 2.0 NOTE(1)	30	40	----	deg.	NOTE(2)
CONTRAST RATIO	K	Φ = 10° NOTE(1)	4.0	5.0	----	----	NOTE(2)
RESPONSE TIME	tr (rise)	Φ = 10° NOTE(1)	----	200	350	ms	NOTE(2)
	tf (fall)	Φ = 10° NOTE(1)	----	300	400	ms	NOTE(2)

Brightness for LED backlight

SYMBOL	*CONDITION*	*MIN.*	*TYP.*	*MAX.*	*UNIT*	*LED TYPE*	*NOTE*
B	Φ = 0° θ = 0°	4.0	----	----	cd/m²	YELLOW-GREEN、RED、AMBER、ORANGE	NOTE(2)
		6.0	----	----		BLUE、PURE GREEN、WHITE	NOTE(3)

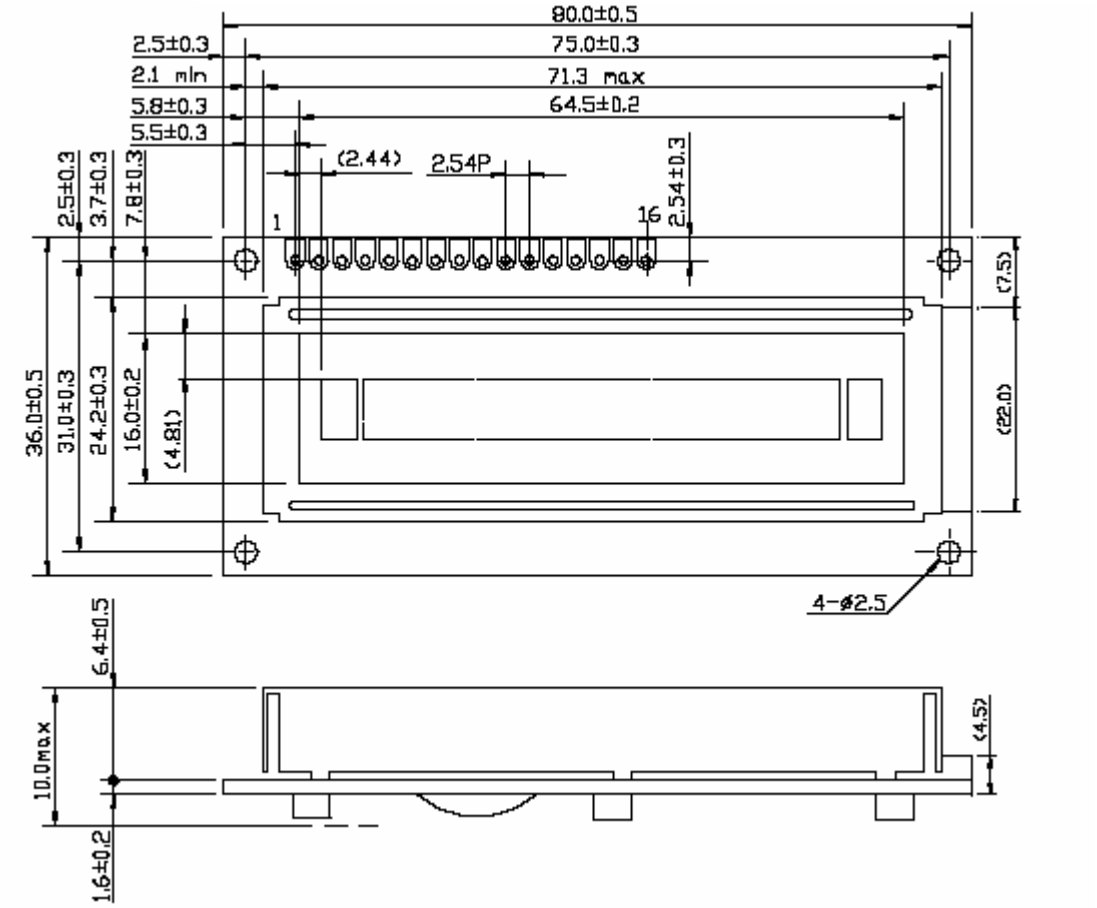
NOTE (1): θ = 0° WHEN VIEWING ANGLE AT 6 O'CLOCK
θ = 180° WHEN VIEWING ANGLE AT 12 O'CLOCK

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

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

MODEL NO : ASI-_-161DAS-GC-_YS/W

Outline dimension



Interface pin connection

PIN NO.	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
SYMBOL	Vss	VDD	Vo	RS	R/$\overline{W}$	E	DB0	DB1
PIN NO.	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
SYMBOL	DB2	DB3	DB4	DB5	DB6	DB7	A(+)	K(-)

Interface pin

PIN NO.	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
SYMBOL	Vss	VDD	Vo	RS	R/$\overline{W}$	E	DB0	DB1
PIN NO.	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
SYMBOL	DB2	DB3	DB4	DB5	DB6	DB7	NC	NC

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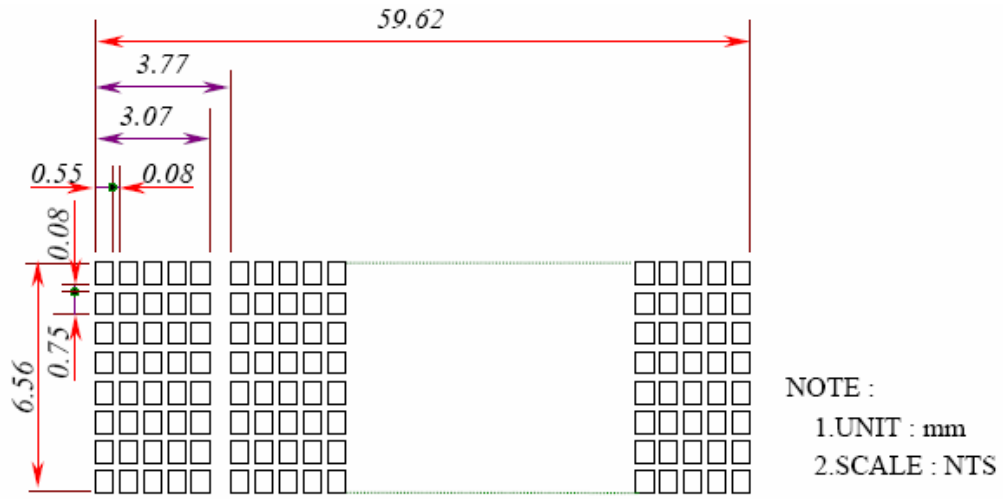
Block diagram

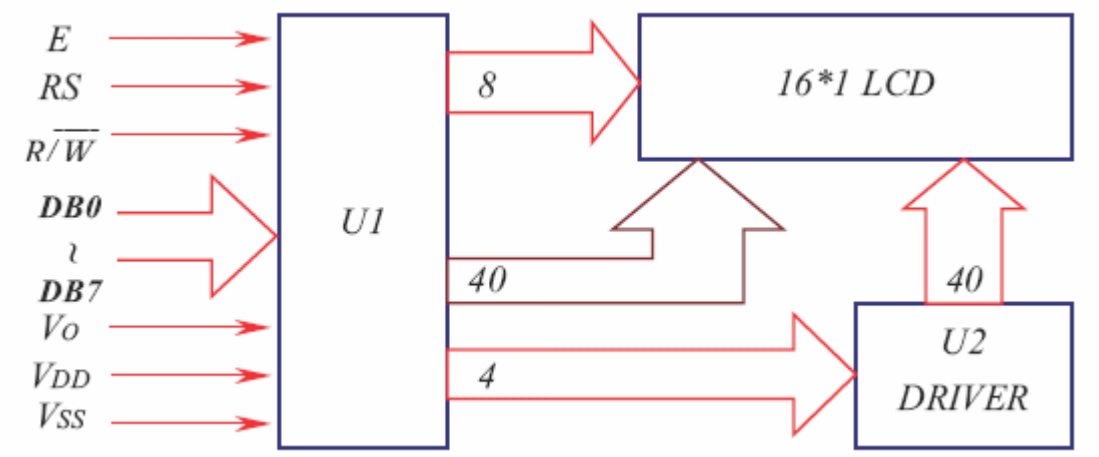
7 . DETAIL DRAWING OF DOT MATRIX

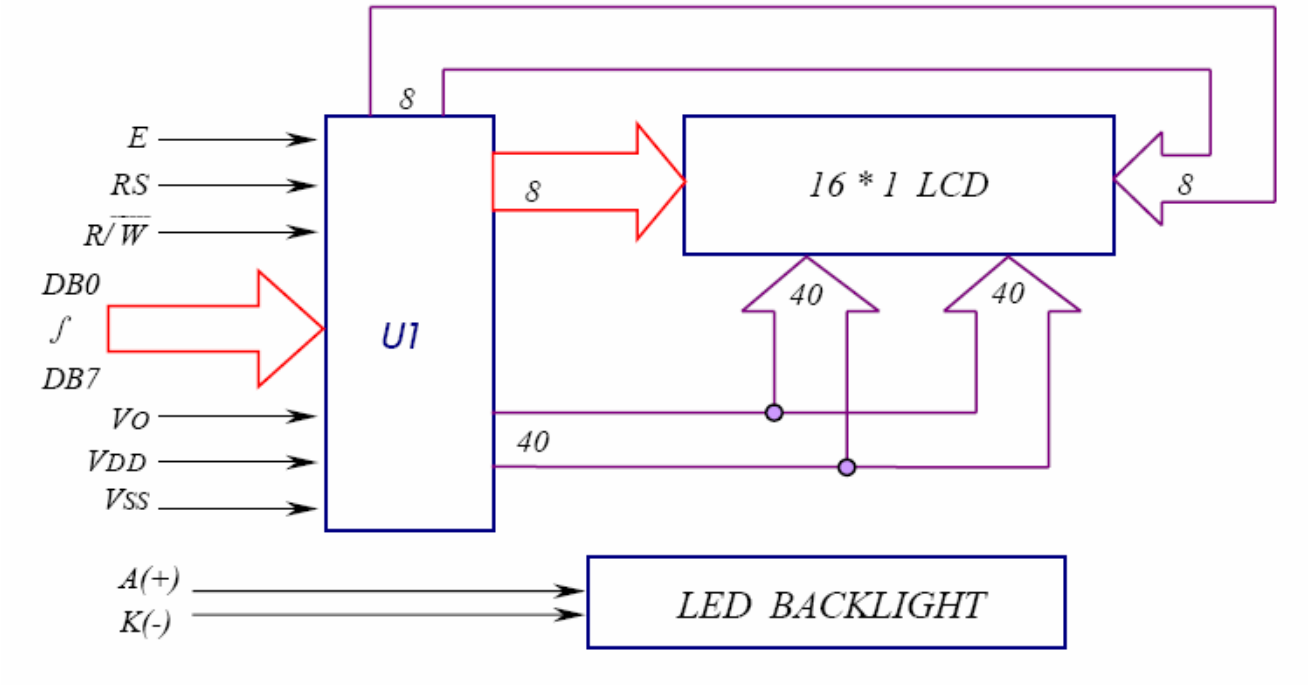


NOTE :
1.UNIT : mm
2.SCALE : NTS

MODEL NO : ASI-_-161DAS-GC-_YS/W

Block diagram



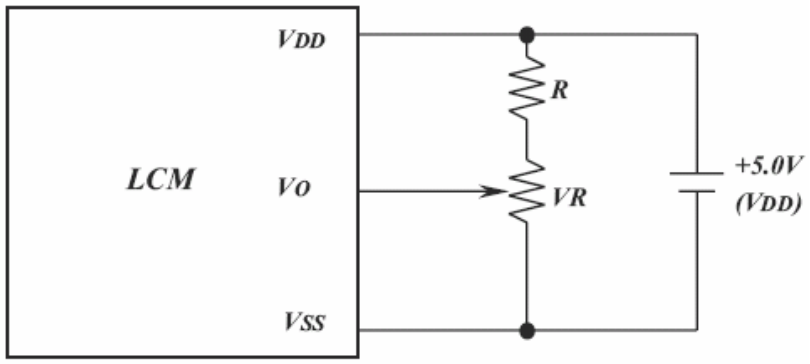


MODEL NO : ASI-_-161DAS-GC-_YS/W

Display data address charts

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
LINE 1	00	01	02	03	04	05	06	07	40	41	42	43	44	45	46	47

Power supply for LCM

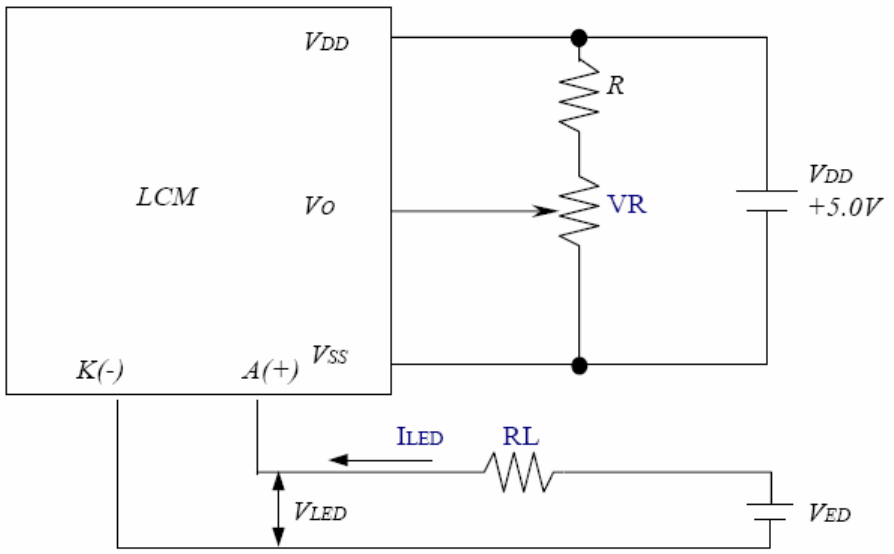


RECOMMENDED RESISTOR R : VDD-Vo≧1.5V

VDD – Vo: LCD DRIVING VOLTAGE

VR : 10KΩ ~ 20KΩ

MODEL NO : ASI-_-161DAS-GC-_YS/W



RECOMMENDED RESISTOR R : VDD–Vo≧1.5V
VDD–Vo: LCD DRIVING VOLTAGE
VR: 10KΩ~20KΩ

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.