



All Shore Industries, Inc.

PART NO. : ASI- R-12864J/W -SERIES-1

CONTENTS

<i>NO.</i>	<i>ITEM</i>	<i>PAGE</i>
1.	COVER	1
2.	RECORD OF REVISION	2
3.	GENERAL SPECIFICATION	3
4.	MECHANICAL DATA	4
5.	ABSOLUTE MAXIMUM RATINGS	4
6.	ELECTRICAL CHARACTERISTICS	5
7.	OPTICAL CHARACTERISTICS	6
8.	OUTLINE DIMENSION	7~9
9.	BLOCK DIAGRAM	10
10.	POWER SUPPLY FOR LCM	11

ACCEPTED BY : _____ PROPOSED BY : _____

RECORD OF REVISION

DATE	PAGE	SUMMARY

3. General specifications

3.1 General specifications

PLEASE REFER TO:

- a. "CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-10000)"
- b. "CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (IC-NT7538)"

3.2 This individual specification is prior to general specifications

4. Mechanical data

- (1) NUMBER OF DOT ----- 128 W* 64 H DOTS
- (2) MODULE SIZE ----- (a) WITH B/L 76.0 W * 49.0 H * 5.0 T (max)mm
(b) WITHOUT B/L 68.0 W * 47.3 H * 2.1 T (max)mm
- (3) EFFECTIVE AREA -----64.5 W * 37.0 H mm
- (4) ACTIVE AREA -----59.49 W * 29.73 H mm
- (5) DOT SIZE-----0.435 W * 0.435 H mm
- (6) DOT PITCH-----0.465 W * 0.465 H mm

5. Absolute maximum ratings

5.1 Electrical absolute maximum ratings

<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}	-0.3	3.6	V	-----	
BOOSTER OUTPUT VOLTAGE	V _{OUT}	-0.3	14.0	V	-----	
STATIC ELECTRICITY	-----	-----	100	V	NOTE(1)	
POWER SUPPLY FOR LED	V _{LED}	-----	6.0	V	LED Color	Amber, Orange, Yellow-Green, Red
		-----	5.0	V		White, Blue, Pure Green

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>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	-20°	70°	-20°	70°	-----
HUMIDITY	NOTE (2)		NOTE (2)		NO CONDENSATION
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□)

6. Electrical characteristics

$T_a = 25^\circ$

<i>ITEM</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>		
POWER SUPPLY VOLTAGE FOR CIRCUIT	VDD-VSS	-----	2.4	----	3.5	V		
	VDD2-VSS	-----	2.4	----	3.5	V		
BOOSTER OUTPUT VOLTAGE	VOUT	-----	6.0	----	12.0	V		
VOLTAGE REGULATOR OPERATION VOLTAGE	V0	-----	4.5	----	11.5	V		
INPUT VOLTAGE	VIH	H LEVEL	0.8VDD	----	VDD	V		
	VIL	L LEVEL	VSS	----	0.2VDD	V		
OUTPUT VOLTAGE	VOH	IOH= -0.5mA	0.8VDD	----	VDD	V		
	VOL	IOH= 0.5mA	VSS	----	0.2VDD	V		
POWER SUPPLY CURRENT	IDD	VDD-VSS = 3.0 V	-----	150	255	μ A		
OSCILLATION FREQUENCY	fOSC	-----	18.0	22.0	26.0	kHz		
RECOMMENDED LCD DRIVING VOLTAGE,NOTE(1)	Vo-VSS	Ta=-20°	$\Phi=10^\circ$	-----	----	-----	V	
			$\Phi=-10^\circ$	-----	-----	-----		
		Ta= 0°	$\Phi=10^\circ$	-----	-----	-----	V	
			$\Phi=-10^\circ$	-----	-----	-----		
		Ta= 25°	$\Phi=10^\circ$	-----	(8.4)	-----	V	
			$\Phi=-10^\circ$	-----	(8.6)	-----		
		Ta= 50°	$\Phi=10^\circ$	-----	----	-----	V	
			$\Phi=-10^\circ$	-----	-----	-----		
		Ta= 70°	$\Phi=10^\circ$	-----	-----	-----	V	
			$\Phi=-10^\circ$	-----	-----	-----		
		POWER SUPPLY CURRENT FOR LED	ILED	VLED=4.0V,NOTE(2)	-----	30	40	mA
				VLED=5.0V,NOTE(2)	-----	45	60	mA

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

(2):

<i>TYPE</i>	<i>VLED</i>	<i>LED COLOR</i>
A	4.0 V	WHITE, BLUE, PURE GREEN
B	5.0 V	AMBER, YELLOW-GREEN , ORANGE, RED

7. Optical characteristics

$T_a = 25^\circ$ $V_O - V_{SS} = 8.4V$

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING ANGLE	$\Phi 2 - \Phi 1$	$K = 2.0$ $\theta = 0^\circ$	30	40	----	deg.	NOTE(1)
CONTRAST RATIO	K	$\Phi = 10^\circ (-10^\circ)$ $\theta = 0^\circ$	3.0	4.0	----	----	NOTE(1)
RESPONSE TIME	tr (rise)	$\Phi = 10^\circ (-10^\circ)$ $\theta = 0^\circ$	----	200	350	ms	NOTE(1)
	tf (fall)	$\Phi = 10^\circ (-10^\circ)$ $\theta = 0^\circ$	----	300	400	ms	NOTE(1)

Brightness for backlight

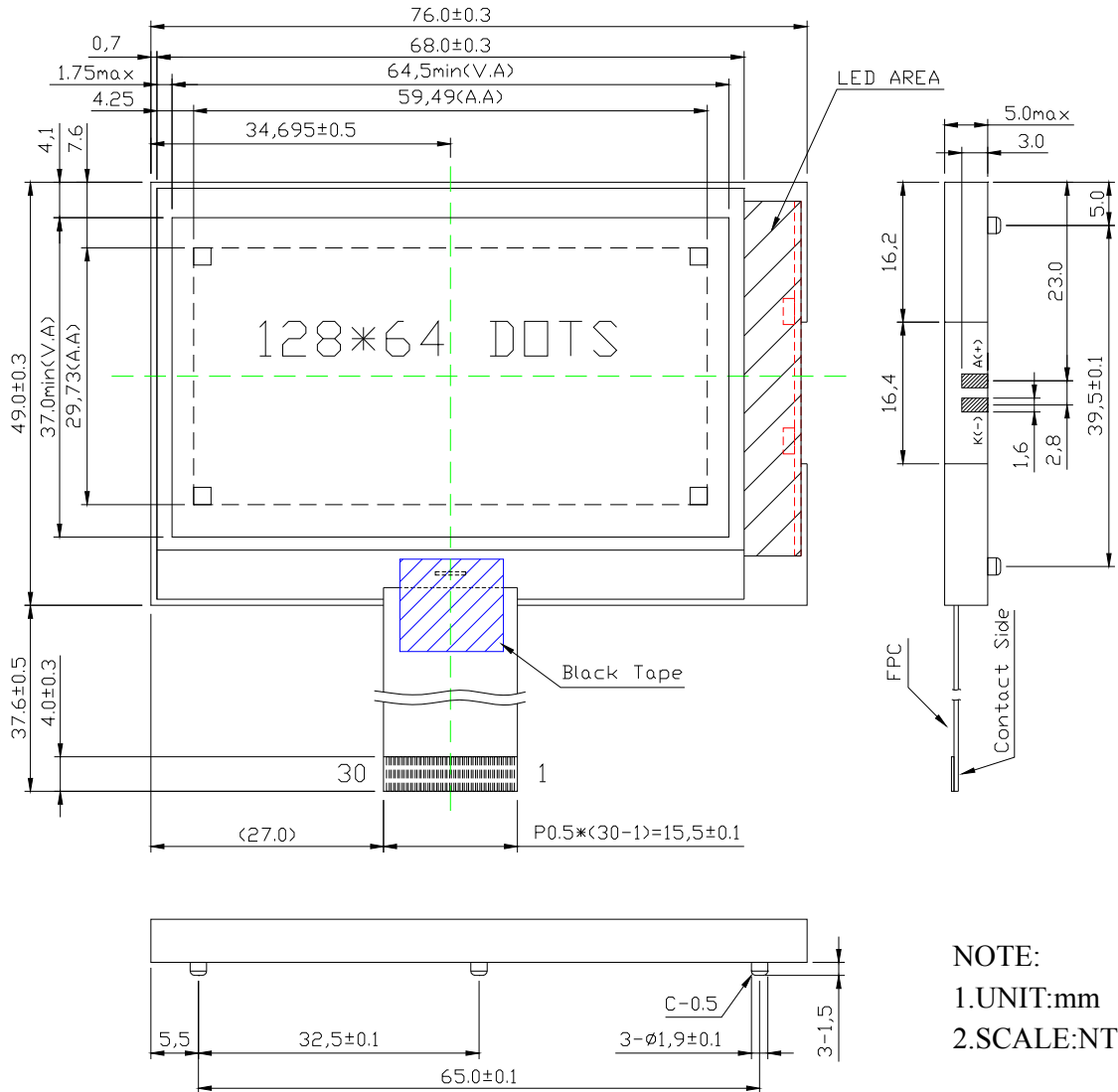
SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	BACKLIGHT TYPE	NOTE
B	$\Phi = 0^\circ$ $\theta = 0^\circ$ $T_a = 25^\circ$	5.0	-----	-----	cd/m ²	TYPE A LED (COLOR: WHITE, BLUE, PURE GREEN)	NOTE(1)
		4.0	-----	-----		TYPE B LED(COLOR: AMBER, YELLOW-GREEN , ORANGE, RED)	NOTE(2)

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

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

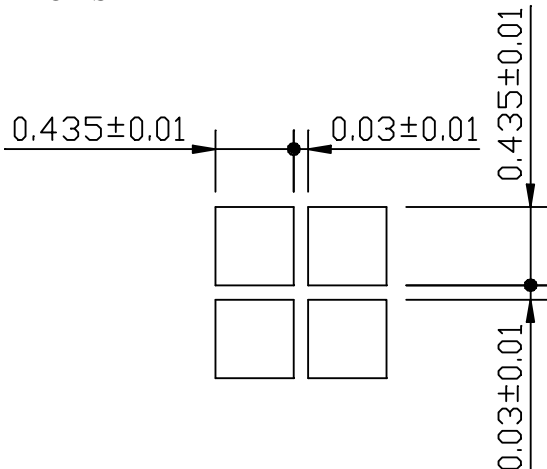
8. Outline dimension

(a) With Backlight

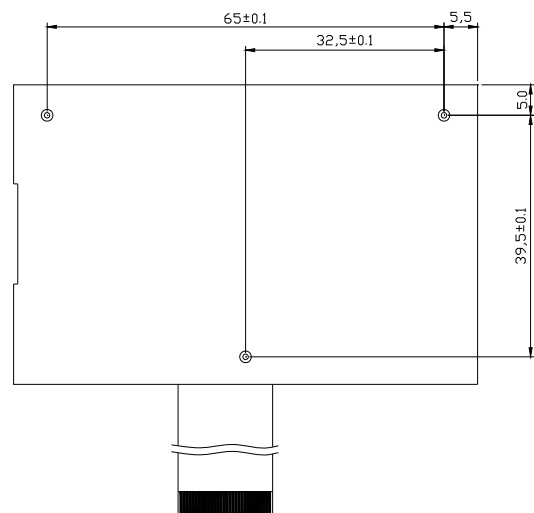


NOTE:
1.UNIT:mm
2.SCALE:NTS

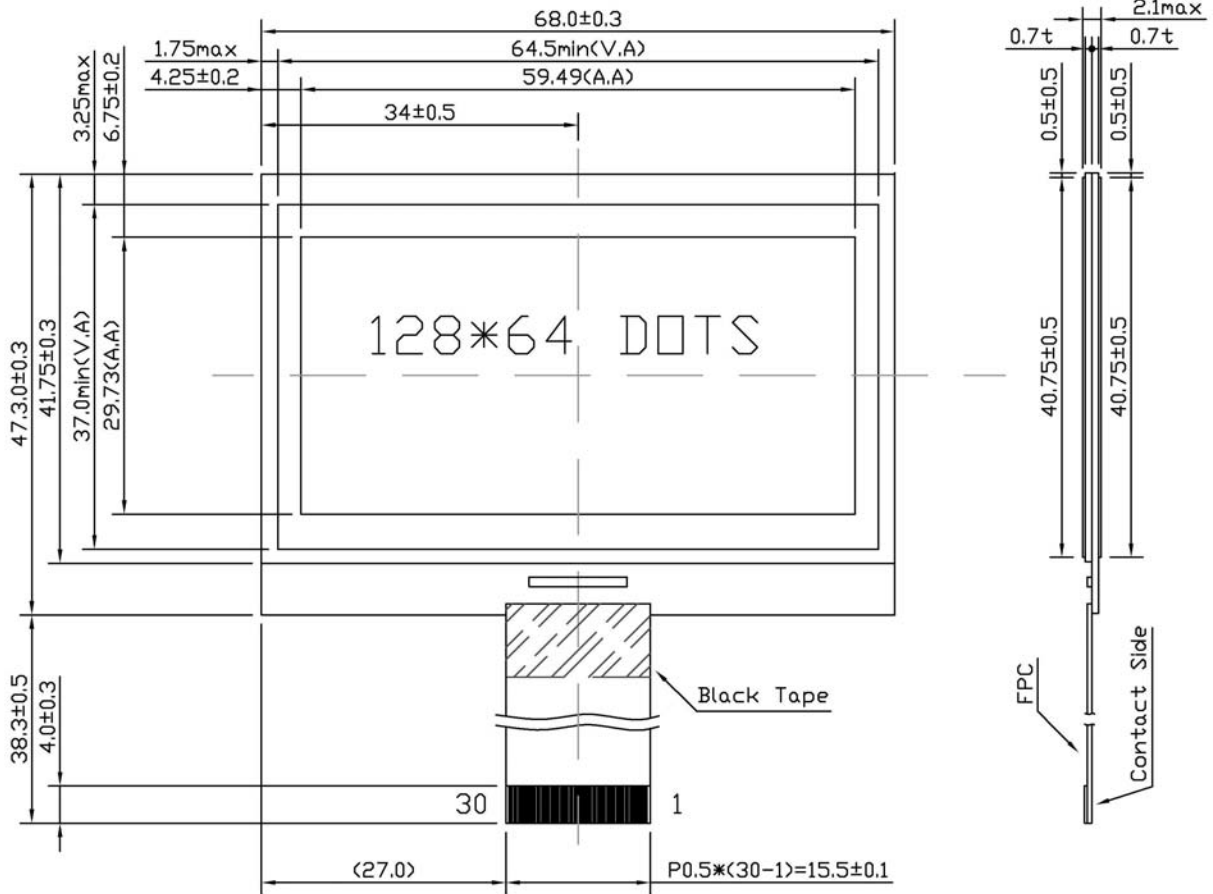
*DOT SIZE :



*BACK OF LCM:



(b) Without Backlight



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

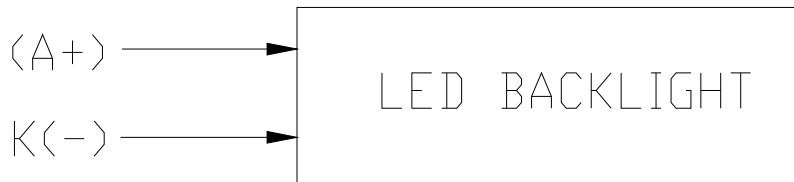
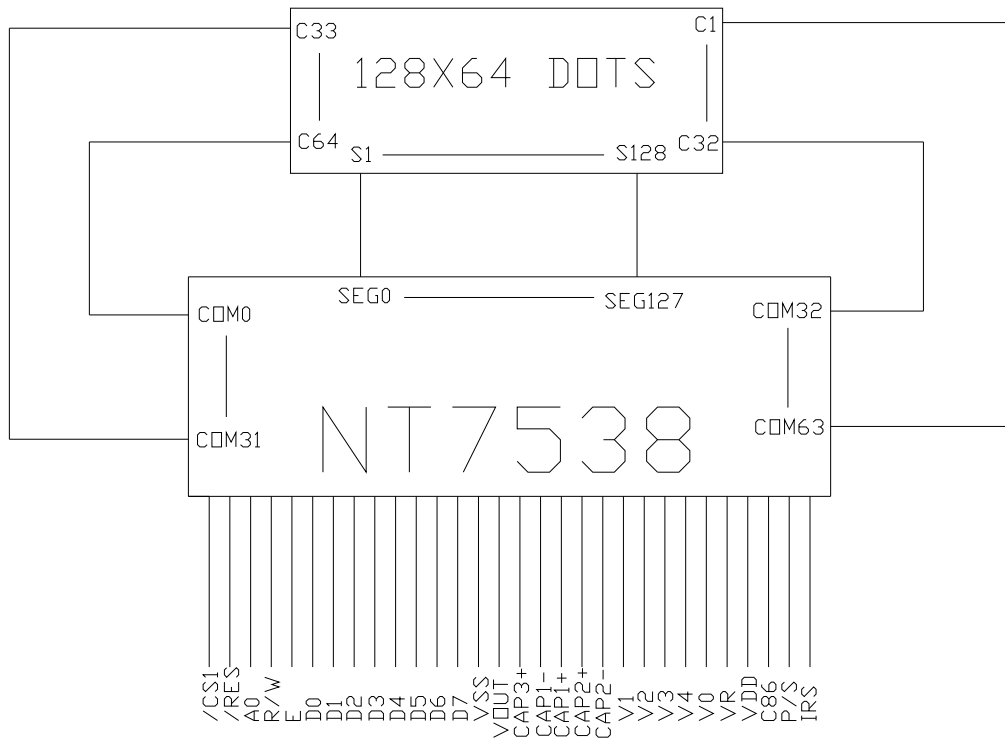
8.1 Interface connection

PIN NO.	SYMBOL	FUNCTION
1	$\overline{CS1}$	CHIP SELECT "L" → ACTIVE
2	\overline{RES}	"L" : RESET
3	A0	"L" :INSTRUCTION "H" :DISPLAY DATA
4	$\overline{R/W}$ \overline{WR}	(When 8080-series) : \overline{WR} IS "L" (When 6800-series) : Read mode → $\overline{R/W}$ IS "H" Write mode → $\overline{R/W}$ IS "L"
5	E \overline{RD}	\overline{RD} :(When to 8080-series) E : (When to 6800-series)
6	DB0	DATA INPUT/OUTPUT (LSB)
7	DB1	DATA INPUT/OUTPUT
8	DB2	DATA INPUT/OUTPUT
9	DB3	DATA INPUT/OUTPUT
10	DB4	DATA INPUT/OUTPUT
11	DB5	DATA INPUT/OUTPUT
12	DB6	DATA INPUT/OUTPUT
13	DB7	DATA INPUT/OUTPUT (MSB)
14	VSS	GROUND
15	VOU	DC-DC VOLTAGE CONVERTER OUTPUT
16	CAP3+	INTERNAL DC/DC VOLTAGE CONVERTER
17	CAP1-	INTERNAL DC/DC VOLTAGE CONVERTER
18	CAP1+	INTERNAL DC/DC VOLTAGE CONVERTER
19	CAP2+	INTERNAL DC/DC VOLTAGE CONVERTER
20	CAP2-	INTERNAL DC/DC VOLTAGE CONVERTER
21	V1	LCD DRIVER SUPPLY VOLTAGES. THE VOLTAGE DETERMINED BY LCD CELL IS IMPEDANCE-CONVERTED BY A RESISTIVE DRIVER OR AN OPERATIONAL AMPLIFIER FOR APPLICATION. VOLTAGES SHOULD HAVE THE FOLLOWING RELATIONSHIP: $V0 \square V1 \square V2 \square V3 \square V4 \square Vss$
22	V2	
23	V3	
24	V4	
25	V0	
26	VR	VOLTAGE ADJUSTMANT PAD.APPLIES VOLTAGE BETWEEN V0 AND VSS USING A RESISTIVE DIVIDER.
27	VDD	POWER SUPPLY INPUT
28	C86	"H" → 6800 SERIES "L" → 8080 SERIES
29	P/S	DATA INPUT : "H" → PARALLEL,"L" → SERIAL
30	IRS	V0 VOLTAGE LEVEL ADJUSTMENT

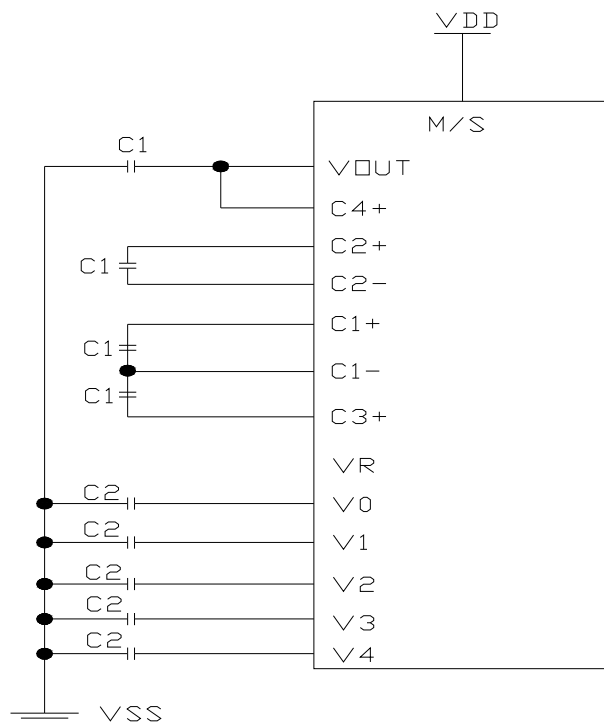
8.2 LED Backlight Interface connection:

PIN NO.	SYMBOL	FUNCTION
-----	A(+)	POWER SUPPLY FOR LED ANODE
-----	K(-)	POWER SUPPLY FOR LED CATHODE

9. Block diagram



10. Power supply for LCM

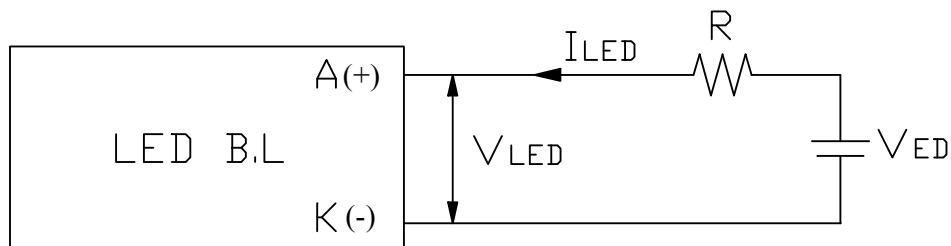


NOTE:

1. RECOMMENDED VALUE OF CAPACITORS: $C1=1.0\sim 4.7\mu\text{F}$
 $C2=0.47\sim 2.2\mu\text{F}$

$$V_0 = (1 + R_p/R_h) * V_{EV} = (1 + R_h/R_p) * (1 - (63 \mu / 162)) * V_{REG}$$

10.1 Power supply for backlight



$$R \geq (V_{ED} - V_{LED}) / I_{LED}$$

TYPE	V _{LED}	I _{LED} (max)	LED COLOR
A	4.0 V	40 mA	WHITE, BLUE, GREEN
B	5.0 V	60 mA	AMBER, YELLOW-GREEN, ORANGE, RED