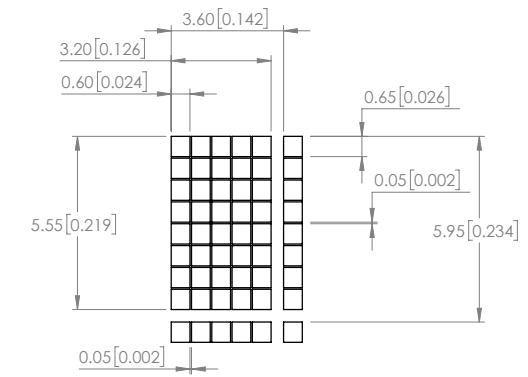
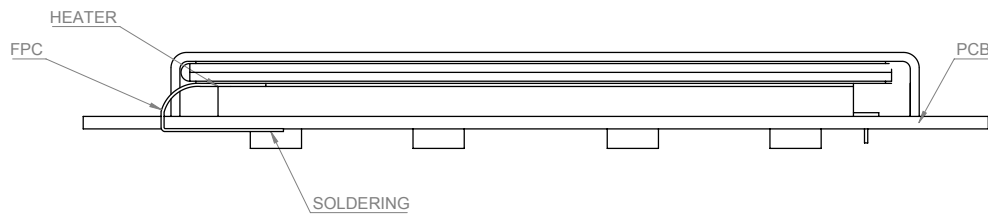
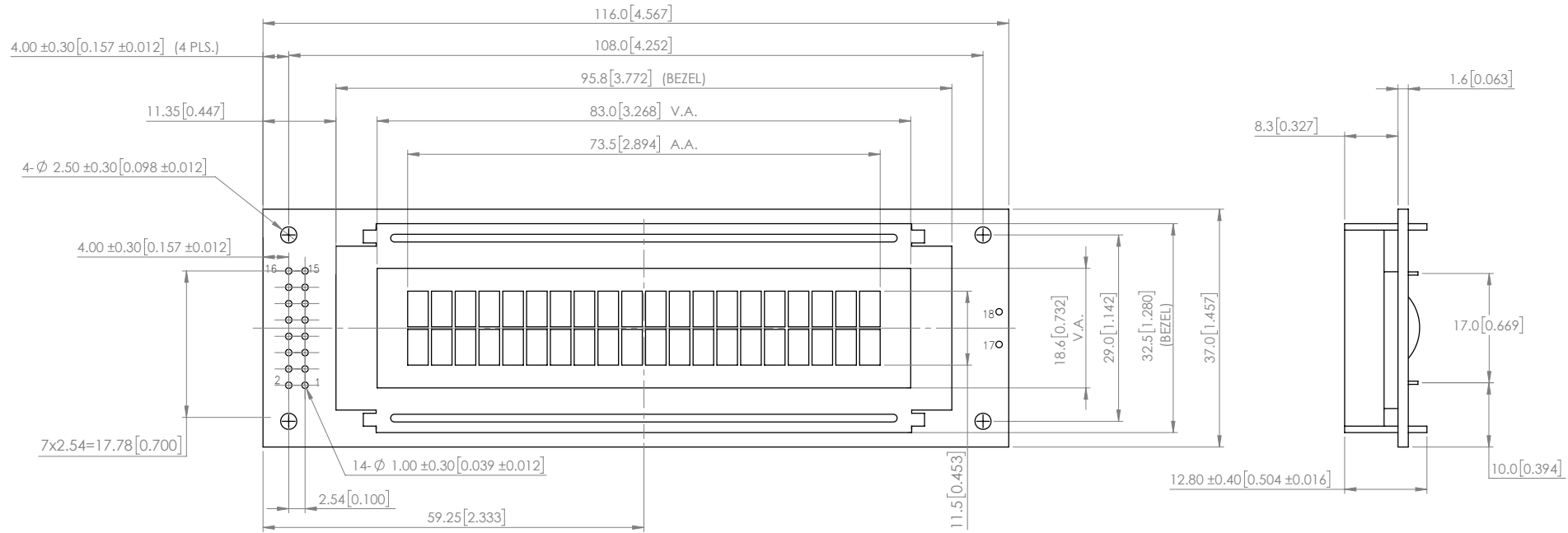


PART NUMBER	LCR-U02002DSF-WH	REV	B
DATE	E.C.N. NUMBER AND REVISION COMMENTS	REV	
05.20.10	E.C.N. #11642	A	
04.30.18	ECN-Lumex201800065	B	



CAUTION: STATIC SENSITIVE DEVICE
 FOLLOW PROPER E.S.D. HANDLING PROCEDURES
 WHEN WORKING WITH THIS PART.

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	425 N. GARY AVE. CAROL STREAM, IL 60188 PHONE : 800-278-5666 FAX : 630-315-2150 WEB : WWW.LUMEX.COM	20 x 2 CHARACTER LCD MODULE, STN GRAY, W/ HEATER, TRANSFLECTIVE, WHITE LED BACKLIGHT, 6:00 VIEW.	DATE : 2018.04.30	DRAWN BY : K.Y.	
	THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE DUE TO NEW MATERIALS OR PRODUCT IMPROVEMENT.		PAGE : 1 OF 3	CHKD BY : E.C.	
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			UNIT : mm [INCH]		

GENERAL SPECIFICATION

ITEM	DESCRIPTION
LCD TYPE	STN GREY, POSITIVE
REAR POLARIZER	TRANSFLECTIVE
BACKLIGHT TYPE	LED
BACKLIGHT COLOR	WHITE
TEMPERATURE RANGE	ULTRA HIGH TEMP.,5V
VIEWING DIRECTION	6 O'CLOCK
VIEWING AREA	83 (W)mm x 18.6 (H)mm
MODULE SIZE	116.0(L)mm x37.0 (W)mm x 12.8 (T)mm
CHARACTER SIZE	3.20(W)mm x 5.55(H)mm
CHARACTER PITCH	3.60(W)mm x 5.95(H)mm
DISPLAY FORMAT	20 x 2
DUTY RATIO	1 / 16 DUTY,1/5 BIAS

ABSOLUTE MAXIMUM RATING

(1) Electrical Absolute Ratings

ITEM	SYMBOL	MIN.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	V _{DD} -V _{SS}	-0.3	6	VOLT
POWER SUPPLY FOR LCD	V _o	V _{DD} -10.0	V _{DD} +0.3	VOLT
INPUT VOLTAGE	V _i	-0.3	V _{DD} +0.3	VOLT

(2) Environmental Absolute Maximum Ratings

ITEM	WIDE TEMPERATURE			
	OPERATING		STORAGE	
	MIN.	MAX.	MIN.	MAX.
AMBIENT TEMPERATURE	-40 °C	+85 °C	-40 °C	+85 °C

Note:

The performance(Both response time & contrast level) under two extreme temperatures is not equivalent to thr one at room temperature.

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425 N. GARY AVE.
CAROL STREAM, IL 60188
PHONE : 800-278-5666
FAX : 630-315-2150
WEB : WWW.LUMEX.COM

20 x 2 CHARACTER LCD MODULE, STN GRAY, W/ HEATER, TRANSFLECTIVE, WHITE LED BACKLIGHT, 6:00 VIEW.

****THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE DUE TO NEW MATERIALS OR PRODUCT IMPROVEMENT.****

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DATE : 2018.04.30	DRAWN BY : K.Y.
PAGE : 2 OF 3	CHKD BY : E.C.
SCALE : NTF	APRVD BY : G.Y.
UNIT : mm [INCH]	Ⓢ

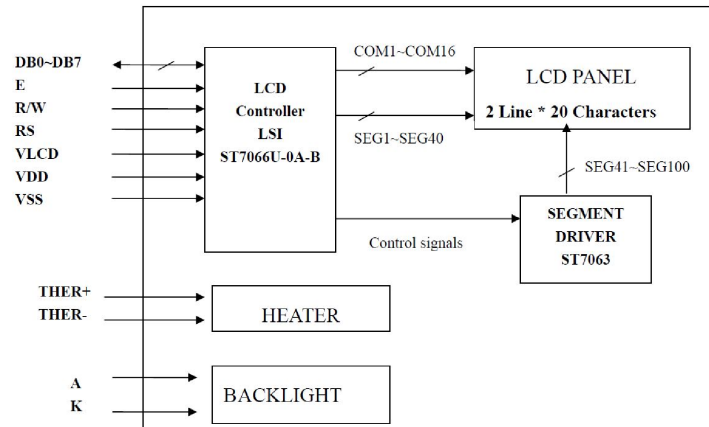
ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	V _{DD}	-	4.5	5	5.5	VOLT
POWER SUPPLY FOR LCD	V _{LCd}	-	4.2	4.5	4.8	VOLT
BACKLIGHT FORWARD VOLTAGE	V _f	I _f =15mA	-	6.6	7.2	V
BACKLIGHT POWER DISSIPATION	PD	-	-	99	-	mW
BACKLIGHT COLOR COORDINATE	X	-	0.24	-	0.33	--
	Y	-	0.24	-	0.33	--
HEATER FORWARD VOLTAGE	V _{fH}	-	-	12	20	V
HEATER FORWARD RESISTANCE	-	-	50	100.	150	ohm
HEATER FORWARD CURRENT	I _H	-	100	150	200	mA
HEATER FORWARD POWER	P _H	-	1.0	1.5	2.0	W



PIN ASSIGNMENT

PIN NO.	PIN OUT	FUNCTION DESCRIPTION
1	V _{SS}	Ground
2	V _{DD}	Power Supply Voltage
3	V ₀	Power Supply for LCD
4	RS	Select Display Data or Instructions
5	R/W	Read or Write Select Signal
6	E	Read / Write Enable Signal
7	DB0	Display Data Signal
8	DB1	
9	DB2	
10	DB3	
11	DB4	
12	DB5	
13	DB6	
14	DB7	
15	LED+(A)	Anode of Backlight
16	LED-(K)	Cathode of Backlight
17	VHTR+	Power Supply(+) for a Heater
18	VHTR-	Power Supply(-) for a Heater

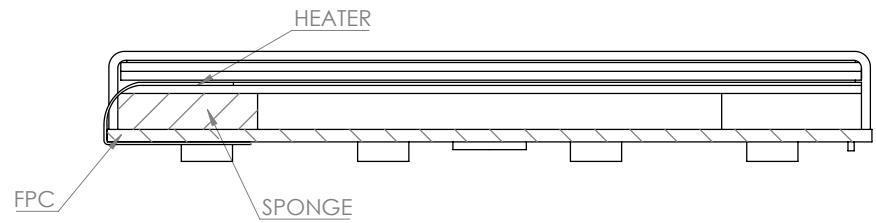
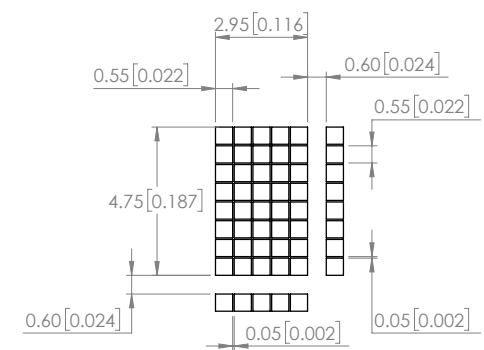
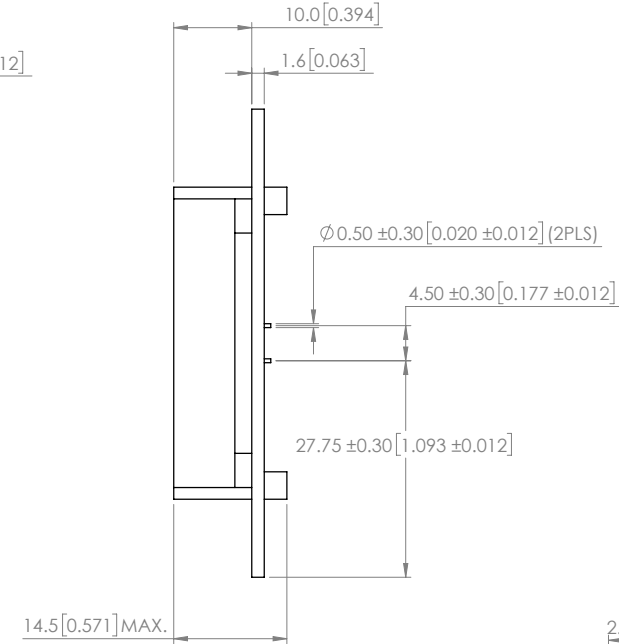
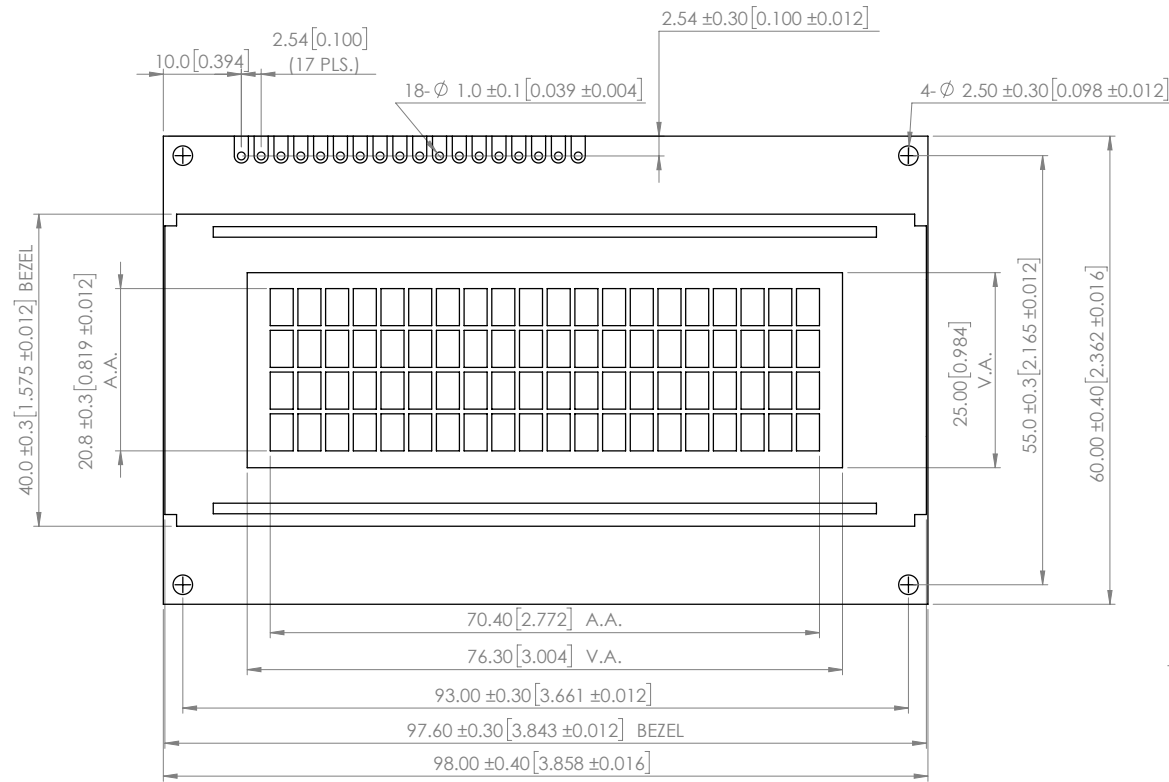
BLOCK DIAGRAM



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 <p>425 N. GARY AVE. CAROL STREAM, IL 60188 PHONE : 800-278-5666 FAX : 630-315-2150 WEB : WWW.LUMEX.COM</p>	20 x 2 CHARACTER LCD MODULE, STN GRAY, W/ HEATER, TRANSFLECTIVE, WHITE LED BACKLIGHT, 6:00 VIEW.		DATE : 2018.04.30	DRAWN BY : K.Y.
	THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE DUE TO NEW MATERIALS OR PRODUCT IMPROVEMENT.		PAGE : 3 OF 3	CHKD BY : E.C.
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			UNIT : mm [INCH]	

PART NUMBER	LCR-U02004DSF-WH	REV	B
DATE	05.20.10	E.C.N. NUMBER AND REVISION COMMENTS	A
04.27.18	ECN-Lumex201800063		B



CAUTION: STATIC SENSITIVE DEVICE
FOLLOW PROPER E.S.D. HANDLING PROCEDURES
WHEN WORKING WITH THIS PART.

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	425 N. GARY AVE. CAROL STREAM, IL 60188 PHONE : 800-278-5666 FAX : 630-315-2150 WEB : WWW.LUMEX.COM	20 x 4 CHARACTER LCD MODULE, STN GRAY, W/ HEATER, TRANSFLECTIVE, WHITE LED BACKLIGHT, 6:00 VIEW.	DATE : 2018.04.27	DRAWN BY : K.Y.
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			UNIT : mm [INCH]	

GENERAL SPECIFICATION

ITEM	DESCRIPTION
LCD TYPE	STN GREY, POSITIVE
REAR POLARIZER	TRANSFLECTIVE
BACKLIGHT TYPE	LED
BACKLIGHT COLOR	WHITE
TEMPERATURE RANGE	ULTRA HIGH TEMP.,5V
VIEWING DIRECTION	6 O'CLOCK
VIEWING AREA	76.3 (W)mm x 25 (H)mm
MODULE SIZE	98.0(L)mm x60.0 (W)mm x 14.5 MAX(T)mm
PIXELS SIZE	0.55(W)mm x 0.55(H)mm
PIXELS PITCH	0.60(W)mm x 0.60(H)mm
DISPLAY FORMAT	20 x 4
DUTY RATIO	1 / 16 DUTY,1/5 BIAS

ABSOLUTE MAXIMUM RATING

(1) Electrical Absolute Ratings

ITEM	SYMBOL	MIN.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	VDD-VSS	-0.3	6.0	VOLT
POWER SUPPLY FOR LCD	Vo	VDD-10.0	VDD+0.3	VOLT
INPUT VOLTAGE	Vi	-0.3	VDD+0.3	VOLT


(2) Environmental Absolute Maximum Ratings

ITEM	WIDE TEMPERATURE			
	OPERATING		STORAGE	
	MIN.	MAX.	MIN.	MAX.
AMBIENT TEMPERATURE	-40 °C	+85 °C	-40 °C	+85 °C

Note:

The performance(Both response time & contrast level) under two extreme temperatures is not equivalent to thr one at room temperature.

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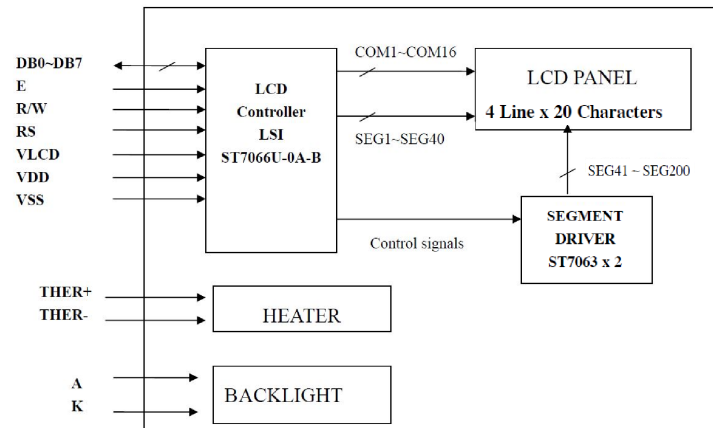
ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	VDD	-	4.5	5.0	5.5	VOLT
POWER SUPPLY FOR LCD	VLCD	VDD-V5	4.2	4.5	4.8	VOLT
BACKLIGHT FORWARD VOLTAGE	Vf	If=30mA	-	3.3	-	V
BACKLIGHT FORWARD CURRENT	If	-	-	30	40	mA
BACKLIGHT POWER DISSIPATION	PD	-	-	99	-	mW
BACKLIGHT COLOR COORDINATE	X	-	0.24	-	0.33	--
	Y	-	0.24	-	0.33	--
HEATER FORWARD VOLTAGE	VfH	-	-	12	20	V
HEATER FORWARD RESISTANCE	-	-	70	120	170	ohm
HEATER FORWARD CURRENT	IH	-	100	150	200	mA
HEATER FORWARD POWER	PH	-	0.5	1.0	1.5	W

ELECTRICAL CHARACTERISTICS

PIN NO.	PIN OUT	FUNCTION DESCRIPTION
1	VSS	Ground
2	VDD	Power Supply Voltage
3	V0	Power Supply for LCD
4	RS	Select Display Data or Instructions
5	R/W	Read or Write Select Signal
6	E	Read / Write Enable Signal
7	DB0	Display Data Signal
8	DB1	
9	DB2	
10	DB3	
11	DB4	
12	DB5	
13	DB6	
14	DB7	
15	LED+(A)	Anode of Backlight
16	LED-(K)	Cathode of Backlight
17	VHTR+	Power Supply(+) for a Heater
18	VHTR-	Power Supply(-) for a Heater

BLOCK DIAGRAM



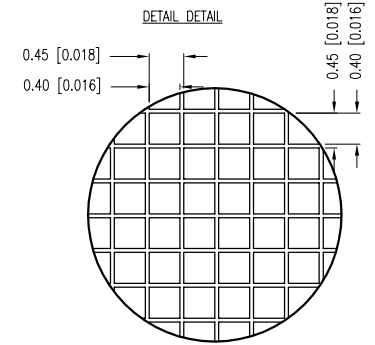
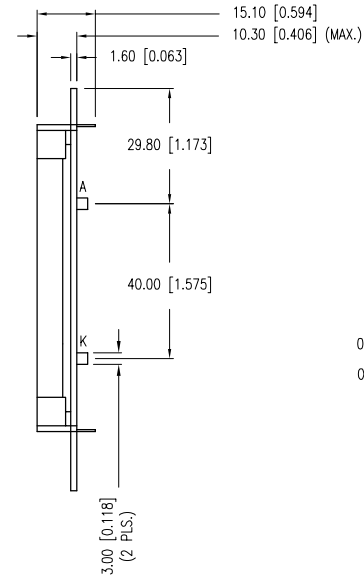
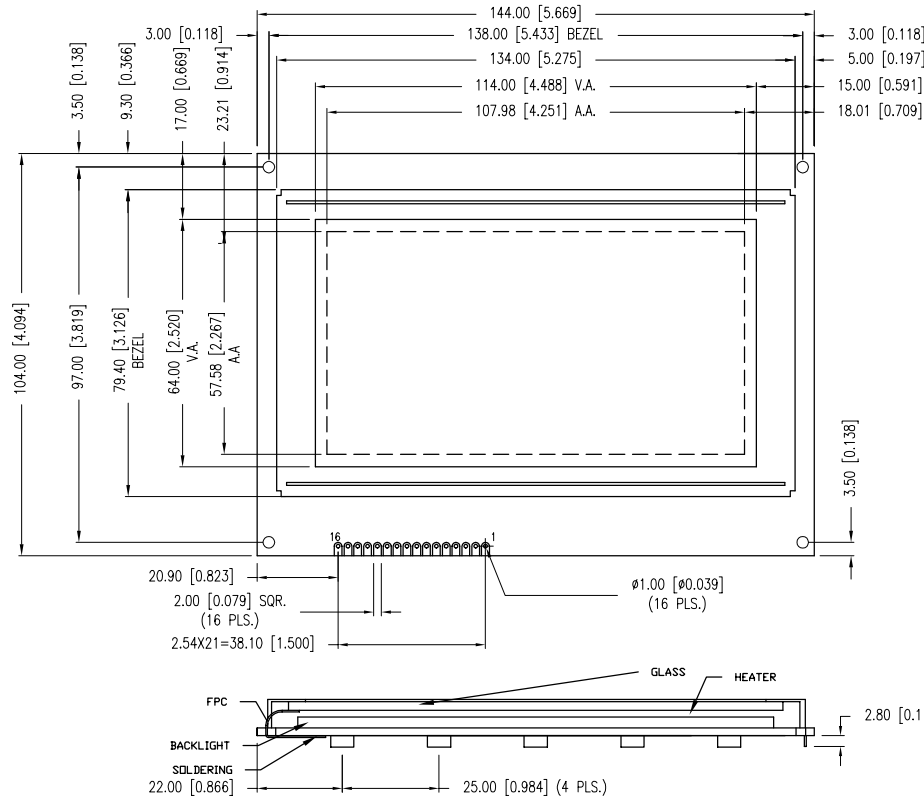
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CAROL STREAM, IL 60188
PHONE : 800-278-5666
FAX : 630-315-2150
WEB : WWW.LUMEX.COM

20 x 4 CHARACTER LCD MODULE, STN GRAY, W/ HEATER, TRANSFLECTIVE, WHITE LED BACKLIGHT, 6:00 VIEW.
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DATE : 2018.04.27	DRAWN BY : K.Y.
PAGE : 3 OF 3	CHKD BY : E.C.
SCALE : NTF	APRVD BY : G.Y.
UNIT : mm [INCH]	Ⓢ



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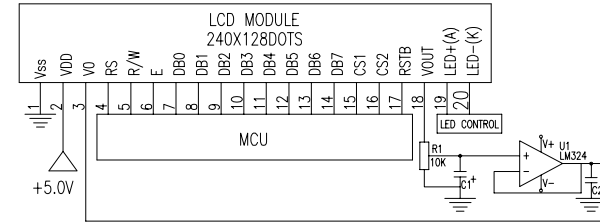
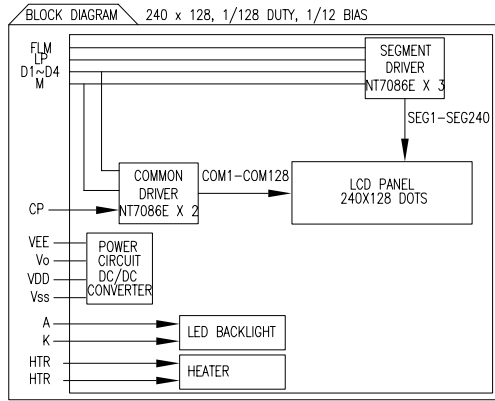
290 E. HELEN ROAD
PALATINE, IL 60067-6976
PHONE: +1.847.359.2790
FAX: +1.847.359.6538
WEB: WWW.LUMEX.COM

240x128 GRAPHIC LCD MODULE, FSTN, TRANSFLECTIVE, WHITE LED BACKLIGHT, W/HEATER, 6:00 VIEW, VLCD=18.OV.

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DATE:	04.01.10	DRAWN BY:	JN
PAGE:	1 OF 2	CHKD BY:	YA
SCALE:	NTS	APRVD BY:	BC
UNIT:	mm [INCH]		(Pb)



NOTES:
 1. R1 IS THE CONTRAST RESISTOR.
 2. VOUT=-10.0V
 3. ADJUST R1 TO GET GOOD CONTRAST. TYP: V0 IS -13.0V.

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
			MIN	MAX	
SUPPLY VOLTAGE FOR LOGIC	V _{DD} -V _{SS}	T _a =25°C	-0.3	7.0	V
SUPPLY VOLTAGE FOR LCD DRIVE	V _{LCD}	-	0	30	V
INPUT VOLTAGE	V _{IN}	T _a =25°C	-0.3	V _{DD} +0.3	V
OPERATING TEMPERATURE	T _{opr}	W/ HEATER	-40	+85	°C
STORAGE TEMPERATURE	T _{stg}	W/ HEATER	-40	+85	°C

PIN CONFIGURATION

PIN NO.	SYMBOL	FUNCTION
1	FLM	FIRST LINE MAKER
2	M	CONTROL SIGNAL FOR AC DRIVING
3	LP	COMMON DRIVER DATA SHIFT SIGNAL
4	CP	CLOCK PULSE FOR SEGMENT SHIFT REGISTER
5	V _{DD}	POWER SUPPLY
6	V _{SS}	GROUND
7	VEE	POWER SUPPLY VOLTAGE FOR LCD
8	D1_SID	DATA BIT INPUT/OUTPUT
9	D2_DL	
10	D3_DM	
11	D4_DR	
12	Vo	CONTRAST ADJUSTMENT VOLTAGE
13	LED+ (A)	ANODE OF LED
14	LED- (K)	CATHODE OF LED
15	HTR +	POWER SUPPLY FOR HEATER +12V
16	HTR -	POWER SUPPLY FOR HEATER GND

ELECTRICAL CHARACTERISTICS

V_{DD}=2.7V to 5.5V, T_A=25°C

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT	
			MIN.	TYP.	MAX.		
SUPPLY VOLTAGE FOR LOGIC	V _{DD} -V _{SS}	-	2.7	5.0	5.5	V	
SUPPLY VOLTAGE FOR LCD DRIVE	V _{DD} -V _o	V _{DD} =5V	6.0	18.0	28.0	V	
SUPPLY CURRENT FOR LOGIC	I _{DD}	V _{DD} =5V	-	8.2	13.0	mA	
LED BACKLIGHT	VOLTAGE	V _f	I _f =60mA	-	5.0	-	V
	CURRENT	I _f	-	-	60	80	mA
	POWER CONSUMPTION	PD	-	-	192	-	mW
	LUMINOUS	L	-	-	150	-	cd/m ²
	COLOR COORDINATE	X Y	WHITE	.260 .260	- -	.330 .330	- -
HEATER	VOLTAGE	V _{fH}	-	-	12	-	V
	RESISTANCE	-	-	160	210	260	OHM
	CURRENT	I _H	-	40	60	80	mA
	POWER	PH	-	-	0.71	-	W

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UNCONTROLLED DOCUMENT



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 PALATINE, IL 60067-6976
 PHONE: +1.847.359.2790
 FAX: +1.847.359.6538
 WEB: WWW.LUMEX.COM

240x128 GRAPHIC LCD MODULE, FSTN, TRANSFLECTIVE, WHITE LED BACKLIGHT, W/HEATER, 6:00 VIEW, VLCD=18.0V.

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DATE:	04.01.10	DRAWN BY:	JN
PAGE:	2 OF 2	CHKD BY:	YA
SCALE:	NTS	APRVD BY:	BC
UNIT:	mm [INCH]		