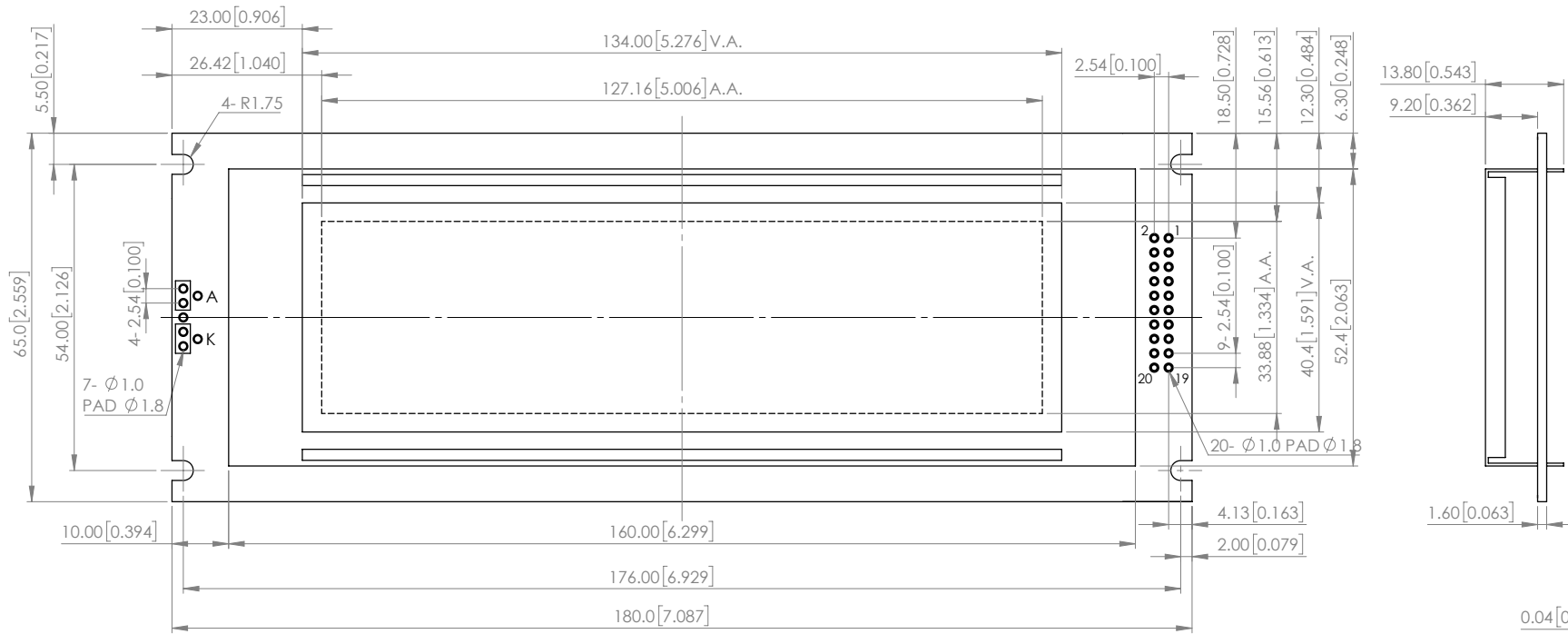
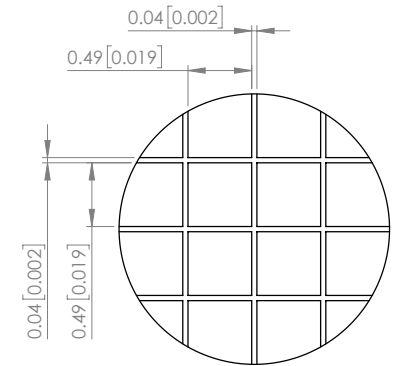


PART NUMBER		LCM-S24064GSF	REV	A
REV	E.C.N. NUMBER AND REVISION COMMENTS		DATE	
A	ECN-Lumex201800062		04.27.18	



PIN NO	SIGNAL
1	FGND
2	VSS
3	VDD
4	VO
5	/WR
6	/RD
7	/CE
8	C/D
9	NC
10	/RST
11	DB0
12	DB1
13	DB2
14	DB3
15	DB4
16	DB5
17	DB6
18	DB7
19	FS
20	NC



**NOTE:**  
1. RoHS COMPLIANT.

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	425 N. GARY AVE. CAROL STREAM, IL 60188 PHONE : 800-278-5666 FAX : 630-315-2150 WEB : WWW.LUMEX.COM	180.0(W)×65.0(H)×13.8(D)mm, 240x64 DOT MATRIX GRAPHIC LCD MODULE, STN GRAY, TRANSPARENT, 1/64 DUTY, LED BACKLIGHT.	DATE : 2018.04.27	DRAWN BY : C.C.	
		**THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE DUE TO NEW MATERIALS OR PRODUCT IMPROVEMENT.**		PAGE : 1 OF 4	CHKD BY : E.C.
		CONFIDENTIAL INFORMATION THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE PROPERTY OF LUMEX INC. EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING BY LUMEX INC., THE HOLDER OF THIS DOCUMENT SHALL KEEP ALL INFORMATION CONTAINED HEREIN CONFIDENTIAL AND SHALL PROTECT SAME IN WHOLE OR IN PART FROM DISCLOSURE AND DISSEMINATION TO ALL THIRD PARTIES.		SCALE : NTF	APRVD BY : G.Y.
				UNIT : mm [INCH]	

**GENERAL SPECIFICATION**

ITEM	DESCRIPTION
LCD TYPE	STN, POSITIVE
REAR POLARIZER	TRANSFLECTIVE
BACKLIGHT TYPE	LED
BACKLIGHT COLOR	YELLOW GREEN
TEMPERATURE RANGE	NORMAL TEMP., 5V
VIEWING DIRECTION	6 O'CLOCK
VIEWING AREA	134.0 (W)mm x 40.4 (H)mm
MODULE SIZE	180 (W)mm x 65.0 (H)mm x 13.8 MAX(D)mm
PIXELS SIZE	0.49 x 0.49
PIXELS PITCH	0.53 x 0.53
DISPLAY FORMAT	240(W) x 64(H)
DUTY RATIO	1 / 64 DUTY

**ABSOLUTE MAXIMUM RATING**

(1) Electrical Absolute Ratings

ITEM	SYMBOL	MIN.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	V <sub>DD</sub> -V <sub>SS</sub>	0	5.5	VOLT
POWER SUPPLY FOR LCD	V <sub>DD</sub> -V <sub>o</sub>	0	22	VOLT
INPUT VOLTAGE	V <sub>1</sub>	V <sub>SS</sub>	V <sub>DD</sub>	VOLT
LED BACKLIGHT POWER DISSIPATION	P <sub>AD</sub>	-	5.0	W
LED BACKLIGHT FORWARD CURRENT	I <sub>AF</sub>	-	990	mA
LED BACKLIGHT REVERSE VOLTAGE	V <sub>R</sub>	-	8	V

(2) Environmental Absolute Maximum Ratings

ITEM	WIDE TEMPERATURE			
	OPERATING		STORAGE	
	MIN.	MAX.	MIN.	MAX.
AMBIENT TEMPERATURE	0°C	+50°C	-20°C	+70°C
HUMIDITY (WITHOUT CONDENSATION)	NOTE 1, 2		NOTE 3, 4	

Note 1: Ta ≤ 50°C: 80% RH max

Ta > 50°C: Absolute humidity must be lower than the humidity of 85%RH at 50°C

Note 2: Background color changes slightly depending on ambient temperature.

This phenomenon is reversible.

Note 3: Ta at -20°C will be <48hrs at 70°C will be <120hrs when humidity is higher than 75%.

Note 4: Ta ≤ 70°C: 75RH max

Ta > 70°C: absolute humidity must be lower than the humidity of 75%RH at 70°C

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180.0(W)×65.0(H)×13.8(D)mm, 240x64 DOT MATRIX GRAPHIC LCD MODULE, STN GRAY, TRANSFLECTIVE, 1/64 DUTY, LED BACKLIGHT.

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DATE : 2018.04.27	DRAWN BY : C.C.
PAGE : 2 OF 4	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	VDD-VSS	-	4.5	5.0	5.5	VOLT
POWER SUPPLY FOR LCD	VEE-VSS	-	-14.1	-14.4	-14.8	VOLT
INPUT VOLTAGE	VIL	L LEVEL	0	-	0.8	VOLT
	VIH	H LEVEL	-2.2 VDD	-	VDD	VOLT
	VDD-VO	Ta=25°C	10.8	12.2	13.1	VOLT
POWER SUPPLY CURRENT FOR LCM	IDD	VDD=5.0V VDD-VO=12.2V	-	16.0	25.0	mA
THE BRIGHTNESS OF BACKLIGHT	L	If=690mA	120	180	-	cd/m <sup>2</sup>
PEAK EMISSION WAVELENGTH	λP	If=690mA	565	570	575	nm
LED FORWARD VOLTAGE	VF	If=690 mA	-	4.1	4.6	VOLT

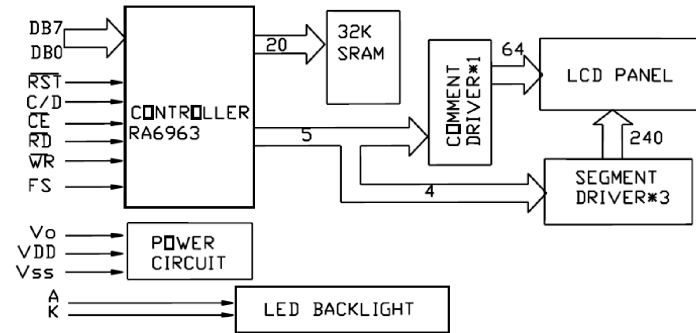
**ELECTRICAL CHARACTERISTICS**

PIN NO.	PIN OUT	FUNCTION DESCRIPTION
1	FGND	For GND
2	VSS	Power Supply Ground
3	VDD	Power Supply Voltage
4	Vo	Contrast Adjustment Voltage
5	/WR	Data Write
6	/RD	Data Read
7	/CE	Enable Signal
8	C/D	WR='L', C/D='H': Command Write WR='L', C/D='L': Data Write RD='L', C/D='H': Status Read RD='L', C/D='L': Data Read
9	VEE	No Connection
10	/RST	Reset Signal
11	DB0	Data Bit 0
12	DB1	Data Bit 1
13	DB2	Data Bit 2
14	DB3	Data Bit 3
15	DB4	Data Bit 4
16	DB5	Data Bit 5
17	DB6	Data Bit 6
18	DB7	Data Bit 7
19	FS	H : 6*8/L : 8*8 Select of Font
20	NC	No Connection

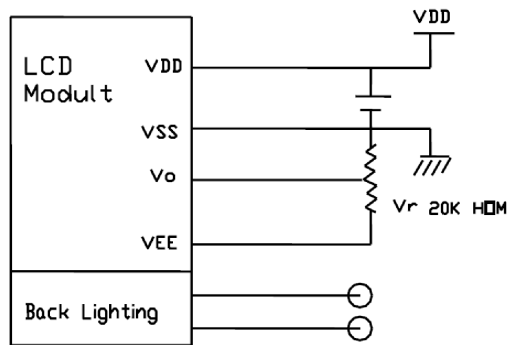
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 <p>425 N. GARY AVE. CAROL STREAM, IL 60188 PHONE : 800-278-5666 FAX : 630-315-2150 WEB : WWW.LUMEX.COM</p>	180.0(W)×65.0(H)×13.8(D)mm, 240x64 DOT MATRIX GRAPHIC LCD MODULE, STN GRAY, TRANSPARENT, 1/64 DUTY, LED BACKLIGHT.	DATE : 2018.04.27	DRAWN BY : C.C.	
	**THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE DUE TO NEW MATERIALS OR PRODUCT IMPROVEMENT.**	PAGE : 3 OF 4	CHKD BY : E.C.	
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		UNIT : mm [INCH]		

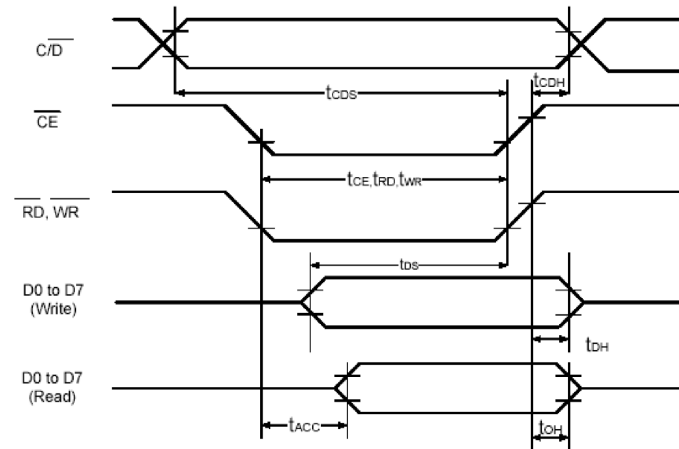
**BLOCK DIAGRAM**



**POWER SUPPLY**



**TIMING CHARACTERISTIC**



ITEM	SYMBOL	TEST CONDITIONS	MIN	MAX	UNIT
C/D Set Up Time	$t_{CDS}$	--	100	--	ns
C/D Hold Time	$t_{CDH}$	--	10	--	ns
$\overline{CE}$ , $\overline{RD}$ , $\overline{WR}$ Pulse Width	$t_{CE, RD, WR}$	--	80	--	ns
Data Set Up Time	$t_{DS}$	--	80	--	ns
Data Hold Time	$t_{DH}$	--	40	--	ns
Access Time	$t_{ACC}$	--	--	150	ns
Output Hold Time	$t_{OH}$	--	10	50	ns

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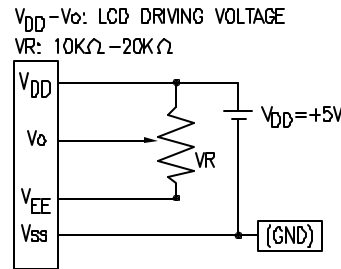
180.0(W)×65.0(H)×13.8(D)mm, 240x64 DOT MATRIX GRAPHIC LCD MODULE, STN GRAY, TRANSPARENT, 1/64 DUTY, LED BACKLIGHT.

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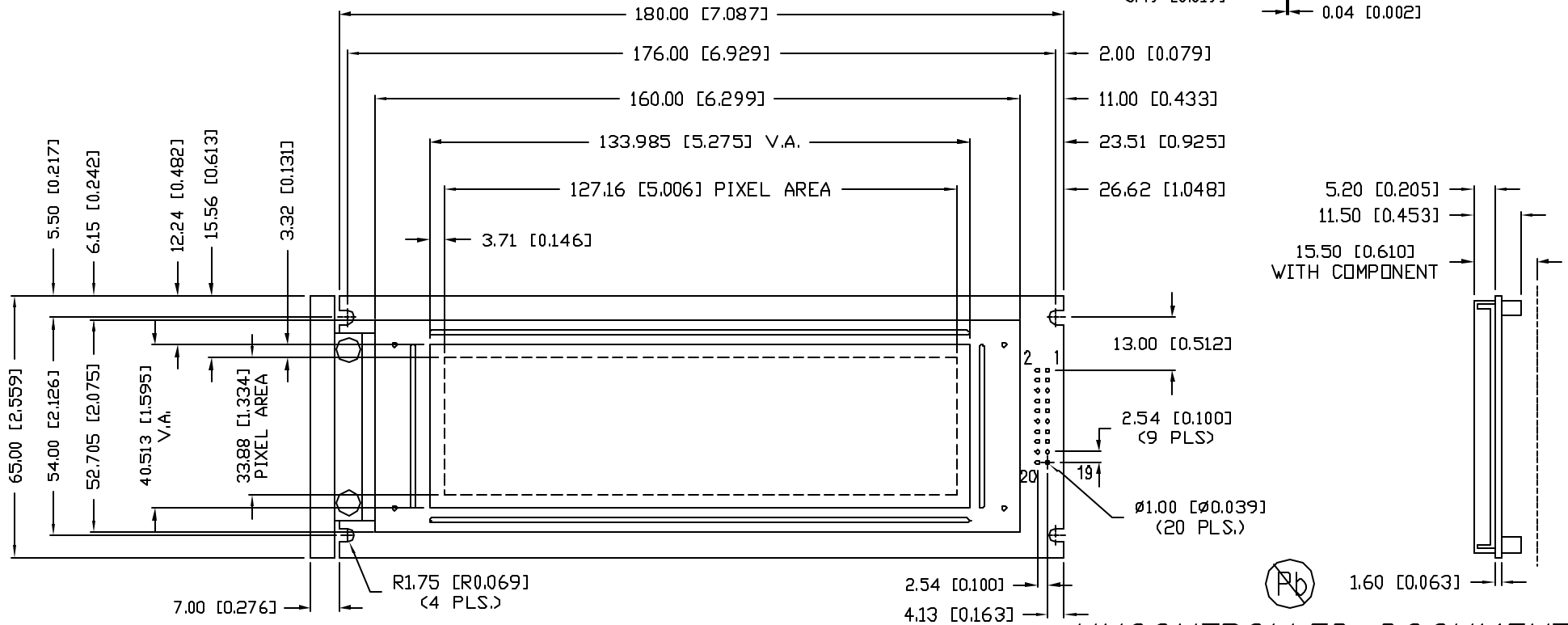
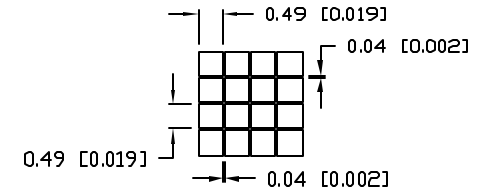
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DATE : 2018.04.27	DRAWN BY : C.C.
PAGE : 4 OF 4	CHKD BY : E.C.
SCALE : NTF	APRVD BY : G.Y.
UNIT : mm [INCH]	Ⓢ

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



PIXEL DETAIL



\*UNLESS OTHERWISE SPECIFIED TOLERANCES PER DECIMAL PRECISION ARE: X=±1 (±0.039), XX=±0.5 (±0.020), XXX=±0.25 (±0.010), XXXX=±0.127 (±0.005). LEAD SIZE=±0.05 (±0.002), LEAD LENGTH=±0.75 (±0.030), MIN= +DECIMAL PRECISION -0.00 MAX.= +0.00 -DECIMAL PRECISION

REV.	PART NUMBER LCM-S24064GSR	<p><b>CONFIDENTIAL INFORMATION</b></p> <p>THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE PROPERTY OF LUMEX INC. EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING BY LUMEX INC., THE HOLDER OF THIS DOCUMENT SHALL KEEP ALL INFORMATION CONTAINED HEREIN CONFIDENTIAL AND SHALL PROTECT SAME IN WHOLE OR IN PART FROM DISCLOSURE AND DISSEMINATION TO ALL THIRD PARTIES.</p> <p><b>RELIABILITY NOTE</b></p> <p>OUR MANY YEARS OF EXPERIENCE DATA ACCUMULATION INDICATE THAT SOLDER HEAT IS A MAJOR CAUSE OF EARLY AND FUTURE FAILURE. PLEASE PAY ATTENTION TO YOUR SOLDERING PROCESS.</p>		<p>290 E. HELEN ROAD PALATINE, IL 60067-6976 PHONE: +1.847.359.2790 US WEB: www.lumex.com TW WEB: www.lumex.com.tw</p>
240 x 64 DOT MATRIX GRAPHIC MODULE, 1/64 DUTY, WITH NEGATIVE CHARGE PUMP, STN, REFLECTIVE.		DRAWN BY: JIN	CHECKED BY:	APPROVED BY: DATE: 06.20.08 PAGE: 1 OF 2 SCALE: N/A

PRELIMINARY IN P/N DIR

ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
POWER SUPPLY VOLTAGE FOR LOGIC	VDD	Ta=25°C	4.5	5.0	5.5	V
POWER SUPPLY CURRENT FOR LOGIC	IDD	VDD-VSS=5V	-	16.0	25.0	mA
INPUT VOLTAGE	VIH	HIGH LEVEL	2.2	-	VDD	V
INPUT VOLTAGE	VIL	LOW LEVEL	-	-	0.6	V
OUTPUT VOLTAGE	VOH	HIGH LEVEL	2.4	-	-	V
OUTPUT VOLTAGE	VOL	LOW LEVEL	-	-	0.4	V
POWER SUPPLY VOLTAGE FOR LCD DRIVE (0°C TO 50°C)	VDD-Vo	VDD=5V Ta=25°C	12.2	13.6	14.5	V
POWER SUPPLY VOLTAGE FOR LCD DRIVE (-20°C TO +70°C)	VDD-Vo	VDD=5V Ta=25°C	12.6	14.1	14.9	V

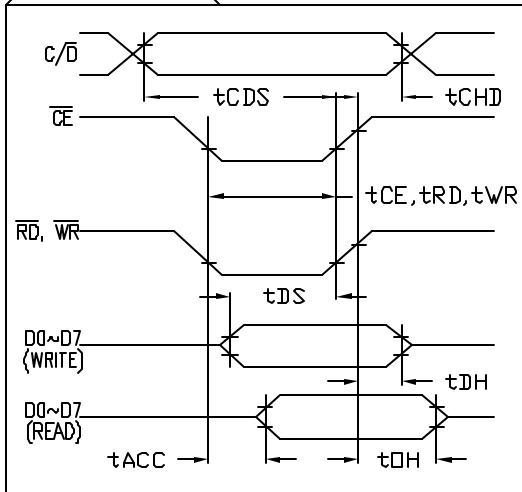
ELECTRIC MAXIMUM RATING

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
POWER SUPPLY FOR LCD DRIVE	VDD-Vo	0	-	22.0	V
POWER SUPPLY FOR LOGIC	VDD-VSS	0	-	7.0	V
INPUT VOLTAGE	VI	VSS	-	VDD	V

TIMING CHARACTERISTICS

PARAMETER	SYMBOL	MIN	MAX	UNIT
C/D SETUP TIME	tCDS	100	-	ns
C/D HOLD TIME	tCDH	10	-	ns
CE, RD, WR PULSE WIDTH	tCE, tRD, tWR	80	-	ns
DATA SETUP TIME	tDS	80	-	ns
DATA HOLD TIME	tDH	40	-	ns
ACCESS TIME	tACC	-	150	ns
OUTPUT HOLD TIME	tOH	10	50	ns

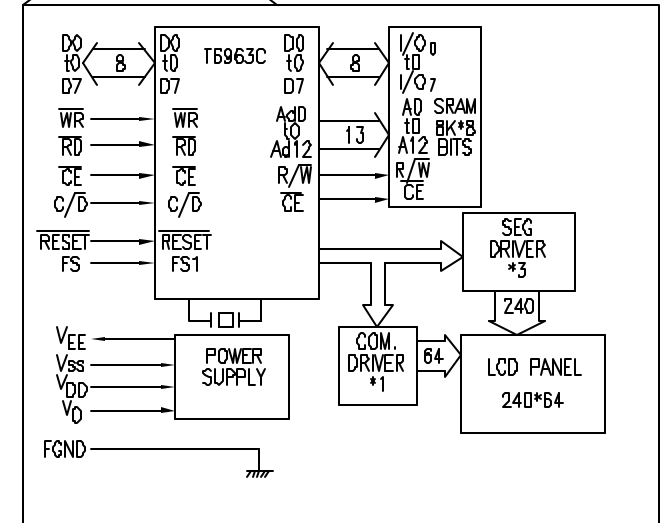
BUS TIMING



PIN CONFIGURATION

PIN #	SYMBOL	LEVEL	FUNCTION
1	FGND	-	FRAME GROUND (CONNECTED TO METAL BEZEL)
2	GND	0V	SIGNAL GROUND
3	VDD	+5V	POWER SUPPLY
4	Vo	-	CONTRAST ADJUSTMENT VOLTAGE
5	WR	L	DATA WRITE
6	RD	L	DATA READ
7	CE	L	CHIP ENABLE
8	C/D	H/L	WR="L", C/D="H": COMMAND WRITE C/D="L": DATA WRITE RD="L", C/D="H": COMMAND READ C/D="L": DATA READ
9	VEE	-15V	OUTPUT VOLTAGE FOR LCD DRIVING
10	RESET	L	CONTROL RESET (MODULE RESET)
11~18	D0~D7	H/L	DATA BUS
19	FS	H/L	FONT SELECT "H": 6 x 8 PIXEL/FONT "L": 8 x 8 PIXEL/FONT
20	N/C	-	NO CONNECTION

BLOCK DIAGRAM



UNCONTROLLED DOCUMENT

REV.

PART NUMBER

LCM-S24064GSR

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RELIABILITY NOTE

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240 x 64 DOT MATRIX GRAPHIC MODULE, 1/64 DUTY,  
WITH NEGATIVE CHARGE PUMP, STN, REFLECTIVE.

DRAWN BY:

CHECKED BY:

APPROVED BY:

DATE: 06.20.08

JN

PAGE: 2 OF 2

SCALE: N/A

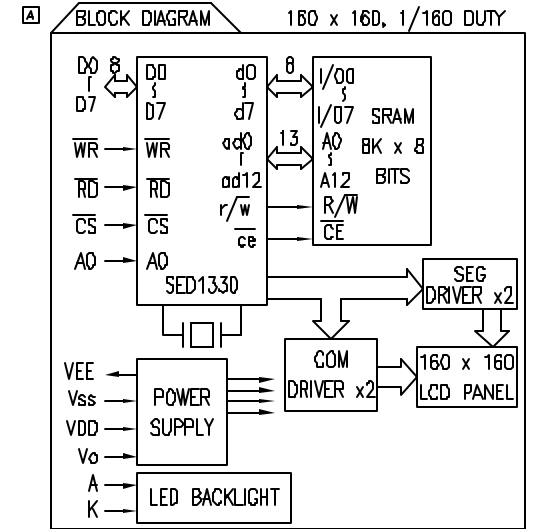
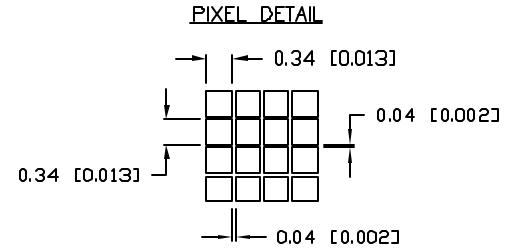
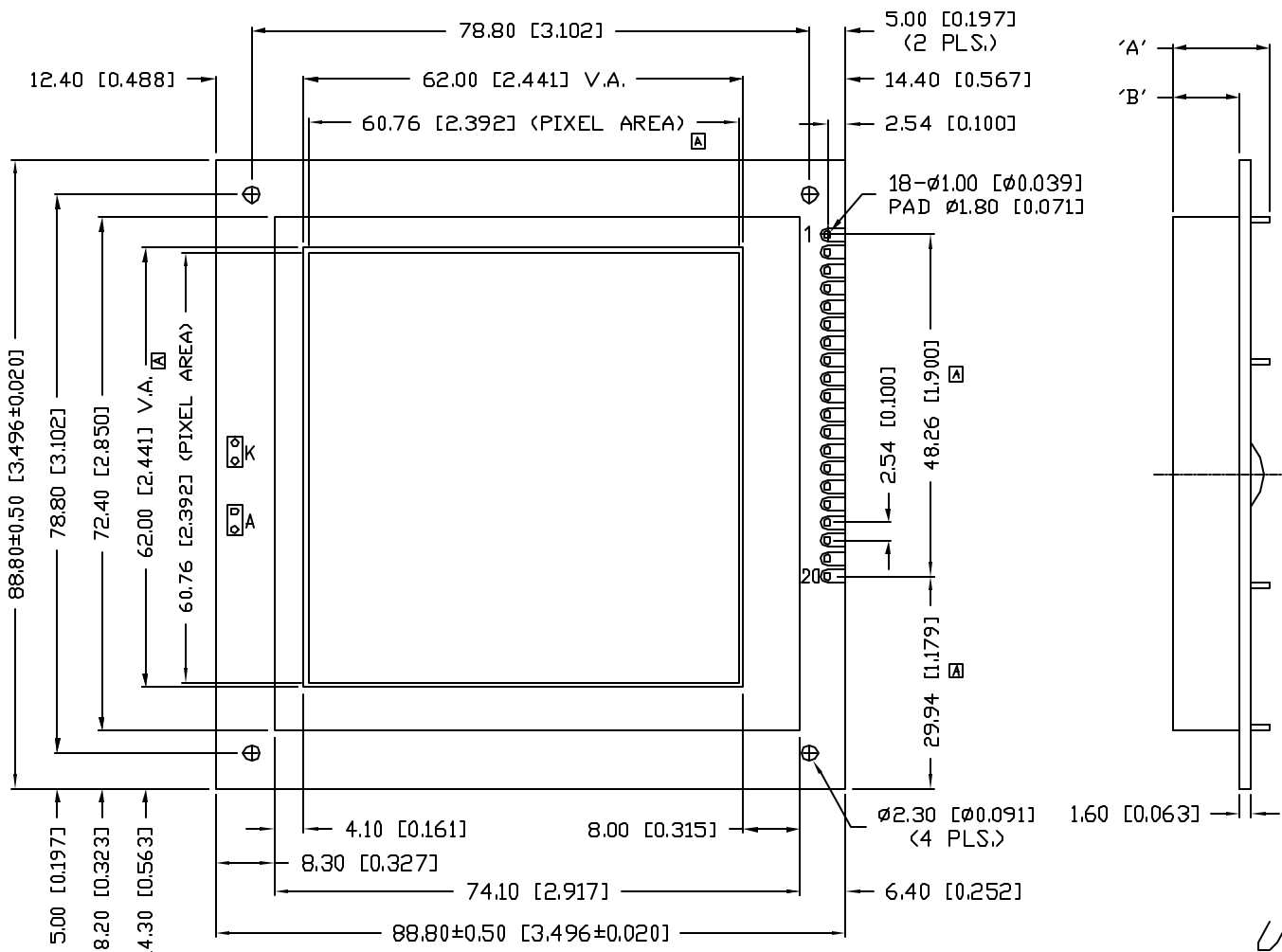
# UNCONTROLLED DOCUMENT

PART NUMBER		REV.
LCM-X160160GXX		A

LCM-X	GXX	DESCRIPTION
STANDARD	S	SR
HIGH TEMP.	H	SF

TYPE	DIM.	A	B
WITH BACKLIGHT		13.8	9.4
NO BACKLIGHT		9.7	4.8

REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #10738. & #10BRDR.	5.21.01



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

# UNCONTROLLED DOCUMENT

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REV.	PART NUMBER
A	LCM-X160160GXX
160 x 160 DOT MATRIX GRAPHIC MODULE, 1/160 DUTY, STN WITH NEGATIVE CHARGE PUMP.	

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SA/CT			PAGE: 1 OF 2
			SCALE: N/A

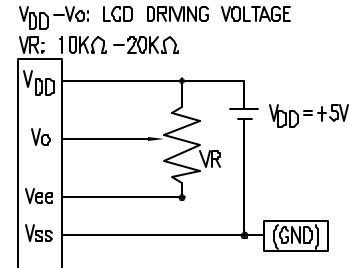
PART NUMBER		REV.
LCM-X160160GXX		A
REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #10738. & #10BRDR.	5.21.01

**A** PIN CONFIGURATION

PIN NO.	SYMBOL	LEVEL	FUNCTION
1	V <sub>SS</sub>	0V	GND
2	V <sub>DD</sub>	5V	SUPPLY VOLTAGE FOR LOGIC
3	V <sub>O</sub>	-	CONTRAST VOLTAGE FOR LCD DRIVE(VARIABLE)
4	R <sub>D</sub>	L	READ SIGNAL
5	W <sub>R</sub>	L	WRITE SIGNAL
6	S <sub>S</sub>	L	CHIP SELECT
7	AD	H/L	DATA TYPE SELECT
8~15	DB0~DB7	H/L	DATA BUS
16	RES	L	RESET SIGNAL (NOTE 1)
17	VEE	-	POWER SUPPLY VOLTAGE FOR LCD
18	A	4.2V	ANODE LED BACKLIGHT
19	K	-	CATHODE LED BACKLIGHT
20	(N/C)	-	NO CONNECTION

NOTES:

- RES IS A SCHMITT TRIGGER INPUT. THE PULSEWIDTH ON RES MUST BE AT LEAST 200μs. PULSES OF MORE THAN A FEW SECONDS WILL CAUSE DC VOLTAGES TO BE APPLIED TO THE LCD PANEL.



ELECTRICAL CHARACTERISTICS

V<sub>DD</sub>=4.75V to 5.25V, T<sub>A</sub>=25°C

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT	
			MIN.	TYP.	MAX.		
SUPPLY VOLTAGE FOR LOGIC	V <sub>DD</sub> -V <sub>SS</sub>	-	4.75	5.0	5.25	V	
SUPPLY VOLTAGE FOR LCD DRIVE	V <sub>DD</sub> -V <sub>EE</sub>	-	-	18.2	-	V	
SUPPLY CURRENT FOR LOGIC	I <sub>DD</sub>	-	-	-	20	mA	
INPUT VOLTAGE	HIGH	V <sub>IH</sub>	-	0.2	-	V <sub>DD</sub>	V
	LOW	V <sub>IL</sub>	-	0	-	0.8	V
OUTPUT VOLTAGE	HIGH	V <sub>OH</sub>	I <sub>OH</sub> =-3.0mA	2.4	-	-	V
	LOW	V <sub>OL</sub>	I <sub>OL</sub> =3.0mA	-	-	0.4	V
*LED BACKLIGHT	VOLTAGE	V <sub>f</sub>	I <sub>f</sub> =560mA	-	4.2	4.5	V
	CURRENT	I <sub>f</sub>	-	-	560	-	mA
	POWER CONSUMPTION	P <sub>D</sub>	-	-	2.8	-	W
	LUMINOUS	L	I <sub>f</sub> =560mA	60	-	-	cd/m <sup>2</sup>
	COLOR	-	-	-	570	-	nm

\*ONLY APPLIES TO MODULES WITH BACKLIGHT

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
			MIN	MAX	
SUPPLY VOLTAGE FOR LOGIC	V <sub>DD</sub> -V <sub>SS</sub>	T <sub>a</sub> =25°C	0	7.0	V
SUPPLY VOLTAGE FOR LCD DRIVE	V <sub>DD</sub> -V <sub>EE</sub>	-	17.2@40°C	19.2@0°C	V
INPUT VOLTAGE	V <sub>I</sub>	T <sub>a</sub> =25°C	V <sub>SS</sub>	V <sub>DD</sub>	V
OPERATING TEMPERATURE	T <sub>opr</sub>	LCM-S	0	50	°C
		LCM-H	-20	70	°C
STORAGE TEMPERATURE	T <sub>stg</sub>	LCM-S	-20	70	°C
		LCM-H	-30	85	°C

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REV.	PART NUMBER
A	LCM-X160160GXX

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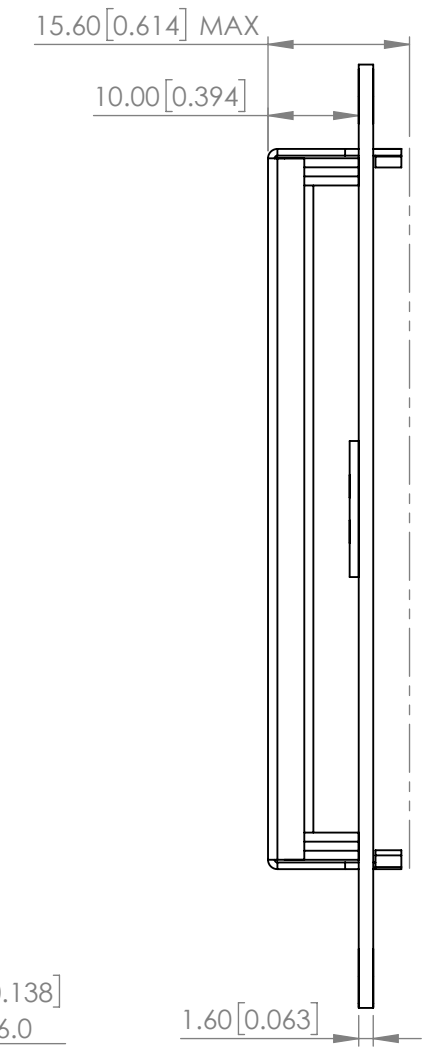
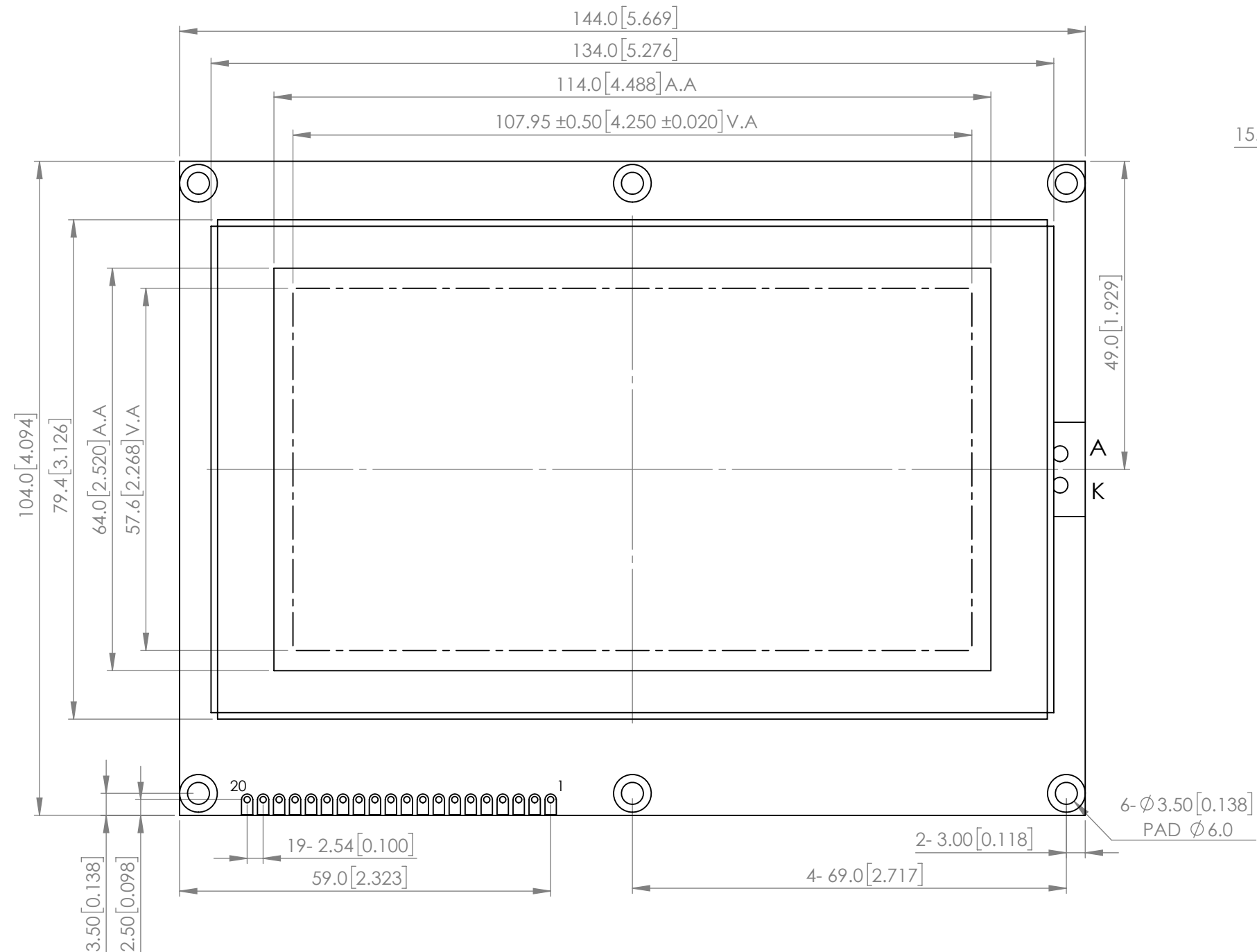
160 x 160 DOT MATRIX GRAPHIC MODULE,  
 1/160 DUTY, STN WITH NEGATIVE CHARGE PUMP.

**RELIABILITY NOTE**  
 OUR MANY YEARS OF EXPERIENCE DATA ACCUMULATION INDICATE THAT SOLDER HEAT IS A MAJOR CAUSE OF EARLY AND FUTURE FAILURE. PLEASE PAY ATTENTION TO YOUR SOLDERING PROCESS.

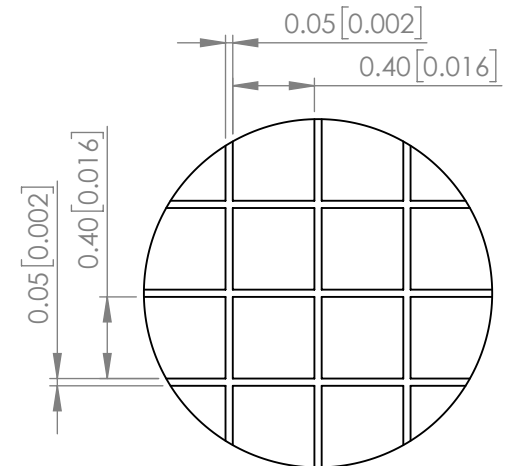
DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
SA/CT			12.1.98
			PAGE: 2 OF 2
			SCALE: N/A



PART NUMBER	LCM-S240128GSF	REV	E
REV	E.C.N. NUMBER AND REVISION COMMENTS	DATE	
A	E.C.N. #10BRDR. & REDRAWN	09.10.98	
B	E.C.N. #10516.	05.10.99	
C	E.C.N. #10BRDR. & #10969	03.14.03	
D	ECN-Lumex201800069	05.02.18	
E	ECN-Lumex202000046	06.04.20	





PIN NO	SIGNAL
1	VSS
2	VDD
3	VO
4	C/D
5	/RD
6	/WR
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7
15	/CE
16	/RST
17	VEE
18	MD
19	FS
20	NC



**NOTE:**  
1. RoHS COMPLIANT.

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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>	<p>144.0(W)×104.0(H)×10.8/15.6(D)MAX. mm, 240x128 DOT MATRIX GRAPHIC LCD MODULE, STN GRAY, POSITIVE, 1/128 DUTY, LED BACKLIGHT.</p>	<p>DATE : 2020.06.04</p>	<p>DRAWN BY : E.C.</p>
	<p>**THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE.**</p>	<p>PAGE : 1 OF 4</p>	<p>CHKD BY : E.C.</p>
	<p>CONFIDENTIAL INFORMATION THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE PROPERTY OF LUMEX INC. EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING BY LUMEX INC., THE HOLDER OF THIS DOCUMENT SHALL KEEP ALL INFORMATION CONTAINED HEREIN CONFIDENTIAL AND SHALL PROTECT SAME IN WHOLE OR IN PART FROM DISCLOSURE AND DISSEMINATION TO ALL THIRD PARTIES.</p>	<p>SCALE : NTF</p>	<p>APRVD BY : G.Y.</p>
		<p>UNIT : mm [INCH]</p>	

**GENERAL SPECIFICATION**

ITEM	DESCRIPTION
LCD TYPE	STN, POSITIVE
REAR POLARIZER	TRANSFLECTIVE
BACKLIGHT TYPE	LED
BACKLIGHT COLOR	YELLOW GREEN
TEMPERATURE RANGE	NORMAL TEMP., 5V
VIEWING DIRECTION	6 O'CLOCK
VIEWING AREA	114.0 (W)mm x 64.0 (H)mm
MODULE SIZE	144.0 (W)mm x 104.0 (H)mm x 15.6 MAX(D)mm
PIXELS SIZE	0.40 x 0.40
PIXELS PITCH	0.45 x 0.45
DISPLAY FORMAT	240(W) x 128(H)
DUTY RATIO	1 / 128 DUTY

**ABSOLUTE MAXIMUM RATING**

**(1) Electrical Absolute Ratings**

ITEM	SYMBOL	MIN.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	VDD-VSS	-0.3	7	VOLT
POWER SUPPLY FOR LCD	VDD-Vo	-0.3	24	VOLT
INPUT VOLTAGE	V1	-0.3	VDD	VOLT
LED POWER DISSIPATION	PAD	-	7590	mW
LED FORWARD CURRENT	IAF	-	1650	mA
LED REVERSE VOLTAGE	VR	-	8	V

**(2) Environmental Absolute Maximum Ratings**

ITEM	WIDE TEMPERATURE			
	OPERATING		STORAGE	
	MIN.	MAX.	MIN.	MAX.
AMBIENT TEMPERATURE	0 °C	+50 °C	-20 °C	+70 °C
HUMIDITY (WITHOUT CONDENSATION)	NOTE 1, 2		NOTE 3, 4	

Note 1: Ta ≤ 50°C: 80% RH max

Ta > 50°C: Absolute humidity must be lower than the humidity of 85%RH at 50°C

Note 2: Background color changes slightly depending on ambient temperature.

This phenomenon is reversible.

Note 3: Ta at -20°C will be <48hrs at 70°C will be <120hrs when humidity is higher than 75%.

Note 4: Ta ≤ 70°C: 75RH max

Ta > 70°C: absolute humidity must be lower than the humidity of 75%RH at 70°C

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**ELECTRICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	VDD-VSS	-	4.5	5.0	5.5	VOLT
POWER SUPPLY FOR LCD	VEE-VSS	-	-14.2	-15.0	-15.9	VOLT
INPUT VOLTAGE	VIL	L LEVEL	0	-	0.8	VOLT
	VIH	H LEVEL	-2.2 VDD	-	VDD	VOLT
	VDD-VO	Ta=25°C	17	18.0	18.6	VOLT
POWER SUPPLY CURRENT FOR LCM	IDD	VDD=5.0V VDD-VO=18.0V	-	17.5	23.0	mA
THE BRIGHTNESS OF BACKLIGHT	L	If =1100mA	-	180	-	cd/m <sup>2</sup>
PEAK EMISSION WAVELENGTH	λP	If =1100mA	-	570	-	nm
LED FORWARD VOLTAGE	VF	If=1100mA	-	4.1	4.6	VOLT

**ELECTRICAL CHARACTERISTICS**

PIN NO.	PIN OUT	FUNCTION DESCRIPTION
1	VSS	Power Supply Ground
2	VDD	Power Supply Voltage
3	Vo	Contrast Adjustment Voltage
4	C/D	WR='L', C/D='H': Command Write WR='L', C/D='L': Data Write RD='L', C/D='H': Status Read RD='L', C/D='L': Data Read
5	/RD	Data Read
6	/WR	Data Write
7	DB0	Data Bit 0
8	DB1	Data Bit 1
9	DB2	Data Bit 2
10	DB3	Data Bit 3
11	DB4	Data Bit 4
12	DB5	Data Bit 5
13	DB6	Data Bit 6
14	DB7	Data Bit 7
15	/CE	Enable Signal
16	/RST	Reset Signal
17	VEE	No Connection
18	MD	H : 32/L : 40 Select of Columns
19	FS	H : 6*8/L : 8*8 Select of Font
20	NC	No Connection

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144.0(W)×104.0(H)×10.8/15.6(D)MAX. mm, 240x128 DOT MATRIX GRAPHIC LCD MODULE, STN GRAY, POSITIVE, 1/128 DUTY, LED BACKLIGHT.

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PAGE : 3 OF 4

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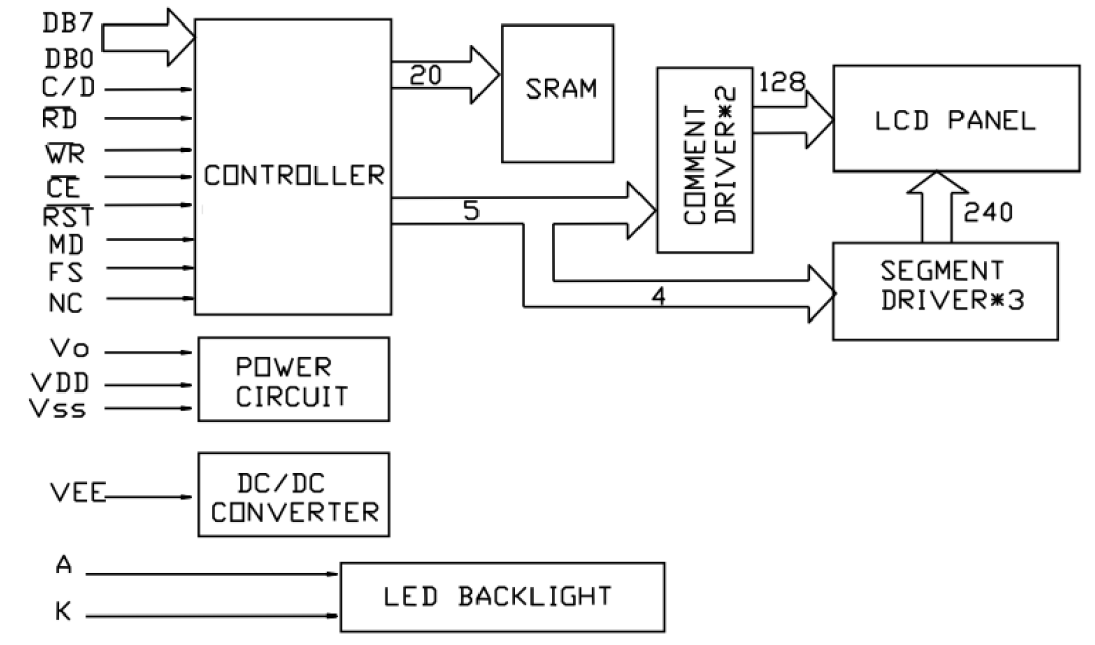
SCALE : NTF

APRVD BY : G.Y.

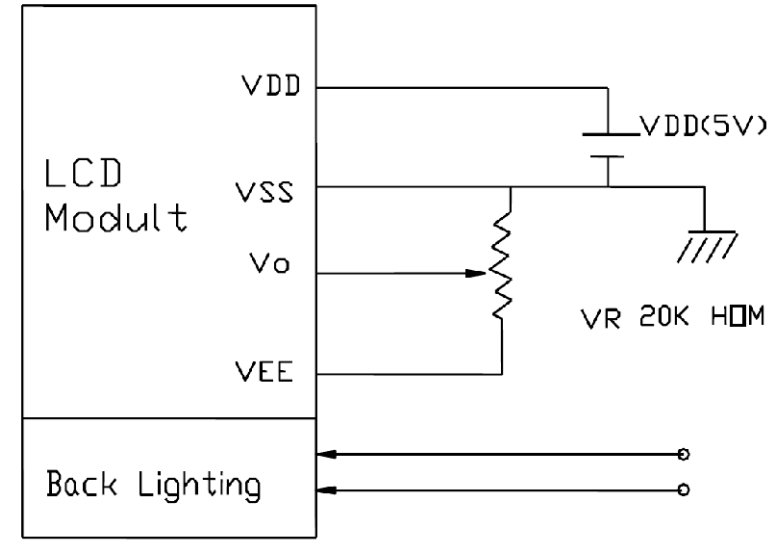
UNIT : mm [INCH]

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**BLOCK DIAGRAM**



**POWER SUPPLY**



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