

LCD DISPLAY PRUDUCTS

U.S.Electronics Inc.

Ph: (314) 423 7500

Fax: (314) 423 0585

LMC SERIES LMG SERIES INVERTERS

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LCD DISPLAY PRUDUCTS

U.S.Electronics Inc.

LMC SERIES

Ph: (314) 423 7500

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Chars x Line	Part Number	Module Size	Viewing Area	Char Size	Duty	Power Supply	LCD Type		LED Back Light	Polarizer Color	
		WxHxD(mm)	W x H(mm)	W x H(mm)		VDD(V)	TN	STN		Grey	Yellow Green
16X1	STC1C16DRG	80.0x36.0x9.5	65.0x13.8	3.07x6.56	1/16	+5.0	X	-	-	X	-
	SSC1C16DRY	80.0x36.0x9.5	65.0x13.8	3.07x6.56	1/16	+5.0	-	X	-	-	X
	SSC1C16DLGY	80.0x36.0x9.5	65.0x13.8	3.07x6.56	1/16	+5.0	-	X	X	X	-
	STC1D16DRG	80.0x36.0x9.0	65.0x16.0	3.07x6.56	1/16	+5.0	X	-	-	X	-
	SSC1D16DRY	80.0x36.0x9.0	65.0x16.0	3.07x6.56	1/16	+5.0	-	X	X	-	X
	SSC1D16DLGY	80.0x36.0x9.0	65.0x16.0	3.07x6.56	1/16	+5.0	-	X	X	X	-
	BTC1A16DRG	122.0x33.0x10.0	99.0x13.0	4.85x9.66	1/16	+5.0	X	-	-	X	-
	BSC1A16DRY	122.0x33.0x10.0	99.0x13.0	4.85x9.66	1/16	+5.0	-	X	-	-	X
	BSC1A16DLYY	122.0x33.0x10.0	99.0x13.0	4.85x9.66	1/16	+5.0	-	X	X	-	X
	BSC1B16DRY	151.0x40.0x10.5	120.0x23.0	6.00x14.54	1/16	+5.0	-	X	-	-	X
	BSC1B16DLYY	151.0x40.0x10.5	120.0x23.0	6.00x14.54	1/16	+5.0	-	X	X	-	X
	STC2A16DRG	85.0x30.0x9.0	65.0x16.0	2.78x4.89	1/16	+5.0	X	-	-	X	-
	SSC2A16DRG	85.0x30.0x9.0	65.0x16.0	2.78x4.89	1/16	+5.0	-	X	-	X	-
	SSC2A16DLGY-H	85.0x30.0x9.0	65.0x16.0	2.78x4.89	1/16	+5.0	-	X	X	X	-
	STC2B16DRG	80.0x36.0x9.0	65.0x16.0	2.78x4.89	1/16	+5.0	X	-	-	X	-
	SSC2B16DRG	80.0x36.0x9.0	65.0x16.0	2.78x4.89	1/16	+5.0	-	X	-	X	-
	SSC2B16DLGY	80.0x36.0x9.0	65.0x16.0	2.78x4.89	1/16	+5.0	-	X	X	X	-
	STC2C16DRG	85.0x35.0x9.0	65.0x18.0	2.96x5.56	1/16	+5.0	X	-	-	X	-
	SSC2C16DRG	85.0x35.0x9.0	65.0x18.0	2.96x5.56	1/16	+5.0	-	X	-	X	-
	SSC2C16DLYY	85.0x35.0x9.0	65.0x18.0	2.96x5.56	1/16	+5.0	-	X	X	-	X
	STC2D16DRG	85.0x36.0x9.0	65.0x18.0	2.96x5.56	1/16	+5.0	X	-	-	X	-
	SSC2D16DRG	85.0x36.0x9.0	65.0x18.0	2.96x5.56	1/16	+5.0	-	X	-	X	-

LCD DISPLAY PRUDUCTS- LMC Series..

16x2	SSC2D16DLYY	85.0x36.0x9.0	65.0x18.0	2.96x5.56	1/16	+5.0	-	X	X	-	X
	STC2E16DRG	84.0x44.0x9.0	65.0x18.0	2.96x5.56	1/16	+5.0	X	-	-	X	-
	SSC2E16DRG	84.0x44.0x9.0	65.0x18.0	2.96x5.56	1/16	+5.0	-	X	-	X	-
	SSC2E16DLYY	84.0x44.0x9.0	65.0x18.0	2.96x5.56	1/16	+5.0	-	X	X	-	X
	STC2F16DRG	85.0x32.6x9.0	65.0x16.0	2.96x5.56	1/16	+5.0	X	-	-	X	-
	SSC2F16DRG	85.0x32.6x9.0	65.0x16.0	2.96x5.56	1/16	+5.0	-	X	-	X	-
	SSC2F16DLYY	85.0x32.6x9.0	65.0x16.0	2.96x5.56	1/16	+5.0	-	X	X	-	X
	BTC2A16DRG	122.0x44.0x9.5	99x24.0	4.48x9.66	1/16	+5.0	X	-	-	X	-
	BSC2A16DRG	122.0x44.0x9.5	99x24.0	4.48x9.66	1/16	+5.0	-	X	-	X	-
	BSC2A16DLGY	122.0x44.0x9.5	99x24.0	4.48x9.66	1/16	+5.0	-	X	X	X	-
	BSC2A16DLYY	122.0x44.0x9.5	99x24.0	4.48x9.66	1/16	+5.0	-	X	X	X	-
	BTC2B16DRG	106.5x43.5x9.5	99x24.0	4.48x9.66	1/16	+5.0	X	-	-	X	-
	BSC2B16DRG	106.5x43.5x9.5	99x24.0	4.48x9.66	1/16	+5.0	-	X	-	X	-
20x2	STC2A20DRG	115.0x36.0x10.5	83.0x18.6	3.20x5.55	1/16	+5.0	X	-	-	X	-
	SSC2A20DRY	115.0x36.0x10.5	83.0x18.6	3.20x5.55	1/16	+5.0	-	X	-	-	X
	SSC2A20DLYY	115.0x36.0x10.5	83.0x18.6	3.20x5.55	1/16	+5.0	-	X	X	-	X
	STC2C20DLYY	115.0x36.0x10.5	83.0x18.6	3.20x5.55	1/16	+5.0	X	-	X	-	X
	SSC2C20DLYY	115.0x36.0x10.5	83.0x18.6	3.20x5.55	1/16	+5.0	-	X	X	-	X
	SSC2C20DRY	115.0x36.0x10.5	83.0x18.6	3.20x5.55	1/16	+5.0	-	X	-	-	X
	SSC2C20DLYY-E	115.0x36.0x10.5	83.0x18.6	3.20x5.55	1/16	+5.0	-	X	X	-	X
	BSC2A20DRY	180.0x40.0x10.5	149.0x23.0	6.00x9.66	1/16	+5.0	-	X	-	-	X
	BSC2A20DLYY	180.0x40.0x10.5	149.0x23.0	6.00x9.66	1/16	+5.0	-	X	X	-	X
	BSC2B20DLYY	190.0x54.0x10.0	149.0x33.0	6.00x13.95	1/16	+5.0	-	X	X	-	X
	* BSC2B20DFGW	190.0x54.0x10.0	149.0x33.0	6.00x13.95	1/16	+5.0	-	X	-	X	-
* BSC2B20DFNW	190.0x54.0x10.0	149.0x33.0	6.00x13.95	1/16	+5.0	-	X	-	-	-	
24x2	STC2A24DRG	118.0x36.0x10.5	94.5x17.8	3.20x5.55	1/16	+5.0	X	-	-	X	-
	SSC2A24DRG	118.0x36.0x10.5	94.5x17.8	3.20x5.55	1/16	+5.0	-	X	-	X	-

LCD DISPLAY PRUDUCTS- LMC Series..

	SSC2A24DLGY	118.0x36.0x10.5	94.5x17.8	3.20x5.55	1/16	+5.0	-	X	X	X	-
12x4	SSC4A12DRY	63.2x55.0x8.0	55.0x36.0	3.70x6.75	1/16	+5.0	-	X	-	-	X
	SSC4A12DLYY	63.2x55.0x8.0	55.0x36.0	3.70x6.75	1/16	+5.0	-	X	X	-	X
16x4	SSC4A16DRY	87.0x60.0x905	62.0x25.0	2.95x4.75	1/16	+5.0	-	X	-	-	X
	SSC4A16DLYY	87.0x60.0x905	62.0x25.0	2.95x4.75	1/16	+5.0	-	X	X	-	X
20x4	STC4A20DRG	98.0x60.0x10.0	76.0x25.0	2.95x4.75	1/16	+5.0	X	-	-	X	-
	SSC4A20DRG	98.0x60.0x10.0	76.0x25.0	2.95x4.75	1/16	+5.0	-	X	-	X	-
	SSC4A20DLGY	98.0x60.0x10.0	76.0x25.0	2.95x4.75	1/16	+5.0	-	X	X	X	-
	BSC4A20DRY	144.0x85.0x10.5	121.0x57.7	4.85x11.55	1/16	+5.0	-	X	-	-	X
	BSC4A20DLYY	144.0x85.0x10.5	121.0x57.7	4.85x11.55	1/16	+5.0	-	X	X	-	X
	SSC2A40DRY	182.0x33.5x10.5	153.6x16.2	3.20x5.55	1/16	+5.0	-	X	-	-	X
40x2	SSC2A40DLYY	182.0x33.5x10.5	153.6x16.2	3.20x5.55	1/16	+5.0	-	X	X	-	X
40x4	SS4A40DLGY	190.0x54.0x10.0	147.0x29.5	2.80x4.91	1/16	+5.0	-	X	X	X	-
	* SS4A40DFGW	190.0x54.0x10.0	147.0x29.5	2.80x4.91	1/16	+5.0	-	X	-	X	-
	* SS4A40DFNW	190.0x54.0x10.0	147.0x29.5	2.80x4.91	1/16	+5.0	-	X	-	-	-

NOTES:

- 1) Standard Operating temperature range is 0 to 50 degrees °C
- 2) Standard viewing angle is 6H
- 3) Standard back light color is Yellow Green
- 4) * Items have FL transmissive white back light

LMC -	STC	1C16	16 CHARS×1 LINES	1/16 DUTY	1/4 BIAS
	SSC				

Part Numbering System

1. FEATURE:

LCD MODE	TN/STN
BACKLIGHT TYPE	LED/EL BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I001A(I001B)

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD -VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	1.5	3.0	mA
LED CURRENT	IF	Ta=25°C	-	100	-	mA
LED DISSIPATION	PD	Ta=25°C	-	500	-	mW

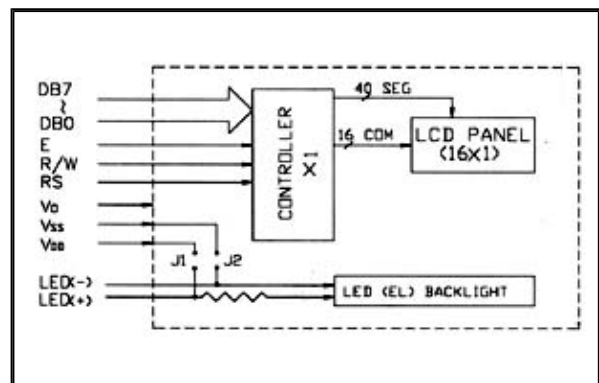
3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

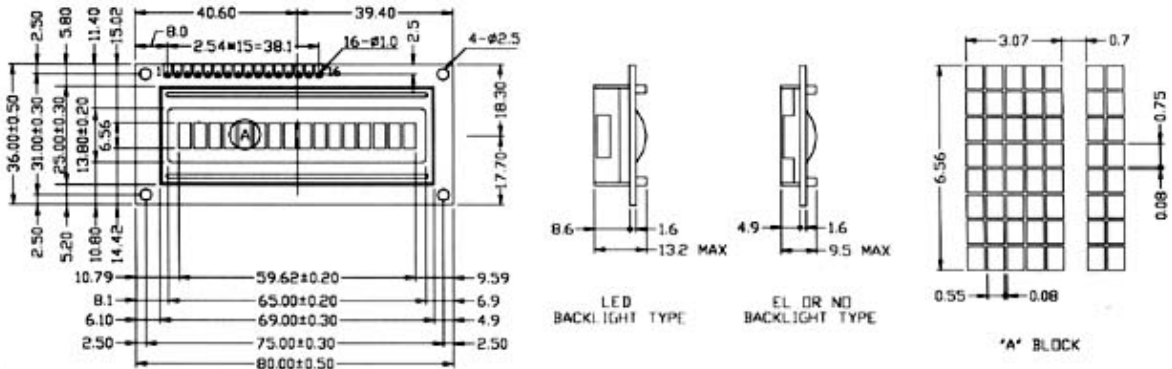
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
L1	80	81	82	83	84	85	86	87	C0	C1	C2	C3	C4	C5	C6	C7

7. DIMENSIONAL DRAWING:



LCD DISPLAY PRODUCTS

U.S.Electronics Inc.

Ph: (314) 423 7500

Fax: (314) 423 0585

LCD CHARACTER MODULE NUMBERING SYSTEM

LMC	-	S	T	C	2	E	16	D	I	Y	Y	-	
		1	2	3	4	5	6	7	8	9	10		11

ITEM	OPTION	OPTION DESCRIPTION			
1	TYPE	C	BIG CHARACTERS	S	SMALL/NORMAL CHARACTERS
2	LCD MODEL	T	TN LCD	S	STN LCD
		F	FSTN LCD		
3	IC PACKAGING	NONE	PCB PACKAGE TYPE	C	CHIP TYPE
4	LINES	NUMBER OF LINES			
5	LCM TYPE	SEE SPECIFICATIONS			
6	CHARACTERS	NUMBER OF CHARACTERS			
7	VIEWING ANGLE	D	6 O'CLOCK	U	12 O'CLOCK
8	BACKLIGHT	R	WITHOUT BACKLIGHT	E	EL (TRANSFLECTIVE)
		L	LED (TRANSFLECTIVE)	F	FL (TRANSMISSIVE)
9	POLARIZER COLOR	G	GRAY	Y	YELLOW GREEN
		N	NEGATIVE STN TYPE: BLUE		
			NEGATIVE FSTN TYPE: BLACK		
10	BACKLIGHT COLOR	B	BLUE	G	GREEN
		O	ORANGE	R	RED
		W	WHITE	Y	YELLOW GREEN
11	TEMPERATURE		NORMAL TEMPERATURE	H	WIDE TEMPERATURE

LMC -	BTC	1A16	16 CHARS×1 LINES	1/16 DUTY	1/4 BIAS
	BSC				

Part Numbering System

1. FEATURE:

LCD MODE	TN/STN
BACKLIGHT TYPE	EL/LED BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I001A(I001B)

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD -VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	170	-	mA
LED DISSIPATION	PD	Ta=25°C	-	850	-	mW

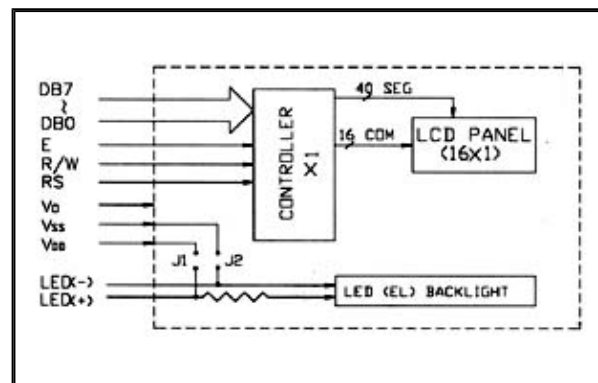
3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

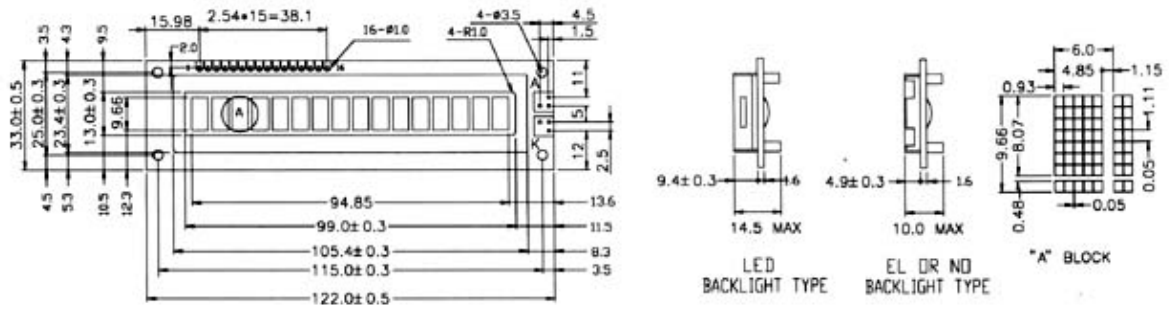
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
L1	80	81	82	83	84	85	86	87	C0	C1	C2	C3	C4	C5	C6	C7

7. DIMENSIONAL DRAWING:



LMC - BS1B16	16 CHARS×1 LINES	1/16 DUTY	1/4 BIAS
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Part Numbering System

1. FEATURE:

LCD MODE	STN
BACKLIGHT TYPE	LED BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT44780 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-1002A(1005)

3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

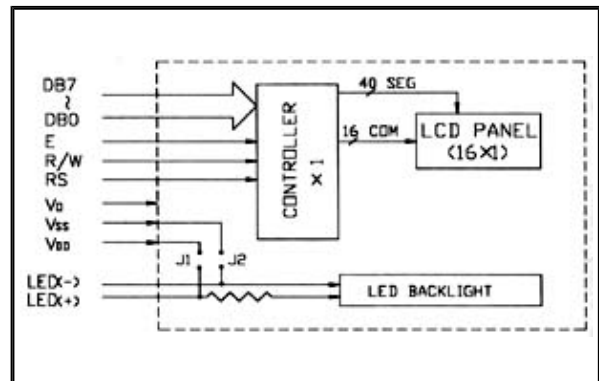
2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD -VO	Ta=0°C	-	4.7	-	V
		Ta=25°C	-	4.5	-	V
		Ta=50°C	-	4.3	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	300	-	mA
LED DISSIPATION	PD	Ta=25°C	-	1500	-	mW

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

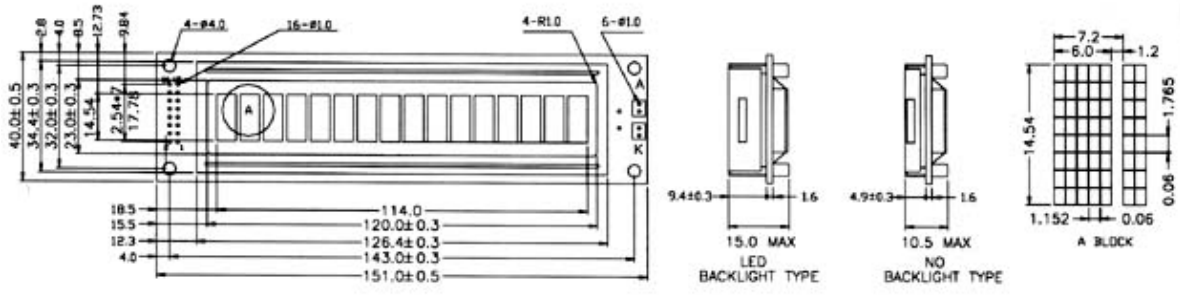
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	80	81	82	83	84	85	86	87	C0	C1	C2	C3	C4	C5	C6	C7

7. DIMENSIONAL DRAWING:



LCD DISPLAY PRODUCTS

LMC SERIES

LMC -	STC	2A16	16 CHARS×2 LINES	1/16 DUTY	1/4 BIAS
	SSC				

Part Numbering System

1. FEATURE:

LCD MODE	TN/STN
BACKLIGHT TYPE	LED/EL BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I001A(I001B)

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD -VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	1.5	3.0	mA
LED CURRENT	IF	Ta=25°C	-	100	-	mA
LED DISSIPATION	PD	Ta=25°C	-	500	-	mW

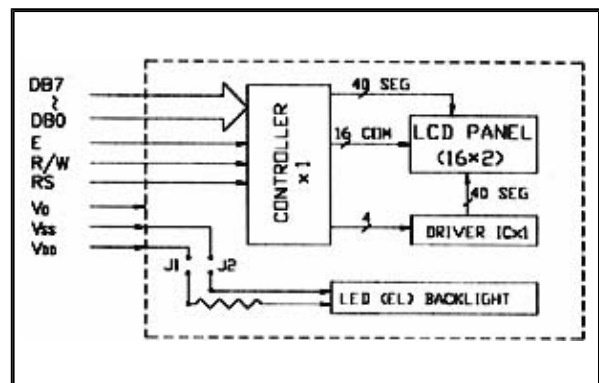
3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0		A(+)	5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1		K(-)	0V	BACKLIGHT

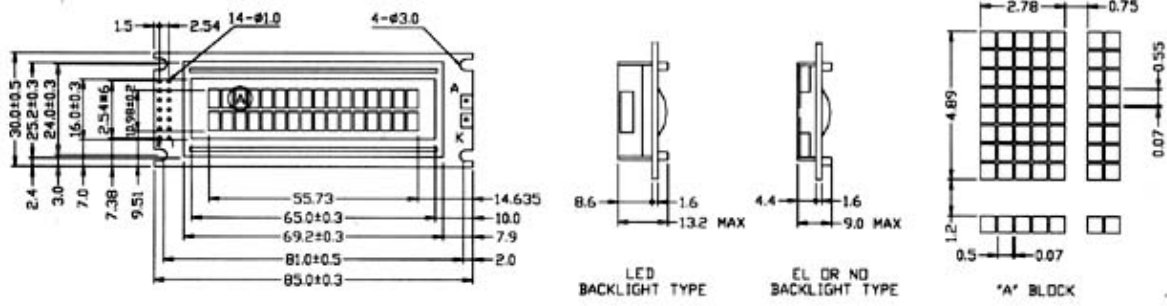
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF

7. DIMENSIONAL DRAWING:



LMC -	STC	2B16	16 CHARS×2 LINES	1/16 DUTY	1/4 BIAS
	SSC				

Part Numbering System

1. FEATURE:

LCD MODE	TN/STN
BACKLIGHT TYPE	LED/EL BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I001A(I001B)

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD -VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	1.5	3.0	mA
LED CURRENT	IF	Ta=25°C	-	100	-	mA
LED DISSIPATION	PD	Ta=25°C	-	500	-	mW

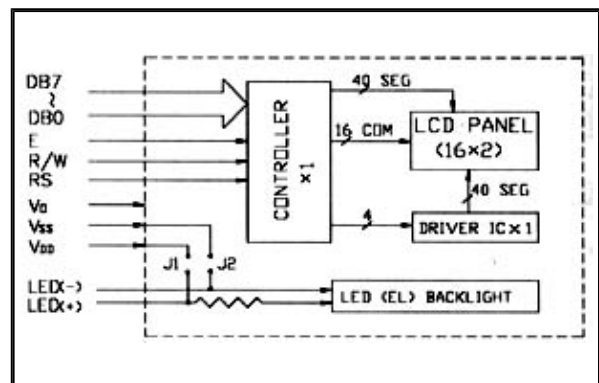
3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

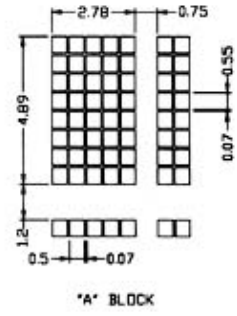
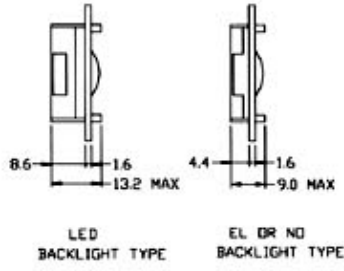
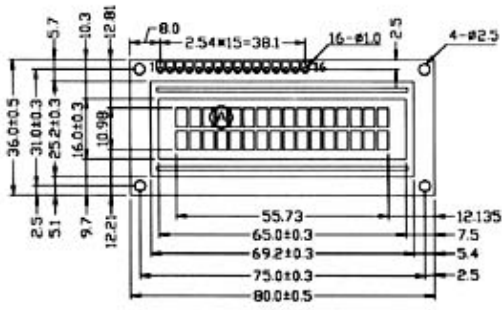
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF

7. DIMENSIONAL DRAWING:



LMC -	STC	2C16	16 CHARS×2 LINES	1/16 DUTY	1/4 BIAS
	SSC				

Part Numbering System

1. FEATURE:

LCD MODE	TN/STN
BACKLIGHT TYPE	LED/EL BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I001A(I001B)

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD -VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	1.5	3.0	mA
LED CURRENT	IF	Ta=25°C	-	100	-	mA
LED DISSIPATION	PD	Ta=25°C	-	500	-	mW

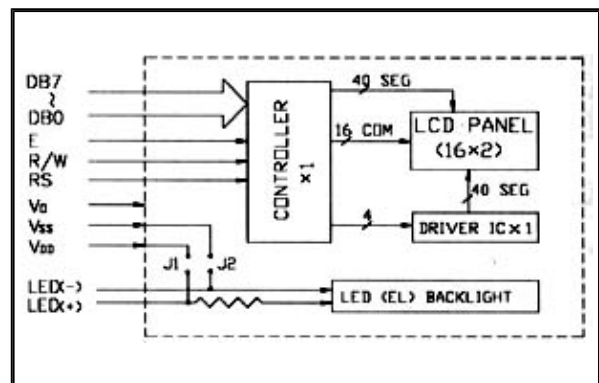
3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VDD	-	+5V	9	DB2	H/L	DATA BIT 2
2	VSS	-	0V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0		A(+)	5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1		K(-)	0V	BACKLIGHT

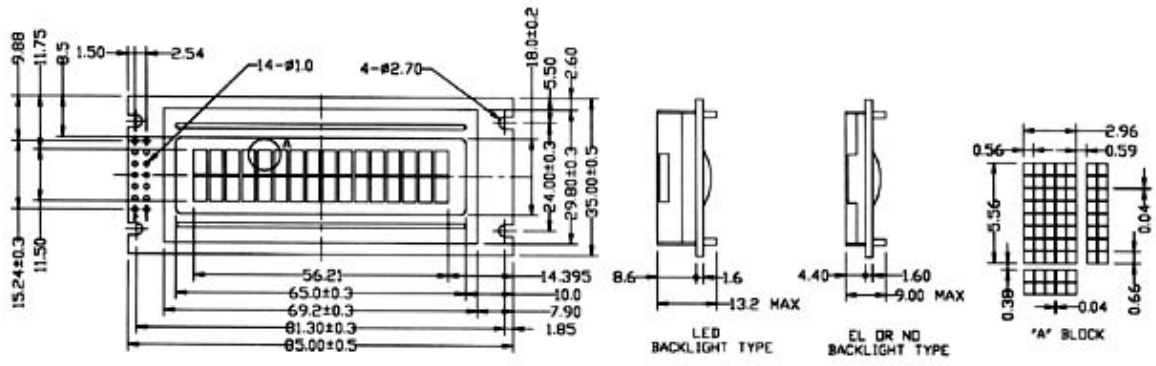
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF

7. DIMENSIONAL DRAWING:



LMC -	STC	2D16	16 CHARS×2 LINES	1/16 DUTY	1/4 BIAS
	SSC				

Part Numbering System

1. FEATURE:

LCD MODE	TN/STN
BACKLIGHT TYPE	LED/EL BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I001A(I001B)

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD -VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	1.5	3.0	mA
LED CURRENT	IF	Ta=25°C	-	100	-	mA
LED DISSIPATION	PD	Ta=25°C	-	500	-	mW

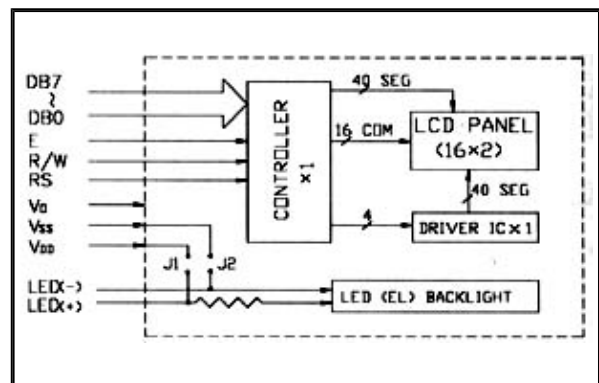
3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

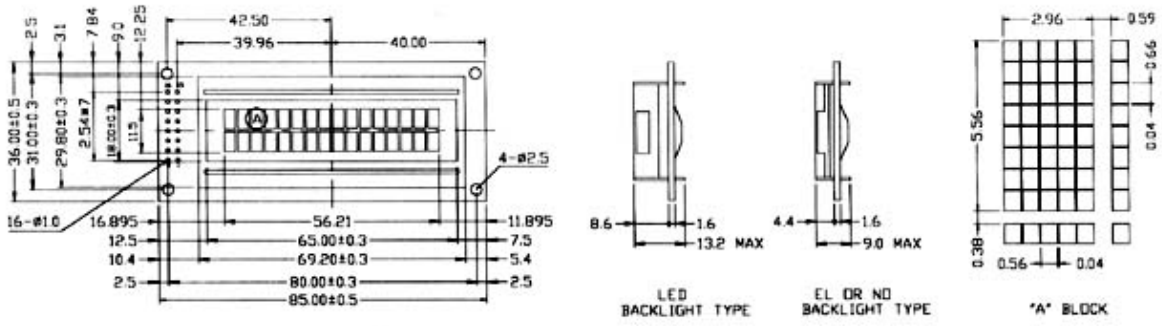
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF

7. DIMENSIONAL DRAWING:



LMC -	STC	2E16	16 CHARS×2 LINES	1/16 DUTY	1/4 BIAS
	SSC				

Part Numbering System

1. FEATURE:

LCD MODE	TN/STN
BACKLIGHT TYPE	LED/EL BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I001A(I001B)

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD -VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	1.5	3.0	mA
LED CURRENT	IF	Ta=25°C	-	100	-	mA
LED DISSIPATION	PD	Ta=25°C	-	500	-	mW

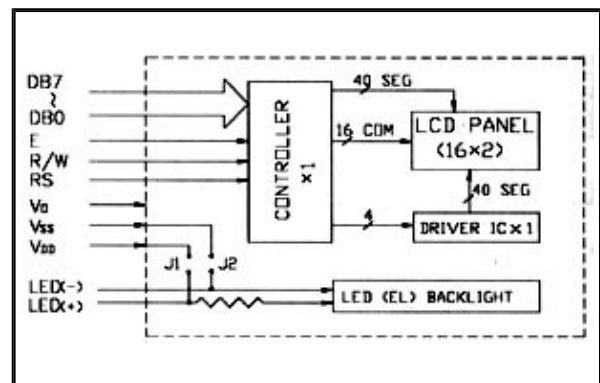
3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

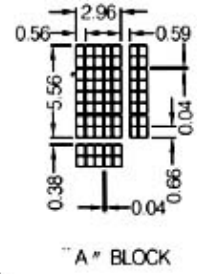
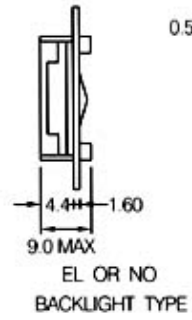
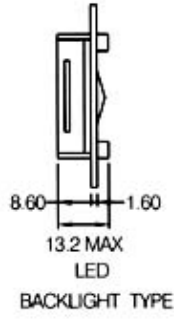
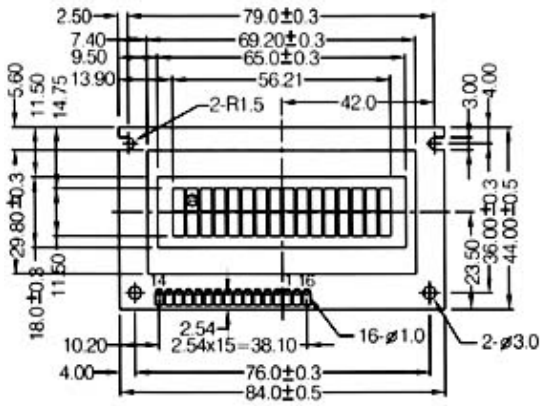
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF

7. DIMENSIONAL DRAWING:



LMC -	STC	2F16	16 CHARS×2 LINES	1/16 DUTY	1/4 BIAS
	SSC				

Part Numbering System

1. FEATURE:

LCD MODE	TN
BACKLIGHT TYPE	EL/LED BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I001A(I001B)

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD -VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	1.5	3.0	mA
LED CURRENT	IF	Ta=25°C	-	100	-	mA
LED DISSIPATION	PD	Ta=25°C	-	500	-	mW

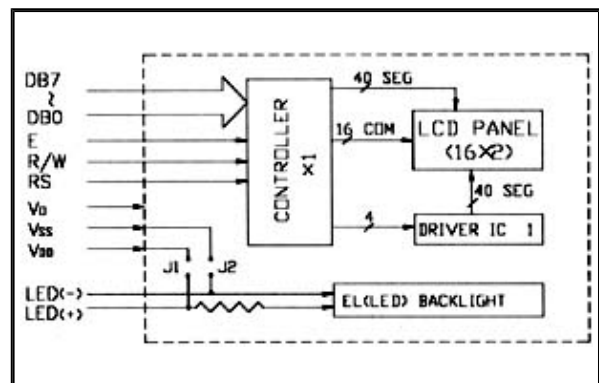
3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

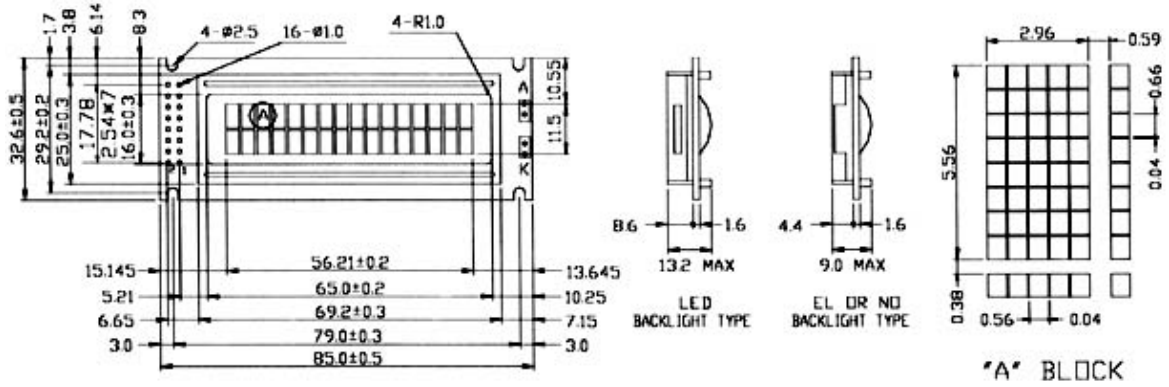
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF

7. DIMENSIONAL DRAWING:



LMC -	BTC	2A16	16 CHARS×2 LINES	1/16 DUTY	1/4 BIAS
	BSC				

Part Numbering System

1. FEATURE:

LCD MODE	TN/STN
BACKLIGHT TYPE	LED/EL BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I002(I005)

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD -Vo	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	Vi	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	4.0	mA
LED CURRENT	IF	Ta=25°C	-	320	-	mA
LED DISSIPATION	PD	Ta=25°C	-	1600	-	mW

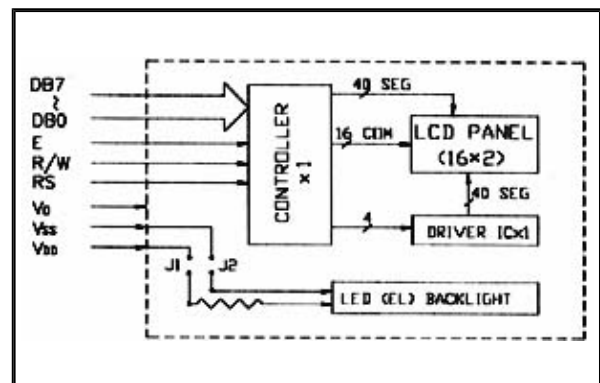
3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	Vi	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-Vo	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	Vo	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0		A(+)	5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1		K(-)	0V	BACKLIGHT

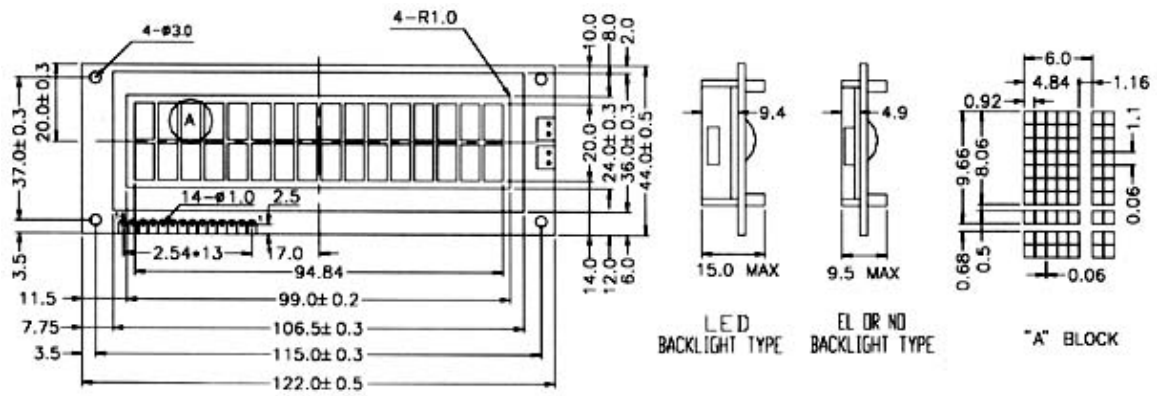
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF

7. DIMENSIONAL DRAWING:



LMC -	BTC	2B16	16 CHARS×2 LINES	1/16 DUTY	1/4 BIAS
	BSC				

Part Numbering System

1. FEATURE:

LCD MODE	TN/STN
BACKLIGHT TYPE	-
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	-
EL BACKLIGHT INPUT	-
EL INVERTER	-

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD -VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	-	-	mA
LED DISSIPATION	PD	Ta=25°C	-	-	-	mW

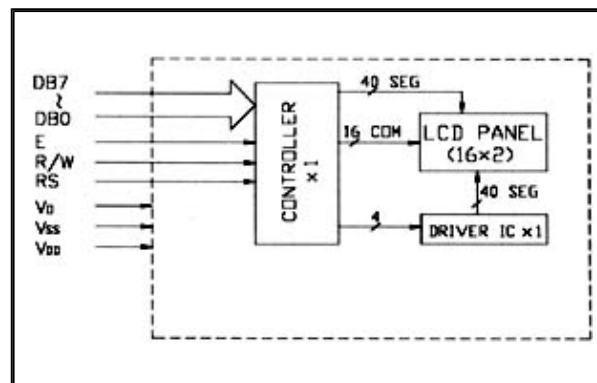
3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0				
8	DB1	H/L	DATA BIT 1				

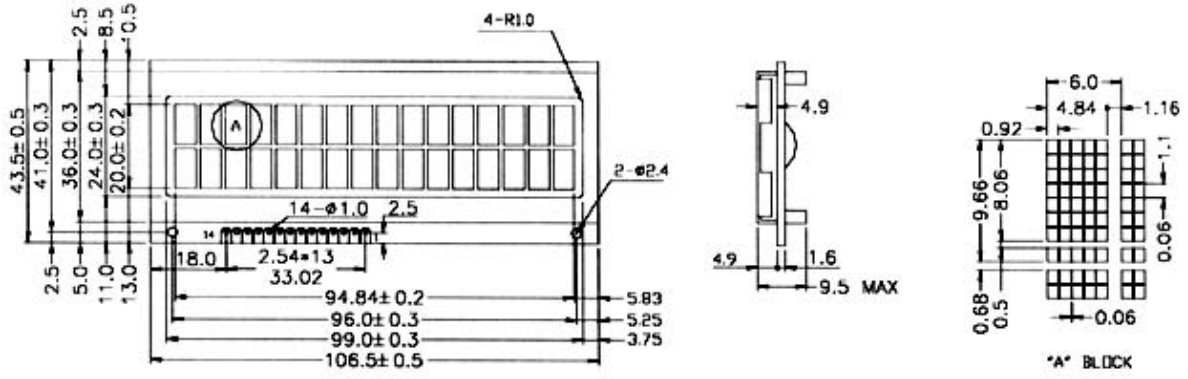
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF

7. DIMENSIONAL DRAWING:



LMC -	STC	2A20	20 CHARS×2 LINES	1/16 DUTY	1/4 BIAS
	SSC				

Part Numbering System

1. FEATURE:

LCD TYPE	TN/STN
BACKLIGHT TYPE	EL/LED BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I002A(I005)

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD - VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	140	-	mA
LED DISSIPATION	PD	Ta=25°C	-	700	-	mW

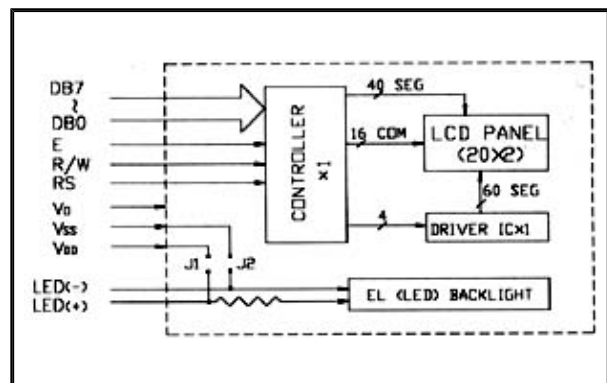
3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	+5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

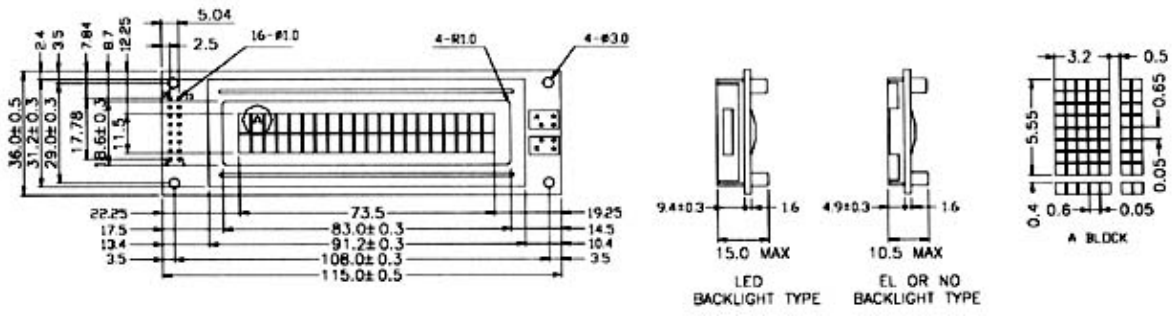
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3

7. DIMENSIONAL DRAWING:



LMC -	STC	2C20	20 CHARS*2 LINES	1/16 DUTY	1/4 BIAS
	SSC				

Part Numbering System

1. FEATURE:

LCD TYPE	TN/STN
BACKLIGHT TYPE	EL/LED BACKLIGHT
CHARACTER FONTS	5x8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I002A(I005)

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD - VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	140	-	mA
LED DISSIPATION	PD	Ta=25°C	-	700	-	mW

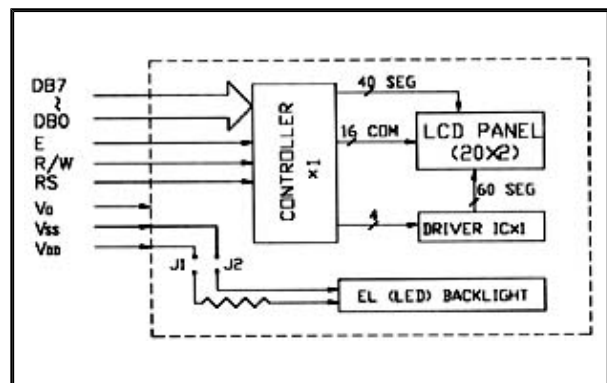
3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0		A(+)	+5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1		K(-)	0V	BACKLIGHT

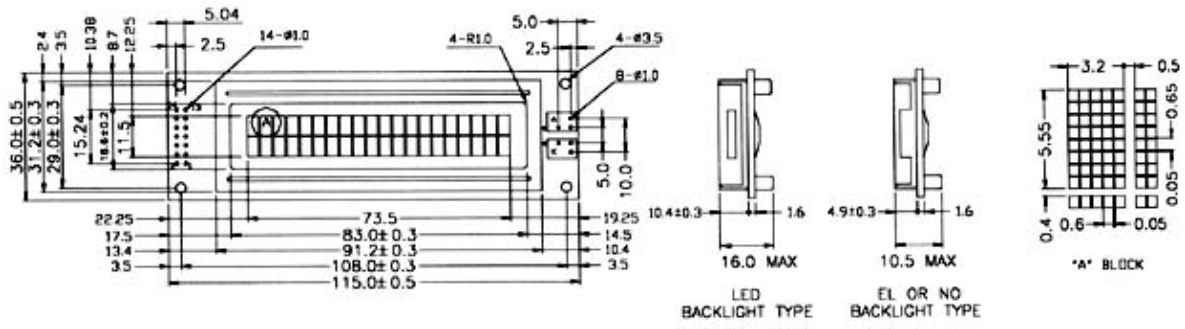
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3

7. DIMENSIONAL DRAWING:



LMC - BS2A20	20 CHARSx2 LINES	1/16 DUTY	1/4 BIAS
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Part Numbering System

1. FEATURE:

LCD TYPE	STN
BACKLIGHT TYPE	LED BACKLIGHT
CHARACTER FONTS	5x8 DOTS (WITH CURSOR)
CONTROLLER	HD44780 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	-
EL INVERTER	-

3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-10	-	70	°C
STORAGE TEMP.	TST	-20	-	80	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

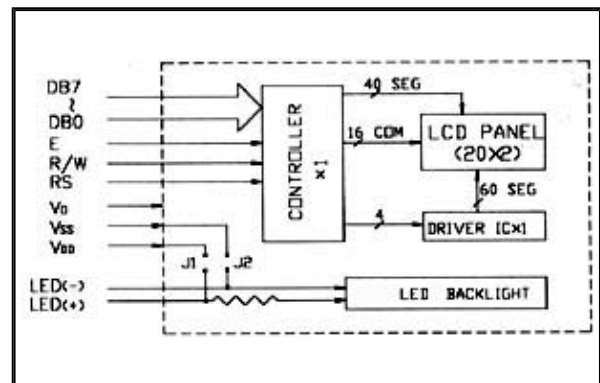
5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.--L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	+5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD - VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	360	-	mA
LED DISSIPATION	PD	Ta=25°C	-	1800	-	mW

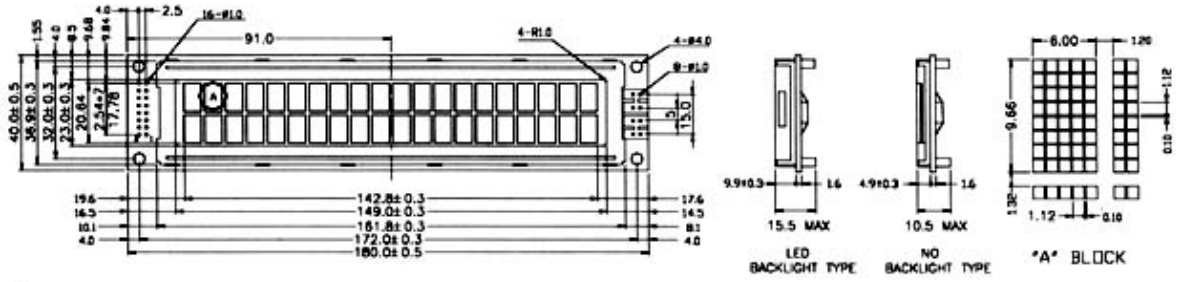
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3

7. DIMENSIONAL DRAWING:



LMC - BS2B20	20 CHARSx2 LINES	1/16 DUTY	1/4 BIAS
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Part Numbering System

1. FEATURE:

LCD TYPE	STN
BACKLIGHT TYPE	FL/LED BACKLIGHT
CHARACTER FONTS	5x8 DOTS (WITH CURSOR)
CONTROLLER	SED 1278 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC1KV(30KHz)
EL INVERTER	SDEC-FL001(5A)

3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-10	-	70	°C
STORAGE TEMP.	TST	-20	-	80	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

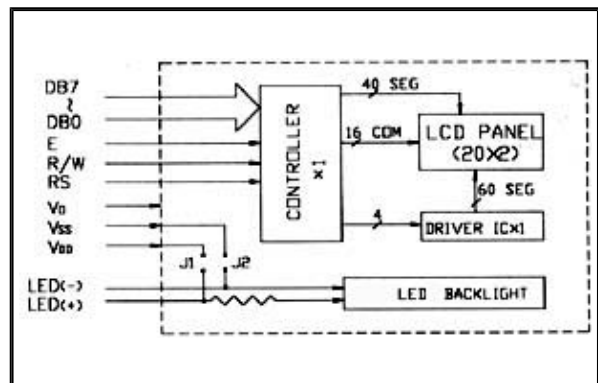
5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.--L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	+5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD - VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	600	-	mA
LED DISSIPATION	PD	Ta=25°C	-	3000	-	mW

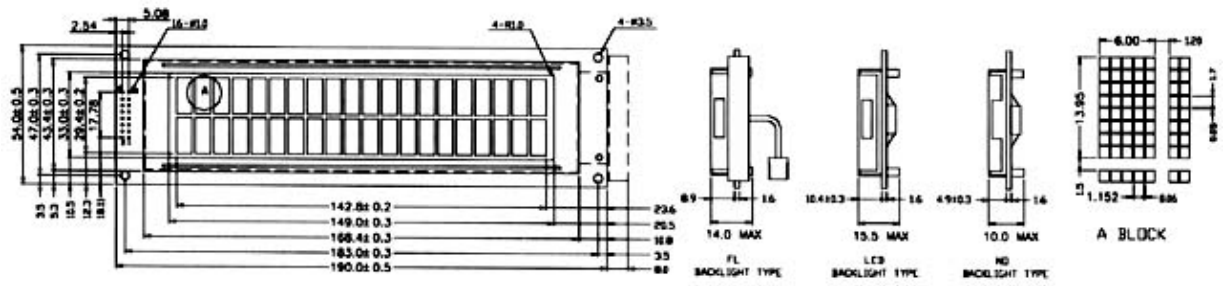
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3

7. DIMENSIONAL DRAWING:



LMC -	STC	2A24	24 CHARS*2 LINES	1/16 DUTY	1/4 BIAS
	SSC				

Part Numbering System

1. FEATURE:

LCD TYPE	TN/STN
BACKLIGHT TYPE	EL/LED BACKLIGHT
CHARACTER FONTS	5x8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SEDC-I002A

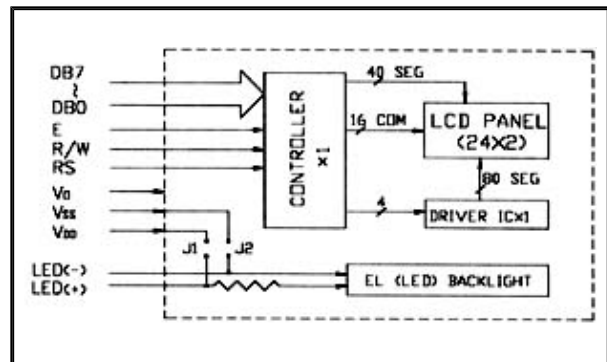
2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD - VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	160	-	mA
LED DISSIPATION	PD	Ta=25°C	-	800	-	mW

3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

4. BLOCK DIAGRAM:



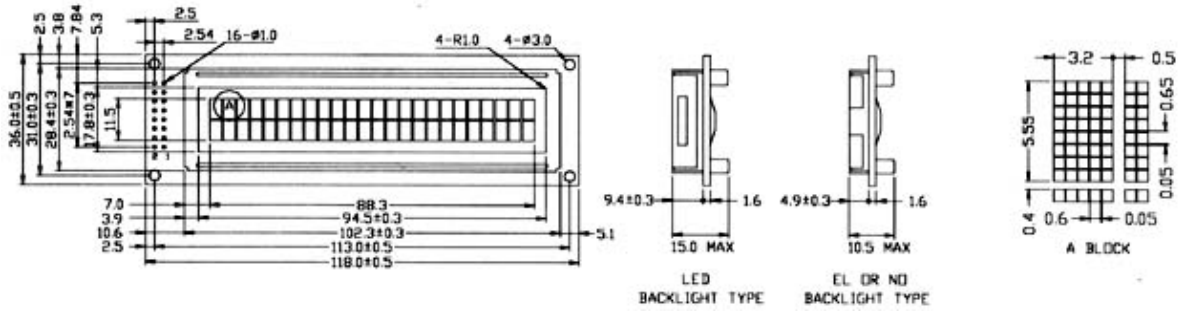
5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.--L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	+5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12
L1	80	81	82	83	84	85	86	87	88	89	8A	8B
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB
	13	14	15	16	17	18	19	20	21	22	23	24
L1	8C	8D	8E	8F	90	91	92	93	94	95	96	97
L2	CC	CD	CE	CF	D0	D1	D2	D3	D4	D5	D6	D7

7. DIMENSIONAL DRAWING:



LMC - SSC4A12	12 CHARS×4 LINES	1/32DUTY	1/6 BIAS
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Part Numbering System

1. FEATURE:

LCD TYPE	STN
BACKLIGHT TYPE	EL/LED BACKLIGHT
CHARACTER FONTS	5x8 DOTS (WITH CURSOR)
CONTROLLER	KS0073 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SEDC-I001B

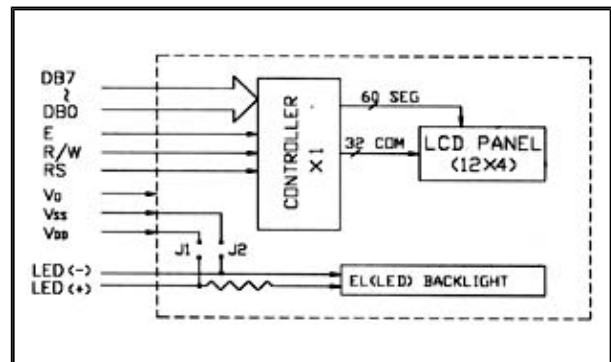
2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD - VO	Ta=0°C	-	6.0	-	V
		Ta=25°C	-	5.8	-	V
		Ta=50°C	-	5.6	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	200	-	mA
LED DISSIPATION	PD	Ta=25°C	-	1000	-	mW

3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

4. BLOCK DIAGRAM:



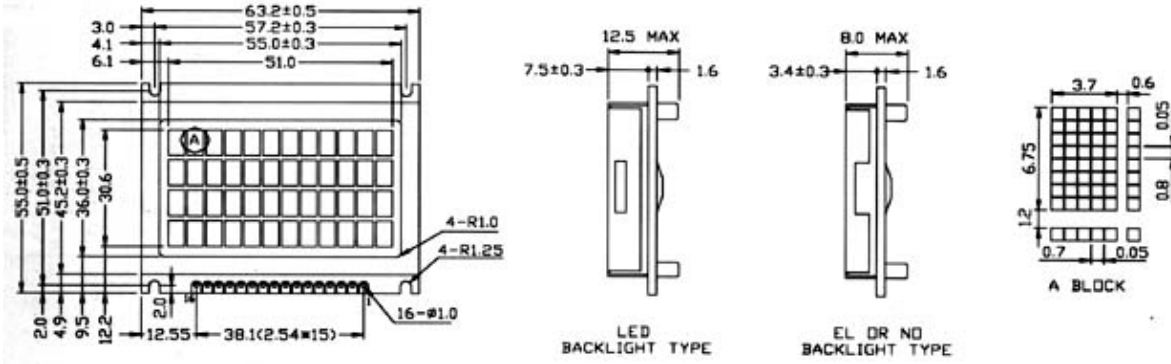
5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	+5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12
L1	00	01	02	03	04	05	06	07	08	09	0A	0B
L2	20	21	22	23	24	25	26	27	28	29	2A	2B
L3	40	41	42	43	44	45	46	47	48	49	4A	4B
L4	60	61	62	63	64	65	66	67	68	69	6A	6B

7. DIMENSIONAL DRAWING:



LCD DISPLAY PRODUCTS

LMC SERIES

LMC - SSC4A16	16 CHARS×4 LINES	1/16DUTY	1/4 BIAS
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Part Numbering System

1. FEATURE:

LCD MODE	STN
BACKLIGHT TYPE	LED BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	NT3881 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	-
EL INVERTER	-

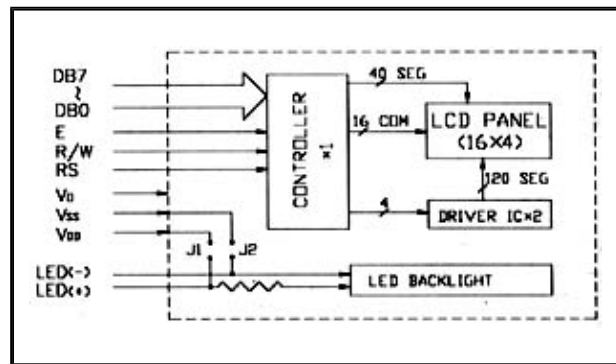
2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD - VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	200	-	mA
LED DISSIPATION	PD	Ta=25°C	-	1000	-	mW

3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

4. BLOCK DIAGRAM:



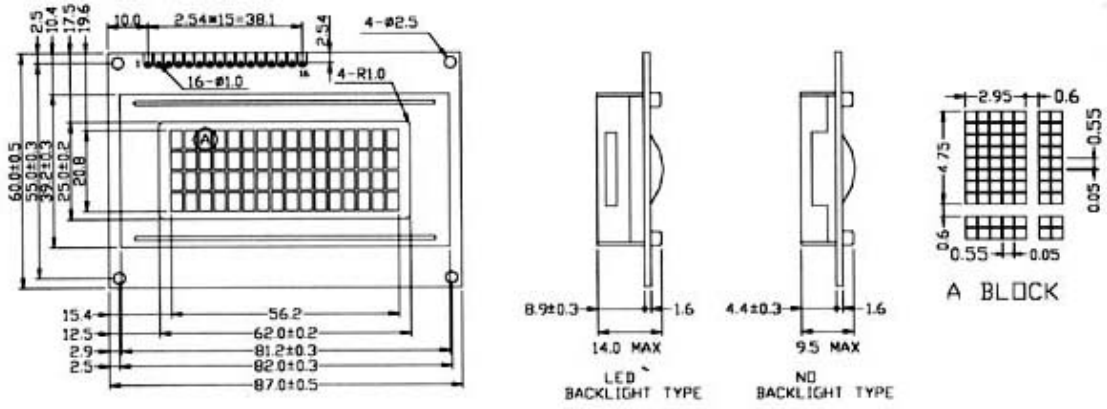
5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF
L3	90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F
L4	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF

7. DIMENSIONAL DRAWING:



LMC - SSC4A20	20 CHARS×4 LINES	1/16 DUTY	1/4 BIAS
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Part Numbering System

1. FEATURE:

LCD TYPE	STN
BACKLIGHT TYPE	LED BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	SED1278 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	-
EL INVERTER	-

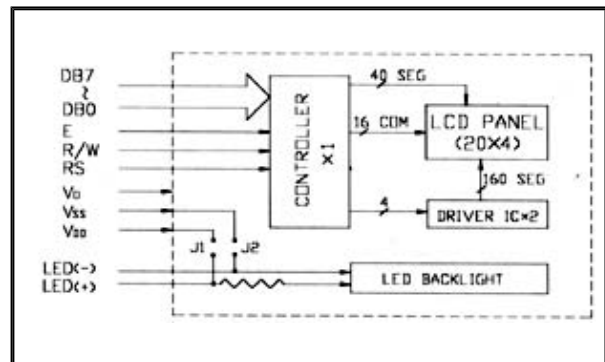
2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD - VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	240	-	mA
LED DISSIPATION	PD	Ta=25°C	-	1200	-	mW

3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

4. BLOCK DIAGRAM:



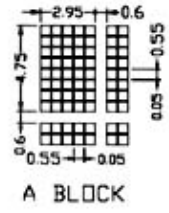
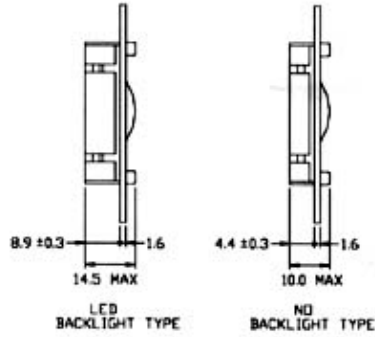
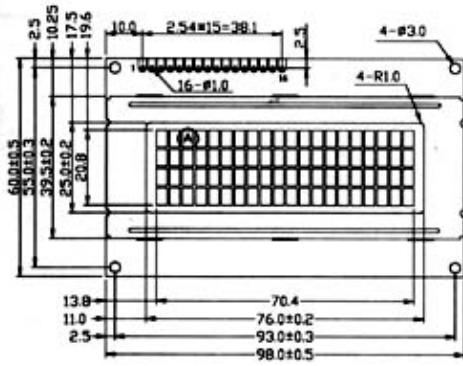
5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.--L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	+5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3
L3	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0	A1	A2	A3	A4	A5	A6	A7
L4	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF	E0	E1	E2	E3	E4	E5	E6	E7

7. DIMENSIONAL DRAWING:



LMC - BS4A20	20 CHARS×4 LINES	1/16 DUTY	1/4 BIAS
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Part Numbering System

1. FEATURE:

LCD TYPE	STN/FSTN
BACKLIGHT TYPE	FL/LED BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	SED1278 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC 1KV(30KHz)
EL INVERTER	SDEC-FL001(5A)

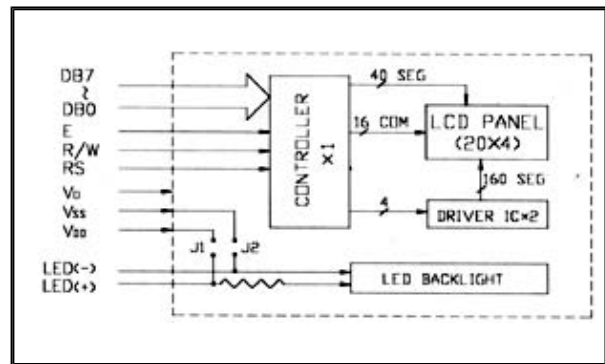
2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD - VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	3.0	5.0	mA
LED CURRENT	IF	Ta=25°C	-	400	-	mA
LED DISSIPATION	PD	Ta=25°C	-	2000	-	mW

3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-10	-	70	°C
STORAGE TEMP.	TST	-20	-	80	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

4. BLOCK DIAGRAM:



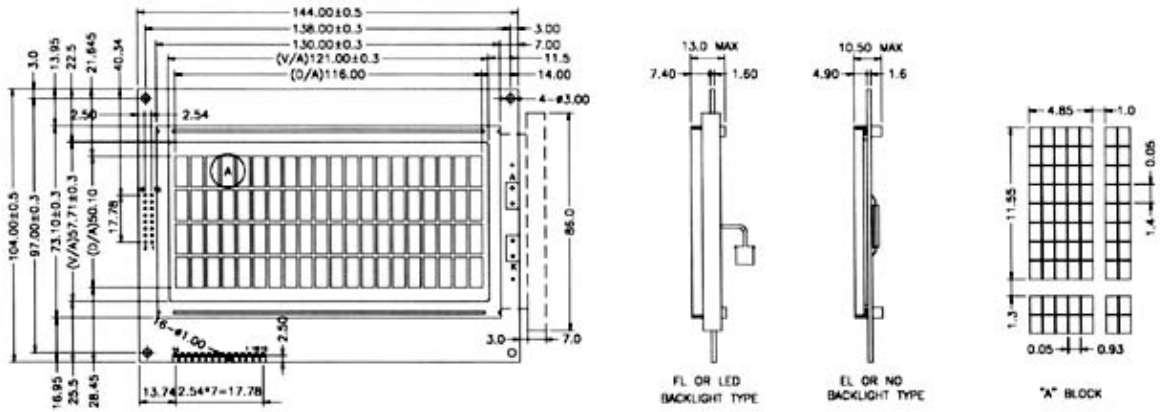
5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.--L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	+5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3
L3	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0	A1	A2	A3	A4	A5	A6	A7
L4	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF	E0	E1	E2	E3	E4	E5	E6	E7

7. DIMENSIONAL DRAWING:



LMC - SS2A40	40 CHARS×2 LINES	1/16 DUTY	1/4 BIAS
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Part Numbering System

1. FEATURE:

LCD TYPE	STN
BACKLIGHT TYPE	EL/LED BACKLIGHT
CHARACTER FONTS	5×8 DOTS (WITH CURSOR)
CONTROLLER	HD44780 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC90~100V(400~700Hz)
EL INVERTER	SDEC-I002A

3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

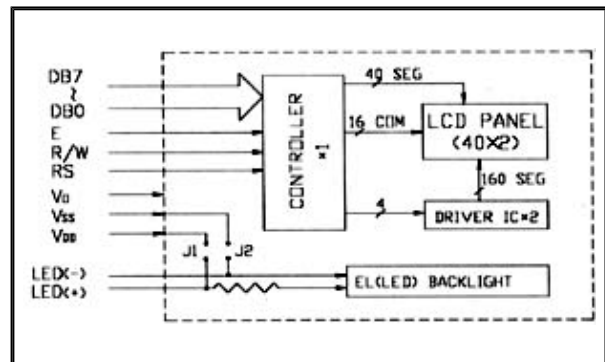
5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V	9	DB2	H/L	DATA BIT 2
2	VDD	-	5V	10	DB3	H/L	DATA BIT 3
3	VO	-	CONTRAST ADJ	11	DB4	H/L	DATA BIT 4
4	RS	H/L	REGISTER SELECT	12	DB5	H/L	DATA BIT 5
5	R/W	H/L	READ/WRITE	13	DB6	H/L	DATA BIT 6
6	E	H.H.-- L	ENABLE SIGNAL	14	DB7	H/L	DATA BIT 7
7	DB0	H/L	DATA BIT 0	15	A(+)	+5V	BACKLIGHT
8	DB1	H/L	DATA BIT 1	16	K(-)	0V	BACKLIGHT

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD - VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	250	-	mA
LED DISSIPATION	PD	Ta=25°C	-	1250	-	mW

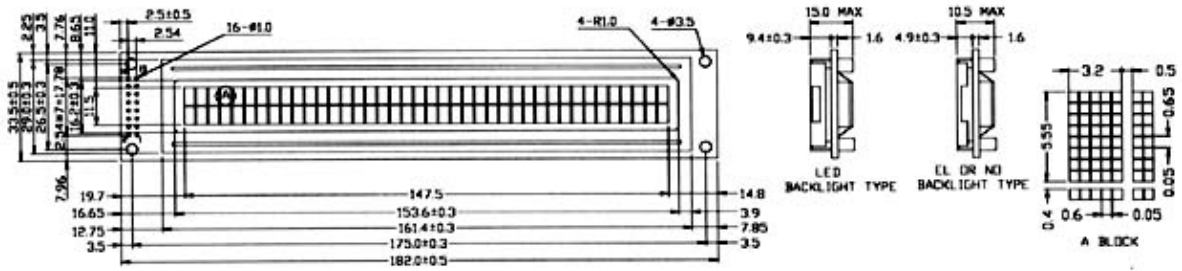
4. BLOCK DIAGRAM:



6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L1	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0	A1	A2	A3	A4	A5	A6	A7
L2	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF	E0	E1	E2	E3	E4	E5	E6	E7

7. DIMENSIONAL DRAWING:



LMC - SS4A40	40 CHARS×4 LINES	1/16 DUTY	1/4 BIAS
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Part Numbering System**1. FEATURE:**

LCD TYPE	STN
BACKLIGHT TYPE	FL/LED BACKLIGHT
CHARACTER FONTS	5x8 DOTS (WITH CURSOR)
CONTROLLER	HD44780 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5V
LED BACKLIGHT INPUT	DC +5V
EL BACKLIGHT INPUT	AC1KV(30KHz)
EL INVERTER	SDEC-FL001(5A)

3. ABSOLUTE MAXIMUM RATINGS:

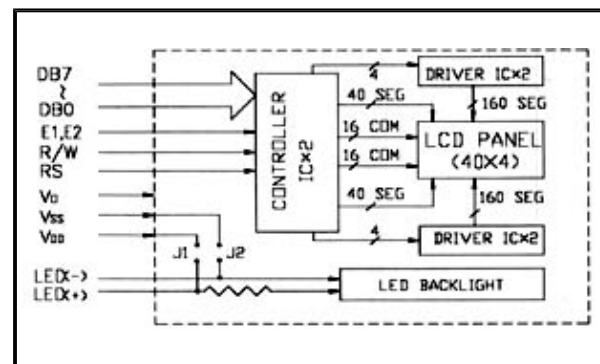
ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-0	-	50	°C
STORAGE TEMP.	TST	-10	-	60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VO	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

NO	SYM	LEVEL	FUNCTION	NO	SYM	LEVEL	FUNCTION
1	DB7	H/L	DATA BIT 7	10	R/W	H/L	READ/WRITE
2	DB6	H/L	DATA BIT 6	11	RS	H/L	REGISTER SELECT
3	DB5	H/L	DATA BIT 5	12	VO	-	CONTRAST ADJ
4	DB4	H/L	DATA BIT 4	13	VSS	-	0V
5	DB3	H/L	DATA BIT 3	14	VDD	-	5V
6	DB2	H/L	DATA BIT 2	15	E2	H.H.--L	ENABLE SIGNAL
7	DB1	H/L	DATA BIT 1	16	NC	-	NO CONNECTION
8	DB0	H/L	DATA BIT 0	17	A(+)	+5V	BACKLIGHT
9	E1	H.H.--L	ENABLE SIGNAL	18	K(-)	0V	BACKLIGHT

2. ELECTRICAL CHARACTERISTICS:

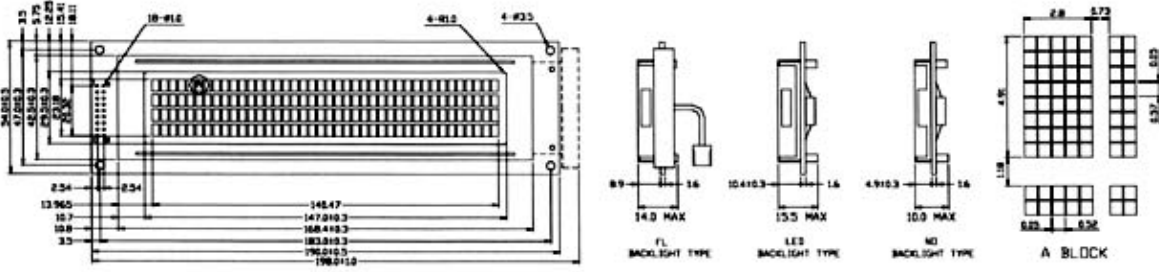
ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LCD	VDD - VO	Ta=0°C	-	4.6	-	V
		Ta=25°C	-	4.4	-	V
		Ta=50°C	-	4.2	-	V
INPUT VOLTAGE	VI	-	4.5	5.0	5.5	V
INPUT HIGH VOL	VIH	-	2.2	-	VDD	V
INPUT LOW VOL	VIL	-	0	-	0.6	V
OUTPUT HIGH VOL	VOH	-	2.4	-	-	V
OUTPUT LOW VOL	VOL	-	-	-	0.4	V
SUPPLY CURRENT	IDD	VDD=5v	-	2.0	3.6	mA
LED CURRENT	IF	Ta=25°C	-	600	-	mA
LED DISSIPATION	PD	Ta=25°C	-	3000	-	mW

4. BLOCK DIAGRAM:

6. DISPLAY CHARACTER ADDRESS CODE:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93
L2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3
L3	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93
L4	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L1	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0	A1	A2	A3	A4	A5	A6	A7
L2	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF	E0	E1	E2	E3	E4	E5	E6	E7
L3	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0	A1	A2	A3	A4	A5	A6	A7
L4	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF	E0	E1	E2	E3	E4	E5	E6	E7

7. DIMENSIONAL DRAWING:



LCD DISPLAY PRUDUCTS

U.S.Electronics Inc.

Ph: (314) 423 7500

Fax: (314) 423 0585

LMG SERIES

Dot Number	Part Number	Module Size	Viewing Area	Dot Size	Duty	Power Supply		Backlight Type		Polarizer Color		Operating Temp.
		W x H x D (mm)	W x H (mm)	W x H (mm)		VDD (V)	VEE	EL	LED	Grey	Yellow Green	
122 x 32	SSC12A32DRG	84.0x44.0x9.5	60.0x18.0	0.40x0.45	1/32	+5	-	-	-	X	-	0~50
	SSC12A32DLGY	84.0x44.0x9.5	60.0x18.0	0.40x0.45	1/32	+5	-	-	X	X	-	0~50
128 x 64	SSC12A64DRG	93.0x70.0x9.5	72.0x39.0	0.48x0.48	1/64	+5	-	-	-	X	-	0~50
	SSC12A64DRGY	93.0x70.0x9.5	72.0x39.0	0.48x0.48	1/64	+5	-	-	-	-	X	0~50
	SSC12A64DEGW	93.0x70.0x9.5	72.0x39.0	0.48x0.48	1/64	+5	-	X	-	X	-	0~50
	SSC12A64DLGY	93.0x70.0x9.5	72.0x39.0	0.48x0.48	1/64	+5	-	-	X	X	-	0~50
	SSC12E64DRG	70.2x55.0x10.0	59.0x32.0	0.40x0.40	1/64	+5	-10	-	-	X	-	-10~70
	SSC12J64DRY	93.0x70.0x9.5	72.0x39.0	0.48x0.48	1/64	+5	-	-	-	-	X	0~50
	SSC12J64DLYY	93.0x70.0x9.5	72.0x39.0	0.48x0.48	1/64	+5	-	-	X	-	X	0~50
160 x 80	SS16A80DRG	93.0x70.0x9.5	72.0x39.0	0.39x0.39	1/80	+5	-	-	-	X	-	0~50
	SS16A80DLGY	93.0x70.0x9.5	72.0x39.0	0.39x0.39	1/80	+5	-	-	X	X	-	0~50
	* SS16A80DFNW	93.0x70.0x9.5	72.0x39.0	0.39x0.39	1/80	+5	-	-	-	-	-	0~50
	SS16B80DRG	100.0x54.0x9.5	72.0x39.0	0.39x0.39	1/80	+5	-	-	-	X	-	0~50
	SS16B80DLGY	100.0x54.0x9.5	72.0x39.0	0.39x0.39	1/80	+5	-	-	X	X	-	0~50
240 x 64	SS24A64DRG	180.0x65.0x11.0	132.0x39.0	0.49x0.49	1/64	+5	-	-	-	X	-	-10~70
	SS24A64DLGY	180.0x65.0x11.0	132.0x39.0	0.49x0.49	1/64	+5	-	-	X	X	-	-10~70
	* SS24A64DFNW	180.0x65.0x11.0	132.0x39.0	0.49x0.49	1/64	+5	-	-	-	-	-	-10~70
	SS24B64DRG	180.0x65.0x11.0	132.0x39.0	0.49x0.49	1/64	+5	-5	-	-	X	-	-10~70
	SS24B64DLGY-E	180.0x65.0x11.0	132.0x39.0	0.49x0.49	1/64	+5	-5	-	X	X	-	-10~70
240 x 128	SS24A12DRY	144.0x104.0x10.5	114.0x61.0	0.40x0.40	1/128	+5	-10	-	-	-	X	-10~70
	SS24A12DEYW	144.0x104.0x10.5	114.0x61.0	0.40x0.40	1/128	+5	-10	X	-	-	X	-10~70
	SS24A12DLYY	144.0x104.0x10.5	114.0x61.0	0.40x0.40	1/128	+5	-10	-	X	-	X	-10~70
	* SS24A12DFNW	144.0x104.0x10.5	114.0x61.0	0.40x0.40	1/128	+5	-10	-	-	-	-	-10~70
	* SF24A12DFNW	144.0x104.0x10.5	114.0x61.0	0.40x0.40	1/128	+5	-10	-	-	-	-	-10~70

SS24B12DRY	144.0x104.0x10.5	114.0x61.0	0.40x0.40	1/128	+5	-10	-	-	-	X	-10~70
SS24B12DEYW	144.0x104.0x10.5	114.0x61.0	0.40x0.40	1/128	+5	-10	X	-	-	X	-10~70
SS24B12DLYY	144.0x104.0x10.5	114.0x61.0	0.40x0.40	1/128	+5	-10	-	X	-	X	-10~70
*SS24B12DFNW	144.0x104.0x10.5	114.0x61.0	0.40x0.40	1/128	+5	-10	-	-	-	-	-10~70

NOTES:

- 1) Standard Operating temperature range is 0 to 50 °C
- 2) Standard viewing angle is 6H
- 3) Standard back light color is Yellow Green
- 4) * Items have FL transmissive white back light

LCD DISPLAY PRUDUCTS

LMG SERIES

LMG - SSC12A32	122 DOTS×32 DOTS	1/32DUTY	1/6 BIAS
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[Part Numbering System](#)

1. FEATURE:

LCD TYPE	STN/FSTN
LCM BACKLIGHT TYPE	LED/EL BACKLIGHT
LCM CONTROLLER IC	BUILT IN SED15202 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5.0V
LED BACKLIGHT INPUT	DC +5.0V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I001A, SDEC-I001B
FL BACKLIGHT INPUT	-
FL INVERTER	-
LCM DIMENSION	84.0x44.0x9.5(13.5) mm
LCM VIEWING AREA	60.0x18.0 mm
LCD DOT SIZE	0.40x0.45 mm
LCD DOT PITCH	0.44x0.49 mm

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LOGIC	VDD - VSS	Ta=25°C	-	5.0	5.5	V
SUPPLY VOLTAGE FOR LCD DRIVER	VEE - VSS	Ta=25°C	-	-	-	V
OPERATING VOL. FOR LCD MODULE	VDD-VO	Ta=25°C	-	5.8	-	V
INPUT HIGH VOL.	VIH	-	2.2	-	VDD	V
INPUT LOW VOL.	VIL	-	0	-	0.6	V
SUPPLY CURRENT FOR LOGIC	IDD	VDD=5.0V	-	2.0	3.6	V
SUPPLY CURRENT FOR LCD	ILCD	-	-	-	6.0	mA
LED CURRENT	IF	Ta=25°C	-	200	-	mA
LED DISSIPATION	PD	Ta=25°C	-	1000	-	mW

3. ABSOLUTE MAXIMUM RATINGS:

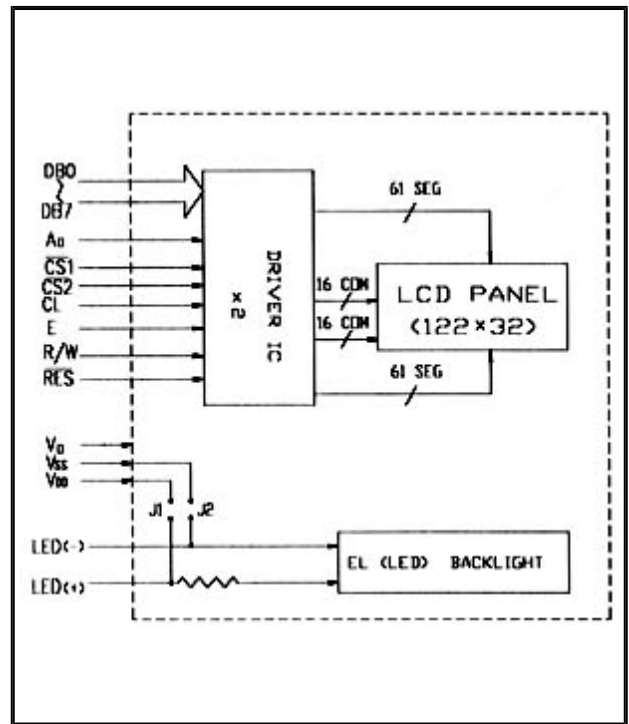
ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	+50	°C
STORAGE TEMP.	TST	-10	-	+60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	5.0	6.5	V
SUPPLY VOL-LCD	VDD-VEE	-	-	6.5	V

5. INTERFACE PIN CONNECTIONS:

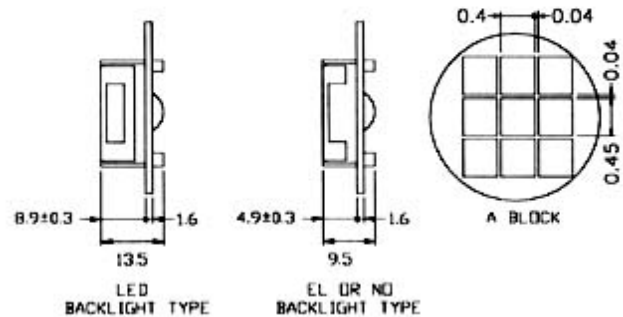
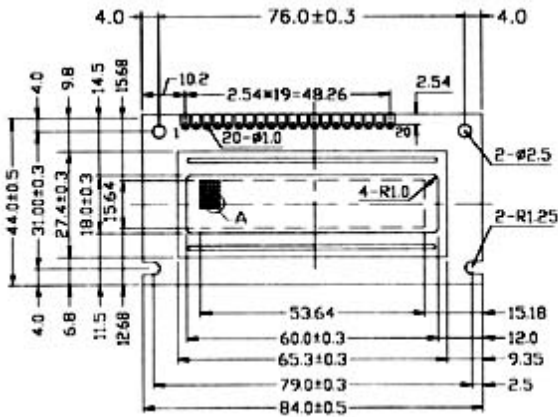
NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V
2	VDD	-	+5V
3	VO	-	CONTRAST ADJ.
4	A0	H/L	H:DATA, L:INSTRUCTION CODE
5	CS1	H.H--L	CHIP SELECT SIGNAL FOR IC1
6	CS2	H.H--L	CHIP SELECT SIGNAL FOR IC2

4. BLOCK DIAGRAM:

7	CL	H---L	INPUT 2KHz CLOCK
8	E	H/L	ENABLE SIGNAL
9	R/W	H/L	H:READ(LCM--MPU) L:WRITE(MPU--LCM)
10	DB0	H/L	DATA BIT 0
11	DB1	H/L	DATA BIT 1
12	DB2	H/L	DATA BIT 2
13	DB3	H/L	DATA BIT 3
14	DB4	H/L	DATA BIT 4
15	DB5	H/L	DATA BIT 5
16	DB6	H	DATA BIT 6
17	DB7	L	DATA BIT 7
18	RES	-	RESET SIGNAL
19	A(+)	+5.0V	BACKLIGHT (+)
20	K(-)	0V	BACKLIGHT (-)



7. DIMENSIONAL DRAWING:



LCD GRAPHICS MODULE NUMBERING SYSTEM

LMG	-	S	S	C	12	A	64	U	E	G	W	-	
		1	2	3	4	5	6	7	8	9	10		11

ITEM	OPTION	OPTION DESCRIPTION			
1	TYPE	B	BIG DOTS	S	SMALL DOTS
2	LCD MODEL	T	TN LCD	S	STN LCD
		F	FSTN LCD		
3	IC PACKAGING	NONE	PCB PACKAGE TYPE	C	CHIP TYPE
4	No. OF DOTS	WIDTH			
5	LCM TYPE	SEE SPECIFICATIONS			
6	No. OF DOTS	HEIGHT			
7	VIEWING ANGLE	D	6 O'CLOCK	U	12 O'CLOCK
8	BACKLIGHT	R	WITHOUT BACKLIGHT	E	EL (TRANSFLECTIVE)
		L	LED (TRANSFLECTIVE)	F	FL (TRANSMISSIVE)
9	POLARIZER COLOR	G	GRAY	Y	YELLOW GREEN
		N	NEGATIVE STN TYPE: BLUE		
		N	NEGATIVE FSTN TYPE: BLACK		
10	BACKLIGHT COLOR	B	BLUE	G	GREEN
		O	ORANGE	R	RED
		W	WHITE	Y	YELLOW GREEN
11	TEMPERATURE		NORMAL TEMPERATURE	H	WIDE TEMPERATURE

LMG - SS12A64	128 DOTS×64 DOTS	1/64 DUTY	1/9 BIAS
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Part Numbering System

1. FEATURE:

LCD TYPE	STN/FSTN
LCM BACKLIGHT TYPE	LED/EL BACKLIGHT
LCM CONTROLLER IC	BUILT IN KS0108 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5.0V
LED BACKLIGHT INPUT	DC +5.0V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I002A
FL BACKLIGHT INPUT	-
FL INVERTER	-
LCM DIMENSION	93.0x77.0x9.5(14.0) mm
LCM VIEWING AREA	72.0x39.0 mm
LCD DOT SIZE	0.48x0.48 mm
LCD DOT PITCH	0.52x0.52 mm

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LOGIC	VDD-VSS	Ta=25°C	4.5	5.0	5.5	V
SUPPLY VOLTAGE FOR LCD DRIVER	VEE-VSS	Ta=25°C	-	-	-5.0	V
OPERATING VOL. FOR LCD MODULE	VDD-VO	Ta=25°C	-	8.0	-	V
INPUT HIGH VOL.	VIH	-	0.7VDD	-	VDD	V
INPUT LOW VOL.	VIL	-	0	-	0.3VDD	V
SUPPLY CURRENT FOR LOGIC	IDD	VDD=5.0V	-	-	7.0	V
SUPPLY CURRENT FOR LCD	ILCD	VO=-3.0V	-	-	12.0	mA
LED CURRENT	IF	Ta=25°C	-	300	-	mA
LED DISSIPATION	PD	Ta=25°C	-	1500	-	mW

3. ABSOLUTE MAXIMUM RATINGS:

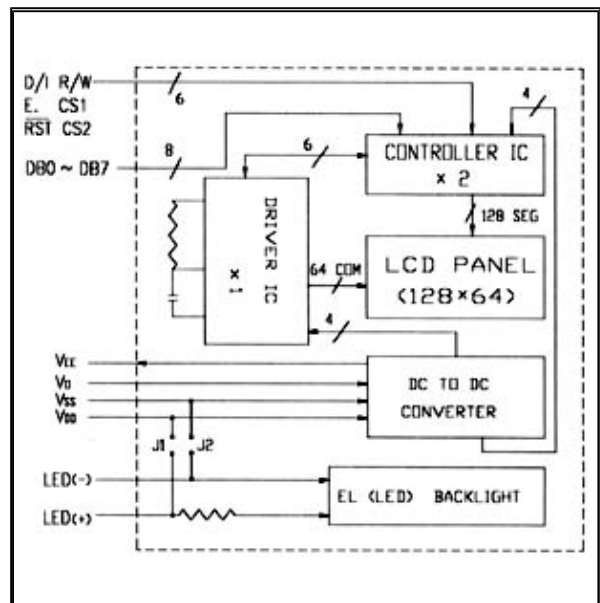
ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-0	-	+50	°C
STORAGE TEMP.	TST	-10	-	+60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	-	7.0	V
SUPPLY VOL-LCD	VDD-VEE	-	-	10.0	V

5. INTERFACE PIN CONNECTIONS:

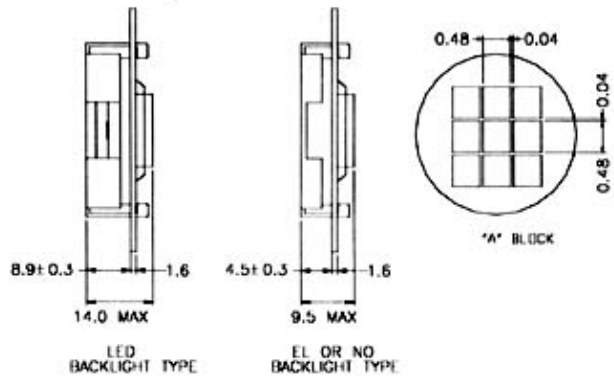
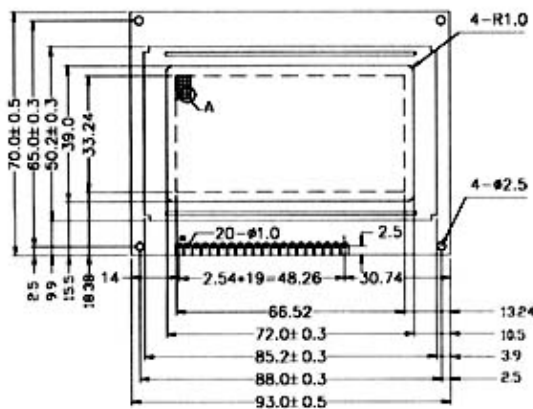
NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V
2	VDD	-	+5V
3	VO	-	CONTRAST ADJ.
4	D/I	H/L	H:DATA, L:INSTRUCTION CODE
5	R/W	H/L	H:READ(LCD -- MPU) L:WRITE(MPU -- LCD)
6	E	H.H. -- L	ENABLE SIGNAL
7	DB0	H/L	DATA BIT 0
8	DB1	H/L	DATA BIT1

4. BLOCK DIAGRAM:

9	DB2	H/L	DATA BIT 2
10	DB3	H/L	DATA BIT 3
11	DB4	H/L	DATA BIT 4
12	DB5	H/L	DATA BIT 5
13	DB6	H/L	DATA BIT 6
14	DB7	H/L	DATA BIT 7
15	CS1	H	CHIP SELECT SIGNAL FOR IC1
16	CS2	H	CHIP SELECT SIGNAL FOR IC2
17	RST	L	RESET SIGNAL
18	VEE	-	NEGATIVE VOLTAGE OUTPUT (-5.0V)
19	A(+)	+5.0V	BACKLIGHT (+)
20	K(-)	0V	BACKLIGHT (-)



7. DIMENSIONAL DRAWING:



LMG - SS12E64	128 DOTS×64 DOTS	1/64 DUTY	1/9 BIAS
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Part Numbering System

1. FEATURE:

LCD TYPE	STN/FSTN
LCM BACKLIGHT TYPE	LED/EL BACKLIGHT
LCM CONTROLLER IC	BUILT IN KS0108 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5.0V
LED BACKLIGHT INPUT	DC +5.0V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I002A
FL BACKLIGHT INPUT	-
FL INVERTER	-
LCM DIMENSION	70.2x55.0x10.0(13.5) mm
LCM VIEWING AREA	59.0x32.0 mm
LCD DOT SIZE	0.40x0.40 mm
LCD DOT PITCH	0.43x0.43 mm

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LOGIC	VDD - VSS	Ta=25°C	4.5	5.0	5.5	V
SUPPLY VOLTAGE FOR LCD DRIVER	VEE- VSS	Ta=25°C	-	-	-5.0	V
OPERATING VOL. FOR LCD MODULE	VDD- VO	Ta=25°C	-	8.0	-	V
INPUT HIGH VOL.	VIH	-	0.7VDD	-	VDD	V
INPUT LOW VOL.	VIL	-	0	-	0.3VDD	V
SUPPLY CURRENT FOR LOGIC	IDD	VDD=5.0V	-	-	6.0	V
SUPPLY CURRENT FOR LCD	ILCD	VO=-3.0V	-	-	12.0	mA
LED CURRENT	IF	Ta=25°C	-	300	-	mA
LED DISSIPATION	PD	Ta=25°C	-	1500	-	mW

3. ABSOLUTE MAXIMUM RATINGS:

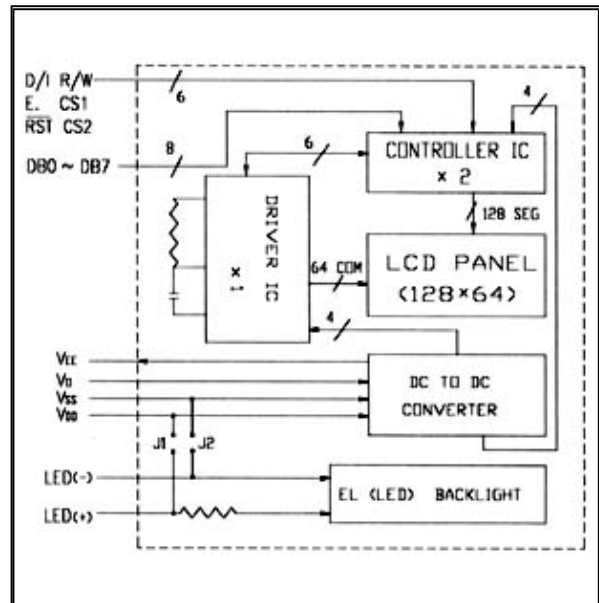
ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-0	-	+50	°C
STORAGE TEMP.	TST	-10	-	+60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	-	7.0	V
SUPPLY VOL-LCD	VDD-VEE	-	-	10.0	V

5. INTERFACE PIN CONNECTIONS:

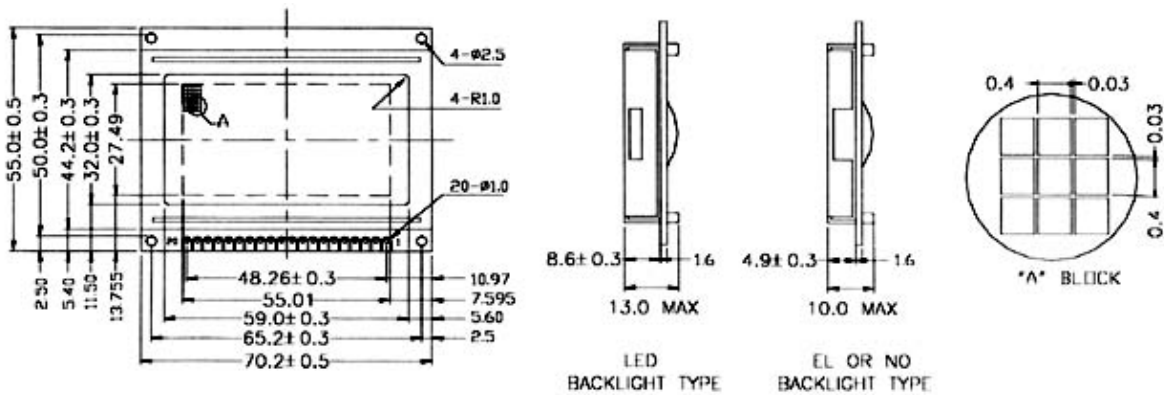
NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V
2	VDD	-	+5V
3	VO	-	CONTRAST ADJ.
4	D/I	H/L	H:DATA, L:INSTRUCTION CODE
5	R/W	H/L	H:READ(LCD -- MPU) L:WRITE(MPU -- LCD)
6	E	H.H. -- L	ENABLE SIGNAL
7	DB0	H/L	DATA BIT 0
8	DB1	H/L	DATA BIT1

4. BLOCK DIAGRAM:

9	DB2	H/L	DATA BIT 2
10	DB3	H/L	DATA BIT 3
11	DB4	H/L	DATA BIT 4
12	DB5	H/L	DATA BIT 5
13	DB6	H/L	DATA BIT 6
14	DB7	H/L	DATA BIT 7
15	CS1	H	CHIP SELECT SIGNAL FOR IC1
16	CS2	H	CHIP SELECT SIGNAL FOR IC2
17	RST	L	RESET SIGNAL
18	VEE	-	NEGATIVE VOLTAGE OUTPUT (-5.0V)
19	A(+)	+5.0V	BACKLIGHT (+)
20	K(-)	0V	BACKLIGHT (-)



7. DIMENSIONAL DRAWING:



LMG - SS16A80	160 DOTSx80 DOTS	1/80 DUTY	1/9 BIAS
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Part Numbering System

1. FEATURE:

LCD TYPE	STN/FSTN
LCM BACKLIGHT TYPE	LED/EL BACKLIGHT
LCM CONTROLLER IC	BUILT IN LC7981 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5.0V
LED BACKLIGHT INPUT	DC +5.0V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I002A
FL BACKLIGHT INPUT	-
FL INVERTER	-
LCM DIMENSION	93.0x70.0x9.5(14.0) mm
LCM VIEWING AREA	72.0x39.0 mm
LCD DOT SIZE	0.39x0.39 mm
LCD DOT PITCH	0.42x0.42 mm

3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	+50	°C
STORAGE TEMP.	TST	-10	-	+60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	-	7.0	V
SUPPLY VOL-LCD	VDD-VEE	-	-	10.0	V

2. ELECTRICAL CHARACTERISTICS:

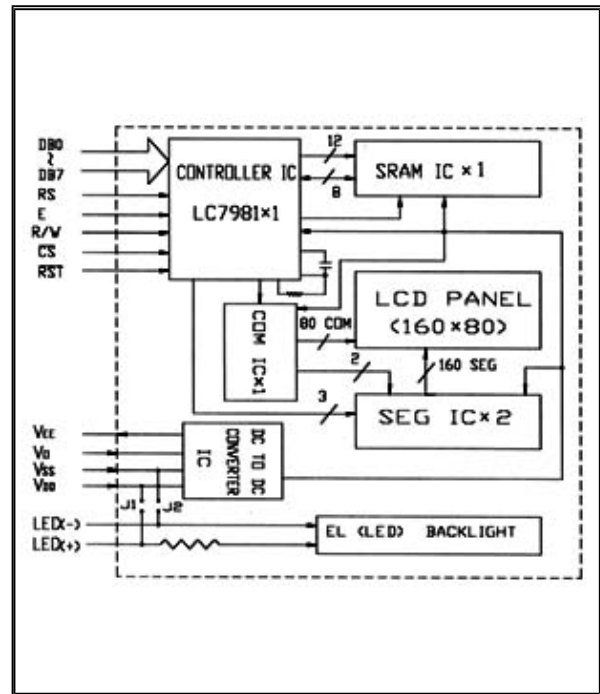
ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LOGIC	VDD - VSS	Ta=25°C	4.5	5.0	5.5	V
SUPPLY VOLTAGE FOR LCD DRIVER	VEE - VSS	Ta=25°C	-	-	-5.0	V
OPERATING VOL. FOR LCD MODULE	VDD - VO	Ta=25°C	-	8.5	-	V
INPUT HIGH VOL.	VIH	-	0.7VDD	-	VDD	V
INPUT LOW VOL.	VIL	-	0	-	0.3VDD	V
SUPPLY CURRENT FOR LOGIC	IDD	VDD=5.0V	-	-	10.0	V
SUPPLY CURRENT FOR LCD	ILCD	VO=-3.5V	-	-	15.0	mA
LED CURRENT	IF	Ta=25°C	-	300	-	mA
LED DISSIPATION	PD	Ta=25°C	-	1500	-	mW

5. INTERFACE PIN CONNECTIONS:

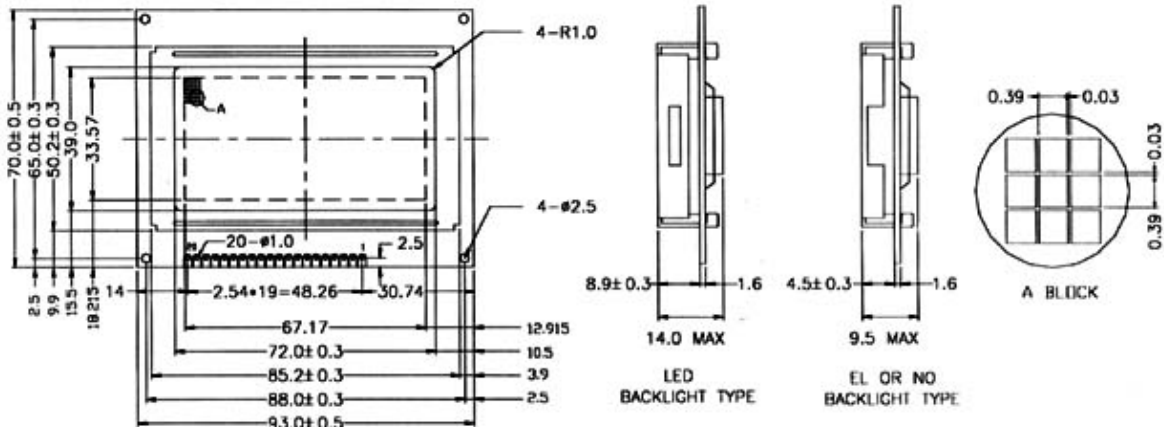
NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V
2	VDD	-	+5V
3	VO	-	CONTRAST ADJ.
4	D/I	H/L	H:DATA, L:INSTRUCTION CODE
5	R/W	H/L	H:READ(LCD ---MPU) L:WRITE(MPU ---LCD)
6	E	H.H.-- L	ENABLE SIGNAL
7	DB0	H/L	DATA BIT 0
8	DB1	H/L	DATA BIT 1

4. BLOCK DIAGRAM:

9	DB2	H/L	DATA BIT 2
10	DB3	H/L	DATA BIT 3
11	DB4	H/L	DATA BIT 4
12	DB5	H/L	DATA BIT 5
13	DB6	H/L	DATA BIT 6
14	DB7	H/L	DATA BIT 7
15	CS	H/L	CHIP ENABLE SIGNAL
16	DIS OFF	H	DISPLAY OFF SIGNAL
17	RST	L	RESET SIGNAL
18	VEE	-	NEGATIVE VOLTAGE OUTPUT (-5.0V)
19	A(+)	+5.0V	BACKLIGHT (+)
20	K(-)	0V	BACKLIGHT (-)



7. DIMENSIONAL DRAWING:



LMG - SS16B80	160 DOTSx80 DOTS	1/80 DUTY	1/9 BIAS
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Part Numbering System

1. FEATURE:

LCD TYPE	STN/FSTN
LCM BACKLIGHT TYPE	LED/EL BACKLIGHT
LCM CONTROLLER IC	BUILT IN LC7981 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5.0V
LED BACKLIGHT INPUT	DC +5.0V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I002A
FL BACKLIGHT INPUT	-
FL INVERTER	-
LCM DIMENSION	100.0x54.0x9.5(14.0) mm
LCM VIEWING AREA	72.0x39.0 mm
LCD DOT SIZE	0.39x0.39 mm
LCD DOT PITCH	0.42x0.42 mm

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LOGIC	VDD - VSS	Ta=25°C	4.5	5.0	5.5	V
SUPPLY VOLTAGE FOR LCD DRIVER	VEE- VSS	Ta=25°C	-	-	-5.0	V
OPERATING VOL. FOR LCD MODULE	VDD- VO	Ta=25°C	-	8.5	-	V
INPUT HIGH VOL.	VIH	-	0.7VDD	-	VDD	V
INPUT LOW VOL.	VIL	-	0	-	0.3VDD	V
SUPPLY CURRENT FOR LOGIC	IDD	VDD=5.0V	-	-	10.0	V
SUPPLY CURRENT FOR LCD	ILCD	VO=-3.5V	-	-	15.0	mA
LED CURRENT	IF	Ta=25°C	-	300	-	mA
LED DISSIPATION	PD	Ta=25°C	-	1500	-	mW

3. ABSOLUTE MAXIMUM RATINGS:

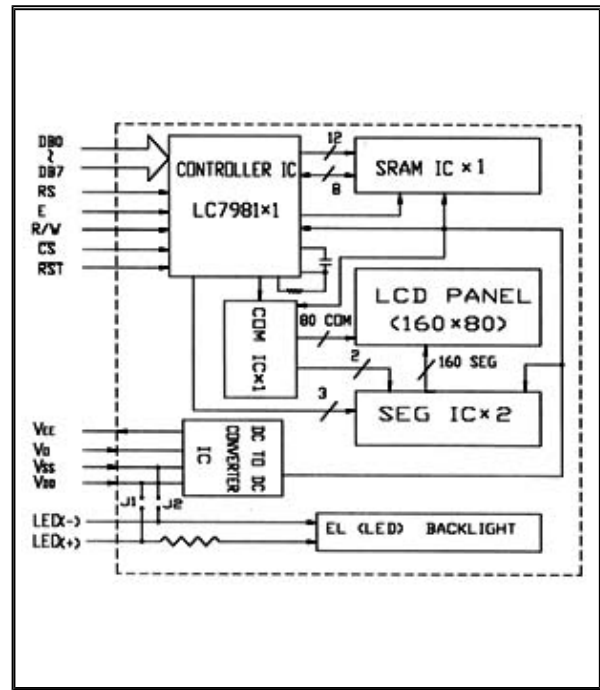
ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	0	-	+50	°C
STORAGE TEMP.	TST	-10	-	+60	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	-	7.0	V
SUPPLY VOL-LCD	VDD-VEE	-	-	10.0	V

5. INTERFACE PIN CONNECTIONS:

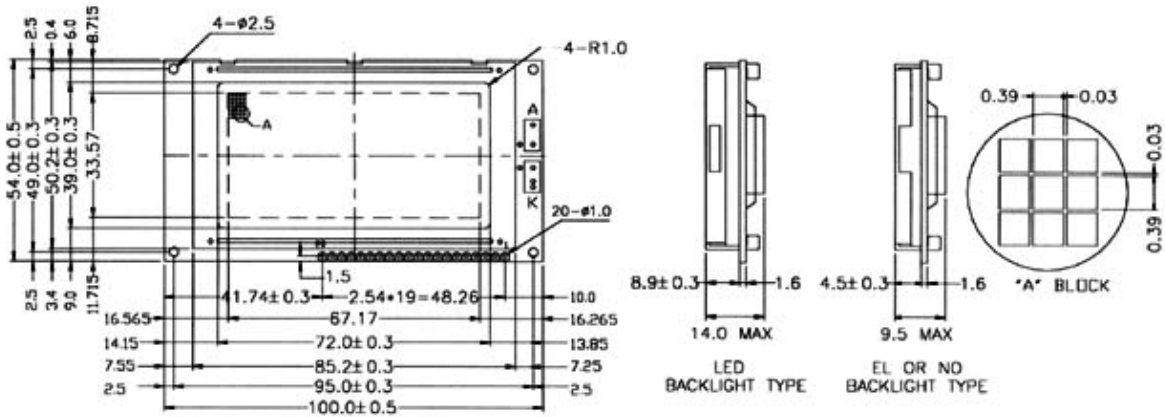
NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V
2	VDD	-	+5V
3	VO	-	CONTRAST ADJ.
4	D/I	H/L	H:DATA, L:INSTRUCTION CODE
5	R/W	H/L	H:READ(LCD -- MPU) L:WRITE(MPU -- LCD)
6	E	H.H.-- L	ENABLE SIGNAL
7	DB0	H/L	DATA BIT 0
8	DB1	H/L	DATA BIT1

4. BLOCK DIAGRAM:

9	DB2	H/L	DATA BIT 2
10	DB3	H/L	DATA BIT 3
11	DB4	H/L	DATA BIT 4
12	DB5	H/L	DATA BIT 5
13	DB6	H/L	DATA BIT 6
14	DB7	H/L	DATA BIT 7
15	CS	H/L	CHIP ENABLE SIGNAL
16	RST	L	RESET SIGNAL
17	VEE	-	NEGATIVE VOLTAGE OUTPUT (-5.0V)
18	N.C	-	NO CONNECTION
19	A(+)	+5.0V	BACKLIGHT (+)
20	K(-)	0V	BACKLIGHT (-)



7. DIMENSIONAL DRAWING:



LMG - SS24A64	240 DOTS×64 DOTS	1/64 DUTY	1/9 BIAS
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Part Numbering System

1. FEATURE:

LCD TYPE	STN/FSTN
LCM BACKLIGHT TYPE	EL/FL/LED BACKLIGHT
LCM CONTROLLER IC	BUILT IN LC7981 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5.0V
LED BACKLIGHT INPUT	DC +5.0V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I002A
FL BACKLIGHT INPUT	AC 1KV(30KHz)
FL INVERTER	SDEC-FL001(5A)
LCM DIMENSION	180.0x65.0x11.0(13.0) mm
LCM VIEWING AREA	132.0x39.0 mm
LCD DOT SIZE	0.49x0.49 mm
LCD DOT PITCH	0.53x0.53 mm

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LOGIC	VDD - VSS	Ta=25°C	4.5	5.0	5.5	V
SUPPLY VOLTAGE FOR LCD DRIVER	VEE- VSS	Ta=25°C	-	-	-5.0	V
OPERATING VOL. FOR LCD MODULE	VDD- VO	Ta=25°C	-	9.0	-	V
INPUT HIGH VOL.	VIH	-	0.7VDD	-	VDD	V
INPUT LOW VOL.	VIL	-	0	-	0.3VDD	V
SUPPLY CURRENT FOR LOGIC	IDD	VDD=5.0V	-	-	15.0	V
SUPPLY CURRENT FOR LCD	ILCD	VO=-4.0V	-	-	17.0	mA
LED CURRENT	IF	Ta=25°C	-	500	-	mA
LED DISSIPATION	PD	Ta=25°C	-	2500	-	mW

3. ABSOLUTE MAXIMUM RATINGS:

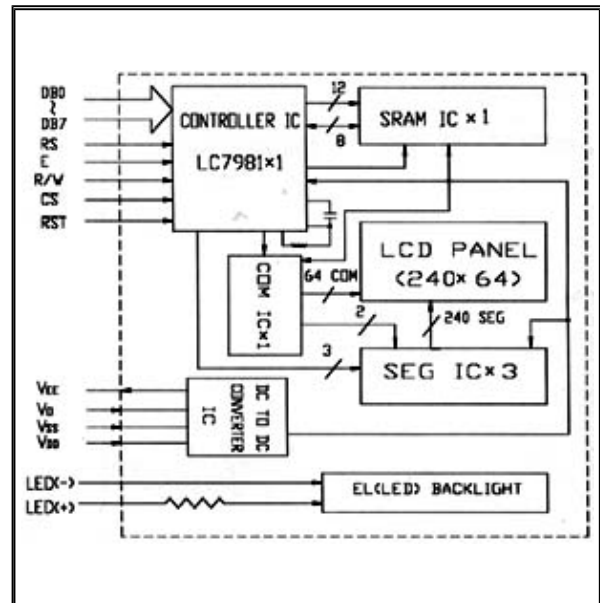
ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-10	-	+70	°C
STORAGE TEMP.	TST	-20	-	+80	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	-	7.0	V
SUPPLY VOL-LCD	VDD-VEE	-	-	10.0	V

5. INTERFACE PIN CONNECTIONS:

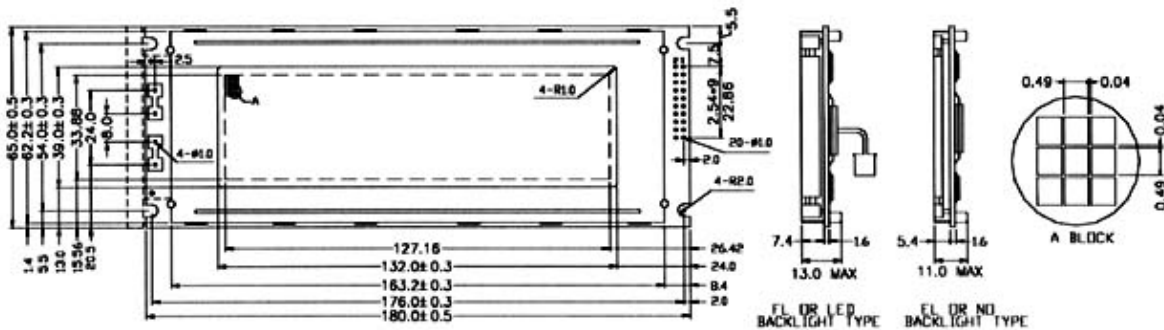
NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V
2	VDD	-	+5V
3	VO	-	CONTRAST ADJ.
4	D/I	H/L	H:DATA, L:INSTRUCTION CODE
5	R/W	H/L	H:READ(LCD ---MPU) L:WRITE(MPU ---LCD)
6	E	H.H.-- L	ENABLE SIGNAL
7	DB0	H/L	DATA BIT 0

4. BLOCK DIAGRAM:

8	DB1	H/L	DATA BIT 1
9	DB2	H/L	DATA BIT 2
10	DB3	H/L	DATA BIT 3
11	DB4	H/L	DATA BIT 4
12	DB5	H/L	DATA BIT 5
13	DB6	H/L	DATA BIT 6
14	DB7	H/L	DATA BIT 7
15	CS	H/L	CHIP ENABLE SIGNAL
16	RST	L	RESET SIGNAL
17	VEE	-	NEGATIVE VOLTAGE OUTPUT (-5.0V)
18	N.C	-	NO CONNECTION
19	A(+)	+5.0V	BACKLIGHT (+)
20	K(-)	0V	BACKLIGHT (-)



7. DIMENSIONAL DRAWING:



LMG - SS24B64	240 DOTS×64 DOTS	1/64 DUTY	1/9 BIAS
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Part Numbering System**1. FEATURE:**

LCD TYPE	STN/FSTN
LCM BACKLIGHT TYPE	EL/FL/LED BACKLIGHT
LCM CONTROLLER IC	BUILT IN T6936C OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5.0V
LED BACKLIGHT INPUT	DC +5.0V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I002A
FL BACKLIGHT INPUT	AC 1KV(30KHz)
FL INVERTER	SDEC-FL001(5A)
LCM DIMENSION	180.0x65.0x11.0(13.0) mm
LCM VIEWING AREA	132.0x39.0 mm
LCD DOT SIZE	0.49x0.49 mm
LCD DOT PITCH	0.53x0.53 mm

3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-10	-	+70	°C
STORAGE TEMP.	TST	-20	-	+80	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	-	7.0	V
SUPPLY VOL-LCD	VDD-VEE	10.0	-	-	V

2. ELECTRICAL CHARACTERISTICS:

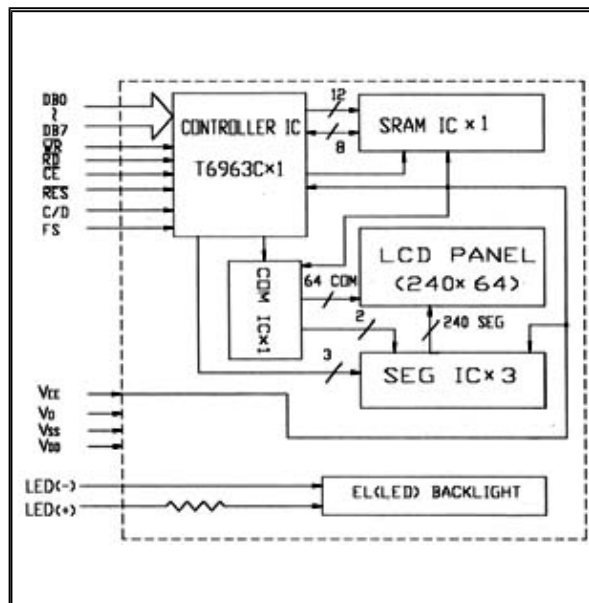
ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LOGIC	VDD - VSS	Ta=25°C	4.5	5.0	5.5	V
SUPPLY VOLTAGE FOR LCD DRIVER	VEE- VSS	Ta=25°C	-	-	-5.0	V
OPERATING VOL. FOR LCD MODULE	VDD- VO	Ta=25°C	-	9.0	-	V
INPUT HIGH VOL.	VIH	-	0.7VDD	-	VDD	V
INPUT LOW VOL.	VIL	-	0	-	0.3VDD	V
SUPPLY CURRENT FOR LOGIC	IDD	VDD=5.0V	-	-	15.0	V
SUPPLY CURRENT FOR LCD	ILCD	VO=-4.0V	-	-	17.0	mA
LED CURRENT	IF	Ta=25°C	-	500	-	mA
LED DISSIPATION	PD	Ta=25°C	-	2500	-	mW

5. INTERFACE PIN CONNECTIONS:

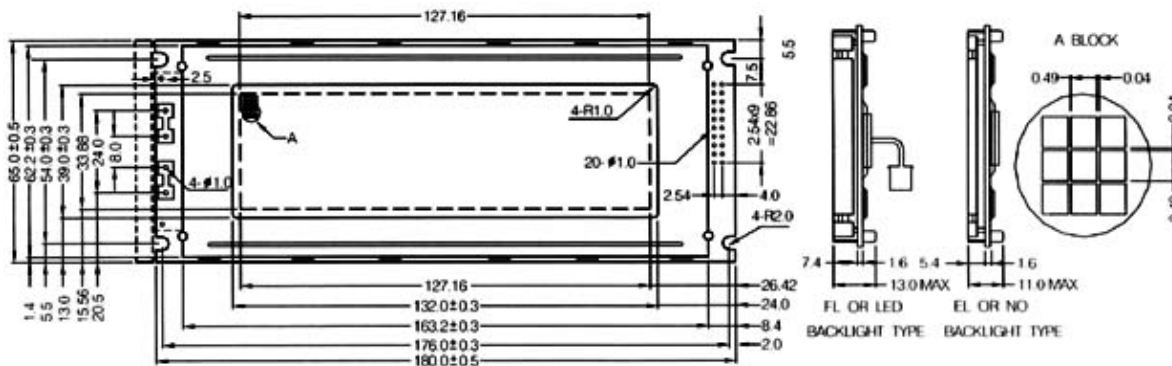
NO	SYM	LEVEL	FUNCTION
1	FGND	-	FRAME GROUND
2	VSS	-	0V
3	VDD	-	+5V
4	VO	-	CONTRAST ADJ.
5	WR	L	WRITE SIGNAL
6	RD	L	READ SIGNAL
7	CE	L	CHIP ENABLE SIGNAL

4. BLOCK DIAGRAM:

8	C/D	H/L	WR=L,C/D(H:COMMAND WRITE, L:DATA WRITE)
9	VEE	-	NEGATIVE VOLTAGE INPUT(-5.0V)
10	RES	L	CONTROLLER RESET
11	DB0	H/L	DATA BIT 0
12	DB1	H/L	DATA BIT 1
13	DB2	H/L	DATA BIT 2
14	DB3	H/L	DATA BIT 3
15	DB4	H/L	DATA BIT 4
16	DB5	H/L	DATA BIT 5
17	DB6	H/L	DATA BIT 6
18	DB7	H/L	DATA BIT 7
19	FS	H/L	CONNECT TO VDD6x8DOTS(TO VSS 8x8DOTS)
20	N.C	-	NO CONNECTION



7. DIMENSIONAL DRAWING:



LMG - SS24A12	240 DOTS×128 DOTS	1/128 DUTY	1/12 BIAS
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Part Numbering System

1. FEATURE:

LCD TYPE	STN/FSTN
LCM BACKLIGHT TYPE	EL/FL/LED BACKLIGHT
LCM CONTROLLER IC	BUILT IN LC7981 OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5.0V
LED BACKLIGHT INPUT	DC +5.0V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I003A
FL BACKLIGHT INPUT	AC 1KV(30KHz)
FL INVERTER	SDEC-FL001(5A)
LCM DIMENSION	144.0x104.0x10.5(13.0) mm
LCM VIEWING AREA	114.0x61.0 mm
LCD DOT SIZE	0.40x0.40 mm
LCD DOT PITCH	0.44x0.44 mm

2. ELECTRICAL CHARACTERISTICS:

ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LOGIC	VDD - VSS	Ta=25°C	4.5	5.0	5.5	V
SUPPLY VOLTAGE FOR LCD DRIVER	VEE - VSS	Ta=25°C	-	-	-5.0	V
OPERATING VOL. FOR LCD MODULE	VDD - VO	Ta=25°C	-	13.0	-	V
INPUT HIGH VOL.	VIH	-	0.7VDD	-	VDD	V
INPUT LOW VOL.	VIL	-	0	-	0.3VDD	V
SUPPLY CURRENT FOR LOGIC	IDD	VDD=5.0V	-	-	15.0	V
SUPPLY CURRENT FOR LCD	ILCD	VO=-8.0V	-	-	20.0	mA
LED CURRENT	IF	Ta=25°C	-	400	-	mA
LED DISSIPATION	PD	Ta=25°C	-	2000	-	mW

3. ABSOLUTE MAXIMUM RATINGS:

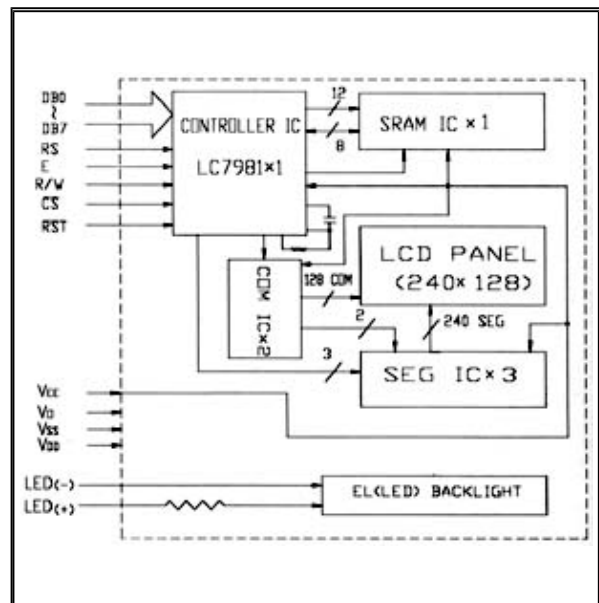
ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-10	-	+70	°C
STORAGE TEMP.	TST	-20	-	+80	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	-	7.0	V
SUPPLY VOL-LCD	VDD-VEE	15.0	-	-	V

5. INTERFACE PIN CONNECTIONS:

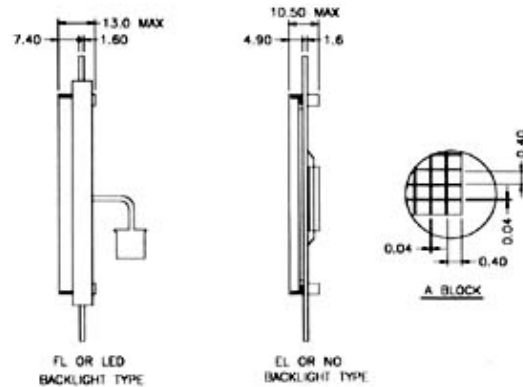
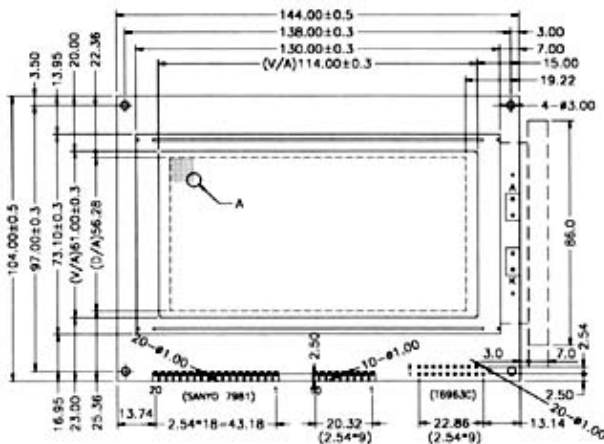
NO	SYM	LEVEL	FUNCTION
1	VSS	-	0V
2	VDD	-	+5V
3	VO	-	CONTRAST ADJ.
4	D/I	H/L	H:DATA, L:INSTRUCTION CODE
5	R/W	H/L	H:READ(LCD ---MPU) L:WRITE(MPU ---LCD)
6	E	H.H.--L	ENABLE SIGNAL
7	DB0	H/L	DATA BIT 0
8	DB1	H/L	DATA BIT1

4. BLOCK DIAGRAM:

9	DB2	H/L	DATA BIT 2
10	DB3	H/L	DATA BIT 3
11	DB4	H/L	DATA BIT 4
12	DB5	H/L	DATA BIT 5
13	DB6	H/L	DATA BIT 6
14	DB7	H/L	DATA BIT 7
15	CS	H/L	CHIP ENABLE SIGNAL
16	RST	L	RESET SIGNAL
17	VEE	-	NEGATIVE VOLTAGE INPUT (-10.0V)
18	N.C	-	NO CONNECTION
19	A(+)	+5.0V	BACKLIGHT (+)
20	K(-)	0V	BACKLIGHT (-)



7. DIMENSIONAL DRAWING:



LMG - SS24B12	240 DOTS×128 DOTS	1/128 DUTY	1/12 BIAS
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Part Numbering System**1. FEATURE:**

LCD TYPE	STN/FSTN
LCM BACKLIGHT TYPE	EL/FL/LED BACKLIGHT
LCM CONTROLLER IC	BUILT IN T6936C OR EQUIVALENT
POWER SUPPLY FOR LCM	DC +5.0V
LED BACKLIGHT INPUT	DC +5.0V
EL BACKLIGHT INPUT	AC90~100V(400~700HZ)
EL INVERTER	SDEC-I002A
FL BACKLIGHT INPUT	AC 1KV(30KHz)
FL INVERTER	SDEC-FL001(5A)
LCM DIMENSION	144.0x104.0x10.5(13.0) mm
LCM VIEWING AREA	114.0x61.0 mm
LCD DOT SIZE	0.40x0.40 mm
LCD DOT PITCH	0.44x0.44 mm

3. ABSOLUTE MAXIMUM RATINGS:

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING TEMP.	TOP	-10	-	+70	°C
STORAGE TEMP.	TST	-20	-	+80	°C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOL-LOGIC	VDD-VSS	-	-	7.0	V
SUPPLY VOL-LCD	VDD-VEE	15.0	-	-	V

2. ELECTRICAL CHARACTERISTICS:

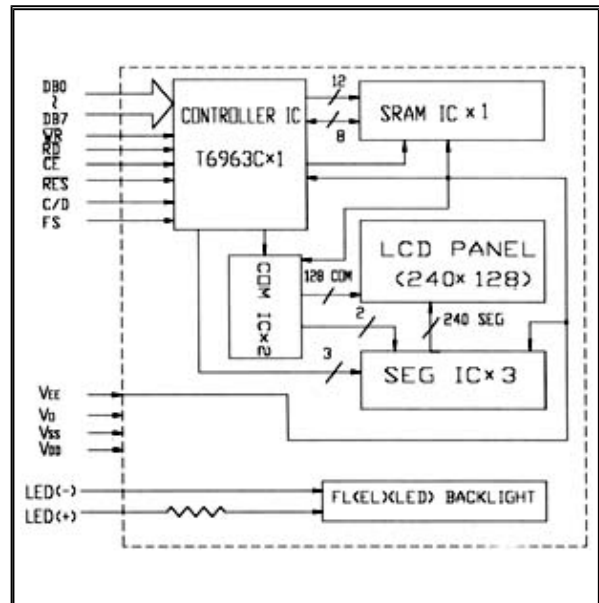
ITEM	SYM	CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE FOR LOGIC	VDD - VSS	Ta=25°C	4.5	5.0	5.5	V
SUPPLY VOLTAGE FOR LCD DRIVER	VEE - VSS	Ta=25°C	-	-	-5.0	V
OPERATING VOL. FOR LCD MODULE	VDD - VO	Ta=25°C	-	13.0	-	V
INPUT HIGH VOL.	VIH	-	0.7VDD	-	VDD	V
INPUT LOW VOL.	VIL	-	0	-	0.3VDD	V
SUPPLY CURRENT FOR LOGIC	IDD	VDD=5.0V	-	-	15.0	V
SUPPLY CURRENT FOR LCD	ILCD	VO=-8.0V	-	-	20.0	mA
LED CURRENT	IF	Ta=25°C	-	400	-	mA
LED DISSIPATION	PD	Ta=25°C	-	2000	-	mW

5. INTERFACE PIN CONNECTIONS:

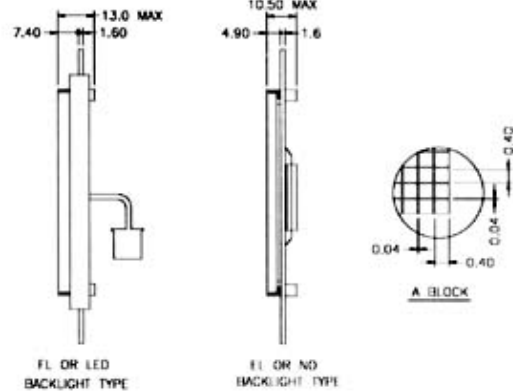
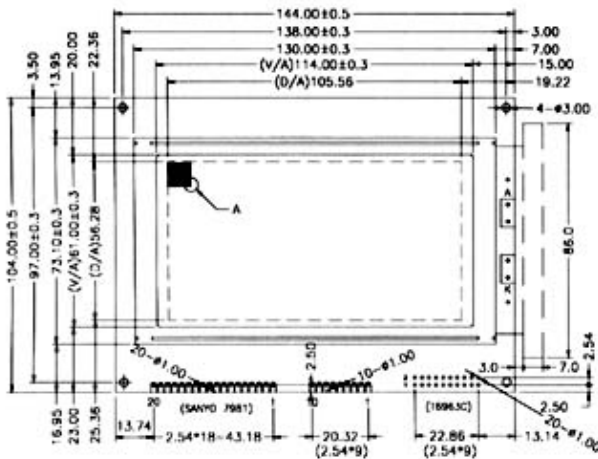
NO	SYM	LEVEL	FUNCTION
1	FGND	-	FRAME GROUND
2	VSS	-	0V
3	VDD	-	+5V
4	VO	-	CONTRAST ADJ.
5	WR	L	WRITE SIGNAL
6	RD	L	READ SIGNAL
7	CE	L	CHIP ENABLE SIGNAL

4. BLOCK DIAGRAM:

8	C/D	H/L	WR=L,C/D(H:COMMAND WRITE, L:DATA WRITE)
9	VEE	-	NEGATIVE VOLTAGE INPUT (-10.0V)
10	RES	L	CONTROLLER RESET
11	DB0	H/L	DATA BIT 0
12	DB1	H/L	DATA BIT1
13	DB2	H/L	DATA BIT 2
14	DB3	H/L	DATA BIT 3
15	DB4	H/L	DATA BIT 4
16	DB5	H/L	DATA BIT 5
17	DB6	H/L	DATA BIT 6
18	DB7	H/L	DATA BIT 7
19	FS	H/L	CONNECT TO VDD6x8DOTS(TO VSS 8x8DOTS)
20	N.C	-	NO CONNECTION



7. DIMENSIONAL DRAWING:



LCD DISPLAY PRUDUCTS

U.S.Electronics Inc.

Ph: (314) 423 7500

Fax: (314) 423 0585

INVERTERS

Part	Black light	Dimensions	Input Voltage	Load Range	Input Current
		WxHxD(mm)	(DC)	(cm2)	(mA)
I001A	EL	15.0x15.0x16.5	+5.0V	9~15	20~30
I001B	EL	22.0x20.0x6.0	+5.0V	10~25	70~100
I002A	EL	24.0x17.5x20.0	+5.0V	45~70	30~40
I003A	EL	22.0x22.0x21.0	+5.0V	70~100	65~85
I005A	EL	30.5x21.0x9.0	+5.0V	20~50	50~70
FL0015A	CCFL	49.0x21.0x15.0	+5.0V	--	230
FL0015B	CCFL	49.0x21.0x15.0	+5.0V	--	230

LCD DISPLAY PRUDUCTS

U.S.Electronics Inc.

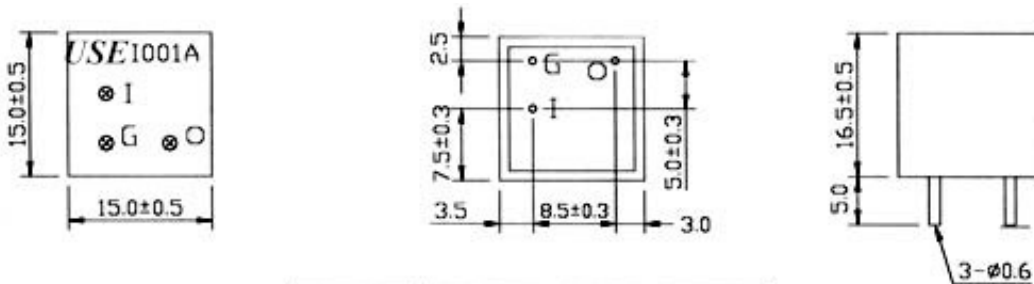
Ph: (314) 423 7500

Fax: (314) 423 0585

INVERTERS

ITEM NUMBER: USE - I001A					
ITEM	RATINGS		ITEM	RATINGS	
	MIN	MAX		MIN	MAX
INPUT VOLTAGE (DC)	4.5	5.5	OSC. FREQUENCY (Hz)	420	600
INPUT CURRENT (mA)	20	30	OUTPUT VOLTAGE (AC)	70	110
OPERATING TEMP. (°C)	-10	+60	LOAD RANGE (cm ²)	9	15
STORAGE TEMP. (°C)	-20	+70	LIFE (HRS)	35,000	

I001A DIMENSIONS (mm):



PIN	FUNCTIONS
O	OUTPUT: FOR EL
G	COMMON: GND/FOR EL
I	INPUT: 5V DC

LCD DISPLAY PRUDUCTS

INVERTERS

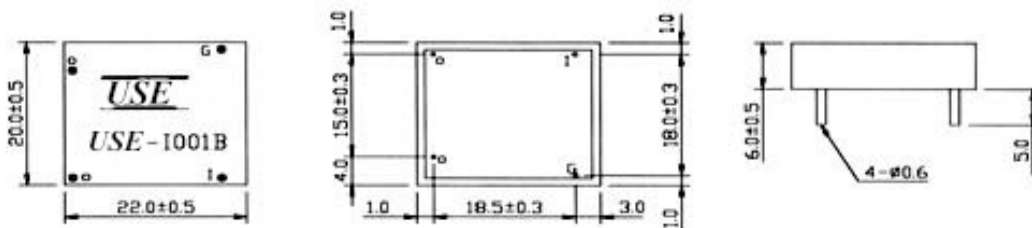
U.S.Electronics Inc.

Ph: (314) 423 7500

Fax: (314) 423 0585

ITEM NUMBER: USE - I001B					
ITEM	RATINGS		ITEM	RATINGS	
	MIN	MAX		MIN	MAX
INPUT VOLTAGE (DC)	4.5	5.5	OSC. FREQUENCY (Hz)	1.85K	2.3K
INPUT CURRENT (mA)	70	100	OUTPUT VOLTAGE (AC)	60	70
OPERATING TEMP. (°C)	-10	+60	LOAD RANGE (cm2)	10	25
STORAGE TEMP. (°C)	-20	+70	LIFE (HRS)	25,000	

I001B DIMENSIONS (mm):



PIN	FUNCTIONS
I	OUTPUT: FOR EL
G	COMMON: GND
I	INPUT: 5V DC

LCD DISPLAY PRUDUCTS

U.S.Electronics Inc.

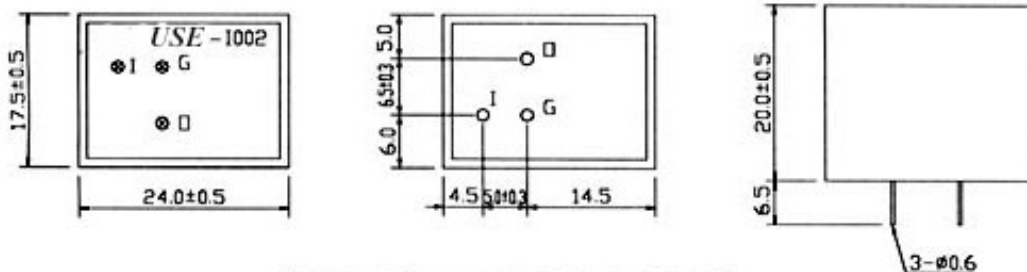
Ph: (314) 423 7500

Fax: (314) 423 0585

INVERTERS

ITEM NUMBER: USE - I002A					
ITEM	RATINGS		ITEM	RATINGS	
	MIN	MAX		MIN	MAX
INPUT VOLTAGE (DC)	4.5	5.5	OSC. FREQUENCY (Hz)	400	700
INPUT CURRENT (mA)	30	40	OUTPUT VOLTAGE (AC)	100	130
OPERATING TEMP. (°C)	-10	+60	LOAD RANGE (cm ²)	45	70
STORAGE TEMP. (°C)	-20	+70	LIFE (HRS)	30,000	

I002A DIMENSIONS (mm):



PIN	FUNCTIONS
□	OUTPUT: FOR EL
G	COMMON: GND/FOR EL
I	INPUT: 5V DC

LCD DISPLAY PRUDUCTS

U.S.Electronics Inc.

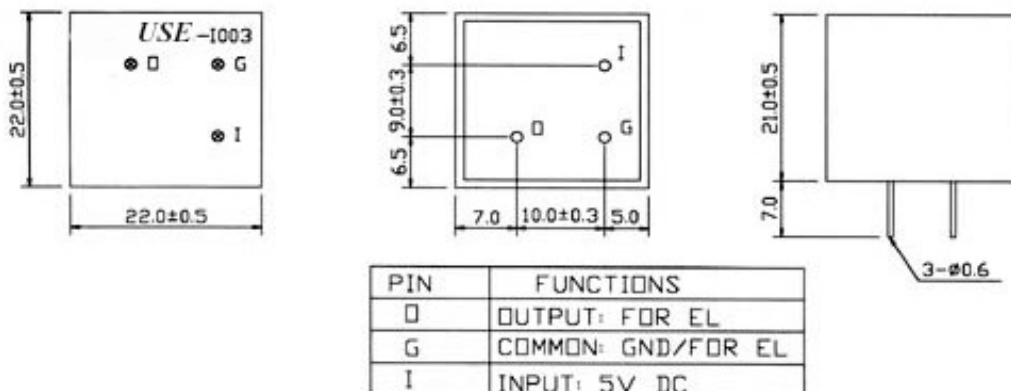
Ph: (314) 423 7500

Fax: (314) 423 0585

INVERTERS

ITEM NUMBER: USE - I003A					
ITEM	RATINGS		ITEM	RATINGS	
	MIN	MAX		MIN	MAX
INPUT VOLTAGE (DC)	4.5	5.5	OSC. FREQUENCY (Hz)	400	700
INPUT CURRENT (mA)	65	85	OUTPUT VOLTAGE (AC)	100	130
OPERATING TEMP. (°C)	-10	+60	LOAD RANGE (cm ²)	70	100
STORAGE TEMP. (°C)	-20	+70	LIFE (HRS)	30,000	

I003A DIMENSIONS (mm):



LCD DISPLAY PRUDUCTS

INVERTERS

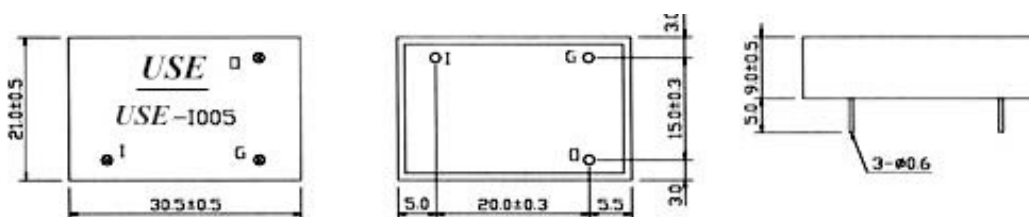
U.S.Electronics Inc.

Ph: (314) 423 7500

Fax: (314) 423 0585

ITEM NUMBER: USE - I005					
ITEM	RATINGS		ITEM	RATINGS	
	MIN	MAX		MIN	MAX
INPUT VOLTAGE (DC)	4.5	5.5	OSC. FREQUENCY (Hz)	700	1K
INPUT CURRENT (mA)	50	70	OUTPUT VOLTAGE (AC)	70	100
OPERATING TEMP. (°C)	-10	+60	LOAD RANGE (cm2)	20	50
STORAGE TEMP. (°C)	-20	+70	LIFE (HRS)	25,000	

I005 DIMENSIONS (mm):



PIN	FUNCTIONS
□	OUTPUT: FOR EL
G	COMMON: GND/FOR EL
I	INPUT: 5V DC

LCD DISPLAY PRUDUCTS**INVERTERS**

U.S.Electronics Inc.

Ph: (314) 423 7500

Fax: (314) 423 0585

ITEM NUMBER: USE - FL001(5A) , (5B)			
ITEM	FL001(5A)	FL001(5B)	
INPUT VOLTAGE (DC)	5.0	12.0	
INPUT CURRENT (mA)	230	160	
OSC. FREQUENCY (Hz)	30K		
OUTPUT VOLTAGE (AC)	1KV		
OPERATING TEMP. (°C)	-10 ~ +60	STORAGE TEMP. (°C)	-20 ~ +70

FL001 DIMENSIONS (mm):

