



# **LCD MODULE**

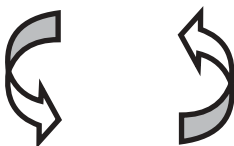
**COB(Chip On Board) SERIES**

**On - line catalogue**  
**[www.fordata.com.cn](http://www.fordata.com.cn)**



ITEM NUMBER	DISPLAY FORMAT	OVERALL SIZE
FDCC0801A	8CHR. X 1LINE	84.0X44.0
<b>FDCC0801B</b>	8CHR. X 1LINE	69.0X27.0
FDCC0802B	8CHR. X 2LINES	58.0X32.0
FDCC0802C	8CHR. X 2LINES	40.0X35.4
FDCC1601A	16CHR. X 1LINE	151.0X40.0
FDCC1601B	16CHR. X 1LINE	122.0X33.0

Click the item number in the list to get to the right page of products.



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<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
<b>FD</b>	<b>C</b>	<b>C</b>	<b>08</b>	<b>01</b>	<b>A</b>	<b>F</b>	<b>L</b>	<b>Y</b>	<b>Y</b>	<b>T</b>	<b>S</b>

<b>Part No.</b>	<b>Remarks</b>	<b>Code</b>	<b>Description</b>
1	Company Name Abbreviated	FD	FORDATA
2	IC PACKING	C	Chip on Board
		G	Chip on Glass
		F	Chip on Film
		T	Tape Carrier Package
3	LCM type	C	Character
		G	Graphic
		D	Custom Design
4	Character	08, 10, 12, 16, 20, 24, 40,	Characters Per Line
	Graphic	80, 100, 120, 122, 128, 160 ... ..	Row Dots Number
5	Character	01, 02, 04,	Lines
	Graphic	32, 64, 80, 128, 160 ... ..	Column Dots Number
6	Serial Number	A ~ Z	
7	Polarizer Type	R	Reflective
		F	Transflective
		M	Transmissive, Positive
		N	Transmissive, Negative
8	Backlight Type	N	Without backlight
		L	LED backlight (array)
		S	LED backlight (side)
		E	EL backlight
		C	CCFL backlight
9	Backlight Color	N	Without backlight
		Y	Yellow-green
		W	White
		R	Red
		A	Amber
		C	Blue-green
		B	Blue
		G	Green
10	LCD panel type	T	TN type LCD
		H	HTN type LCD
		Y	STN yellow-green type LCD
		G	STN gray type LCD
		B	STN blue type LCD
		F	FSTN type LCD
11	Viewing Angle	B	Bottom View ( 6:00 )
		T	Top View ( 12:00 )
12	Operation temperature range	S	Standard temp. range w/single supply voltage
		D	Standard temp. range w/dual supply voltages
		W	Wide temp. range w/single supply voltage
		H	Wide temp. range w/dual supply voltage

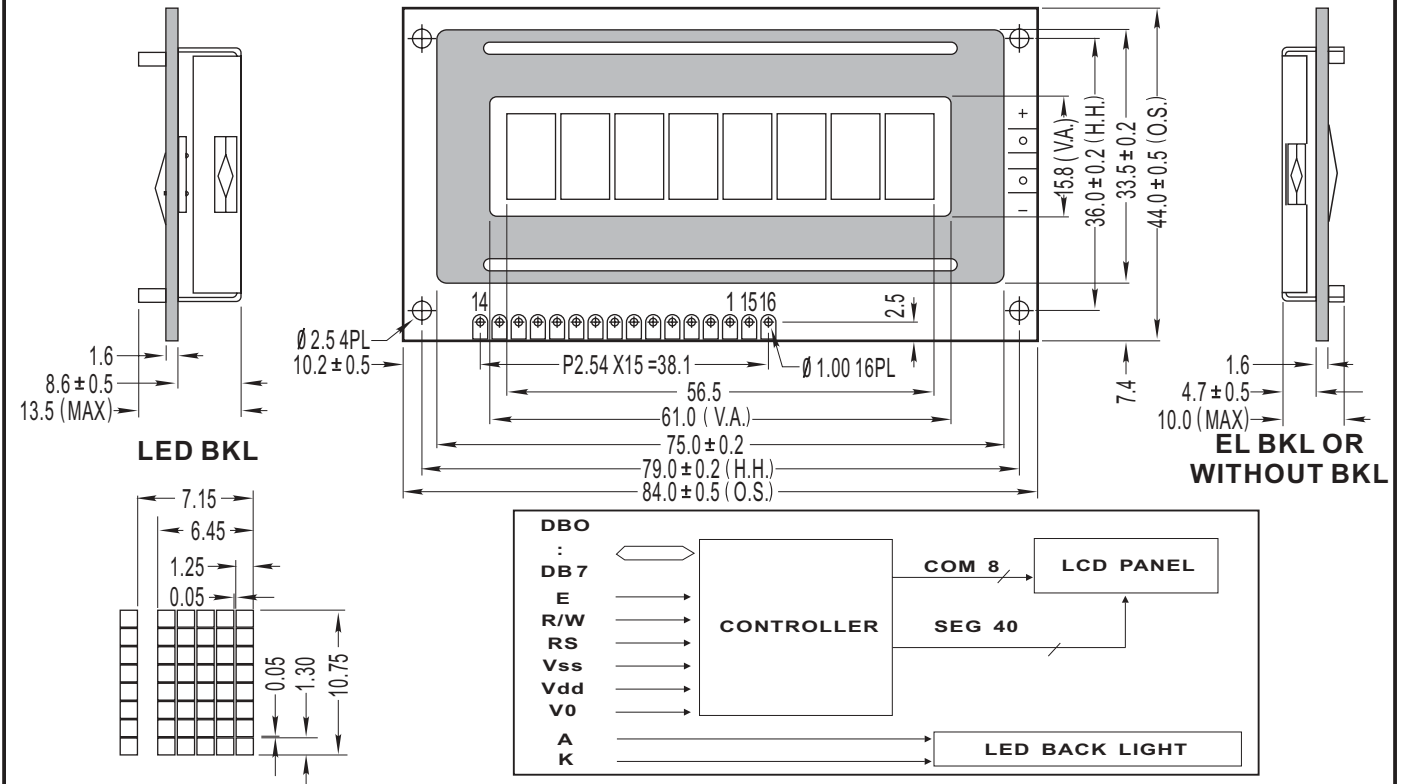


**CHARACTER TYPE LCD MODULE**

ITEM NUMBER	DISPLAY FORMAT	OVERALL SIZE	VIEWING AREA	HOLE-HOLE	CHARACTER SIZE	DOT SIZE	DUTY
FDCC0801A	8CHR. X 1LINE	84.0X44.0	61.0X15.8	79.0X36.0	6.45X10.75	1.25X1.30	1/8
FDCC0801B	8CHR. X 1LINE	69.0X27.0	45.2X13.8	65.40	4.20X7.71	0.80X0.92	1/8
FDCC0802B	8CHR. X 2LINES	58.0X32.0	38.0X16.0	53.0X27.0	2.96X5.56	0.56X0.66	1/16
FDCC0802C	8CHR. X 2LINES	40.0X35.4	30.4X13.9	36.0X30.9	2.95X4.75	0.55X0.55	1/16
FDCC1601A	16CHR. X 1LINE	151.0X40.0	120.0X23.0	143.0X32.0	6.00X14.54	1.152X1.765	1/16
FDCC1601B	16CHR. X 1LINE	122.0X33.0	99.0X13.0	115.0X25.0	4.84X9.22	0.92X1.10	1/16
FDCC1601D	16CHR. X 1LINE	80.0X36.0	64.5X14.0	75.0X31.0	3.07X6.56	0.55X0.75	1/16
FDCC1601E	16CHR. X 1LINE	80.0X36.0	64.0X13.8	75.0X31.0	3.07X6.56	0.55X0.75	1/16
FDCC1602A	16CHR. X 2LINES	122.0X44.0	99.0X24.0	115.0X37.0	5.20X9.55	1.00X1.15	1/16
FDCC1602B	16CHR. X 2LINES	85.0X36.0	63.0X16.4	80.0X31.0	3.00X5.23	0.56X0.61	1/16
FDCC1602C	16CHR. X 2LINES	85.0X32.6	64.5X16.4	79.0X29.2	3.00X5.23	0.56X0.61	1/16
FDCC1602D	16CHR. X 2LINES	85.0X29.5	64.5X16.4	81.0X24.0	3.00X5.23	0.56X0.61	1/16
FDCC1602E	16CHR. X 2LINES	84.0X44.0	64.5X16.4	79/76X36.0	3.00X5.23	0.56X0.61	1/16
FDCC1602G	16CHR. X 2LINES	80.0X36.0	64.5X16.4	75.0X31.0	3.00X5.23	0.56X0.61	1/16
FDCC1602L	16CHR. X 2LINES	65.5X36.7	54.0X14.4	60.5X31.7	2.55X4.99	0.47X0.58	1/16
FDCC1602N	16CHR. X 2LINES	80.0X36.0	64.0X13.8	75.0X31.0	2.95X4.35	0.55X0.50	1/16
FDCC1602P	16CHR. X 2LINES	122.0X44.0	99.0X24.0	115.0X37.0	4.84X9.66	0.92X1.10	1/16
FDCC1604A	16CHR. X 4LINES	87.0X60.0	61.8X25.2	82.0X55.0	2.95X4.75	0.55X0.55	1/16
FDCC2002C	20CHR. X 2LINES	146.0X43.0	123.0X23.0	139.0X36.0	4.84X9.22	0.92X1.10	1/16
FDCC2002D	20CHR. X 2LINES	116.0X37.0	83.0X18.6	108.0X29.0	3.20X5.55	0.60X0.65	1/16
FDCC2004B	20CHR. X 4LINES	98.0X60.0	78.0X25.2	93.0X55.0	2.95X4.75	0.55X0.55	1/16
FDCC2402E	24CHR. X 2LINES	116.0X37.0	83.0X18.6	108.0X29.0	2.70X5.55	0.50X0.65	1/16
FDCC4001B	40CHR. X 1LINE	182.0X33.5	152.0X16.5	175.0X26.5	3.20X8.20	0.60X0.70	1/8
FDCC4002B	40CHR. X 2LINES	182.0X33.5	154.5X16.0	175.0X26.5	3.20X5.55	0.60X0.65	1/16

**GRAPHIC TYPE LCD MODULE**

ITEM NUMBER	DISPLAY FORMAT	MODULE SIZE	VIEWING AREA	HOLE-HOLE	DOT SIZE	DUTY
FDCG12232D	122X32 Dot Matrix	84.0X44.0	64.0X17.9	79.5X36.0	0.40X0.45	1/32
FDCG12864B	128X64 Dot Matrix	93.0X70.0	72.0X40.0	88.0X64.0	0.48X0.48	1/64
FDCG12864C	128X64 Dot Matrix	110.0X70.0	72.0X40.0	88.0X64.0	0.48X0.48	1/64
FDCG12864E	128X64 Dot Matrix	78.0X70.0	62.0X44.0	68.0X65.0	0.40X0.56	1/64
FDCG12864H	128X64 Dot Matrix	75.0X52.7	60.0X32.5	70.0X49.7	0.39X0.39	1/64
FDCG24064A	240X64 Dot Matrix	180.0X75.0	132.0X39.0	176.0X64.0	0.48X0.48	1/64
FDCG24064B	240X64 Dot Matrix	180.0X65.0	134.0X40.4	176.0X54.0	0.49X0.49	1/64
FDCG128128A	128X128 Dot Matrix	92.0X106.0	73.0X73.0	85.0X99.0	0.50X0.50	1/128



**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/8 duty cycle
5. BKL to be driven by pin1, pin2, or pin15, pin16 or A, K
6. N.V. Optional

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15(A)	LED+	Power supply for BKL(+)
16(K)	LED-	Power supply for BKL(-)

**MECHANICAL SPECIFICATIONS**

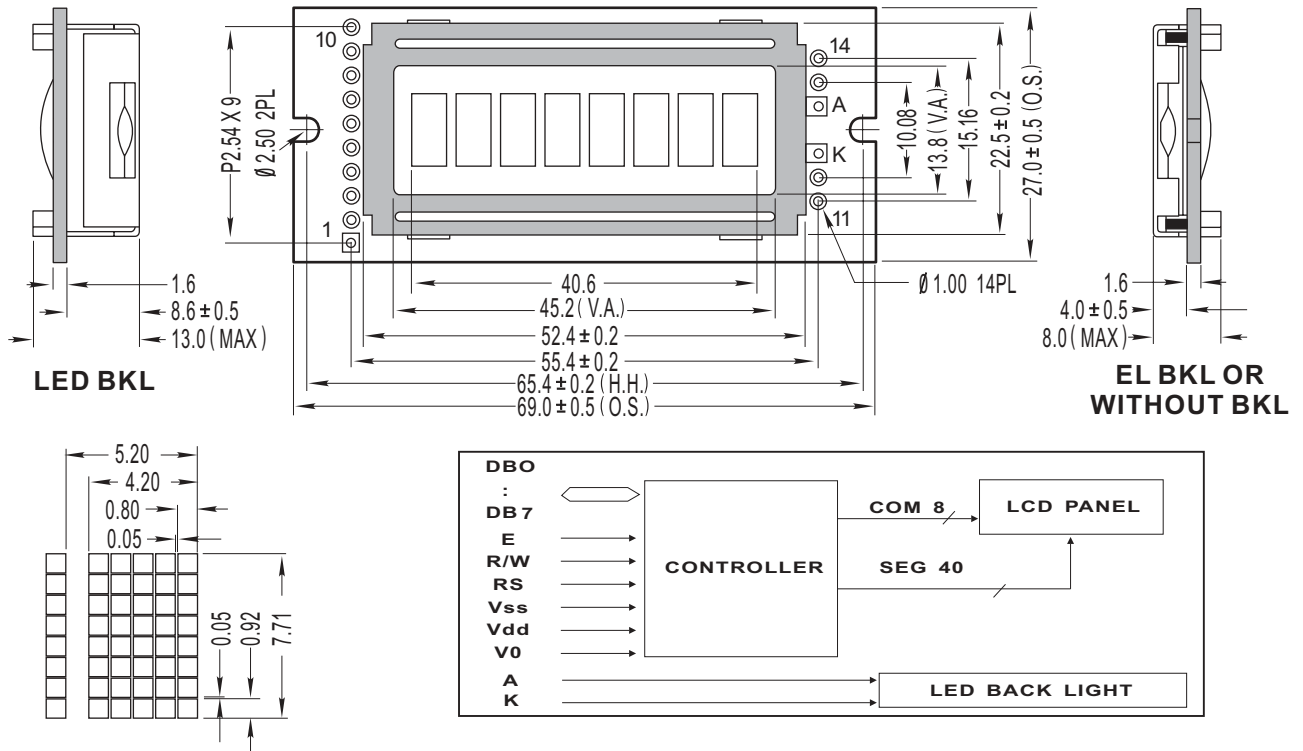
CHARACTER NUMBER	8W X 1H	—
OVERALL SIZE	84.00W X 44.00H	mm
VIEWING AREA	61.00W X 15.80H	mm
HOLE - HOLE	79.00W X 36.00H	mm
CHARACTER SIZE	6.45W X 10.75H	mm
CHARACTER PITCH	0.70W	mm
DOT SIZE	1.25W X 1.30H	mm
DOT PITCH	0.05W X 0.05H	mm

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	1.3	2.5	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.6	V
LED forward current	I <sub>F</sub>	25 °C	---	70	---	mA
EL power supply current	EL	AC 400Hz V <sub>EL</sub> =110V	---	---	---	mA

**DISPLAY CHARACTER ADDRESS CODE**

Display position 1 2 3 4 5 6 7 8  
 DDRAM address 00 01 02 -- -- -- 07



**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/8 duty cycle
5. BKL to be driven by pin1, pin2 or A, K
6. N.V. Optional

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
A	LED+	Power supply for BKL(+)
K	LED-	Power supply for BKL(-)

**MECHANICAL SPECIFICATIONS**

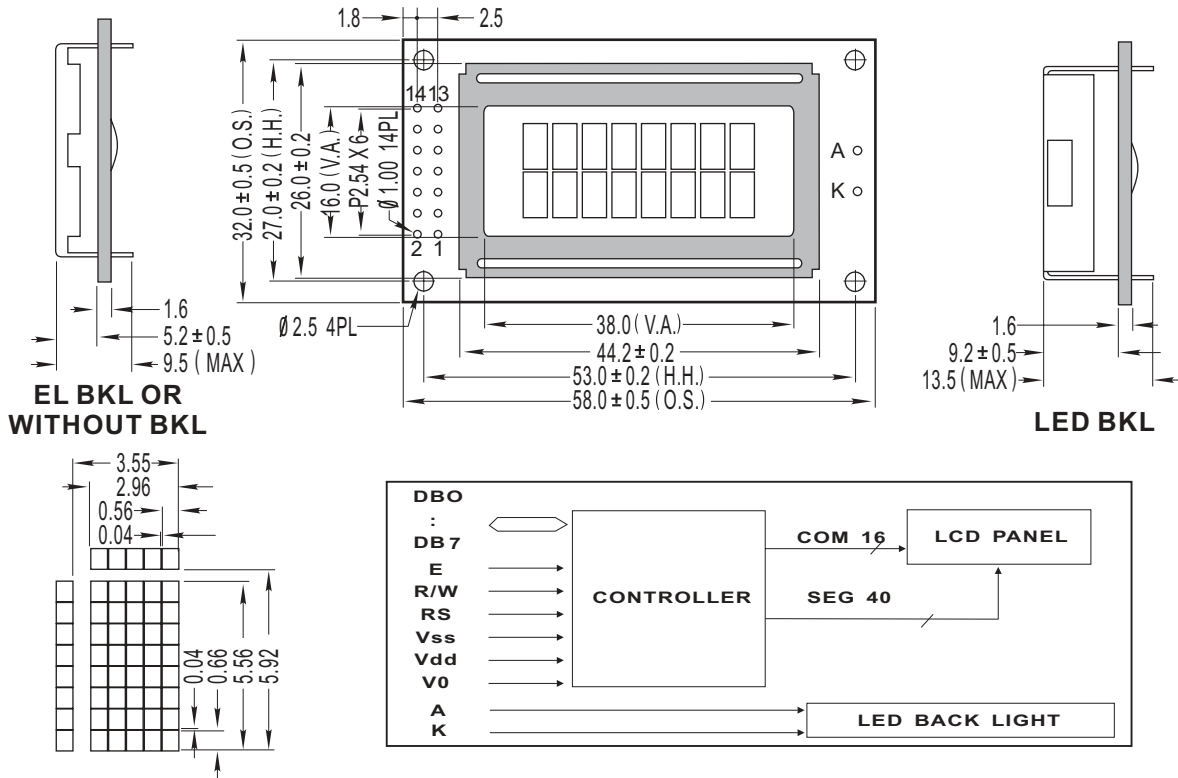
CHARACTER NUMBER	8W X 1H	—
OVERALL SIZE	69.00W X 27.00H	mm
VIEWING AREA	45.20W X 13.80H	mm
HOLE - HOLE	65.40W	mm
CHARACTER SIZE	4.20W X 7.71H	mm
CHARACTER PITCH	1.00W	mm
DOT SIZE	0.80W X 0.92H	mm
DOT PITCH	0.05W X 0.05H	mm

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	1.3	2.5	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	VF	25 °C	---	4.2	4.6	V
LED forward current	IF	25 °C	---	70	---	mA
EL power supply current	EL	AC 400Hz VEL=110V	----	---	---	mA

**DISPLAY CHARACTER ADDRESS CODE**

Display position 1 2 3 4 5 6 7 8  
 DDRAM address 00 01 02 -- -- -- 07



**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/16 duty cycle
5. BKL to be driven by pin1,pin2 or A,K
6. N.V. Optional

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
A	LED+	Power supply for BKL(+)
K	LED-	Power supply for BKL(-)

**MECHANICAL SPECIFICATIONS**

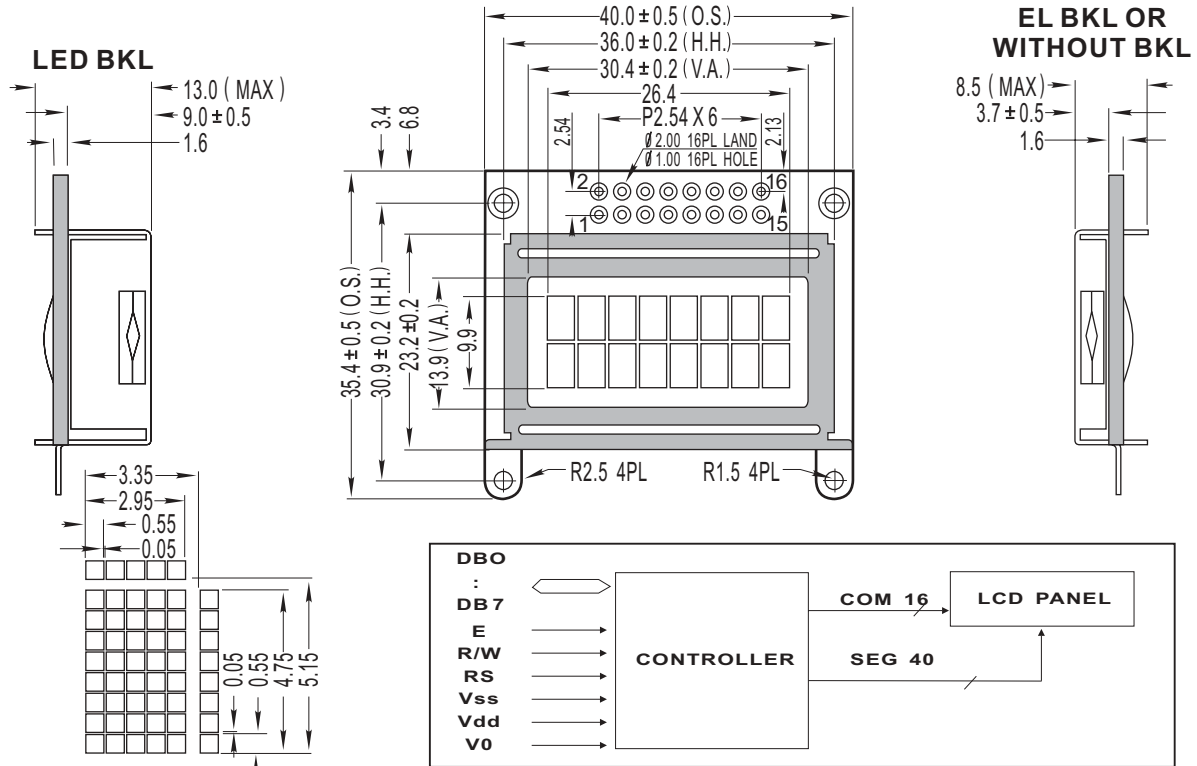
CHARACTER NUMBER	8W X 2H	—
OVERALL SIZE	58.00W X 32.00H	mm
VIEWING AREA	38.00W X 16.00H	mm
HOLE - HOLE	53.00WX27.00H	mm
CHARACTER SIZE	2.96W X 5.56H	mm
CHARACTER PITCH	0.59WX0.36H	mm
DOT SIZE	0.56W X 0.66H	mm
DOT PITCH	0.04W X 0.04H	mm

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	1.3	2.5	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.6	V
LED forward current	I <sub>F</sub>	25 °C	---	70	---	mA
EL power supply current	EL	AC 400Hz V <sub>EL</sub> =110V	----	---	---	mA

**DISPLAY CHARACTER ADDRESS CODE**

Display position	1 2 3 4 5 6 7 8
DDRAM address	00 01 02 -- -- -- 07
DDRAM address	40 41 42 -- -- -- 47



**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/16 duty cycle
5. N.V. Optional

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15	LED+	Power supply for BKL(+)
16	LED-	Power supply for BKL(-)

**MECHANICAL SPECIFICATIONS**

CHARACTER NUMBER	8W X 2H	—
OVERALL SIZE	40.00W X 35.40H	mm
VIEWING AREA	30.40W X 13.90H	mm
HOLE - HOLE	36.00WX30.90H	mm
CHARACTER SIZE	2.95W X 4.75H	mm
CHARACTER PITCH	0.40WX0.40H	mm
DOT SIZE	0.55W X 0.55H	mm
DOT PITCH	0.05W X 0.05H	mm

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	1.3	2.5	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.6	V
LED forward current	I <sub>F</sub>	25 °C	---	70	---	mA
EL power supply current	EL	AC 400Hz V <sub>EL</sub> =110V	----	---	---	mA

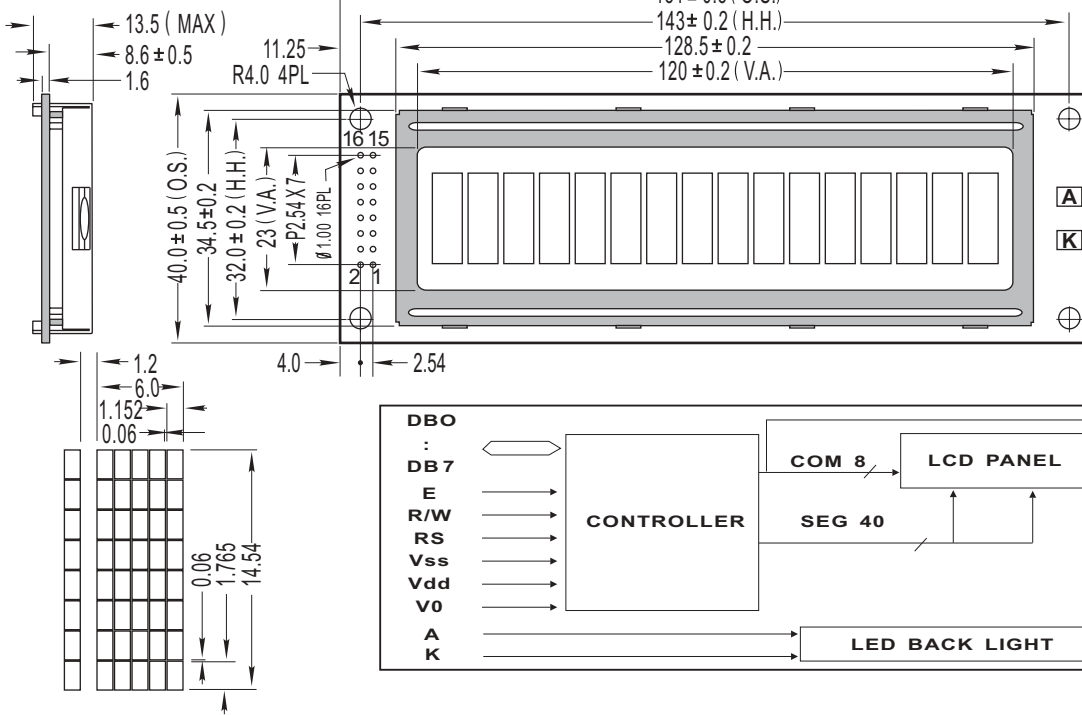
**DISPLAY CHARACTER ADDRESS CODE**

Display position	1 2 3 4 5 6 7 8
DDRAM address	00 01 02 -- -- -- 07
DDRAM address	40 41 42 -- -- -- 47

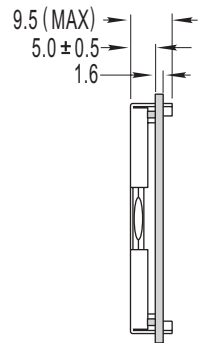




**LED BKL**



**EL BKL OR WITHOUT BKL**



**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/16 duty cycle
5. BKL to be driven by pin1, pin2, or pin15, pin16 or A, K
6. N.V. Optional

**MECHANICAL SPECIFICATIONS**

CHARACTER NUMBER	16W X 1H	—
OVERALL SIZE	151.00W X 40.00H	mm
VIEWING AREA	120.00W X 23.00H	mm
HOLE - HOLE	143.00W X 32.00H	mm
CHARACTER SIZE	6.00W X 14.54H	mm
CHARACTER PITCH	1.20W	mm
DOT SIZE	1.152W X 1.765H	mm
DOT PITCH	---	mm

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd -13.5	Vdd +0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd +0.3	V

**ELECTRONICAL CHARACTERISTICS**

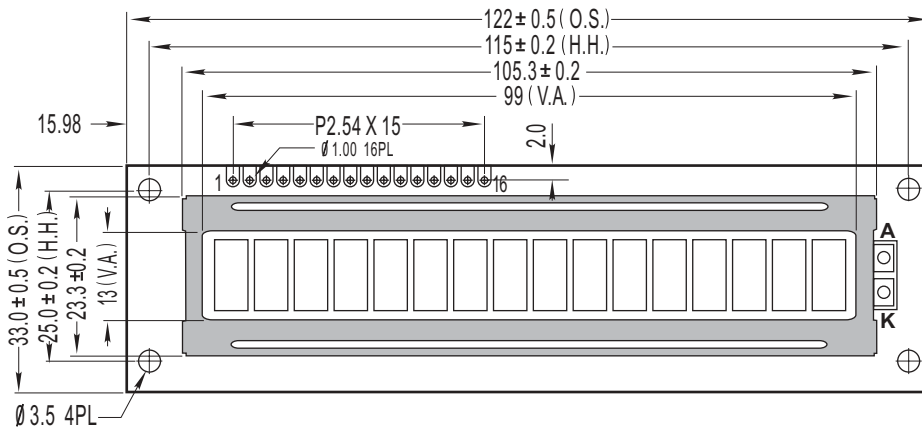
ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	2.0	4.0	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.6	V
LED forward current	I <sub>F</sub>	25 °C	---	300	---	mA
EL power supply current	EL	AC 400Hz V <sub>EL</sub> =110V	----	---	---	mA

**PIN ASSIGNMENT**

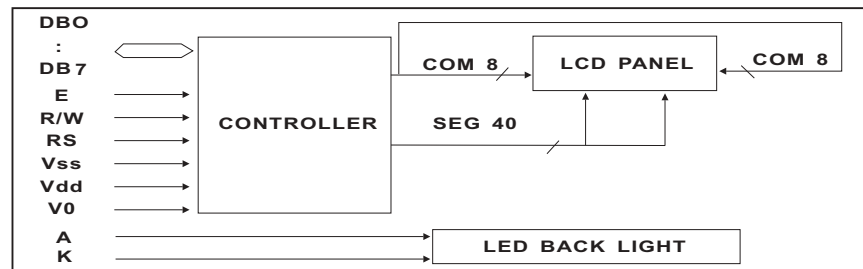
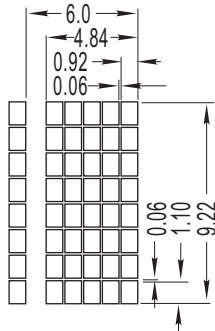
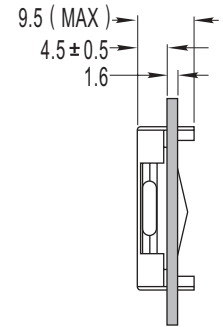
PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15(A)	LED+	Power supply for BKL(+)
16(K)	LED-	Power supply for BKL(-)

**DISPLAY CHARACTER ADDRESS CODE**

Display position 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16  
 DDRAM address 00 01 02 -- -- -- 07 40 41 42 -- -- -- 47



EL BKL OR  
WITHOUT BKL



**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/16 duty cycle
5. BKL to be driven by pin1, pin2, or pin15, pin16 or A, K
6. N.V. Optional

**MECHANICAL SPECIFICATIONS**

CHARACTER NUMBER	16W X 1H	—
OVERALL SIZE	122.00W X 33.00H	mm
VIEWING AREA	99.00W X 13.00H	mm
HOLE - HOLE	115.00W X 25.00H	mm
CHARACTER SIZE	4.84W X 9.22H	mm
CHARACTER PITCH	1.16W	mm
DOT SIZE	0.92W X 1.10H	mm
DOT PITCH	0.06W X 0.06H	mm

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	1.5	4.0	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.6	V
LED forward current	I <sub>F</sub>	25 °C	---	180	---	mA
EL power supply current	EL	AC 400Hz V <sub>EL</sub> =110V	----	---	---	mA

**PIN ASSIGNMENT**

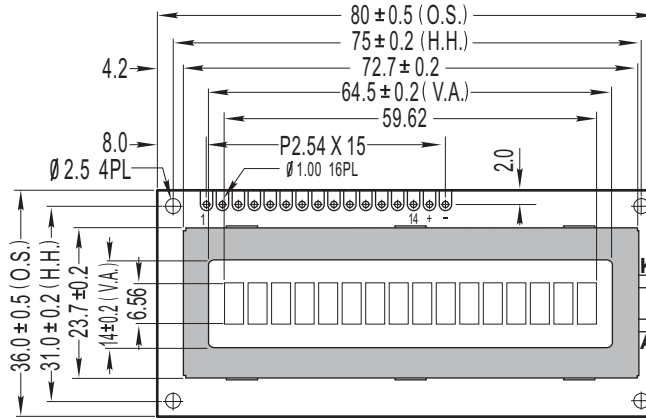
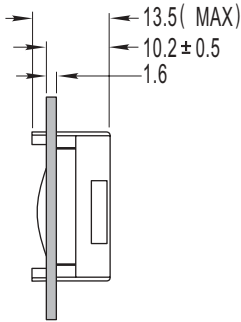
PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15(A)	LED+	Power supply for BKL(+)
16(K)	LED-	Power supply for BKL(-)

**DISPLAY CHARACTER ADDRESS CODE**

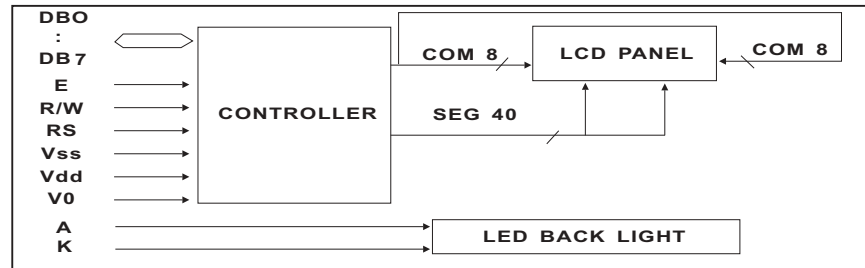
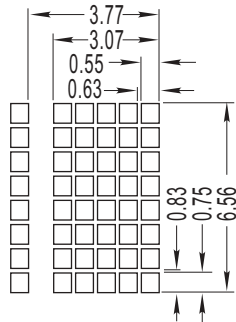
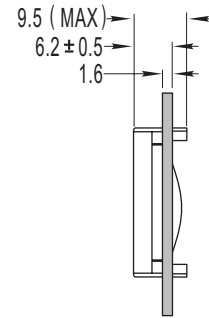
Display position 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16  
 DDRAM address 00 01 02 -- -- -- 07 40 41 42 -- -- -- 47



**LED BKL**



**EL BKL OR WITHOUT BKL**



**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/16 duty cycle
5. BKL to be driven by pin1, pin2, or pin15, pin16 or A, K
6. N.V. Optional

**MECHANICAL SPECIFICATIONS**

CHARACTER NUMBER	16W X 1H	—
OVERALL SIZE	80.00W X 36.00H	mm
VIEWING AREA	64.50W X 14.00H	mm
HOLE - HOLE	75.00W X 31.00H	mm
CHARACTER SIZE	3.07W X 6.56H	mm
CHARACTER PITCH	0.70W	mm
DOT SIZE	0.55W X 0.75H	mm
DOT PITCH	0.08W X 0.08H	mm

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**ELECTRONICAL CHARACTERISTICS**

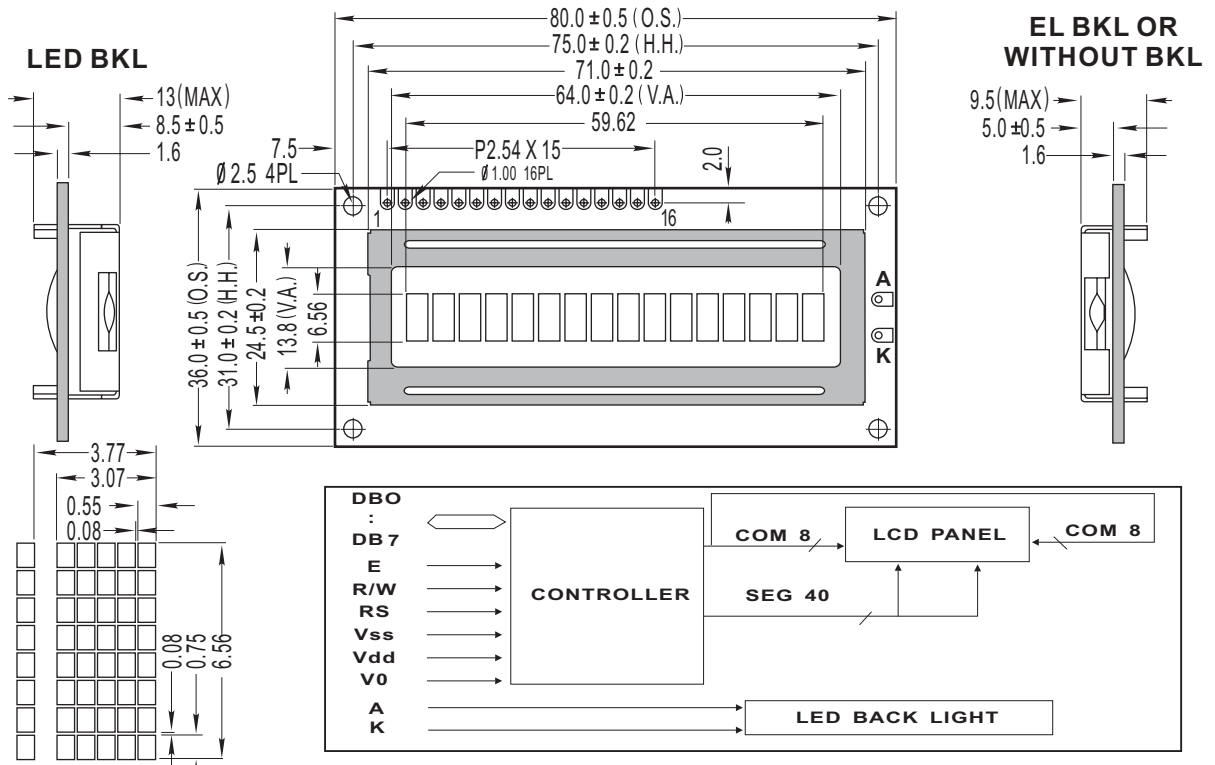
ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	1.3	4.0	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.6	V
LED forward current	I <sub>F</sub>	25 °C	---	110	---	mA
EL power supply current	EL	AC 400Hz V <sub>EL</sub> =110V	----	---	---	mA

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15(A)	LED+	Power supply for BKL(+)
16(K)	LED-	Power supply for BKL(-)

**DISPLAY CHARACTER ADDRESS CODE**

Display position   1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16  
 DDRAM address 00 01 02 -- -- -- 07 40 41 42 -- -- -- 47



FEATURE	
1.	5X8 dots with cursor
2.	Built-in controller (KS0066U or Equivalent)
3.	+5V power supply (Also available for +3.0V)
4.	1/16 duty cycle
5.	BKL to be driven by pin1, pin2, or pin15, pin16 or A, K
6.	N.V. Optional

MECHANICAL SPECIFICATIONS		
CHARACTER NUMBER	16W X 1H	—
OVERALL SIZE	80.00W X 36.00H	mm
VIEWING AREA	64.00W X 13.80H	mm
HOLE - HOLE	75.00W X 31.00H	mm
CHARACTER SIZE	3.07W X 6.56H	mm
CHARACTER PITCH	0.70W	mm
DOT SIZE	0.55W X 0.75H	mm
DOT PITCH	0.08W X 0.08H	mm

ABSOLUTE MAXIMUM RATINGS				
ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

ELECTRONICAL CHARACTERISTICS						
ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	1.3	4.0	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.6	V
LED forward current	I <sub>F</sub>	25 °C	---	110	---	mA
EL power supply current	EL	AC 400Hz V <sub>EL</sub> =110V	----	---	---	mA

PIN ASSIGNMENT		
PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15(A)	LED+	Power supply for BKL(+)
16(K)	LED-	Power supply for BKL(-)

DISPLAY CHARACTER ADDRESS CODE	
Display position	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
DDRAM address	00 01 02 -- -- -- 07 40 41 42 -- -- -- 47













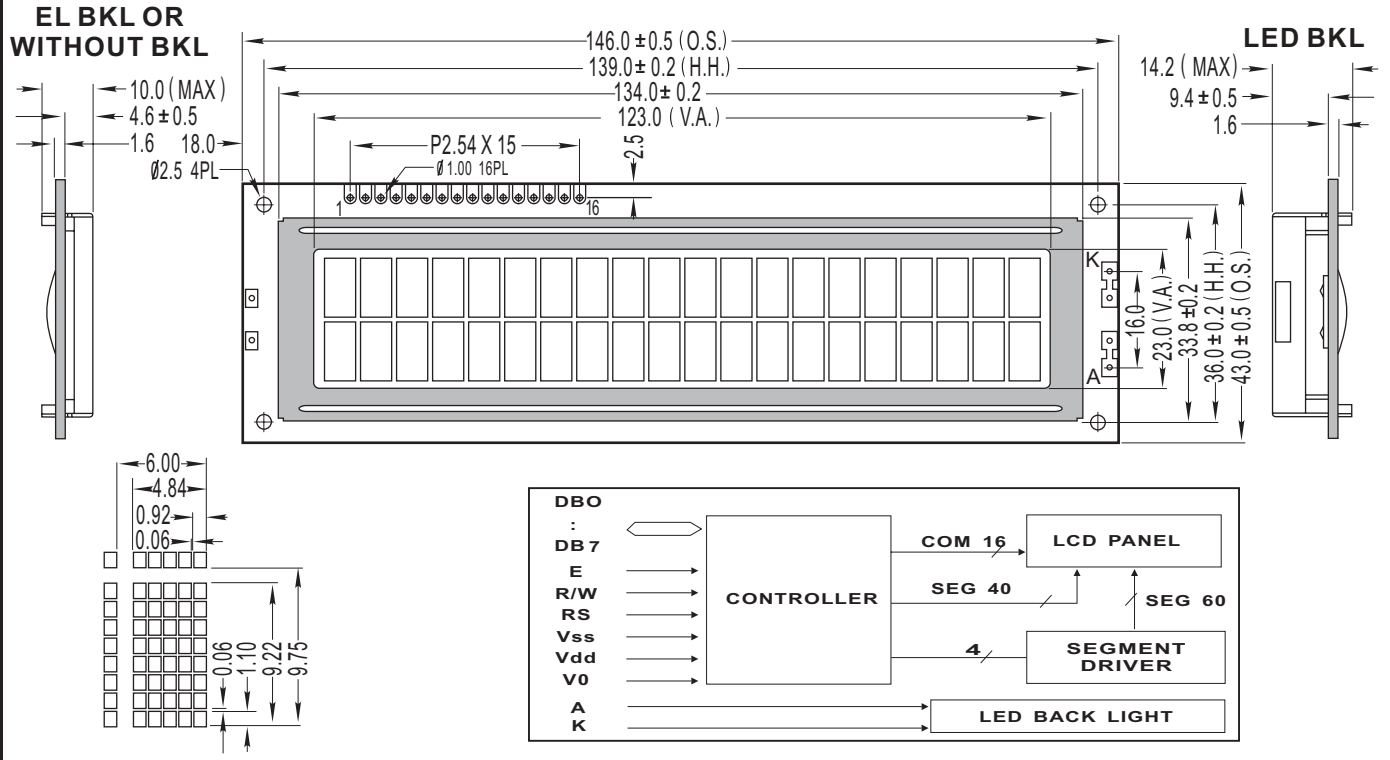












**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/16 duty cycle
5. BKL to be driven by pin1, pin2, or pin15, pin16 or A, K
6. N.V. Optional

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15(A)	LED+	Power supply for BKL(+)
16(K)	LED-	Power supply for BKL(-)

**MECHANICAL SPECIFICATIONS**

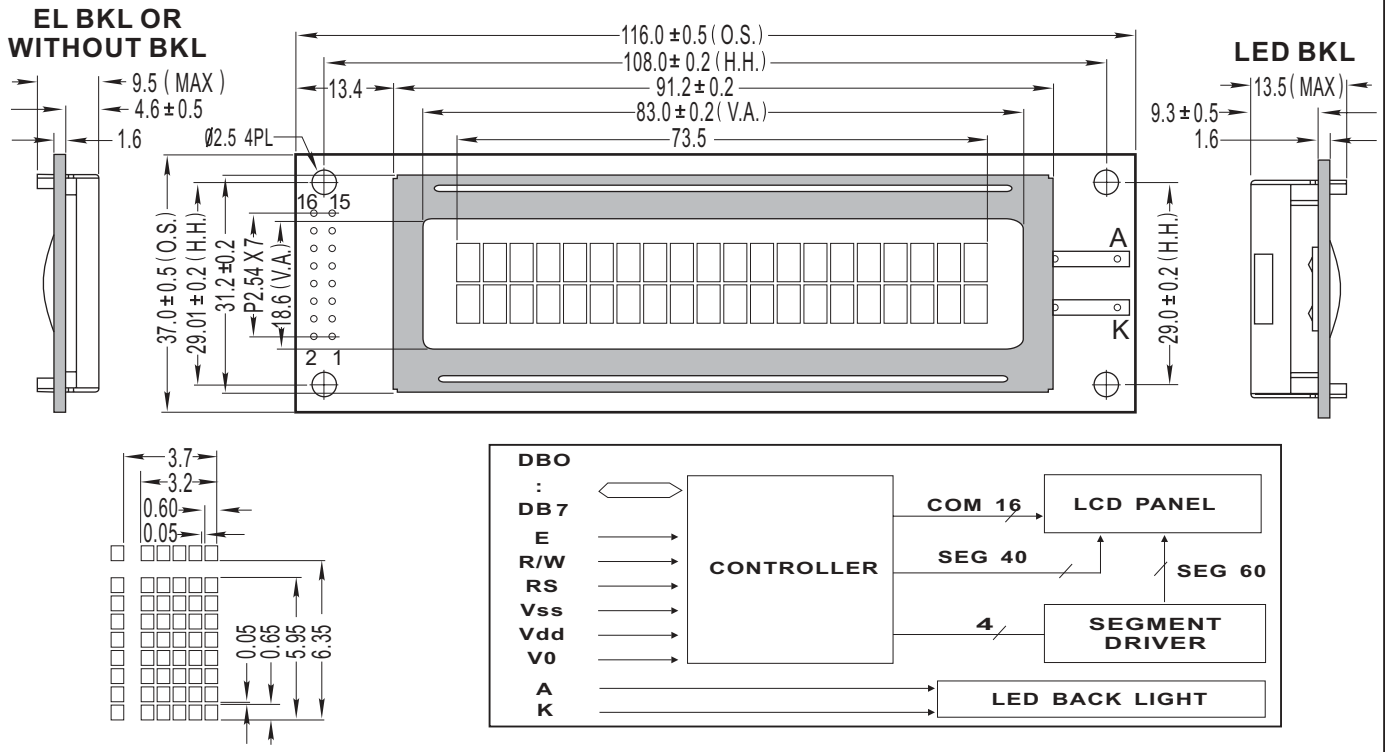
CHARACTER NUMBER	20W X 2H	—
OVERALL SIZE	146.00W X 43.00H	mm
VIEWING AREA	123.00W X 23.00H	mm
HOLE - HOLE	139.00W X 36.00H	mm
CHARACTER SIZE	4.84W X 9.22H	mm
CHARACTER PITCH	1.16W X 0.53H	mm
DOT SIZE	0.92W X 1.10H	mm
DOT PITCH	0.06W X 0.06H	mm

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	2.5	4.0	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	4.8	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.4	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.6	V
LED forward current	I <sub>F</sub>	25 °C	---	300	---	mA
EL power supply current	EL	AC 400Hz V <sub>EL</sub> =110V	---	---	---	mA

**DISPLAY CHARACTER ADDRESS CODE**

Display position	1	2	3	4	5	--	--	--	--	18	19	20
DDRAM address	00	01	02	--	--	--	--	--	--	11	12	13
DDRAM address	40	41	42	--	--	--	--	--	--	51	52	53



**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/16 duty cycle
5. BKL to be driven by pin1, pin2, or pin15, pin16 or A, K
6. N.V. Optional

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15(A)	LED+	Power supply for BKL(+)
16(K)	LED-	Power supply for BKL(-)

**MECHANICAL SPECIFICATIONS**

CHARACTER NUMBER	20W X 2H	—
OVERALL SIZE	116.00W X 37.00H	mm
VIEWING AREA	83.00W X 18.60H	mm
HOLE - HOLE	108.00W X 29.00H	mm
CHARACTER SIZE	3.20W X 5.55H	mm
CHARACTER PITCH	0.50W X 0.40H	mm
DOT SIZE	0.60W X 0.65H	mm
DOT PITCH	0.05W X 0.05H	mm

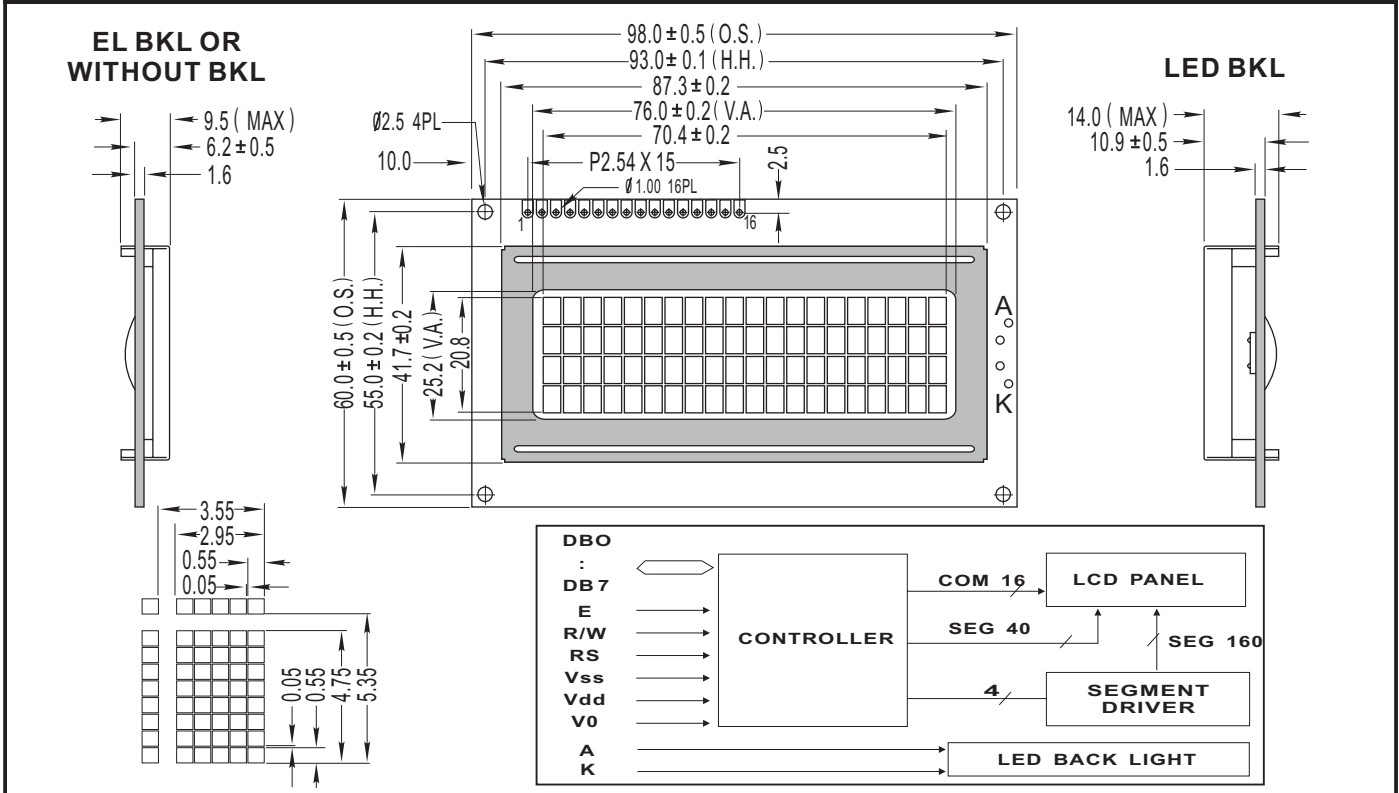
**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	2.5	4.0	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.6	V
LED forward current	I <sub>F</sub>	25 °C	---	140	---	mA
EL power supply current	EL	AC 400Hz V <sub>EL</sub> =110V	----	---	---	mA

**DISPLAY CHARACTER ADDRESS CODE**

Display position	1 2 3 4 5 -- -- -- -- --	18 19 20
DDRAM address	00 01 02 -- -- -- -- --	11 12 13
DDRAM address	40 41 42 -- -- -- -- --	51 52 53





**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/16 duty cycle
5. BKL to be driven by pin1, pin2, or pin15, pin16 or A, K
6. N.V. Optional

**MECHANICAL SPECIFICATIONS**

CHARACTER NUMBER	20W X 4H	—
OVERALL SIZE	98.00W X 60.00H	mm
VIEWING AREA	76.00W X 25.20H	mm
HOLE - HOLE	93.00W X 55.00H	mm
CHARACTER SIZE	2.95W X 4.75H	mm
CHARACTER PITCH	0.60W X 0.60H	mm
DOT SIZE	0.55W X 0.55H	mm
DOT PITCH	0.05W X 0.05H	mm

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	3.0	5.0	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.6	V
LED forward current	I <sub>F</sub>	25 °C	---	240	---	mA

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15(A)	LED+	Power supply for BKL(+)
16(K)	LED-	Power supply for BKL(-)

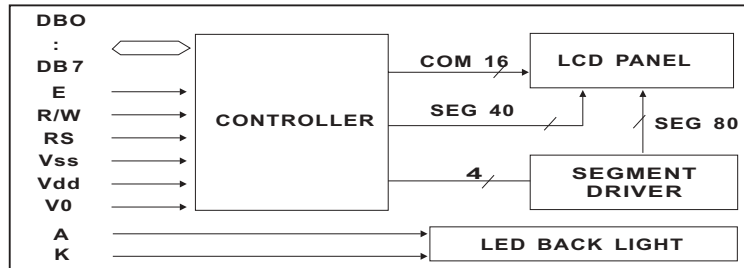
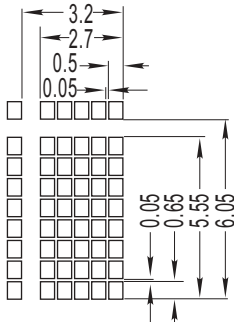
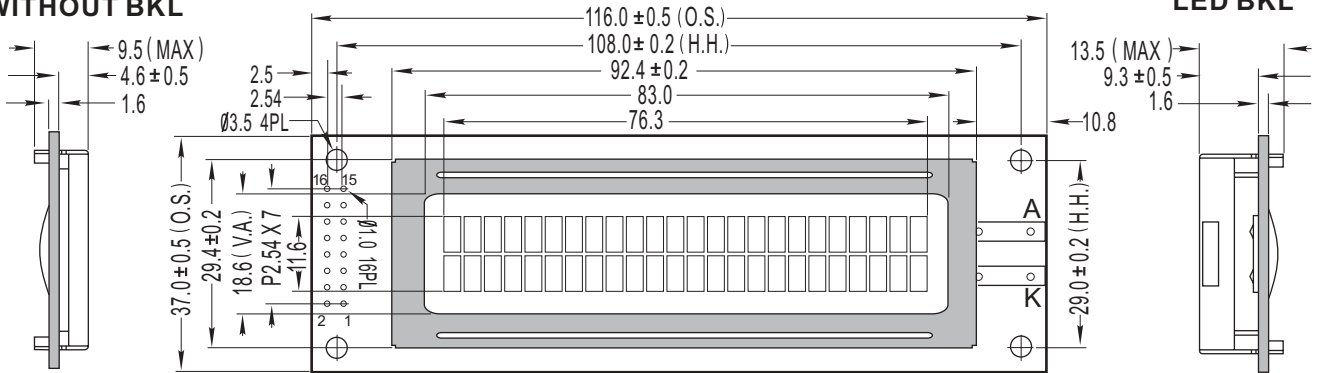
**DISPLAY CHARACTER ADDRESS CODE**

Display position	1	2	3	4	--	--	--	--	19	20
DDRAM address	00	01	02	--	--	--	--	--	12	13
DDRAM address	40	41	42	--	--	--	--	--	52	53
DDRAM address	14	15	16	--	--	--	--	--	26	27
DDRAM address	54	55	56	--	--	--	--	--	66	67



EL BKL OR  
WITHOUT BKL

LED BKL



**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/16 duty cycle
5. BKL to be driven by pin1, pin2, or pin15, pin16 or A, K
6. N.V. Optional

**MECHANICAL SPECIFICATIONS**

CHARACTER NUMBER	24W X 2H	—
OVERALL SIZE	116.00W X 37.00H	mm
VIEWING AREA	83.00W X 18.60H	mm
HOLE - HOLE	108.00W X 29.00H	mm
CHARACTER SIZE	2.70W X 5.55H	mm
CHARACTER PITCH	0.50W X 0.50H	mm
DOT SIZE	0.50W X 0.65H	mm
DOT PITCH	0.05W X 0.05H	mm

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**ELECTRONICAL CHARACTERISTICS**

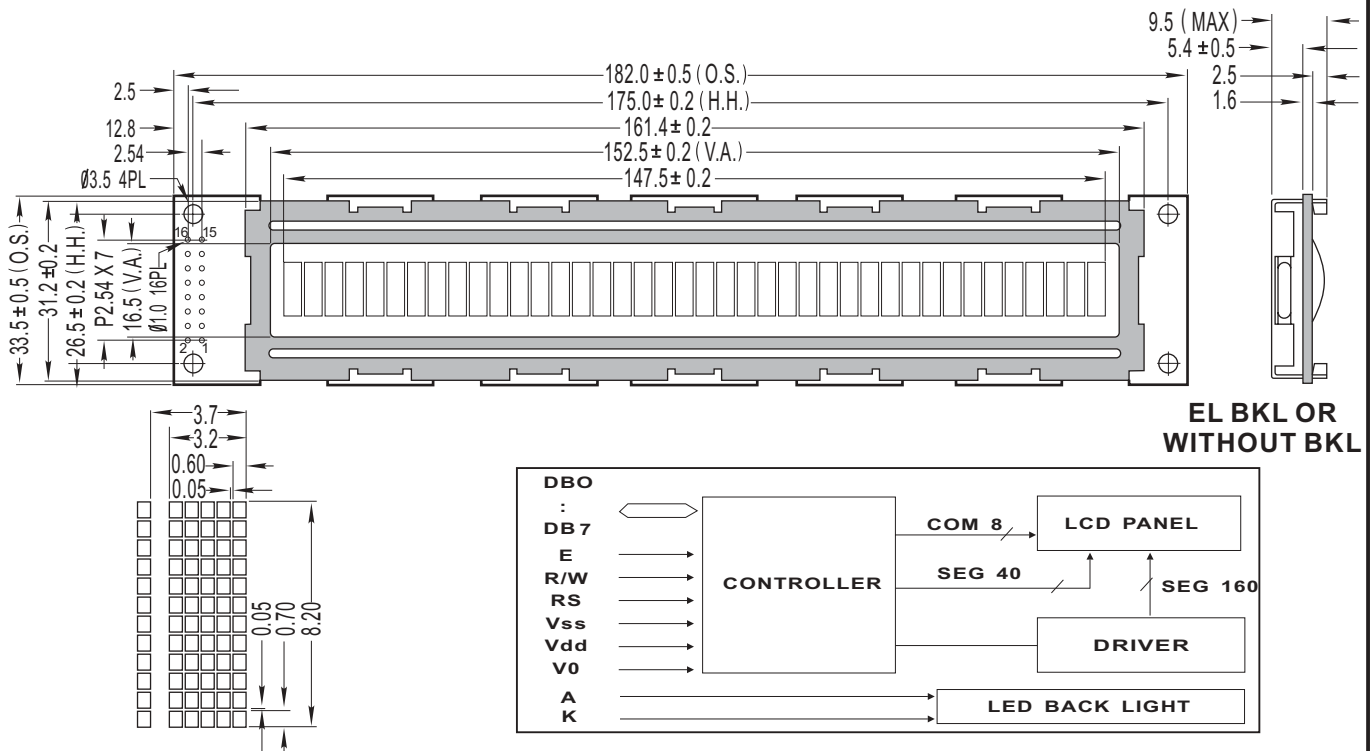
ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	3.0	5.0	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.6	V
LED forward current	I <sub>F</sub>	25 °C	---	300	---	mA
EL power supply current	EL	AC 400Hz V <sub>EL</sub> =110V	---	---	---	mA

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15(A)	LED+	Power supply for BKL(+)
16(K)	LED-	Power supply for BKL(-)

**DISPLAY CHARACTER ADDRESS CODE**

Display position	1	2	3	--	--	--	--	23	24
DDRAM address	00	01	02	--	--	--	--	16	17
DDRAM address	40	41	42	--	--	--	--	56	57



EL BKL OR WITHOUT BKL

**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/8 duty cycle
5. BKL to be driven by pin1, pin2, or pin15, pin16
6. N.V. Optional

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15	LED+	Power supply for BKL(+)
16	LED-	Power supply for BKL(-)

**MECHANICAL SPECIFICATIONS**

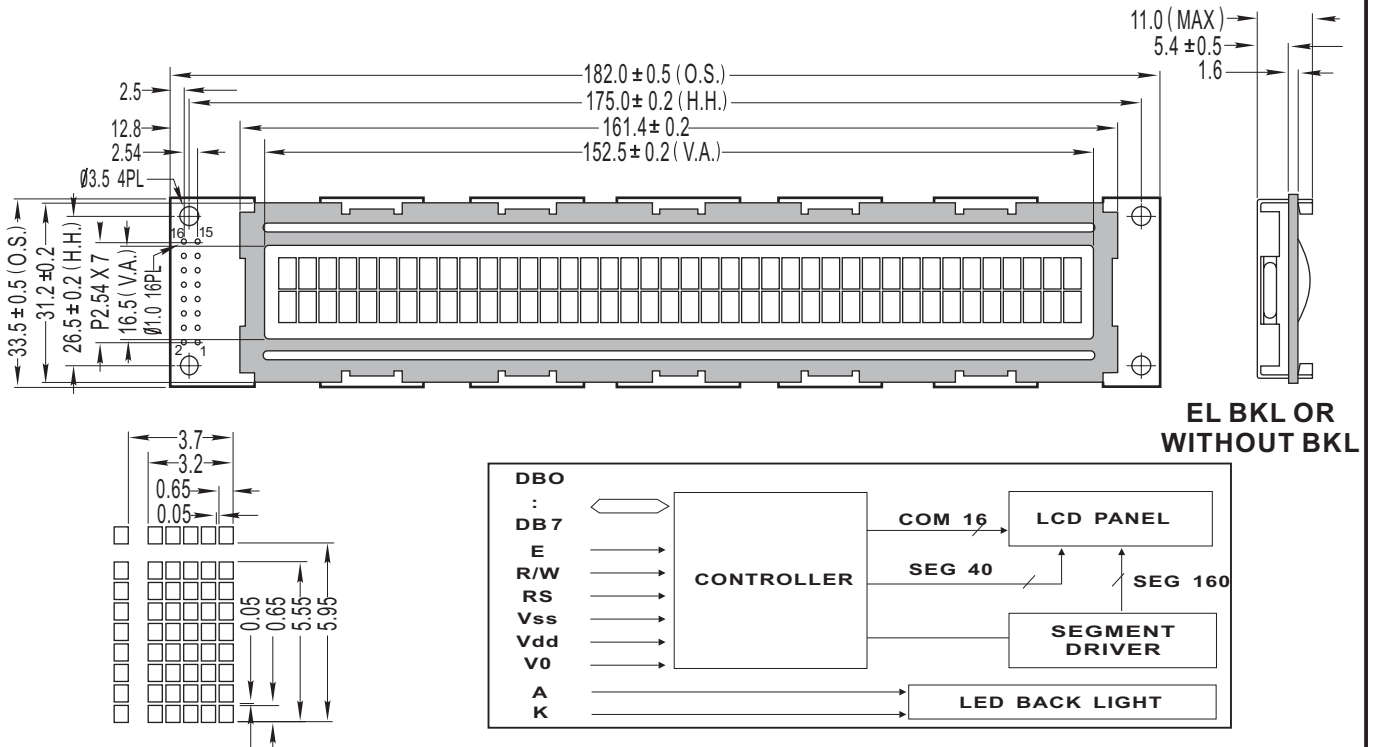
CHARACTER NUMBER	40W X 1H	—
OVERALL SIZE	182.00W X 33.50H	mm
VIEWING AREA	152.50W X 16.50H	mm
HOLE - HOLE	175.00W X 26.50H	mm
CHARACTER SIZE	3.20W X 8.20H	mm
CHARACTER PITCH	0.50W	mm
DOT SIZE	0.60W X 0.70H	mm
DOT PITCH	0.05W X 0.05H	mm

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	3.0	5.0	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	VF	25 °C	---	4.2	4.6	V
LED forward current	IF	25 °C	---	300	---	mA
EL power supply current	EL	AC 400Hz VEL=110V	----	---	---	mA

**DISPLAY CHARACTER ADDRESS CODE**

Display position	1 2 3 4 5 6 -- -- -- --	40
DDRAM address	00 01 02 -- -- -- --	27



**FEATURE**

1. 5X8 dots with cursor
2. Built-in controller (KS0066U or Equivalent)
3. +5V power supply (Also available for +3.0V)
4. 1/16 duty cycle
5. BKL to be driven by pin1, pin2, or pin15, pin16
6. N.V. Optional

**MECHANICAL SPECIFICATIONS**

CHARACTER NUMBER	40W X 2H	—
OVERALL SIZE	182.00W X 33.50H	mm
VIEWING AREA	154.50W X 16.00H	mm
HOLE - HOLE	175.00W X 26.50H	mm
CHARACTER SIZE	3.20W X 5.55H	mm
CHARACTER PITCH	0.50W X 0.40H	mm
DOT SIZE	0.60W X 0.65H	mm
DOT PITCH	0.05W X 0.05H	mm

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-13.5	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**ELECTRONICAL CHARACTERISTICS**

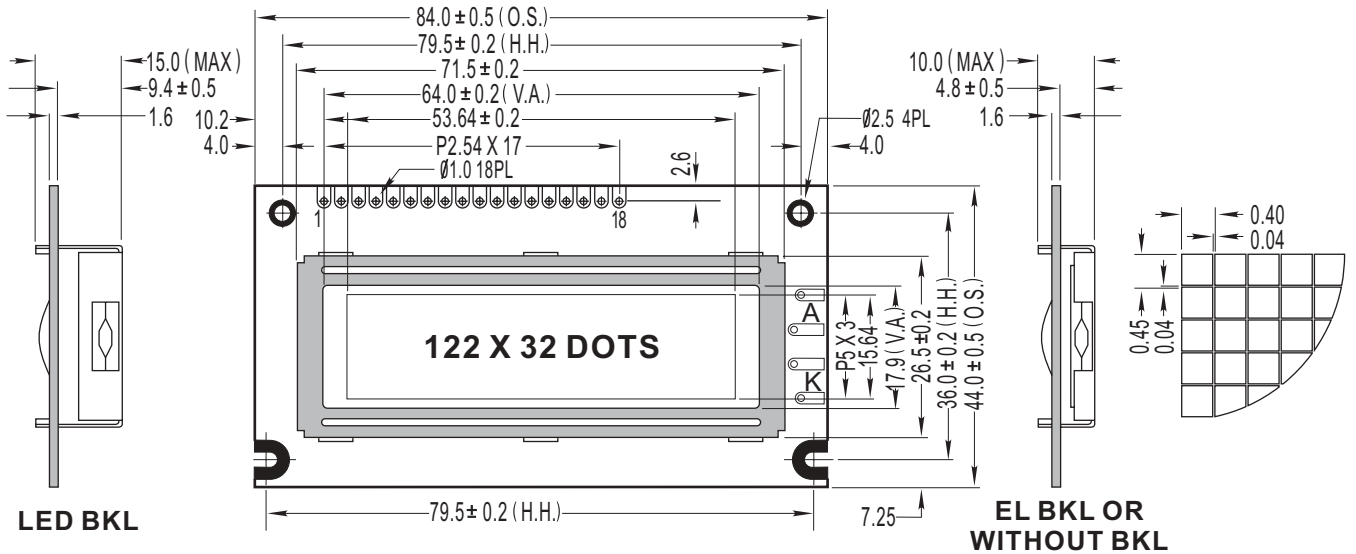
ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
		+3.3V	2.7	3.0	5.3	V
Supply current	Idd	Vdd=5V	---	3.0	5.0	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.6	V
LED forward current	I <sub>F</sub>	25 °C	---	300	---	mA
EL power supply current	EL	AC 400Hz V <sub>EL</sub> =110V	----	---	---	mA

**PIN ASSIGNMENT**

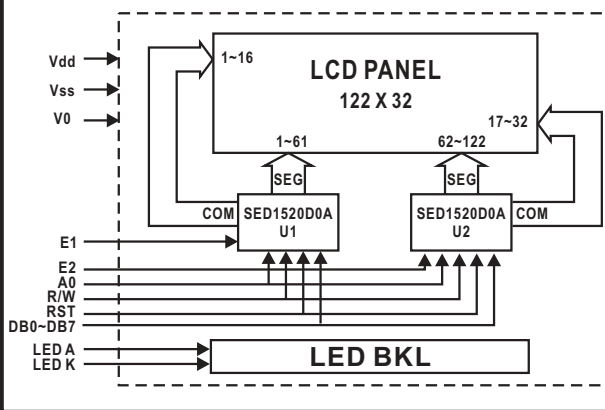
PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	Register Select Signal
5	R/W	Data Read/Write
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15	LED+	Power supply for BKL(+)
16	LED-	Power supply for BKL(-)

**DISPLAY CHARACTER ADDRESS CODE**

Display position	1 2 3 4 5 6 -- -- -- --	40
DDRAM address	00 01 02 -- -- -- --	27
DDRAM address	14 15 16 -- -- -- --	67



**BLOCK DIAGRAM**



**FEATURE**

1. 122X32 dots graphic LCD module
2. Built-in controller (SED1520D0A)
3. +5V power supply
4. STN LCD panel, 1/32 duty cycle

**MECHANICAL SPECIFICATIONS**

DOT NUMBER	122W X 32H	—
OVERALL SIZE	84.00W X 44.00H	mm
VIEWING AREA	64.00W X 17.90H	mm
HOLE - HOLE	79.50W X 36.00H	mm
DOT SIZE	0.40W X 0.45H	mm
DOT PITCH	0.04W X 0.04H	mm

**PIN ASSIGNMENT**

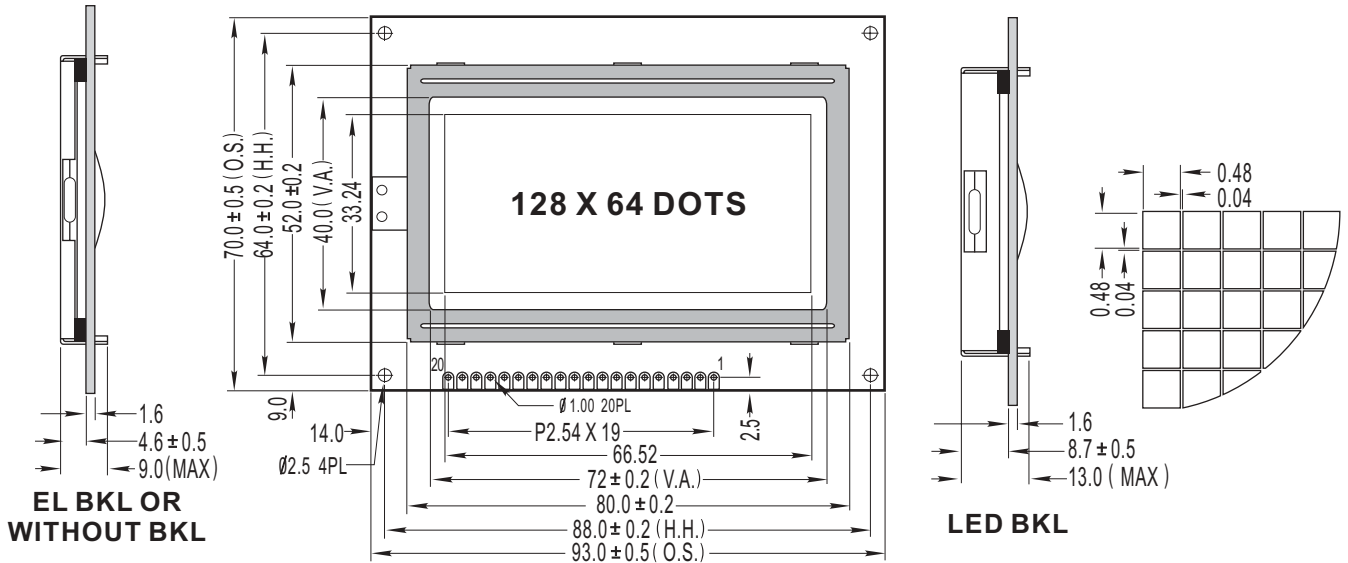
PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RST	H/L Reset signal
5	E1	Chip enable signal
6	E2	Chip enable signal
7	R/W	H/L Read/write
8	A0	H/L H:Data L:Instruction code
9 to 16	DB0 to DB7	H/L Data bus line
17(A)	LED+	Power supply for BKL(+)
18(K)	LED-	Power supply for BKL(-)

**ABSOLUTE MAXIMUM RATINGS**

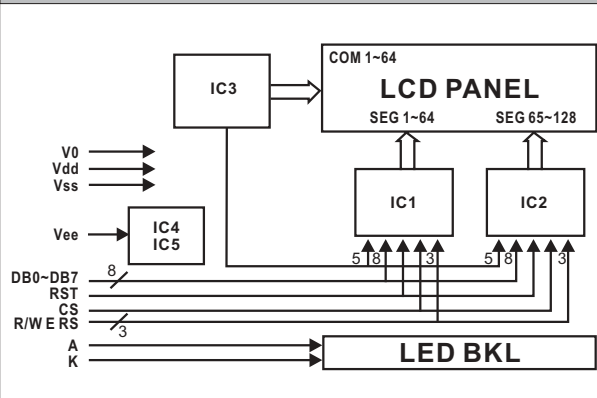
ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd -13.5	Vdd +0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd +0.3	V

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
Supply current	Idd	Vdd=5V	---	2.5	---	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	4.7	5.0	5.5	V
		25 °C	4.3	4.5	4.7	
		50 °C	4.1	4.3	4.5	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.5	V
LED forward current	I <sub>F</sub>	25 °C	---	120	---	mA



**BLOCK DIAGRAM**



**FEATURE**

1. 128X64 dots graphic LCD module
2. Built-in controller (KS0108B)
3. +5V power supply
4. STN LCD panel, 1/64 duty cycle

**MECHANICAL SPECIFICATIONS**

DOT NUMBER	128W X 64H	—
OVERALL SIZE	93.00W X 70.00H	mm
VIEWING AREA	72.00W X 40.00H	mm
HOLE - HOLE	88.00W X 64.00H	mm
DOT SIZE	0.48W X 0.48H	mm
DOT PITCH	0.04W X 0.04H	mm

**PIN ASSIGNMENT**

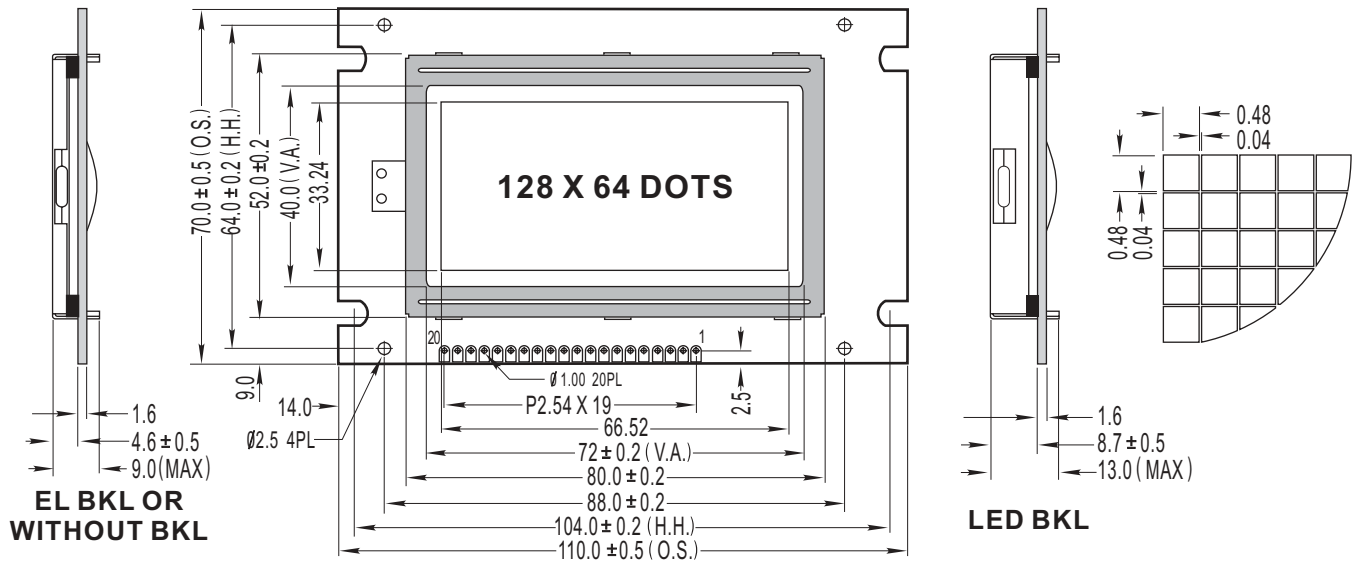
PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	H/L Register select signal
5	R/W	H/L Read/write
6	E	Chip enable signal
7 to 14	DB0 to DB7	H/L Data bus line
15	CS1	Chip select for IC1
16	CS2	Chip select for IC2
17	RST	Reset signal
18	Vee	Negative voltage output
19(A)	LED+	Power supply for BKL(4.2V)
20(K)	LED-	Power supply for BKL(GND)

**ABSOLUTE MAXIMUM RATINGS**

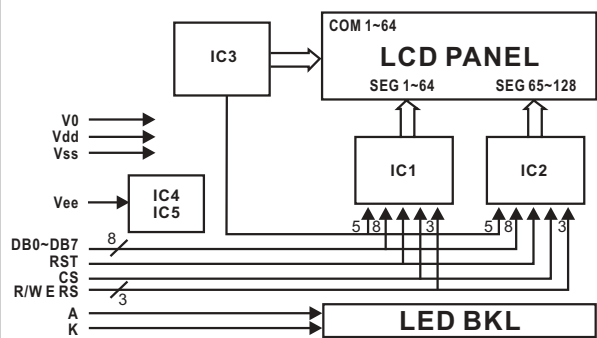
ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd -19.0	Vdd +0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd +0.3	V

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
			---	---	---	V
Supply current	Idd	Vdd=5V	---	8	---	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	---	9.8	---	V
		25 °C	---	9.5	---	
		50 °C	---	9.3	---	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.5	V
LED forward current	I <sub>F</sub>	25 °C	---	360	---	mA



**BLOCK DIAGRAM**



**FEATURE**

1. 128X64 dots graphic LCD module
2. Built- in controller (KS0108B)
3. +5V power supply
4. STN LCD panel, 1/64 duty cycle

**MECHANICAL SPECIFICATIONS**

DOT NUMBER	128W X 64H	—
OVERALL SIZE	110.00W X 70.00H	mm
VIEWING AREA	72.00W X 40.00H	mm
HOLE - HOLE	88.00W X 64.00H	mm
DOT SIZE	0.48W X 0.48H	mm
DOT PITCH	0.04W X 0.04H	mm

**PIN ASSIGNMENT**

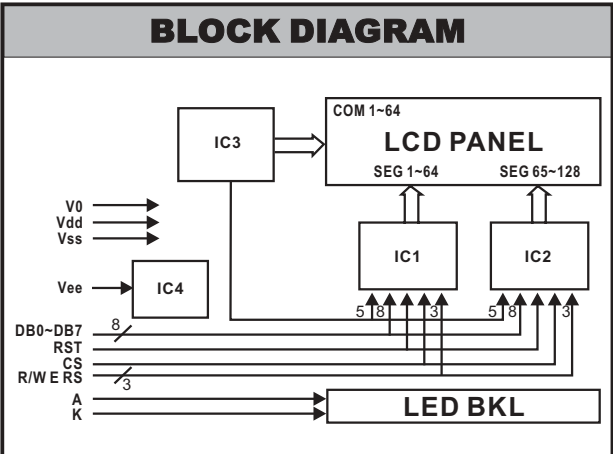
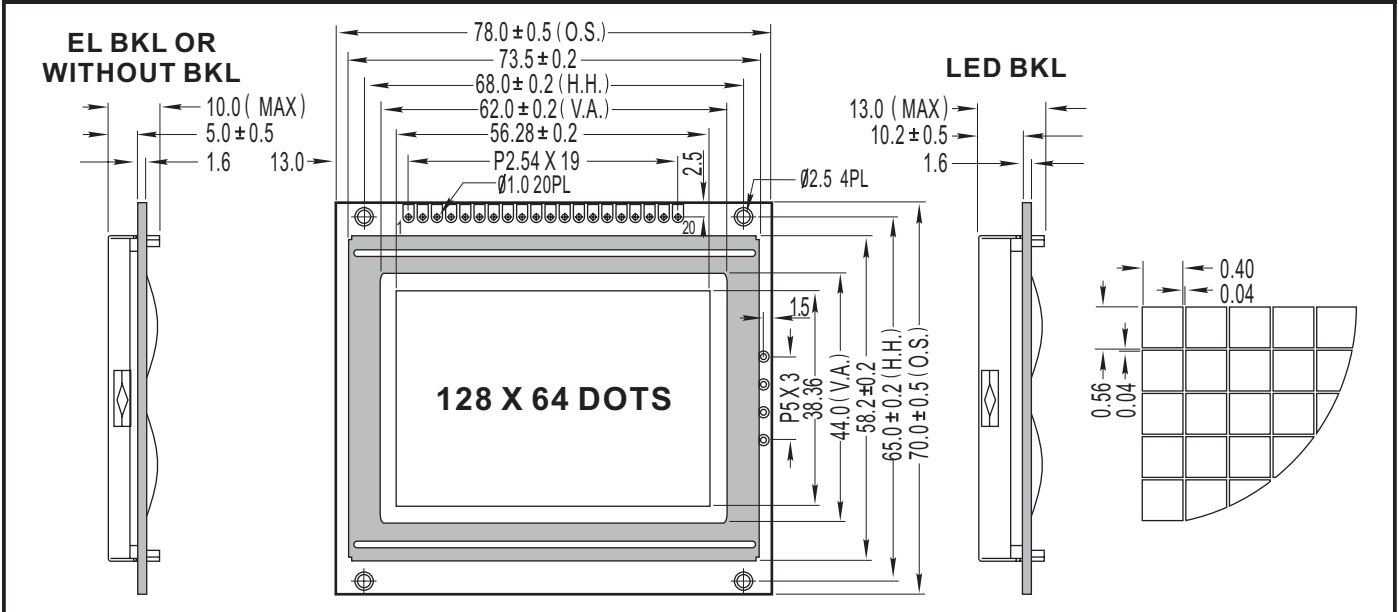
PIN	SYMBOL	FUNCTION
1	Vss	GND
2	Vdd	Power Supply
3	V0	Contrast Adjust
4	RS	H/L Register select signal
5	R/W	H/L Read/write
6	E	Chip enable signal
7 to 14	DB0 to DB7	H/L Data bus line
15	CS1	Chip select for IC1
16	CS2	Chip select for IC2
17	RST	Reset signal
18	Vee	Negative voltage output
19(A)	LED+	Power supply for BKL(4.2V)
20(K)	LED-	Power supply for BKL(GND)

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-19.0	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
						V
Supply current	Idd	Vdd=5V	---	8	---	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	---	9.8	---	V
		25 °C	---	9.5	---	
		50 °C	---	9.3	---	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.5	V
LED forward current	I <sub>F</sub>	25 °C	---	360	---	mA



- FEATURE**
1. 128X64 dots graphic LCD module
  2. Built-in controller (KS0108B)
  3. +5V power supply
  4. STN LCD panel, 1/64 duty cycle

**MECHANICAL SPECIFICATIONS**

DOT NUMBER	128W X 64H	—
OVERALL SIZE	78.00W X 70.00H	mm
VIEWING AREA	62.00W X 44.00H	mm
HOLE - HOLE	68.00W X 65.00H	mm
DOT SIZE	0.40W X 0.56H	mm
DOT PITCH	0.04W X 0.04H	mm

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	/CSA	Chip select for IC1
2	/CSB	Chip select for IC2
3	Vss	GND
4	Vdd	Power Supply
5	V0	Contrast Adjust
6	RS	H/L Register select signal
7	R/W	H/L Read/write
8	E	Chip enable signal
9 to 16	DB0 to DB7	H/L Data bus line
17	RST	Reset signal
18	Vee	Negative voltage output
19(A)	LED+	Power supply for BKL(4.2V)
20(K)	LED-	Power supply for BKL(GND)

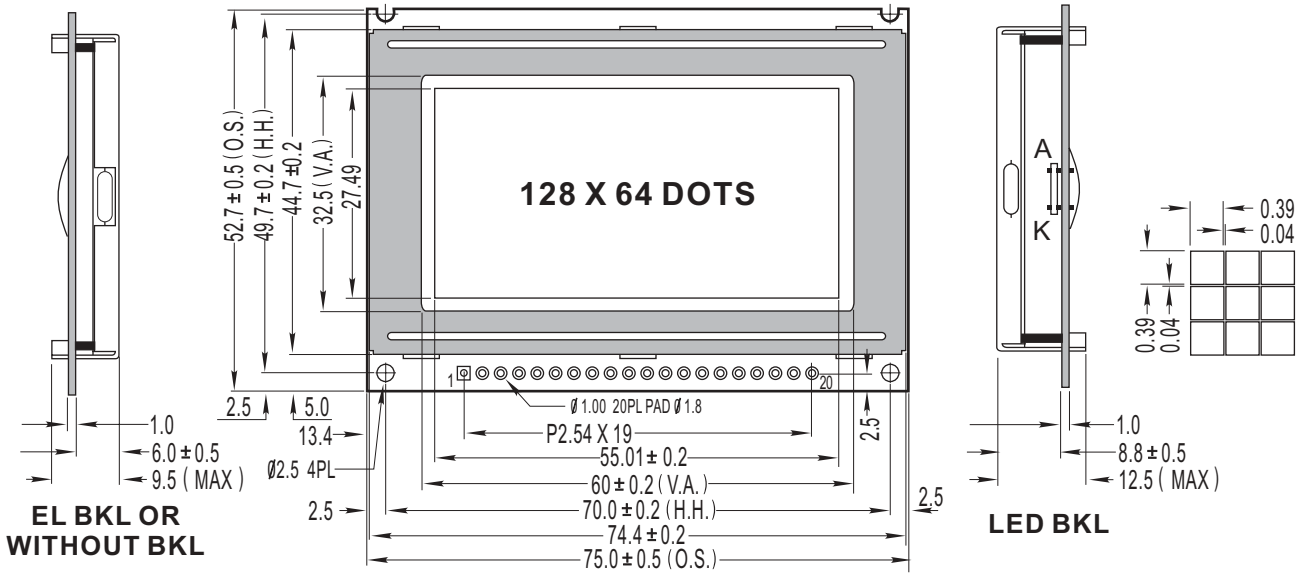
**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-19.0	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

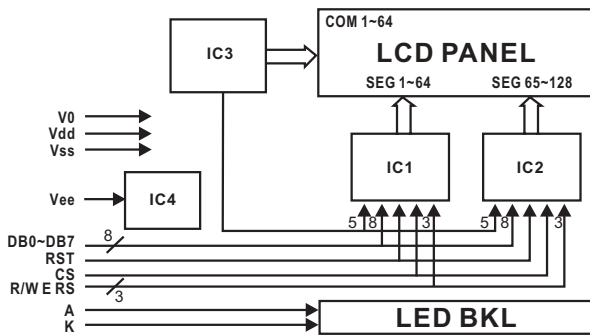
**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
			---	---	---	V
Supply current	Idd	Vdd=5V	---	8	---	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	---	9.8	---	V
		25 °C	---	9.5	---	
		50 °C	---	9.3	---	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.5	V
LED forward current	I <sub>F</sub>	25 °C	---	360	---	mA





**BLOCK DIAGRAM**



**FEATURE**

1. 128X64 dots graphic LCD module
2. Built- in controller (KS0108B)
3. +5V power supply
4. STN LCD panel, 1/64 duty cycle

**MECHANICAL SPECIFICATIONS**

DOT NUMBER	128W X 64H	—
OVERALL SIZE	75.00W X 52.70H	mm
VIEWING AREA	60.00W X 32.50H	mm
HOLE - HOLE	70.00W X 49.70H	mm
DOT SIZE	0.39W X 0.39H	mm
DOT PITCH	0.04W X 0.04H	mm

**PIN ASSIGNMENT**

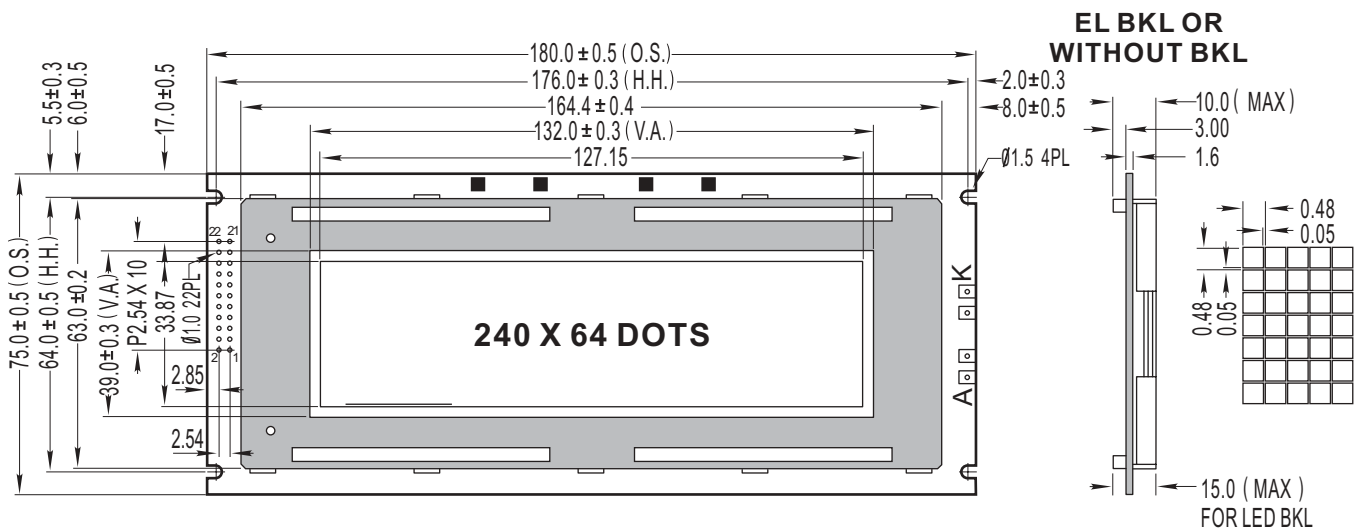
PIN	SYMBOL	FUNCTION
1	Vdd	Power Supply
2	Vss	GND
3	V0	Contrast Adjust
4 to 11	DB0 to DB7	H/L Data bus line
12	CS1	Chip select for IC1
13	CS2	Chip select for IC2
14	RST	Reset signal
15	R/W	H/L Read/write
16	D/I	H/L H: Data,L: Instruction code
17	E	H/L Enable signal
18	Vee	Negative voltage output
19(A)	LED+	Power supply for BKL(4.2V)
20(K)	LED-	Power supply for BKL(GND)

**ABSOLUTE MAXIMUM RATINGS**

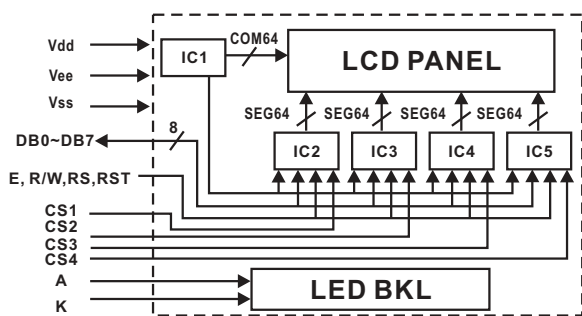
ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-19.0	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
						V
Supply current	Idd	Vdd=5V	---	8	---	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	---	9.8	---	V
		25 °C	---	9.5	---	
		50 °C	---	9.3	---	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.5	V
LED forward current	I <sub>F</sub>	25 °C	---	240	---	mA



**BLOCK DIAGRAM**



**FEATURE**

- 240X64 dots graphic LCD module
- Built-in controller (T6963C)
- +5V power supply
- STN LCD panel, 1/64 duty cycle

**MECHANICAL SPECIFICATIONS**

DOT NUMBER	240W X 64H	—
OVERALL SIZE	180.00W X 75.00H	mm
VIEWING AREA	132.00W X 39.00H	mm
HOLE - HOLE	176.00W X 64.00H	mm
DOT SIZE	0.48W X 0.48H	mm
DOT PITCH	0.05W X 0.05H	mm

**ABSOLUTE MAXIMUM RATINGS**

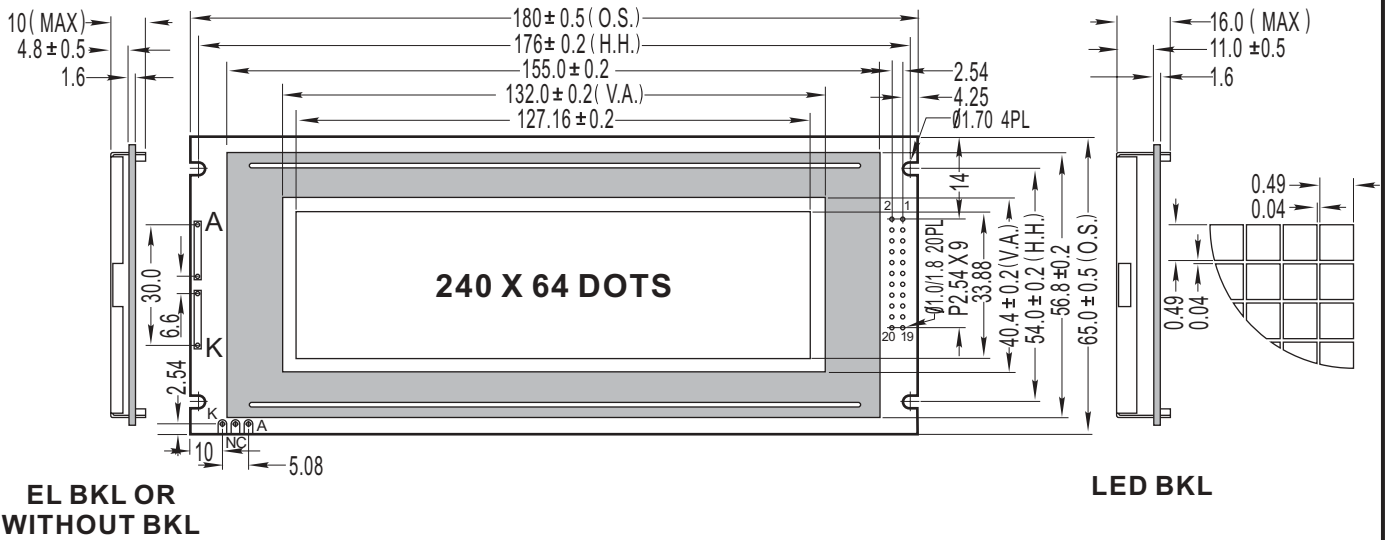
ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-30	Vdd-8	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**PIN ASSIGNMENT**

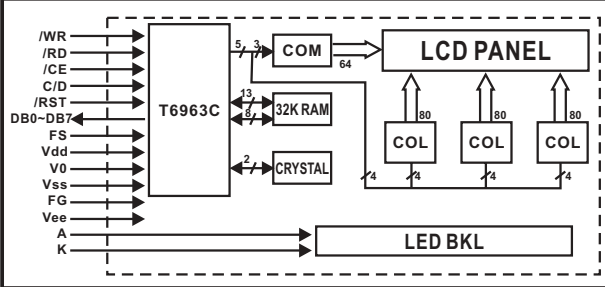
PIN	SYMBOL	FUNCTION
1	FG	Frame ground
2	Vss	GND
3	Vdd	Power Supply
4	Vee	Operating voltage for LCD
5	/WR	Write enable signal
6	/RD	Read enable signal
7	/CE	Chip enable signal
8	C/D	H: Instruction , L: Data
9	RST	Reset signal
10 to 17	DB0 to DB7	H/L Data bus line
18	FS	Font selection
19(A)	LED+	Power supply for BKL
20(K)	LED-	Power supply for BKL

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
Supply current	Idd	Vdd=5V	---	10.0	---	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	---	13.0	---	V
		25 °C	---	12.5	---	
		50 °C	---	12.0	---	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.5	V
LED forward current	I <sub>F</sub>	25 °C	---	540	---	mA



**BLOCK DIAGRAM**



**FEATURE**

1. 240X64 dots graphic LCD module
2. Built-in controller (T6963C)
3. +5V power supply
4. STN LCD panel, 1/64 duty cycle

**MECHANICAL SPECIFICATIONS**

DOT NUMBER	240W X 64H	—
OVERALL SIZE	180.00W X 65.00H	mm
VIEWING AREA	134.00W X 40.40H	mm
HOLE - HOLE	176.00W X 54.00H	mm
DOT SIZE	0.49W X 0.49H	mm
DOT PITCH	0.04W X 0.04H	mm

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	FG	Frame ground
2	Vss	GND
3	Vdd	Power Supply
4	V0	Contrast adjustment
5	/WR	Write enable signal
6	/RD	Read enable signal
7	/CE	Chip enable signal
8	C/D	H: Instruction , L: Data
9	Vee	Operating voltage for LCD
10	RST	Reset signal
11 to 18	DB0 to DB7	H/L Data bus line
19	FS	Font selection
20	N/A	No Connection
A	LED+	Power supply for BKL
K	LED-	Power supply for BKL

**ABSOLUTE MAXIMUM RATINGS**

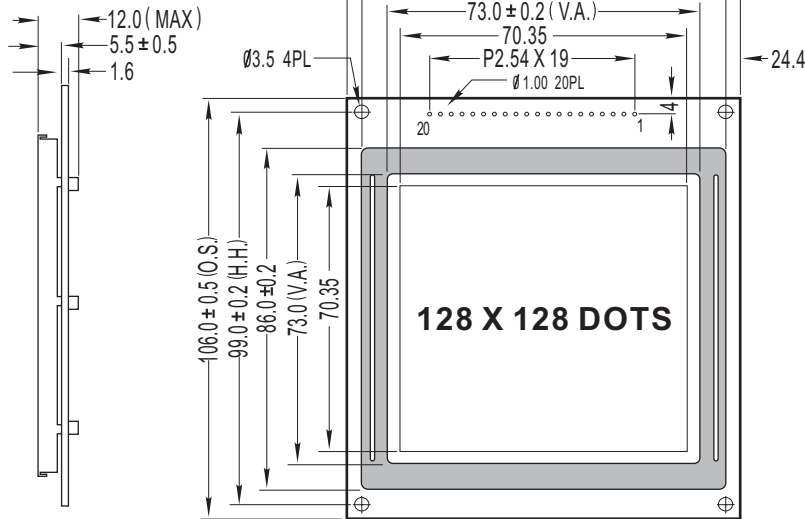
ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-30	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**ELECTRONICAL CHARACTERISTICS**

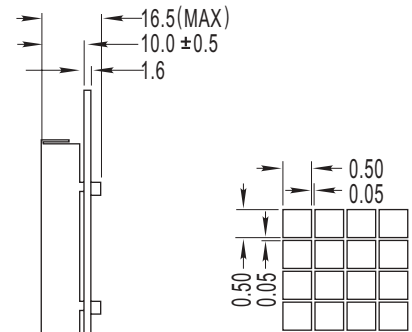
ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
						V
Supply current	Idd	Vdd=5V	---	10	---	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	---	13.0	---	V
		25 °C	---	12.5	---	
		50 °C	---	12.0	---	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.5	V
LED forward current	I <sub>F</sub>	25 °C	---	500	---	mA



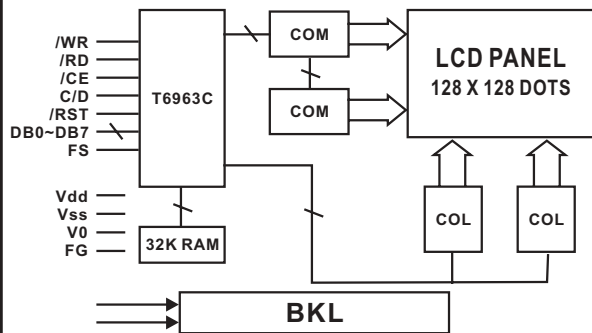
EL BKL OR  
WITHOUT BKL



LED BKL



**BLOCK DIAGRAM**



**FEATURE**

1. 128X128 dots graphic LCD module
2. Built-in controller (T6963C)
3. +5V power supply
4. STN LCD panel, 1/128 duty cycle

**MECHANICAL SPECIFICATIONS**

DOT NUMBER	128W X 128H	—
OVERALL SIZE	92.00W X 106.00H	mm
VIEWING AREA	73.00W X 73.00H	mm
HOLE - HOLE	85.00W X 99.00H	mm
DOT SIZE	0.50W X 0.50H	mm
DOT PITCH	0.05W X 0.05H	mm

**PIN ASSIGNMENT**

PIN	SYMBOL	FUNCTION
1	FG	Frame ground
2	Vss	GND
3	Vdd	Power Supply
4	Vee	Operating voltage for LCD
5	WR	Write enable signal
6	RD	Read enable signal
7	CE	Chip enable signal
8	CD	H: Instruction , L: Data
9	RST	Reset signal
10 to 17	DB0 to DB7	H/L Data bus line
18	FS	Font selection
19(A)	LED+	Power supply for BKL(4.2V)
20(K)	LED-	Power supply for BKL(GND)

**ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	-0.3	7.0	V
POWER SUPPLY (LCD)	V0	Vdd-30.0	Vdd+0.3	V
INPUT VOLTAGE	Vin	-0.3	Vdd+0.3	V

**ELECTRONICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+5V	4.7	5.0	5.5	V
						V
Supply current	Idd	Vdd=5V	---	10	---	mA
Recommended LCD driving voltage for normal temp version module	Vdd-V0	0 °C	---	19.5	---	V
		25 °C	---	19.0	---	
		50 °C	---	18.0	---	
LED forward voltage	V <sub>F</sub>	25 °C	---	4.2	4.5	V
LED forward current	I <sub>F</sub>	25 °C	---	530	---	mA