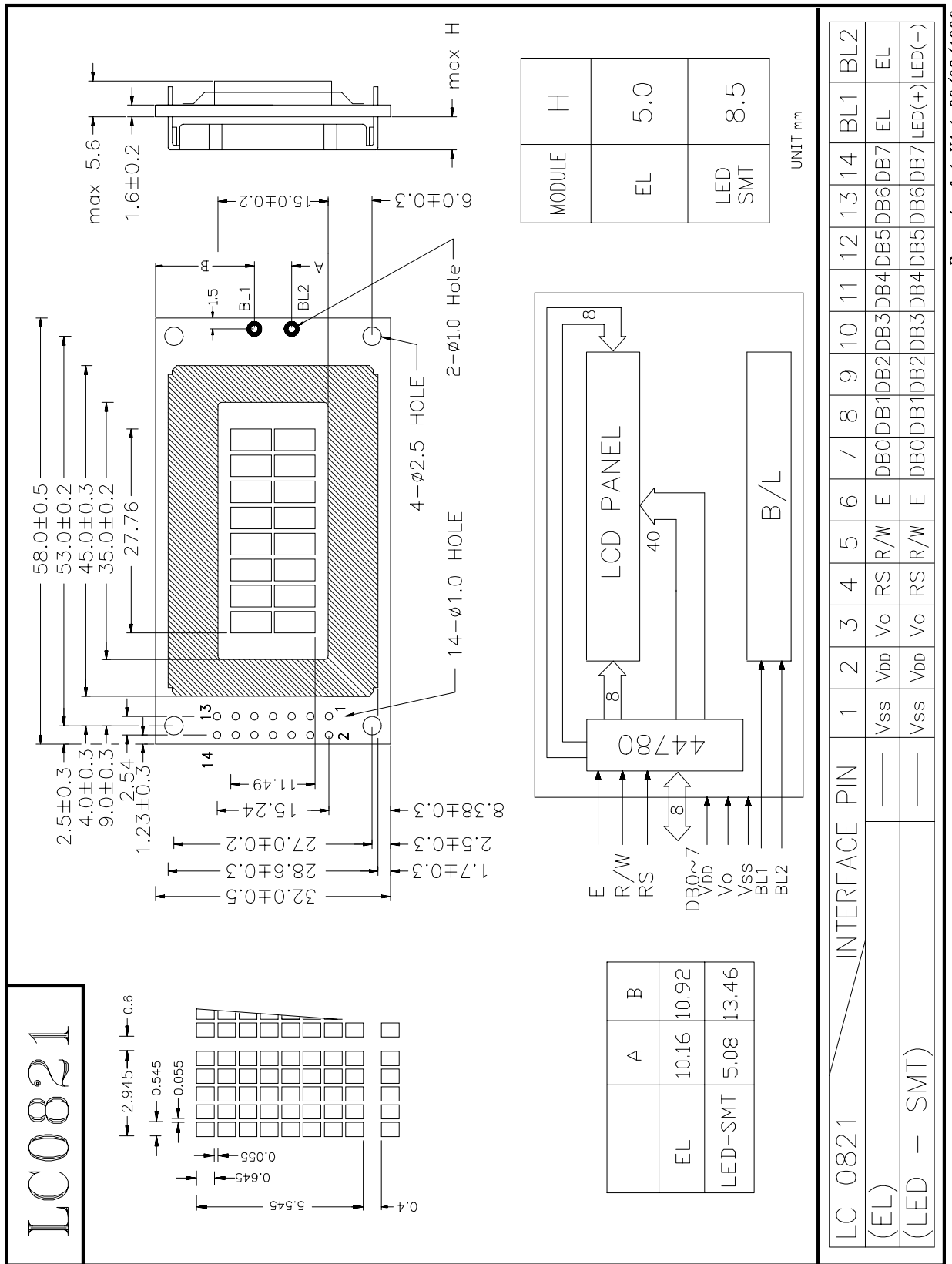


1. LCM Drawing



2. Electrical spec

**LC0821**

**8 Characters X 2 Lines**  
**1/16 DUTY 5x8 Font**

**ELECTRICAL CHARACTERISTICS**

$T_a = 25^{\circ}\text{C}$   $V_{DD} = 5.0 \pm 0.25 \text{ v}$

Input "High" Voltage ( $V_{IH}$ ) 2.2 V min

Input "Low " Voltage ( $V_{IL}$ ) 0.6 V max

**APPLICABLE FOR -LNY**

	<u>TN</u>		<u>STN</u>	
	<u>TEMPERATURE</u>		<u>TEMPERATURE</u>	
	<u>NORMAL</u>	<u>WIDE</u>	<u>NORMAL</u>	<u>WIDE</u>
Supply Current, ( $I_{DD}$ )Typ., mA	N/A	N/A	1.7	1.7
Recommend LCD drive Voltage:				
( $V_{DD} - V_O$ ) at $T_a = -20^{\circ}\text{C}$ , Volts	N/A	N/A	N/A	6.2
$T_a = 0^{\circ}\text{C}$	N/A	N/A	4.9	6.0
$T_a = 25^{\circ}\text{C}$	N/A	N/A	4.7	5.8
$T_a = 50^{\circ}\text{C}$	N/A	N/A	4.5	5.5
$T_a = 70^{\circ}\text{C}$	N/A	N/A	N/A	5.3

**ABSOLUTE MAXIMUM RATINGS**

	<u>NORMAL</u>		<u>WIDE</u>	
	<u>TEMPERATURE</u>		<u>TEMPERATURE</u>	
	<u>MIN</u>	<u>MAX</u>	<u>MIN</u>	<u>MAX</u>
Input Voltage ( $V_I$ ) V	0	$V_{DD}$	0	$V_{DD}$
Supply for Logic ( $V_{DD} - V_{SS}$ ) V	0	7	0	7
Supply for LCD ( $V_{DD} - V_O$ ) V	0	10	0	10
Operating Temperature $T_{OP}$ , $^{\circ}\text{C}$	0	+50	-20	+70
Storage Temperature $T_{ST}$ , $^{\circ}\text{C}$	-20	+70	-30	+80

**OPTION**

**BACKLIGHT**

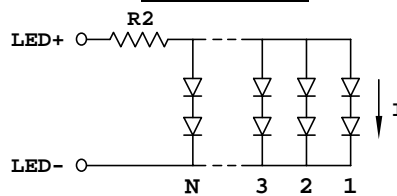
- BEXX -- EL
- BLSXX -- LED SMT

**INPUT VOLTAGE & CURRENT**

100  $V_{RMS}$  (400-800) Hz; 1.3mA  
 + 5V DC; 70 mA  $R_2 = 13 \text{ Ohm } 1/4 \text{ W}$

\* $R_2$ : Suggest BL current limit resistor on customer board

**SMT LED**



$N = 7, I = 10 \text{ mA}$

----- Single +5V for wide temperature operation -----

**SINGLE +5V OPERATION** only

-- not available --

**TEMPERATURE COMPENSATION**

-- not available --

**LC0821**

**8 Characters X 2 Lines**  
**1/16 DUTY 5x8 Font**

**ELECTRICAL CHARACTERISTICS**

$T_a = 25^{\circ}\text{C}$   $V_{DD} = 5.0 \pm 0.25 \text{ v}$

Input "High" Voltage ( $V_{IH}$ ) 2.2 V min

Input "Low " Voltage ( $V_{IL}$ ) 0.6 V max

**APPLICABLE FOR -LEP**

	<u>TN</u>		<u>STN</u>	
	<u>TEMPERATURE</u>		<u>TEMPERATURE</u>	
	<u>NORMAL</u>	<u>WIDE</u>	<u>NORMAL</u>	<u>WIDE</u>
Supply Current, ( $I_{DD}$ )Typ., mA	N/A	N/A	1.7	2.2
Recommend LCD drive Voltage:				
( $V_{DD}-V_O$ ) at $T_a = -20^{\circ}\text{C}$ , Volts	N/A	N/A	N/A	7.3
$T_a = 0^{\circ}\text{C}$	N/A	N/A	4.7	7.1
$T_a = 25^{\circ}\text{C}$	N/A	N/A	4.5	6.8
$T_a = 50^{\circ}\text{C}$	N/A	N/A	4.2	6.5
$T_a = 70^{\circ}\text{C}$	N/A	N/A	N/A	6.2

**ABSOLUTE MAXIMUM RATINGS**

	<u>NORMAL</u>		<u>WIDE</u>	
	<u>TEMPERATURE</u>		<u>TEMPERATURE</u>	
	<u>MIN</u>	<u>MAX</u>	<u>MIN</u>	<u>MAX</u>
Input Voltage ( $V_I$ ) V	0	$V_{DD}$	0	$V_{DD}$
Supply for Logic ( $V_{DD}-V_{SS}$ ) V	0	7	0	7
Supply for LCD ( $V_{DD}-V_O$ ) V	0	10	0	10
Operating Temperature $T_{OP}$ , $^{\circ}\text{C}$	0	+50	-20	+70
Storage Temperature $T_{ST}$ , $^{\circ}\text{C}$	-20	+70	-30	+80

**OPTION**

**BACKLIGHT**

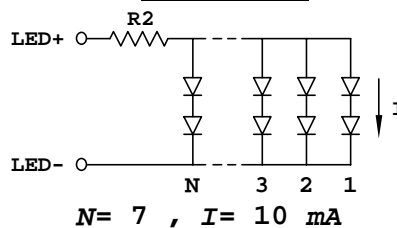
- BEXX -- EL
- BLSXX -- LED SMT

**INPUT VOLTAGE & CURRENT**

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\* $R_2$ : Suggest BL current limit resistor on customer board

**SMT LED**



$N = 7, I = 10 \text{ mA}$

..... **Single +5V for wide temperature operation** .....

**SINGLE +5V OPERATION** only

-- not available --

**TEMPERATURE COMPENSATION**

-- not available --

# LC0821

8 Characters X 2 Lines  
1/16 DUTY 5x8 Font

## ELECTRICAL CHARACTERISTICS

$T_a = 25^\circ\text{C}$   $V_{DD} = 5.0 \pm 0.25 \text{ V}$

Input "High" Voltage ( $V_{IH}$ ) 2.2 V min

Input "Low" Voltage ( $V_{IL}$ ) 0.6 V max

### APPLICABLE FOR -LNA

	<u>TN</u>		<u>STN</u>	
	<u>TEMPERATURE</u>		<u>TEMPERATURE</u>	
	<u>NORMAL</u>	<u>WIDE</u>	<u>NORMAL</u>	<u>WIDE</u>
Supply Current, ( $I_{DD}$ ) Typ., mA	N/A	N/A	1.7	N/A
Recommend LCD drive Voltage: ( $V_{DD} - V_O$ ) at $T_a = -20^\circ\text{C}$ , Volts	N/A	N/A	N/A	N/A
$T_a = 0^\circ\text{C}$	N/A	N/A	4.7	N/A
$T_a = 25^\circ\text{C}$	N/A	N/A	4.6	N/A
$T_a = 50^\circ\text{C}$	N/A	N/A	4.5	N/A
$T_a = 70^\circ\text{C}$	N/A	N/A	N/A	N/A

## ABSOLUTE MAXIMUM RATINGS

	<u>NORMAL</u>		<u>WIDE</u>	
	<u>TEMPERATURE</u>		<u>TEMPERATURE</u>	
	<u>MIN</u>	<u>MAX</u>	<u>MIN</u>	<u>MAX</u>
Input Voltage ( $V_I$ ) V	0	$V_{DD}$	0	$V_{DD}$
Supply for Logic ( $V_{DD} - V_{SS}$ ) V	0	7	0	7
Supply for LCD ( $V_{DD} - V_O$ ) V	0	10	0	10
Operating Temperature $T_{OP}$ , $^\circ\text{C}$	0	+50	-20	+70
Storage Temperature $T_{ST}$ , $^\circ\text{C}$	-20	+70	-30	+80

## OPTION

### BACKLIGHT

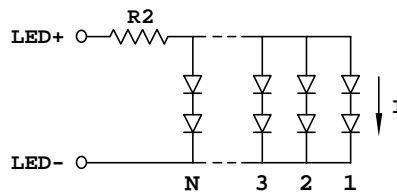
- BEXX -- EL
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+ 5V DC; 70 mA  $R_2 = 13 \text{ Ohm } 1/4 \text{ W}$

\* $R_2$ : Suggest BL current limit resistor on customer board

### SMT LED



$N = 7, I = 10 \text{ mA}$

----- Single +5V for wide temperature operation -----

SINGLE +5V OPERATION only

TEMPERATURE COMPENSATION

-- not available --

-- not available --