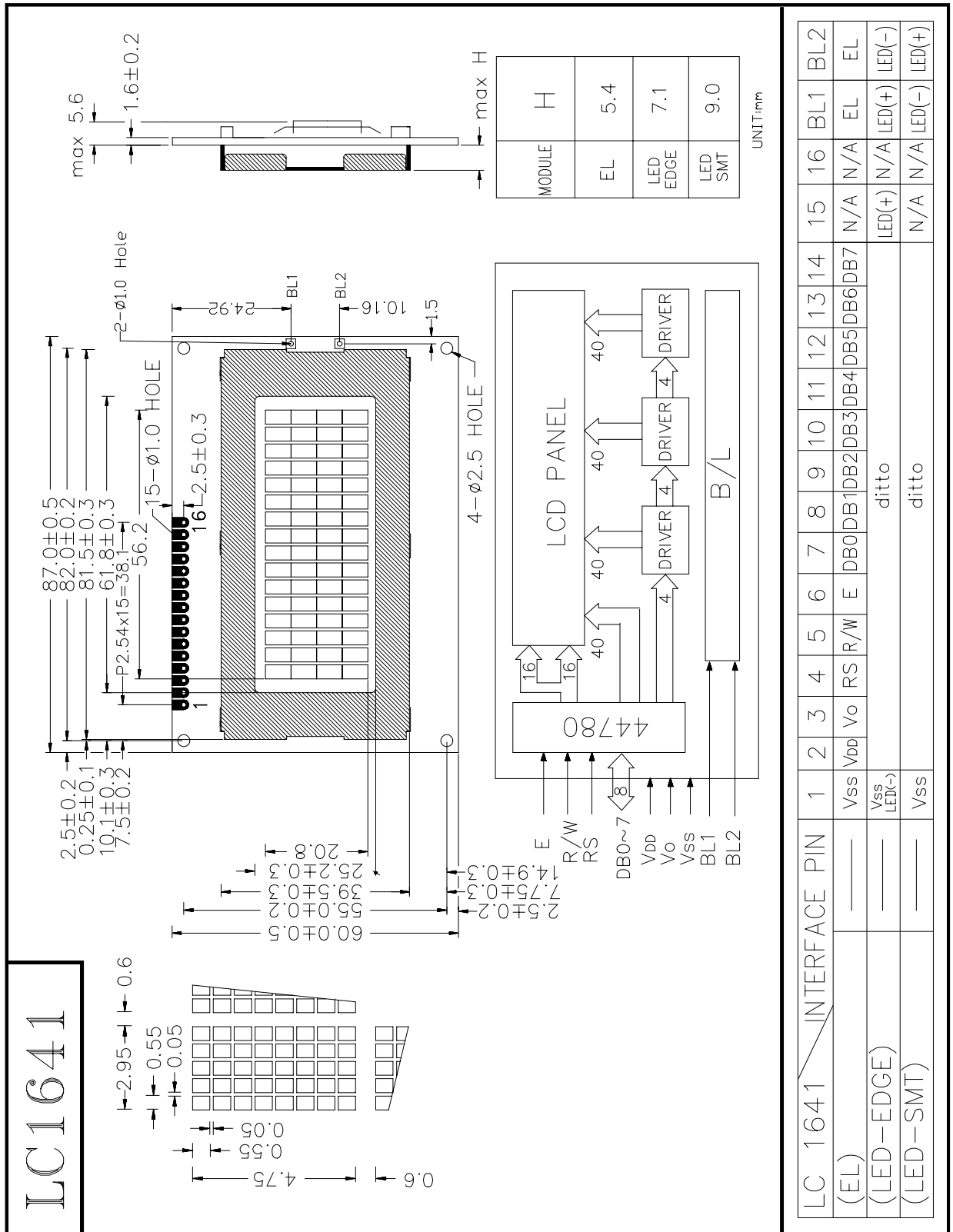


1. LCM Drawing



2. Electrical spec

**LC1641**

**16 Characters X 4 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 -LOP**

	<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	3	3	3	3
Recommend LCD drive Voltage:				
( $V_{DD} - V_O$ ) at $T_a = -20^{\circ}\text{C}$ , Volts	N/A	9.3	N/A	8.5
$T_a = 0^{\circ}\text{C}$	4.5	8.8	4.5	8.2
$T_a = 25^{\circ}\text{C}$	4.2	8.3	4.2	7.8
$T_a = 50^{\circ}\text{C}$	3.9	7.9	4.0	7.0
$T_a = 70^{\circ}\text{C}$	N/A	7.5	N/A	5.9

**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
- BLEXX -- LED EDGE
- BLSXX -- LED SMT

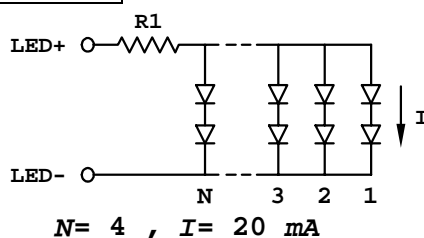
**INPUT VOLTAGE & CURRENT**

100  $V_{RMS}$  (400-800) Hz; 3.4mA  
 + 5V DC; 80 mA  $R1 = 13 \text{ Ohm } 1/4 \text{ W}$   
 + 5V DC; 120 mA  $R2 = 4.2 \text{ Ohm } 1/2 \text{ W}$

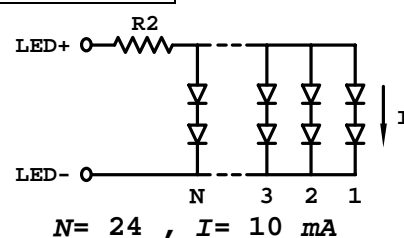
\*R1: Built-in BL current limit resistor On LCDM

\*R2: Suggest BL current limit resistor on customer board

**EDGE**



**SMT LED**



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

**SINGLE +5V OPERATION** *only*

-- not available --

**TEMPERATURE COMPENSATION**

-- not available --

**LC1641**

**16 Characters X 4 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	3	3
Recommend LCD drive Voltage: ( $V_{DD}-V_O$ )at $T_a = -20^{\circ}\text{C}$ ,Volts	N/A	N/A	N/A	7.1
$T_a = 0^{\circ}\text{C}$	N/A	N/A	4.4	6.9
$T_a = 25^{\circ}\text{C}$	N/A	N/A	4.2	6.7
$T_a = 50^{\circ}\text{C}$	N/A	N/A	3.9	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
- BLEXX -- LED EDGE
- BLSXX -- LED SMT

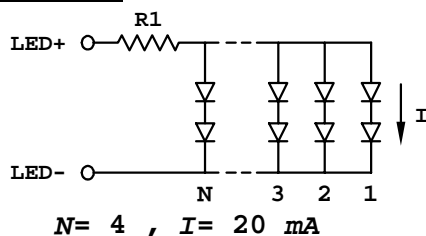
**INPUT VOLTAGE & CURRENT**

100  $V_{RMS}$  (400-800) Hz; 3.4mA  
 + 5V DC;80 mA R1= 13 Ohm 1/4 W  
 + 5V DC;120 mA R2= 4.2 Ohm 1/2 W

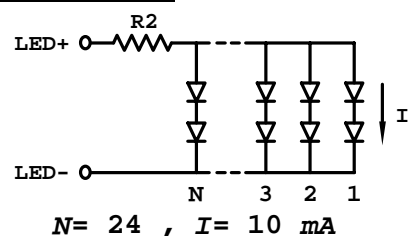
\*R1:Built-in BL current limit resistor On LCDM

\*R2:Suggest BL current limit resistor on customer board

**EDGE**



**SMT LED**



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

**SINGLE +5V OPERATION** only

**TEMPERATURE COMPENSATION**

-- not available --

-- not available --

# LC1641

**16 Characters X 4 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	3	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	4.4	N/A
$T_a = 25^{\circ}\text{C}$	N/A	N/A	4.2	N/A
$T_a = 50^{\circ}\text{C}$	N/A	N/A	4.0	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
- BLEXX -- LED EDGE
- BLSXX -- LED SMT

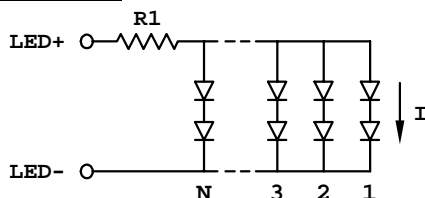
### INPUT VOLTAGE & CURRENT

100  $V_{RMS}$  (400-800) Hz; 3.4mA  
 + 5V DC; 80 mA R1= 13 Ohm 1/4 W  
 + 5V DC; 120 mA R2= 4.2 Ohm 1/2 W

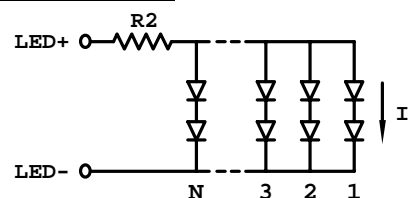
\*R1: Built-in BL current limit resistor On LCDM

\*R2: Suggest BL current limit resistor on customer board

#### EDGE



#### SMT LED



$N = 4$  ,  $I = 20 \text{ mA}$

$N = 24$  ,  $I = 10 \text{ mA}$

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

**SINGLE +5V OPERATION** *only*

**TEMPERATURE COMPENSATION**

-- not available --

-- not available --