

PC2004A-L (20x4) Character LCD Display

Features *20 Character, 4 Line *View Angle 12H or 6H *TN or STN Fluid *Extended Temperature Range available *Several Character Types available *LED or EL Backlight available	Absolute Maximum Ratings at T _A = 25 °C				
	Item	Symbol	Min	Max	Unit
	Power Supply (Logic)	Vdd	-0.3	7.0	V
	Power Supply (LCD)	Vo	Vdd - 0.3	Vdd 12.0	V
	Input Voltage	Vi	- 0.3	Vdd	V
	Operating Temperature (Standard)	Topr	0	50	°C
	Storage Temperature (Standard)	Tstg	- 20	70	°C
	Extended Operating Temperature	Topr	- 20	70	°C
	Extended Storage Temperature	Tstg	- 30	80	°C

Electrical Characteristics at T_A = 25 °C, Vdd=5V±0.25V

Item	Symbol	Min	Typ	Max	Unit
Power Supply (Logic)	Vdd-Vss	4.7	5.0	5.3	V
Supply Current	Idd	—	3.2	6.0	mA
LCD Driving Voltage	Vdd - Vo	4.2	4.5	4.8	V
Input Voltage "H"	Vih	2.2	—	Vdd	V
Input Voltage "L"	Vil	—	—	0.6	V
Output Voltage "H"	Voh	2.4	—	—	V
Output Voltage "L"	Vol	—	—	0.4	V

Interface Pin Connection

No	Symbol	Function	No	Symbol	Function
1	Vss	Power Supply (GND)	9	DB2	Data Bus Line 2
2	Vdd	Power Supply (+5V)	10	DB3	Data Bus Line 3
3	Vo	Contrast Adjust	11	DB4	Data Bus Line 4
4	RS	Instruction/Register Select	12	DB5	Data Bus Line 5
5	R/W	Read/Write	13	DB6	Data Bus Line 6
6	E	Enable Signal	14	DB7	Data Bus Line 7
7	DB0	Data Bus Line 0	15	A	Power Supply for LED Backlight (+)
8	DB1	Data Bus Line 1	16	K	Power Supply for LED Backlight (-)

LED Backlight Specifications

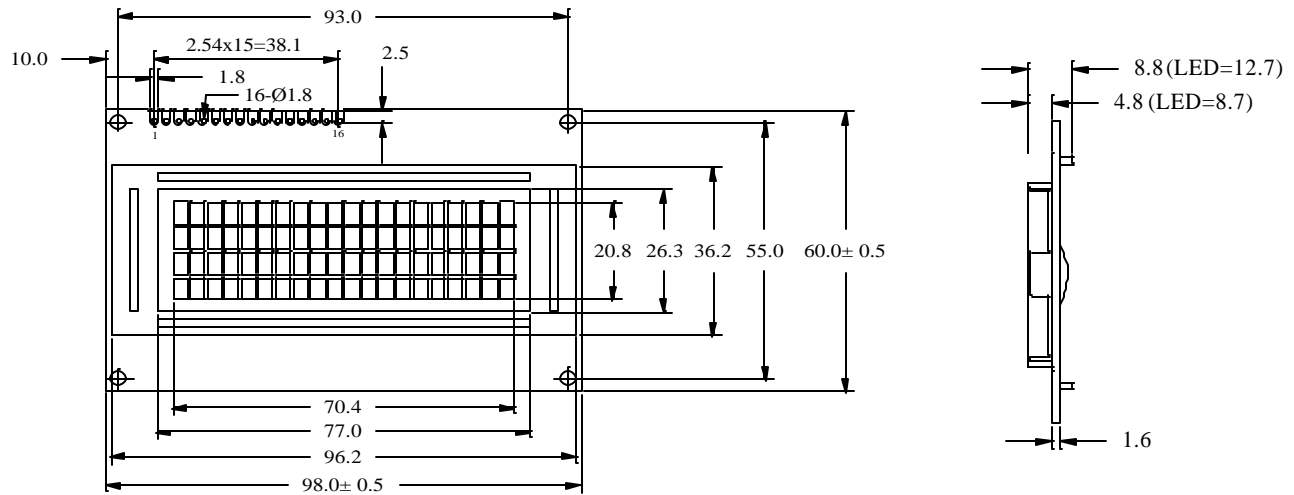
Forward Voltage	Forward Current	Power Dissipation	Peak Wavelength
4.2V (Typ)	420mA (Max)	1900mW (Max)	570nm (Typ)

Mechanical Specifications

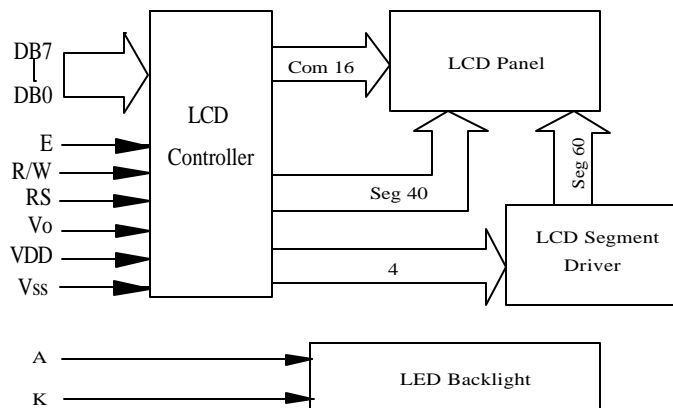
Item	Overall Size	Viewing Area	Character Size	Character Pitch	Dot Size
Specifications	98.0W x 60.0H x 8.8T (BL12.7T)	77.0W x 26.3H	2.95W x 4.75H	3.55W x 5.35H	0.55W x 0.55H

All dimensions are in mm. Tolerance is ± 0.3 Unless otherwise specified

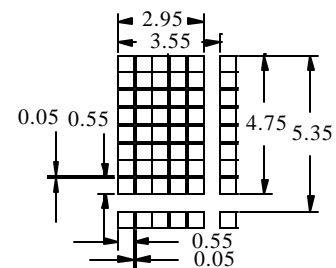
PC2004A-L (20x4) Character LCD Display



LCD Block Diagram



Dot Layout



All dimensions are in mm. Tolerance is ± 0.3 Unless otherwise specified

PC2004B-L (20x4) Character LCD Display

Features *20 Character, 4 Line *View Angle 12H or 6H *TN or STN Fluid *Extended Temperature Range available *Several Character Types available *LED or EL Backlight available	Absolute Maximum Ratings at T _A = 25 °C				
	Item	Symbol	Min	Max	Unit
	Power Supply (Logic)	Vdd	-0.3	7.0	V
	Power Supply (LCD)	Vo	Vdd - 0.3	Vdd 12.0	V
	Input Voltage	Vi	- 0.3	Vdd	V
	Operating Temperature (Standard)	Topr	0	50	°C
	Storage Temperature (Standard)	Tstg	- 20	70	°C
	Extended Operating Temperature	Topr	- 20	70	°C
	Extended Storage Temperature	Tstg	- 30	80	°C

Electrical Characteristics at T_A = 25 °C, Vdd=5V±0.25V

Item	Symbol	Min	Typ	Max	Unit
Power Supply (Logic)	Vdd-Vss	4.7	5.0	5.3	V
Supply Current	Idd	—	3.2	6.0	mA
LCD Driving Voltage	Vdd - Vo	4.2	4.5	4.8	V
Input Voltage “H”	Vih	2.2	—	Vdd	V
Input Voltage “L”	Vil	—	—	0.6	V
Output Voltage “H”	Voh	2.4	—	—	V
Output Voltage “L”	Vol	—	—	0.4	V

Interface Pin Connection

No	Symbol	Function	No	Symbol	Function
1	Vss	Power Supply (GND)	9	DB2	Data Bus Line 2
2	Vdd	Power Supply (+5V)	10	DB3	Data Bus Line 3
3	Vo	Contrast Adjust	11	DB4	Data Bus Line 4
4	RS	Instruction/Register Select	12	DB5	Data Bus Line 5
5	R/W	Read/Write	13	DB6	Data Bus Line 6
6	E	Enable Signal	14	DB7	Data Bus Line 7
7	DB0	Data Bus Line 0	15	A	Power Supply for LED Backlight (+)
8	DB1	Data Bus Line 1	16	K	Power Supply for LED Backlight (-)

LED Backlight Specifications

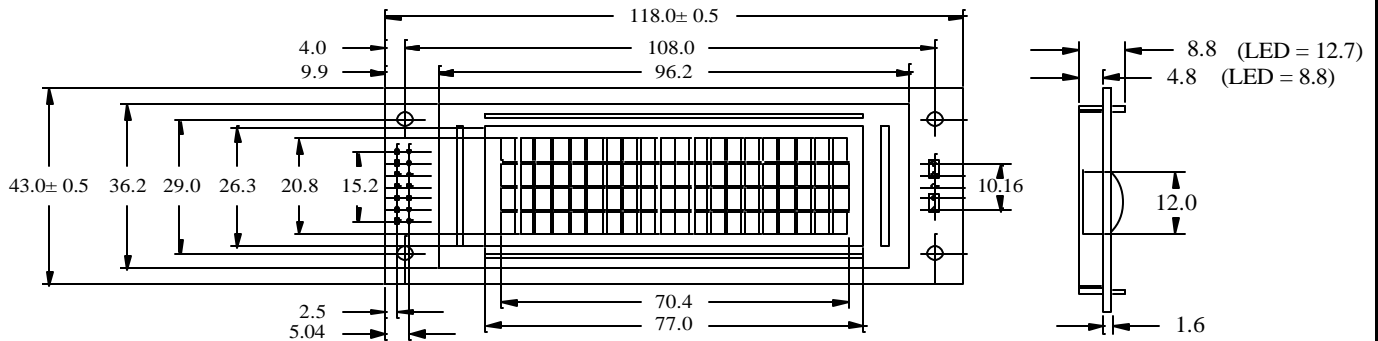
Forward Voltage	Forward Current	Power Dissipation	Peak Wavelength
4.2V (Typ)	420mA (Max)	1900mW (Max)	570nm (Typ)

Mechanical Specifications

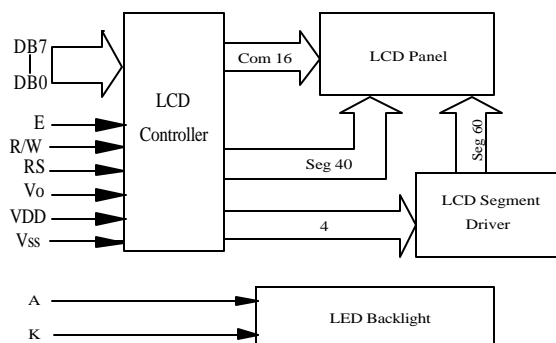
Item	Overall Size	Viewing Area	Character Size	Character Pitch	Dot Size
Specifications	118.0W x 43.0H x 8.8T (BL12.7T)	77.0W x 26.3H	2.95W x 4.75H	3.55W x 5.35H	0.55W x 0.55H

All dimensions are in mm. Tolerance is ± 0.3 Unless otherwise specified

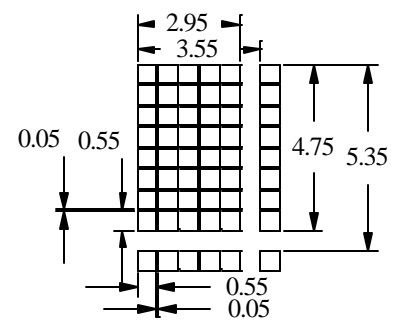
PC2004B-L (20x4) Character LCD Display



LCD Block Diagram



Dot Layout



All dimensions are in mm. Tolerance is ± 0.3 Unless otherwise specified

PC2004C-L (20x4) Character LCD Display

Features *20 Character, 4 Line *View Angle 12H or 6H *TN or STN Fluid *Extended Temperature Range available *Several Character Types available	Absolute Maximum Ratings at T_A = 25 °C				
	Item	Symbol	Min	Max	Unit
	Power Supply (Logic)	Vdd	-0.3	7.0	V
	Power Supply (LCD)	Vo	-0.3	12.0	V
	Input Voltage	Vi	- 0.3	Vdd	V
	Operating Temperature (Standard)	Topr	0	50	°C
	Storage Temperature (Standard)	Tstg	- 20	70	°C
	Extended Operating Temperature	Topr	- 20	70	°C
	Extended Storage Temperature	Tstg	- 30	80	°C

Electrical Characteristics at T_A = 25 °C, Vdd=5V±0.25V

Item	Symbol	Min	Typ	Max	Unit
Power Supply (Logic)	Vdd	4.5	5.0	5.5	V
Supply Current	Idd	—	3.0	4.0	mA
LCD Driving Voltage	Vdd - Vo	4.5	4.8	5	V
Input Voltage “H”	Vih	2.2	—	Vdd	V
Input Voltage “L”	Vil	—	—	0.6	V
Output Voltage “H”	Voh	2.4	—	—	V
Output Voltage “L”	Vol	—	—	0.4	V

Interface Pin Connection

No	Symbol	Function	No	Symbol	Function
1	Vss	Power Supply (GND)	9	DB2	Data Bus Line 2
2	Vdd	Power Supply (+5V)	10	DB3	Data Bus Line 3
3	Vo	Contrast Adjust	11	DB4	Data Bus Line 4
4	RS	Instruction/Register Select	12	DB5	Data Bus Line 5
5	R/W	Read/Write	13	DB6	Data Bus Line 6
6	E	Enable Signal	14	DB7	Data Bus Line 7
7	DB0	Data Bus Line 0	15	NC	
8	DB1	Data Bus Line 1	16	NC	

LED Backlight Specifications

Forward Voltage	Forward Current	Power Dissipation	Peak Wavelength
4.2V (Typ)	450mA (Typ)	1890mW (Typ)	570nm (Typ)

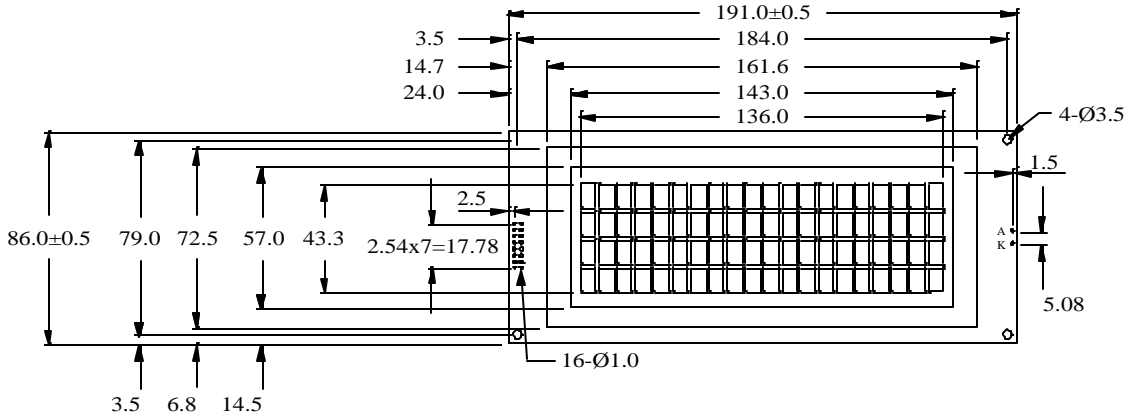
Mechanical Specifications

Item	Overall Size	Viewing Area	Character Size	Character Pitch	Dot Size
Specifications	191.0W x 86.0H x 22.4 Max T	143.0W x 57.0H	5.66W x 9.8H	6.86W x 11.3H	1.1W x 1.19H

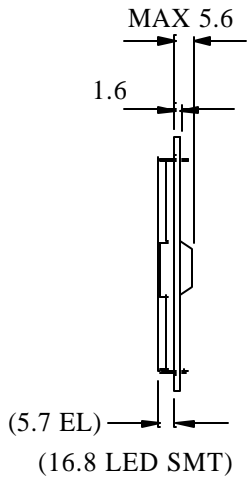
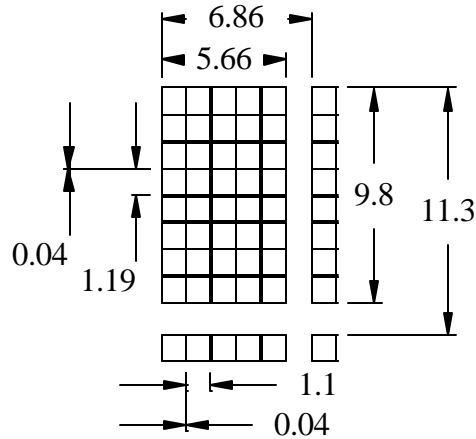
All dimensions are in mm. Tolerance is ± 0.3 Unless otherwise specified

PC2004C-L (20x4) Character LCD Display

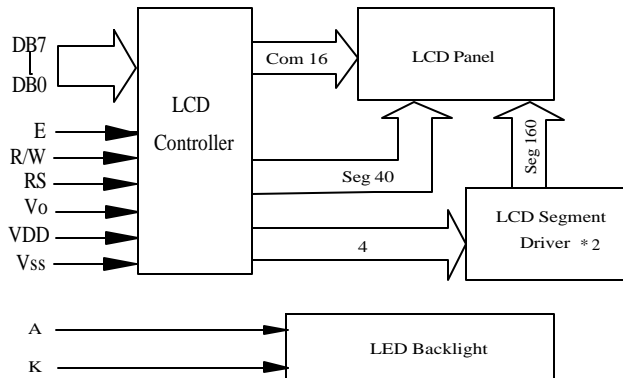
All dimensions are in mm. Tolerance is ± 0.3 Unless otherwise specified



Character Dot Layout



Block Diagram



PC2004D-O (20x4) Character LCD Display

Features *20 Character, 4 Line *View Angle 12H or 6H *TN or STN Fluid *Extended Temperature Range available *Several Character Types available	Absolute Maximum Ratings at T _A = 25 °C				
	Item	Symbol	Min	Max	Unit
	Power Supply (Logic)	Vdd	-0.3	7.0	V
	Power Supply (LCD)	Vo	Vdd - 15.0	Vdd + 0.3	V
	Input Voltage	Vi	- 0.3	Vdd	V
	Operating Temperature (Standard)	Topr	0	50	°C
	Storage Temperature (Standard)	Tstg	- 20	70	°C
	Extended Operating Temperature	Topr	- 20	70	°C
	Extended Storage Temperature	Tstg	- 30	80	°C

Electrical Characteristics at T_A = 25 °C, Vdd=5V±0.25V

Item	Symbol	Min	Typ	Max	Unit
Power Supply (Logic)	Vdd	4.5	5.0	5.5	V
Supply Current	Idd	2.0	—	—	mA
LCD Driving Voltage	Vdd - Vo	—	—	13.0	V
Input Voltage “H”	Vih	2.2	—	Vdd	V
Input Voltage “L”	Vil	—	—	0.6	V
Output Voltage “H”	Voh	2.4	—	—	V
Output Voltage “L”	Vol	—	—	0.4	V

Interface Pin Connection

No	Symbol	Function	No	Symbol	Function
1	Vss	Power Supply (GND)	9	DB2	Data Bus Line 2
2	Vdd	Power Supply (+5V)	10	DB3	Data Bus Line 3
3	Vo	Contrast Adjust	11	DB4	Data Bus Line 4
4	RS	Instruction/Register Select	12	DB5	Data Bus Line 5
5	R/W	Read/Write	13	DB6	Data Bus Line 6
6	E	Enable Signal	14	DB7	Data Bus Line 7
7	DB0	Data Bus Line 0	15	A	Power Supply for LED Backlight (+)
8	DB1	Data Bus Line 1	16	K	Power Supply for LED Backlight (-)

LED Backlight Specifications

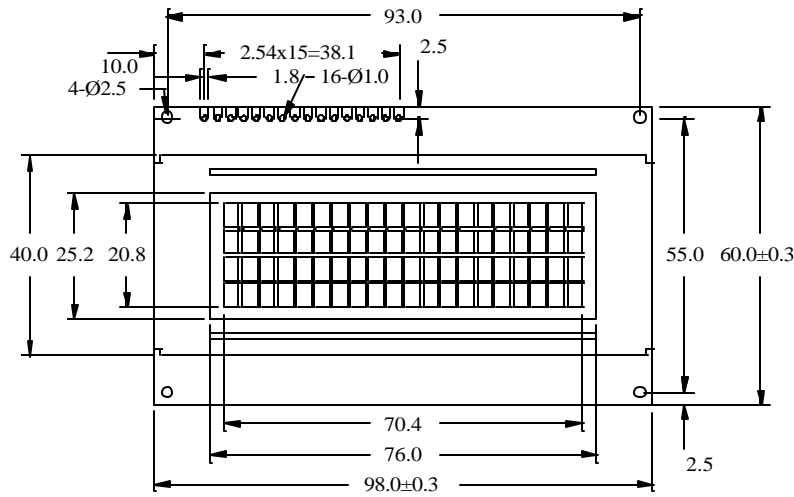
Forward Voltage	Forward Current	Power Dissipation	Peak Wavelength
4.2V (Typ)	375mA (Typ)	1580mW (Typ)	570nm (Typ)

Mechanical Specifications

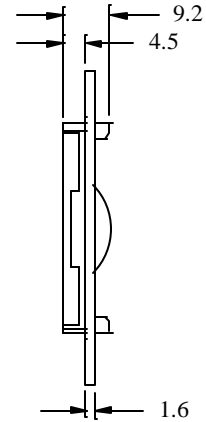
Item	Overall Size	Viewing Area	Character Size	Character Pitch	Dot Size
Specifications	98.0W x 60.0H x 9.2T (BL13.5T)	76.0W x 25.2H	2.95W x 4.75H	3.55W x 5.35H	0.55W x 0.55H

All dimensions are in mm. Tolerance is ± 0.3 Unless otherwise specified

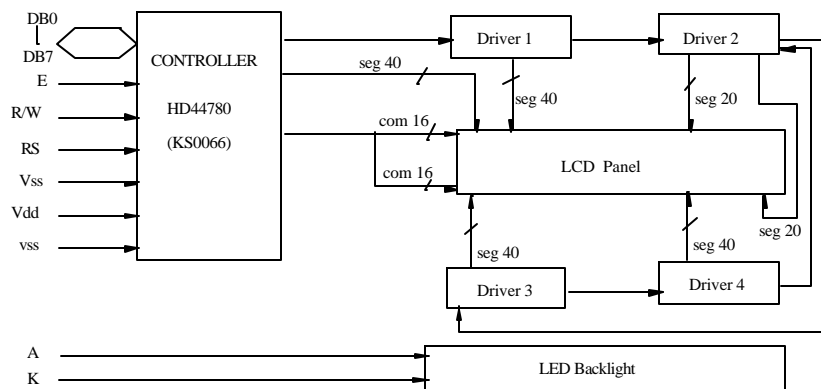
PC2004D-O (20x4) Character LCD Display



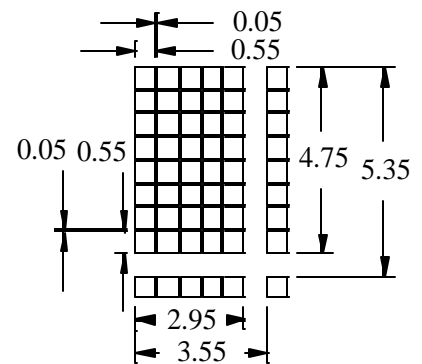
MAX 13.5 for LED Backlight



Block Diagram



Character Dot Layout



PC2004E-O (20x4) Character LCD Display

Features *20 Character, 4 Line *View Angle 12H or 6H *TN or STN Fluid *Extended Temperature Range available *Several Character Types available	Absolute Maximum Ratings at T _A = 25 °C				
	Item	Symbol	Min	Max	Unit
	Power Supply (Logic)	Vdd	-0.3	7.0	V
	Power Supply (LCD)	Vo	Vdd - 15.0	Vdd + 0.3	V
	Input Voltage	Vi	- 0.3	Vdd	V
	Operating Temperature (Standard)	Topr	0	50	°C
	Storage Temperature (Standard)	Tstg	- 20	70	°C
	Extended Operating Temperature	Topr	- 20	70	°C
	Extended Storage Temperature	Tstg	- 30	80	°C

Electrical Characteristics at T_A = 25 °C, Vdd=5V±0.25V

Item	Symbol	Min	Typ	Max	Unit
Power Supply (Logic)	Vdd	4.5	5.0	5.5	V
Supply Current	Idd	2.0	—	—	mA
LCD Driving Voltage	Vdd - Vo	—	—	13.0	V
Input Voltage “H”	Vih	2.2	—	Vdd	V
Input Voltage “L”	Vil	—	—	0.6	V
Output Voltage “H”	Voh	2.4	—	—	V
Output Voltage “L”	Vol	—	—	0.4	V

Interface Pin Connection

No	Symbol	Function	No	Symbol	Function
1	Vss	Power Supply (GND)	9	DB2	Data Bus Line 2
2	Vdd	Power Supply (+5V)	10	DB3	Data Bus Line 3
3	Vo	Contrast Adjust	11	DB4	Data Bus Line 4
4	RS	Instruction/Register Select	12	DB5	Data Bus Line 5
5	R/W	Read/Write	13	DB6	Data Bus Line 6
6	E	Enable Signal	14	DB7	Data Bus Line 7
7	DB0	Data Bus Line 0	15	A	Power Supply for LED Backlight (+)
8	DB1	Data Bus Line 1	16	K	Power Supply for LED Backlight (-)

LED Backlight Specifications

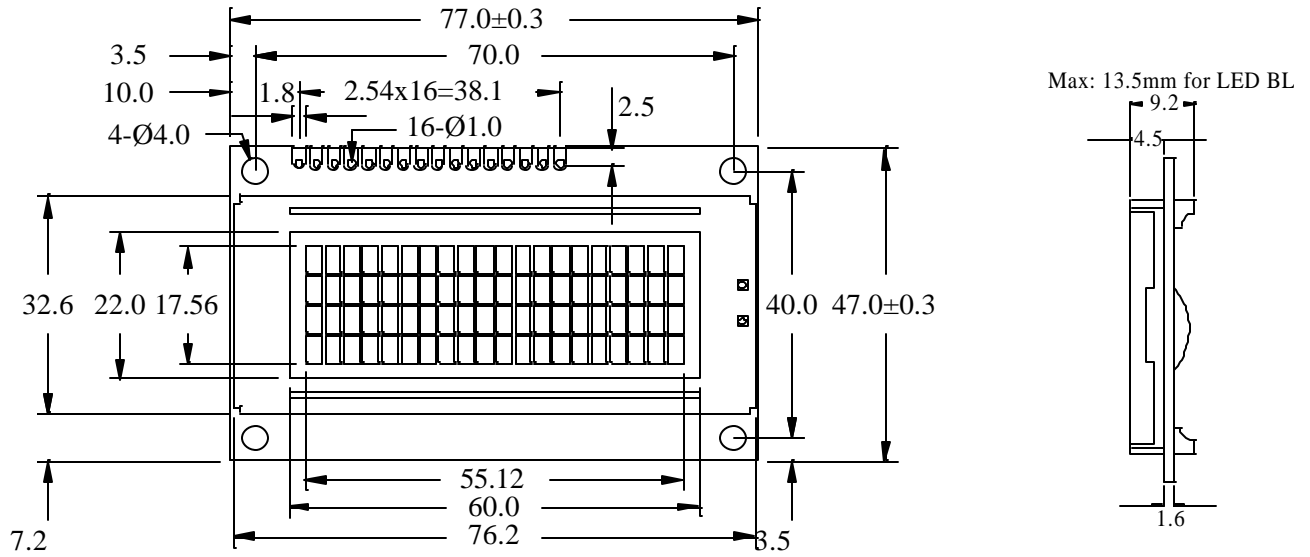
Forward Voltage	Forward Current	Power Dissipation	Peak Wavelength
4.2V (Typ)	235mA (Typ)	1000mW (Typ)	570nm (Typ)

Mechanical Specifications

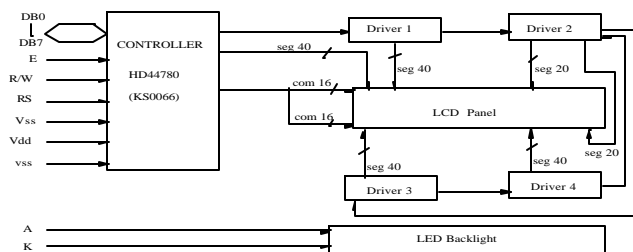
Item	Overall Size	Viewing Area	Character Size	Character Pitch	Dot Size
Specifications	77.0W x 47.0H x 9.2T (BL13.5T)	60.0W x 22.0H	2.30W x 4.03H	2.78W x 4.51H	0.42W x 0.46H

All dimensions are in mm. Tolerance is ± 0.3 Unless otherwise specified

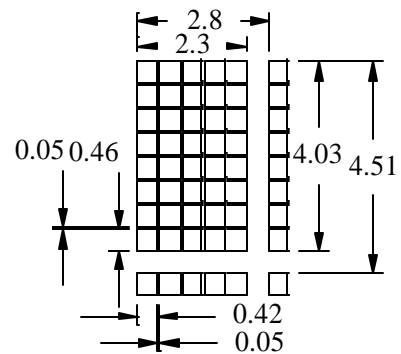
PC2004E-O (20x4) Character LCD Display



LCD Block Diagram



Dot Layout



PC2004F-O (20x4) Character LCD Display

Features *20 Character, 4 Line *View Angle 12H or 6H *TN or STN Fluid *Extended Temperature Range available *Several Character Types available	Absolute Maximum Ratings at T_A = 25 °C				
	Item	Symbol	Min	Max	Unit
	Power Supply (Logic)	Vdd	-0.3	7.0	V
	Power Supply (LCD)	Vo	Vdd - 15.0	Vdd + 0.3	V
	Input Voltage	Vi	- 0.3	Vdd	V
	Operating Temperature (Standard)	Topr	0	50	°C
	Storage Temperature (Standard)	Tstg	- 20	70	°C
	Extended Operating Temperature	Topr	- 20	70	°C
	Extended Storage Temperature	Tstg	- 30	80	°C

Electrical Characteristics at T_A = 25 °C, Vdd=5V±0.25V

Item	Symbol	Min	Typ	Max	Unit
Power Supply (Logic)	Vdd	4.5	5.0	5.5	V
Supply Current	Idd	2.0	—	—	mA
LCD Driving Voltage	Vdd - Vo	—	—	13.0	V
Input Voltage “H”	Vih	2.2	—	Vdd	V
Input Voltage “L”	Vil	—	—	0.6	V
Output Voltage “H”	Voh	2.4	—	—	V
Output Voltage “L”	Vol	—	—	0.4	V

Interface Pin Connection

No	Symbol	Function	No	Symbol	Function
1	Vss	Power Supply (GND)	9	DB2	Data Bus Line 2
2	Vdd	Power Supply (+5V)	10	DB3	Data Bus Line 3
3	Vo	Contrast Adjust	11	DB4	Data Bus Line 4
4	RS	Instruction/Register Select	12	DB5	Data Bus Line 5
5	R/W	Read/Write	13	DB6	Data Bus Line 6
6	E	Enable Signal	14	DB7	Data Bus Line 7
7	DB0	Data Bus Line 0	15	A	Power Supply for LED Backlight (+)
8	DB1	Data Bus Line 1	16	K	Power Supply for LED Backlight (-)

LED Backlight Specifications

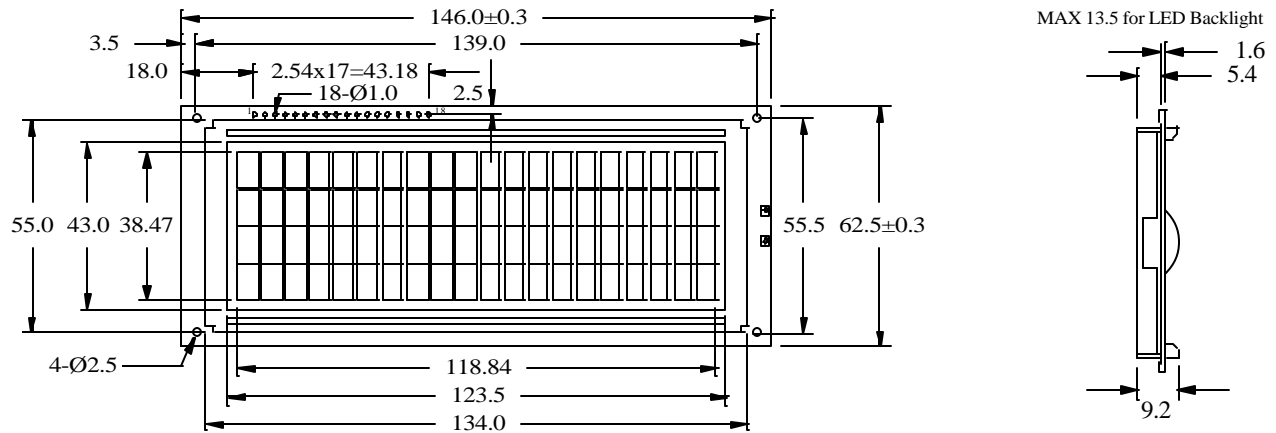
Forward Voltage	Forward Current	Power Dissipation	Peak Wavelength
4.2V (Typ)	710mA (Typ)	3000mW (Typ)	570nm (Typ)

Mechanical Specifications

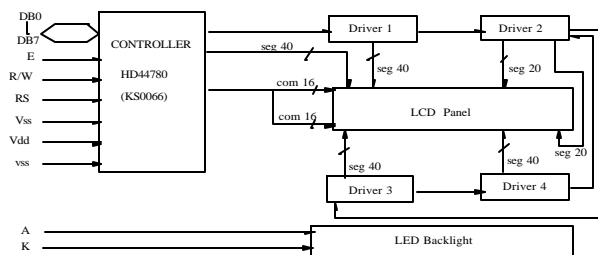
Item	Overall Size	Viewing Area	Character Size	Character Pitch	Dot Size
Specifications	146.0W x 62.5H x 9.2T (BL13.5T)	123.5W x 43.0H	4.84W x 9.22H	6.0W x 9.75H	0.92W x 1.1H

All dimensions are in mm. Tolerance is ± 0.3 Unless otherwise specified

PC2004F-O (20x4) Character LCD Display



LCD Block Diagram



Dot Layout

