

## PC1601A-L (16x1) Character LCD Display

| Features | Absolute Maximum Ratings at T <sub>A</sub> = 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   |
|          |                                                    |        |           |          |      |

\*16 Character, 1 Line  
 \*View Angle 12H or 6H  
 \*TN or STN Fluid  
 \*Extended Temperature Range available  
 \*Several Character Types available  
 \*LED or EL Backlight available

### Electrical Characteristics at T<sub>A</sub> = 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      | —   | 1.2 | 2.5 | 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

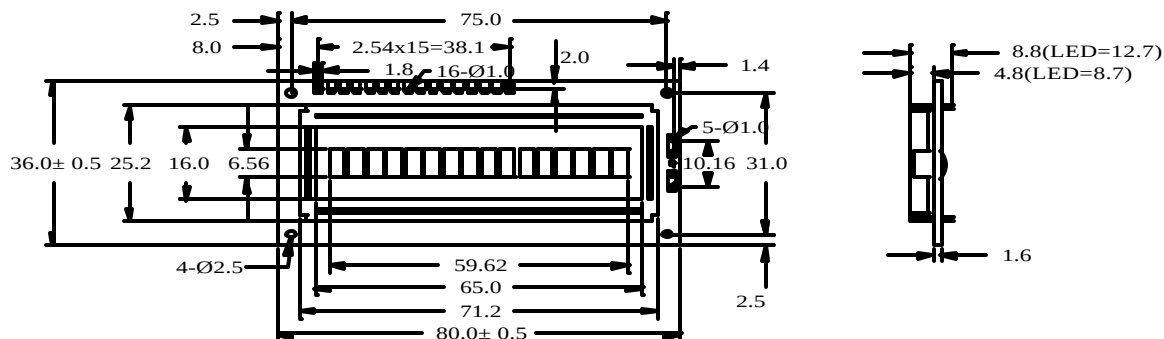
| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
|-----------------|-----------------|-------------------|-----------------|
| 4.2V (Typ)      | 195mA (Max)     | 900mW (Max)       | 570nm (Typ)     |

### Mechanical Specifications

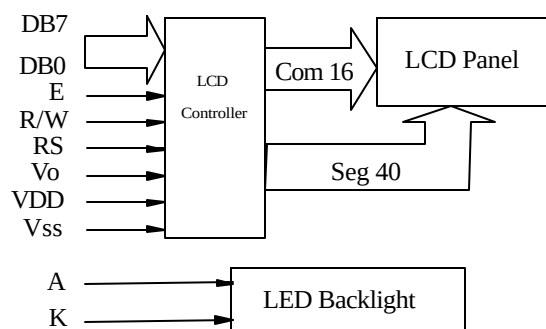
| Item           | Overall Size                   | Viewing Area  | Character Size | Character Pitch | Dot Size      |
|----------------|--------------------------------|---------------|----------------|-----------------|---------------|
| Specifications | 80.0W x 36.0H x 8.8T (BL12.7T) | 65.0W x 16.0H | 3.07W x 6.56H  | 3.77W x 6.56H   | 0.55W x 0.75H |

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

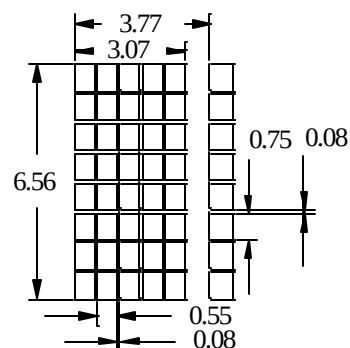
## PC1601A-L (16x1) Character LCD Display



LCD Block Diagram



Dot Layout



## PC1601B-O (16x1) Character LCD Display

| <b>Features</b><br><b>*16 Character, 1 Line</b><br><b>*View Angle 12H or 6H</b><br><b>*TN or STN Fluid</b><br><b>*Extended Temperature Range available</b><br><b>*Several Character Types available</b> | Absolute Maximum Ratings at T <sub>A</sub> = 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   |
|                                                                                                                                                                                                         | <b>Extended Operating Temperature</b>              | Topr   | - 20       | 70        | °C   |
|                                                                                                                                                                                                         | <b>Extended Storage Temperature</b>                | Tstg   | - 30       | 80        | °C   |

### Electrical Characteristics at T<sub>A</sub> = 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

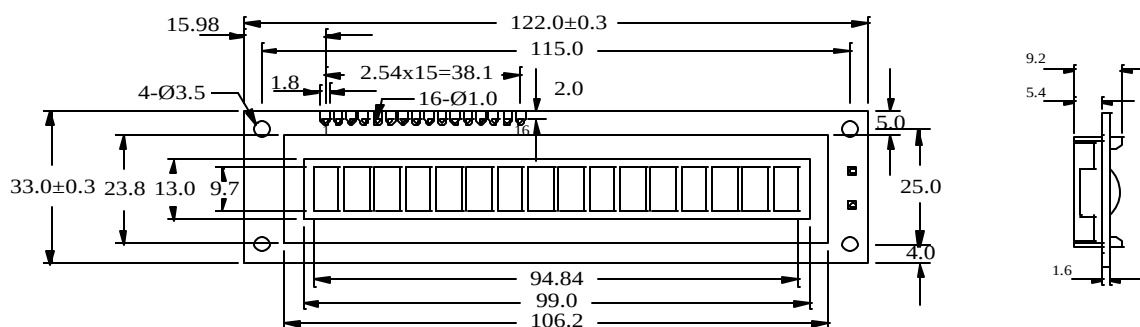
| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
|-----------------|-----------------|-------------------|-----------------|
| 4.2V (Typ)      | 235mA (Typ)     | 987mW (Typ)       | 570nm (Typ)     |

### Mechanical Specifications

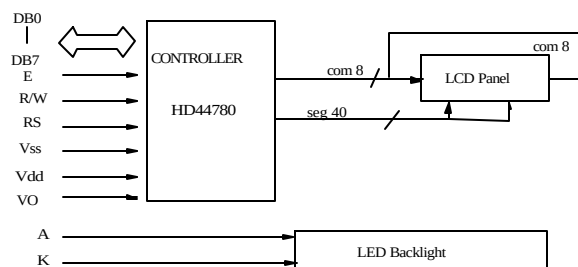
| Item           | Overall Size                    | Viewing Area  | Character Size | Character Pitch | Dot Size     |
|----------------|---------------------------------|---------------|----------------|-----------------|--------------|
| Specifications | 122.0W x 33.0H x 9.2T (BL13.5T) | 99.0W x 13.0H | 4.84W x 8.06H  | 6.0W x 8.56H    | 0.92W x 1.1H |

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

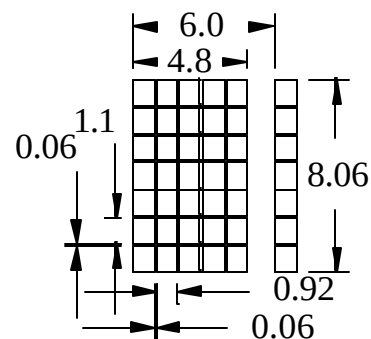
## PC1601B-O (16x1) Character LCD Display



### LCD Block Diagram



### Dot Layout



## PC1601C-L (16x1) Character LCD Display

| Features | Absolute Maximum Ratings at T <sub>A</sub> = 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 <sub>A</sub> = 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      | —   | 1.2 | 2.5 | 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    |

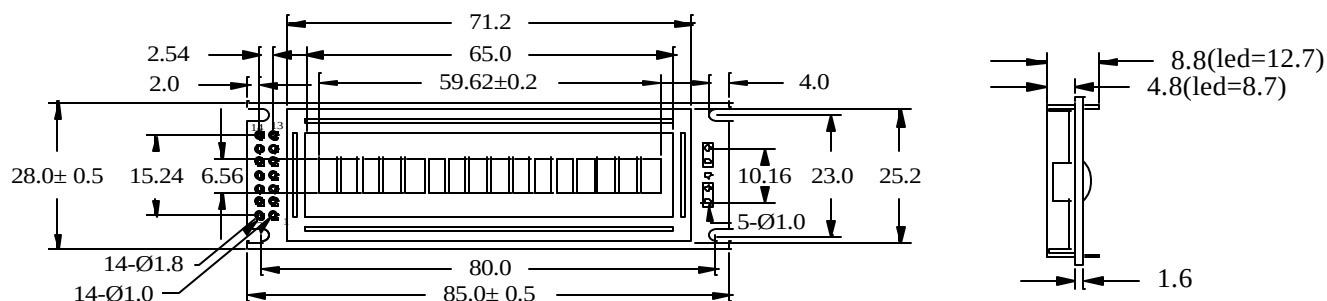
| Interface Pin Connection |        |                             |    |        |                                    |
|--------------------------|--------|-----------------------------|----|--------|------------------------------------|
| No                       | Symbol | Function                    | 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)                   | 195mA (Max)     | 900mW (Max)       | 570nm (Typ)     |

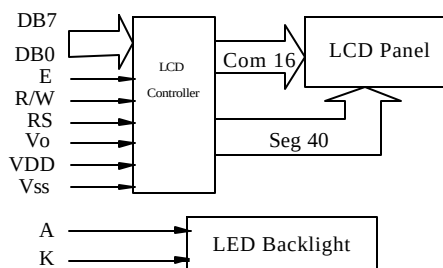
| Mechanical Specifications |                                |               |                |                 |               |
|---------------------------|--------------------------------|---------------|----------------|-----------------|---------------|
| Item                      | Overall Size                   | Viewing Area  | Character Size | Character Pitch | Dot Size      |
| Specifications            | 85.0W x 28.0H x 8.8T (BL12.7T) | 65.0W x 16.0H | 3.07W x 6.56H  | 3.77W x 6.56H   | 0.55W x 0.75H |

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

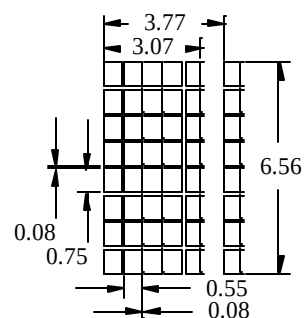
## PC1601C-L (16x1) Character LCD Display



### LCD Block Diagram



### Dot Layout



## PC1601D-L (16x1) Character LCD Display

| Features | Absolute Maximum Ratings at T <sub>A</sub> = 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   |
|          |                                                    |        |           |          |      |

\*16 Character, 1 Line  
\*View Angle 12H or 6H  
\*TN or STN Fluid  
\*Extended Temperature Range available  
\*Several Character Types available  
\*LED or EL Backlight available

### Electrical Characteristics at T<sub>A</sub> = 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      | —   | 1.2 | 2.5 | 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

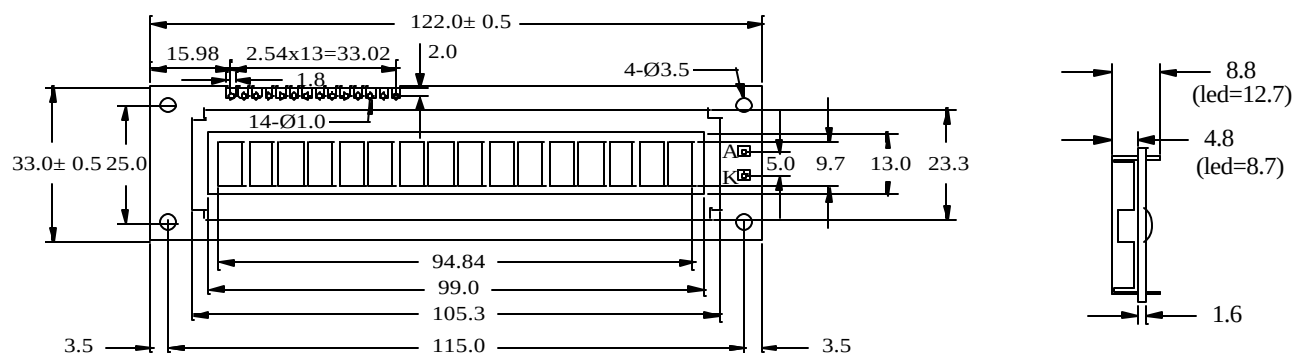
| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
|-----------------|-----------------|-------------------|-----------------|
| 4.2V (Typ)      | mA (Max)        | mW (Max)          | 570nm (Typ)     |

### Mechanical Specifications

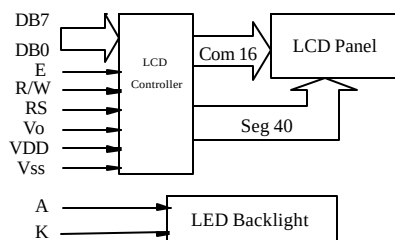
| Item           | Overall Size                    | Viewing Area  | Character Size | Character Pitch | Dot Size      |
|----------------|---------------------------------|---------------|----------------|-----------------|---------------|
| Specifications | 122.0W x 33.0H x 9.5T (BL13.5T) | 99.0W x 13.0H | 4.84W x 9.70H  | 6.0W x 9.70H    | 0.92W x 1.16H |

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

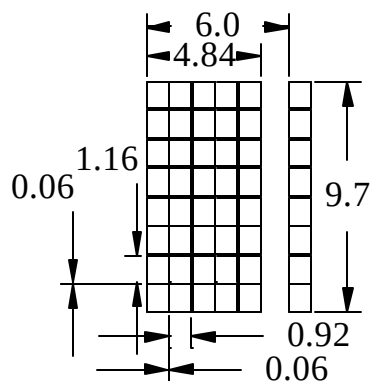
## PC1601D-L (16x1) Character LCD Display



LCD Block Diagram



Dot Layout





## PC1601E-O (16x1) Character LCD Display

| <b>Features</b><br><b>*16 Character, 1 Line</b><br><b>*View Angle 12H or 6H</b><br><b>*TN or STN Fl;uid</b><br><b>*Extended Temperature Range available</b><br><b>*Several Character Types available</b> | Absolute Maximum Ratings at T <sub>A</sub> = 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   |
|                                                                                                                                                                                                          | <b>Extended Operating Temperature</b>              | Topr   | - 20       | 70        | °C   |
|                                                                                                                                                                                                          | <b>Extended Storage Temperature</b>                | Tstg   | - 30       | 80        | °C   |

### Electrical Characteristics at T<sub>A</sub> = 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

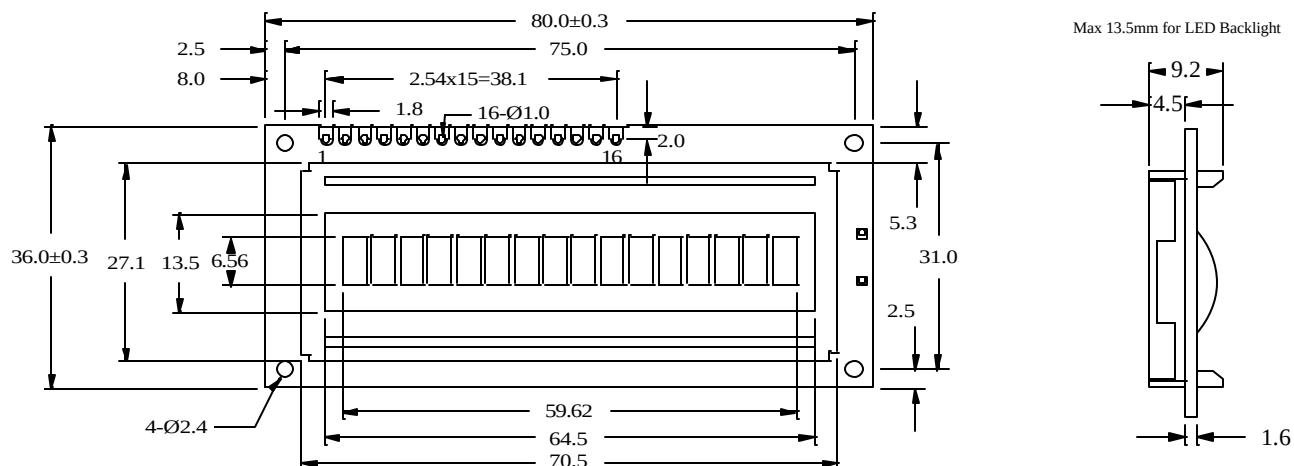
| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
|-----------------|-----------------|-------------------|-----------------|
| 4.2V (Typ)      | 185mA (Typ)     | 777mW (Typ)       | 570nm (Typ)     |

### Mechanical Specifications

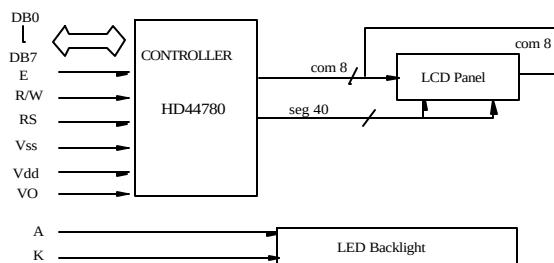
| Item           | Overall Size                   | Viewing Area  | Character Size | Character Pitch | Dot Size      |
|----------------|--------------------------------|---------------|----------------|-----------------|---------------|
| Specifications | 80.0W x 36.0H x 9.2T (BL13.5T) | 64.5W x 13.5H | 3.07W x 6.56H  | 3.77W x 6.56H   | 0.55W x 0.75H |

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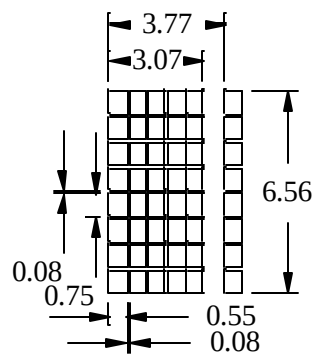
## PC1601E-O (16x1) Character LCD Display



### LCD Block Diagram



### Dot Layout



## PC1601F-O (16x1) Character LCD Display

| <b>Features</b><br><b>*16 Character, 1 Line</b><br><b>*View Angle 12H or 6H</b><br><b>*TN or STN Fluid</b><br><b>*Extended Temperature Range available</b><br><b>*Several Character Types available</b> | Absolute Maximum Ratings at T <sub>A</sub> = 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   |
|                                                                                                                                                                                                         | <b>Extended Operating Temperature</b>              | Topr   | - 20       | 70        | °C   |
|                                                                                                                                                                                                         | <b>Extended Storage Temperature</b>                | Tstg   | - 30       | 80        | °C   |

### Electrical Characteristics at T<sub>A</sub> = 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

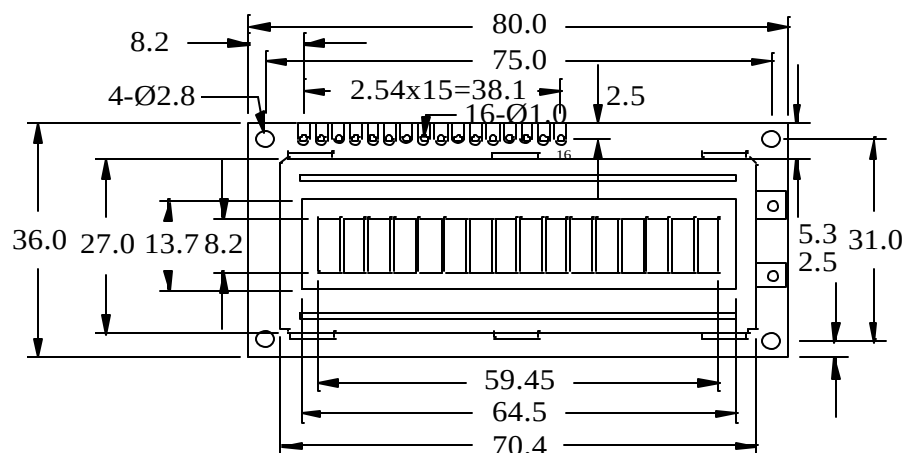
| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
|-----------------|-----------------|-------------------|-----------------|
| 4.2V (Typ)      | 180mA (Typ)     | 756mW (Typ)       | 570nm (Typ)     |

### Mechanical Specifications

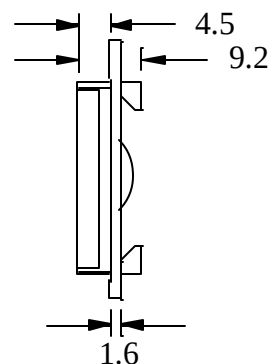
| Item           | Overall Size                   | Viewing Area  | Character Size | Character Pitch | Dot Size    |
|----------------|--------------------------------|---------------|----------------|-----------------|-------------|
| Specifications | 80.0W x 36.0H x 9.2T (BL13.5T) | 64.5W x 13.7H | 3.20W x 8.20H  | 3.75W x 8.2H    | 0.6W x 0.7H |

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

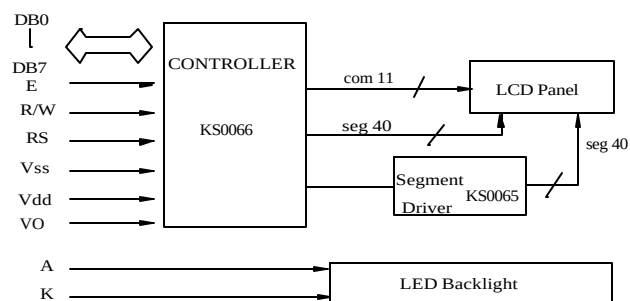
## PC1601F-O (16x1) Character LCD Display



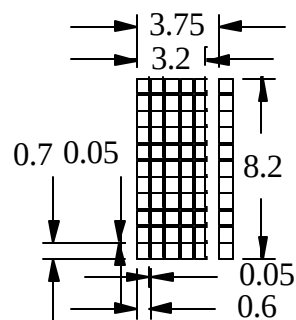
Max 13.5 for LED Backlight



### LCD Block Diagram



### Dot Layout



## PC1601G-O (16x1) Character LCD Display

| <b>Features</b><br><b>*16 Character, 1 Line</b><br><b>*View Angle 12H or 6H</b><br><b>*TN or STN Fluid</b><br><b>*Extended Temperature Range available</b><br><b>*Several Character Types available</b> | Absolute Maximum Ratings at T <sub>A</sub> = 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   |
|                                                                                                                                                                                                         | <b>Extended Operating Temperature</b>              | Topr   | - 20       | 70        | °C   |
|                                                                                                                                                                                                         | <b>Extended Storage Temperature</b>                | Tstg   | - 30       | 80        | °C   |

### Electrical Characteristics at T<sub>A</sub> = 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

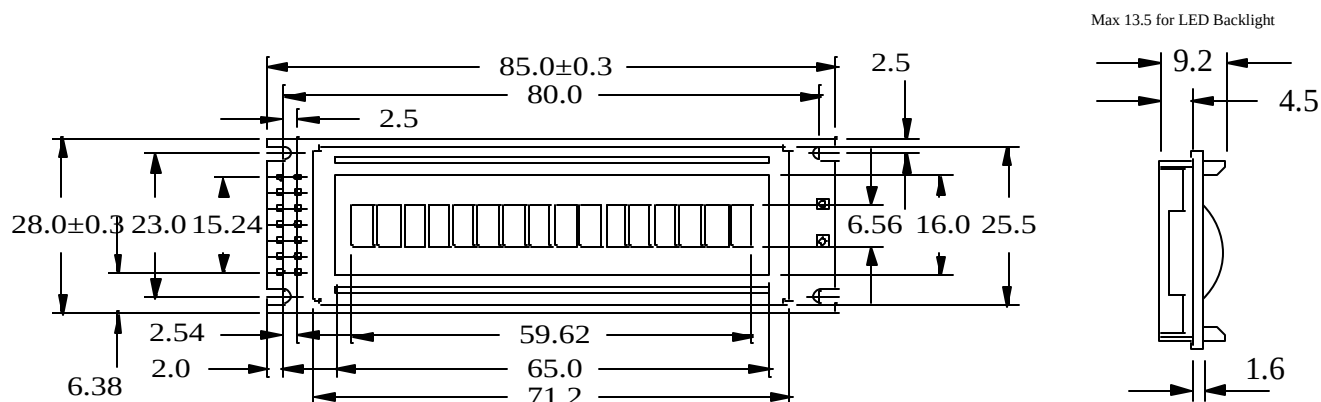
| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
|-----------------|-----------------|-------------------|-----------------|
| 4.2V (Typ)      | 170mA (Typ)     | 714mW (Typ)       | 570nm (Typ)     |

### Mechanical Specifications

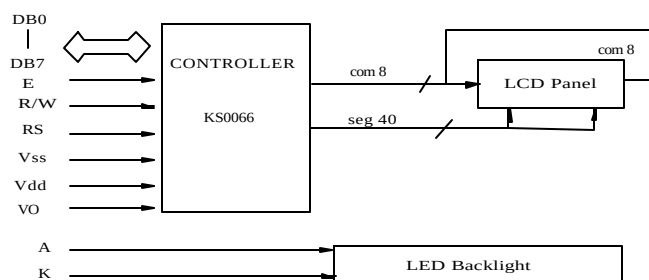
| Item           | Overall Size                   | Viewing Area  | Character Size | Character Pitch | Dot Size      |
|----------------|--------------------------------|---------------|----------------|-----------------|---------------|
| Specifications | 85.0W x 28.0H x 9.2T (BL13.5T) | 65.0W x 16.0H | 3.07W x 6.56H  | 3.77W x 6.56H   | 0.55W x 0.75H |

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

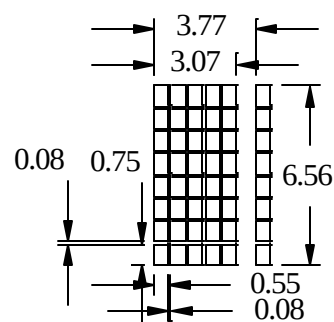
## PC1601G-O (16x1) Character LCD Display



LCD Block Diagram



Dot Layout



## PC1601H-O (16x1) Character LCD Display

| <b>Features</b><br><br><b>*16 Character, 1 Line</b><br><b>*View Angle 12H or 6H</b><br><b>*TN or STN Fluid</b><br><b>*Extended Temperature Range available</b><br><b>*Several Character Types available</b> | Absolute Maximum Ratings at T <sub>A</sub> = 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   |
|                                                                                                                                                                                                             | <b>Extended Operating Temperature</b>              | Topr   | - 20       | 70        | °C   |
|                                                                                                                                                                                                             | <b>Extended Storage Temperature</b>                | Tstg   | - 30       | 80        | °C   |

### Electrical Characteristics at T<sub>A</sub> = 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

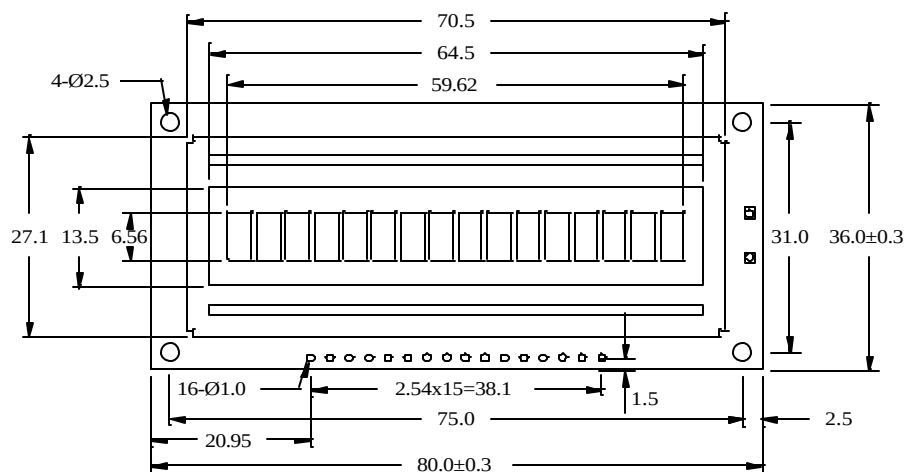
| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
|-----------------|-----------------|-------------------|-----------------|
| 4.2V (Typ)      | 185mA (Typ)     | 777mW (Typ)       | 570nm (Typ)     |

### Mechanical Specifications

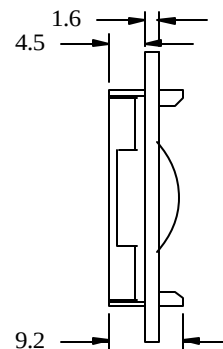
| Item           | Overall Size                   | Viewing Area  | Character Size | Character Pitch | Dot Size      |
|----------------|--------------------------------|---------------|----------------|-----------------|---------------|
| Specifications | 80.0W x 36.0H x 9.2T (BL13.5T) | 64.5W x 13.5H | 3.07W x 6.56H  | 3.77W x 6.56H   | 0.55W x 0.75H |

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

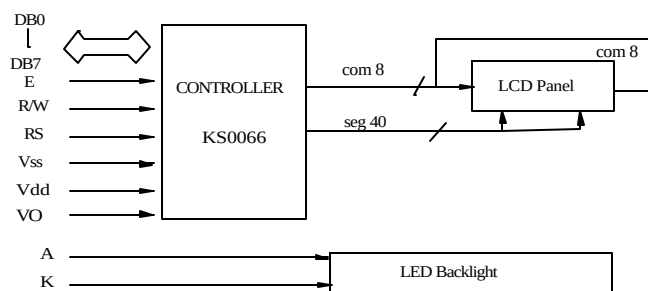
## PC1601H-O (16x1) Character LCD Display



Max 13.5 for LED Backlight



### LCD Block Diagram



### Dot Layout

