

## PG12864A-L (128x64) Graphic LCD Display

|   |  |         |      |      |      |
|---|--|---------|------|------|------|
| <b>Features</b><br>*128 Dots x 64 Dots<br>*View Angle 12H or 6H<br>*TN or STN Fluid<br>*Extended Temperature Range available<br>*8 Bit Parallel Interface<br>*LED or EL Backlight available | <b>Absolute Maximum Ratings at T<sub>A</sub> = 25 °C</b> |         |      |      |      |
|   | Item   | Symbol  | Min  | Max  | Unit |
|   | Power Supply (Logic)                                     | Vdd-Vss | 0    | 7.0  | V    |
|   | Power Supply (LCD)                                       | Vdd-Vo  | 0    | 14.0 | V    |
|   | Input Voltage  | Vi      | 0    | 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-Vss  | 4.5 | 5.0 | 5.5  | V    |
| Supply Current       | Idd      | —   | 6.0 | 10.0 | mA   |
| LCD Driving Voltage  | Vdd - Vo | 7.6 | 8.3 | 9.2  | 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)             | 11 | DB4    | Data Bus Line 4 (H/L)             |
| 2  | Vdd    | Power Supply (+5V)             | 12 | DB5    | Data Bus Line 5 (H/L)             |
| 3  | Vo     | Contrast Adjustment Voltage    | 13 | DB6    | Data Bus Line 6 (H/L)             |
| 4  | C/D    | Data (H), Instruction Code (L) | 14 | DB7    | Data Bus Line 7 (H/L)             |
| 5  | R/D    | Read (L)                       | 15 | CE     | Enable Signal (L)                 |
| 6  | WR     | Write (L)                      | 16 | RST    | Reset Signal (L)                  |
| 7  | DB0    | Data Bus Line 0 (H/L)          | 17 | Vee    | Power Supply Voltage for LCD      |
| 8  | DB1    | Data Bus Line 1 (H/L)          | 18 | MD     | 32 (H) / 40 (L) Select of Columns |
| 9  | DB2    | Data Bus Line 2 (H/L)          | 19 | FS     | 6*8 (H) / 8*8 (L) Select of Font  |
| 10 | DB3    | Data Bus Line 3 (H/L)          | 20 | HLT    | Stop the Oscillation of Clock (L) |

### LED Backlight Specifications

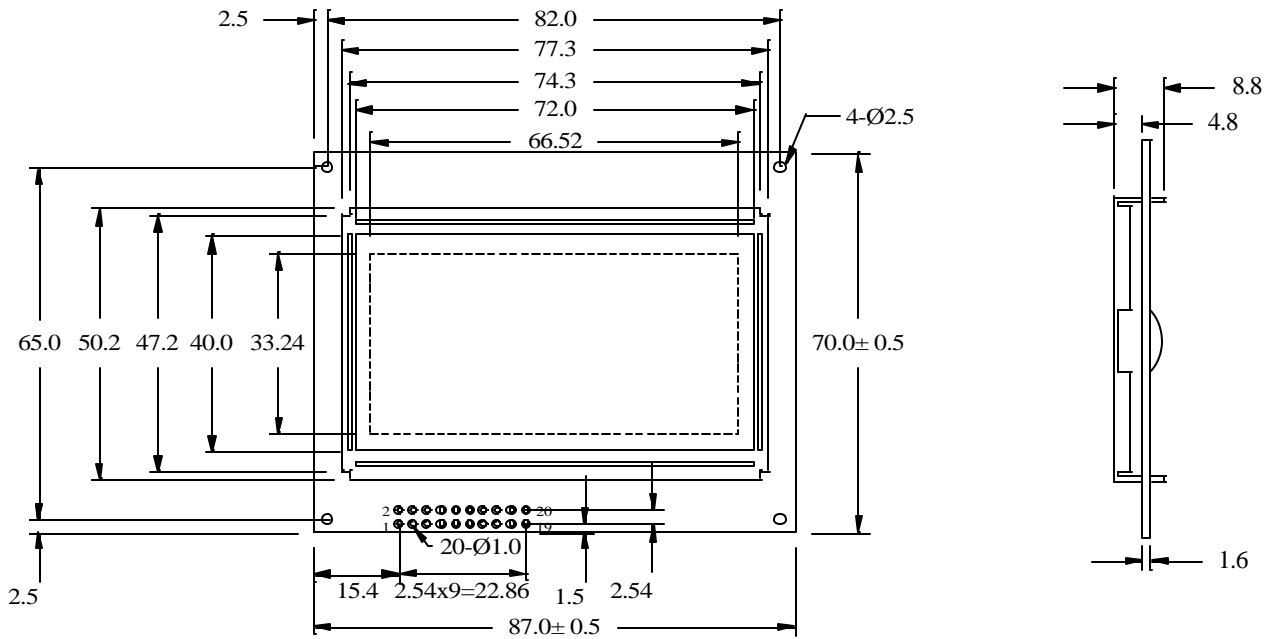
| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
|-----------------|-----------------|-------------------|-----------------|
| 4.2V (Typ)      | 660mA (Max)     | 2650mW (Max)      | 570nm (Typ)     |

### Mechanical Specifications

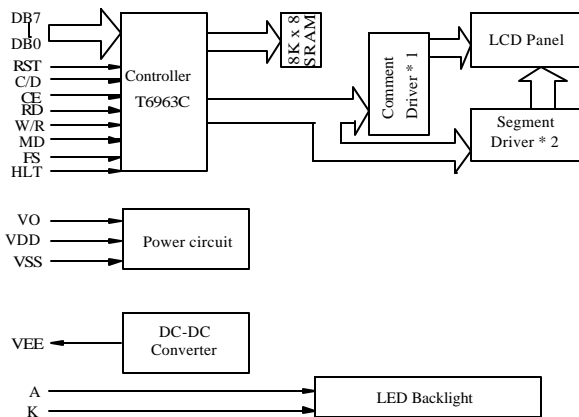
| Item           | Overall Size                   | Viewing Area  | Active Area     | Dot Size      | Dot Pitch     |
|----------------|--------------------------------|---------------|-----------------|---------------|---------------|
| Specifications | 87.0W x 70.0H x 8.8T (BL12.7T) | 72.0W x 40.0H | 66.52W x 33.24H | 0.48W x 0.48H | 0.52W x 0.52H |

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

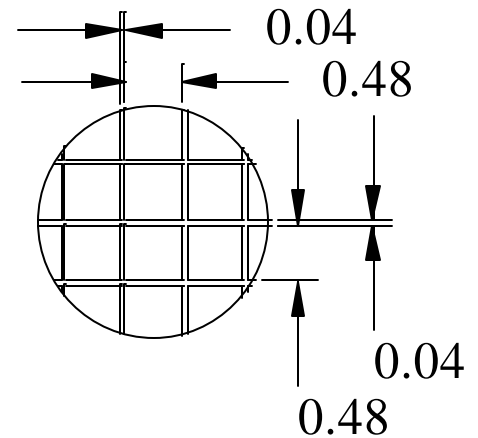
## PG12864A-L (128x64) Graphic LCD Display



LCD Block Diagram



Dot Layout



## PG12864B-L (128x64) Graphic LCD Display

|   |  |         |      |      |      |
|---|--|---------|------|------|------|
| <b>Features</b><br>*128 Dots x 64 Dots<br>*View Angle 12H or 6H<br>*TN or STN Fluid<br>*Extended Temperature Range available<br>*8 Bit Parallel Interface<br>*LED or EL Backlight available | <b>Absolute Maximum Ratings at T<sub>A</sub> = 25 °C</b> |         |      |      |      |
|   | Item   | Symbol  | Min  | Max  | Unit |
|   | Power Supply (Logic)                                     | Vdd-Vss | 0    | 7.0  | V    |
|   | Power Supply (LCD)                                       | Vdd-Vo  | 0    | 14.0 | V    |
|   | Input Voltage  | Vi      | 0    | 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-Vss  | 4.5 | 5.0 | 5.5  | V    |
| Supply Current       | Idd      | —   | 4.5 | 10.0 | mA   |
| LCD Driving Voltage  | Vdd - Vo | 7.6 | 8.3 | 9.2  | 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)                   | 11 | DB4    | Data Bus Line 4 (H/L)              |
| 2  | Vdd    | Power Supply (+5V)                   | 12 | DB5    | Data Bus Line 5 (H/L)              |
| 3  | Vo     | Operating Voltage for LCD (Variable) | 13 | DB6    | Data Bus Line 6 (H/L)              |
| 4  | D/I    | Data (H), Instruction Code (L)       | 14 | DB7    | Data Bus Line 7 (H/L)              |
| 5  | R/W    | Read (H) / Write (L)                 | 15 | CS1    | Select Signal for IC1 (H)          |
| 6  | E      | Enable Signal (H to L)               | 16 | CS2    | Select Signal for IC2 (H)          |
| 7  | DB0    | Data Bus Line 0 (H/L)                | 17 | RES    | Reset Signal (L)                   |
| 8  | DB1    | Data Bus Line 1 (H/L)                | 18 | Vout   | Power Supply Voltage for LCD       |
| 9  | DB2    | Data Bus Line 2 (H/L)                | 19 | A      | Power Supply for LED Backlight (+) |
| 10 | DB3    | Data Bus Line 3 (H/L)                | 20 | K      | Power Supply for LED Backlight (-) |

### LED Backlight Specifications

| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
|-----------------|-----------------|-------------------|-----------------|
| 4.2V (Typ)      | 660mA (Max)     | 2650mW (Max)      | 570nm (Typ)     |

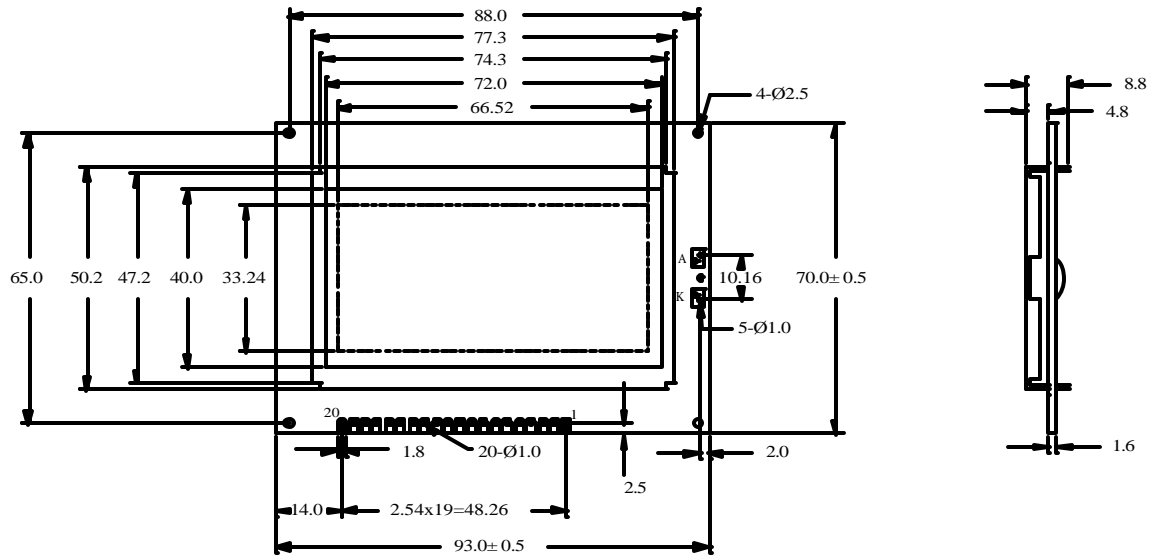
### Mechanical Specifications

| Item           | Overall Size                   | Viewing Area  | Active Area     | Dot Size      | Dot Pitch     |
|----------------|--------------------------------|---------------|-----------------|---------------|---------------|
| Specifications | 93.0W x 70.0H x 8.8T (BL12.7T) | 72.0W x 40.0H | 66.52W x 33.24H | 0.48W x 0.48H | 0.52W x 0.52H |

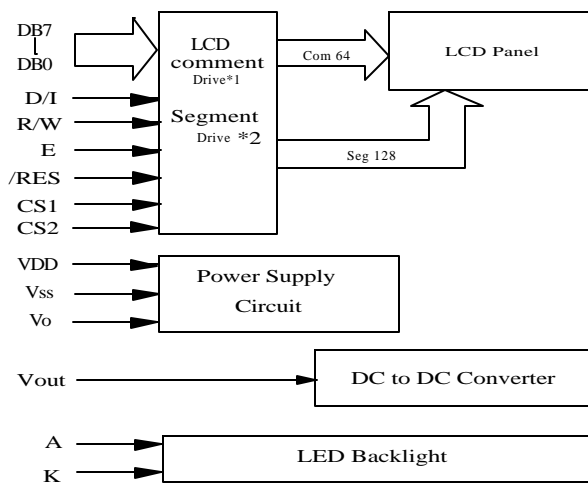
All dimensions are in mm. Tolerance is ± 0.3 Unless otherwise specified

## PG12864B-L (128x64) Graphic LCD Display

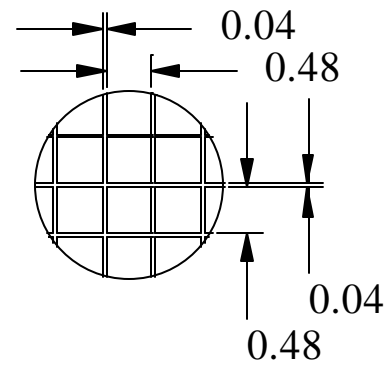
All dimensions are in mm. Tolerance is  $\pm 0.3$  Unless otherwise specified



### LCD Block Diagram



### Dot Layout



## PG12864C-L (128x64) Graphic LCD Display

| <b>Features</b><br>*128 Dots x 64 Dots<br>*View Angle 12H or 6H<br>*TN or STN Fluid<br>*Extended Temperature Range available<br>*8 Bit Parallel Interface | Absolute Maximum Ratings at T <sub>A</sub> = 25 °C |         |      |      |      |
|---|--|---------|------|------|------|
|   | Item   | Symbol  | Min  | Max  | Unit |
|   | Power Supply (Logic)                               | Vdd-Vss | 0    | 7.0  | V    |
|   | Power Supply (LCD)                                 | Vdd-Vo  | 0    | 14.0 | V    |
|   | Input Voltage                                      | Vi      | 0    | 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-Vss  | 4.5 | 5.0 | 5.5  | V    |
| Supply Current       | Idd      | —   | 4.5 | 10.0 | mA   |
| LCD Driving Voltage  | Vdd - Vo | 7.6 | 8.3 | 9.2  | 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)                   | 11 | DB4    | Data Bus Line 4 (H/L)              |
| 2  | Vdd    | Power Supply (+5V)                   | 12 | DB5    | Data Bus Line 5 (H/L)              |
| 3  | Vo     | Operating Voltage for LCD (Variable) | 13 | DB6    | Data Bus Line 6 (H/L)              |
| 4  | D/I    | Data (H), Instruction Code (L)       | 14 | DB7    | Data Bus Line 7 (H/L)              |
| 5  | R/W    | Read (H) / Write (L)                 | 15 | CS1    | Select Signal for IC1 (H)          |
| 6  | E      | Enable Signal (H to L)               | 16 | CS2    | Select Signal for IC2 (H)          |
| 7  | DB0    | Data Bus Line 0 (H/L)                | 17 | RES    | Reset Signal (L)                   |
| 8  | DB1    | Data Bus Line 1 (H/L)                | 18 | Vout   | Power Supply Voltage for LCD       |
| 9  | DB2    | Data Bus Line 2 (H/L)                | 19 | A      | Power Supply for LED Backlight (+) |
| 10 | DB3    | Data Bus Line 3 (H/L)                | 20 | K      | Power Supply for LED Backlight (-) |

### LED Backlight Specifications

| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
|-----------------|-----------------|-------------------|-----------------|
| 4.2V (Typ)      | 660mA (Max)     | 2650mW (Max)      | 570nm (Typ)     |

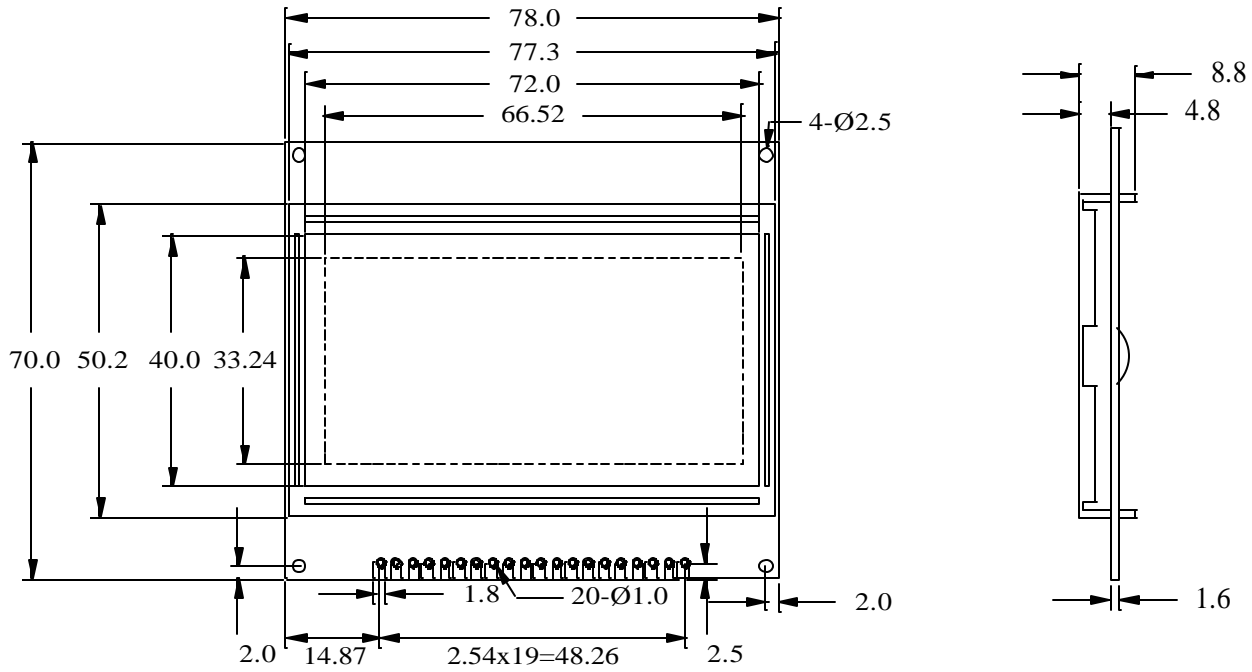
### Mechanical Specifications

| Item           | Overall Size                   | Viewing Area  | Active Area     | Dot Size      | Dot Pitch     |
|----------------|--------------------------------|---------------|-----------------|---------------|---------------|
| Specifications | 78.0W x 70.0H x 8.8T (BL12.7T) | 72.0W x 40.0H | 66.52W x 33.24H | 0.48W x 0.48H | 0.52W x 0.52H |

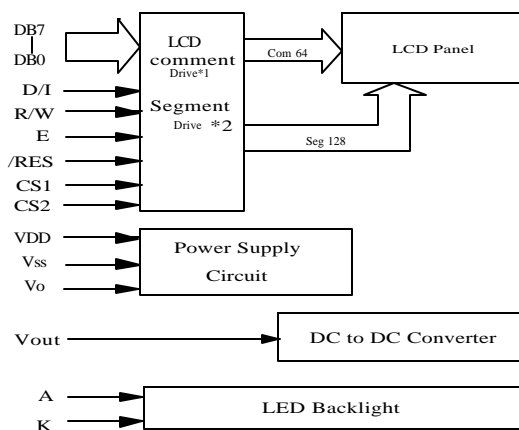
All dimensions are in mm. Tolerance is ± 0.3 Unless otherwise specified

## PG12864C-L (128x64) Graphic LCD Display

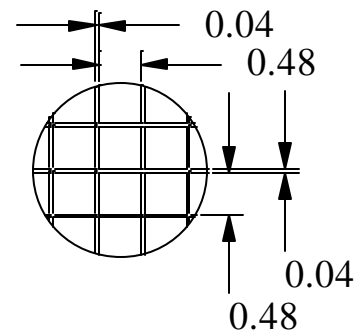
All dimensions are in mm. Tolerance is  $\pm 0.3$  Unless otherwise specified



### LCD Block Diagram



### Dot Layout



## PG12864D-L (128x64) Graphic LCD Display

|   |  |         |      |      |      |
|---|--|---------|------|------|------|
| <b>Features</b><br>*128 Dots x 64 Dots<br>*View Angle 12H or 6H<br>*TN or STN Fluid<br>*Extended Temperature Range available<br>*8 Bit Parallel Interface<br>*LED or EL Backlight available | <b>Absolute Maximum Ratings at T<sub>A</sub> = 25 °C</b> |         |      |      |      |
|   | Item   | Symbol  | Min  | Max  | Unit |
|   | Power Supply (Logic)                                     | Vdd-Vss | 0    | 7.0  | V    |
|   | Power Supply (LCD)                                       | Vdd-Vo  | 0    | 18.0 | V    |
|   | Input Voltage  | Vi      | 0    | 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-Vss  | 4.5  | 5.0  | 5.5  | V    |
| Supply Current       | Idd      | —    | 6.0  | 10.0 | mA   |
| LCD Driving Voltage  | Vdd - Vo | 11.5 | 12.2 | 13.2 | 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 (+5V)                   | 11 | DB7    | Data Bus Line 7 (H/L)              |
| 2  | Vdd    | Power Supply (GND)                   | 12 | CS1    | Select Signal for IC1 (H)          |
| 3  | Vo     | Operating Voltage for LCD (Variable) | 13 | CS2    | Select Signal for IC2 (H)          |
| 4  | DB0    | Data Bus Line 0 (H/L)                | 14 | RES    | Reset Signal (L)                   |
| 5  | DB1    | Data Bus Line 1 (H/L)                | 15 | R/W    | Read (H), Write (L)                |
| 6  | DB2    | Data Bus Line 2 (H/L)                | 16 | D/I    | Data (H), Instruction Code (L)     |
| 7  | DB3    | Data Bus Line 3 (H/L)                | 17 | E      | Enable Signal (H to L)             |
| 8  | DB4    | Data Bus Line 4 (H/L)                | 18 | Vout   | Power Supply Voltage for LCD       |
| 9  | DB5    | Data Bus Line 5 (H/L)                | 19 | A      | Power Supply for LED Backlight (+) |
| 10 | DB6    | Data Bus Line 6 (H/L)                | 20 | K      | Power Supply for LED Backlight (-) |

### LED Backlight Specifications

|                 |                 |                   |                 |
|-----------------|-----------------|-------------------|-----------------|
| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
| 4.2V (Typ)      | 80mA (Max)      | 300mW (Max)       | 570nm (Typ)     |

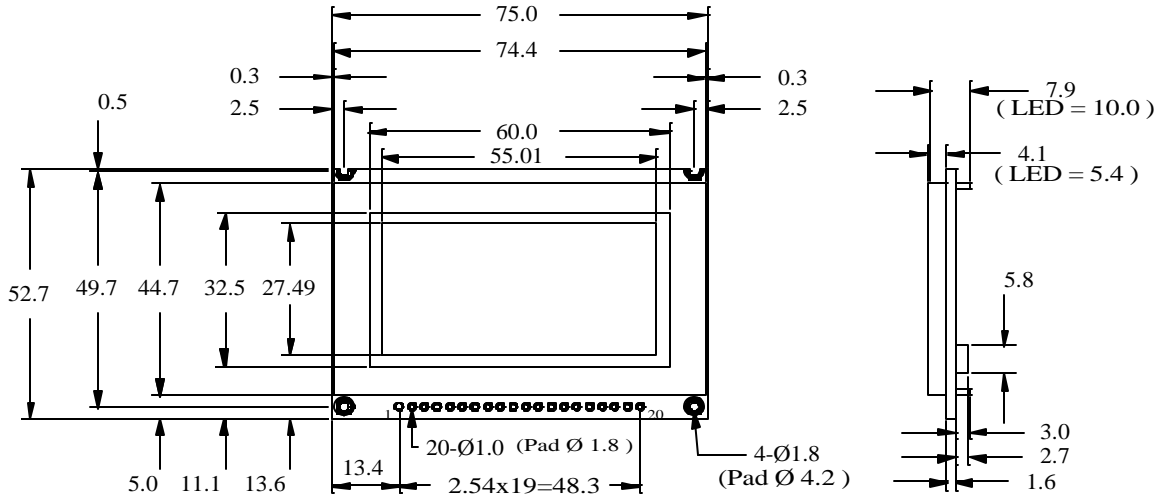
### Mechanical Specifications

| Item           | Overall Size                   | Viewing Area  | Active Area     | Dot Size      | Dot Pitch     |
|----------------|--------------------------------|---------------|-----------------|---------------|---------------|
| Specifications | 75.0W x 52.7H x 7.9T (BL10.0T) | 60.0W x 32.5H | 55.01W x 27.49H | 0.40W x 0.40H | 0.43W x 0.43H |

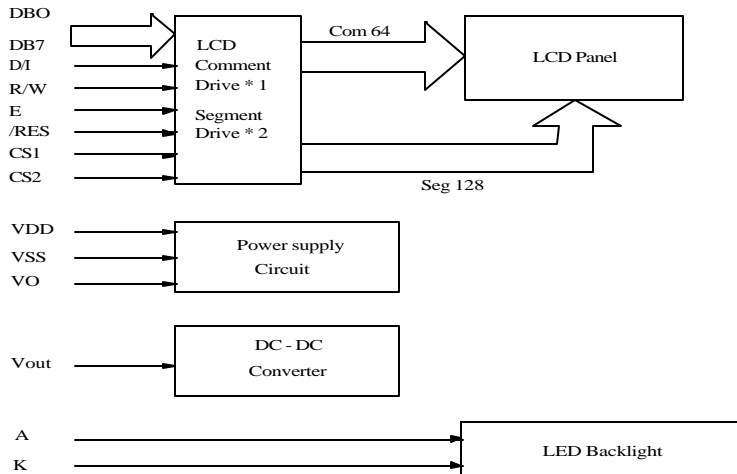
All dimensions are in mm. Tolerance is ± 0.3 Unless otherwise specified

## PG12864D-L (128x64) Graphic LCD Display

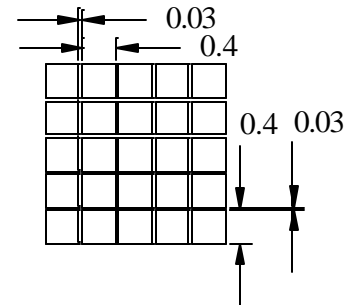
All dimensions are in mm. Tolerance is  $\pm 0.3$  Unless otherwise specified



### Block Diagram



### Character Dot Layout





## PG12864E-O (128x64) Graphic LCD Display

|  |  |         |            |           |      |
|--|--|---------|------------|-----------|------|
| <b>Features</b><br>*128 Dots x 64 Dots<br>*View Angle 12H or 6H<br>*TN or STN Fluid<br>*Extended Temperature Range available<br>*LED Backlight available | <b>Absolute Maximum Ratings at T<sub>A</sub> = 25 °C</b> |         |            |           |      |
|  | Item   | Symbol  | Min        | Max       | Unit |
|  | Power Supply (Logic)                                     | Vdd-Vss | -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-Vss  | 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)                 | 11 | DB4    | Data Bus Line 4                    |
| 2  | Vdd    | Power Supply (+5V)                 | 12 | DB5    | Data Bus Line 5                    |
| 3  | Vo     | Contrast Adjust                    | 13 | DB6    | Data Bus Line 6                    |
| 4  | RS     | Instruction / Data Register Select | 14 | DB7    | Data Bus Line 7                    |
| 5  | R/W    | Read / Write                       | 15 | CS1    | Selection Signal for IC1           |
| 6  | E      | Enable Signal                      | 16 | CS2    | Selection Signal for IC2           |
| 7  | DB0    | Data Bus Line 0                    | 17 | RST    | Reset                              |
| 8  | DB1    | Data Bus Line 1                    | 18 | Vee    | Power Supply for LCD Driving       |
| 9  | DB2    | Data Bus Line 2                    | 19 | A      | Power Supply for LCD Backlight (+) |
| 10 | DB3    | Data Bus Line 3                    | 20 | K      | Power Supply for LCD Backlight (-) |

### LED Backlight Specifications

|                 |                 |                   |                 |
|-----------------|-----------------|-------------------|-----------------|
| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
| 4.2V (Typ)      | 420mA (Typ)     | 1770mW (Typ)      | 570nm (Typ)     |

### Mechanical Specifications

| Item           | Overall Size                   | Viewing Area  | Active Area     | Dot Size      | Dot Pitch    |
|----------------|--------------------------------|---------------|-----------------|---------------|--------------|
| Specifications | 78.0W x 70.0H x 9.2T (BL13.5T) | 62.0W x 44.0H | 56.27W x 38.35H | 0.39W x 0.55H | 0.44W x 0.6H |

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



## PG12864F-O (128x64) Graphic LCD Display

| <b>Features</b><br>*128 Dots x 64 Dots<br>*View Angle 12H or 6H<br>*TN or STN Fluid<br>*Extended Temperature Range available<br>*LED Backlight available | Absolute Maximum Ratings at T <sub>A</sub> = 25 °C |         |            |           |      |
|--|--|---------|------------|-----------|------|
|  | Item   | Symbol  | Min        | Max       | Unit |
|  | Power Supply (Logic)                               | Vdd-Vss | -0.3       | 7.0       | V    |
|  | Power Supply (LCD)                                 | Vo      | Vdd - 15.0 | Vdd + 0.3 | V    |
|  | Input Voltage                                      | Vi      | -0.3       | Vdd + 0.3 | 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-Vss  | 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    |

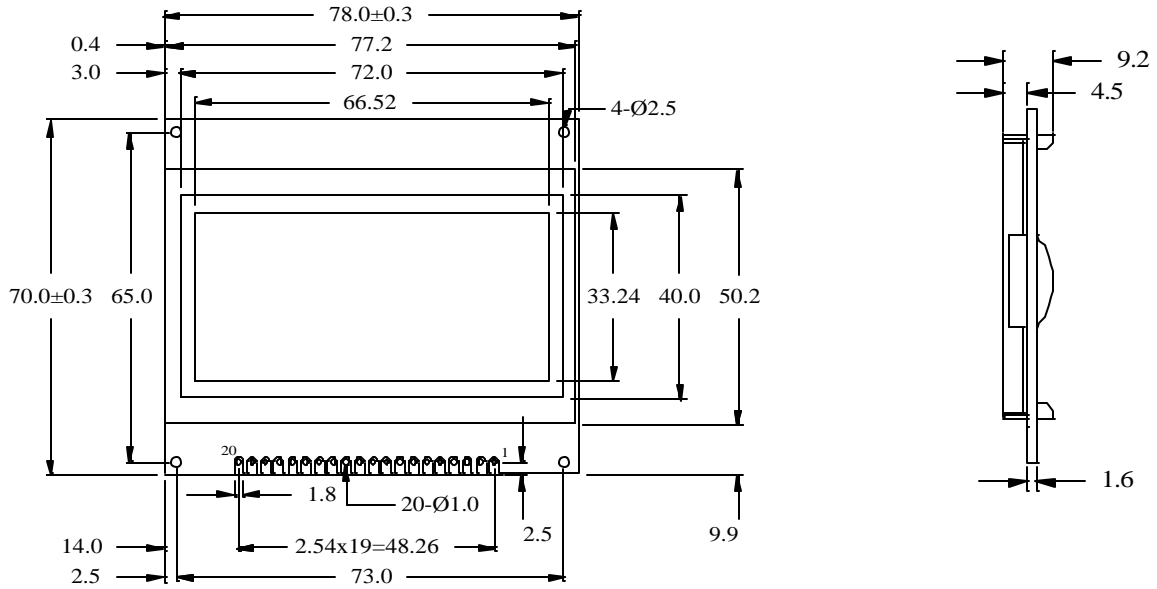
| Interface Pin Connection |        |                                    |    |        |                                    |
|--------------------------|--------|------------------------------------|----|--------|------------------------------------|
| No                       | Symbol | Function                           | No | Symbol | Function                           |
| 1                        | Vss    | Power Supply (GND)                 | 11 | DB4    | Data Bus Line 4                    |
| 2                        | Vdd    | Power Supply (+5V)                 | 12 | DB5    | Data Bus Line 5                    |
| 3                        | Vo     | Contrast Adjust                    | 13 | DB6    | Data Bus Line 6                    |
| 4                        | RS     | Instruction / Data Register Select | 14 | DB7    | Data Bus Line 7                    |
| 5                        | R/W    | Read / Write                       | 15 | CS1    | Selection Signal for IC1           |
| 6                        | E      | Enable Signal                      | 16 | CS2    | Selection Signal for IC2           |
| 7                        | DB0    | Data Bus Line 0                    | 17 | RST    | Reset                              |
| 8                        | DB1    | Data Bus Line 1                    | 18 | Vee    | Power Supply for LCD Driving       |
| 9                        | DB2    | Data Bus Line 2                    | 19 | A      | Power Supply for LCD Backlight (+) |
| 10                       | DB3    | Data Bus Line 3                    | 20 | K      | Power Supply for LCD Backlight (-) |

| LED Backlight Specifications |                 |                   |                 |
|------------------------------|-----------------|-------------------|-----------------|
| Forward Voltage              | Forward Current | Power Dissipation | Peak Wavelength |
| 4.2V (Typ)                   | 370mA (Typ)     | 1554mW (Typ)      | 570nm (Typ)     |

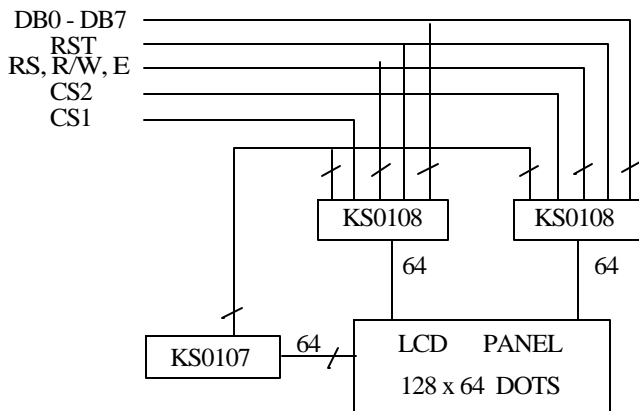
| Mechanical Specifications |                                |               |                 |               |               |
|---------------------------|--------------------------------|---------------|-----------------|---------------|---------------|
| Item                      | Overall Size                   | Viewing Area  | Active Area     | Dot Size      | Dot Pitch     |
| Specifications            | 78.0W x 70.0H x 9.2T (BL13.5T) | 72.0W x 40.0H | 66.52W x 33.24H | 0.48W x 0.48H | 0.52W x 0.52H |

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

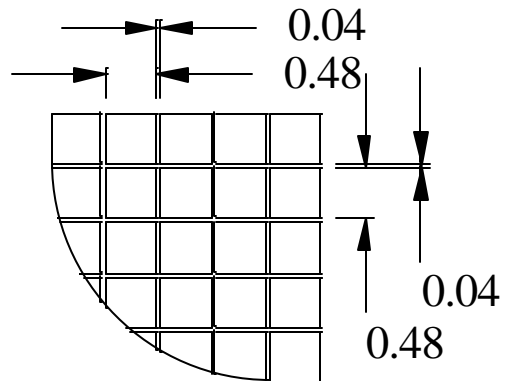
## PG12864F-O (128x64) Graphic LCD Display



### LCD Block Diagram



### Dot Layout



## PG12864G-O (128x64) Graphic LCD Display

|   |  |         |            |           |      |
|---|--|---------|------------|-----------|------|
| Features<br>*128 Dots x 64 Dots<br>*View Angle 12H or 6H<br>*TN or STN Fluid<br>*Extended Temperature Range available<br>*LED Backlight available | <b>Absolute Maximum Ratings at T<sub>A</sub> = 25 °C</b> |         |            |           |      |
|   | Item   | Symbol  | Min        | Max       | Unit |
|   | Power Supply (Logic)                                     | Vdd-Vss | -0.3       | 7.0       | V    |
|   | Power Supply (LCD)                                       | Vo      | Vdd - 15.0 | Vdd + 0.3 | V    |
|   | Input Voltage  | Vi      | -0.3       | Vdd + 0.3 | 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-Vss  | 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)                 | 11 | DB4    | Data Bus Line 4                    |
| 2  | Vdd    | Power Supply (+5V)                 | 12 | DB5    | Data Bus Line 5                    |
| 3  | Vo     | Contrast Adjust                    | 13 | DB6    | Data Bus Line 6                    |
| 4  | RS     | Instruction / Data Register Select | 14 | DB7    | Data Bus Line 7                    |
| 5  | R/W    | Read / Write                       | 15 | CS1    | Selection Signal for IC1           |
| 6  | E      | Enable Signal                      | 16 | CS2    | Selection Signal for IC2           |
| 7  | DB0    | Data Bus Line 0                    | 17 | RST    | Reset                              |
| 8  | DB1    | Data Bus Line 1                    | 18 | Vee    | Power Supply for LCD Driving       |
| 9  | DB2    | Data Bus Line 2                    | 19 | A      | Power Supply for LCD Backlight (+) |
| 10 | DB3    | Data Bus Line 3                    | 20 | K      | Power Supply for LCD Backlight (-) |

### LED Backlight Specifications

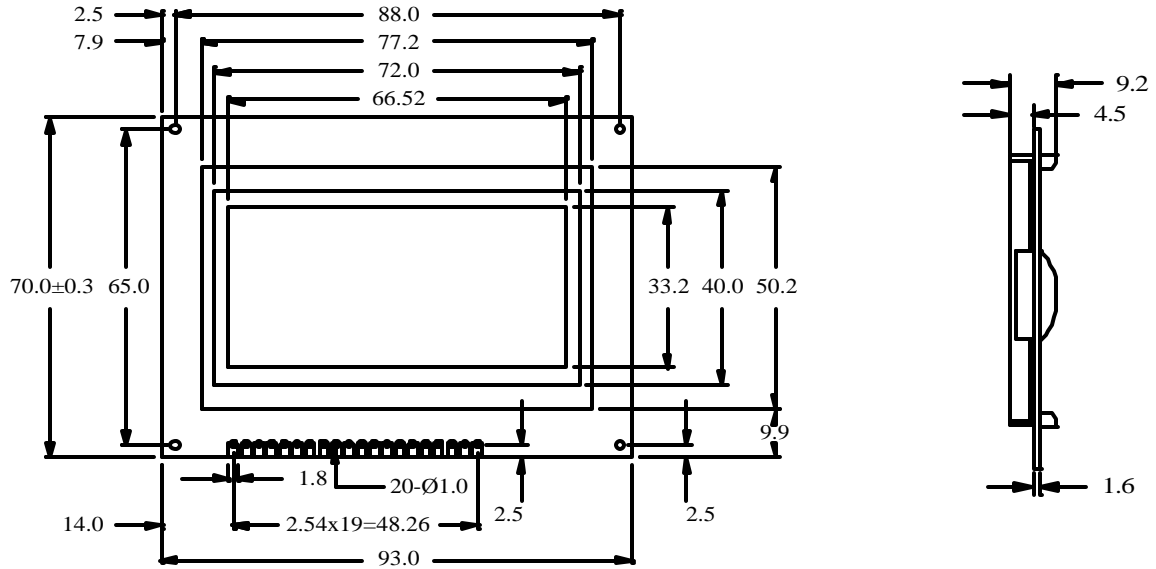
| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
|-----------------|-----------------|-------------------|-----------------|
| 4.2V (Typ)      | 370mA (Typ)     | 1560mW (Typ)      | 570nm (Typ)     |

### Mechanical Specifications

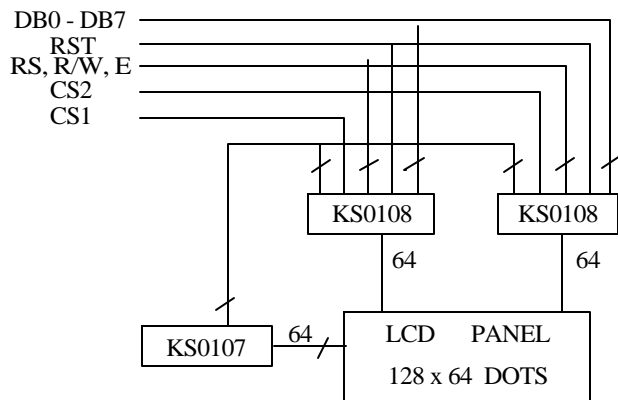
| Item           | Overall Size                   | Viewing Area  | Active Area     | Dot Size      | Dot Pitch     |
|----------------|--------------------------------|---------------|-----------------|---------------|---------------|
| Specifications | 93.0W x 70.0H x 9.2T (BL13.5T) | 72.0W x 40.0H | 66.52W x 33.24H | 0.48W x 0.48H | 0.52W x 0.52H |

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

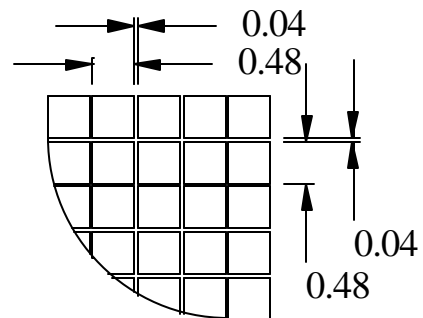
## PG12864G-O (128x64) Graphic LCD Display



### LCD Block Diagram



### Dot Layout



## PG12864I-O (128x64) Graphic LCD Display

|  |  |         |            |           |      |
|--|--|---------|------------|-----------|------|
| <b>Features</b><br>*128 Dots x 64 Dots<br>*View Angle 12H or 6H<br>*TN or STN Fluid<br>*Extended Temperature Range available<br>*LED Backlight available | <b>Absolute Maximum Ratings at T<sub>A</sub> = 25 °C</b> |         |            |           |      |
|  | Item   | Symbol  | Min        | Max       | Unit |
|  | Power Supply (Logic)                                     | Vdd-Vss | -0.3       | 7.0       | V    |
|  | Power Supply (LCD)                                       | Vo      | Vdd - 15.0 | Vdd + 0.3 | V    |
|  | Input Voltage  | Vi      | -0.3       | Vdd + 0.3 | 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-Vss  | 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)                 | 11 | DB4    | Data Bus Line 4                    |
| 2  | Vdd    | Power Supply (+5V)                 | 12 | DB5    | Data Bus Line 5                    |
| 3  | Vo     | Contrast Adjust                    | 13 | DB6    | Data Bus Line 6                    |
| 4  | RS     | Instruction / Data Register Select | 14 | DB7    | Data Bus Line 7                    |
| 5  | R/W    | Read / Write                       | 15 | CS1    | Selection Signal for IC1           |
| 6  | E      | Enable Signal                      | 16 | CS2    | Selection Signal for IC2           |
| 7  | DB0    | Data Bus Line 0                    | 17 | RST    | Reset                              |
| 8  | DB1    | Data Bus Line 1                    | 18 | Vee    | Power Supply for LCD Driving       |
| 9  | DB2    | Data Bus Line 2                    | 19 | A      | Power Supply for LCD Backlight (+) |
| 10 | DB3    | Data Bus Line 3                    | 20 | K      | Power Supply for LCD Backlight (-) |

### LED Backlight Specifications

| Forward Voltage | Forward Current | Power Dissipation | Peak Wavelength |
|-----------------|-----------------|-------------------|-----------------|
| 4.2V (Typ)      | 480mA (Typ)     | 2000mW (Typ)      | 570nm (Typ)     |

### Mechanical Specifications

| Item           | Overall Size                    | Viewing Area  | Active Area     | Dot Size      | Dot Pitch     |
|----------------|---------------------------------|---------------|-----------------|---------------|---------------|
| Specifications | 113.0W x 65.0H x 9.2T (BL13.5T) | 73.4W x 40.8H | 64.33W x 32.59H | 0.46W x 0.46H | 0.51W x 0.51H |

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

