

## PL09 Series 3mm (T1) LED

### Features

- \*Flanged
- \*Available in Color, White Diffused (WD), Color Transparent (CT) and Water Clear (WC)

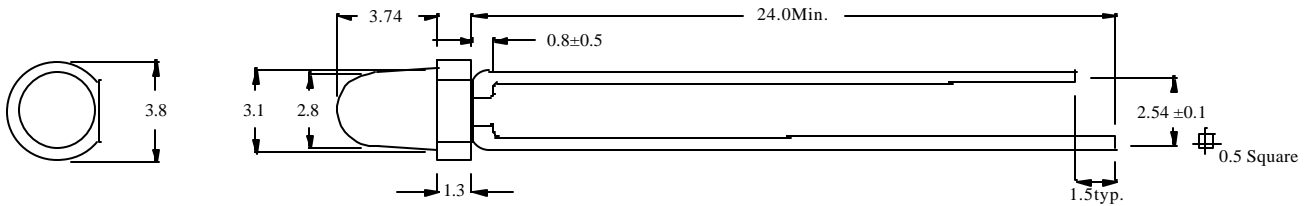
### Absolute Maximum Ratings at T<sub>A</sub> = 25 °C

|  |                    |
|--|--------------------|
| Reverse Voltage (<100µA).....                                  | 5.0V               |
| Max Forward Current.....                                       | 20mA               |
| Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)..... | 100mA              |
| Operating Temperature Range.....                               | -25°C to + 85°C    |
| Storage Temperature Range.....                                 | -25°C to +100°C    |
| Soldering Temperature (1.6mm below body).....                  | 260° for 5 seconds |

### Electrical & Optical Characteristics at T<sub>A</sub> = 25 °C

| Part Number       |                | Emitting Color | Material     | Peak Wave Length | View Angle 2θ ½ | Forward Voltage @20mA (V) |     | Luminous Intensity @20mA (mcd) |      |
|-------------------|----------------|----------------|--------------|------------------|-----------------|---------------------------|-----|--------------------------------|------|
| Color Diffused    | White Diffused |                |              | (nm)             | Deg             | Typ                       | Max | Min                            | Typ  |
| PL09-CDR24        | PL09-WDR24     | Bright Red     | GaP          | 700              | 38°             | 2.1                       | 3.0 | 2.4                            | 4.0  |
| PL09-CDR12        | PL09-WDR12     | Hi Eff Red     | GaAsP on GaP | 635              |                 | 2.1                       | 3.0 | 14.0                           | 23.1 |
| PL09-CDG13        | PL09-WDG13     | Green          | GaP          | 567              |                 | 2.1                       | 3.0 | 12.0                           | 20.1 |
| PL09-CDY01        | PL09-WDY01     | Yellow         | GaAsP on GaP | 585              |                 | 2.1                       | 3.0 | 9.9                            | 16.4 |
| PL09-CDA02        | PL09-WDA02     | Amber          | GaAsP on GaP | 610              |                 | 2.1                       | 3.0 | 14.0                           | 23.1 |
| PL09-CDO12        | PL09-WDO12     | Orange         | GaAsP on GaP | 635              |                 | 2.1                       | 3.0 | 14.0                           | 23.1 |
| Color Transparent | Water Clear    |                |              | (nm)             | Deg             | Typ                       | Max | Min                            | Typ  |
| PL09-CTR24        | PL09-WCR24     | Bright Red     | GaP          | 700              | 32°             | 2.1                       | 3.0 | 8.2                            | 13.7 |
| PL09-CTR12        | PL09-WCR12     | Hi Eff Red     | GaAsP on GaP | 635              |                 | 2.1                       | 3.0 | 47.4                           | 78.7 |
| PL09-CTG13        | PL09-WCG13     | Green          | GaP          | 567              |                 | 2.1                       | 3.0 | 41.0                           | 68.1 |
| PL09-CTY01        | PL09-WCY01     | Yellow         | GaAsP on GaP | 585              |                 | 2.1                       | 3.0 | 33.6                           | 55.8 |
| PL09-CTA02        | PL09-WCA02     | Amber          | GaAsP on GaP | 610              |                 | 2.1                       | 3.0 | 47.4                           | 78.7 |
| PL09-CTO12        | PL09-WCO12     | Orange         | GaAsP on GaP | 635              |                 | 2.1                       | 3.0 | 47.4                           | 78.7 |

Package Dimensions are in **Millimeters**. Tolerance is ± 0.25mm unless otherwise specified.  
An Epoxy Meniscus may extend about 1 mm. down the leads.



## PL09 Series 5 Volt 3mm (T1) LED

### Features

- \*Flanged
- \*Available in Color, White Diffused (WD), Color Transparent (CT) and Water Clear (WC)
- \*Available with Integrated Current Limiting Resistor for 12V operation

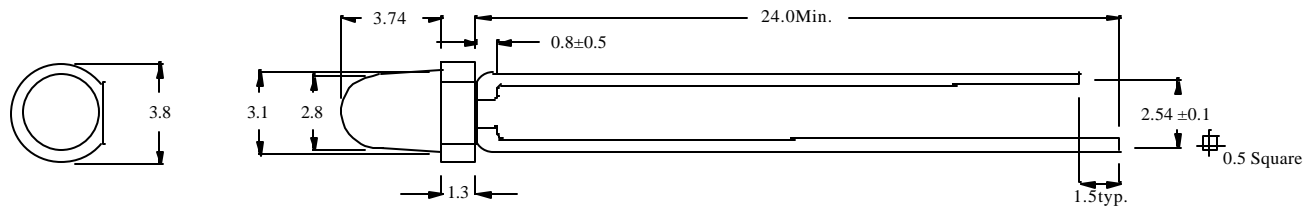
### Absolute Maximum Ratings at T<sub>A</sub> = 25 °C

|  |                    |
|--|--------------------|
| Reverse Voltage (<100μA).....                                  | 5.0V               |
| Max Forward Current.....                                       | 20mA               |
| Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)..... | 100mA              |
| Operating Temperature Range.....                               | -25°C to + 85°C    |
| Storage Temperature Range.....                                 | -25°C to +100°C    |
| Soldering Temperature (1.6mm below body).....                  | 260° for 5 seconds |

### Electrical & Optical Characteristics at T<sub>A</sub> = 25 °C

| Part Number       |                | Emitting Color | Material     | Peak Wave Length | View Angle 2θ ½ | Forward Voltage @20mA (V) |     | Luminous Intensity @20mA (mcd) |      |
|-------------------|----------------|----------------|--------------|------------------|-----------------|---------------------------|-----|--------------------------------|------|
|                   |                |                |              |                  |                 | Typ                       | Max | Min                            | Typ  |
| Color Diffused    | White Diffused |                |              | (nm)             | Deg             | Typ                       | Max | Min                            | Typ  |
| PL09-CDR24-5V     | PL09-WDR24-5V  | Bright Red     | GaP          | 700              | 38°             | 5.0                       | 7.0 | 2.4                            | 4.0  |
| PL09-CDR12-5V     | PL09-WDR12-5V  | Hi Eff Red     | GaAsP on GaP | 635              |                 | 5.0                       | 7.0 | 14.0                           | 23.1 |
| PL09-CDG13-5V     | PL09-WDG13-5V  | Green          | GaP          | 567              |                 | 5.0                       | 7.0 | 12.0                           | 20.1 |
| PL09-CDY01-5V     | PL09-WDY01-5V  | Yellow         | GaAsP on GaP | 585              |                 | 5.0                       | 7.0 | 9.9                            | 16.4 |
| PL09-CDA02-5V     | PL09-WDA02-5V  | Amber          | GaAsP on GaP | 610              |                 | 5.0                       | 7.0 | 14.0                           | 23.1 |
| PL09-CDO12-5V     | PL09-WDO12-5V  | Orange         | GaAsP on GaP | 635              |                 | 5.0                       | 7.0 | 14.0                           | 23.1 |
| Color Transparent | Water Clear    |                |              | (nm)             | Deg             | Typ                       | Max | Min                            | Typ  |
| PL09-CTR24-5V     | PL09-WCR24-5V  | Bright Red     | GaP          | 700              | 32°             | 5.0                       | 7.0 | 8.2                            | 13.7 |
| PL09-CTR12-5V     | PL09-WCR12-5V  | Hi Eff Red     | GaAsP on GaP | 635              |                 | 5.0                       | 7.0 | 47.4                           | 78.7 |
| PL09-CTG13-5V     | PL09-WCG13-5V  | Green          | GaP          | 567              |                 | 5.0                       | 7.0 | 41.0                           | 68.1 |
| PL09-CTY01-5V     | PL09-WCY01-5V  | Yellow         | GaAsP on GaP | 585              |                 | 5.0                       | 7.0 | 33.6                           | 55.8 |
| PL09-CTA02-5V     | PL09-WCA02-5V  | Amber          | GaAsP on GaP | 610              |                 | 5.0                       | 7.0 | 47.4                           | 78.7 |
| PL09-CTO12-5V     | PL09-WCO12-5V  | Orange         | GaAsP on GaP | 635              |                 | 5.0                       | 7.0 | 47.4                           | 78.7 |

Package Dimensions are in **Millimeters**. Tolerance is ± 0.25mm unless otherwise specified.  
An Epoxy Meniscus may extend about 1 mm. down the leads.



## PL09 Series 12 Volt 3mm (T1) LED

### Features

- \*Flanged
- \*Available in Color, White Diffused (WD), Color Transparent (CT) and Water Clear (WC)
- \*Standard and Low Current Available
- \*Available with Integrated Current Limiting Resistor for 5V operation

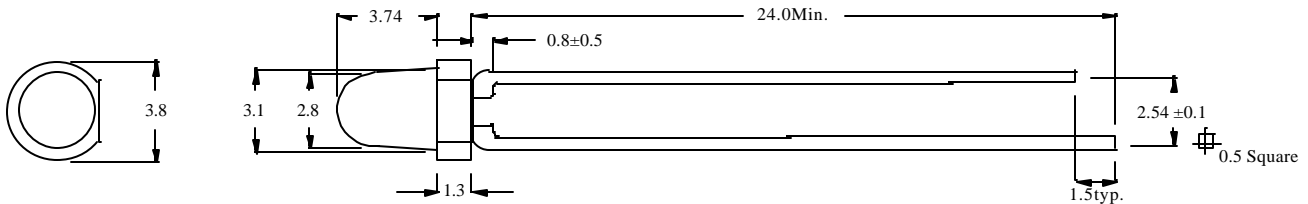
### Absolute Maximum Ratings at T<sub>A</sub> = 25 °C

|  |                    |
|--|--------------------|
| Reverse Voltage (<100µA).....                                  | 5.0V               |
| Max Forward Current.....                                       | 20mA               |
| Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)..... | 100mA              |
| Operating Temperature Range.....                               | -25°C to + 85°C    |
| Storage Temperature Range.....                                 | -25°C to +100°C    |
| Soldering Temperature (1.6mm below body).....                  | 260° for 5 seconds |

### Electrical & Optical Characteristics at T<sub>A</sub> = 25 °C

| Part Number       |                | Emitting Color | Material     | Peak Wave Length | View Angle 2θ ½ | Forward Voltage @20mA (V) |      | Luminous Intensity @20mA (mcd) |      |
|-------------------|----------------|----------------|--------------|------------------|-----------------|---------------------------|------|--------------------------------|------|
|                   |                |                |              |                  |                 | Typ                       | Max  | Min                            | Typ  |
| Color Diffused    | White Diffused |                |              | (nm)             | Deg             | Typ                       | Max  | Min                            | Typ  |
| PL09-CDR24-12V    | PL09-WDR24-12V | Bright Red     | GaP          | 700              | 38°             | 12.0                      | 15.0 | 2.4                            | 4.0  |
| PL09-CDR12-12V    | PL09-WDR12-12V | Hi Eff Red     | GaAsP on GaP | 635              |                 | 12.0                      | 15.0 | 14.0                           | 23.1 |
| PL09-CDG13-12V    | PL09-WDG13-12V | Green          | GaP          | 567              |                 | 12.0                      | 15.0 | 12.0                           | 20.1 |
| PL09-CDY01-12V    | PL09-WDY01-12V | Yellow         | GaAsP on GaP | 585              |                 | 12.0                      | 15.0 | 9.9                            | 16.4 |
| PL09-CDA02-12V    | PL09-WDA02-12V | Amber          | GaAsP on GaP | 610              |                 | 12.0                      | 15.0 | 14.0                           | 23.1 |
| PL09-CDO12-12V    | PL09-WDO12-12V | Orange         | GaAsP on GaP | 635              |                 | 12.0                      | 15.0 | 14.0                           | 23.1 |
| Color Transparent | Water Clear    |                |              | (nm)             | Deg             | Typ                       | Max  | Min                            | Typ  |
| PL09-CTR24-12V    | PL09-WCR24-12V | Bright Red     | GaP          | 700              | 32°             | 12.0                      | 15.0 | 8.2                            | 13.7 |
| PL09-CTR12-12V    | PL09-WCR12-12V | Hi Eff Red     | GaAsP on GaP | 635              |                 | 12.0                      | 15.0 | 47.4                           | 78.7 |
| PL09-CTG13-12V    | PL09-WCG13-12V | Green          | GaP          | 567              |                 | 12.0                      | 15.0 | 41.0                           | 68.1 |
| PL09-CTY01-12V    | PL09-WCY01-12V | Yellow         | GaAsP on GaP | 585              |                 | 12.0                      | 15.0 | 33.6                           | 55.8 |
| PL09-CTA02-12V    | PL09-WCA01-12V | Amber          | GaAsP on GaP | 610              |                 | 12.0                      | 15.0 | 47.4                           | 78.7 |
| PL09-CTO12-12V    | PL09-WCO12-12V | Orange         | GaAsP on GaP | 635              |                 | 12.0                      | 15.0 | 47.4                           | 78.7 |

Package Dimensions are in **Millimeters**. Tolerance is ± 0.25mm unless otherwise specified.  
An Epoxy Meniscus may extend about 1 mm. down the leads.



## PL09 Series Low Current 3mm (T1) LED

### Features

- \*Flanged
- \*Available in Color, White Diffused (WD), Color Transparent (CT) and Water Clear (WC)

### Absolute Maximum Ratings at T<sub>A</sub> = 25 °C

|  |                    |
|--|--------------------|
| Reverse Voltage (<100µA).....                                  | 5.0V               |
| Max Forward Current.....                                       | 20mA               |
| Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)..... | 100mA              |
| Operating Temperature Range.....                               | -25°C to + 85°C    |
| Storage Temperature Range.....                                 | -25°C to +100°C    |
| Soldering Temperature (1.6mm below body).....                  | 260° for 5 seconds |

### Electrical & Optical Characteristics at T<sub>A</sub> = 25 °C

| Part Number       |                | Emitting Color | Material     | Peak Wave Length | View Angle 2θ ½ | Forward Voltage @2mA (V) |     | Luminous Intensity @2mA (mcd) |     |
|-------------------|----------------|----------------|--------------|------------------|-----------------|--------------------------|-----|-------------------------------|-----|
|                   |                |                |              |                  |                 | Typ                      | Max | Min                           | Typ |
| Color Diffused    | White Diffused |                |              | (nm)             | Deg             | Typ                      | Max | Min                           | Typ |
| PL09-CDR12-LC     | PL09-WDR12-LC  | Hi Eff Red     | GaAsP on GaP | 635              | 38°             | 1.8                      | 2.2 | 1.5                           | 2.6 |
| PL09-CDG13-LC     | PL09-WDG13-LC  | Green          | GaP          | 567              |                 | 1.8                      | 2.2 | 1.3                           | 2.2 |
| PL09-CDY01-LC     | PL09-WDY01-LC  | Yellow         | GaAsP on GaP | 585              |                 | 1.8                      | 2.2 | 1.0                           | 1.8 |
| PL09-CDO12-LC     | PL09-WDO12-LC  | Orange         | GaAsP on GaP | 635              |                 | 1.8                      | 2.2 | 1.5                           | 2.6 |
| Color Transparent | Water Clear    |                |              | (nm)             | Deg             | Typ                      | Max | Min                           | Typ |
| PL09-CTR12-LC     | PL09-WCR12-LC  | Hi Eff Red     | GaAsP on GaP | 635              | 32°             | 1.8                      | 2.2 | 5.3                           | 8.8 |
| PL09-CTG13-LC     | PL09-WCG13-LC  | Green          | GaP          | 567              |                 | 1.8                      | 2.2 | 4.5                           | 7.6 |
| PL09-CTY01-LC     | PL09-WCY01-LC  | Yellow         | GaAsP on GaP | 585              |                 | 1.8                      | 2.2 | 3.7                           | 6.2 |
| PL09-CTO12-LC     | PL09-WCO12-LC  | Orange         | GaAsP on GaP | 635              |                 | 1.8                      | 2.2 | 5.3                           | 8.8 |

Package Dimensions are in **Millimeters**. Tolerance is ± 0.25mm unless otherwise specified.  
An Epoxy Meniscus may extend about 1 mm. down the leads.

