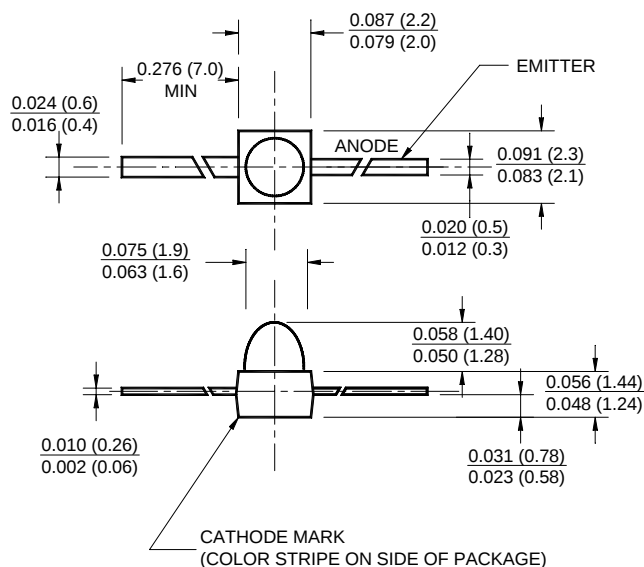


# SOLID STATE LED LAMPS

## SUBMINIATURE T-1 3/4 (1.9mm)

### PACKAGE DIMENSIONS

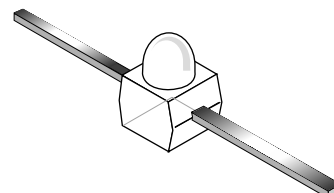


NOTE:  
Dimensions are in inches (mm).

|                |            |       |
|----------------|------------|-------|
| AlGaAs RED     | HLMP-Q106A | Clear |
| AlInGaP ORANGE | HLMA-QH00A | Clear |
| AlInGaP YELLOW | HLMA-QL00A | Clear |

### FEATURES

- Subminiature package
- Low profile package
- Three lead bend options for surface mounting
- Available in tape and reel



### DESCRIPTION

These subminiature LED lamps are intended for high volume, low cost status indication on PCBs, as well as for backlighting keyboards and switches. Choices of "Yoke", "Z-Bend" or "Gull-Wing" lead bends are available.

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

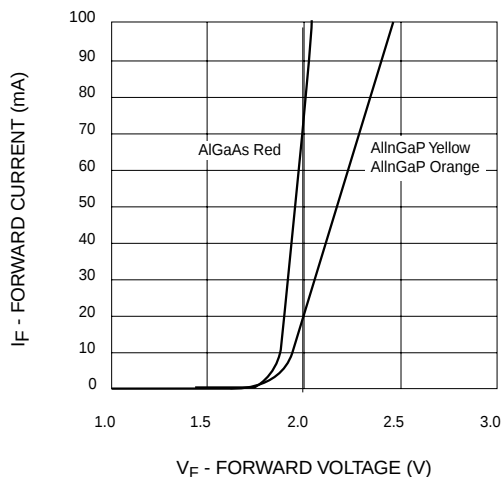
| Parameter                                                            | AlGaAs Red<br>HLMP-Q106A | AlInGaP Orange<br>HLMA-QH00A | AlInGaP Yellow<br>HLMA-QL00A | Units            |
|----------------------------------------------------------------------|--------------------------|------------------------------|------------------------------|------------------|
| Continuous Forward Current - $I_F$                                   | 50                       | 50                           | 50                           | mA               |
| Peak Forward Current - $I_F$<br>( $f = 1.0$ KHz, Duty Factor = 1/10) | 200                      | 100                          | 100                          | mA               |
| Reverse Voltage - $V_R$ ( $I_R = 10 \mu\text{A}$ )                   | 5                        | 5                            | 5                            | V                |
| Power Dissipation - $P_D$                                            | 100                      | 120                          | 120                          | mW               |
| Operating Temperature - $T_{OPR}$                                    | -40 to +100              |                              |                              | $^\circ\text{C}$ |
| Storage Temperature - $T_{STG}$                                      | -40 to +100              |                              |                              | $^\circ\text{C}$ |
| Lead Soldering Time - $T_{SOL}$                                      |                          |                              |                              | $^\circ\text{C}$ |
| Wave                                                                 | 260 for 5 sec            |                              |                              |                  |
| Reflow                                                               | 260 for 10 sec           |                              |                              |                  |

### ELECTRICAL / OPTICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

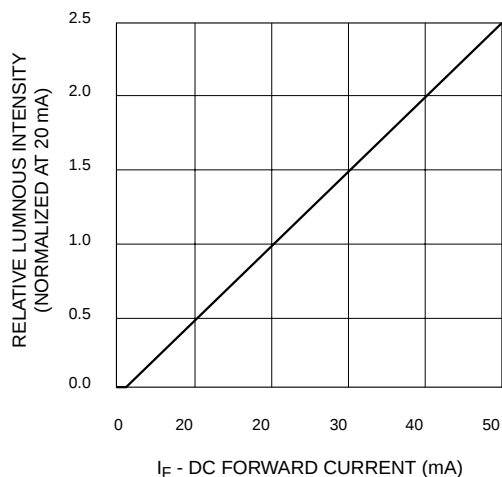
| Part Number                   | AlGaAs Red<br>HLMP-Q106A | AlInGaP Orange<br>HLMA-QH00A | AlInGaP Yellow<br>HLMA-QL00A | Condition           |
|-------------------------------|--------------------------|------------------------------|------------------------------|---------------------|
| Luminous Intensity (mcd)      |                          |                              |                              | $I_F = 20\text{mA}$ |
| Minimum                       | 50                       | 150                          | 150                          |                     |
| Typical                       | 500                      | 500                          | 500                          |                     |
| Forward Voltage (V)           |                          |                              |                              | $I_F = 20\text{mA}$ |
| Maximum                       | 2.4                      | 2.4                          | 2.4                          |                     |
| Typical                       | 1.9                      | 1.9                          | 1.9                          |                     |
| Peak Wavelength (nm)          | 660                      | 620                          | 590                          | $I_F = 20\text{mA}$ |
| Spectral Line Half Width (nm) | 20                       | 18                           | 15                           | $I_F = 20\text{mA}$ |
| Viewing Angle ( $^\circ$ )    | 25                       | 25                           | 25                           | $I_F = 20\text{mA}$ |

|                |            |       |
|----------------|------------|-------|
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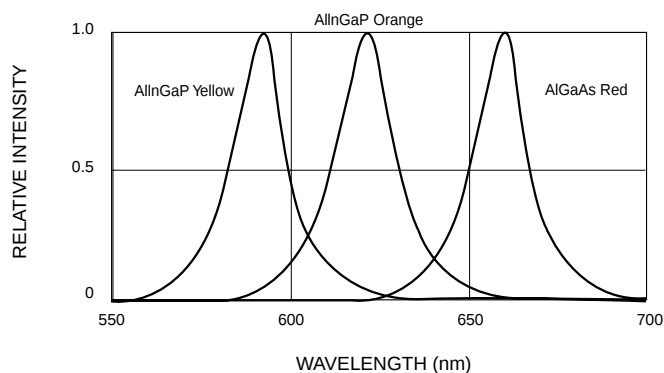
### TYPICAL PERFORMANCE CURVES



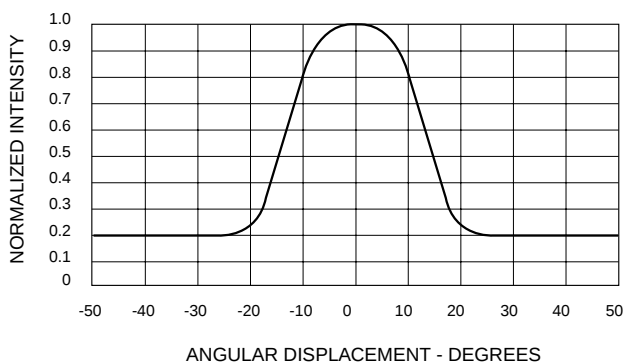
**Fig. 1 Forward Current vs. Forward Voltage**



**Fig. 2 Relative Luminous Intensity vs. DC Forward Current**



**Fig. 3 Relative Intensity vs. Peak Wavelength**

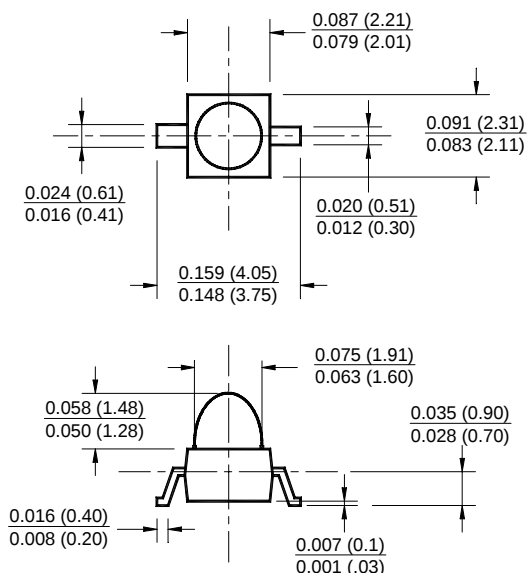


**Fig. 4 Relative Luminous Intensity vs. Angular Displacement**

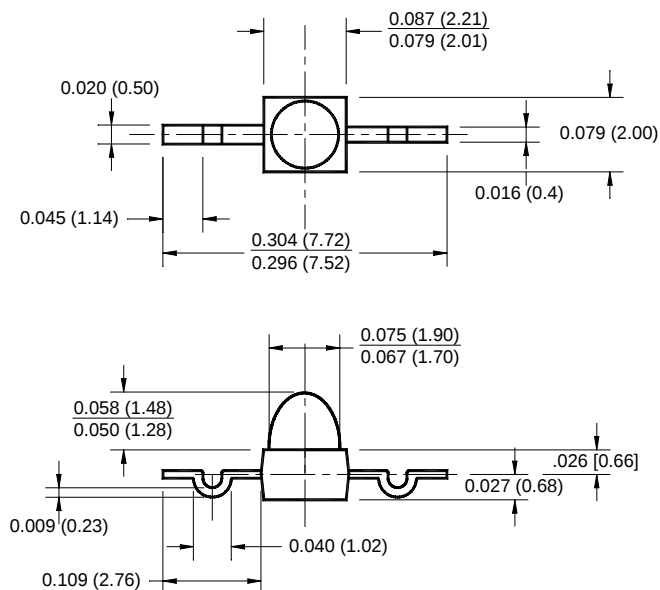
# SOLID STATE LED LAMPS SUBMINIATURE T-1 3/4 (1.9mm)

|                |            |       |
|----------------|------------|-------|
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| AlInGaP ORANGE | HLMA-QH00A | Clear |
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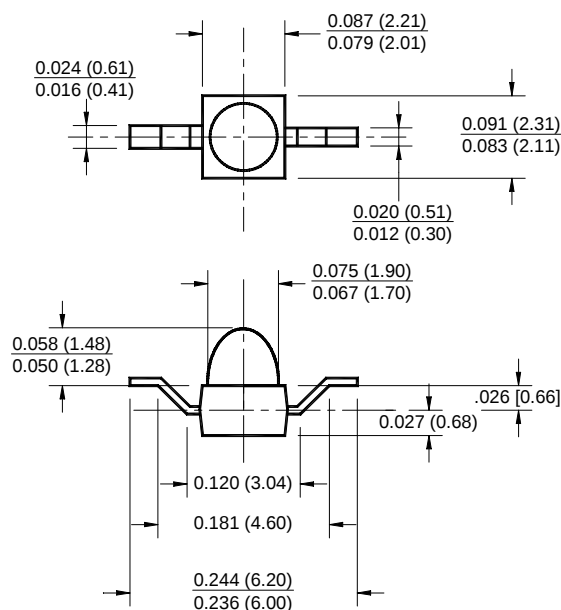
## Gull-Wing Lead Option



## Yoke Lead Option



## Z-Bend Lead Option



### NOTE

All dimensions are in inches (millimeters)

[www.qtopto.com](http://www.qtopto.com)

**Call QT Optoelectronics for more information or the phone number of your nearest distributor.**

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.