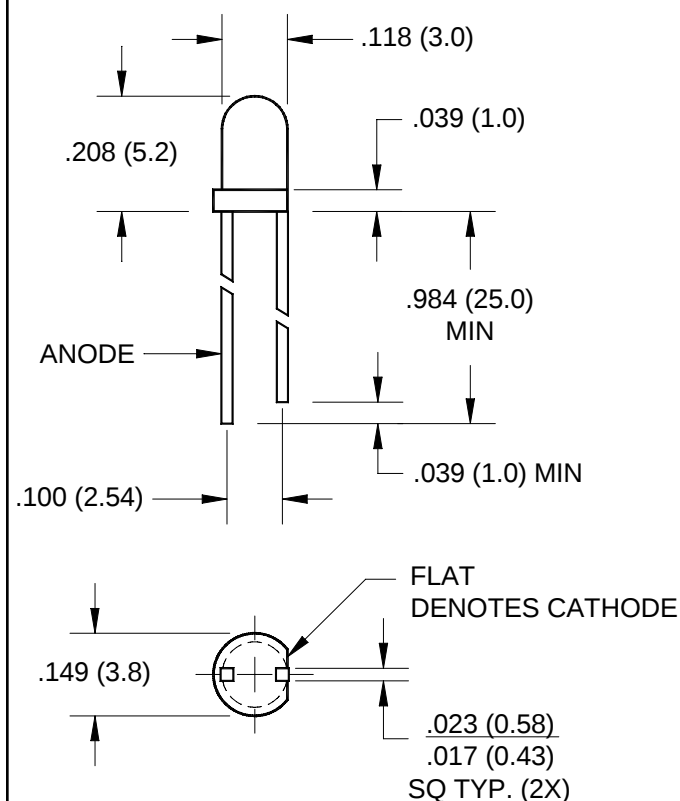


|                 |         |
|-----------------|---------|
| RED DIFFUSED    | QL202HD |
| HER DIFFUSED    | QL202ID |
| YELLOW DIFFUSED | QL202YD |
| GREEN DIFFUSED  | QL202GD |

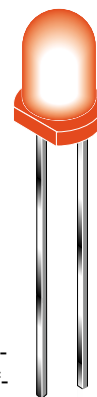
|              |         |
|--------------|---------|
| RED CLEAR    | QL202HT |
| HER CLEAR    | QL202IT |
| YELLOW CLEAR | QL202YT |
| GREEN CLEAR  | QL202GT |

### PACKAGE DIMENSIONS



### FEATURES

- Popular T-100 package
- Choice of viewing angles
- Choice of tinted or tinted diffused lens



### DESCRIPTION

These T-100 LEDs are used as general purpose indicators. They come in either a wide angle (70°) diffused lens or a moderate angle (32°) clear lens. The red and green lamps are made with GaP LEDs on a GaP substrate. The HER and yellow lamps are made with GaAsP LEDs on a GaP substrate. All have an epoxy encapsulation lens.

### NOTES:

1. Dimensions for all drawings are in inches (mm).
2. Lead spacing is measured where the leads emerge from the package.
3. Protruded resin under the flange is 1.5 mm (0.059") max.
4. Tolerance is  $\pm 0.12$  (0.3mm) unless otherwise noted.

**ABSOLUTE MAXIMUM RATING** (T<sub>A</sub> = 25°C)

| Parameter                                                 | Symbol           | Red         | Her         | Green       | Yellow      | Units |
|-----------------------------------------------------------|------------------|-------------|-------------|-------------|-------------|-------|
| Power Dissipation                                         | P <sub>D</sub>   | 100         | 100         | 100         | 100         | mA    |
| Peak Forward Current (at f = 1.0 KHz, Duty factor = 1/10) | I <sub>FM</sub>  | 50          | 100         | 100         | 100         | mA    |
| Reversed Voltage                                          | V <sub>R</sub>   | 5           | 5           | 5           | 5           | V     |
| Continuous DC Forward Current                             | I <sub>F</sub>   | 15          | 20          | 20          | 20          | mA    |
| Lead Soldering Time at 260° C                             | T <sub>SOL</sub> | 5           | 5           | 5           | 5           | sec   |
| Operating Temperature                                     | T <sub>OPR</sub> | -40 to +100 | -40 to +100 | -40 to +100 | -40 to +100 | °C    |
| Storage Temperature                                       | T <sub>STG</sub> | -40 to +100 | -40 to +100 | -40 to +100 | -40 to +100 | °C    |

**ELECTRICAL / OPTICAL CHARACTERISTICS** (T<sub>A</sub> = 25°C)

| Part Number                   | Symbol         | QL202HD | QL202ID | QL202GD | QL202YD | Condition             |
|-------------------------------|----------------|---------|---------|---------|---------|-----------------------|
| Luminous Intensity (mcd)      |                |         |         |         |         | I <sub>F</sub> = 10mA |
| Minimum                       | I <sub>V</sub> | 0.5     | 1.1     | 1.1     | 1.1     |                       |
| Typical                       |                | 1.6     | 6.0     | 6.0     | 4.5     |                       |
| Forward Voltage (V)           |                |         |         |         |         | I <sub>F</sub> = 10mA |
| Typical                       | V <sub>F</sub> | 1.7     | 1.7     | 1.7     | 1.7     |                       |
| Maximum                       |                | 2.1     | 2.0     | 2.1     | 2.0     |                       |
| Spectral Line Half Width (nm) | Δλ             | 90      | 45      | 30      | 35      | I <sub>F</sub> = 10mA |
| Peak Wavelength (nm)          | λ <sub>p</sub> | 697     | 635     | 565     | 585     | I <sub>F</sub> = 10mA |
| Viewing Angle (Total) (°)     | 2θ 1/2         | 70      | 70      | 70      | 70      | I <sub>F</sub> = 10mA |

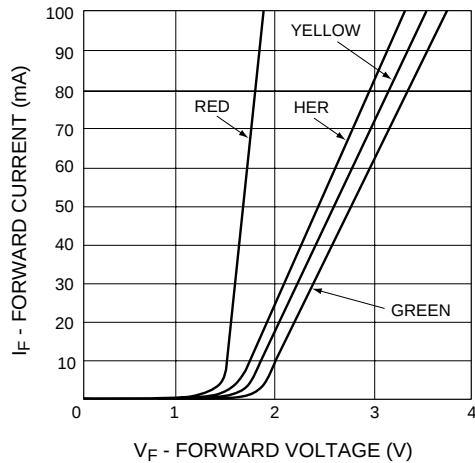
**ELECTRICAL / OPTICAL CHARACTERISTICS** (T<sub>A</sub> = 25°C)

| Part Number                   | Symbol         | QL202HT | QL202IT | QL202GT | QL202YT | Condition             |
|-------------------------------|----------------|---------|---------|---------|---------|-----------------------|
| Luminous Intensity (mcd)      |                |         |         |         |         | I <sub>F</sub> = 10mA |
| Minimum                       | I <sub>V</sub> | 2.5     | 3.5     | 3.0     | 3.5     |                       |
| Typical                       |                | 10.0    | 17.0    | 15.0    | 15.0    |                       |
| Forward Voltage (V)           |                |         |         |         |         | I <sub>F</sub> = 10mA |
| Typical                       | V <sub>F</sub> | 1.7     | 1.7     | 1.7     | 1.7     |                       |
| Maximum                       |                | 2.1     | 2.0     | 2.1     | 2.0     |                       |
| Spectral Line Half Width (nm) | Δλ             | 90      | 45      | 30      | 35      | I <sub>F</sub> = 10mA |
| Peak Wavelength (nm)          | λ <sub>p</sub> | 697     | 635     | 565     | 585     | I <sub>F</sub> = 10mA |
| Viewing Angle (Total) (°)     | 2θ 1/2         | 32      | 32      | 32      | 32      | I <sub>F</sub> = 10mA |

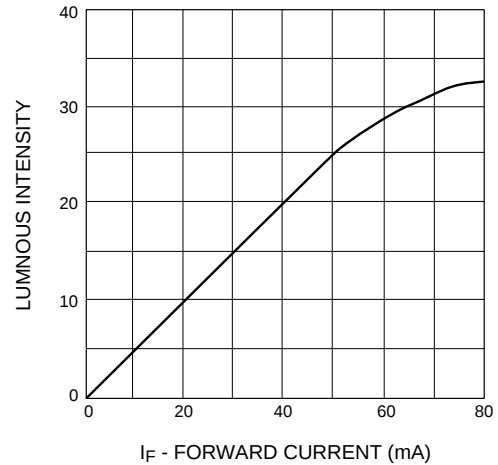
- The leads of the device were immersed in molten solder at 260°C, to a point 1/16 inch (1.6 mm) from the body of the device per MIL-S-750, with a dwell time of 5 seconds.

**TYPICAL PERFORMANCE CURVES ( $T_A = 25^\circ\text{C}$ )**

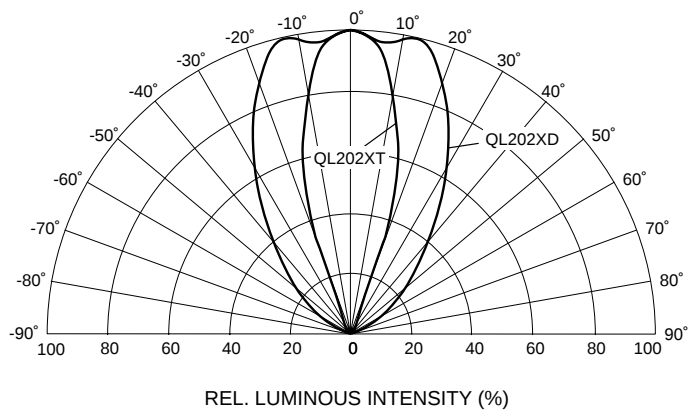
**Fig. 1 Forward Current vs. Forward Voltage**



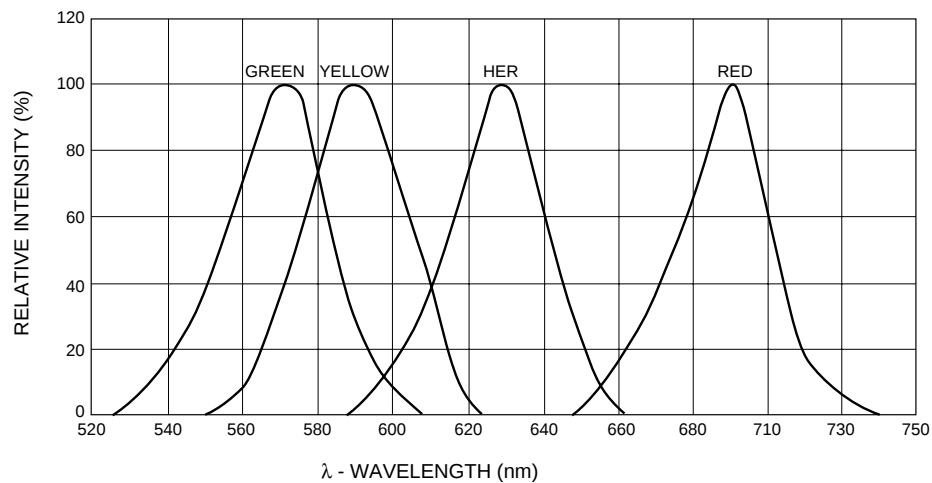
**Fig. 2 Luminous Intensity vs. Forward Current**



**Fig. 3 Spatial Distribution**



**Fig. 4 Relative Intensity vs. Peak Wavelength**



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