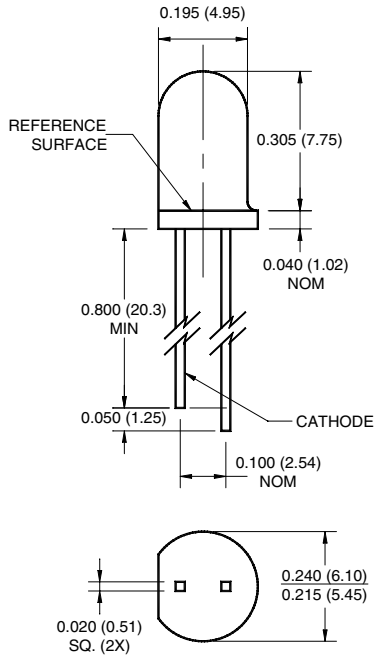
FAIRCHILD
SEMICONDUCTOR™

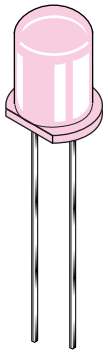
# QED121/122/123
## PLASTIC INFRARED LIGHT EMITTING DIODE

## PACKAGE DIMENSIONS




NOTES:

1. Dimensions for all drawings are in inches (mm).
2. Tolerance of ± .010 (.25) on all non-nominal dimensions unless otherwise specified.

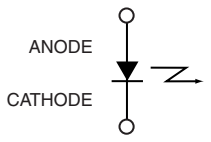


## FEATURES

- λ= 880 nm
- Chip material = AlGaAs
- Package type: T-1 3/4 (5mm lens diameter)
- Matched Photosensor: QSD122/123/124
- Narrow Emission Angle, 18°
- High Output Power
- Package material and color: Clear, peach tinted, plastic

1. Derate power dissipation linearly 2.67 mW/°C above 25°C.
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron 1/16" (1.6mm) minimum from housing.

## SCHEMATIC




## ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25°C unless otherwise specified)

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Operating Temperature | $T_{OPR}$ | -40 to +100 | °C |
| Storage Temperature | $T_{STG}$ | -40 to +100 | °C |
| Soldering Temperature (Iron)(2,3,4) | $T_{SOL-I}$ | 240 for 5 sec | °C |
| Soldering Temperature (Flow)(2,3) | $T_{SOL-F}$ | 260 for 10 sec | °C |
| Continuous Forward Current | $I_F$ | 100 | mA |
| Reverse Voltage | $V_R$ | 5 | V |
| Power Dissipation(1) | $P_D$ | 200 | mW |

## ELECTRICAL / OPTICAL CHARACTERISTICS ($T_A$ =25°C)

| PARAMETER | TEST CONDITIONS | SYMBOL | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|
| Peak Emission Wavelength | $I_F$ = 20 mA | $\lambda_{PE}$ | — | 880 | — | nm |
| Emission Angle | $I_F$ = 100 mA | Θ | — | ±9 | — | Deg. |
| Forward Voltage | $I_F$ = 100 mA, tp = 20 ms | $V_F$ | — | — | 1.7 | V |
| Reverse Current | $V_R$ = 5 V | $I_R$ | — | — | 10 | µA |
| Radiant Intensity QED121 | $I_F$ = 100 mA, tp = 20 ms | $I_E$ | 16 | — | 40 | mW/sr |
| Radiant Intensity QED122 | $I_F$ = 100 mA, tp = 20 ms | $I_E$ | 32 | — | 100 | mW/sr |
| Radiant Intensity QED123 | $I_F$ = 100 mA, tp = 20 ms | $I_E$ | 50 | — | — | mW/sr |
| Rise Time | $I_F$ = 100 mA | $t_r$ | — | 800 | — | ns |
| Fall Time | | $t_f$ | — | 800 | — | ns |

## TYPICAL PERFORMANCE CURVES

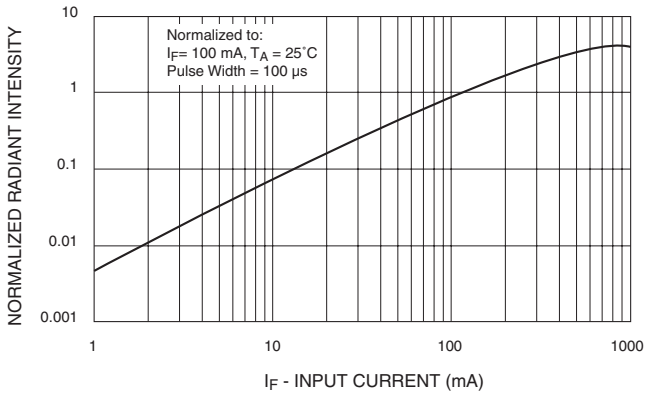



**Fig. 1 Normalized Radiant Intensity vs. Input Current**

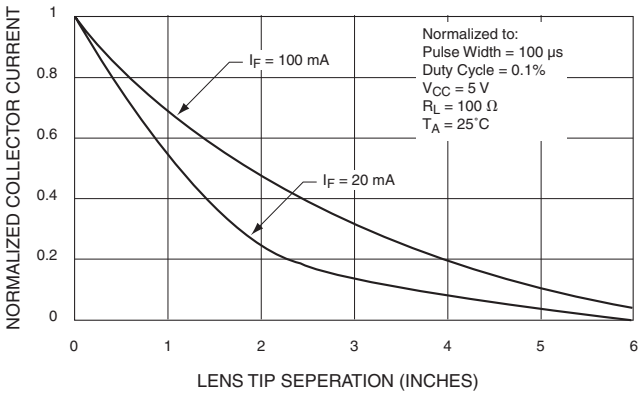



**Fig. 2 Coupling Characteristics of QED12X and QSD12X**

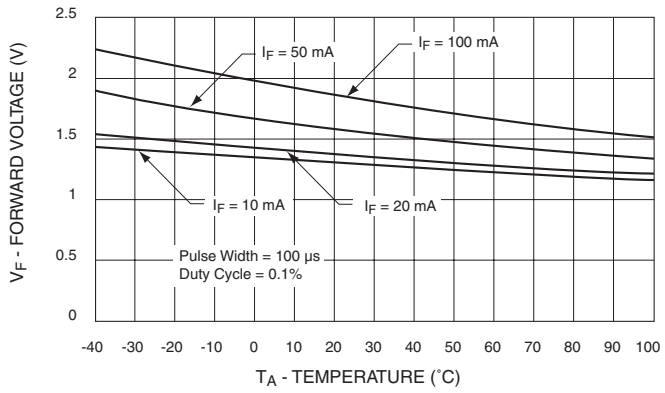



**Fig. 3 Forward Voltage vs. Temperature**

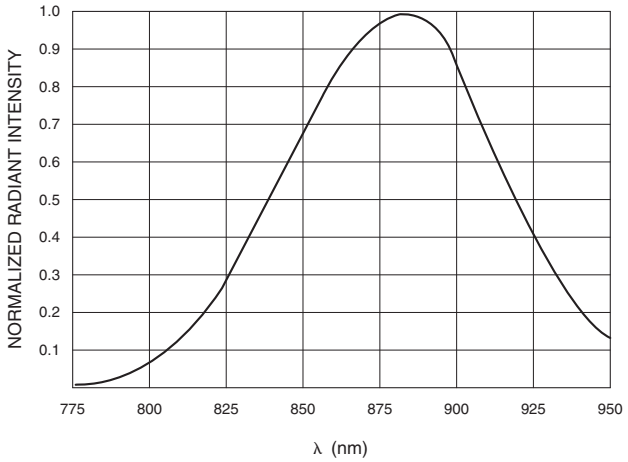
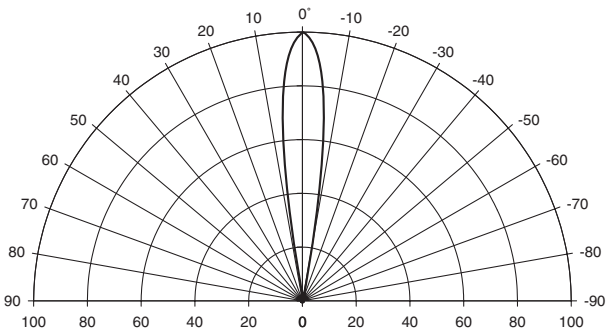



**Fig. 4 Normalized Radiant Intensity vs. Wavelength**

**Fig. 5 Radiation Pattern**



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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.