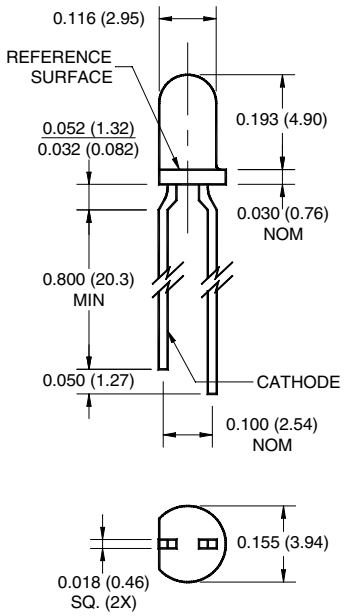
FAIRCHILD
SEMICONDUCTOR®

# PLASTIC INFRARED LIGHT EMITTING DIODE

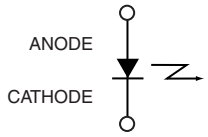
## QEC121 QEC122 QEC123

### PACKAGE DIMENSIONS




NOTES:
1. Dimensions are in inches (millimeters)
2. Tolerance of ± .010 (.25) on all non nominal dimensions unless otherwise specified.

### SCHEMATIC




## DESCRIPTION

The QEC12X is an 880 nm AlGaAs LED encapsulated in a clear purple tinted, plastic T-1 package.

## FEATURES

- λ= 880 nm
- Chip material = AlGaAs
- Package type: T-1 (3mm lens diameter)
- Matched Photosensor: QSC112/113/114
- Narrow Emission Angle, 16°
- High Output Power
- Package material and color: Clear, purple tinted, plastic

## 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 | $I_F$ | 50 | mA |
| Reverse Voltage | $V_R$ | 5 | V |
| Power Dissipation(1) | $P_D$ | 100 | mW |

## NOTES

1. Derate power dissipation linearly 1.33 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.

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

| PARAMETER | TEST CONDITIONS | SYMBOL | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|
| Peak Emission Wavelength | $I_F$ = 100 mA | $\lambda_{PE}$ | — | 880 | — | nm |
| Emission Angle | $I_F$ = 100 mA | $2\Theta_{1/2}$ | — | 16 | — | 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 IntensityQEC121 | $I_F$ = 100 mA, tp = 20 ms | $I_E$ | 14 | — | — | mW/sr |
| Radiant IntensityQEC122 | $I_F$ = 100 mA, tp = 20 ms | $I_E$ | 27 | — | 94 | mW/sr |
| Radiant IntensityQEC123 | $I_F$ = 100 mA, tp = 20 ms | $I_E$ | 39 | — | — | mW/sr |
| Rise Time | $I_F$ = 100 mA | $t_r$ | — | 800 | — | ns |
| Fall Time | | $t_f$ | — | 800 | — | ns |

# PLASTIC INFRARED LIGHT EMITTING DIODE

## QEC121 QEC122 QEC123

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

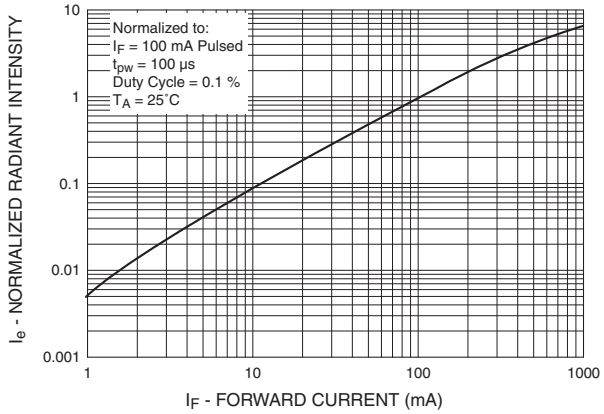



**Fig.2 Coupling Characteristics of QEC12X And QSC11X**

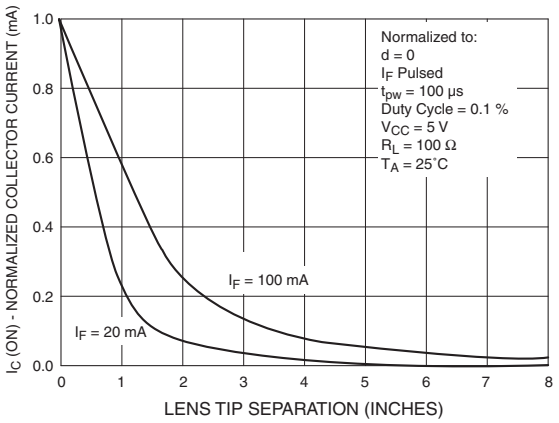



**Fig.3 Forward Voltage vs. Ambient Temperature**

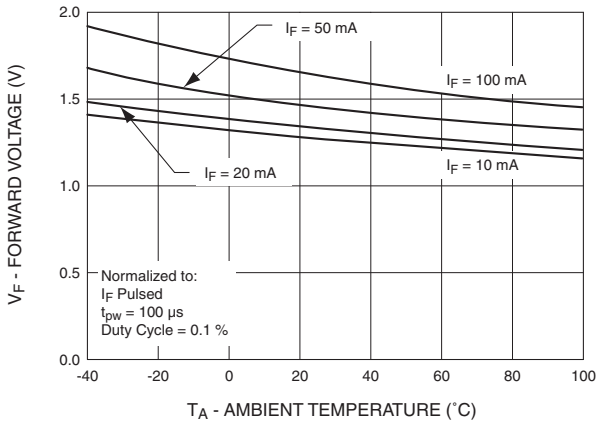



**Fig. 4 Normalized Radiant Intensity vs. Wavelength**

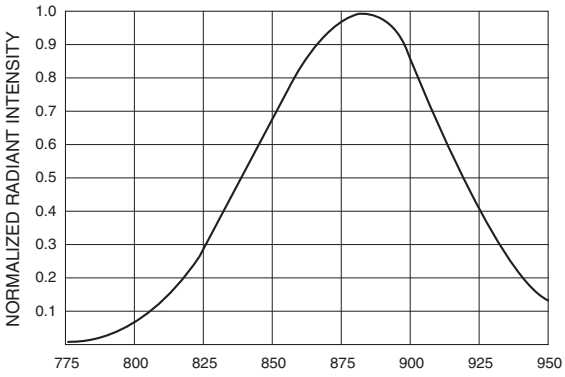
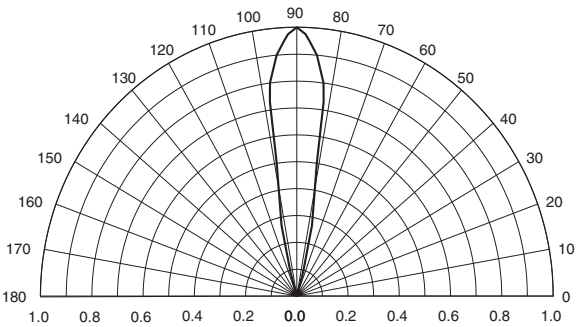



**Fig. 5 Radiation Diagram**



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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.