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FAIRCHILD SEMICONDUCTOR®

August 2008

QED121, QED122, QED123
Plastic Infrared Light Emitting Diode

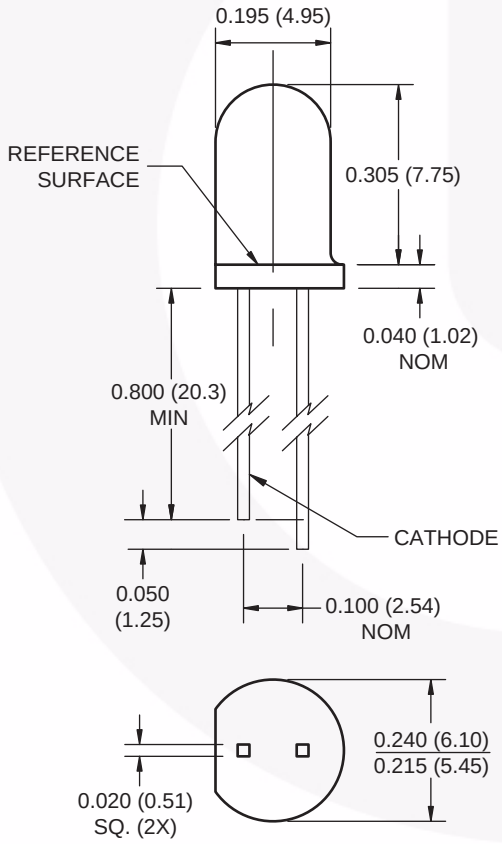
Features

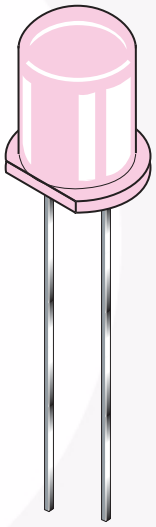
- λ = 880nm
- Chip material = AlGaAs
- Package type: T-1 3/4 (5mm lens diameter)
- Matched photosensor: QSD122/QSD123/QSD124
- Narrow emission angle, 16°
- High output power
- Package material and color: clear, peach tinted, plastic

Description

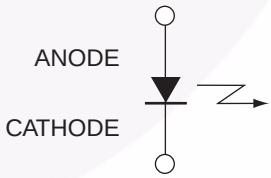
The QED121, QED122 and QED123 are 880nm AlGaAs LEDs encapsulated in a clear peach tinted, plastic T-1 3/4 package.

Package Dimensions





Schematic



Notes:

1. Dimensions of all drawings are in inches (mm).
2. Tolerance is ±0.010 (0.25) on all non-nominal dimensions unless otherwise specified.

Absolute Maximum Ratings (T_A = 25°C unless otherwise specified)

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

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

Notes:

1. Derate power dissipation linearly 2.67mW/°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)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
λ_{PE}	Peak Emission Wavelength	I_F = 20mA		890		nm
TC_λ	Temperature Coefficient			0.2		nm / °C
$2\Theta^1/2$	Emission Angle	I_F = 100mA		16		°
V_F	Forward Voltage	I_F = 100mA, tp = 20ms			1.7	V
TC_{VF}	Temperature Coefficient			-6		mV / °C
I_R	Reverse Current	V_R = 5V			10	µA
I_E	Radiant Intensity QED121	I_F = 100mA, tp = 20ms	16		40	mW/sr
I_E	Radiant Intensity QED122	I_F = 100mA, tp = 20ms	32		100	mW/sr
I_E	Radiant Intensity QED123	I_F = 100mA, tp = 20ms	50	70		mW/sr
TC_{IE}	Temperature Coefficient			-0.3		% / °C
t_r	Rise Time	I_F = 100mA		900		ns
t_f	Fall Time			800		ns
C_j	Junction Capacitance	V_R = 0V		11		pF

Typical Performance Curves

Figure 1. Normalized Intensity vs. Wavelength

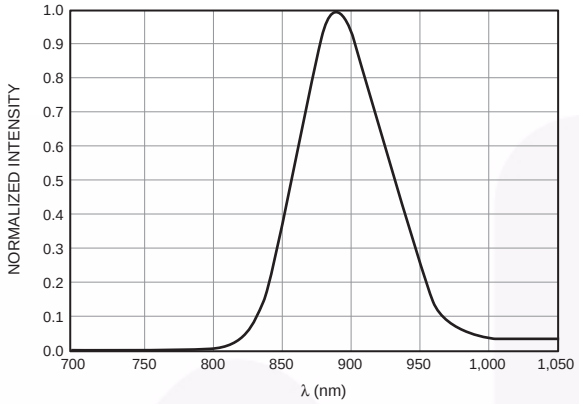


Figure 2. Peak Wavelength vs. Ambient Temperature

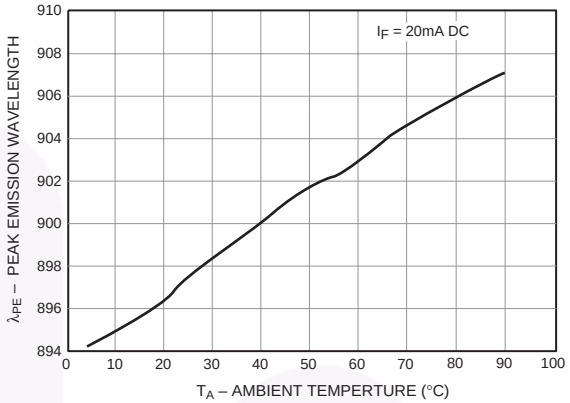


Figure 3. Normalized Radiant Intensity vs. Forward Current

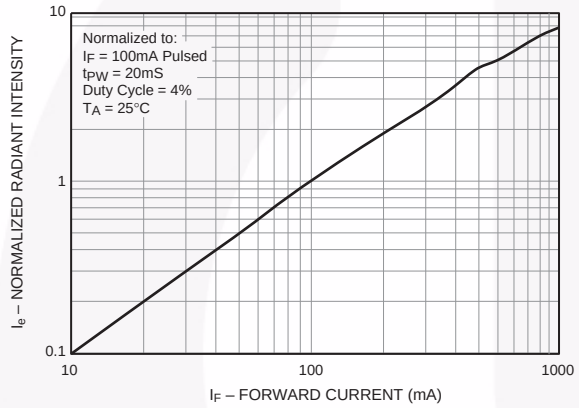


Figure 4. Normalized Radient Intensity vs. Ambient Temperature

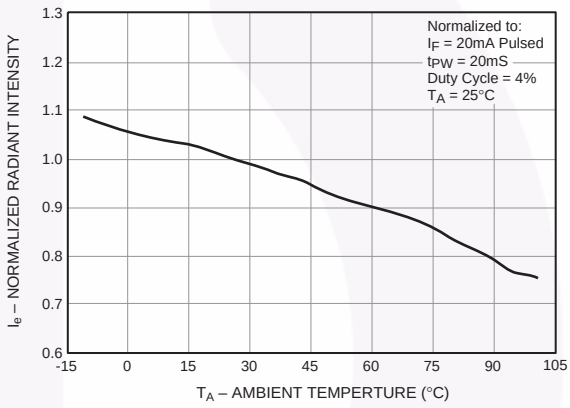


Figure 5. Forward Voltage vs. Forward Current

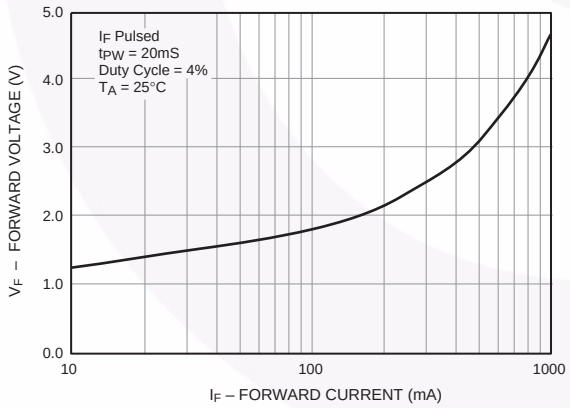
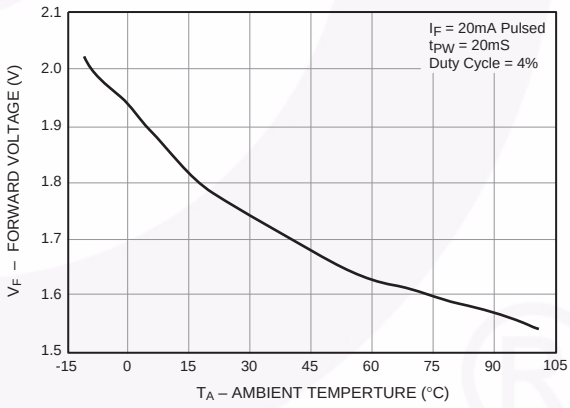


Figure 6. Forward Voltage vs. Ambient Temperature



Typical Performance Curves (Continued)

Figure 7. Radiation Diagram

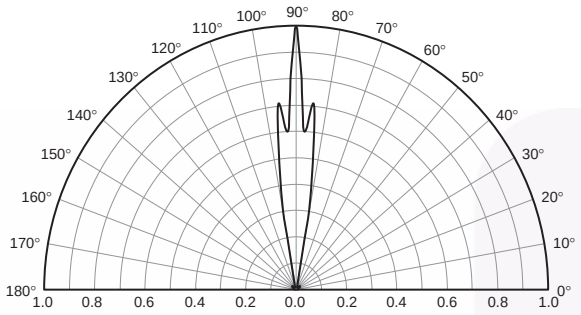
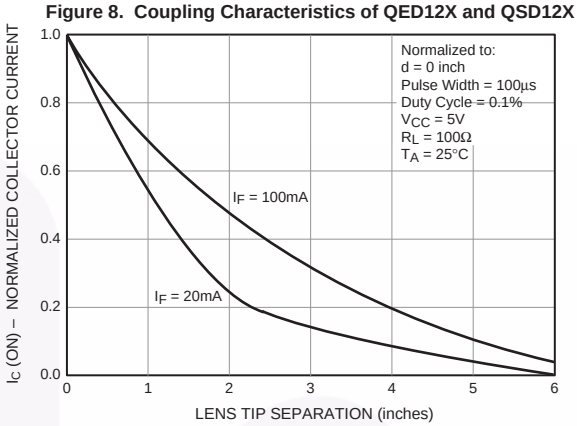


Figure 8. Coupling Characteristics of QED12X and QSD12X



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