

# Plastic Infrared Light Emitting Diode

## QED223

### Description

The QED223 is 880 nm AlGaAs LEDs encapsulated in a clear purple tinted, plastic T-1 3/4 package.

### Features

- $\lambda = 880 \text{ nm}$
- Chip Material = AlGaAs
- Package Type: T-1 3/4 (5 mm lens diameter)
- Matched Photosensor: QSD123/QSD124
- Medium wide Emission Angle, 30°
- High Output Power
- Package Material and Color: Clear, Purple Tinted, Plastic

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
T <sub>OPR</sub>	Operating Temperature	-40 to 100	°C
T <sub>STG</sub>	Storage Temperature	-40 to +100	°C
T <sub>SOL-I</sub>	Soldering Temperature (Iron) (Notes 2, 3, 4)	240 for 5 s	°C
T <sub>SOL-F</sub>	Soldering Temperature (Flow) (Notes 2, 3)	260 for 10 s	°C
I <sub>F</sub>	Continuous Forward Current	100	mA
V <sub>R</sub>	Reverse Voltage	5	V
P <sub>D</sub>	Power Dissipation (Note 1)	200	mW
I <sub>F(Peak)</sub>	Peak Forward Current (Note 5)	1.5	V

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

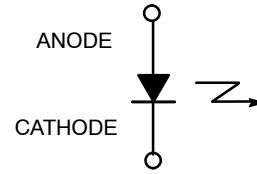
1. Derate power dissipation linearly 2.67 mW/°C above 25°C.
2. RMA flux is recommended.
3. Methanol or Isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron tip 1/16" (1.6 mm) minimum from housing.
5. Pulse conditions; t<sub>p</sub> = 100 μs, T = 10 ms.

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$\lambda_{PE}$	Peak Emission Wavelength	I <sub>F</sub> = 20 mA	-	890	-	nm
TC <sub><math>\lambda</math></sub>	Temperature Coefficient		-	0.2	-	nm/°C
2 $\theta$ <sub>1/2</sub>	Emission Angle	I <sub>F</sub> = 100 mA	-	30	-	°
V <sub>F</sub>	Forward Voltage	I <sub>F</sub> = 20 mA, t <sub>p</sub> = 20 ms	-	-	1.7	V
TC <sub>V<sub>F</sub></sub>	Temperature Coefficient		-	-6	-	mV/°C
I <sub>R</sub>	Reverse Current	V <sub>R</sub> = 5 V	-	-	10	μA
I <sub>E</sub>	Radiant Intensity	I <sub>F</sub> = 20 mA, t <sub>p</sub> = 20 ms	25	-	-	mW/sr
TC <sub>I<sub>E</sub></sub>	Temperature Coefficient		-	-0.3	-	%/°C
t <sub>r</sub>	Rise Time	I <sub>F</sub> = 100 mA	-	900	-	ns
t <sub>f</sub>	Fall Time	I <sub>F</sub> = 100 mA	-	800	-	ns
C <sub>j</sub>	Junction Capacitance	V <sub>R</sub> = 0 V	-	11	-	pF

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

### SCHEMATIC



T-1 3/4, 5MM LED  
CASE 100CC

### ORDERING INFORMATION

Device	Package	Shipping†
QED223	T-1 3/4, 5MM LED (Pb-Free)	250 / Bulk Bag
QED223A4R0	T-1 3/4, 5MM LED (Pb-Free)	1200 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

TYPICAL PERFORMANCE CURVES

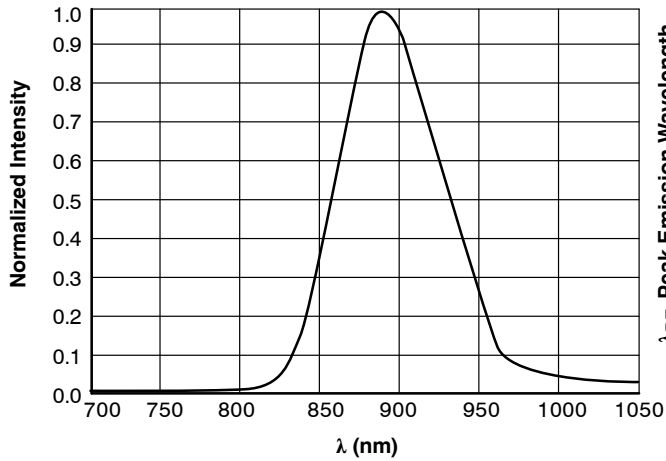


Figure 1. Normalized Intensity vs. Wavelength

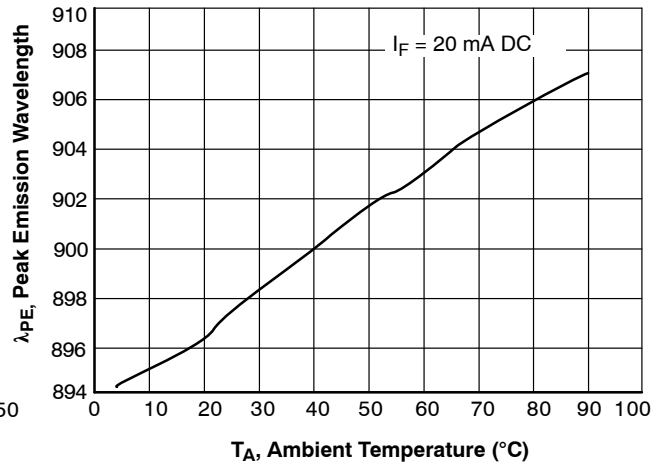


Figure 2. Peak Wavelength vs. Ambient Temperature

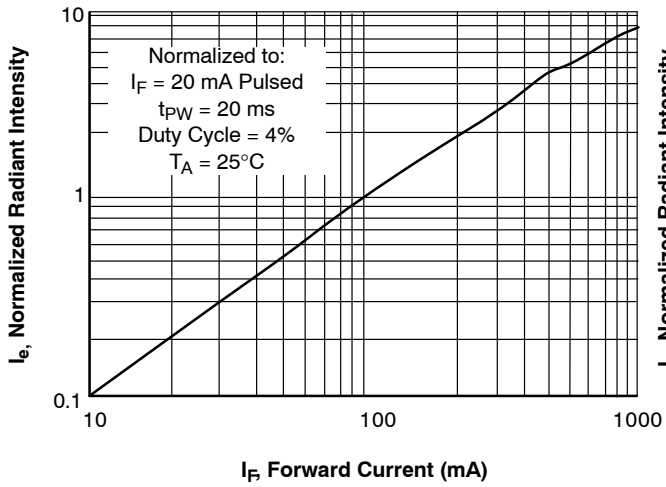


Figure 3. Normalized Radiant Intensity vs. Forward Current

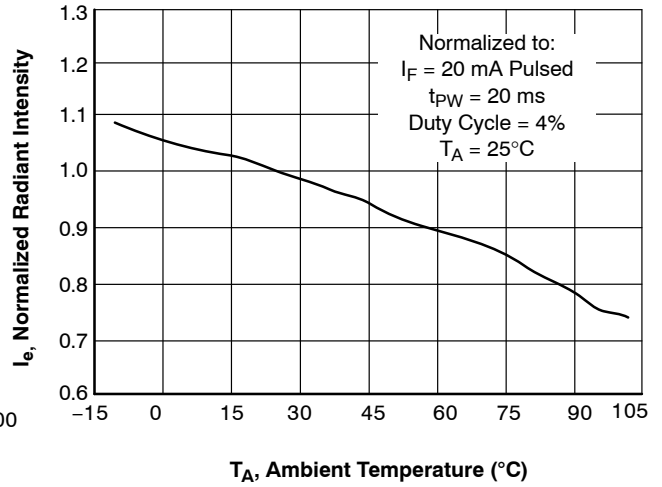


Figure 4. Normalized Radiant Intensity vs. Ambient Temperature

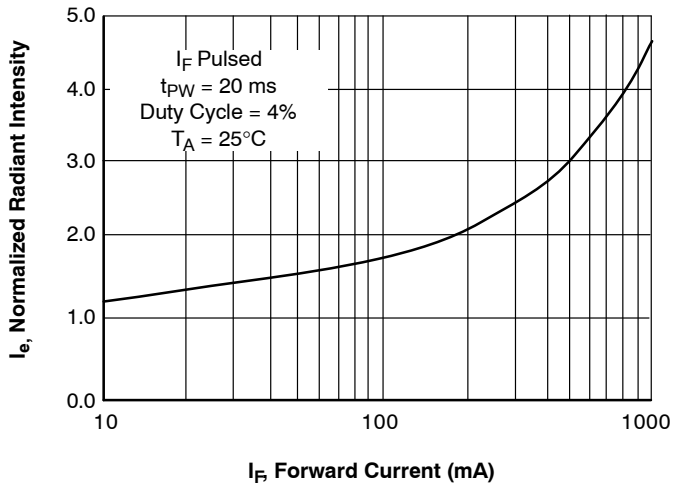


Figure 5. Forward Voltage vs. Forward Current

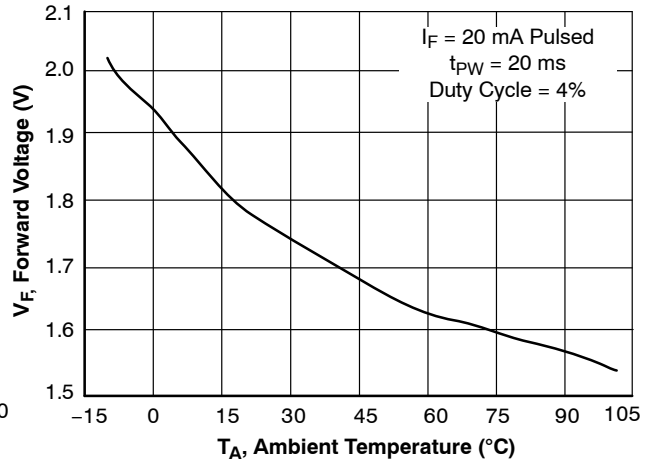


Figure 6. Forward Voltage vs. Ambient Temperature

TYPICAL PERFORMANCE CURVES (continue)

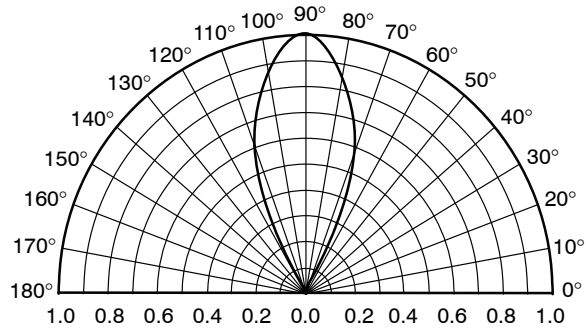


Figure 7. Radiation Diagram

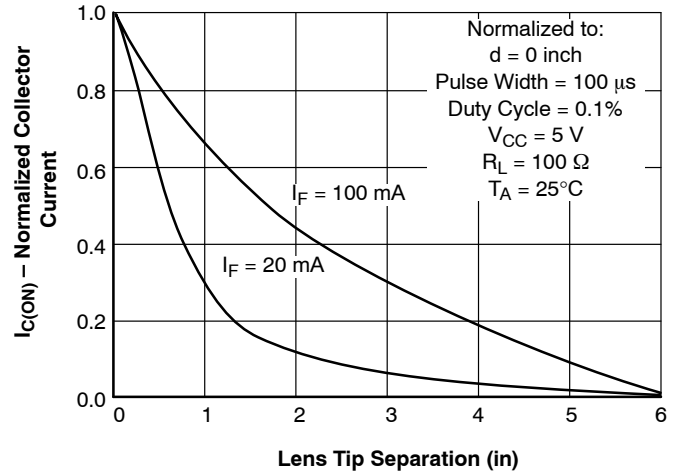
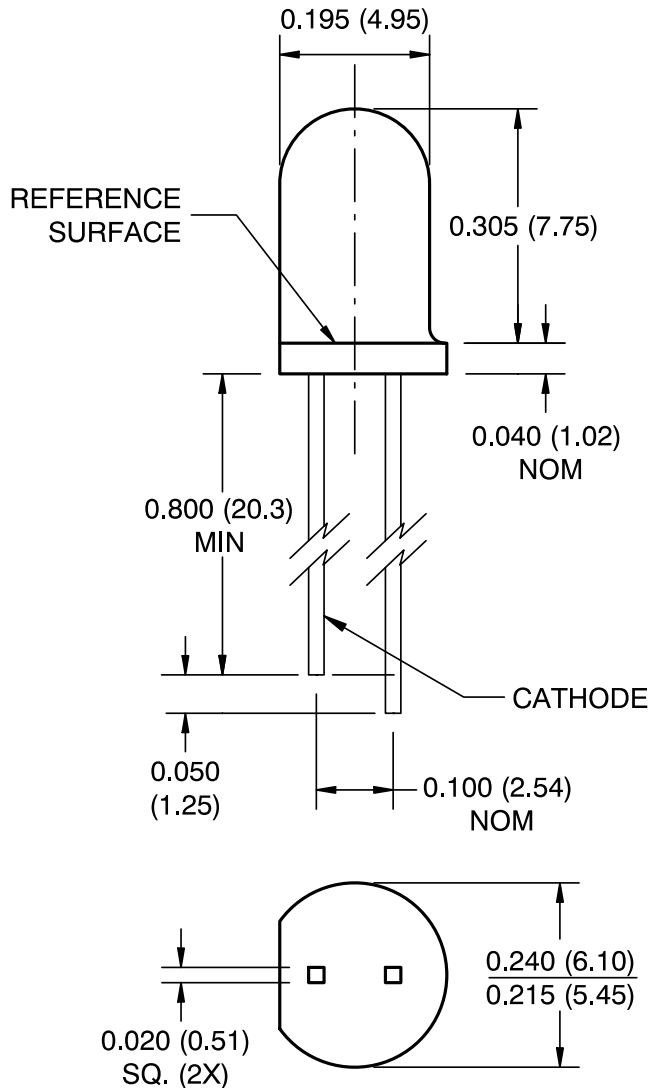


Figure 8. Coupling Characteristics of QED22X and QSD22X

**T-1 3/4, 5MM LED**  
**CASE 100CC**  
**ISSUE O**

DATE 30 NOV 2016



**Notes:**

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

<b>DOCUMENT NUMBER:</b>	<b>98AON13434G</b>	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
<b>DESCRIPTION:</b>	<b>T-1 3/4, 5MM LED</b>	<b>PAGE 1 OF 1</b>

**onsemi** and **ONSEMI** are trademarks of Semiconductor Components Industries, LLC dba **onsemi** or its subsidiaries in the United States and/or other countries. **onsemi** reserves the right to make changes without further notice to any products herein. **onsemi** makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. **onsemi** does not convey any license under its patent rights nor the rights of others.

**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

### ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at [www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)