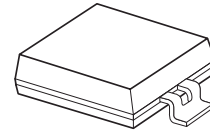


# Surface-Mount Silicon Pin Photodiode

## QSB34GR, QSB34ZR, QSB34CGR, QSB34CZR



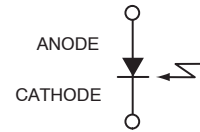
PLCC 2 LEAD  
CASE 776AX

PLCC 2 LEAD  
CASE 776AY

### Features

- Daylight Filter (QSB34GR and QSB34ZR Only)
- Surface-Mount Packages:
  - ◆ QSB34GR / QSB34CGR for Over-Mount Board
  - ◆ QSB34ZR / QSB34CZR for Under-Mount Board
- Fast PIN Photodiode
- Wide Reception Angle: 120°
- Large Chip Size: 3 mm x 3 mm
- Sensitive Area: 2.55 mm x 2.55 mm
- High Sensitivity
- Low Capacitance
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### SCHEMATIC



### ORDERING INFORMATION

Part Number	Operating Temperature	Package	Shipping <sup>†</sup>
QSB34GR	-25 to +85°C	PLCC 2 Lead, case 776AX (Pb-Free)	1000 / Tape & Reel
QSB34ZR		PLCC 2 Lead, case 776AY (Pb-Free)	
QSB34CGR		PLCC 2 Lead, case 776AX (Pb-Free)	
QSB34CZR		PLCC 2 Lead, case 776AY (Pb-Free)	

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# QSB34GR, QSB34ZR, QSB34CGR, QSB34CZR

## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Operating Temperature	$T_{OPR}$	-25 to +85	°C
Storage Temperature	$T_{STG}$	-40 to +85	°C
Soldering Temperature (Note 1)	$T_{SOL}$	260	°C
Reverse Voltage	$V_R$	32	V
Power Dissipation at (or below) 25°C Free Air Temperature	$P_C$	150	mW

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. Soldering time  $\leq 5$  s.

## Recommended $I_R$ Reflow Soldering Profile

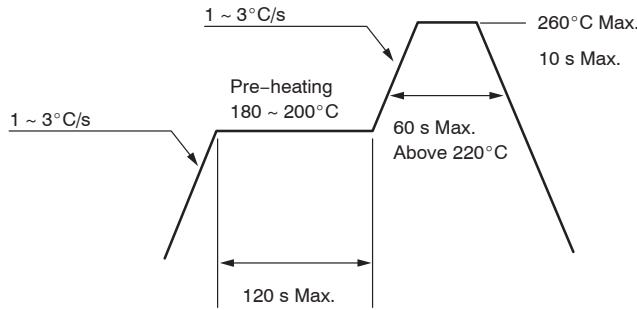


Figure 1. Recommended  $I_R$  Reflow Soldering Profile

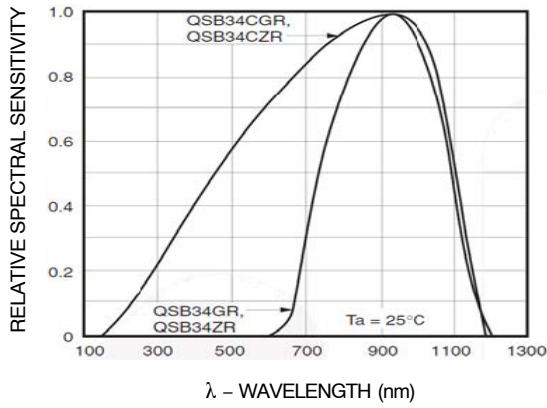
## ELECTRICAL / OPTICAL CHARACTERISTICS (Values are at $T_A = 25^\circ\text{C}$ unless specified otherwise)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_R$	Reverse Voltage	$I_R = 0.1$ mA	32			V
$I_{R(D)}$	Dark Reverse Current	$V_R = 10$ V			30	nA
$\lambda_{PK}$	Peak Sensitivity			940		nm
$\theta$	Reception Angle at 1/2 Power			$\pm 60$		°
$I_{PH}$	Photo Current	$E_E = 1$ mW/cm <sup>2</sup> , $V_{CE} = 5$ V	25	37		$\mu\text{A}$
C	Capacitance	$V_R = 3$ V		25		pF
$t_r$	Rise Time	$V_R = 10$ V, $R_L = 50$ $\Omega$		50		ns
$t_f$	Fall Time	$V_R = 10$ V, $R_L = 50$ $\Omega$		50		ns
$\lambda_{0.5}$	Special Sensitivity	QSB34GR, QSB34ZR	730		1100	nm
		QSB34CGR, QSB34CZR	400		1100	

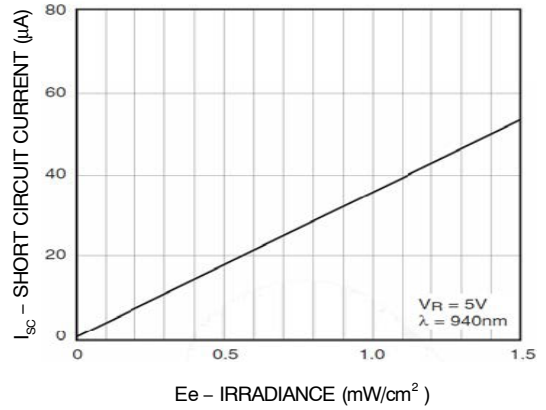
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

# QSB34GR, QSB34ZR, QSB34CGR, QSB34CZR

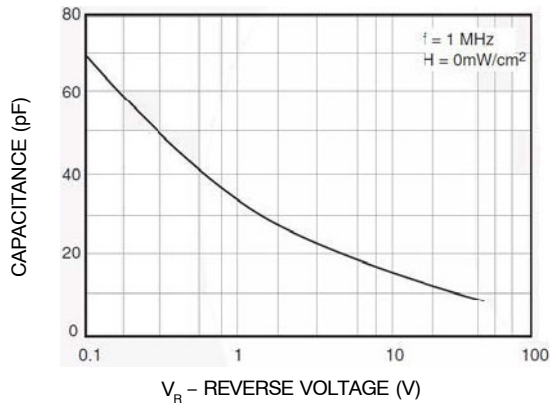
## TYPICAL PERFORMANCE CHARACTERISTICS



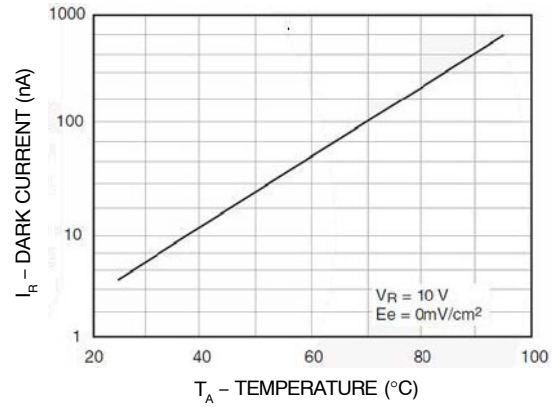
**Figure 1. Relative Spectral Sensitivity vs. Wavelength**



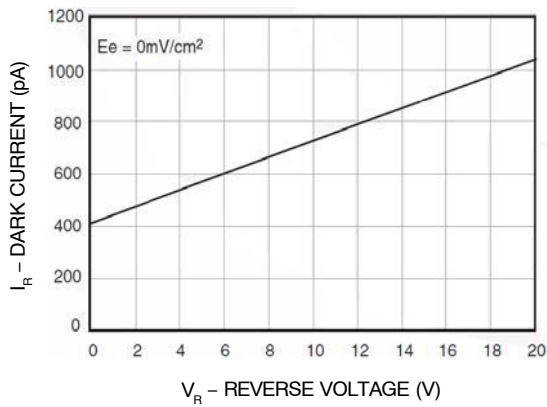
**Figure 2. Short Circuit Current vs. Irradiance**



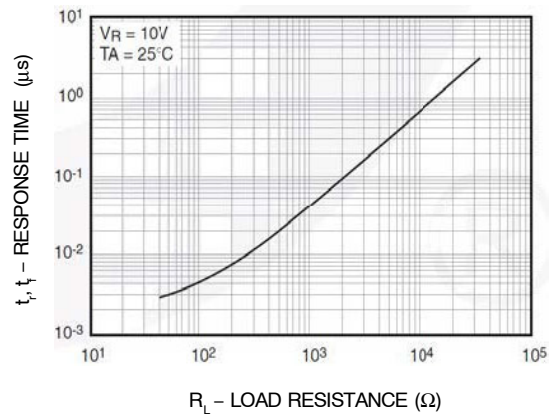
**Figure 3. Capacitance vs. Reverse Voltage**



**Figure 4. Dark Current vs. Temperature**



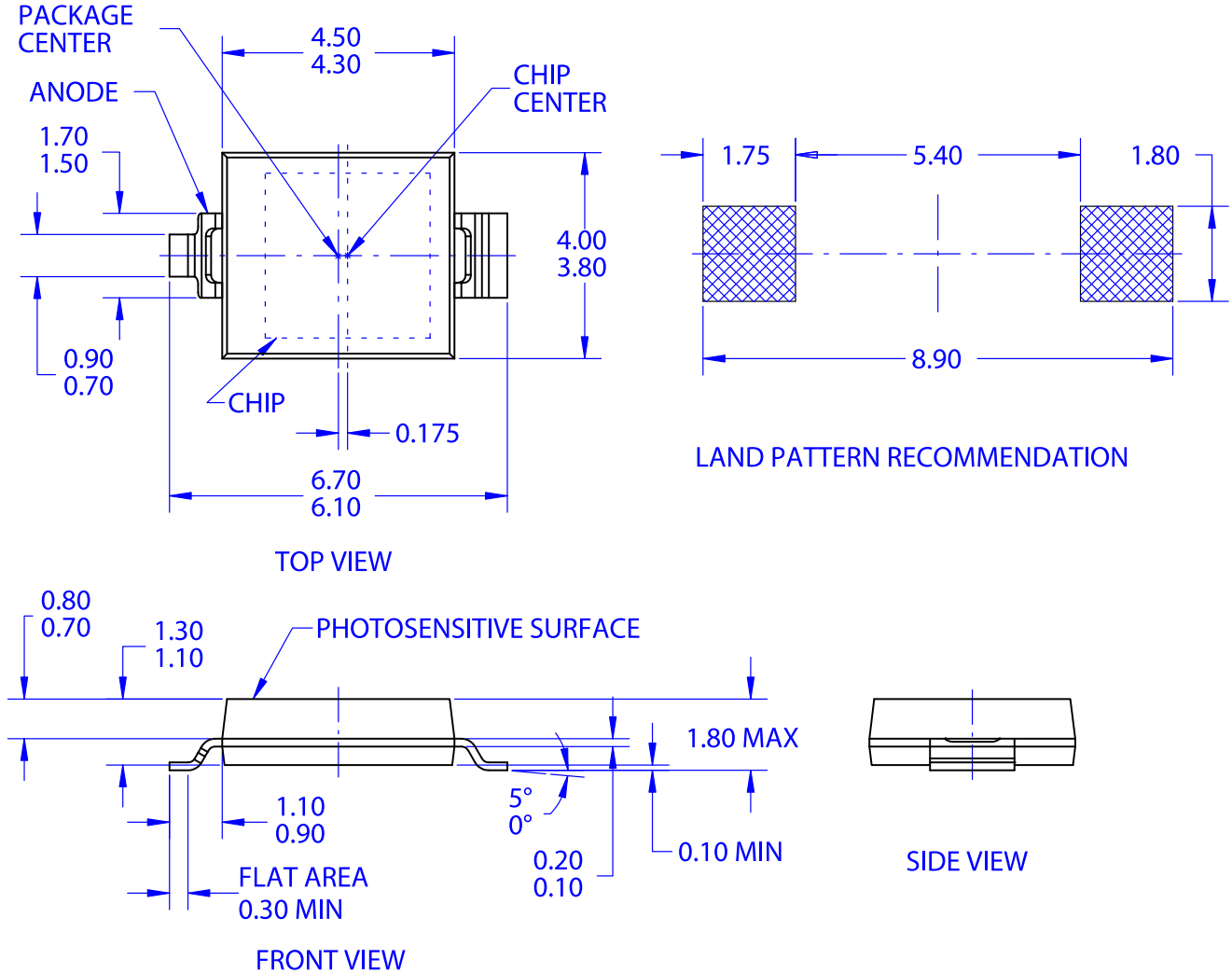
**Figure 5. Dark Current vs. Reverse Voltage**



**Figure 6. Response Time vs. Load Resistance**

**PLCC 2 LEAD**  
**CASE 776AX**  
**ISSUE O**

DATE 28 FEB 2017



**NOTES:**

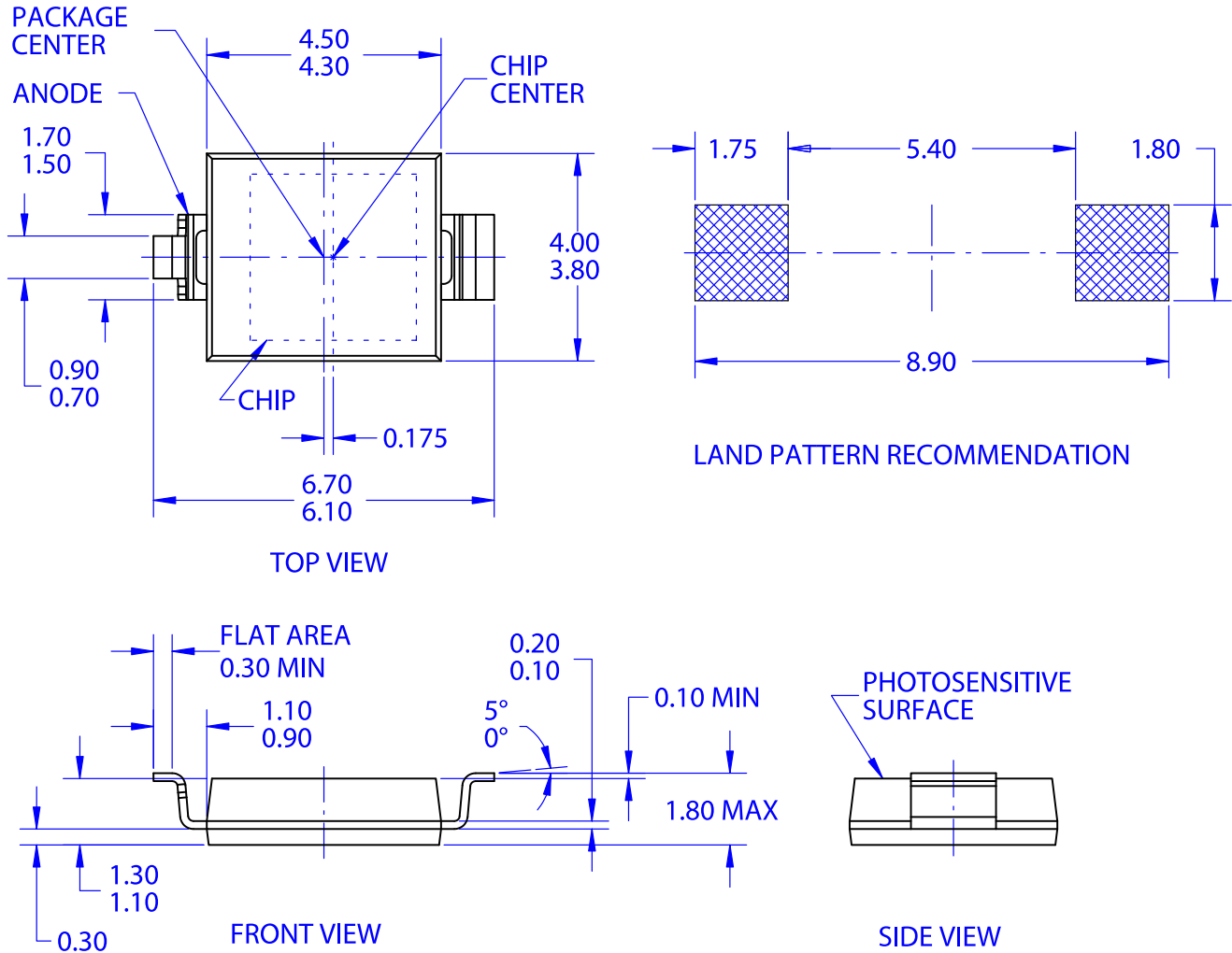
- A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
- B. ALL DIMENSIONS ARE IN MILLIMETERS
- C. DIMENSIONS DO NOT INCLUDE MOLD FLASH OR BURRS

<b>DOCUMENT NUMBER:</b>	<b>98AON13760G</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>PLCC 2 LEAD</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.

**PLCC 2 LEAD**  
**CASE 776AY**  
**ISSUE O**

DATE 28 FEB 2017



**NOTES:**

- A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
- B. ALL DIMENSIONS ARE IN MILLIMETERS
- C. DIMENSIONS DO NOT INCLUDE MOLD FLASH OR BURRS

<b>DOCUMENT NUMBER:</b>	<b>98AON13757G</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>PLCC 2 LEAD</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)

