

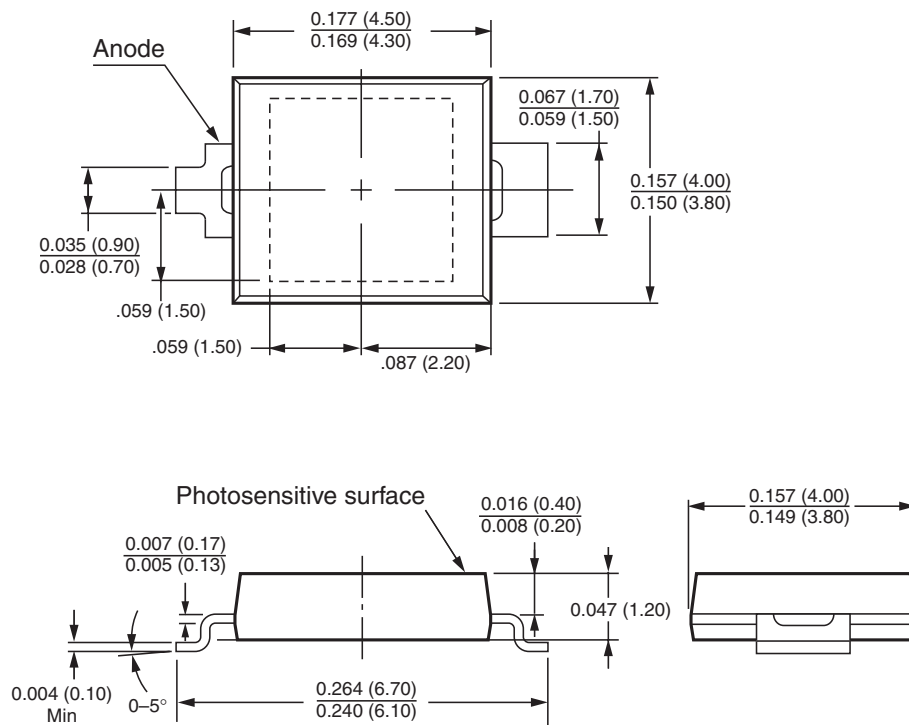
# QSB34GR, QSB34ZR, QSB34CGR, QSB34CZR

## Surface Mount Silicon Pin Photodiode

### Features

- Daylight Filter (QSB34GR and QSB34ZR only)
- Surface Mount Packages:
  - QSB34GR/QSB34CGR for overmount board
  - QSB34ZR/QSB34CZR for undermount board
- Fast PIN Photodiode
- Wide Reception Angle, 120°
- Large Chip Size = .014 in<sup>2</sup> (9 mm<sup>2</sup>)
- High Sensitivity
- Low Capacitance
- Available in 0.470" (12mm) width tape on 7" (178mm) diameter reel; 1,000 units per reel

### Package Dimensions, QSB34GR



### Notes:

1. Dimensions for all drawings are in inches (mm).
2. Tolerance of  $\pm 0.005$  (.13) on all non-nominal dimensions unless otherwise specified.

### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ 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	Unit
$T_{OPR}$	Operating Temperature	-25 to +85	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-40 to +85	$^\circ\text{C}$
$T_{SOL}$	Soldering Temperature	260	$^\circ\text{C}$
$V_R$	Reverse Voltage	32	V
$P_C$	Power Dissipation at (or below) $25^\circ\text{C}$ Free Air Temperature	150	mW

**Note:**

- Soldering time  $\leq 5$  seconds

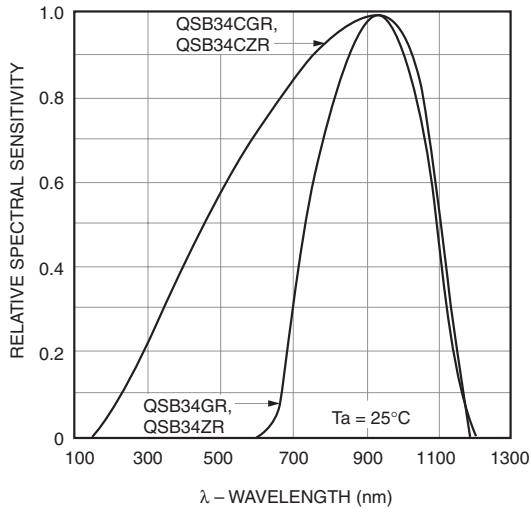
### Electrical/Optical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance to the datasheet specifications. Fairchild does not recommend exceeding them or designing to absolute maximum ratings.

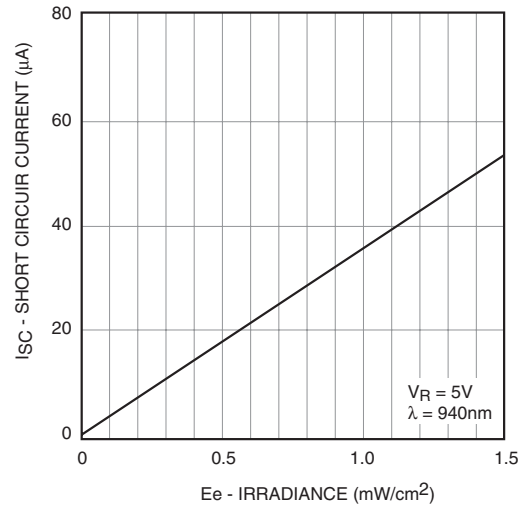
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_R$	Reverse Voltage	$I_R = 0.1\text{mA}$	32			V
$I_{R(D)}$	Dark Reverse Current	$V_R = 10\text{V}$			30	nA
$\lambda_{PK}$	Peak Sensitivity	$V_R = 5\text{V}$		940		nm
$\Theta$	Reception Angle @ 1/2 Power			$\pm 60$		$^\circ$
$I_{PH}$	Photo Current	$E_e = 1.0\text{mW/cm}^2, V_{CE} = 5\text{V}^{(4)}$	25	37		$\mu\text{A}$
C	Capacitance	$V_R = 3\text{V}$		25		pF
$t_r$	Rise Time	$V_R = 10\text{V}, R_L = 50\Omega$		50		ns
$t_f$	Fall Time	$V_R = 10\text{V}, R_L = 50\Omega$		50		ns
$\lambda_{0.5}$	Spectral Sensitivity QSB34GR, QSB34ZR QSB34CGR, QSB34CZR		730 400		1100 1100	nm

## Typical Performance Curves

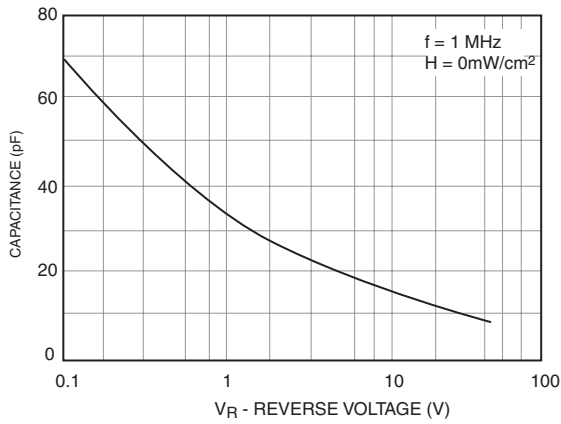
**Fig. 1 Relative Spectral Sensitivity vs. Wavelength**



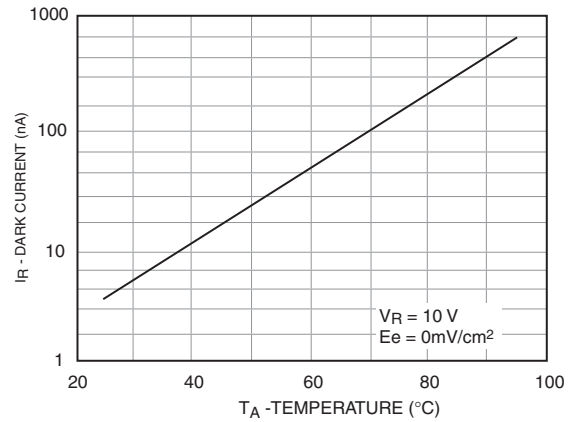
**Fig. 2 Short Circuit Current vs. Irradiance**



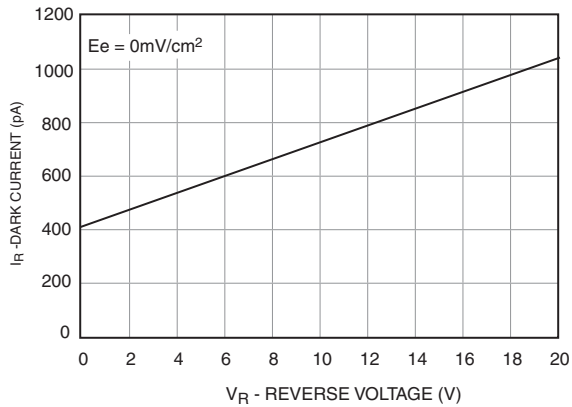
**Fig. 3 Capacitance vs. Reverse Voltage**



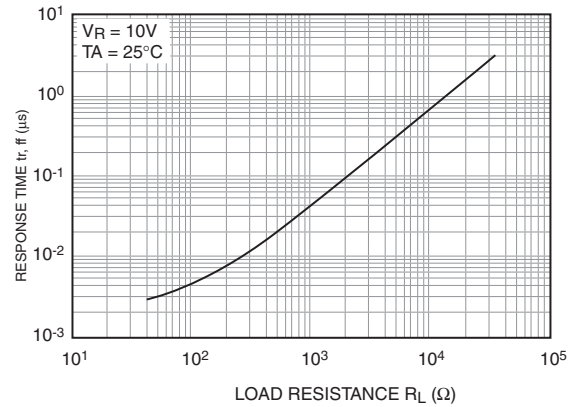
**Fig. 4 Dark Current vs. Temperature**



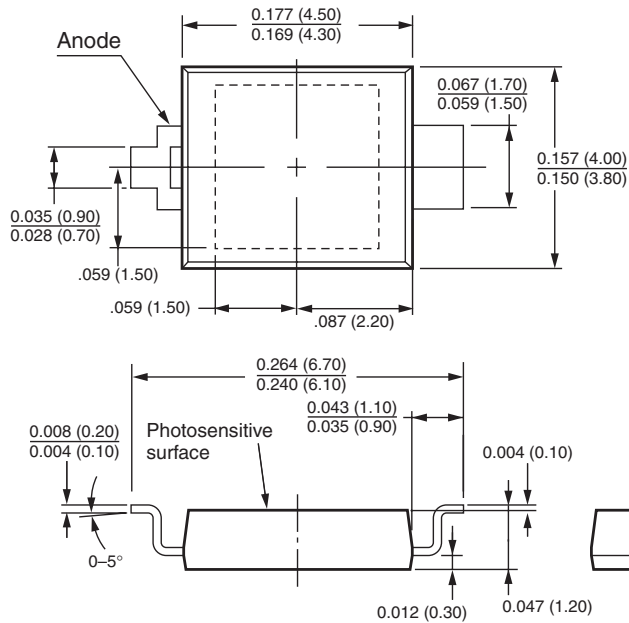
**Fig. 5 Dark Current vs. Reverse Voltage**



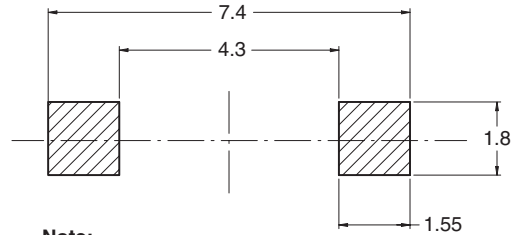
**Fig. 6 Response Time vs. Load Resistance**



### Package Dimensions, QSB34ZR



### Recommended Solder Screen Pattern (For Reference Only)

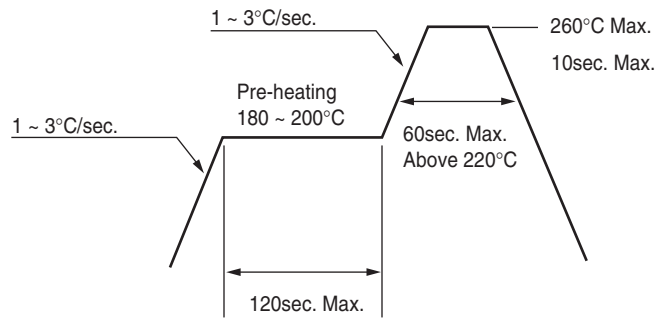


- Note:**  
 1. All dimensions in mm  
 2. Pattern applies to both QSB34GR and QSB34Z

**Note:**

1. Dimensions for all drawings are in inches (mm).
2. Tolerance of  $\pm 0.005$  (.13) on all non-nominal dimensions unless otherwise specified.

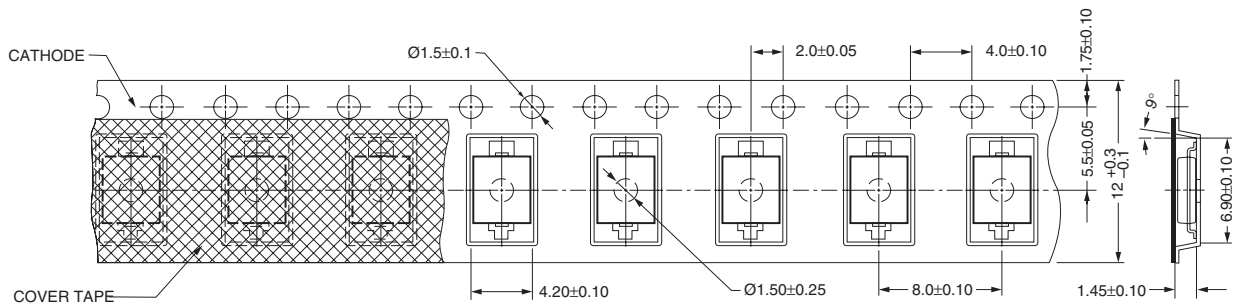
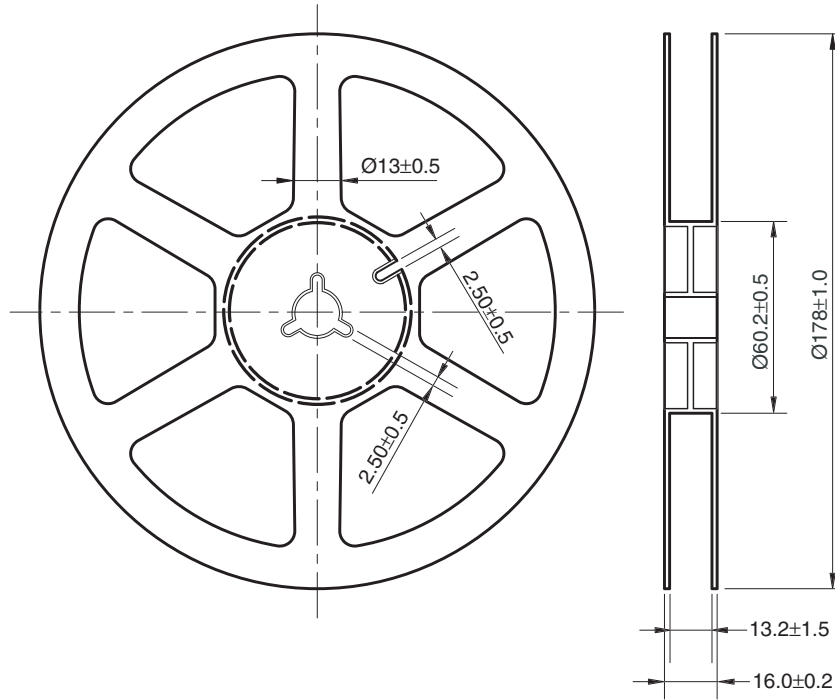
### Recommend IR Reflow Soldering Profile



### Ordering Information

Option	Description
QSB34GR	Gullwing, 1000 units per reel
QSB34ZR	Z-Bend reversed, 1000 units per reel
QSB34CGR	Gullwing, 1000 units per reel
QSB34CZR	Z-Bend reversed, 1000 units per reel

### Tape & Reel Dimensions




Unit: mm



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