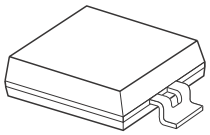
FAIRCHILD SEMICONDUCTOR®

June 2013

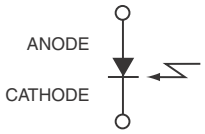
QSB34GR / QSB34ZR / QSB34CGR / QSB34CZR
Surface-Mount Silicon Pin Photodiode

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
- Available in 0.470 inch (12 mm) Width Tape on
  7 inch (178 mm) Diameter Reel: 1,000 Units per Reel



Schematic



Ordering Information

Part Number	Operating Temperature	Package	Packing Method
QSB34GR	-25 to +85°C	PLCC 2L	Tape and Reel
QSB34ZR			
QSB34CGR			
QSB34CZR			

Absolute Maximum Ratings

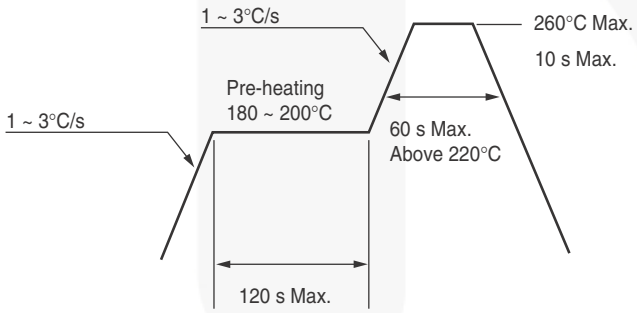
Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at T_A = 25°C unless otherwise specified.

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

Note:

1. Soldering time ≤ 5 s.

Recommend I_R Reflow Soldering Profile



Electrical / Optical Characteristics

Values are at T_A = 25°C unless specified otherwise.

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

Typical Performance Characteristics

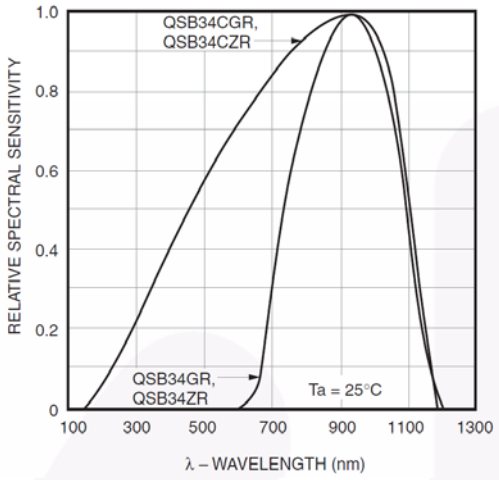


Figure 1. Relative Spectral Sensitivity vs. Wavelength

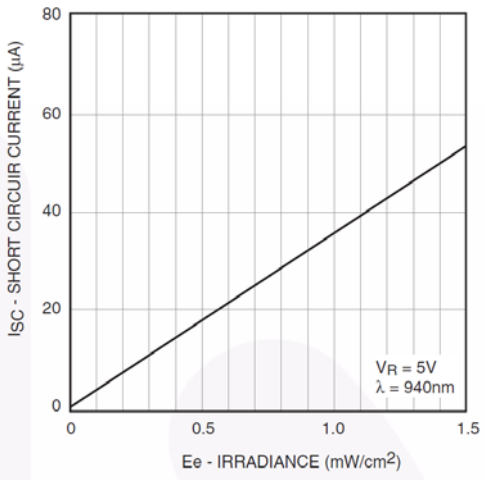


Figure 2. Short Circuit Current vs. Irradiance

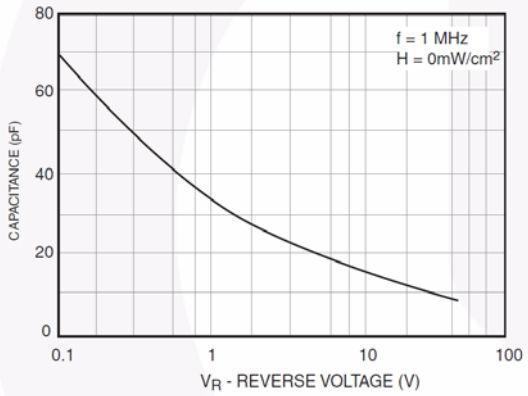


Figure 3. Capacitance vs. Reverse Voltage

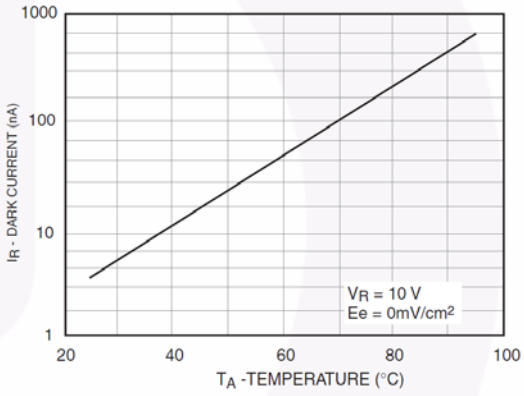


Figure 4. Dark Current vs. Temperature

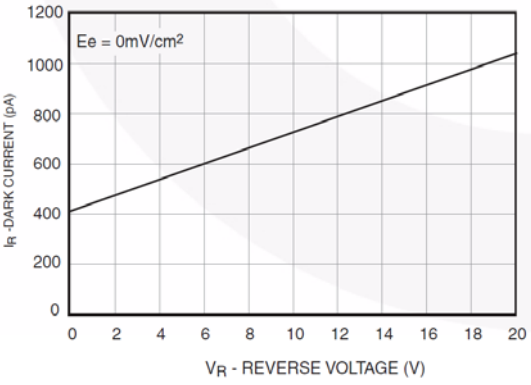


Figure 5. Dark Current vs. Reverse Voltage

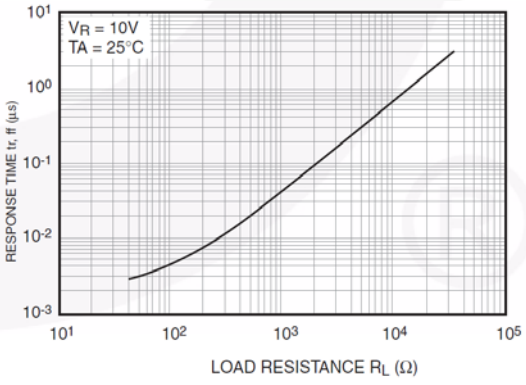
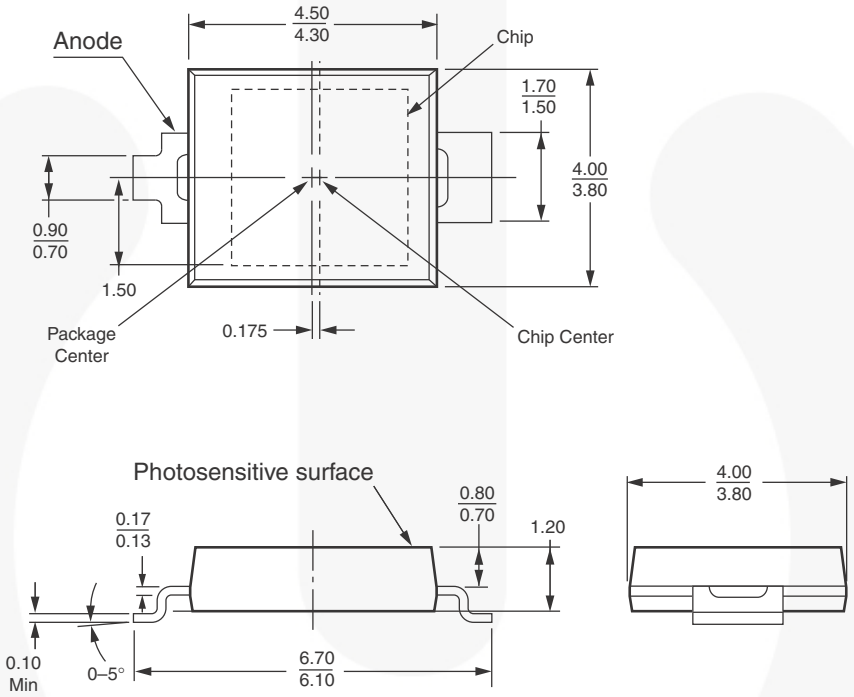


Figure 6. Response Time vs. Load Resistance

Physical Dimensions

PLCC 2L (QSB34GR / CGR)



Notes:

1. Dimensions for all drawings are in mm.
2. Tolerance of ±0.13 on all non-nominal dimensions unless otherwise specified.

Figure 7. PLCC DETECTOR (ACTIVE)

Package drawings are provided as a service to customers considering Fairchild components. Drawings may change in any manner without notice. Please note the revision and/or date on the drawing and contact a Fairchild Semiconductor representative to verify or obtain the most recent revision. Package specifications do not expand the terms of Fairchild's worldwide terms and conditions, specifically the warranty therein, which covers Fairchild products.

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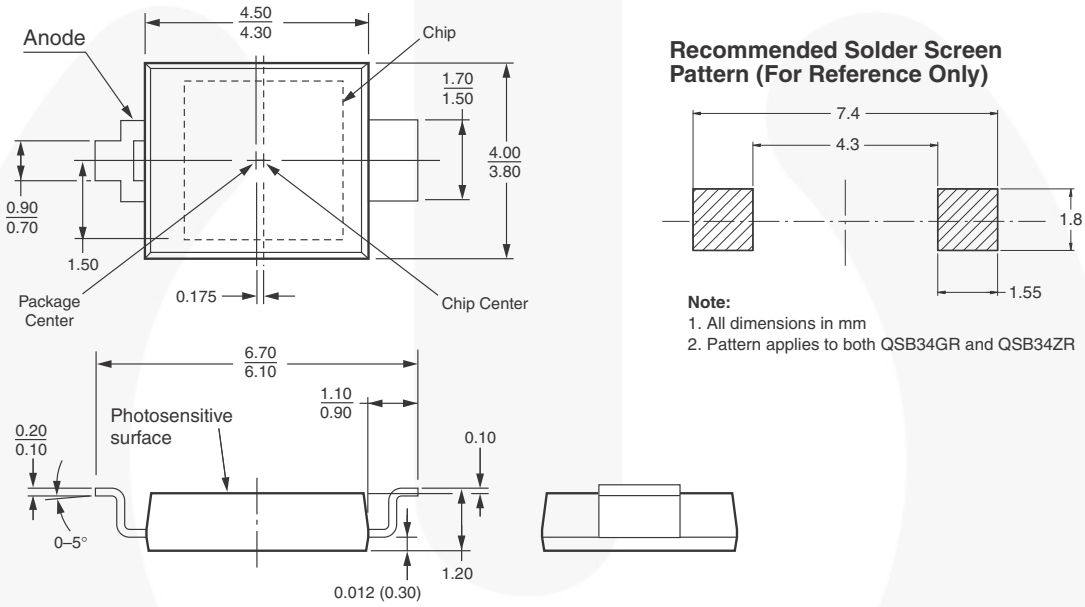
Physical Dimensions (continued)

PLCC 2L (QSB34ZR / CZR)



Note:

1. Dimensions for all drawings are in mm.
2. Tolerance of ±0.13 on all non-nominal dimensions unless otherwise specified.

Figure 8. PLCC DETECTOR (ACTIVE)

Package drawings are provided as a service to customers considering Fairchild components. Drawings may change in any manner without notice. Please note the revision and/or date on the drawing and contact a Fairchild Semiconductor representative to verify or obtain the most recent revision. Package specifications do not expand the terms of Fairchild's worldwide terms and conditions, specifically the warranty therein, which covers Fairchild products.

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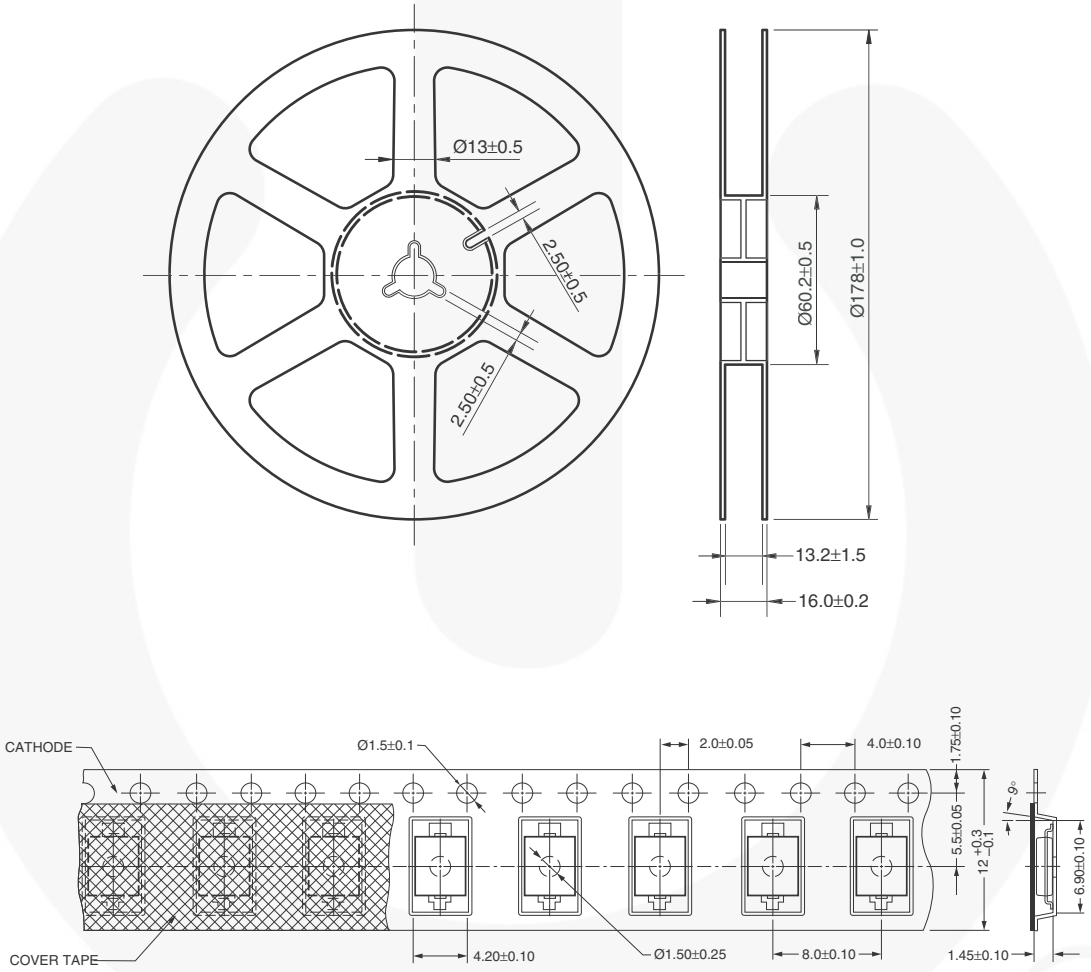
Tape and Reel Dimensions



Unit: mm

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Preliminary	First Production	Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

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