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Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

FAIRCHILD SEMICONDUCTOR®

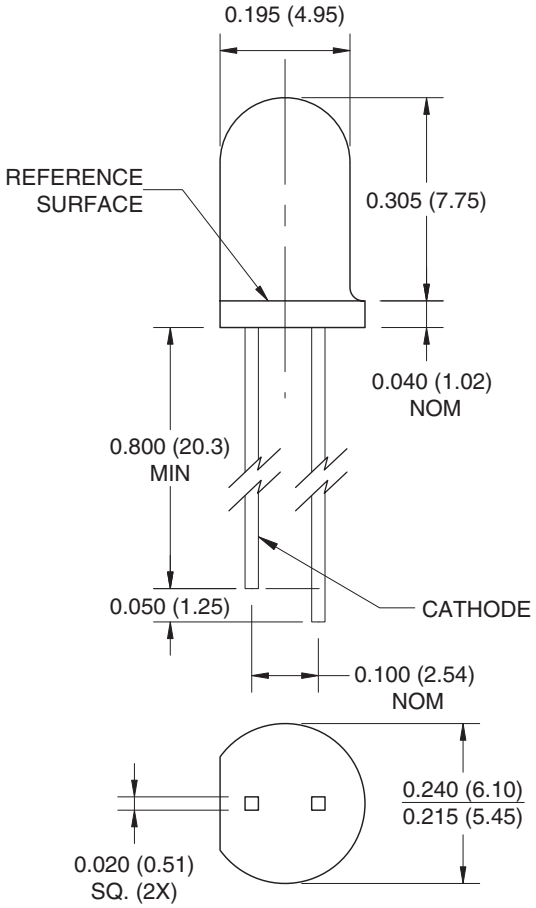
November 2018

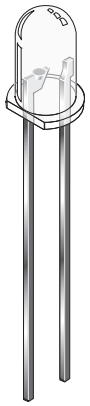
QSD2030
Plastic Silicon Photodiode

Features

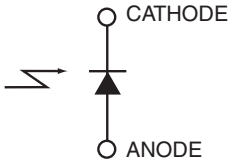
- PIN photodiode
- Package type: T-1 3/4 (5mm lens diameter)
- Wide reception angle, 40°
- Package material and color: clear epoxy
- High sensitivity
- Peak sensitivity λ = 880nm
- Radiant sensitive area: 1.245mm x 1.245mm

Package Dimensions





Schematic



Notes:
1. Dimensions for all drawings are in inches (mm).
2. Tolerance of ±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	Unit
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
V_{BR}	Reverse Breakdown Voltage	50	V
P_D	Power Dissipation[1]	100	mW

Notes:

1. Derate power dissipation linearly 1.33mW/°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_{PS}	Peak Sensitivity Wavelength			880		nm
λ_{SR}	Wavelength Sensitivity Range		400		1100	nm
Θ	Reception Angle			±20		°
V_F	Forward Voltage	I_F = 80mA		1.3		V
I_D	Reverse Dark Current	V_R = 10V, Ee = 0			10	nA
I_L	Reverse Light Current	Ee = 0.5mW/cm^2, V_R = 5V, λ = 950nm	15	25		µA
V_O	Open Circuit Voltage	Ee = 0.5mW/cm^2, λ = 880nm		420		mV
TC_V	Temperature Coefficient of V_O			+0.6		mV / K
I_{SC}	Short Circuit Current	Ee = 0.5mW/cm^2, λ = 880nm		50		µA
TC_I	Temperature Coefficient of I_{SC}			+0.3		% / K
C	Capacitance	V_R = 0, f = 1MHz, Ee = 0		15		pF
t_r	Rise Time	V_R = 5V, R_L = 50Ω, λ = 950nm		5		ns
t_f	Fall Time			5		

Typical Performance Characteristics

Figure 1. Reverse Light Current vs. Emitter Output Power

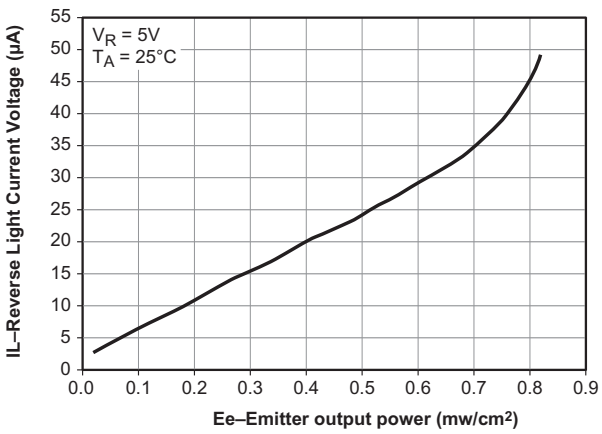


Figure 2. Angular Response

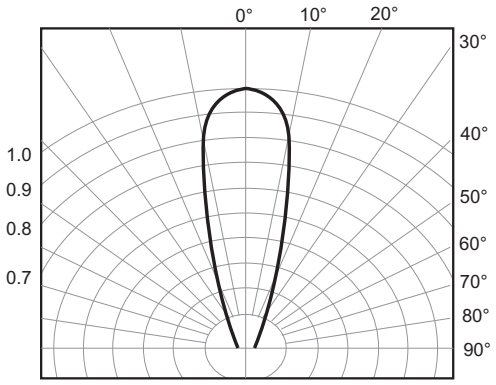


Figure 3. Capacitance vs. Reverse Voltage

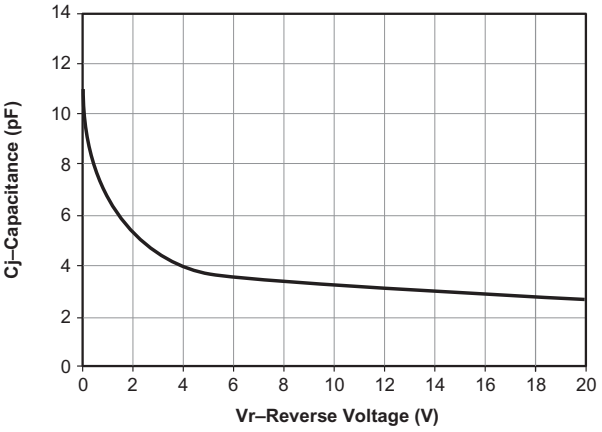
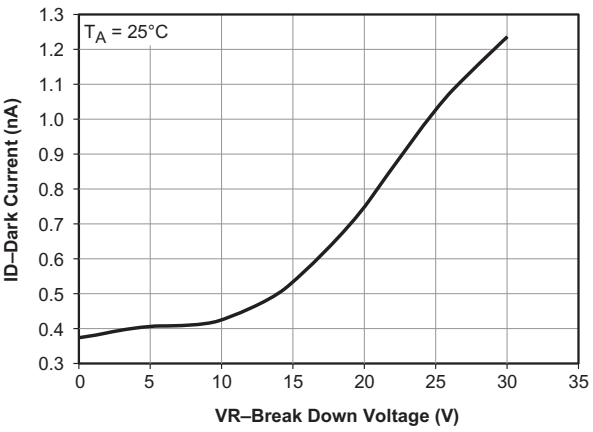


Figure 4. Dark Current vs. Reverse Voltage



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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.
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