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August 2016

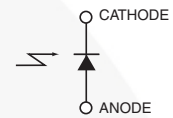
# QSD2030F Plastic Silicon Photodiode

## Features

- PIN Photodiode
- Package Type: T-1 3/4 (5 mm Lens Diameter)
- Wide Reception Angle: 40°
- Daylight Filter
- Package Material and Color: Black Epoxy
- High Sensitivity
- Peak Sensitivity  $\lambda = 880 \text{ nm}$
- Radiant Sensitive Area: 1.245 mm x 1.245 mm



Schematic



## Ordering Information

Part Number	Operating Temperature	Package	Packing Method
QSD2030F	-40 to +100°C	T-1 3/4	Bulk

QSD2030F — Plastic Silicon Photodiode

## 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  $T_A = 25^\circ\text{C}$  unless otherwise specified.

Symbol	Parameter	Min.	Unit
$T_{OPR}$	Operating Temperature	-40 to +100	°C
$T_{STG}$	Storage Temperature	-40 to + 100	
$T_{SOL-I}$	Soldering Temperature (Iron) <sup>(1,2,3)</sup>	240 for 5 s	
$T_{SOL-F}$	Soldering Temperature (Flow) <sup>(1,2)</sup>	260 for 10 s	
$V_{BR}$	Reverse Breakdown Voltage	50	V
$P_D$	Power Dissipation <sup>(4)</sup>	100	mW

### Notes:

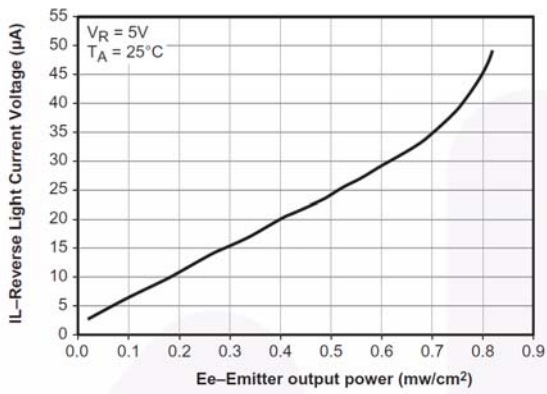
1. RMA flux is recommended.
2. Methanol or isopropyl alcohols are recommended as cleaning agents.
3. Soldering iron tip 1/16 inch (1.6 mm) minimum from housing.
4. Derate power dissipation linearly 1.33 mW/°C above 25°C.

## Electrical / Optical Characteristics

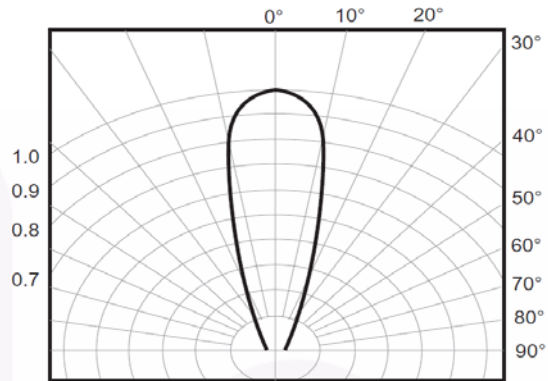
Values are at  $T_A = 25^\circ\text{C}$  unless specified otherwise.

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$\lambda_{PS}$	Peak Sensitivity Wavelength			880		nm
$\lambda_{SR}$	Wavelength Sensitivity Range		700		1100	nm
$\Theta$	Reception Angle			±20		°
$V_F$	Forward Voltage	$I_F = 80 \text{ mA}$		1.3		V
$I_D$	Reverse Dark Current	$V_R = 10 \text{ V}, E_e = 0$			10	nA
$I_L$	Reverse Light Current	$E_e = 0.5 \text{ mW/cm}^2,$ $V_R = 5 \text{ V}, \lambda = 950 \text{ nm}$	15	25		μA
$V_O$	Open Circuit Voltage	$E_e = 0.5 \text{ mW/cm}^2,$ $\lambda = 880 \text{ nm}$		420		mV
$TC_V$	Temperature Coefficient of $V_O$			+0.6		mV/K
$I_{SC}$	Short Circuit Current	$E_e = 0.5 \text{ mW/cm}^2,$ $\lambda = 880 \text{ nm}$		50		μA
$TC_I$	Temperature Coefficient of $I_{SC}$			+0.3		%/K
C	Capacitance	$V_R = 0, f = 1 \text{ MHz}, E_e = 0$		15		pF
$t_r$	Rise Time	$V_R = 5 \text{ V}, R_L = 50 \Omega,$		5		ns
$t_f$	Fall Time	$\lambda = 950 \text{ nm}$		5		

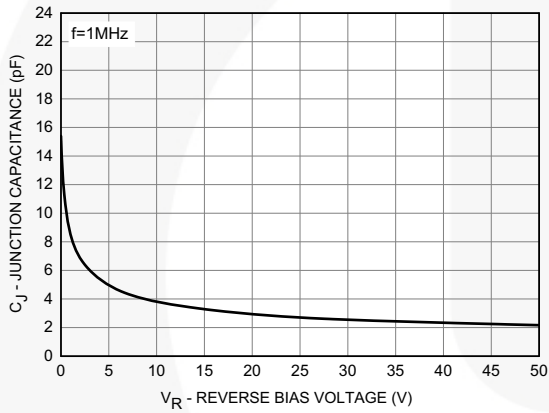
## Typical Performance Characteristics



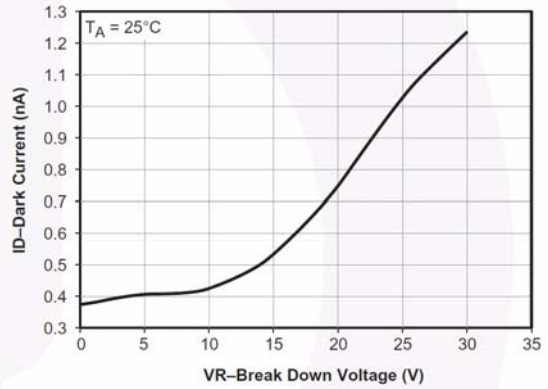
**Figure 1. Reverse Light Current vs. Emitter Output Power**



**Figure 2. Angular Response**



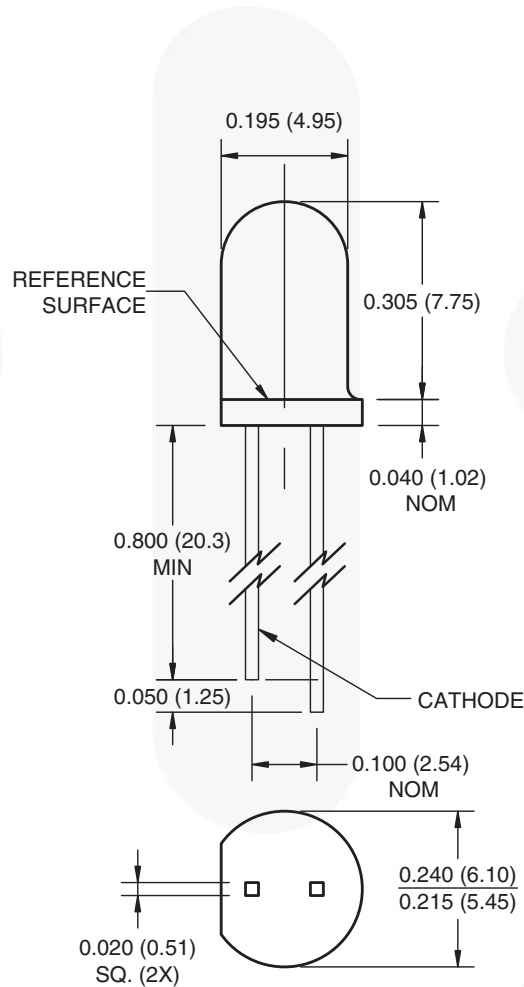
**Figure 3. Capacitance vs. Reverse Voltage**



**Figure 4. Dark Current vs. Reverse Voltage**

## Physical Dimensions

### T-1 3/4



**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.

**Figure 5. T-1 3/4, 5 MM LED (ACTIVE)**

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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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