

# Plastic Silicon Photodiode

## QSD2030F

### 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  $\lambda = 880$  nm
- Radiant Sensitive Area: 1.245 mm x 1.245 mm
- This is a Pb-Free Device

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
$T_{OPR}$	Operating Temperature	-40 to +100	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-40 to +100	$^\circ\text{C}$
$T_{SOL-I}$	Soldering Temperature (Iron) (Note 1), (Note 2), (Note 3)	240 for 5 s	$^\circ\text{C}$
$T_{SOL-F}$	Soldering Temperature (Flow) (Note 1), (Note 2)	260 for 10 s	$^\circ\text{C}$
$V_{BR}$	Reverse Breakdown Voltage	50	V
$P_D$	Power Dissipation (Note 4)	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.

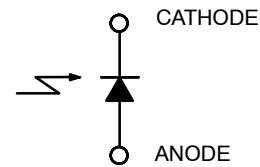
1. RMA flux is recommended
2. Methanol or isopropyl alcohols are recommended as cleaning agents.
3. Soldering iron tip 1/16 inch (1.6 mm) minimum from housing..
4. Derate power dissipation linearly 1.33 mW/ $^\circ\text{C}$  above 25 $^\circ\text{C}$ .

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

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

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.

### SCHEMATIC



T-1 3/4, 5MM PHOTODIODE  
CASE 100CF

### ORDERING INFORMATION

Device	Package	Shipping
QSD2030F	T-1 3/4, 5MM PHOTODIODE (Pb-Free)	250 / Bulk Bag

TYPICAL PERFORMANCE CHARACTERISTICS

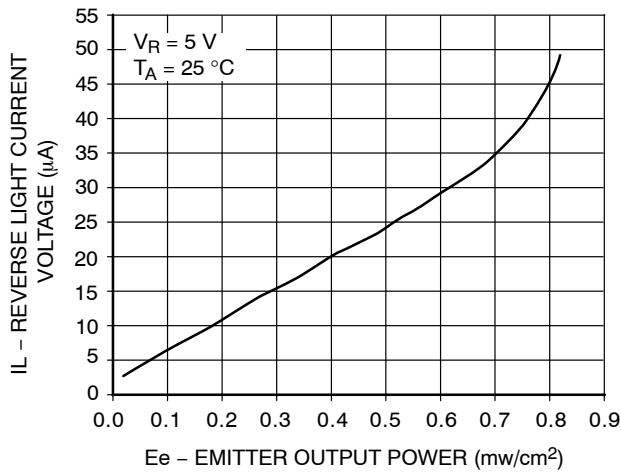


Figure 1. Reverse Light Current vs. Emitter Output Power

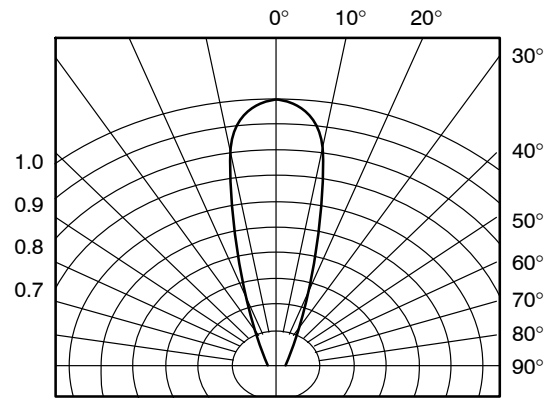


Figure 2. Angular Response

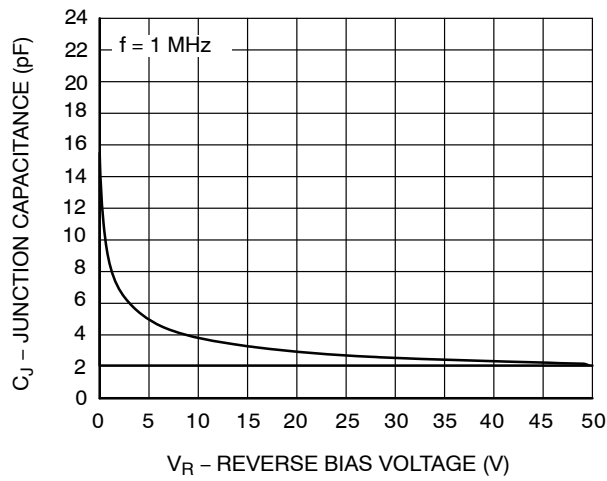


Figure 3. Capacitance vs. Reverse Voltage

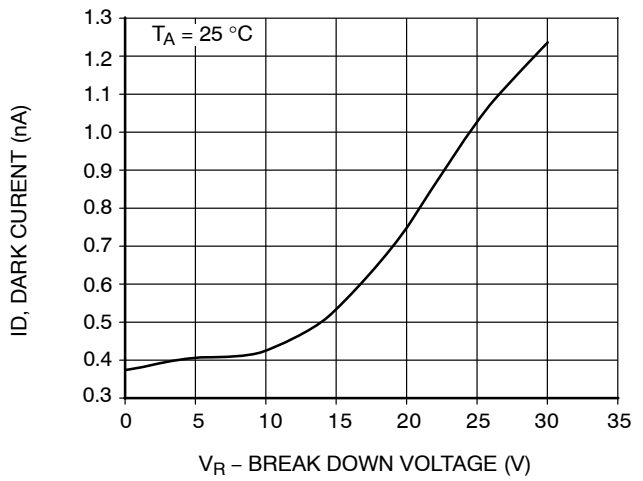
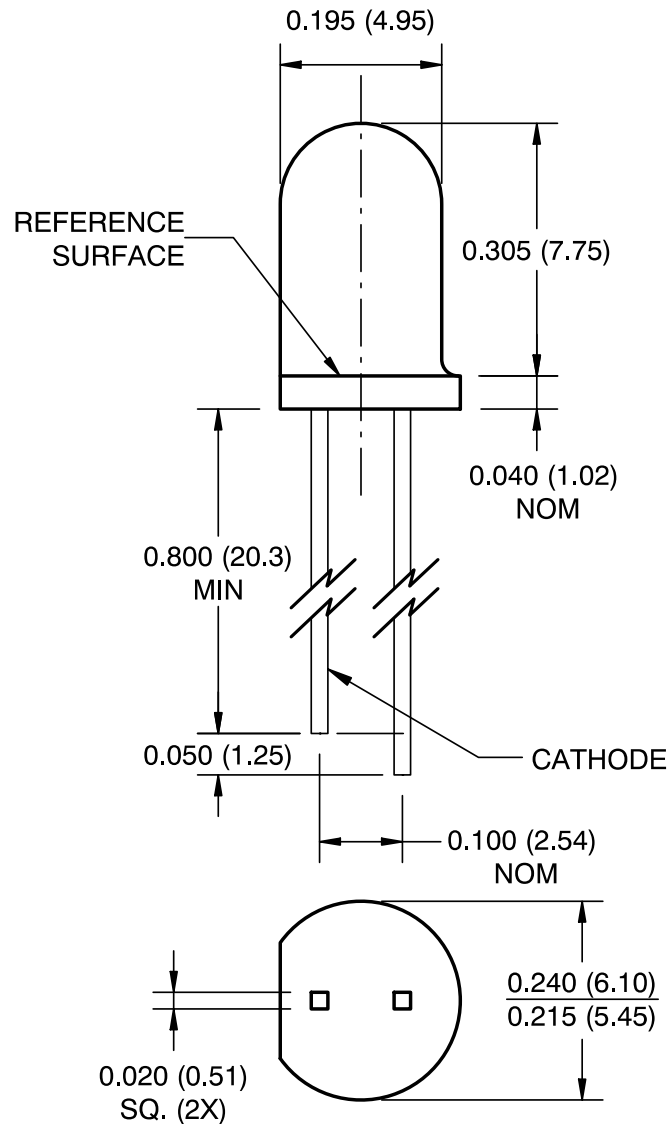


Figure 4. Dark Current vs. Reverse Voltage

**T-1 3/4, 5MM PHOTODIODE**  
CASE 100CF  
ISSUE O


DATE 30 NOV 2016



**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.

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