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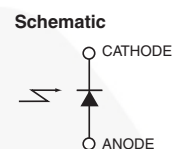


August 2016

## 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



### Ordering Information

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

## 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             |
|--------------------|-------------------------------------------------|--------------|------------------|
| $T_{\text{OPR}}$   | Operating Temperature                           | -40 to +100  | $^\circ\text{C}$ |
| $T_{\text{STG}}$   | Storage Temperature                             | -40 to + 100 |                  |
| $T_{\text{SOL-I}}$ | Soldering Temperature (Iron) <sup>(1,2,3)</sup> | 240 for 5 s  |                  |
| $T_{\text{SOL-F}}$ | Soldering Temperature (Flow) <sup>(1,2)</sup>   | 260 for 10 s |                  |
| $V_{\text{BR}}$    | 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/ $^\circ\text{C}$  above  $25^\circ\text{C}$ .

## Electrical / Optical Characteristics

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

| Symbol                | Parameter                                  | Test Conditions                                                                | Min. | Typ.     | Max. | Units         |
|-----------------------|--------------------------------------------|--------------------------------------------------------------------------------|------|----------|------|---------------|
| $\lambda_{\text{PS}}$ | Peak Sensitivity Wavelength                |                                                                                |      | 880      |      | nm            |
| $\lambda_{\text{SR}}$ | Wavelength Sensitivity Range               |                                                                                | 700  |          | 1100 | nm            |
| $\Theta$              | Reception Angle                            |                                                                                |      | $\pm 20$ |      | $^\circ$      |
| $V_F$                 | 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                      | $E_e = 0.5 \text{ mW/cm}^2$ ,<br>$V_R = 5 \text{ V}, \lambda = 950 \text{ nm}$ | 15   | 25       |      | $\mu\text{A}$ |
| $V_O$                 | Open Circuit Voltage                       | $E_e = 0.5 \text{ mW/cm}^2$ ,<br>$\lambda = 880 \text{ nm}$                    |      | 420      |      | mV            |
| $\text{TC}_V$         | Temperature Coefficient of $V_O$           |                                                                                |      | +0.6     |      | mV/K          |
| $I_{\text{SC}}$       | Short Circuit Current                      | $E_e = 0.5 \text{ mW/cm}^2$ ,<br>$\lambda = 880 \text{ nm}$                    |      | 50       |      | $\mu\text{A}$ |
| $\text{TC}_I$         | Temperature Coefficient of $I_{\text{SC}}$ |                                                                                |      | +0.3     |      | %/K           |
| C                     | Capacitance                                | $V_R = 0, f = 1 \text{ MHz}, E_e = 0$                                          |      | 15       |      | pF            |
| $t_r$                 | Rise Time                                  | $V_R = 5 \text{ V}, R_L = 50 \Omega$ ,<br>$\lambda = 950 \text{ nm}$           |      | 5        |      | ns            |
| $t_f$                 | Fall Time                                  |                                                                                |      | 5        |      |               |

## Typical Performance Characteristics

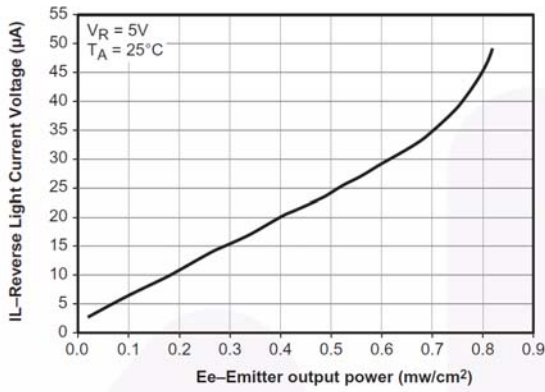


Figure 1. Reverse Light Current vs. Emitter Output Power

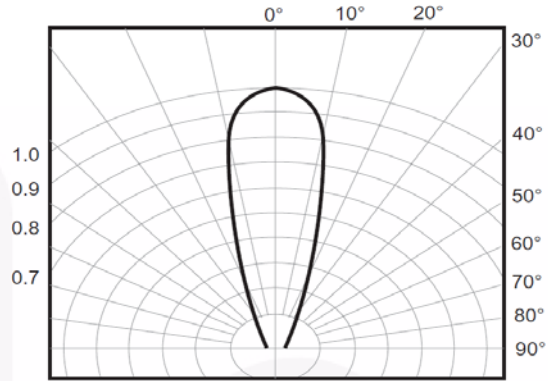


Figure 2. Angular Response

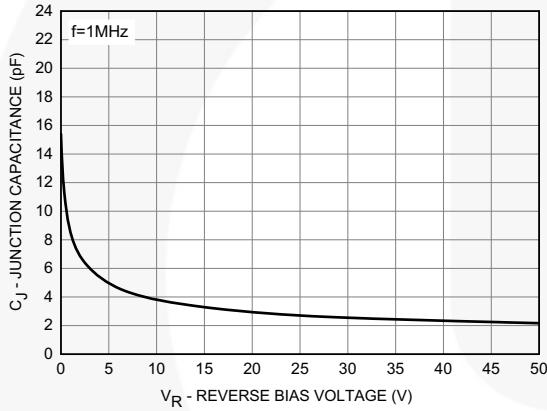


Figure 3. Capacitance vs. Reverse Voltage

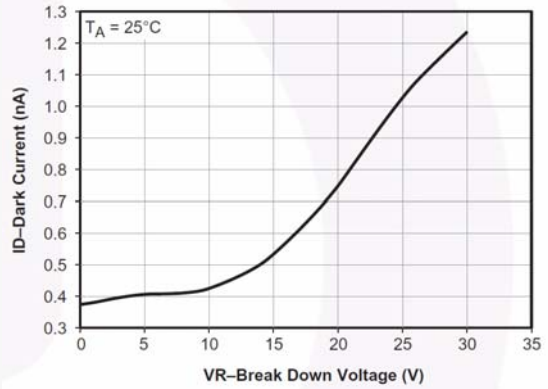
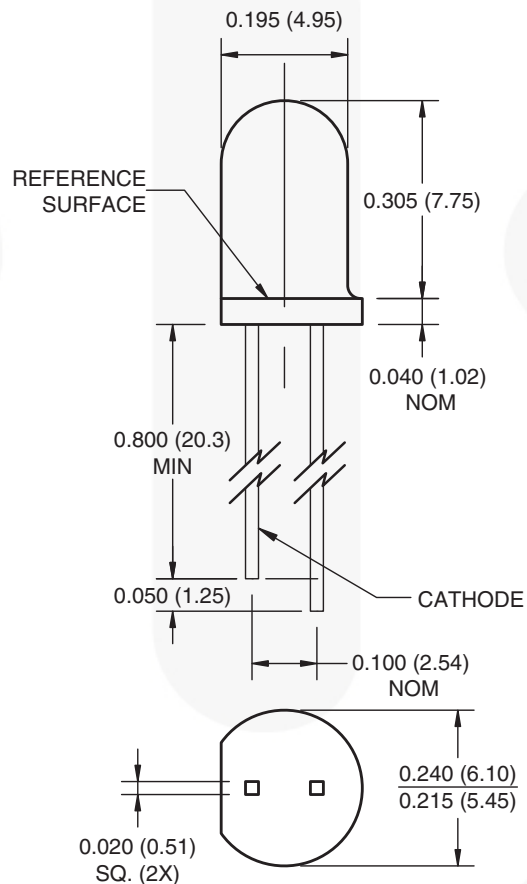


Figure 4. Dark Current vs. Reverse Voltage

## 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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