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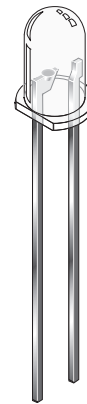
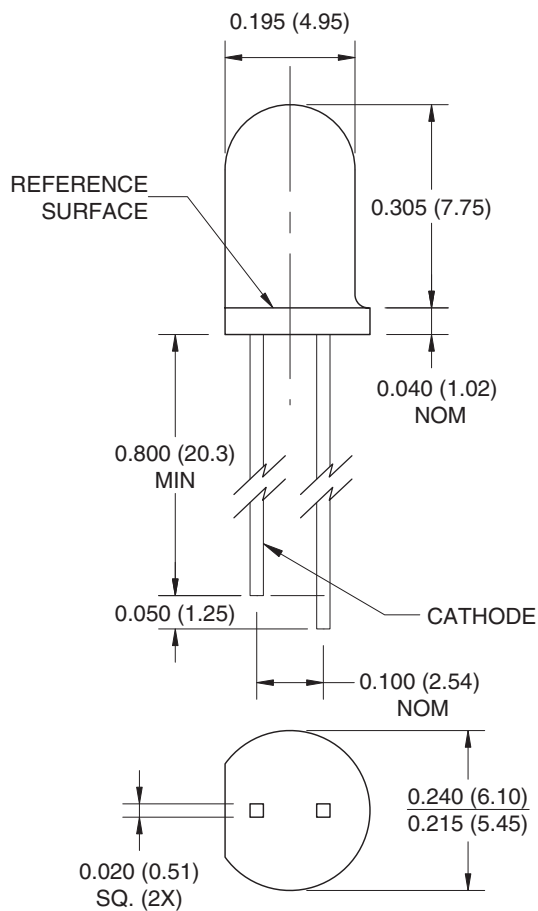
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# QSD2030 Plastic Silicon Photodiode

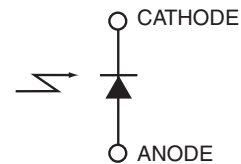
## Features

- 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  $\lambda = 880\text{nm}$
- Radiant sensitive area: 1.245mm x 1.245mm

## Package Dimensions



## Schematic



## 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.

**Absolute Maximum Ratings** ( $T_A = 25^\circ\text{C}$  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             |
|--------------------|-------------------------------------------------|----------------|------------------|
| $T_{\text{OPR}}$   | Operating Temperature                           | -40 to +100    | $^\circ\text{C}$ |
| $T_{\text{STG}}$   | Storage Temperature                             | -40 to +100    | $^\circ\text{C}$ |
| $T_{\text{SOL-I}}$ | Soldering Temperature (Iron) <sup>(2,3,4)</sup> | 240 for 5 sec  | $^\circ\text{C}$ |
| $T_{\text{SOL-F}}$ | Soldering Temperature (Flow) <sup>(2,3)</sup>   | 260 for 10 sec | $^\circ\text{C}$ |
| $V_{\text{BR}}$    | Reverse Breakdown Voltage                       | 50             | V                |
| $P_{\text{D}}$     | Power Dissipation <sup>(1)</sup>                | 100            | mW               |

**Notes:**

1. Derate power dissipation linearly 1.33mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$ .
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** ( $T_A = 25^\circ\text{C}$ )

| Symbol                | Parameter                                  | Test Conditions                                                                                      | Min. | Typ.     | Max. | Units         |
|-----------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------|------|----------|------|---------------|
| $\lambda_{\text{PS}}$ | Peak Sensitivity Wavelength                |                                                                                                      |      | 880      |      | nm            |
| $\lambda_{\text{SR}}$ | Wavelength Sensitivity Range               |                                                                                                      | 400  |          | 1100 | nm            |
| $\Theta$              | Reception Angle                            |                                                                                                      |      | $\pm 20$ |      | $^\circ$      |
| $V_{\text{F}}$        | Forward Voltage                            | $I_{\text{F}} = 80\text{mA}$                                                                         |      | 1.3      |      | V             |
| $I_{\text{D}}$        | Reverse Dark Current                       | $V_{\text{R}} = 10\text{V}$ , $E_{\text{e}} = 0$                                                     |      |          | 10   | nA            |
| $I_{\text{L}}$        | Reverse Light Current                      | $E_{\text{e}} = 0.5\text{mW}/\text{cm}^2$ , $V_{\text{R}} = 5\text{V}$ ,<br>$\lambda = 950\text{nm}$ | 15   | 25       |      | $\mu\text{A}$ |
| $V_{\text{O}}$        | Open Circuit Voltage                       | $E_{\text{e}} = 0.5\text{mW}/\text{cm}^2$ , $\lambda = 880\text{nm}$                                 |      | 420      |      | mV            |
| $\text{TC}_V$         | Temperature Coefficient of $V_{\text{O}}$  |                                                                                                      |      | +0.6     |      | mV / K        |
| $I_{\text{SC}}$       | Short Circuit Current                      | $E_{\text{e}} = 0.5\text{mW}/\text{cm}^2$ , $\lambda = 880\text{nm}$                                 |      | 50       |      | $\mu\text{A}$ |
| $\text{TC}_I$         | Temperature Coefficient of $I_{\text{SC}}$ |                                                                                                      |      | +0.3     |      | % / K         |
| C                     | Capacitance                                | $V_{\text{R}} = 0$ , $f = 1\text{MHz}$ , $E_{\text{e}} = 0$                                          |      | 15       |      | pF            |
| $t_{\text{r}}$        | Rise Time                                  | $V_{\text{R}} = 5\text{V}$ , $R_{\text{L}} = 50\Omega$ , $\lambda = 950\text{nm}$                    |      | 5        |      | ns            |
| $t_{\text{f}}$        | Fall Time                                  |                                                                                                      |      | 5        |      |               |

## Typical Performance Characteristics

Figure 1. Reverse Light Current vs. Emitter Output Power

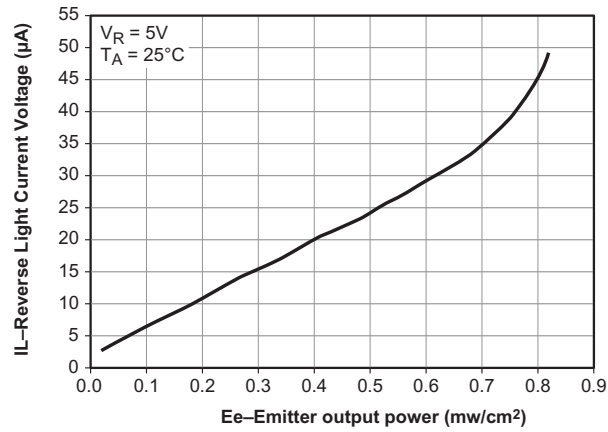


Figure 2. Angular Response

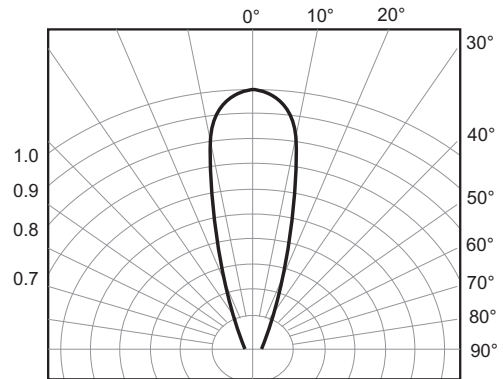


Figure 3. Capacitance vs. Reverse Voltage

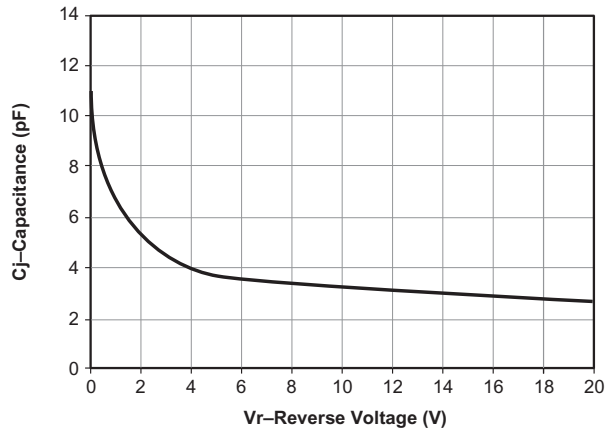
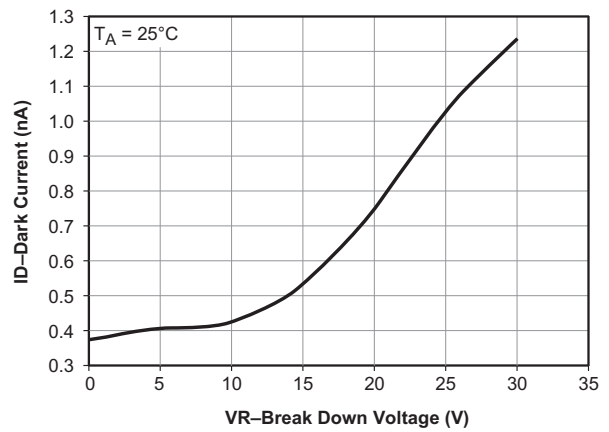


Figure 4. Dark Current vs. Reverse Voltage





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