

# Right Angle Surface Mount Infrared Phototransistor

## QTLP610CPD

### Description

QTLP610CPD is a phototransistor in miniature SMD package molded in a water clear plastic with right angle lens.

### Features

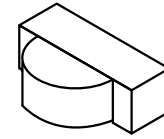
- NPN Silicon Phototransistor
- Right Angle Surface Mount Package
- Matched Emitters: QTLP610CIR
- Available in 0.315" (8 mm) width tape on 7" (178 mm) diameter reel; 2,000 Units per Reel
- High Photo Sensitivity
- Low Junction Capacitance
- Fast Response Time
- Water Clear Lens
- This Device is Pb-Free and Halide Free

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise noted)

| Symbol             | Parameter                                       | Value        | Unit |
|--------------------|---|--------------|------|
| T <sub>OPR</sub>   | Operating Temperature                           | -25 to +85   | °C   |
| T <sub>STG</sub>   | Storage Temperature                             | -40 to +90   | °C   |
| T <sub>SOL-I</sub> | Soldering Temperature (Iron)<br>(Notes 2, 3, 4) | 240 for 5 s  | °C   |
| T <sub>SOL-F</sub> | Soldering Temperature (Flow)<br>(Notes 2, 3)    | 260 for 10 s | °C   |
| V <sub>CE</sub>    | Collector Emitter Voltage                       | 30           | V    |
| V <sub>EC</sub>    | Emitter Collector Voltage                       | 5            | V    |
| P <sub>D</sub>     | Power Dissipation (Note 1)                      | 75           | mW   |

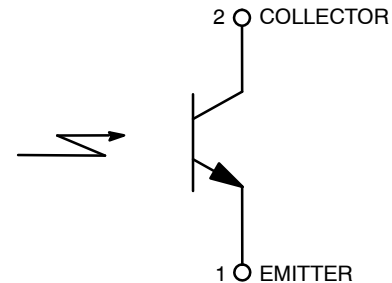
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. At 25°C or below.
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Pulse conditions: tp = 100 μs, T = 10 ms



CHIPLED DETECTOR SIDELOOKER  
 CASE 100CQ

### SCHEMATIC



### ORDERING INFORMATION

| Device       | Package  | Shipping†             |
|--------------|--|-----------------------|
| QTLP610CPDTR | CHIPLED<br>DETECTOR<br>SIDELOOKER<br>(Pb-Free) | 2000 /<br>Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

## QTLP610CPD

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

| Symbol         | Parameter                   | Test Conditions  | Min | Typ      | Max | Unit          |
|----------------|-----------------------------|--|-----|----------|-----|---------------|
| $\lambda_{PS}$ | Peak Sensitivity Wavelength |  | –   | 860      | –   | nm            |
| $\Theta$       | Reception Angle             |  | –   | $\pm 80$ | –   | $^\circ$      |
| $I_D$          | Dark Current                | $V_{CE} = 20\text{ V}, E_e = 0$                                | –   | –        | 100 | nA            |
| $BV_{CEO}$     | Collector–Emitter Breakdown | $I_C = 100\ \mu\text{A}, E_e = 0$                              | 30  | –        | –   | V             |
| $BV_{ECO}$     | Emitter–Collector Breakdown | $I_E = 100\ \mu\text{A}, E_e = 0$                              | 5   | –        | –   | V             |
| $I_{C(ON)}$    | On–State Collector Current  | $E_e = 1\ \text{mW}/\text{cm}^2, V_{CE} = 5\ \text{V}$         | 0.1 | 0.5      | –   | mA            |
| $V_{CE(SAT)}$  | Saturation Voltage          | $E_e = 1\ \text{mW}/\text{cm}^2, I_C = 2\ \text{mA}$           | –   | –        | 0.4 | V             |
| $t_r$          | Rise Time                   | $V_{CE} = 5\ \text{V}, R_L = 1000\ \Omega, I_C = 1\ \text{mA}$ | –   | 15       | –   | $\mu\text{s}$ |
| $t_f$          | Fall Time                   |  | –   | 15       | –   | $\mu\text{s}$ |

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.

# QTLP610CPD

## TYPICAL PERFORMANCE CHARACTERISTICS

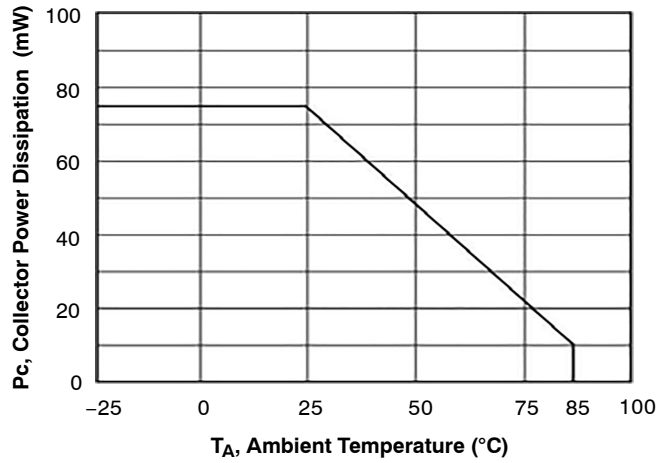


Figure 1. Collector Power Dissipation vs. Ambient Temperature

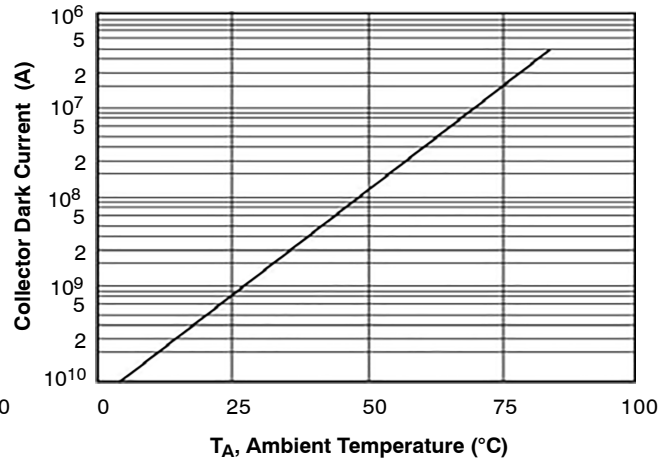


Figure 2. Collector Dark Current vs. Ambient temperature

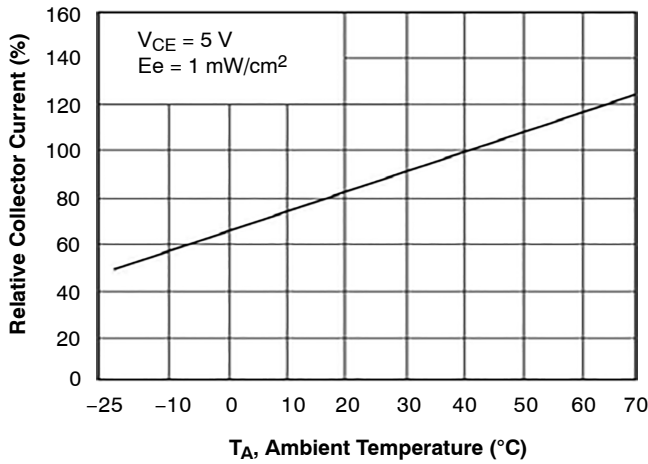


Figure 3. Relative Collector Current vs. Ambient Temperature

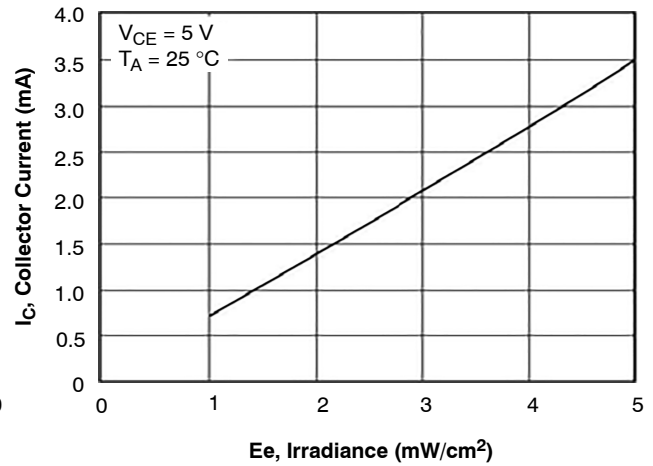


Figure 4. Collector Current vs. Irradiance

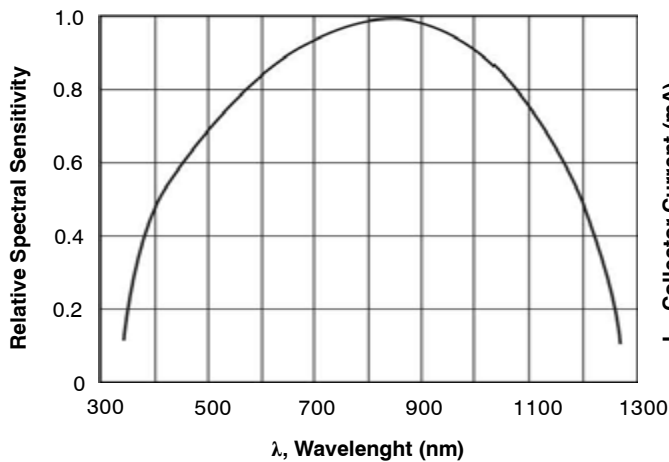


Figure 5. Spectral Sensitivity

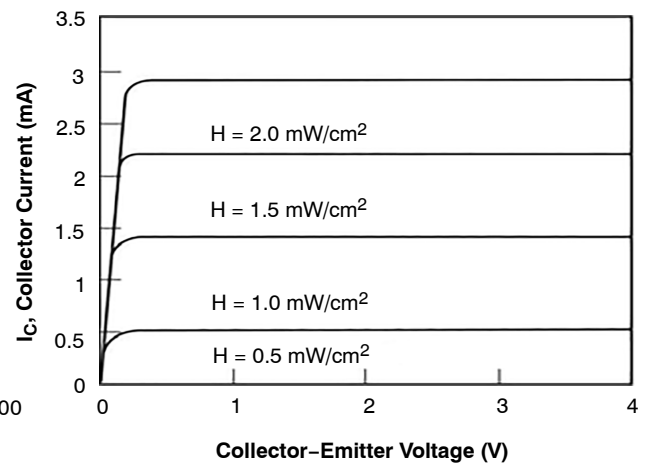
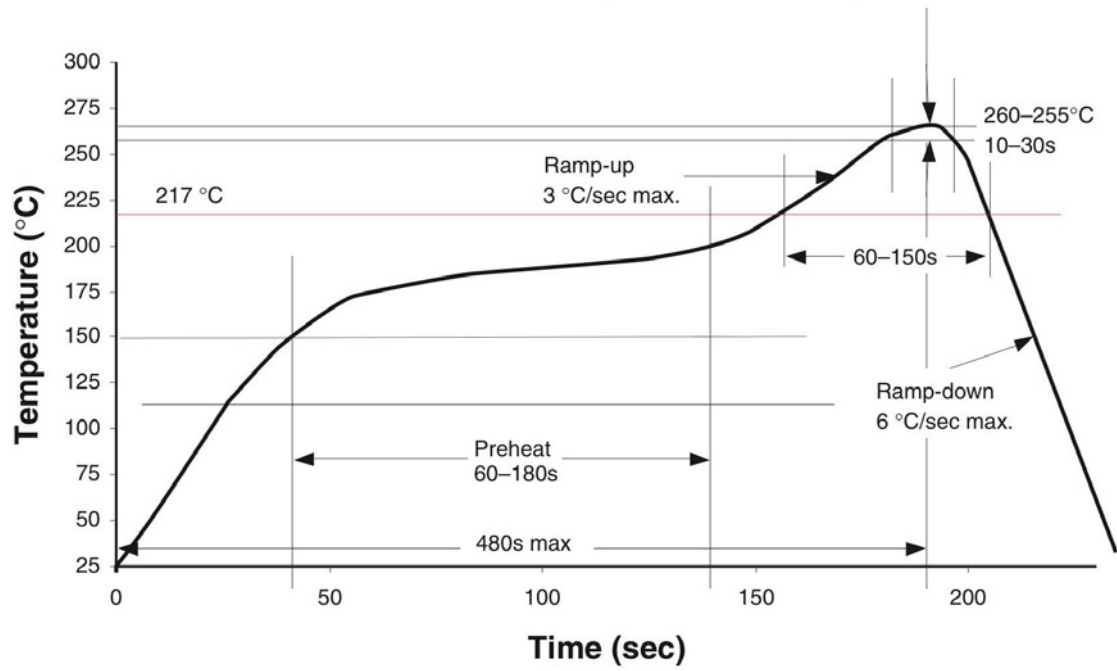


Figure 6. Collector Current vs. Collector-Emitter Voltage

# QTLP610CPD

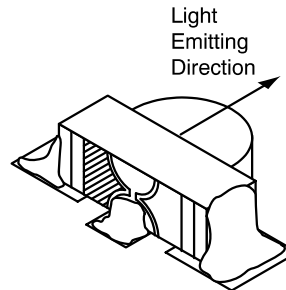
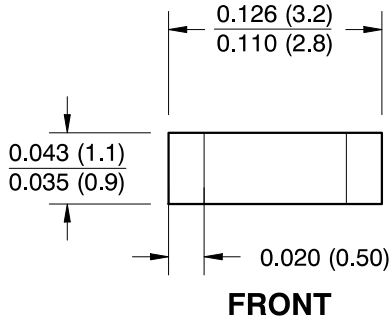
## RECOMMENDED IR REFLOW SOLDERING PROFILE

Classification Reflow Profile (JEDEC J-STD-020C)

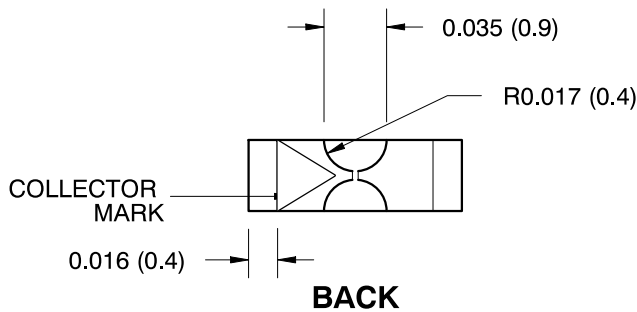
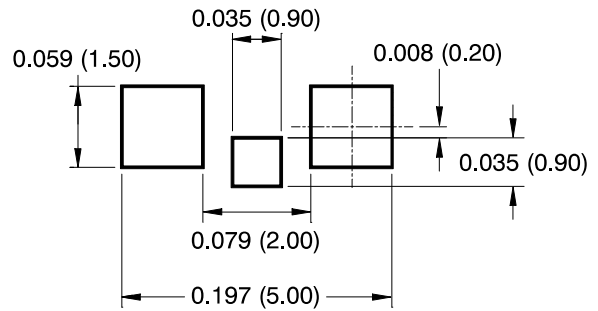
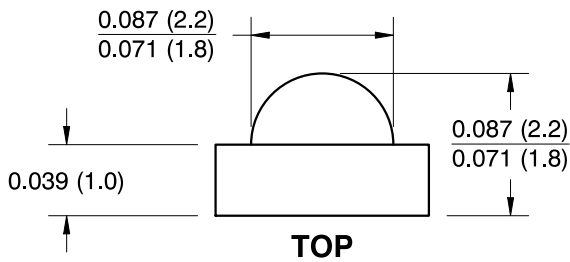


**CHIPLED DETECTOR SIDELOOKER**  
CASE 100CQ  
ISSUE O

DATE 30 NOV 2016



**MOUNTING EXAMPLE**



**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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