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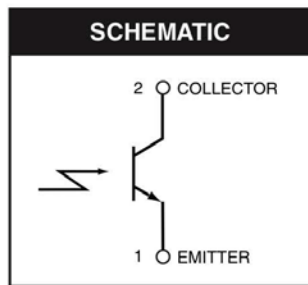
# QTLP610CPD

## Right Angle Surface Mount Infrared Phototransistor

QTLP61 OCPD is a phototransistor in miniature SMD package molded in a water clear plastic with right angle lens.

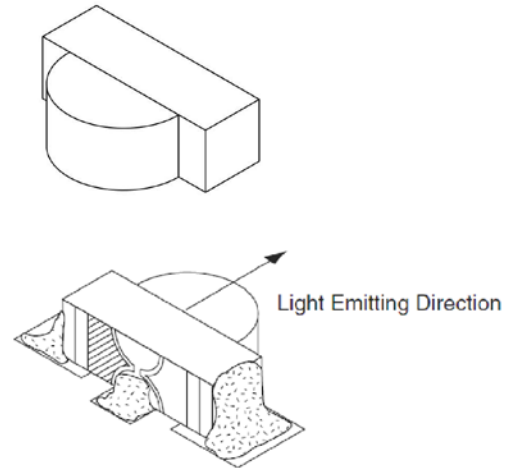
### FEATURES

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



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

| Parameter                                       | Symbol             | Rating         | Unit             |
|-------------------------------------------------|--------------------|----------------|------------------|
| Operating Temperature                           | $T_{\text{OPR}}$   | -25 to +85     | $^\circ\text{C}$ |
| Storage Temperature                             | $T_{\text{STG}}$   | -40 to +90     | $^\circ\text{C}$ |
| Soldering Temperature (Iron) <sup>(2,3,4)</sup> | $T_{\text{SOL-I}}$ | 240 for 5 sec  | $^\circ\text{C}$ |
| Soldering Temperature (Flow) <sup>(2,3)</sup>   | $T_{\text{SOL-F}}$ | 260 for 10 sec | $^\circ\text{C}$ |
| Collector Emitter Voltage                       | $V_{\text{CE}}$    | 30             | V                |
| Emitter Collector Voltage                       | $V_{\text{EC}}$    | 5              | V                |
| Power Dissipation <sup>(1)</sup>                | $P_{\text{D}}$     | 75             | mW               |

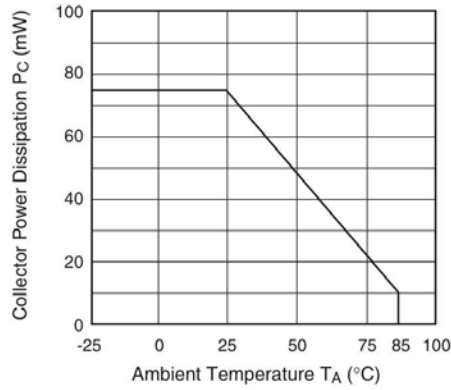
#### Notes:

1. At  $25^\circ\text{C}$  or below.
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Pulse conditions:  $t_p = 100\mu\text{s}$ ,  $T = 10\text{ ms}$ .

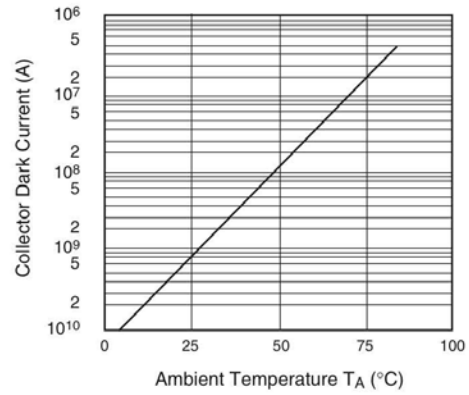
| <b>ELECTRICAL / OPTICAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ ) |                                                   |                |      |          |      |               |
|--------------------------------------------------------------------------|---------------------------------------------------|----------------|------|----------|------|---------------|
| PARAMETER                                                                | TEST CONDITIONS ( $\lambda_p = 940\text{nm}$ )    | SYMBOL         | MIN. | TYP.     | MAX. | UNITS         |
| Peak Sensitivity Wavelength                                              |                                                   | $\lambda_{PS}$ | —    | 860      | —    | nm            |
| Reception Angle                                                          |                                                   | $\Theta$       | —    | $\pm 80$ | —    | Deg.          |
| Dark Current                                                             | $V_{CE} = 20\text{ V}$ , $E_e = 0$                | $I_D$          | —    | —        | 100  | nA            |
| Collector-Emitter Breakdown                                              | $I_C = 100\mu\text{A}$ , $E_e = 0$                | $BV_{CEO}$     | 30   | —        | —    | V             |
| Emitter-Collector Breakdown                                              | $I_E = 100\mu\text{A}$ , $E_e = 0$                | $BV_{ECO}$     | 5    | —        | —    | V             |
| On-State Collector Current                                               | $E_e = 1\text{ mW/cm}^2$<br>$V_{CE} = 5\text{ V}$ | $I_{C(ON)}$    | 0.1  | 0.5      | —    | mA            |
| Saturation Voltage                                                       | $E_e = 1\text{ mW/cm}^2$<br>$I_C = 2\text{ mA}$   | $V_{CE(SAT)}$  | —    | —        | 0.4  | V             |
| Rise Time                                                                | $V_{CE} = 5\text{ V}$ , $R_L = 1000\Omega$        | $t_r$          | —    | 15       | —    | $\mu\text{s}$ |
| Fall Time                                                                | $I_C = 1\text{ mA}$                               | $t_f$          | —    | 15       | —    | $\mu\text{s}$ |

# TYPICAL PERFORMANCE CURVES

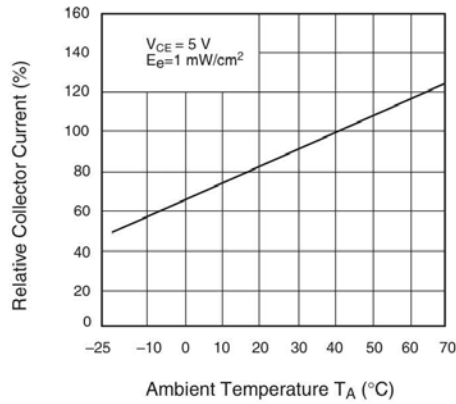
**Fig. 1 Collector Power Dissipation vs. Ambient Temperature**



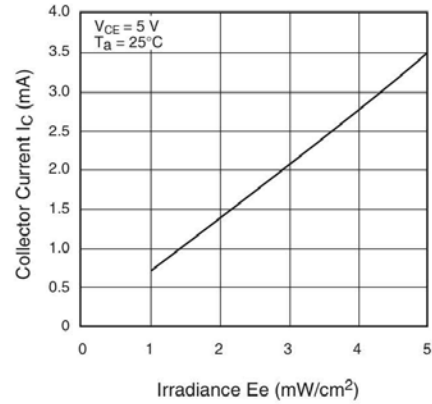
**Fig. 2 Collector Dark Current vs. Ambient Temperature**



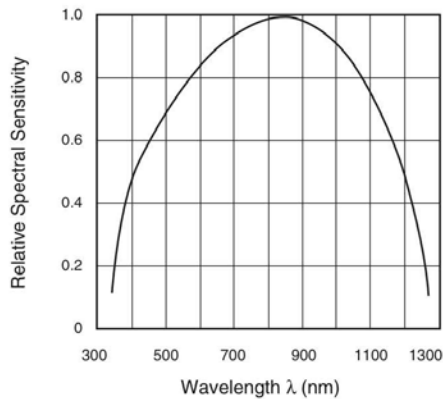
**Fig. 3 Relative Collector Current vs. Ambient Temperature**



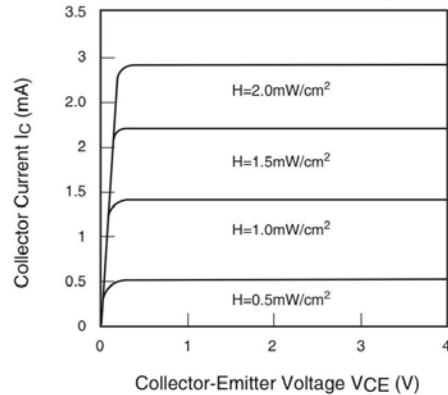
**Fig. 4 Collector Current vs. Irradiance**



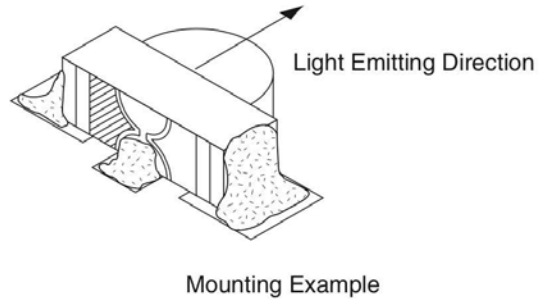
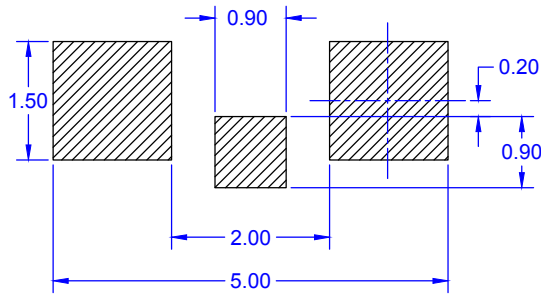
**Fig. 5 Spectral Sensitivity**



**Fig. 6 Collector Current vs. Collector-Emitter Voltage**

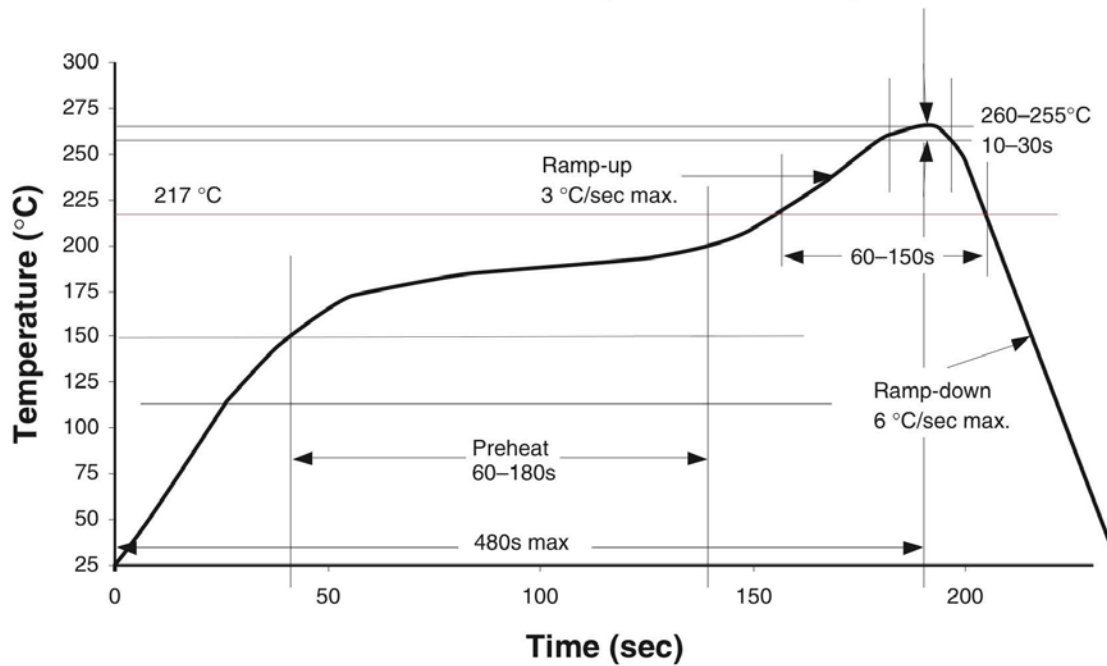


## RECOMMENDED PRINTED CIRCUIT BOARD PATTERN

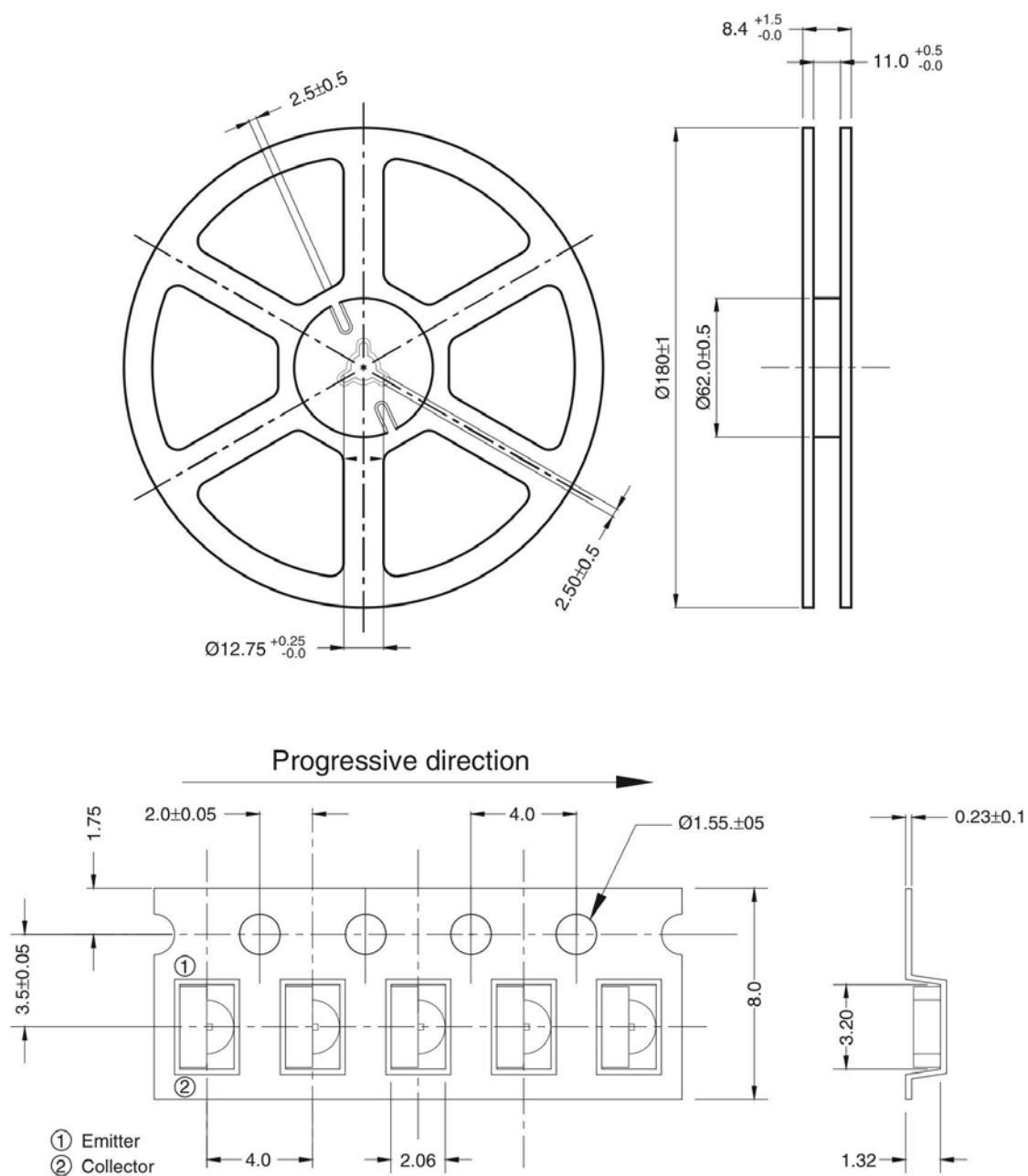


## RECOMMENDED IR REFLOW SOLDERING PROFILE

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



## TAPE AND REEL DIMENSIONS

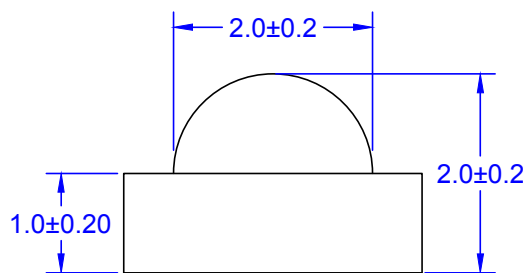


Dimensional tolerance is  $\pm 0.1\text{mm}$  unless otherwise specified

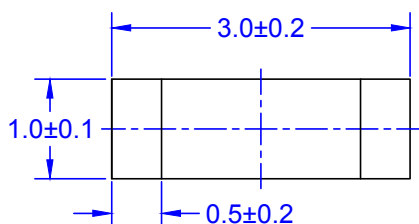
Angle:  $\pm 0.5$

Unit: mm

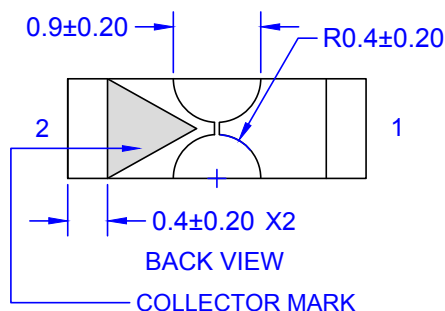
# PACKAGE DIMENSIONS



TOP VIEW

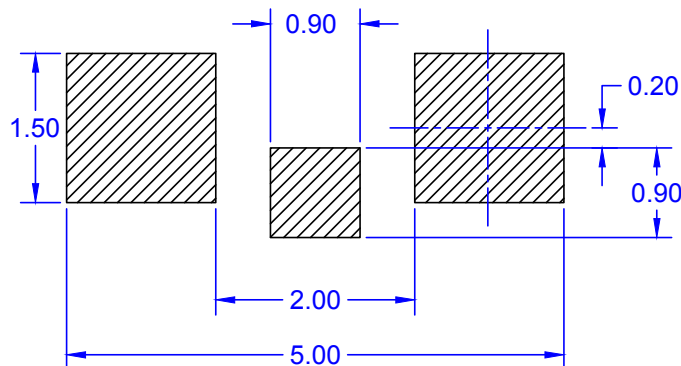


FRONT VIEW

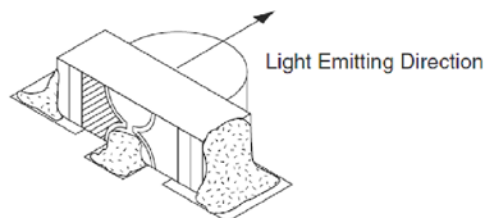


BACK VIEW

COLLECTOR MARK



LAND PATTERN RECOMMENDATION



Mounting Example

## NOTES:

- A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
- B. ALL DIMENSIONS ARE IN MILLIMETERS
- C. COLLECTOR: PIN 2 EMITTER: PIN1
- D. DRAWING FILENAME: MKT-DCE212ArevO

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