

# KI1309

## Wide Gap Type

### Description

Model **KI1309** consists of an Infra Red LED and a High sensitive Photo transistor.

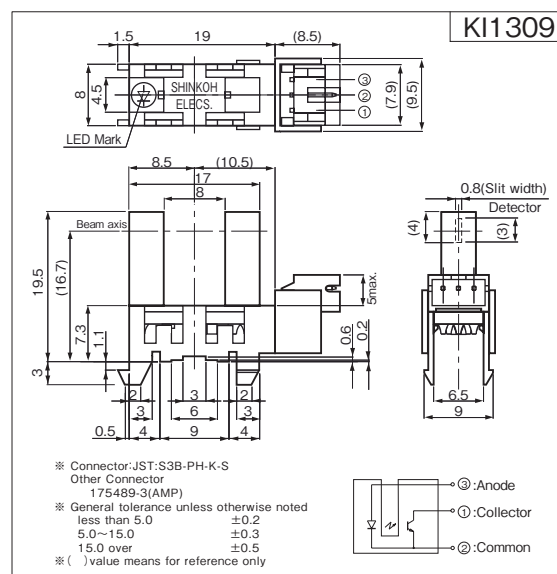
### Feature

- Deep ditch-12.2mm.
- Wide gap-8mm.
- Visible Light cut filter.
- The other model;  
Photo IC output type ... **KI1305, KI1306**

### Application

- Object passing for Card reader, Bill exchanger.
- Coin-passing for Auto vending machine and Amusement.
- Object passing in Auto vender and Ticket vending machine.
- Paper detection for O.A. equipment.

Dimension (Unit:mm)



### Absolute Maximum Ratings

[Ta=25°C Unless otherwise noted]

| Item                  |                           | Symbol    | Rating    | Units |
|-----------------------|---------------------------|-----------|-----------|-------|
| Emitter               | Forward Current           | $I_F$     | 50        | mA    |
|                       | Pulse Forward Current*1   | $I_{FP}$  | 1         | A     |
|                       | Reverse Voltage           | $V_R$     | 5         | V     |
|                       | Power Dissipation         | P         | 75        | mW    |
| Detector              | Collector-Emitter Voltage | $V_{CEO}$ | 30        | V     |
|                       | Emitter-Collector Voltage | $V_{ECO}$ | 5         | V     |
|                       | Collector Current         | $I_C$     | 20        | mA    |
|                       | Power Dissipation         | $P_C$     | 75        | mW    |
| Operating Temperature |                           | $T_{opr}$ | -20 ~ +75 | °C    |
| Storage Temperature   |                           | $T_{stg}$ | -30 ~ +85 | °C    |

※ 1. Pulse width:  $t_w \leq 100 \mu \text{ sec}$ , Duty ratio=0.01

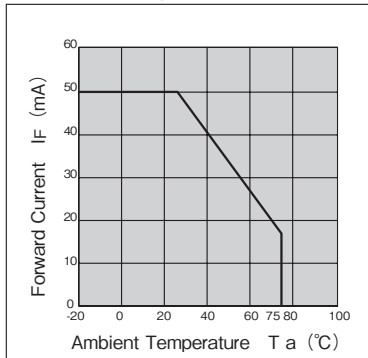
### Electro-Optical Characteristics [Ta=25°C Unless otherwise noted]

| Item     |                           | Symbol        | Condition                                                        | min. | typ. | max. | Units             |
|----------|---------------------------|---------------|------------------------------------------------------------------|------|------|------|-------------------|
| Emitter  | Forward Voltage           | $V_F$         | $I_F=20\text{mA}$                                                | —    | 1.2  | 1.5  | V                 |
|          | Reverse Current           | $I_R$         | $V_R=3\text{V}$                                                  | —    | —    | 10   | $\mu \text{ A}$   |
| Detector | Dark Current              | $I_{CEO}$     | $V_{CE}=20\text{V}$ , 0 lux                                      | —    | —    | 100  | n A               |
| Coupled  | Light Current             | $I_C$         | $V_{CE}=5\text{V}$ , $I_F=20\text{mA}$                           | 0.5  | —    | —    | mA                |
|          | Collector-Emitter Voltage | $V_{CE(sat)}$ | $I_F=20\text{mA}$ , $I_C=0.25\text{mA}$                          | —    | —    | 0.4  | V                 |
|          | Response Time             | Rise          | $V_{CC}=5\text{V}$ , $I_C=0.5\text{mA}$ , $R_L=1\text{k} \Omega$ | —    | 15   | —    | $\mu \text{ sec}$ |
|          |                           | Fall          |                                                                  | —    | 17   | —    |                   |

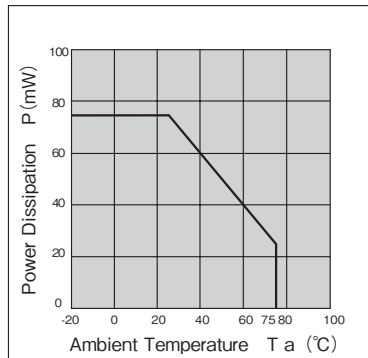
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Note: Operation never exceeds each value of Absolute Maximum Ratings.

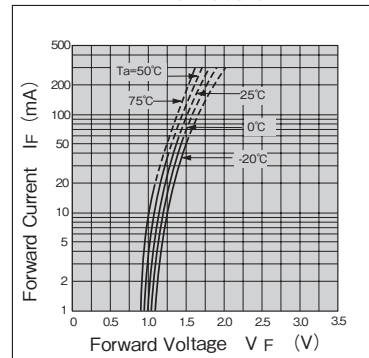
Forward Current vs. Ambient Temperature



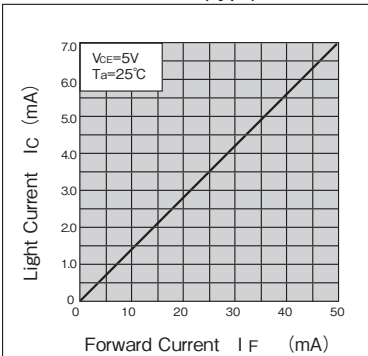
Collector Power Dissipation vs. Ambient Temperature



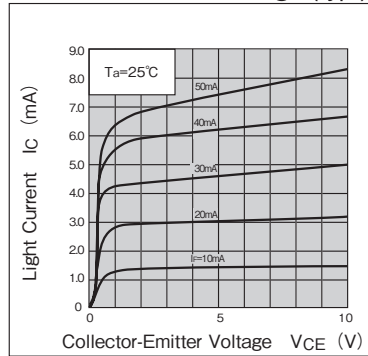
Forward Current vs. Forward Voltage (typ.)



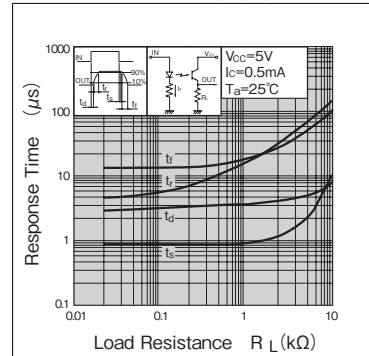
Light Current vs. Forward Current (typ.)



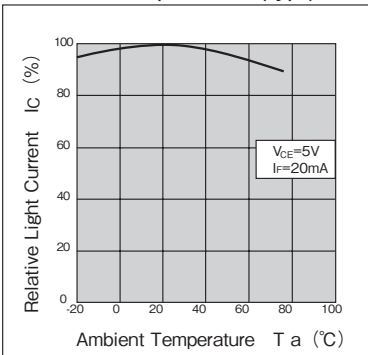
Light Current vs. Collector-Emitter Voltage (typ.)



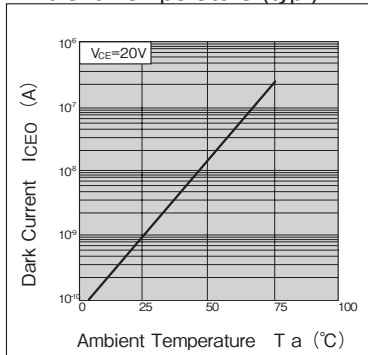
Response Time vs. Load Resistance (typ.)



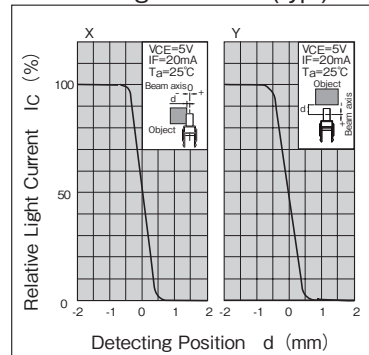
Relative Light Current vs. Ambient Temperature (typ.)



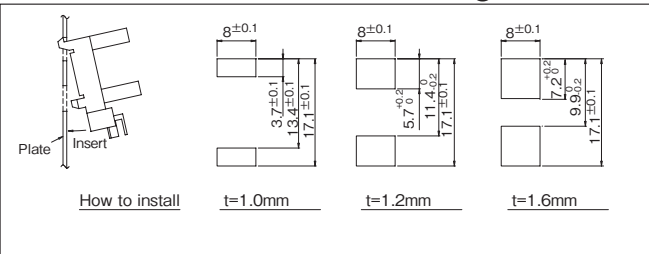
Dark Current vs. Ambient Temperature (typ.)



Detecting Position vs. Relative Light Current (typ.)



## Recommended installation to mounting holes



- We recommend to mount the sensor from pressed surface of plate.
- The actual tolerance should be confirmed after setting of sensor

- A Custom designed package is available on request.
- Specification are subject to change without notice.

04.09-1A

**shinkoh electronics co., ltd.**

Head Office: 3-16-9, Minami-Kamonomiya, Odawara, Kanagawa  
 Zip code: 250-0875 Japan  
 Tel: +81 -465-45-1212 / Fax: +81 -465-45-1213  
 Tokyo Office: 5F, Ebuchi Bldg., 3-24-13, Minami-Ohi, Shinagawa,  
 Tokyo  
 Website: <http://www.shinkoh-elecs.com/>