# POHTO REFLECTOR

## ■ GENERAL DESCRIPTION

The NJL5172K/72KF is the single-in-line super miniature, super thin type photo Reflector, which consist of high output power LED and high sensitive Siphoto transistor. There are pin-loeation difference between NJL5171K and NJL5172K.

## ■ FEATURES

- Super minimature, Super thin type
- Built-in visible light cut off filter
- High output, Hith S/N ratio

## ■ APPLICATIONS

- End detector of video, audio tape etc.
- Rotation detection and control of various motors, audio turntables.
- Paper edge detection of facsimile, printer, X-Y recorder, so on.
- Line code reading, encorder and the automatic vending machine etc.
- FDD, Robot, and other detecton of industrial systems.

## ■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

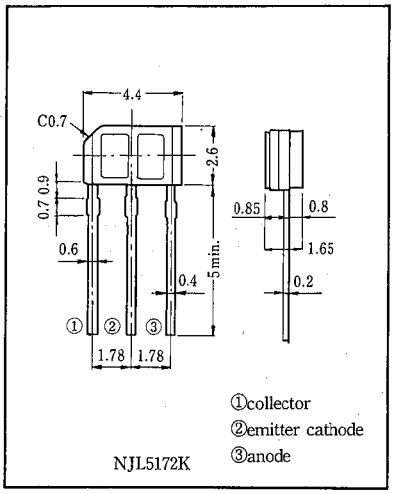
| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Emitter | | | |
| Forward Current (Continuous) | $I_F$ | 50 | mA |
| Pulse Forward Current | $I_{FP}$ | 500(note 1) | mA |
| Reverse Voltage (Continuous) | $V_R$ | 6 | V |
| Power Dissipation | $P_D$ | 75 | mW |
| Detector | | | |
| Cellector-Emitter Voltage | $V_{CEO}$ | 25 | V |
| Emitter-Collector Voltage | $V_{ECO}$ | 6 | V |
| Collector Current | $I_C$ | 20 | mA |
| Collector Power Dissipation | $P_C$ | 75 | mW |
| Coupled | | | |
| Total Power Dissipation | $P_{tot}$ | 100 | mW |
| Operating Temperature | $T_{opr}$ | −20～+90 | °C |
| Storage Temperature | $T_{stg}$ | −30～+100 | °C |
| Soldering Temperture | $T_{sol}$ | 260 (10sec. 1.5mm from body) | °C |

(Note1):Pulse width≦10μs, Duty Ratio 0.01

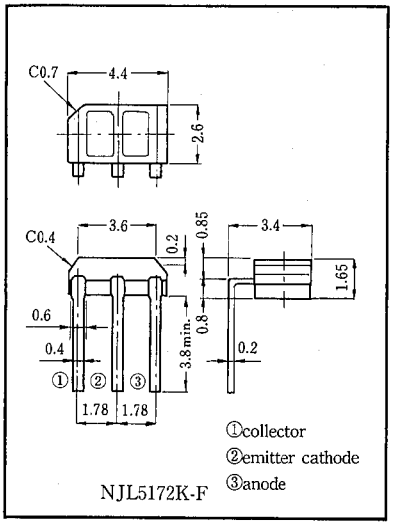
## ■ NOTE

- NJL5172K has the same Electro-Optical characteristics as NJL5171K, and so precaution for handling is the same.

## ■ OUTLINE (typ.) Unit : mm




NJL5172K




NJL5172K-F

## ■ ELECTRO-OPTICAL CHARACTERISTICS (Ta=25°C)

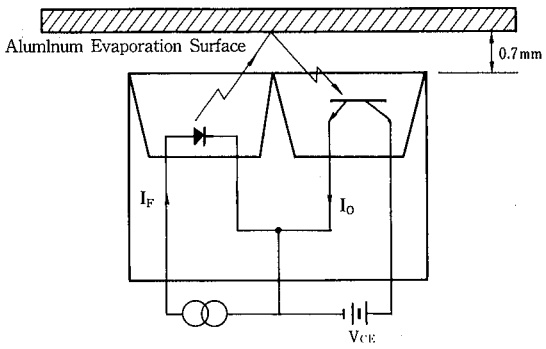
| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Emitter | | | | | | |
| Forward Voltage | $V_F$ | $I_F$=4mA | — | — | 1.2 | V |
| Reverse Current | $I_R$ | $V_R$=6V | — | — | 1 | μA |
| Capacitance | $C_t$ | $V_R$=0V, f=1MHz | — | 25 | — | pF |
| Detector | | | | | | |
| Dark Current | $I_{CEO}$ | $V_{CE}$=10V | — | — | 200 | nA |
| Collector-Emitter Voltage | $V_{CEO}$ | $I_C$=100μA | 25 | — | — | V |
| Emitter-Collector Current | $I_{ECO}$ | $V_{EC}$=6V | — | — | 100 | μA |
| Coupled | | | | | | |
| Output Current | $I_O$ | $I_F$=4mA, $V_{CE}$=2V, d=0.7mm | 50 | — | 160 | μA |
| Operating Dark Current | $I_{CEOD}$ | $I_F$=4mA, $V_{CE}$=2V | — | — | 100 | μA |
| Rise time | $t_r$ | $V_{CE}$=2V, $I_F$=4mA, $R_L$=1kΩ, d=0.7mm | — | 20 | — | μs |
| Fall Time | $t_f$ | 〃 | — | 20 | — | μs |

## ■ RANK OF OUTPUT CUEERNT

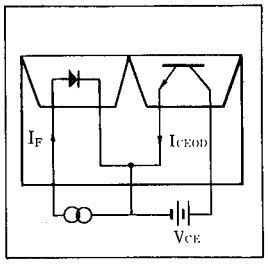
| Rank | G | H |
|---|---|---|
| Io(μA) | 70~160 | 50~110 |

## ■ MEASURING SPECIFICATION FOR OUTPUT CURRENT

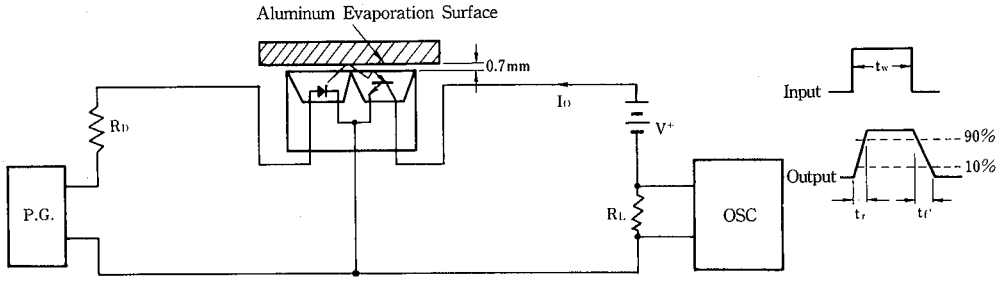
The Output current can be measured when reflected at the Aluminum evaporation mirror.




## ■ MEASURING CIRCUIT FOR OPERATING DARK CURRENT

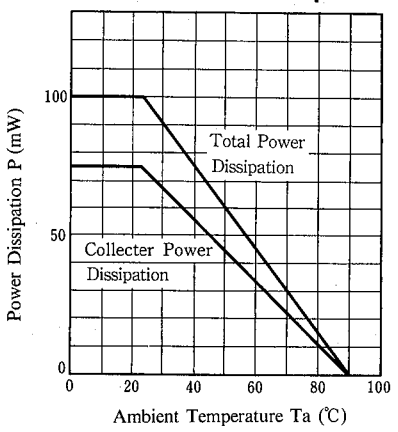



## ■ MEASURING CIRCUIT FOR RESPONSE TIME

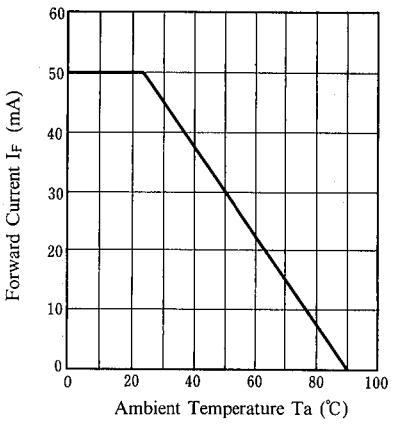


## ■ MAXIMUM RATING CURVES

### Power Dissipation vs. Temperature

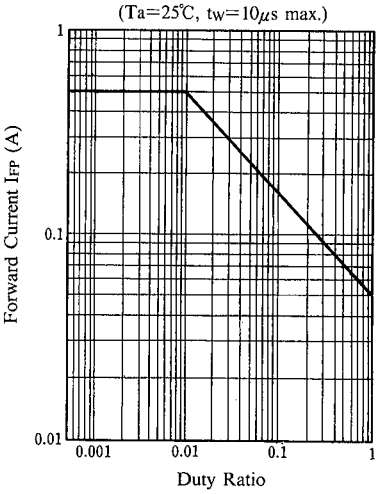



### Forward Current vs. Temperature



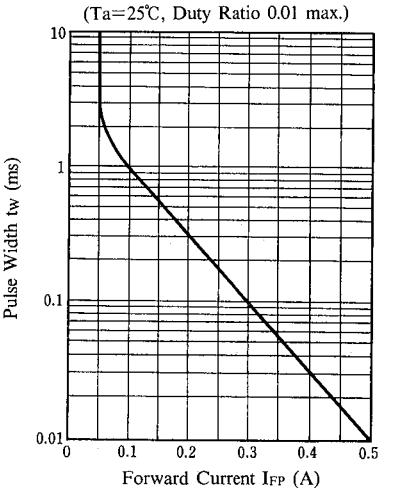

### Pulse Forward Current vs. Duty Ratio

(Ta=25℃, tw=10μs max.)




### Pulse Width vs. Forward Current

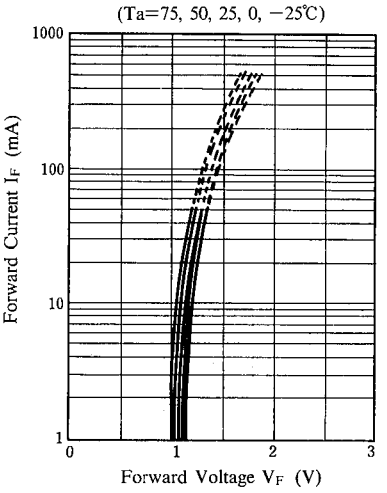
(Ta=25℃, Duty Ratio 0.01 max.)



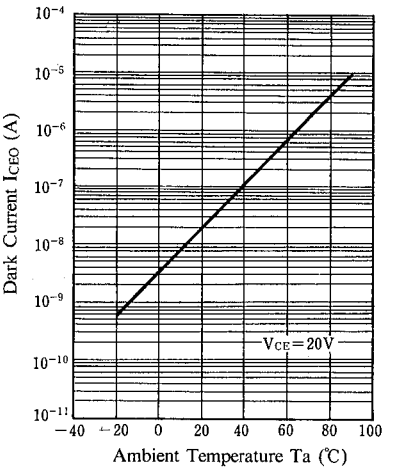

## ■ TYPICAL CHARACTERISTICS

### Forward Current vs. Forward Voltage

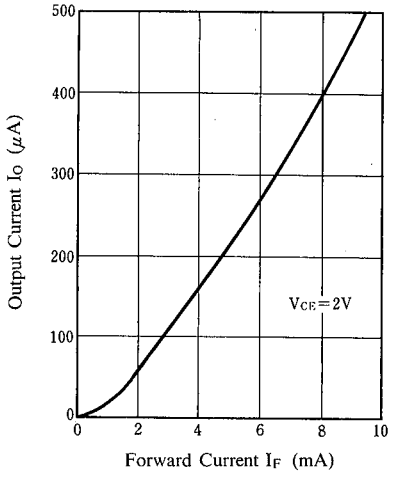
(Ta=75, 50, 25, 0, −25℃)



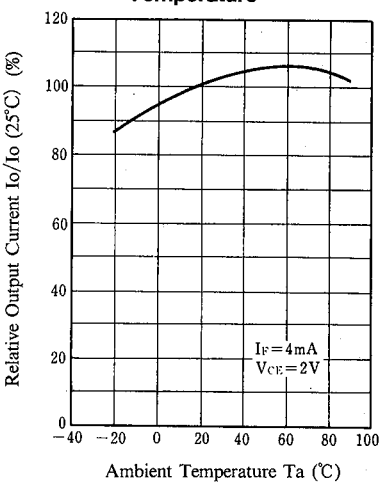

### Dark Current vs. Temperature



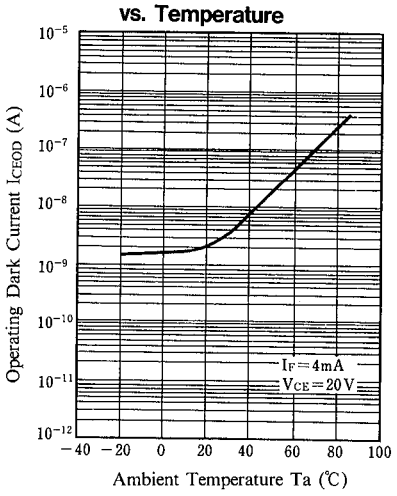
**Output Current vs. Forward Current** (Ta=25℃)




**Output Current vs. Temperature**




**Operating Dark Current vs. Temperature**



# PRECAUTION FOR HANDLING

## 1. Soldering

1) Avoid the reflow method and the solder to touch the body of the device during wave soldering. This is to prevent changes in optical characteristics of the device.
2) Recommended in Soldering

| Temperature | Time Lead | Soldering Position |
|---|---|---|
| 260℃ maximum | less than 10 seconds | At least 1.5mm from body |

3) Soldering is recommended to be done in as short period of the time as possible by controlling the temperature of the soldering iron or by the iron of less than 15 watts.
4) The resin gets softened right after soldered, so, the following care has to be taken.
   - Not to contact the lens surface to anything
   - Not to dip the device into water or any solvents
5) It is recommended not to solder when the leads or between the lead get pulled, depressed or twisted.
6) In the case of using rosin flux, be careful to avoid contact with the lens surface. If the lens is covered with the flux, the specified characteristics cannot be achieved.

2

## 2. Post Solder Cleaning

1) Organic solvents for flux removal like trichloroethlene, acetone, thinner etc, might attack the lens surface. It is preferable to use less reactive solvents, Methyl Alcohol, Isopropyle Alcohol.
2) Cleaning Operation
   Cleaning Solvent Temperature : 35℃ maximum
   Dipping Time : 3 minute maximum

## 3. Attention in handling

1) Treat not to touch the lens surface.
2) Avoid dust and any other foreign materials( flux, paint, bonding material, etc)on the lens surface.
3) Never to apply reverse voltage($V_{EC}$) of more than 6V on the photo transistor when measuring the characteristics or adjusting the system. If applied, it causes to lower the sensitivity.
4) When mounting, special care has to be taken on the mounting position and tilting of the device because it is very important to place the device to the optimum position to the object.

## 4. Storage

The leads are silver plated and they are discolored if the device is left open to the air for long after taken out of the envelope. It causes deterioration of soldering characteristics. Mount the device as short as possible after opening the envelope.

MEMO