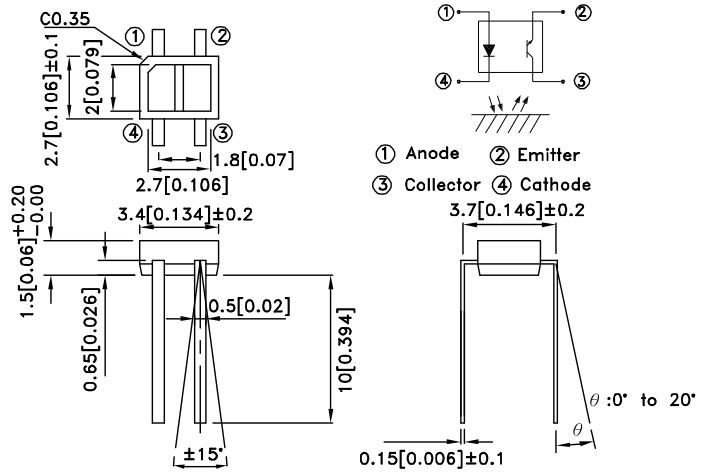


SUBMINIATURE, HIGH SENSITIVITY PHOTOINTERRUPTER

*Features

- Compact and thin.
- Visible light cut-off type.
- High sensitivity.
- RoHS Compliant.



*Applications

- Cassette tape recorders, VCRs.
- Floppy disk drives.
- Various microcomputerized control equipment.

UNIT : MM [INCH]

TOLERANCE : ±0.25 [± 0.01] UNLESS OTHERWISE NOTED.

*Absolute Maximum Ratings $T_a=25^\circ\text{C}$

| Parameter | | Symbol | Rating | Unit |
|---|--|-----------|----------|------------------|
| Input | Forward current | I_F | 50 | mA |
| | Reverse voltage | V_R | 6 | V |
| | Power dissipation | P_D | 75 | mW |
| | Peak Forward Current (Pulse Width $\leq 100\mu\text{s}$, Duty Cycle = 1%) | I_{FP} | 1 | A |
| Output | Collector-emitter voltage | V_{CEO} | 35 | V |
| | Emitter-collector voltage | V_{ECO} | 6 | V |
| | Collector current | I_C | 20 | mA |
| | Collector power dissipation | P_C | 75 | mW |
| Operating temperature | | T_{opr} | -25~+85 | $^\circ\text{C}$ |
| Storage temperature | | T_{stg} | -40~+100 | $^\circ\text{C}$ |
| soldering temperature (1/16 inch from body for 5 seconds) | | T_{sol} | 260 | $^\circ\text{C}$ |



Electro-optical Characteristics

| Parameter | | Symbol | Conditions | Min. | TYP. | Max. | Unit | |
|--------------------------|------------------------|-------------|--------------------------|--|-----------|-----------|---------|-----------|
| Input | Forward Voltage | V_F | $I_F=20mA$ | 1.0 | 1.2 | 1.5 | V | |
| | Reverse Current | I_R | $V_R=6V$ | - | - | 10 | μA | |
| | Peak Wavelength | λ_P | $I_F=20mA$ | - | 940 | - | nm | |
| Output | Collector Dark Current | I_{CEO} | $V_{CE}=20V$ | - | 10^{-9} | 10^{-7} | A | |
| Transfer characteristics | *1 Collector Current | I_C | $V_{CE}=2V$ $I_F=4mA$ | 10 | - | 400 | μA | |
| | *2 Leak Current | I_{LEAK} | $V_{CE}=2V$ $I_F=4mA$ | - | - | 0.1 | μA | |
| | Response time | Rise time | t_r | $V_{CE}=2V$ $I_C=100\mu A$ $R_L=1K\Omega, d=1mm$ | - | 20 | 100 | μsec |
| | | Fall time | t_f | | - | 20 | 100 | μsec |

*1 The condition and arrangement of the reflective object are shown below.
*2 Without reflective object.

| BIN CODE | I_C (μA) |
|----------|-------------------|
| E | 10-120 |
| F | 100-250 |
| G | 200-400 |

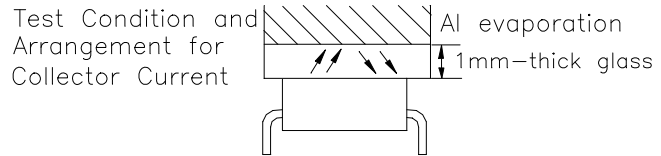


Fig. 1 Forward Current vs. Forward Voltage

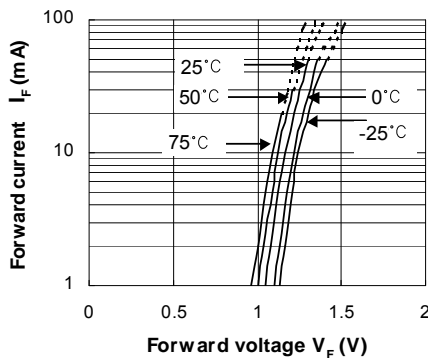


Fig. 3 Collector Current vs. Collector-emitter Voltage

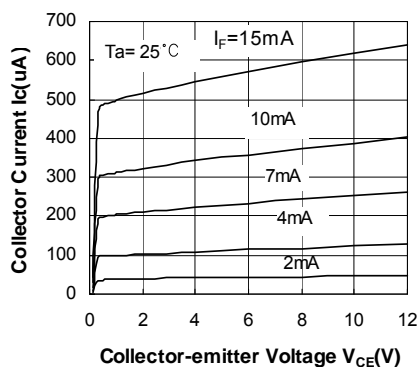


Fig. 2 Collector Current vs. Forward Current

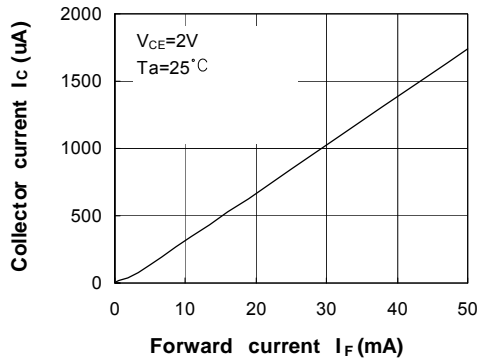


Fig. 4 Relative Collector Current vs. Ambient Temperature

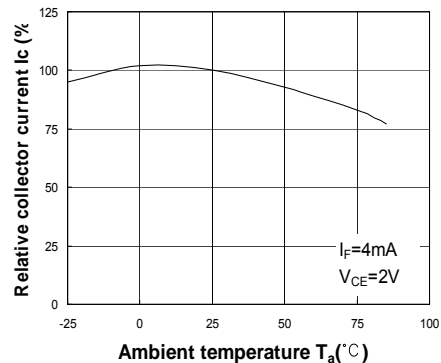
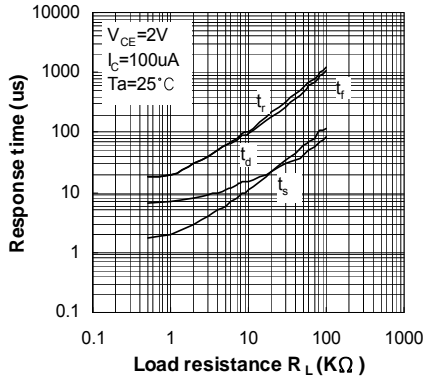


Fig. 5 Response Time vs. Load Resistance



Test Circuit for Response Time

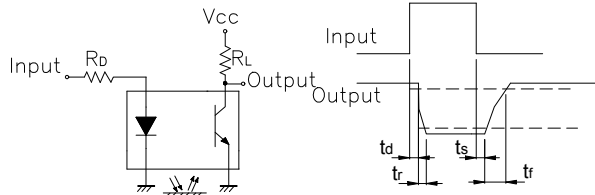


Fig. 6 Collector Dark Current vs. Ambient Temperature

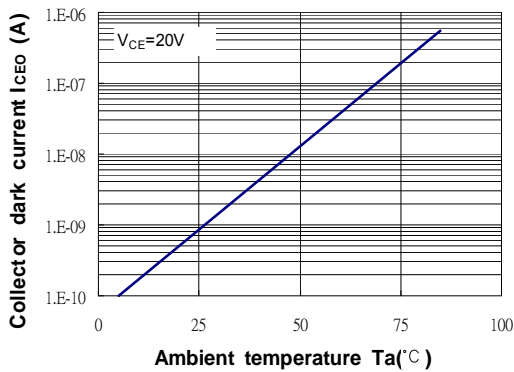


Fig. 7 Relative Collector Current vs. Distance between Sensor and Al Evaporation Glass

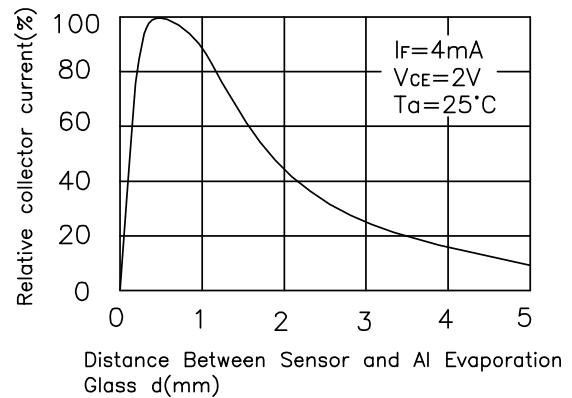


Fig. 8 Relative Collector Current vs. Card Moving Distance (1)

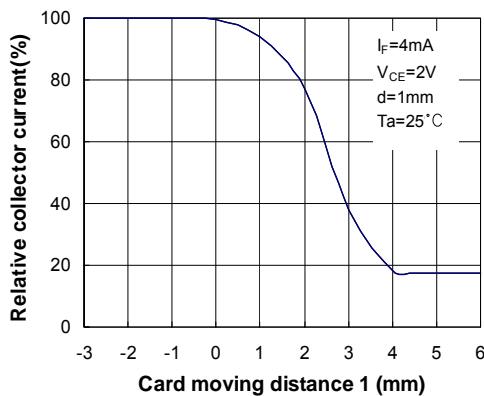
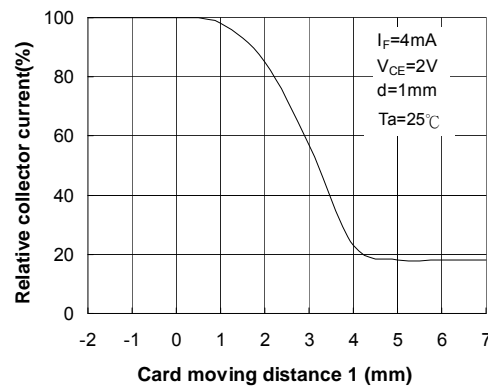
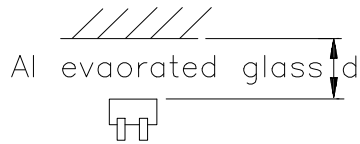


Fig. 9 Relative Collector Current vs. Card Moving Distance (2)



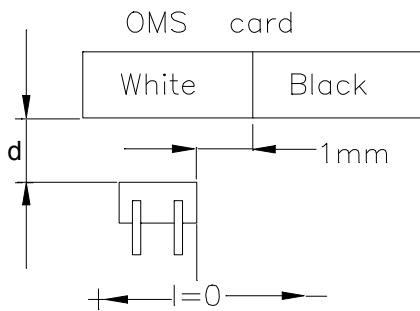
Test Condition for Distance&Detecting Position Characteristics

Correpond to Fig. 7



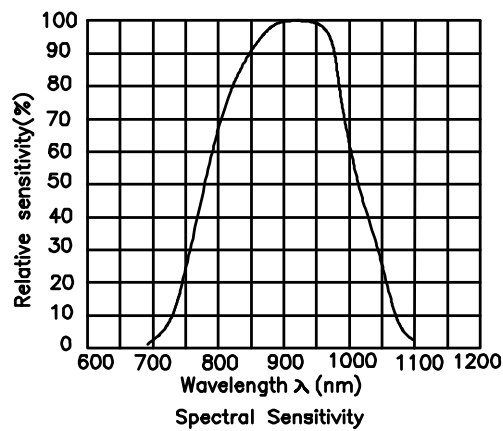
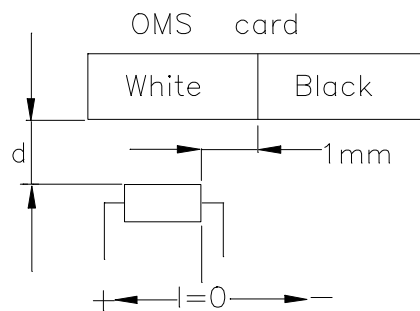
Correpond to Fig. 8
Test condition

$I_F = 4\text{mA}$
 $V_{CE} = 2\text{V}$
 $d = 1\text{mm}$

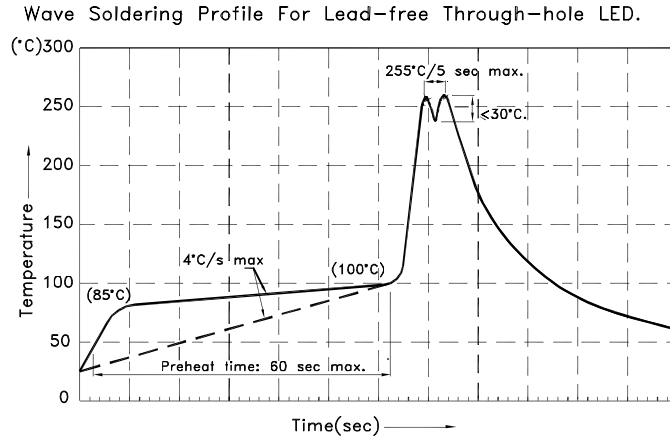


Correpond to Fig. 9
Test condition

$I_F = 4\text{mA}$
 $V_{CE} = 2\text{V}$
 $d = 1\text{mm}$



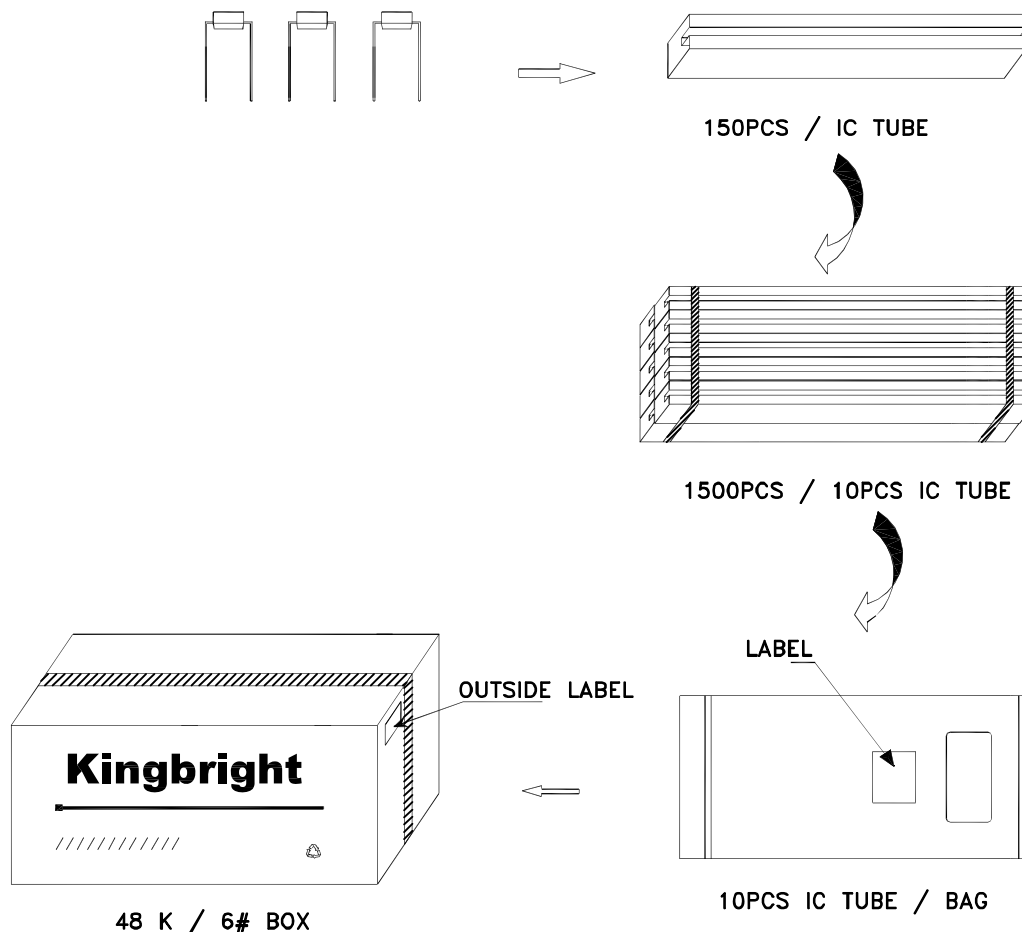
Wave Soldering Profile



Notes:

- 1.Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C
- 2.Peak wave soldering temperature between 245°C ~ 255°C for 3 sec (5 sec max).
- 3.Do not apply stress to the epoxy resin while the temperature is above 85°C.
- 4.Fixtures should not incur stress on the component when mounting and during soldering process.
- 5.SAC 305 solder alloy is recommended.
- 6.No more than one wave soldering pass.

PACKING & LABEL SPECIFICATIONS



| | | | | | |
|---------------------|------|---|-----|------------|--------|
| <h1>Kingbright</h1> | | | | | |
| P/NO: KTIRxxx | | | | | |
| QTY: 1500 pcs | Q.C. | <table border="1"> <tr> <td style="text-align: center;">Q C</td> </tr> <tr> <td style="text-align: center;">XX XX XXXX</td> </tr> <tr> <td style="text-align: center;">PASSED</td> </tr> </table> | Q C | XX XX XXXX | PASSED |
| Q C | | | | | |
| XX XX XXXX | | | | | |
| PASSED | | | | | |
| S/N: XXXX | | | | | |
| CODE: XXX | | | | | |
| LOT NO: | | | | | |
| | | | | | |
| XXXXXXXXXXXXXXXXXX | | | | | |
| RoHS Compliant | | | | | |

Detailed application notes are listed on our website.

http://www.kingbright.com/application_notes