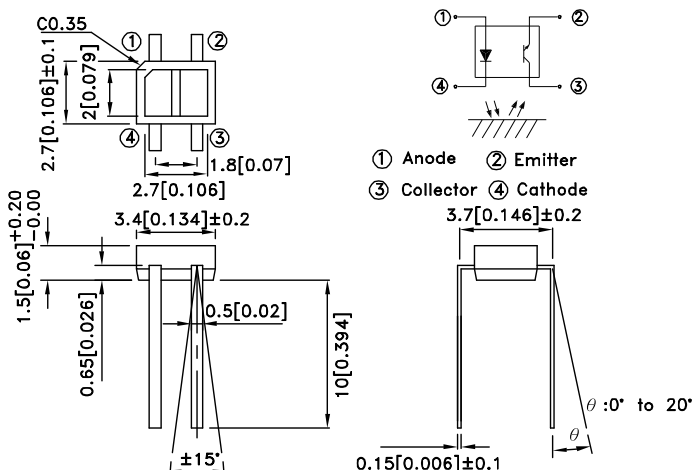


SUBMINIATURE, HIGH SENSITIVITY PHOTOINTERRUPTER

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

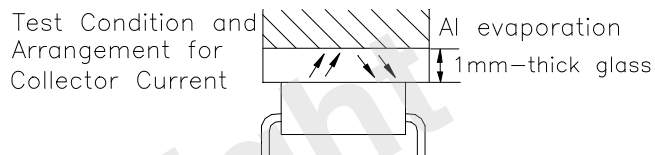


Fig. 1 Forward Current vs. Forward Voltage

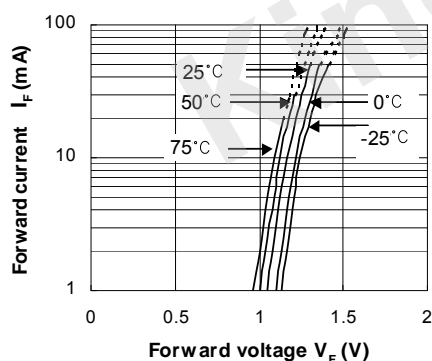


Fig. 2 Collector Current vs. Forward Current

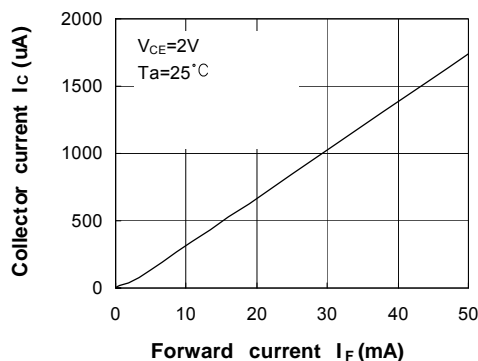


Fig. 3 Collector Current vs. Collector-emitter Voltage

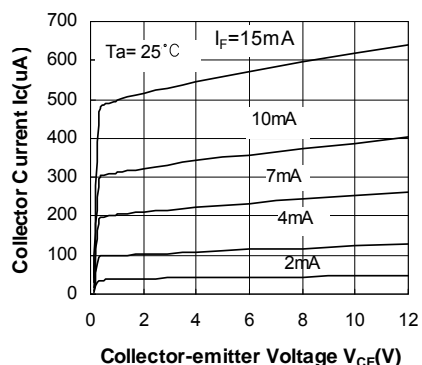


Fig. 4 Relative Collector Current vs. Ambient Temperature

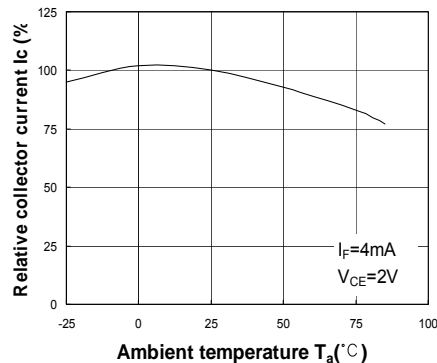
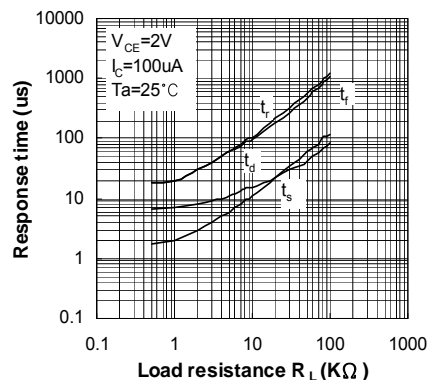


Fig. 5 Response Time vs. Load Resistance



Test Circuit for Response Time

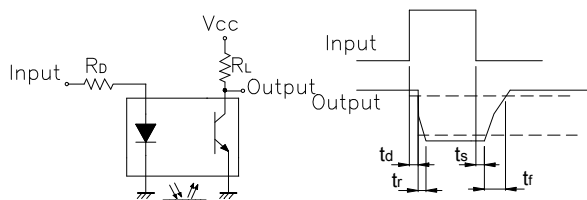


Fig. 6 Collector Dark Current vs. Ambient Temperature

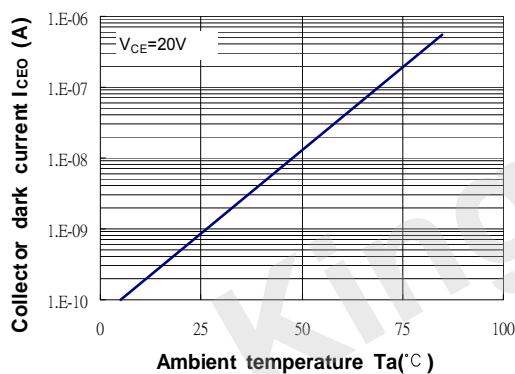


Fig. 7 Relative Collector Current vs. Distance between Sensor and Al Evaporation Glass

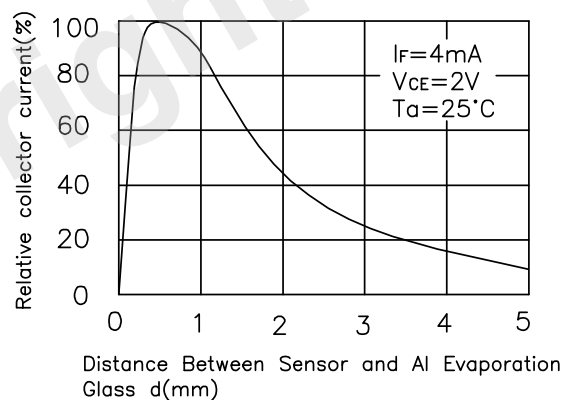


Fig. 8 Relative Collector Current vs. Card Moving Distance (1)

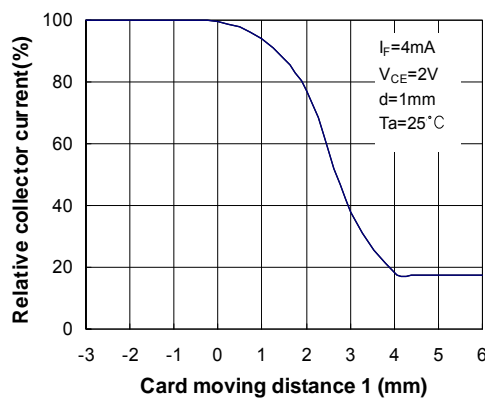
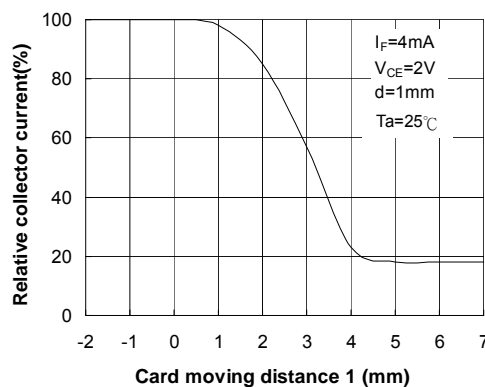
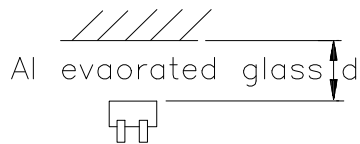


Fig. 9 Relative Collector Current vs. Card Moving Distance (2)



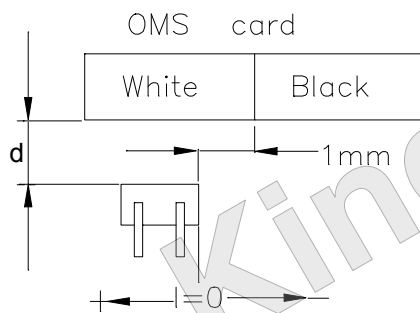
Test Condition for Distance&Detecting Position Characteristics

Correpond to Fig. 7



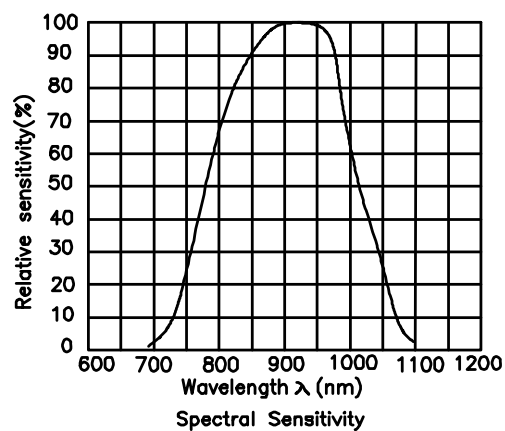
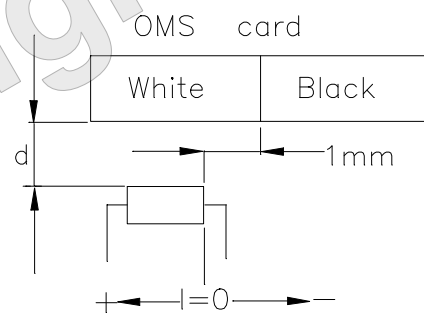
Correpond to Fig. 8
Test condition

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

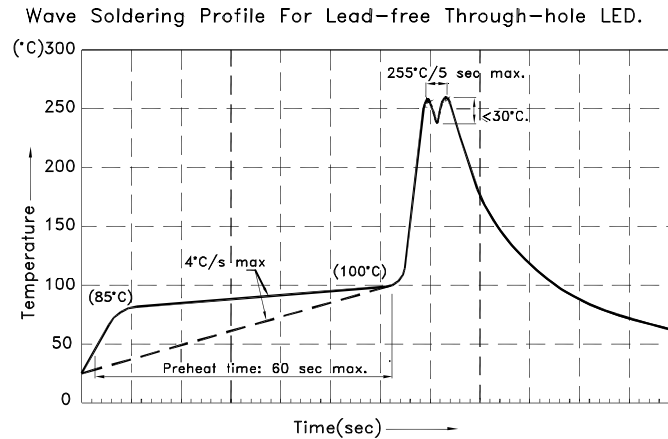


Correpond to Fig. 9
Test condition

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



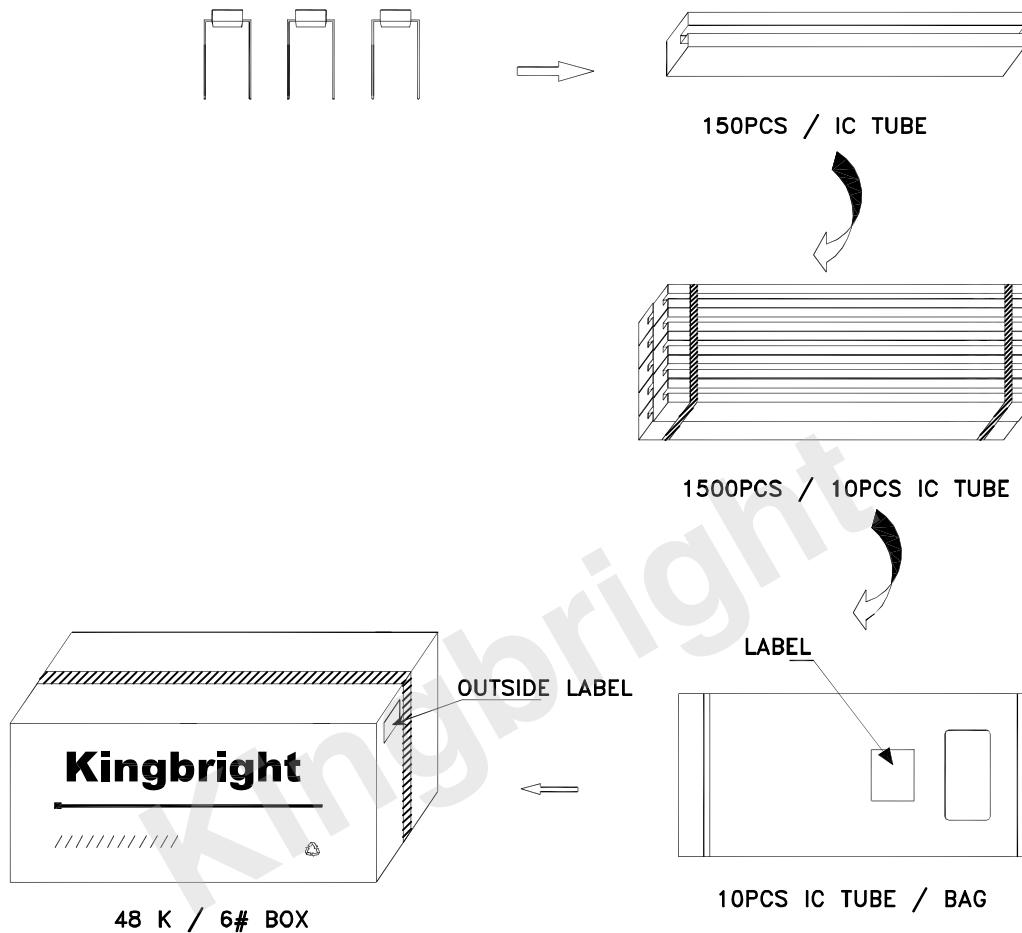
Wave Soldering Profile




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. | <div style="border: 1px solid black; border-radius: 50%; padding: 5px; display: inline-block;"> Q C XX XX XXXX PASSED </div> |
| S/N: XXXX | | |
| CODE: XXX | | |
| LOT NO: | | |
|  XXXXXXXXXXXXXXXXXX | | |
| RoHS Compliant | | |

Detailed application notes are listed on our website.

http://www.kingbright.com/application_notes