# GP2S60

## Subminiature, Reflective Type Photointerrupter for Automatic Mounting

### ■ Features

1. Subminiature, leadless type. (Dimensions : 3.2×1.7×1.1mm)
2. Soldering reflow.
   (Peak temperature : 240°C, 10s or less)
3. Taped model. (2 000 pcs/reel)
4. Visible light cut-off type.

### ■ Applications

1. Audio equipment
2. VCR
3. Camcoders
4. Printers
5. CD-ROM drives

### ■ Absolute Maximum Ratings

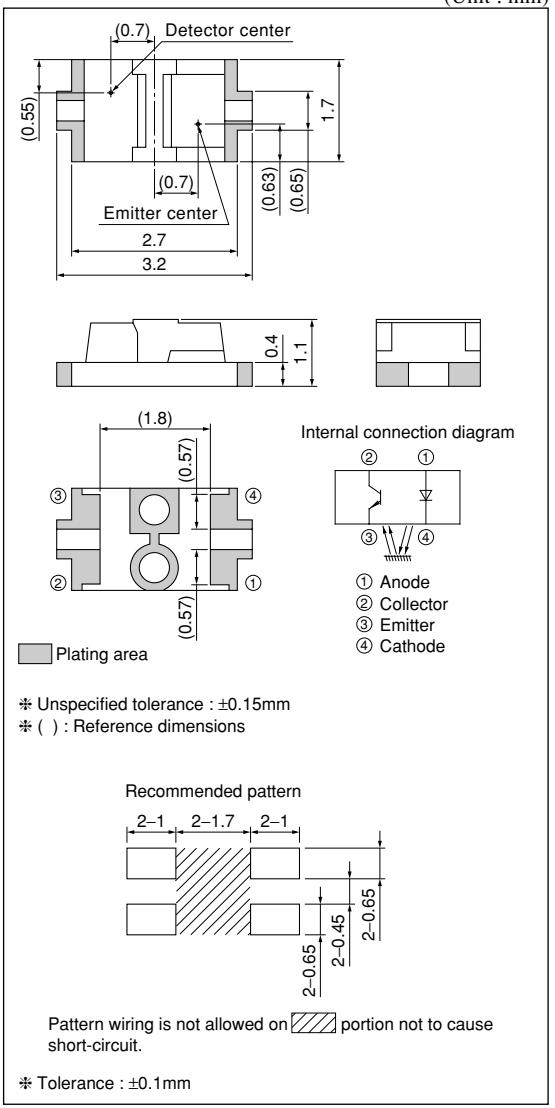
($T_a$=25°C)

| | Parameter | Symbol | Rating | Unit |
|---|---|---|---|---|
| Input | Forward current | $I_F$ | 50 | mA |
| | Reverse voltage | $V_R$ | 6 | V |
| | Power dissipation | $P_D$ | 75 | mW |
| 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 |
| | Total power dissipation | $P_{tot}$ | 100 | mW |
| | Operating temperature | $T_{opr}$ | −25 to +85 | °C |
| | Storage temperature | $T_{stg}$ | −40 to +100 | °C |
| | *Soldering temperature | $T_{sol}$ | 260 | °C |

*For MAX. 5s

### ■ Outline Dimensions

(Unit : mm)




※ Unspecified tolerance : ±0.15mm
※ ( ) : Reference dimensions

※ Tolerance : ±0.1mm

Notice In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP devices shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.
Internet Internet address for Electronic Components Group http://sharp-world.com/ecg/

## ■ Electro-optical Characteristics

(Ta=25°C)

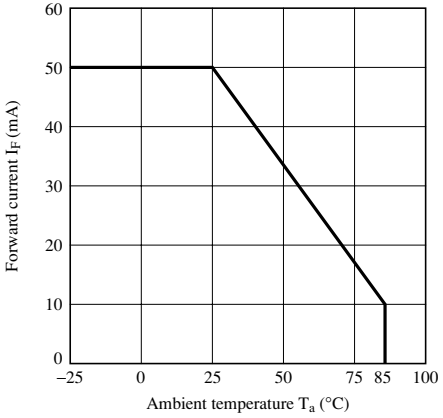
| Parameter | | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|---|---|
| Input | Forward voltage | | $V_F$ | $I_F$=20mA | – | 1.2 | 1.4 | V |
| | Reverse current | | $I_R$ | $V_R$=6V | – | – | 10 | μA |
| Output | Collector dark current | | $I_{CEO}$ | $V_{CE}$=20V | – | 1 | 100 | nA |
| Transfer characteristics | *1 Collector current | | $I_C$ | $V_{CE}$=2V, $I_F$=4mA | 40 | 85 | 130 | μA |
| | *2 Leak current | | $I_{LEAK}$ | $V_{CE}$=2V, $I_F$=4mA | – | – | 500 | nA |
| | Response time | Rise time | $t_r$ | $V_{CE}$=2V, $I_C$=100μA | – | 20 | 100 | μs |
| | | Fall time | $t_f$ | $R_L$=1 000Ω, d=1mm | – | 20 | 100 | μs |

*1 Refer to Fig.11
*2 No Reflective object

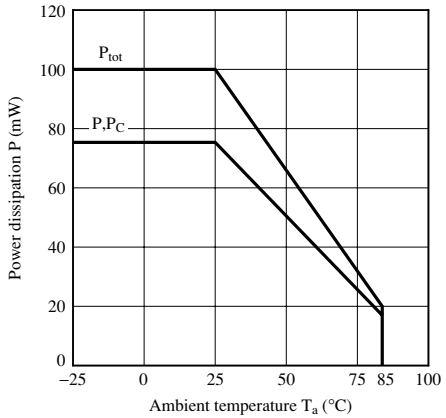
## ■ Rank Table

| Model No. | Rank mark | Ic(μA) | Conditions |
|---|---|---|---|
| **GP2S60** | A or B | 40 to 130 | $I_F$=4mA<br>$V_{CE}$=2V<br>Ta=25°C |
| **GP2S60A** | A | 40 to 80 | |
| **GP2S60B** | B | 65 to 130 | |

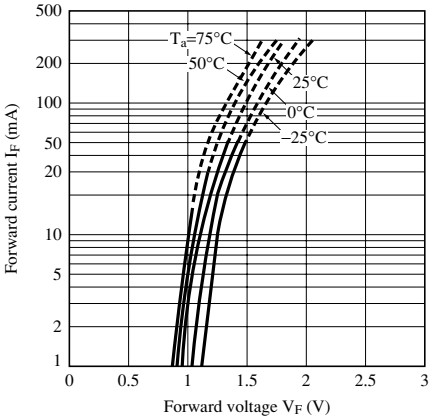
### Fig.1 Forward Current vs. Ambient Temperature



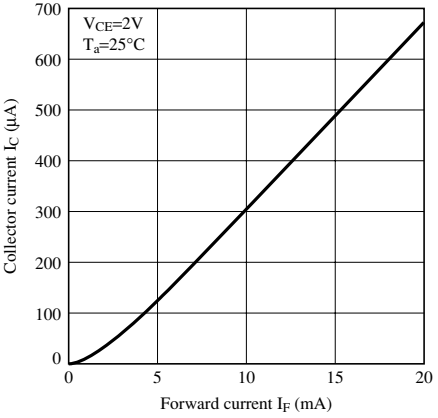

### Fig.2 Power Dissipation vs. Ambient Temperature



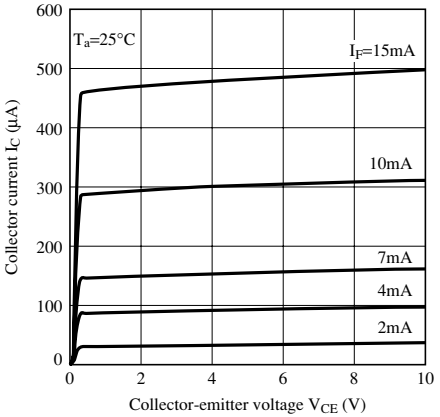
## Fig.3 Forward Current vs. Forward Voltage



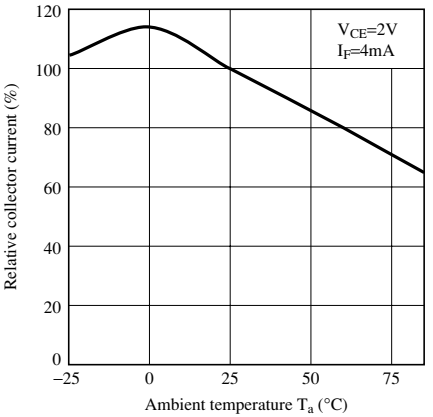

## Fig.4 Collector Current vs. Forward Current



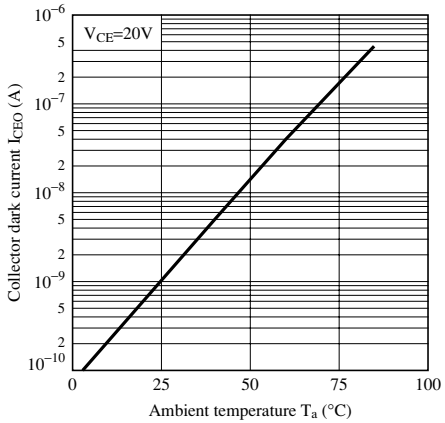

## Fig.5 Collector Current vs. Collector-emitter Voltage



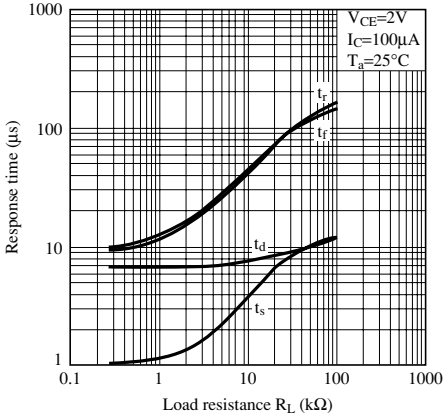

## Fig.6 Relative Collector Current vs. Ambient Temperature



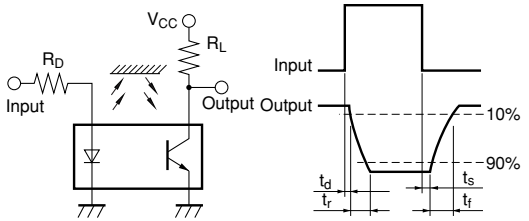

## Fig.7 Collector Dark Current vs. Ambient Temperature



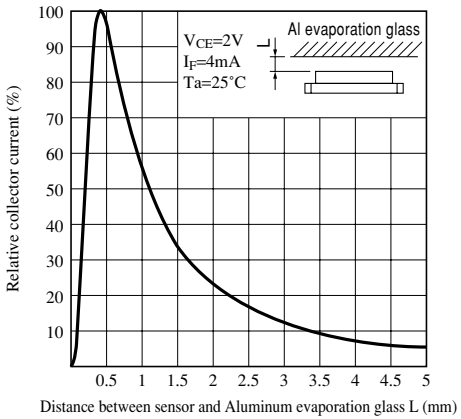
## Fig.8 Response Time vs. Load Resistance



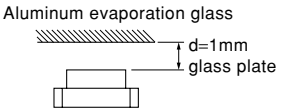

## Fig.9 Test Circuit For Response Time



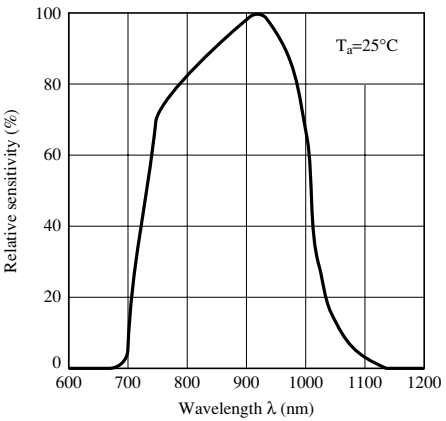

## Fig.10 Relative Collector Current vs. Distance Between Sensor and Aluminum Evaporation Glass



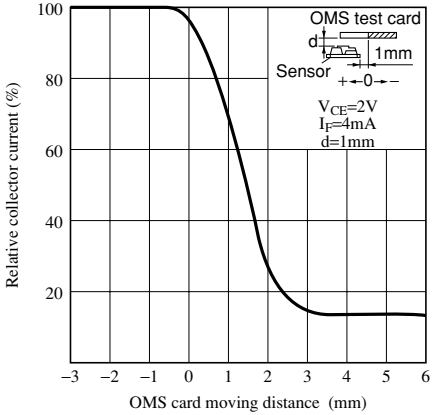

## Fig.11 Measuring Configulation of Collector Current



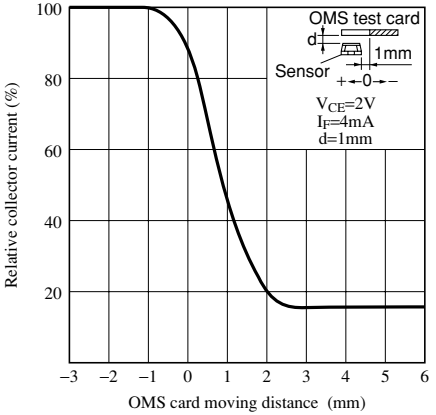

## Fig.12 Spectral Sensitivity



## Fig.13 Relative Collector Current vs.OMS Card Moving Distance

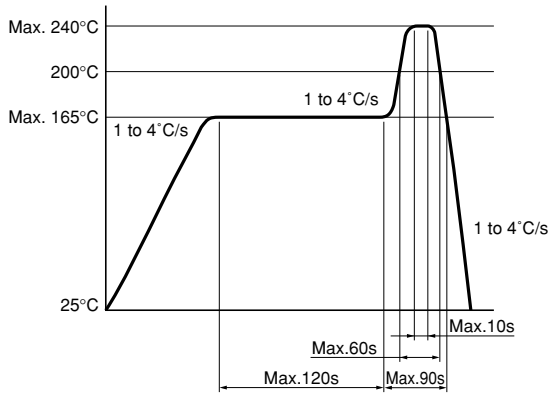



## Fig.14 Relative Collector Current vs.OMS Card Moving Distance




## Fig.15 Reflow Soldering

Only one time soldering is available within the temperature profile shown below.




## ■ Other Precautions

An infrared lamp used to heat up for soldering may cause a localized temperature rise in the resin. So keep the package temperature within that specified in Item 1. Also avoid immersing the resin part in the solder. Even if within the temperature profile above, there is the possibility that the gold wire in package is broken in case that the deformation of PCW gives the affection to lead pins. Please use after confirmation the conditions fully by actual solder reflow machine.

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