

Pb-free
HEAT



PS1101WA

Surface Mount Phototransistor/Flat Lenz Type

Features

| | |
|-----------------------------|---|
| Package | Flat Lenz Type, Water clear epoxy |
| Product features | <ul style="list-style-type: none">• Outer Dimension 3.0 x 2.0 x 1.5mm (L x W x H)• Photo Current : 3.5mA TYP. ($V_{CE}=5V, E_e=5mW/cm^2$)• Wide Distribution• Lead-free soldering compatible• RoHS compliant |
| Peak Sensitivity Wavelength | 880nm |
| Half Intensity Angle | 130 deg. |
| Die materials | Si |
| Rank grouping parameter | Sorted by photo current per rank taping |
| Assembly method | Auto pick & place machine (Auto Mounter) |
| Soldering methods | Reflow soldering, and manual soldering ※Please refer to Soldering Conditions about soldering. |
| Taping and reel | 2,500pcs per reel in a 8mm width tape. (Standard) Reel diameter: ϕ 180mm |
| ESD | 2kV (HBM) |

Recommended Applications

Car Audio, Electric Household Appliances, OA/FA, PC/Peripheral Equipment, Other General Applications

Absolute Maximum Ratings

(Ta=25°C)

| Item | Symbol | Absolute Maximum Ratings | Unit |
|---------------------------|------------------|--------------------------|------|
| Collector Dissipation | Pc | 75 | mW |
| Collector-Emitter Voltage | V _{CEO} | 30 | V |
| Emitter-Collector Voltage | V _{ECO} | 5 | V |
| Collector Current | Ic | 20 | mA |
| Operating Temperature | T _{opr} | -30~+85 | °C |
| Storage Temperature | T _{stg} | -40~+90 | °C |

Electro-Optical Characteristics

(Ta=25°C)

| Item | Conditions | Symbol | Characteristics | | Unit |
|-----------------------------|---|------------------|-----------------|------|------|
| | | | Min. | TYP. | |
| Photo Current | V _{CE} =5V, Ee=5mW/cm ² ※1 | Ic | Min. | 0.7 | mA |
| | | | TYP. | 3.5 | mA |
| Response Time | V _{CE} =10V, Ic=2mA, R _L =100Ω | tr/tf | TYP. | 8/9 | μs |
| Dark Current | V _{CEO} =10V | I _{CEO} | Max. | 0.1 | μA |
| Peak Sensitivity Wavelength | V _{CE} =5V | λ _p | TYP. | 880 | nm |
| Spatial Half Width | V _{CE} =5V | Δθ | TYP. | 130 | deg. |

※1 Color temperature is 2,856K. Employs a standard tungsten lamp.

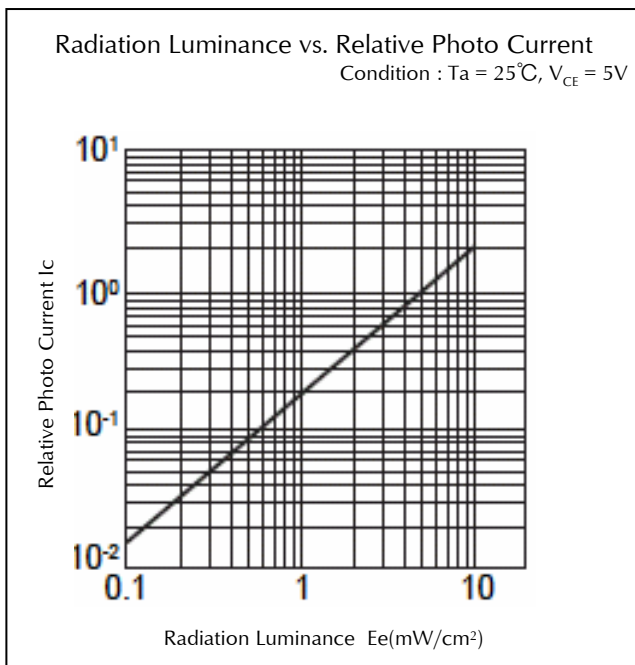
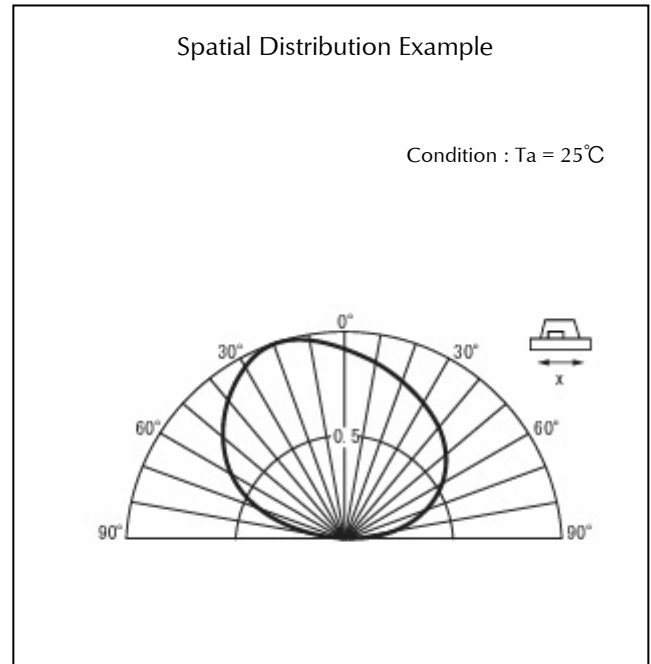
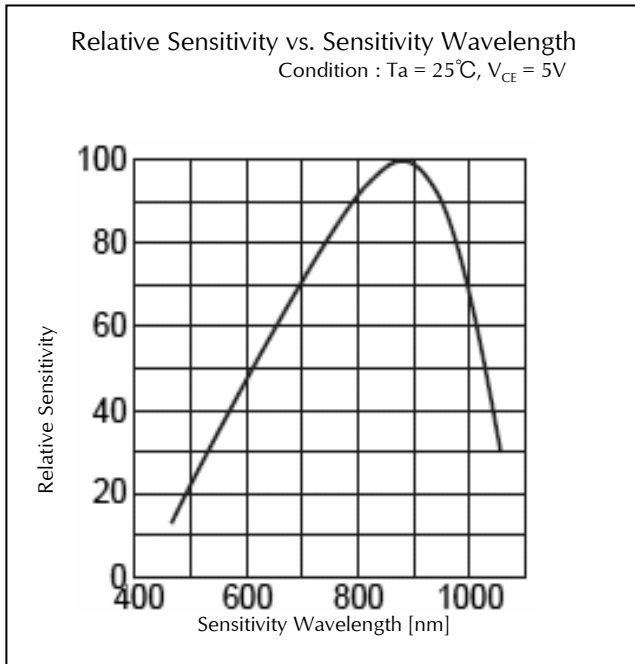
Photo Current Rank

(Ta=25°C)

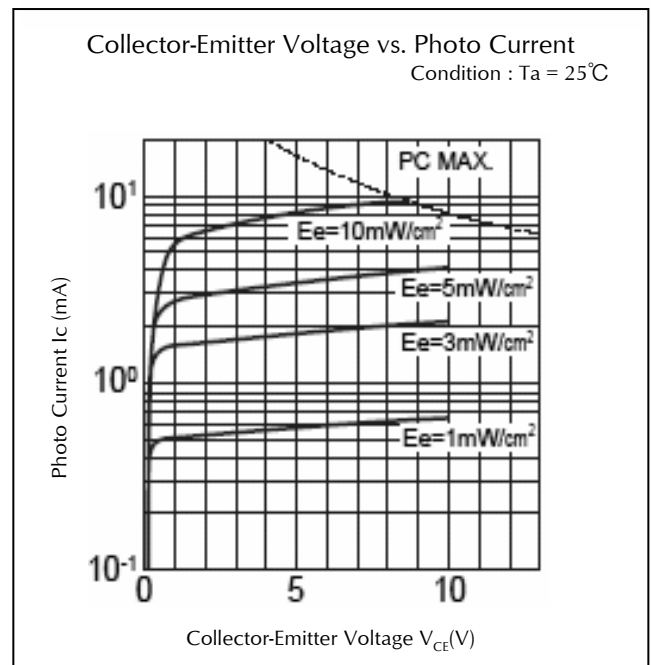
| Rank | Ic(mA) | | Condition |
|------|--------|------|-----------------------------------|
| | MIN. | MAX. | |
| A | 0.7 | 1.4 | $V_{CE} = 5V$ $E_e = 5mW/cm^2$ |
| B | 1.2 | 2.4 | |
| C | 2.1 | 4.2 | |
| D | 3.6 | 7.2 | |
| E | 6.3 | 12.6 | |

※Please contact our sales staff concerning rank designation.

Technical Data

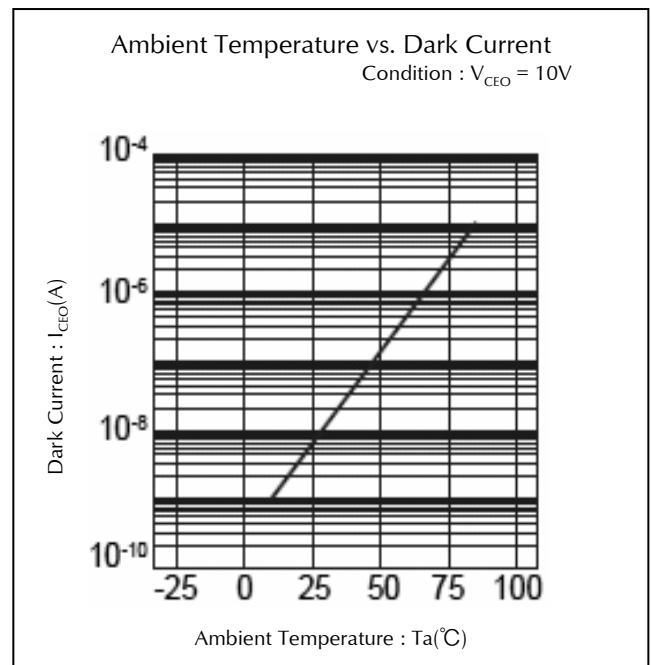
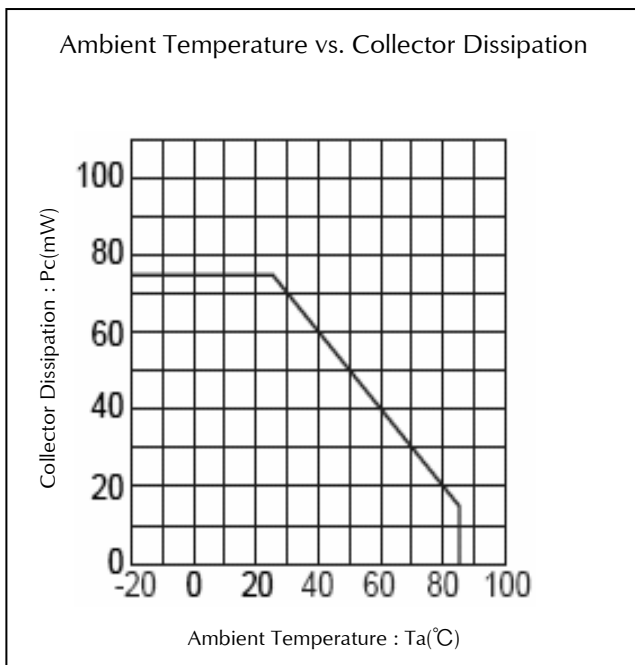
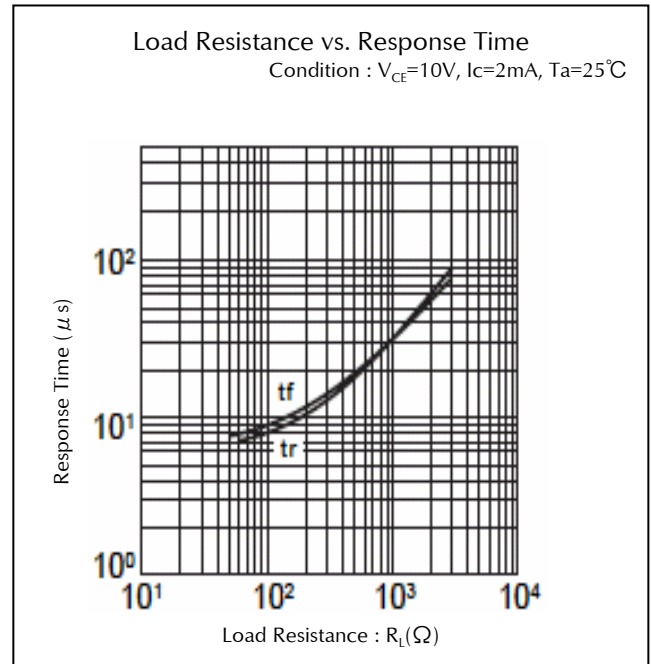
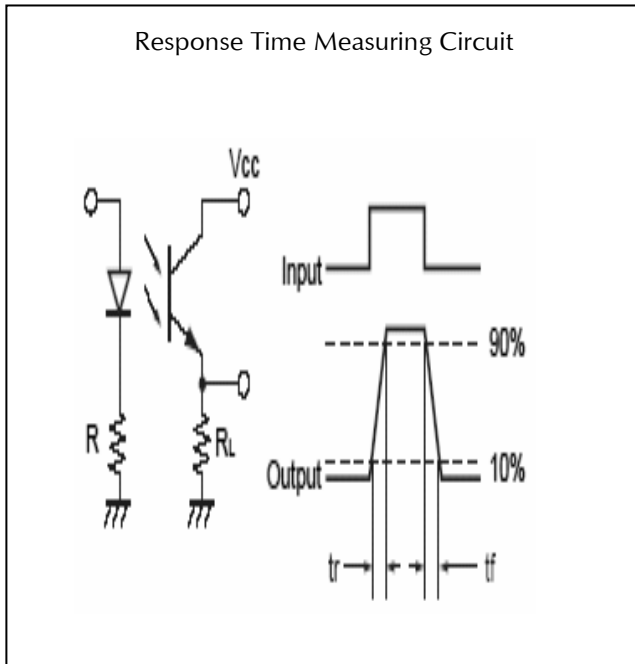


It is based on $E_e = 5\text{mW/cm}^2$.
Employs a standard tungsten lamp of 2,856K.

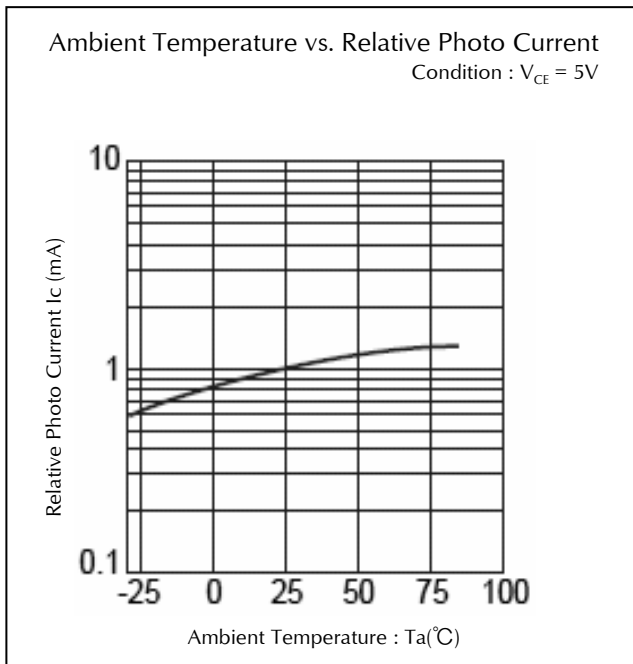


Employs a standard tungsten lamp of 2,856K.

Technical Data



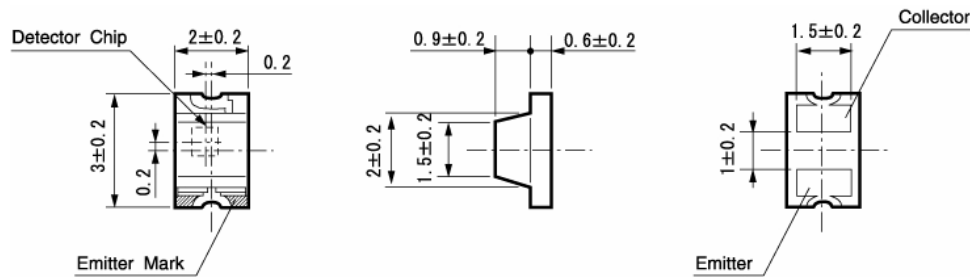
Technical Data



Package Dimensions

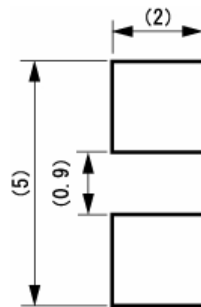
(Unit: mm)

Weight: (7.80)mg



Recommended Soldering Pattern

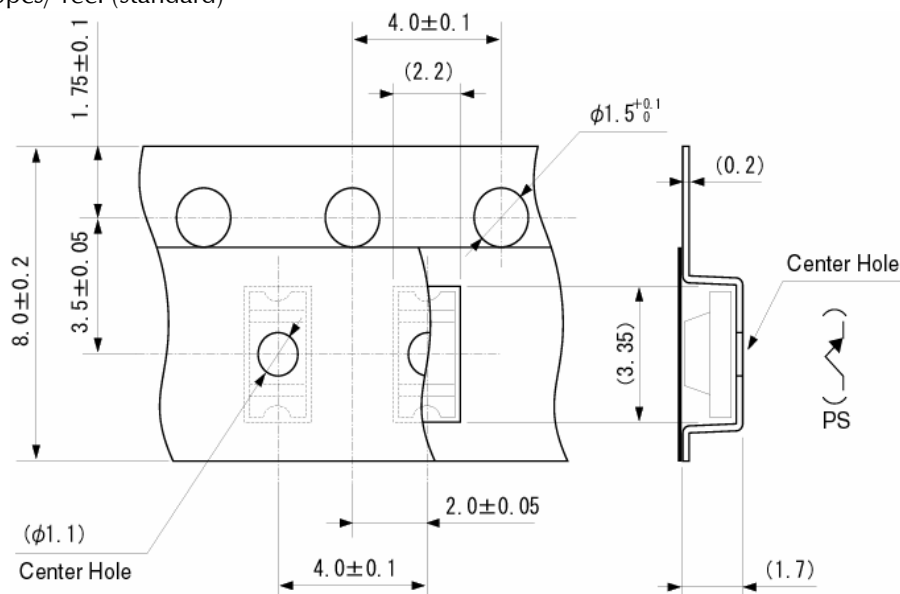
(Unit: mm)



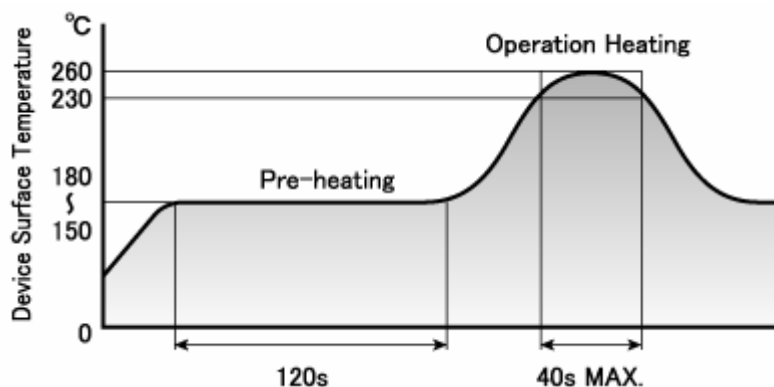
Taping Specification

(Unit: mm)

Quantity: 2,500pcs/ reel (standard)



Reflow Soldering Conditions



- 1) The above profile temperature gives the maximum temperature of the device resin surface. Please set the temperature so as to avoid exceeding this range.
- 2) Total times of reflow soldering process shall be no more than 2 times. When the second reflow soldering process is performed, intervals between the first and second reflow should be short as possible (while allowing some time for the component to return to normal temperature after the first reflow) in order to prevent the device from absorbing moisture.
- 3) Temperature fluctuation to the device during the pre-heating process shall be minimized.

Manual Soldering Conditions

| | | |
|------------------------------|--------|--------------------|
| Iron tip temp. | 350 °C | (MAX.) (30 W Max.) |
| Soldering time and frequency | 3 s | (MAX.) |
| | 1 time | (MAX.) |

Reliability Testing Result

| Reliability Testing Result | Applicable Standard | Testing Conditions | Duration | Failure |
|-------------------------------|-----------------------|---|----------|---------|
| Room Temp. Operating Life | EIAJ ED-4701/100(101) | Ta = 25°C, Pc = Maximum Rated Power Dissipation | 1,000 h | 0/16 |
| Resistance to Soldering Heat | EIAJ ED-4701/300(301) | (Pretreatment) Individual standard (Reflow Soldering) Pre-heating 150°C~180°C 120s Operating Heating 230°C Min. Peak temperature 260°C | Twice | 0/16 |
| Temperature Cycling | EIAJ ED-4701/100(105) | Minimum Rated Storage Temperature(30min) ~Normal Temperature(15min) ~Maximum Rated Storage Temperature(30min) ~Normal Temperature(15min) | 5 cycles | 0/16 |
| Wet High Temp. Storage Life | EIAJ ED-4701/100(103) | Ta = 60±2°C, RH = 90±5% | 1,000 h | 0/16 |
| High Temp. Storage Life | EIAJ ED-4701/200(201) | Ta = Maximum Rated Storage Temperature | 1,000 h | 0/16 |
| Low Temp. Storage Life | EIAJ ED-4701/200(202) | Ta = Minimum Rated Storage Temperature | 1,000 h | 0/16 |
| Vibration, Variable Frequency | EIAJ ED-4701/400(403) | 98.1m/s ² (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction | 2 h | 0/16 |

Failure Criteria

| Items | Symbols | Conditions | Failure criteria |
|---------------------|------------------|--|--|
| Photo Current | I _C | E _E Value of each product Irradiance of Photo Current V _{CE} Value of each product Collector-emitter Voltage of Photo Current | Testing Max. Value ≥ Initial Value x 1.3 Testing Min. Value ≤ Initial Value x 0.7 |
| Dark Current | I _{CEO} | V _{CEO} Value of each product Collector-emitter Voltage of Dark Current | Testing Max. Value ≥ Spec. Max. Value x 1.2 |
| Cosmetic Appearance | - | - | Occurrence of notable decoloration, deformation and cracking |

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