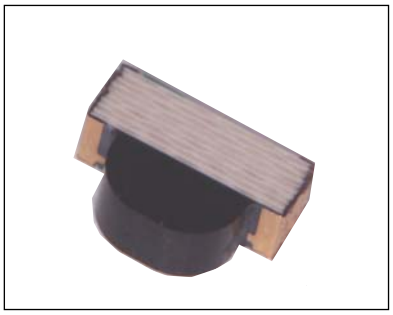


Pb-free HEAT

# PP1191FB

Surface Mount PIN Photodiode/Side Viewing Type

## Features

| | |
|---|---|
| Package | Side Viewing type, Black Visible Radiation Cut Filter epoxy |
| Product features | ・Outer Dimension 3.0 x 2.0 x 1.0 mm ( L x W x H )<br>・Photo Current : 1.8μA TYP. ($V_R$=5V,Ee=5mW/cm$^2$)<br>・Visible Radiation Cut Filter under 700nm<br>・Lead-free soldering compatible<br>・RoHS compliant |
| Peak Sensitivity Wavelength | 950nm |
| Half Intensity Angle | θx = 156 deg., θy = 132 deg. |
| Die materials | Si |
| Assembly method | Auto pick & place machine (Auto Mounter) |
| Soldering methods | Reflow soldering, and manual soldering<br>※Please refer to Soldering Conditions about soldering. |
| Taping and reel | 3,000pcs per reel in a 8mm width tape. (Standard)<br>Reel diameter: φ180mm |
| ESD | 2kV (HBM) |

## Recommended Applications

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

## Absolute Maximum Ratings

(Ta=25℃)

| Item | Symbol | Absolute Maximum Ratings | Unit |
|---|---|---|---|
| Power Dissipation | Pd | 15 | mW |
| Reverse Voltage | $V_R$ | 12 | V |
| Operating Temperature | $T_{opr}$ | -30～+85 | ℃ |
| Storage Temperature | $T_{stg}$ | -40～+100 | ℃ |

## Electro-Optical Characteristics

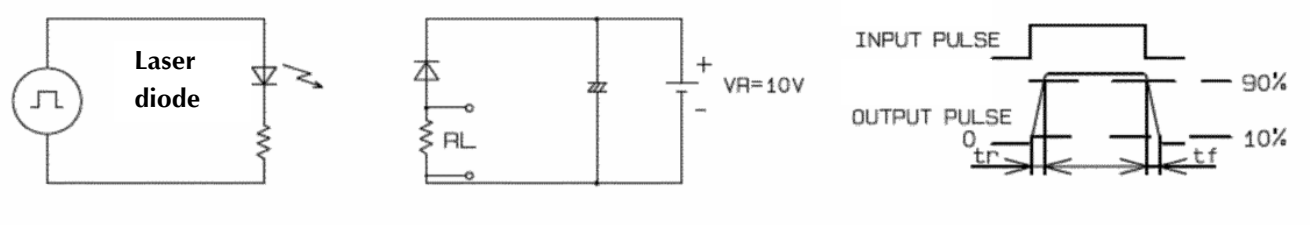
(Ta=25℃)

| Item | Conditions | Symbol | Characteristics | | Unit |
|---|---|---|---|---|---|
| Photo Current | $V_R$=5V, Ee=5mW/cm$^2$ ※1 | Ip | MIN. | 1.2 | μA |
| | | | TYP. | 1.8 | |
| | | | MAX. | 2.4 | |
| Response Time | $V_R$=10V, $R_L$=1,000Ω ※3 | tr/tf | TYP. | 60 | ns |
| Capacity | $V_R$=5V, f=1MHz | $C_T$ | TYP. | 1.6 | pF |
| Dark Current | $V_R$=10V | $I_D$ | TYP. | 0.1 | nA |
| | | | MAX. | 20 | |
| Peak Sensitivity Wavelength | $V_R$=0V | λp | TYP. | 950 | nm |
| Spatial Half Width※2 | $V_R$=0V | 2θ1/2 | TYP. | 156(θx) | deg. |
| | | | TYP. | 132(θy) | |

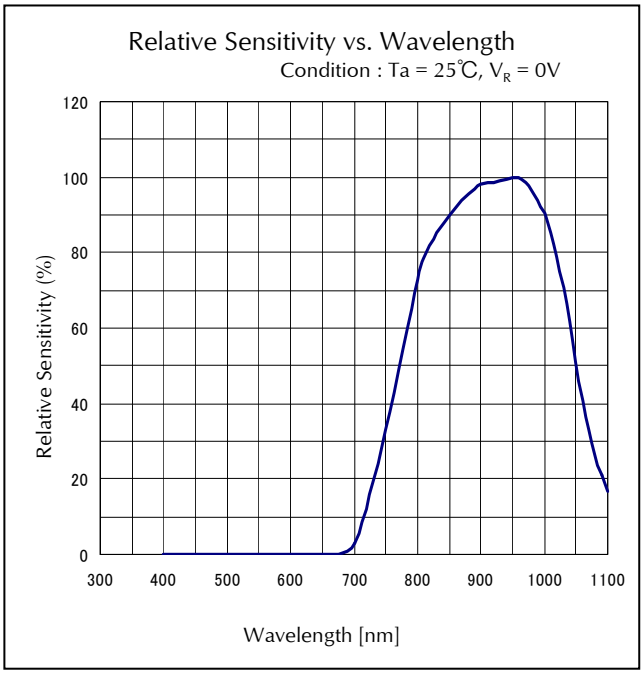
※1 Color temperature is 2,856K. Employs a standard tungsten lamp.

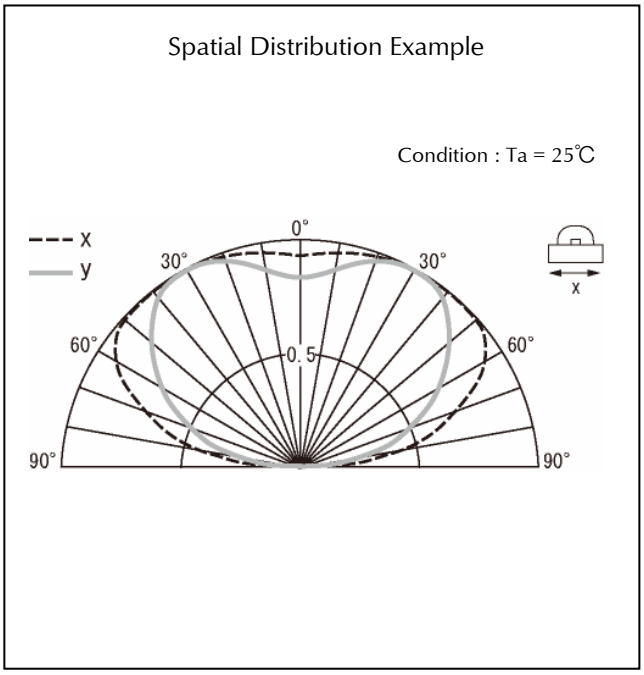
※2 θx：Lens long side axis, θy ：Lens short side axis

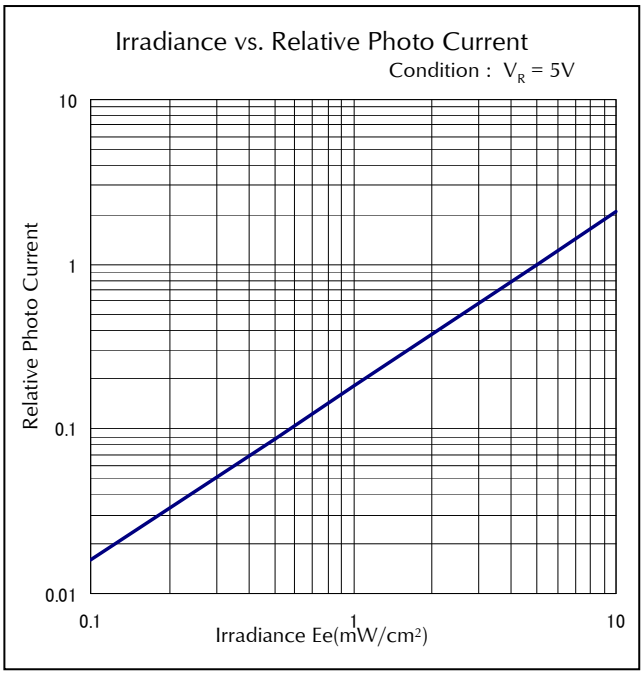
※3 Response time test circuit.

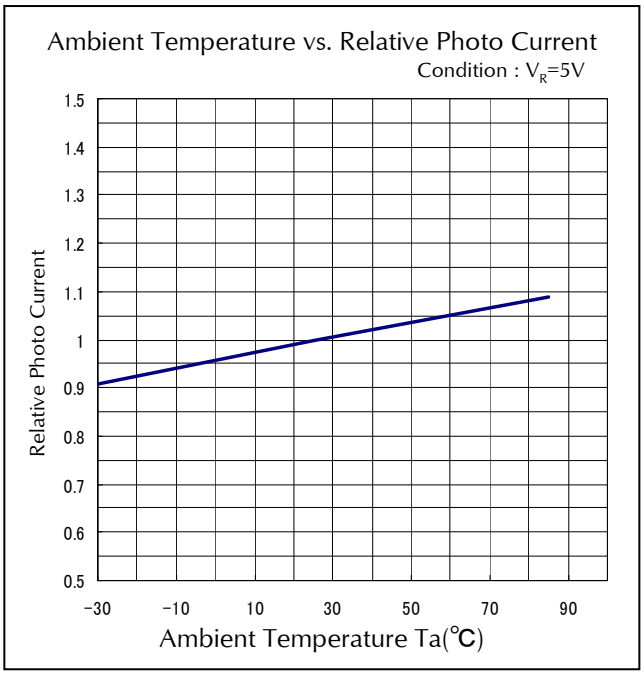


# Technical Data



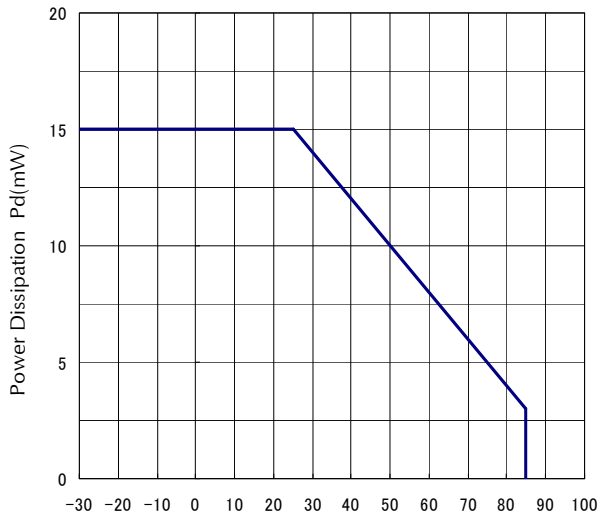




It is based on Ee=5mW/cm².
Employs a standard tungsten lamp of 2,856K.

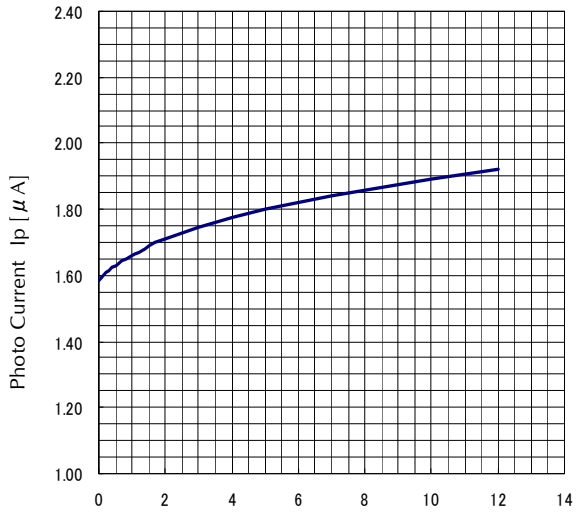
# Technical Data

Ambient Temperature vs. Power Dissipation



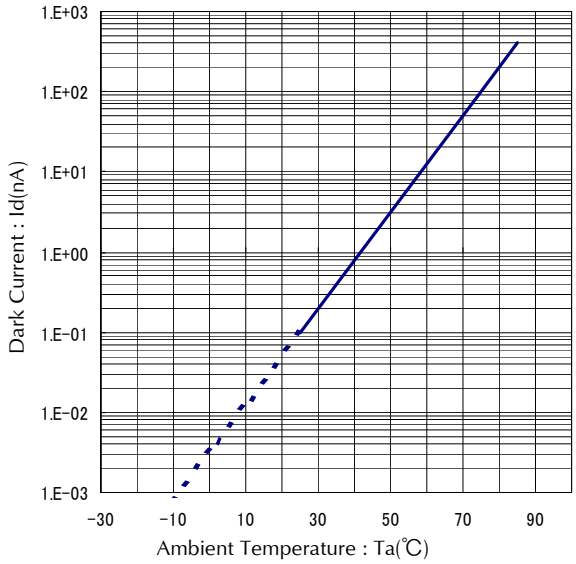

Reverse Voltage vs. Photo Current

Condition : Ee=1mW/cm², Ta=25℃



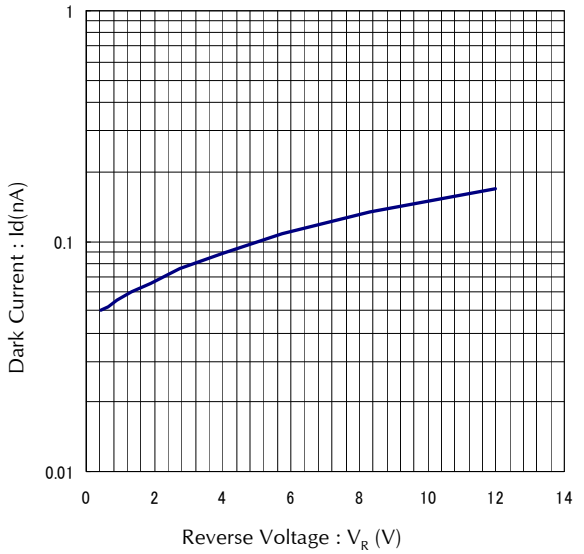

Ambient Temperature vs. Dark Current

Condition : $V_R$=10V

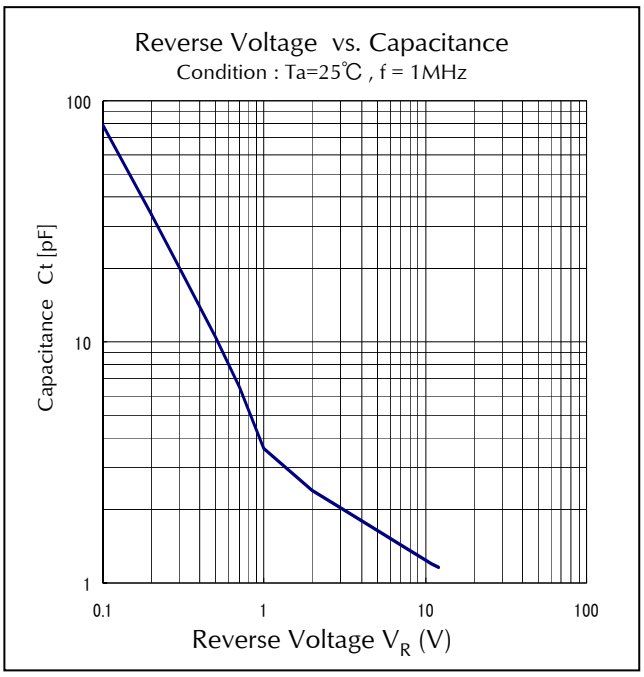



Reverse Voltage vs. Dark Current

Condition : Ta=25℃



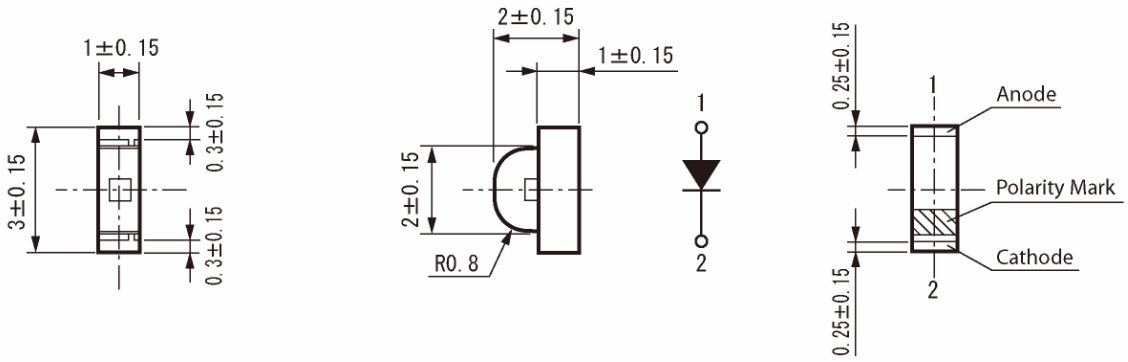
# Technical Data



## Package Dimensions

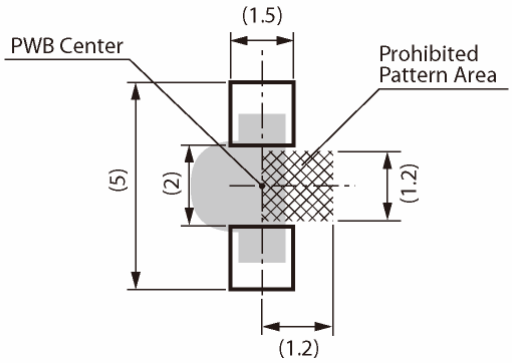
(Unit: mm)

MASS: (8.5)mg




## Recommended Soldering Pattern

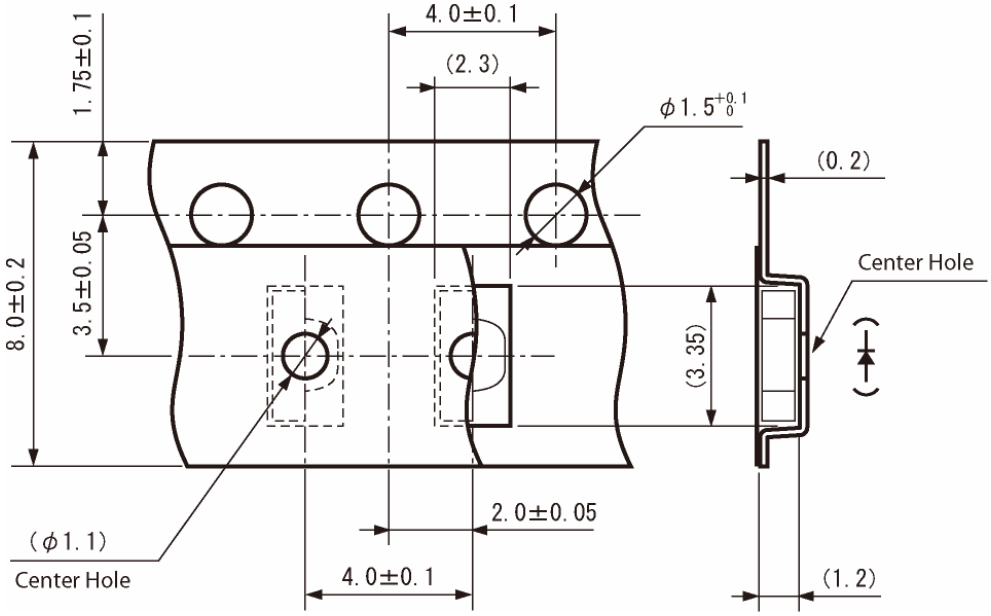
(Unit: mm)



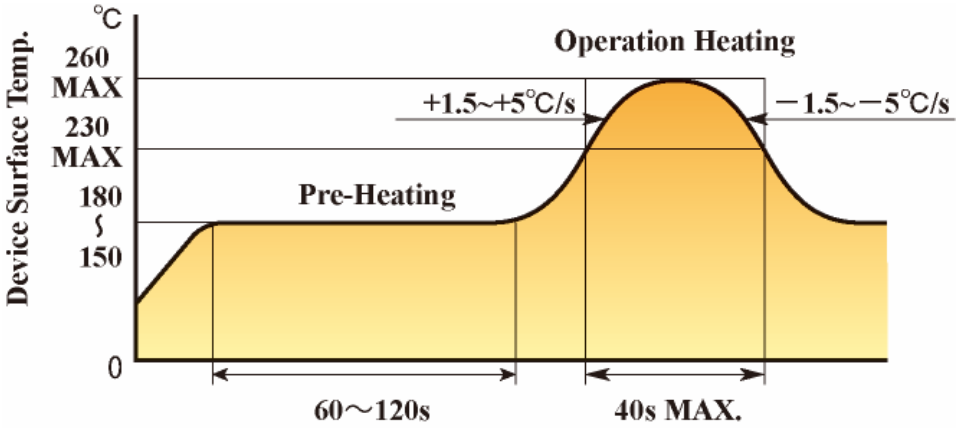

## Taping Specification

(Unit: mm)

Quantity: 3,000pcs/ 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 ℃ | |
| Soldering time and frequency | 3 s<br>1 time | (MAX.)<br>(MAX.) |

## Reliability Testing Result

| Test Item | Applicable Standard | Testing Conditions | Duration | Failure |
|---|---|---|---|---|
| Operating Life | EIAJ ED-4701/100(101) | Ta=25℃ Maximum Voltage (Dark condition) | 1,000 h | 0/15 |
| High Temperature Operating Life | EIAJ ED-4701/100(101) | Ta=85℃ $V_R$=5V (Dark condition) | 1,000 h | 0/15 |
| Low Temperature Operating Life | EIAJ ED-4701/100(101) | Ta=30℃ $V_R$=5V (Dark condition) | 1,000 h | 0/15 |
| Wet High Temperature Operating Life | EIAJ ED-4701/100(102) | Ta=60℃ Rh=90% $V_R$=5V (Dark condition) | 1,000 h | 0/15 |
| High Temperature Storage Life | EIAJ ED-4701/200(201) | Ta = Tstg MAX. Maximum Storage Temperature | 1,000 h | 0/15 |
| Low Temperature Storage Life | EIAJ ED-4701/200(202) | Ta = Tstg MIN. Minmum Storage Temperature | 1,000 h | 0/15 |
| Wet High Temperature Storage Life | EIAJ ED-4701/100(101) | Ta=60℃ Rh=90% | 1,000 h | 0/15 |
| Thermal Shock | EIAJ ED-4701/100(105) | Ta = Tstg MAX. ～ Tstg MIN. (each 15min) | 5 cycles | 0/15 |
| Resistance to Reflow Soldering | EIAJ ED-4701/300(301) | Moisture Soak: 30℃ 70% 72h<br>Preheating: 150 ～180℃ 120sec MAX.<br>Soldering: 260℃ 5sec | 2 times | 0/15 |

## Failure Criteria

| Items | Symbols | Conditions | Failure criteria |
|---|---|---|---|
| Relitive Photocurrent | Ip | $V_R$=5V, Ee=5mW/cm$^2$ | Testing Max. Value ≧Initial Value x 1.3<br>Testing Min. Value < Initial Value x 0.7 |
| Dark Current | $I_D$ | $V_R$=10V | Testing Max. Value ≧ 20mA x 2.5 |

# Special Notice to Customers Using the Products and Technical Information Shown in This Data Sheet

1) The technical information shown in the data sheets are limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.

2) For the purpose of product improvement, the specifications, characteristics and technical data described in the data sheets are subject to change without prior notice. Therefore it is recommended that the most updated specifications be used in your design.

3) When using the products described in the data sheets, please adhere to the maximum ratings for operating voltage, heat dissipation characteristics, and other precautions for use. We are not responsible for any damage which may occur if these specifications are exceeded.

4) The products that have been described to this catalog are manufactured so that they will be used for the electrical instrument of the benchmark (OA equipment, telecommunications equipment, AV machine, home appliance and measuring instrument).
The application of aircrafts, space borne application, transportation equipment, medical equipment and nuclear power control equipment, etc. needs a high reliability and safety, and the breakdown and the wrong operation might influence the life or the human body. Please consult us beforehand if you plan to use our product for the usages of aircrafts, space borne application, transportation equipment, medical equipment and nuclear power control equipment, etc. except OA equipment, telecommunications equipment, AV machine, home appliance and measuring instrument.

5) In order to export the products or technologies described in this data sheet which are under the "Foreign Exchange and Foreign Trade Control Law," it is necessary to first obtain an export permit from the Japanese government.

6) No part of this data sheet may be reprinted or reproduced without prior written permission from Stanley Electric Co., Ltd.

7) The most updated edition of this data sheet can be obtained from the address below:
http://www.stanley-components.com