



**Pb-free**  
**HEAT**



# PS4032

Through-hole Phototransistor/  $\phi$  3 Type

## Features

Package	$\phi$ 3 type, Water clear epoxy
Product features	<ul style="list-style-type: none"><li>• Flat Lenz type</li><li>• Phpto Current : 5mA TYP. (<math>V_{CE}=5V, E_e=10mW/cm^2</math>)</li><li>• No lead package</li><li>• Lead-free soldering compatible</li></ul>
Peak Sensitivity Wavelength	880nm
Half Intensity Angle	80 deg.
Die materials	Si
Soldering methods	TTW (Through The Wave) soldering and manual soldering ※Please refer to Soldering Conditions about soldering.
ESD	2kV (HBM)
Packing	Bulk : 200pcs(MIN.)

## Recommended Applications

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 <sub>CEO</sub>	30	V
Emitter-Collector Voltage	V <sub>ECO</sub>	5	V
Collector Current	Ic	30	mA
Operating Temperature	T <sub>opr</sub>	-30 ~ +85	
Storage Temperature	T <sub>stg</sub>	-30 ~ +100	

## Electro-Optical Characteristics

(Ta=25°C)

Item	Conditions	Symbol	Characteristics		Unit
Photo Current	V <sub>CE</sub> =5V, Ee=10mW/cm <sup>2</sup> ※1	Ic	Min.	1.5	mA
			TYP.	5	mA
Response Time	V <sub>CE</sub> =10V, Ic=2mA, R <sub>L</sub> =100Ω ※1	tr/tf	TYP.	5	μs
Dark Current	V <sub>CEO</sub> =10V	I <sub>CEO</sub>	Max.	0.2	μA
Peak Sensitivity Wavelength	V <sub>CE</sub> =5V	λ <sub>p</sub>	TYP.	880	nm
Spatial Half Width	V <sub>CE</sub> =5V	Δθ	TYP.	80	deg.

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

# Photo Current Rank

(Ta=25°C)

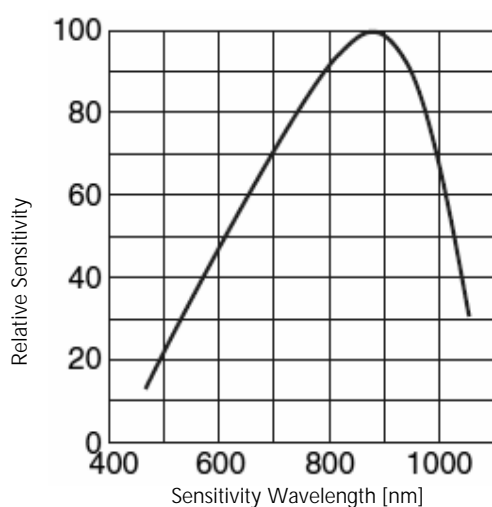
Rank	Ic(mA)		Condition
	MIN.	MAX.	
A	1.5	3.0	$V_{CE} = 5V$ $E_e = 10mW/cm^2$
B	2.6	5.2	
C	4.5	9.0	
D	7.8	15.6	
E	13.5	-	

※Please contact our sales staff concerning rank designation.

## Technical Data

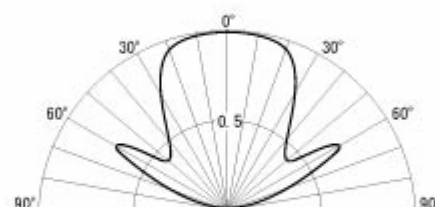
Relative Sensitivity vs. Sensitivity Wavelength

Condition :  $T_a = 25^\circ\text{C}$  ,  $V_{CE} = 5\text{V}$



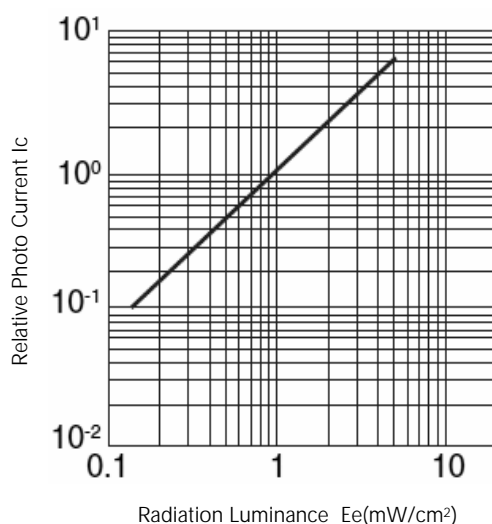
Spatial Distribution Example

Condition :  $T_a = 25^\circ\text{C}$



Radiation Luminance vs. Relative Photo Current

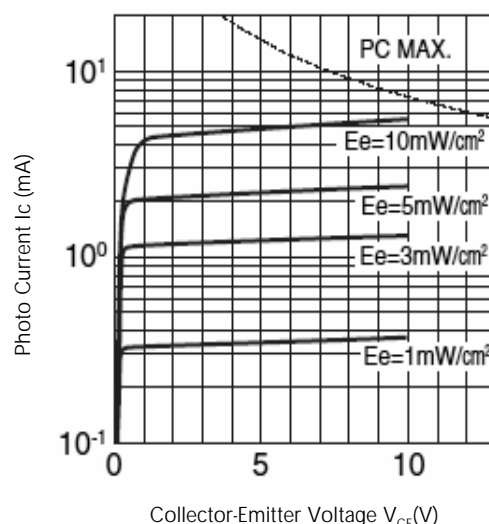
Condition :  $T_a = 25^\circ\text{C}$  ,  $V_{CE} = 5\text{V}$



It is based on  $E_e = 10\text{mW}/\text{cm}^2$ .  
Employs a standard tungsten lamp of 2,856K.

Collector-Emitter Voltage vs. Photo Current

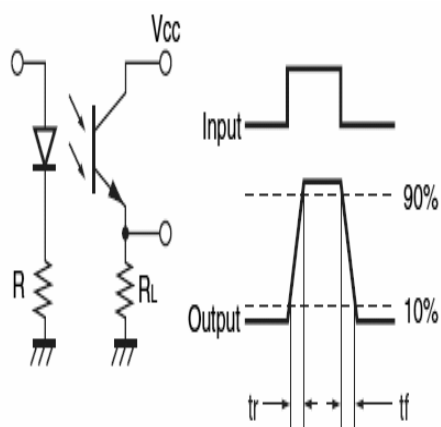
Condition :  $T_a = 25^\circ\text{C}$



Employs a standard tungsten lamp of 2,856K.

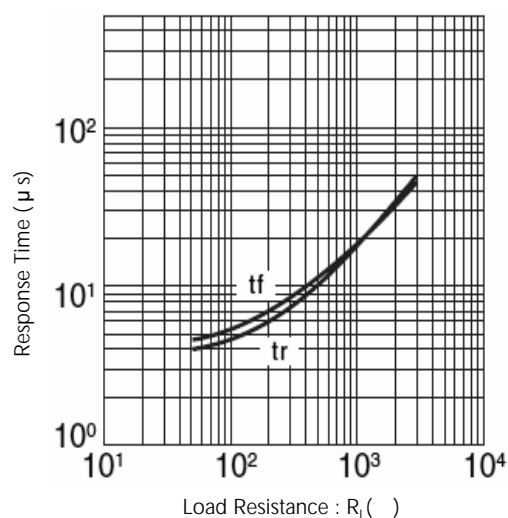
## Technical Data

Response Time Measuring Circuit

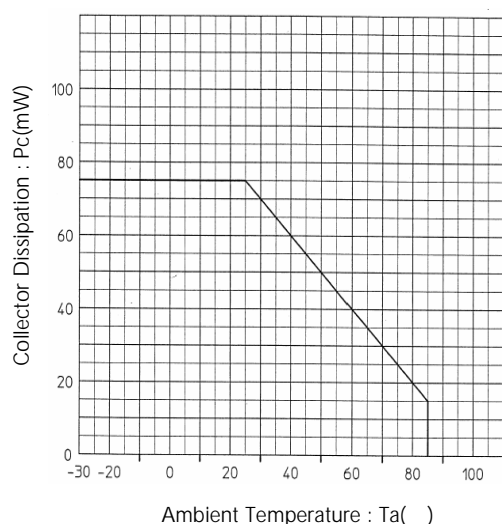


Ambient Temperature vs. Relative Photo Current

Condition :  $V_{CE}=10V$ ,  $I_C=2mA$ ,  $T_a=25$

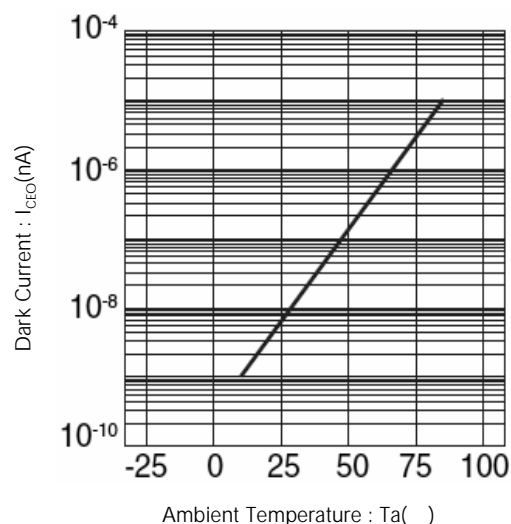


Ambient Temperature vs. Collector Dissipation

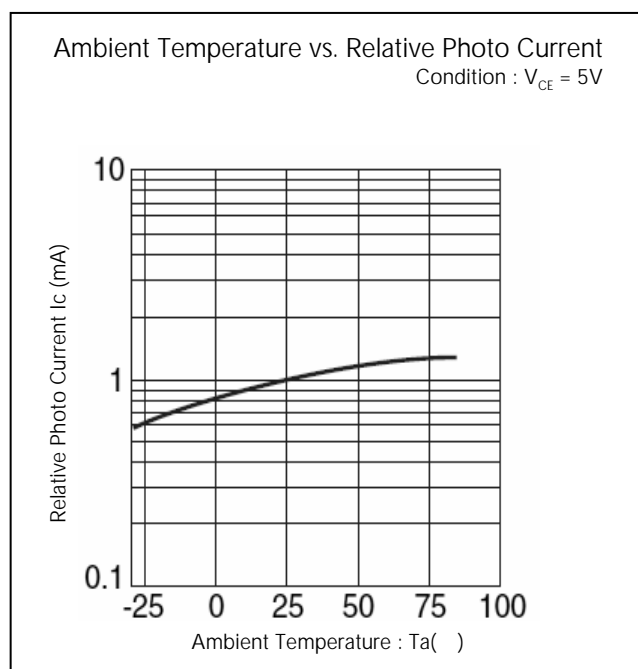


Ambient Temperature vs. Dark Current

Condition :  $V_{CE0} = 10V$

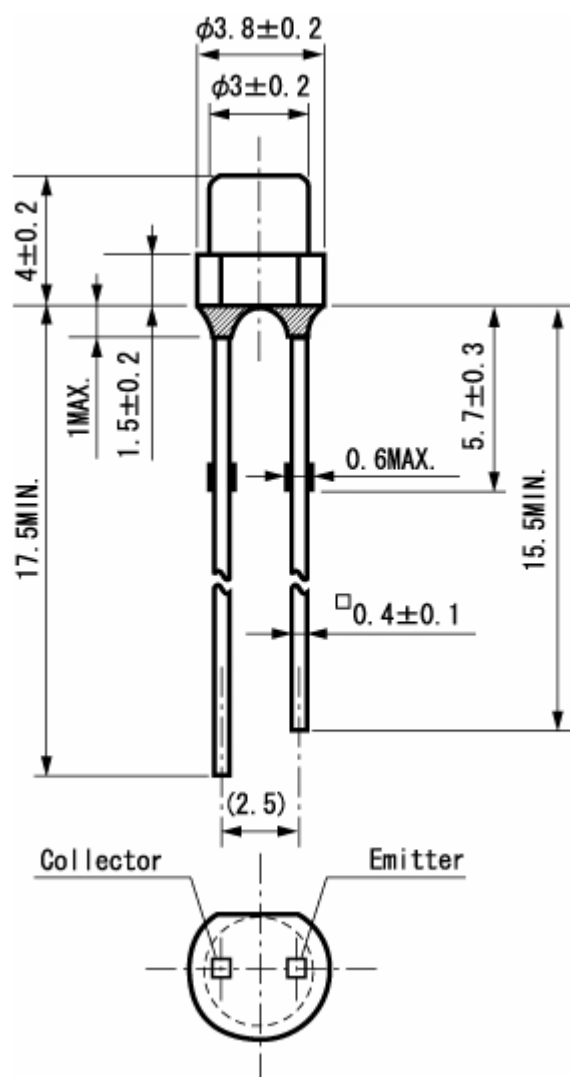


## Technical Data



## Package Dimensions

(Unit: mm)



## TTW (Through The Wave) soldering Conditions

Pre-heating	100 60 s	(MAX.) Resin surface temperature (MAX.)
Solder Bath Temp.	265	(MAX.)
Dipping Time	5 s	(MAX.)
Position	At least 3.0 mm away from resin body	



- 1) The dip soldering process shall be 2 times maximum.
- 2) The product shall be cooled to normal temperature before the second dipping process.

## Manual Soldering Conditions

Iron tip temp.	400	(MAX.) (30 W Max.)
Soldering time and frequency	3 s 1 time	(MAX.) (MAX.)
Position	At least 3.0 mm away from resin body	



## 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(302)	 260±5°C, 3mm from package base	5sec	0/16
		 265±5°C, 3mm from package base	5sec	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
Lead Tension	EIAJ ED-4701/400(401)	10N, 1time (□0.4 and Flat Package : 5N)	10sec	0/16
Vibration, Variable Frequency	EIAJ ED-4701/400(403)	98.1m/s <sup>2</sup> (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction	2 h	0/16

## Failure Criteria

Items	Symbols	Conditions	Failure criteria
Photo Current	I <sub>C</sub>	E <sub>E</sub> Value of each product Radiant Intensity of Photo Current V <sub>CE</sub> 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 <sub>CEO</sub>	V <sub>CEO</sub> Value of each product Collector-emitter Voltage of Dark Current	Testing Max. Value ≥ Spec. Max. Value x 1.2
Cosmetic Appearance	-	-	No notable, decoloration, deformation and cracking

## 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 described in the data sheets are made to be used in standard electronic applications such as office automation appliances, communication devices, audio visual, home appliances, and measuring instruments.
- 5) If the products in the data sheets are to be used for purposes other than the above which requires high level reliability and safety where failure and or malfunction of the product may cause death or other serious effects on the human body such as airplane, space activity, transportation, medical, nuclear), please contact our sales personnel.
- 6) 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.
- 7) No part of this data sheet may be reprinted or reproduced without prior written permission from Stanley Electric Co., Ltd.
- 8) The most updated edition of this data sheet can be obtained from the address below:  
<http://www.stanley-components.com>