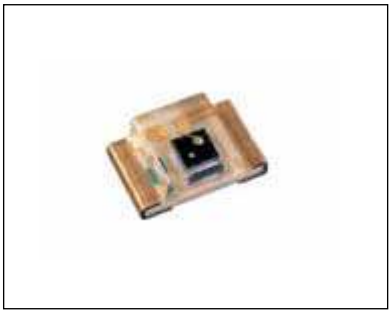


Pb-free HEAT

PS1102HA

Surface Mount Phototransistor/2125 Type

Features

Package	2125 Type, Water clear epoxy
Product features	・Outer Dimension 2.0 x 1.25 x 0.8mm (L x W x H) ・Small Size ・Photo Current : 2mA TYP. (V_{CE}=5V,Ee=5mW/cm^2) ・Wide Distribution ・Lead-free soldering compatible ・RoHS compliant
Peak Sensitivity Wavelength	880nm
Half Intensity Angle	θx = 130 deg., θy = 135 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	4,000pcs 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℃)

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	℃
Storage Temperature	T_{stg}	-40～+90	℃

Electro-Optical Characteristics

(Ta=25℃)

Item	Conditions	Symbol	Characteristics		Unit
Photo Current	V_{CE}=5V, Ee=5mW/cm^2 ※1	Ic	Min.	0.4	mA
			TYP.	2	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	λp	TYP.	880	nm
Spatial Half Width	V_{CE}=5V	⊿θ	TYP.	130(θx)	deg.
				135(θy)	

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

Photo Current Rank

(Ta=25℃)

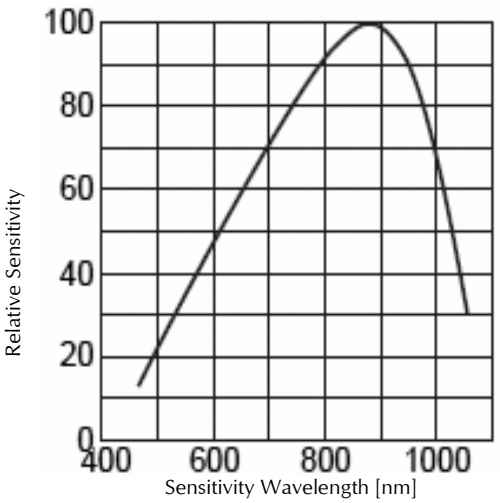
Rank	Ic(mA)		Condition
	MIN.	MAX.	
A	0.4	0.8	V_{CE} = 5V Ee = 5mW/cm^2
B	0.7	1.4	
C	1.2	2.4	
D	2.1	4.2	
E	3.6	7.2	

※Please contact our sales staff concerning rank designation.

Technical Data

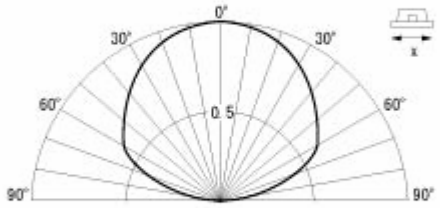
Relative Sensitivity vs. Sensitivity Wavelength

Condition : Ta = 25℃, V_{CE} = 5V



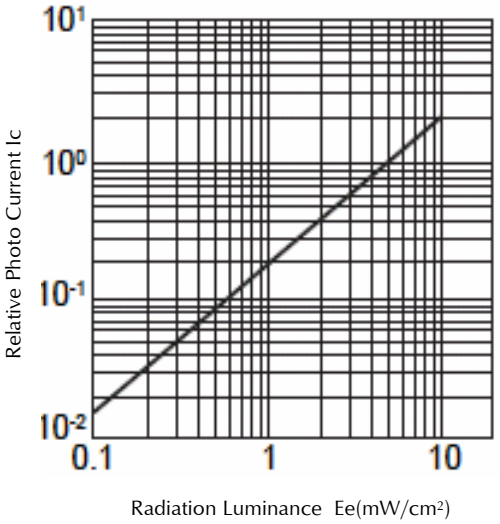
Spatial Distribution Example

Condition : Ta = 25℃



Radiation Luminance vs. Relative Photo Current

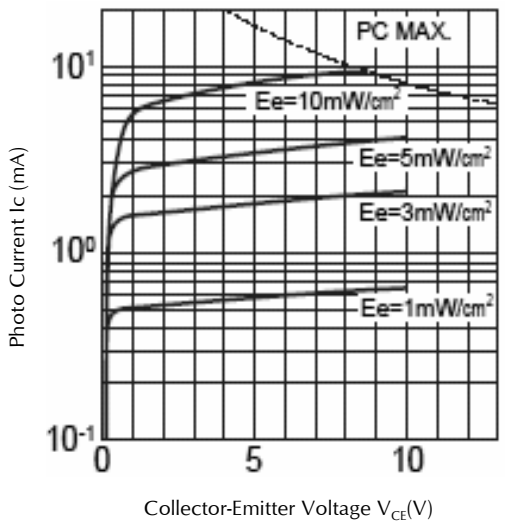
Condition : Ta = 25℃, V_{CE} = 5V



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

Collector-Emitter Voltage vs. Photo Current

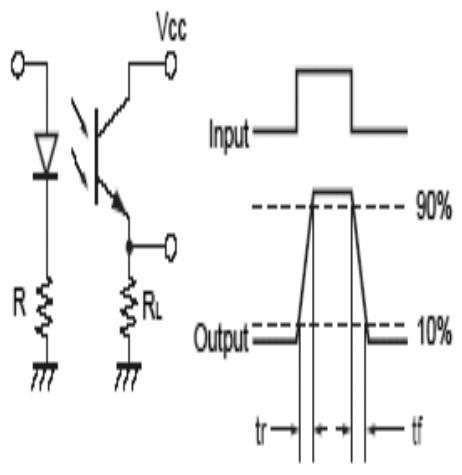
Condition : Ta = 25℃



Employs a standard tungsten lamp of 2,856K.

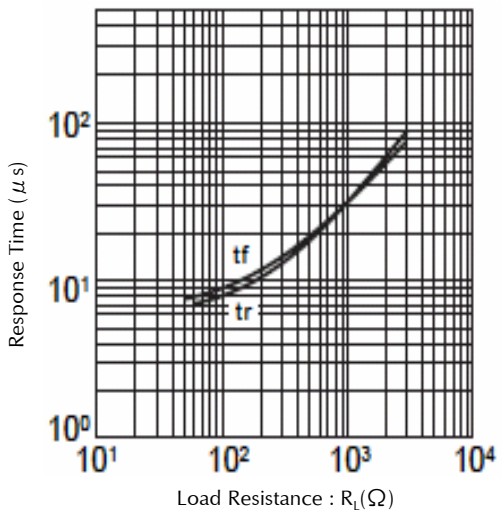
Technical Data

Response Time Measuring Circuit

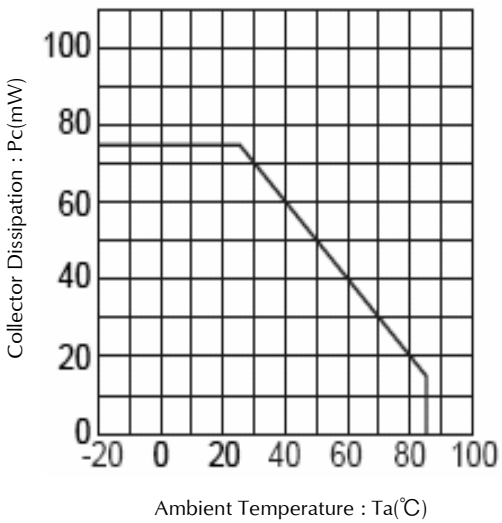


Load Resistance vs. Response Time

Condition : V_{CE}=10V, Ic=2mA, Ta=25℃

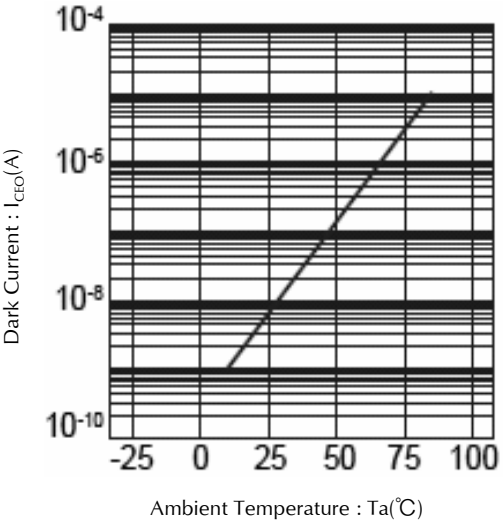


Ambient Temperature vs. Collector Dissipation



Ambient Temperature vs. Dark Current

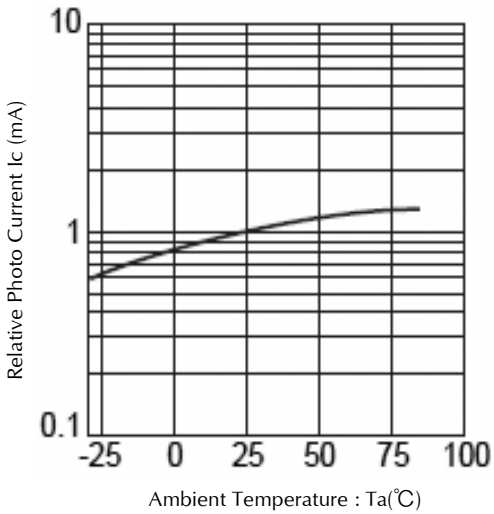
Condition : V_{CEO} = 10V



Technical Data

Ambient Temperature vs. Relative Photo Current

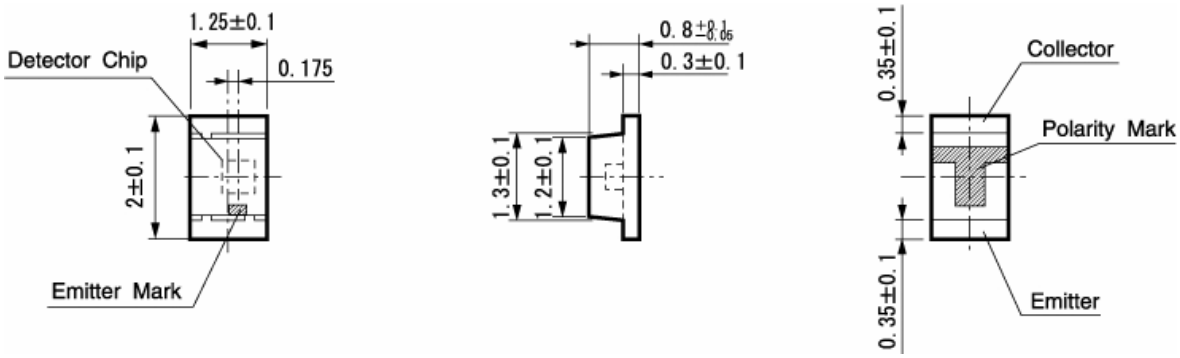
Condition : V_{CE} = 5V



Package Dimensions

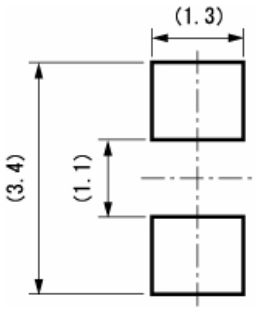
(Unit: mm)

Weight: (2.84)mg



Recommended Soldering Pattern

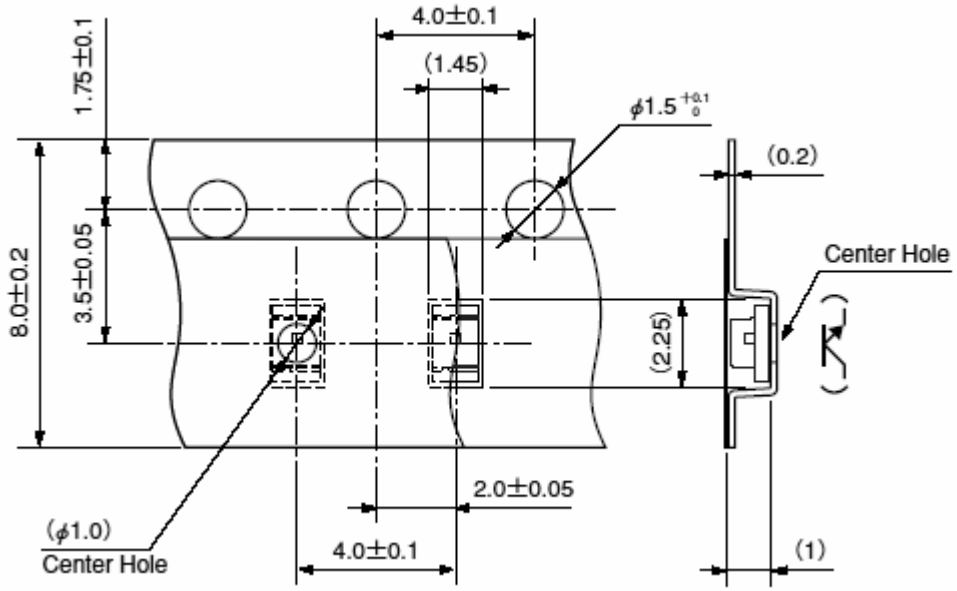
(Unit: mm)



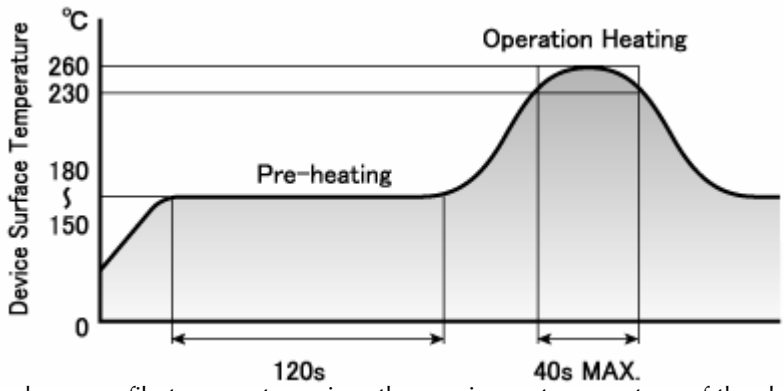
Taping Specification

(Unit: mm)

Quantity: 4,000pcs/ 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 ℃	(MAX.) (30 W Max.)
Soldering time and frequency	3 s 1 time	(MAX.) (MAX.)

Reliability Testing Result

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
Room Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 25℃, Pc = Maxium 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℃～180℃ 120s Operating Heating 230℃ Min. Peak temperature 260℃	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℃, 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

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