



Pb-free
HEAT



PS5G04S

Through-hole Phototransistor/ $\phi 5$ Type

Features

Package	$\phi 5$ Type, Water clear epoxy
Product features	<ul style="list-style-type: none">• High Photo Current : 12.0mA TYP. ($V_{CE}=5V, E_e=1.0mW/cm^2$)• Narrow distribution• Lead-free soldering compatible• RoHS compliant
Peak Sensitivity Wavelength	880nm
Half Intensity Angle	20 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)

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	30	mA
Operating Temperature	T _{opr}	-30~+85	°C
Storage Temperature	T _{stg}	-30~+100	°C

Electro-Optical Characteristics

(Ta=25)

Item	Conditions	Symbol	Characteristics		Unit
Photo Current	V _{CE} =5V, Ee=1mW/cm ² ※1	Ic	Min.	1.5	mA
			TYP.	12	mA
			Max.	24	mA
Response Time	V _{CE} =10V, Ic=2mA, R _L =100Ω	tr/tf	TYP.	5/5	μ s
Dark Current	V _{CEO} =10V	I _{CEO}	Max.	0.2	μ A
Peak Sensitivity Wavelength	V _{CE} =5V	λ p	TYP.	880	nm
Collector-Emitter Saturation Voltage	Ic=0.5mA, Ee=10mW/cm ²	V _{CE(SAT)}	TYP.	0.1	V
Spatial Half Width	-	Δθ	TYP.	20	deg.

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

Photo Current Rank

(Ta=25)

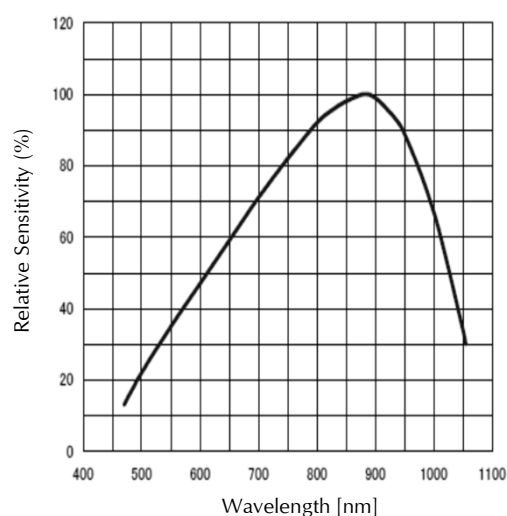
Rank	Ic(mA)		Condition
	MIN.	MAX.	
A	1.5	3.0	$V_{CE} = 5V$ $E_e = 1mW/cm^2$
B	2.4	4.8	
C	4.0	8.0	
D	7.0	14.0	
E	12.0	24.0	

Please contact our sales staff concerning rank designation.

Technical Data

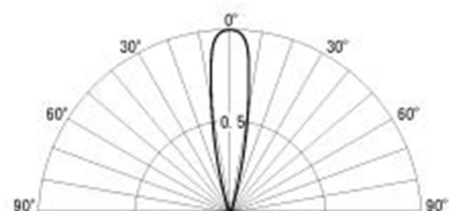
Wavelength vs. Relative Sensitivity

Condition : $T_a = 25^\circ\text{C}$, $V_{ce} = 0\text{V}$



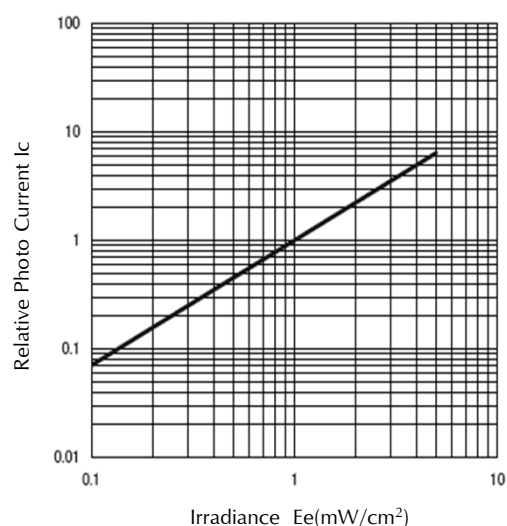
Spatial Distribution Example

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



Irradiance vs. Relative Photo Current

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

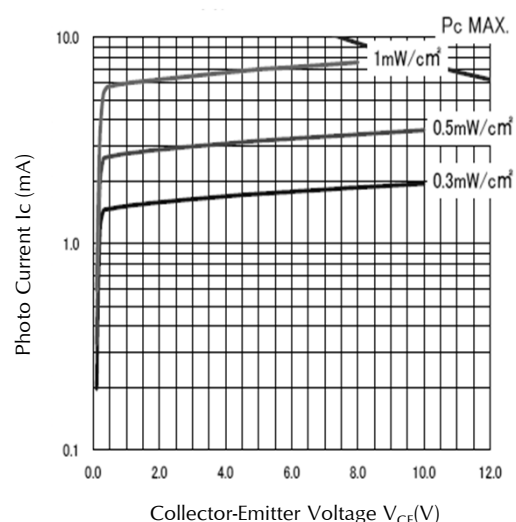


It is based on $E_e = 1\text{mW/cm}^2$.

Employs a standard tungsten lamp of 2,856K.

Collector-Emitter Voltage vs. Photo Current

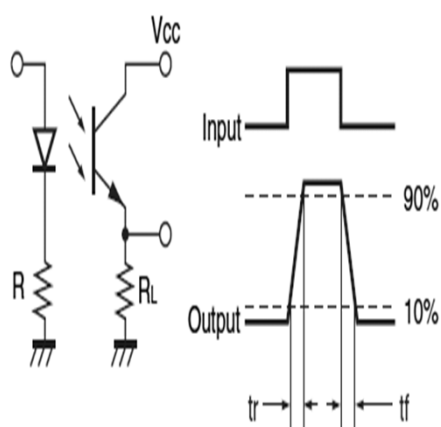
Condition : $T_a = 25^\circ\text{C}$



Employs a standard tungsten lamp of 2,856K.

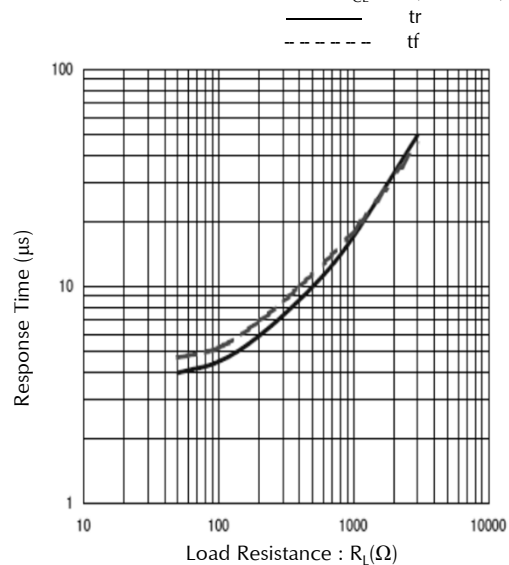
Technical Data

Response Time Measuring Circuit

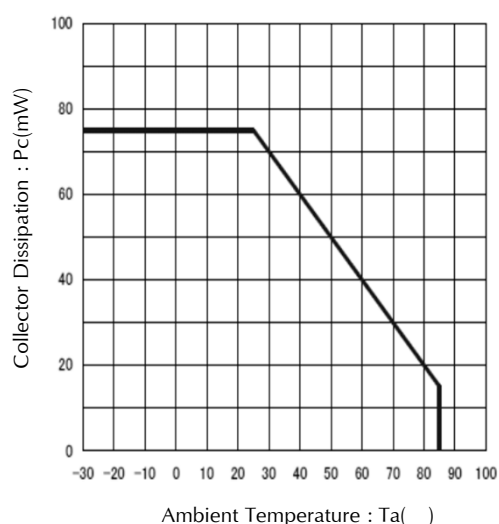


Ambient Temperature vs. Relative Photo Current

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

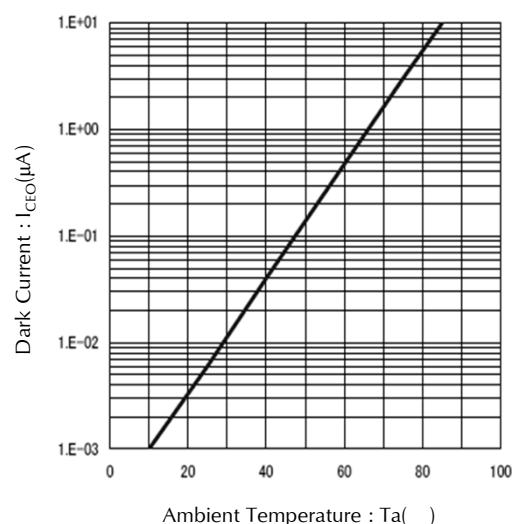


Ambient Temperature vs. Collector Dissipation

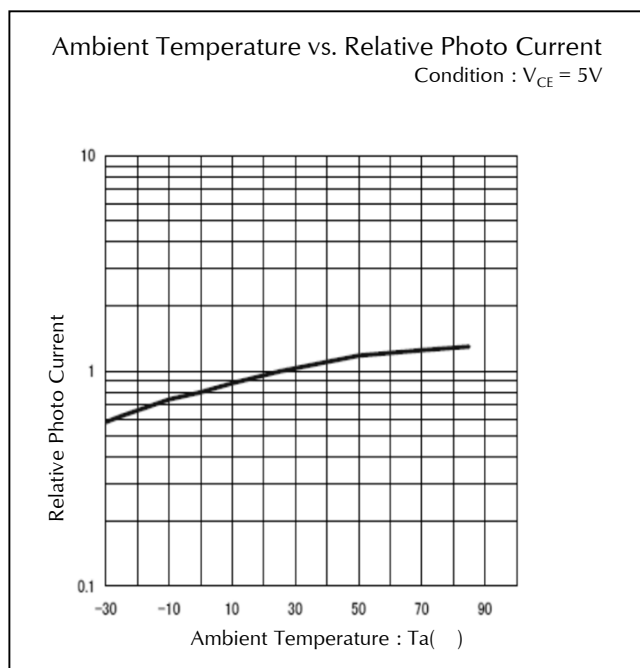


Ambient Temperature vs. Dark Current

Condition : $V_{CE0} = 10V$

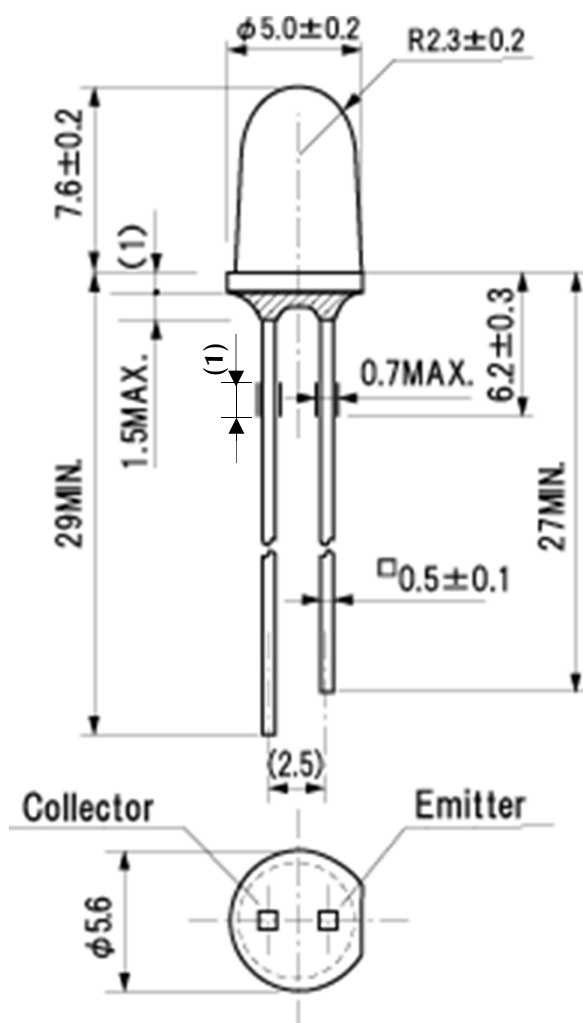


Technical Data



Package Dimensions

(Unit: mm)



TTW (Through The Wave) soldering Conditions

Pre-heating	100	(MAX.) Resin surface temperature
Solder Bath Temp.	265	(MAX.)
Dipping Time	5 s	(MAX.)
Position	At least 3.0 mm away from the root of lead	

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

The detail is described to LED and Photodetector handling precautions of home page:
"Mounting through-hole Type Devices" and "Soldering", and use it after the confirmation, please.

Manual Soldering Conditions

Iron tip temp.	360	(MAX)
Soldering time and frequency	3 s	(MAX.)
	1 time	(MAX.)
Position	At least 3.0 mm away from the root of lead	

The detail is described to LED and Photodetector handling precautions of home page:
"Mounting through-hole Type Devices" and "Soldering", and use it after the confirmation, please.

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)	265±5°C, 3mm from package base	5s	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)	10s	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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