5MM PHOTOTRANSISTOR

ST-5L5B-E

SIVAGO® SEMICONDUCTOR

Features

Fast response time

High photo sensitivity

Pb free

The product itself will remain within RoHS compliant version.

Copliance with EU REACH

Compliance Halogen Free.（Br＜900 ppm，Cl＜900ppm，Br+Cl＜1500ppm）

Application

Infrared applied system

Camera

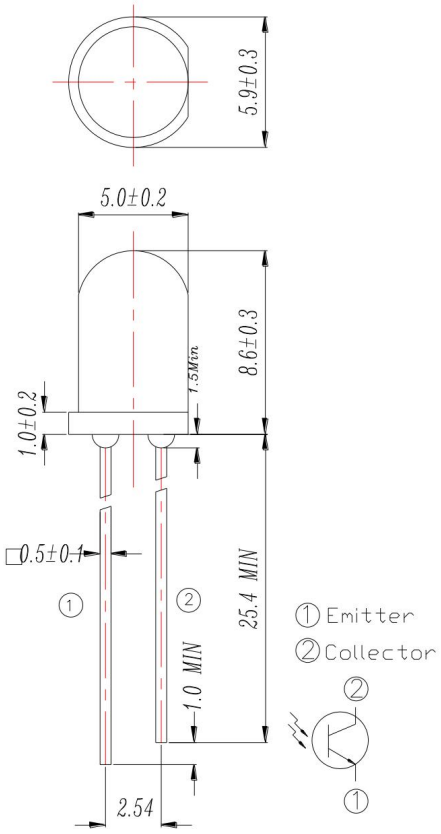
Printer

Cockroach catcher

Description

ST-5L5B-E is a high speed and high sensitive NPN silicon NPN epitaxial planar phototransistor molded in a standard 5 mm package.Due to its Black epoxy the device is sensitive to infrared radiation.

PACKAGE DIMENSIONS



NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25mm(.010") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.

ABSOLUTE MAXIMUM RATINGS AT TA =25℃

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	V_{CEO}	30	V
Emitter-Collector-Voltage	V_{ECO}	5	V
Collector Current	I_C	20	mA
Operating Temperature	Topr	-25 ~ +85℃	℃
Storage Temperature	Tstg	-40 ~ +85℃	℃
Lead Soldering Temperature *1	Tsol	260	℃
Power Dissipation at(or below)25℃ Free Air Temperature	Pc	75	mW

Notes: *1:Soldering time≦5 seconds.

ELECTRICAL OPTICAL CHARACTERISTICS AT TA=25℃

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Collector – Emitter Breakdown Voltage	BV_{CEO}	30	-----	-----	V	I_C=100μAEe=0mW/cm²
Emitter-CollectorBreakdown Voltage	BV_{ECO}	5	-----	-----	V	I_E=100μAEe=0mW/cm²
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-----	-----	0.4	V	I_C=2mAEe=1mW/cm²
Rise Time	t_r	-----	15	-----	μS	V_{CE}=5V I_C=1mA RL=1000Ω
Fall Time	t_f	-----	15	-----		
Collector Dark Current	I_{CEO}	-----	-----	100	nA	Ee=0mW/cm² V_{CE}=20V
On State Collector Current	$I_{C(on)}$	0.7	2.0	-----	mA	Ee=1mW/cm² V_{CE}=5Vλp=940nm
Rang Of Spectral Bandwidth	$\lambda_{0.5}$	760	-----	1100	nm	----
Wavelength of Peak Sensitivity	λ_P	-----	940	-----	nm	----

Note:
*Measurement Uncertainty of Forward Voltage: ±0.1V
*Measurement Uncertainty of Luminous Intensity: ±10%
*Measurement Uncertainty of Dominant Wavelength ±1.0nm

Typical Electro-Optical Characteristics Curves

Fig.1Collector Power Dissipation vs. Ambient Temperature

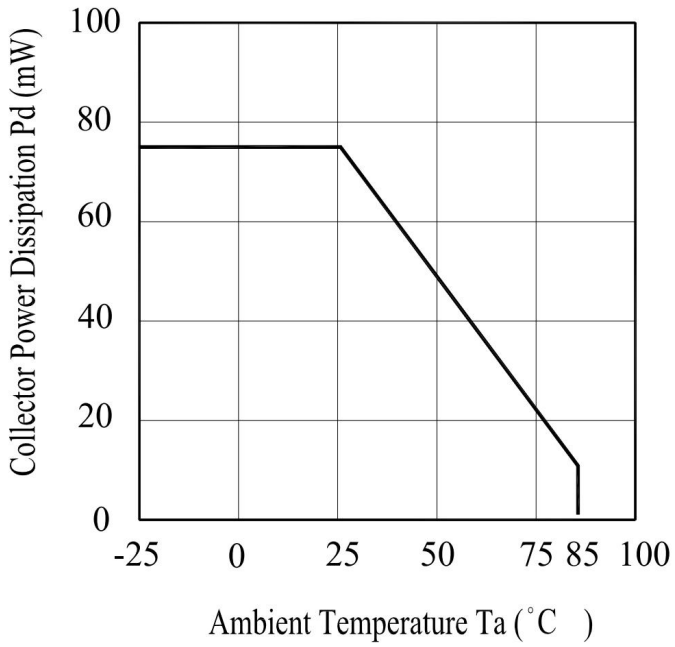


Fig.2 Spectral Sensitivity

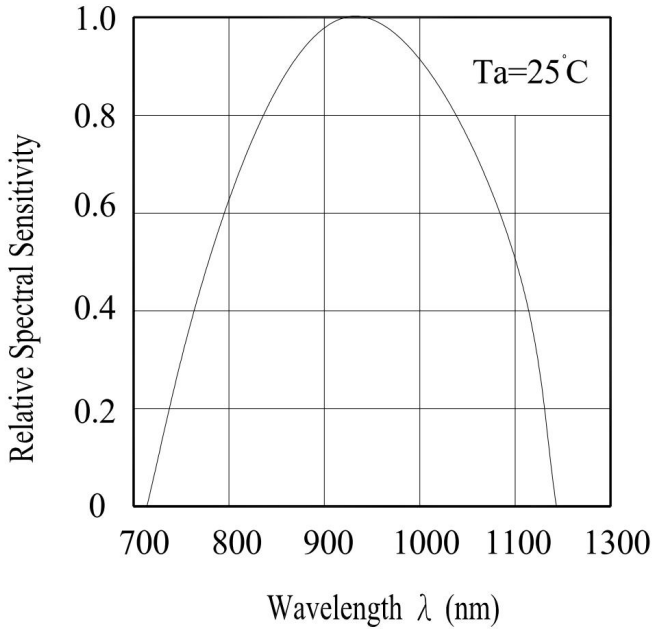


Fig.3 Relative Collector Current vs. Ambient Temperature

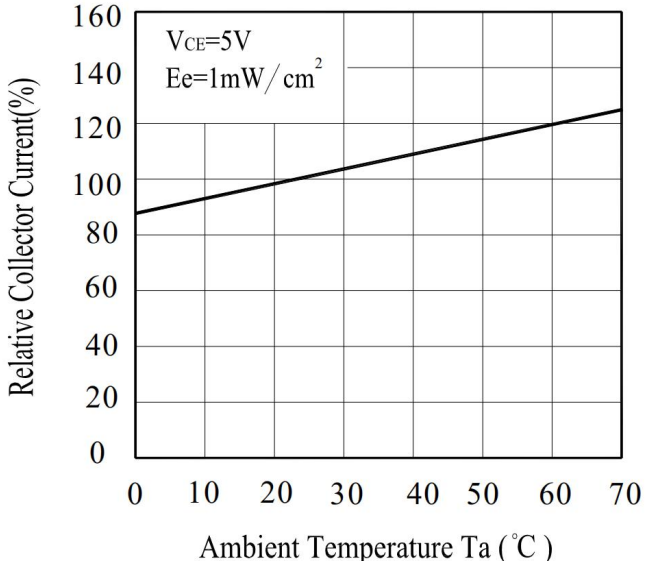
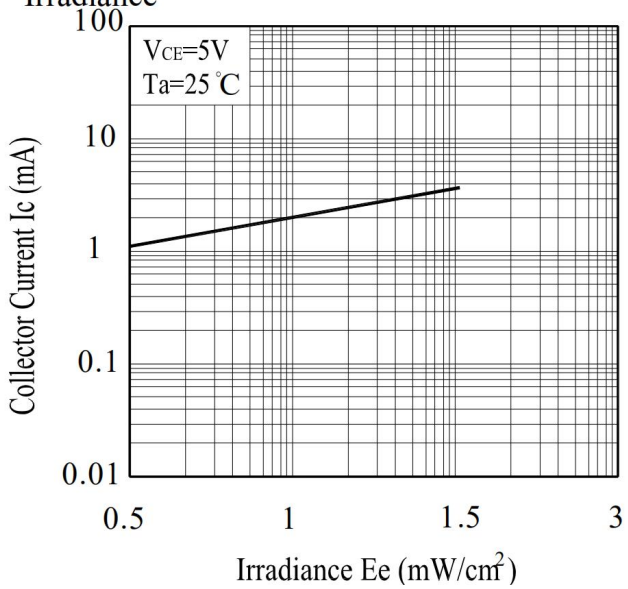


Fig.4 Collector Current vs. Irradiance



Typical Electro-Optical Characteristics Curves

Fig.5 Collector Dark Current vs. Ambient Temperature

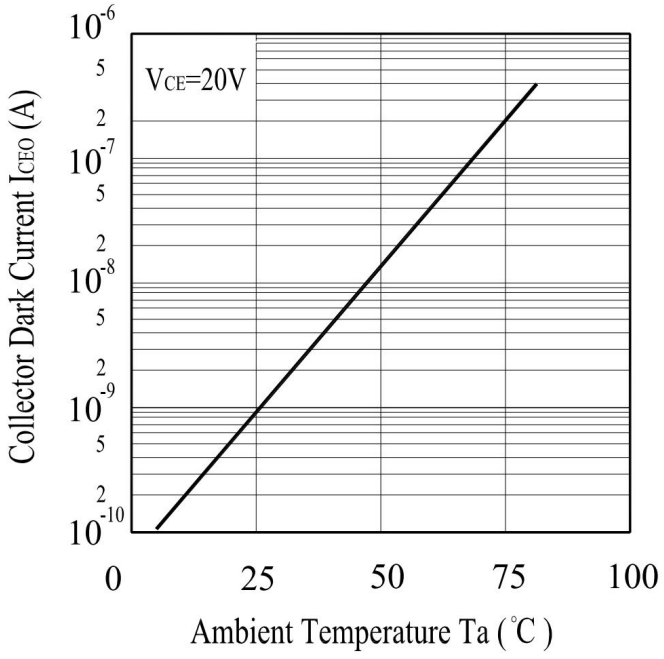
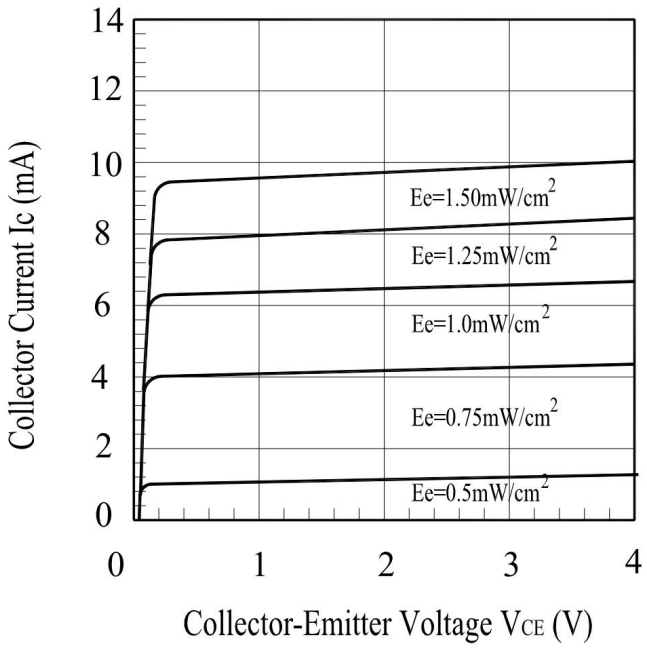


Fig.6 Collector Current vs. Collector-Emitter Voltage



Packing Quantity Specification

1. 1000Pcs/1Bag,7 Bag/1Box

2. 4Boxes/1Carton

Label Form Specification

- PRODUCT: Part Number
- CODE NO.: Product Serial Number
- QTY: Packing Quantity
- LOT No: Lot Number
- REMARKS:Remarks

Notes

Lead Forming

1.During lead frame bending, the lead frame should be bent at a distance more than 3mm from bottom of the epoxy.

Note: Must fix lead frame and do not touch epoxy before bending to avoid Phototransistors broken.

2.Lead forming should be done before soldering.

3.Avoid stressing the Phototransistor package during leads forming. The stress to the base may damage the Phototransistor's characteristics or it may break the Phototransistors.

4.Cut the Phototransistor lead frame at room temperature. Cutting the lead frame at high temperatures may cause failure of the Phototransistors.

5.When mounting the Phototransistors onto a PCB, the PCB holes must be aligned exactly with the lead position of the Phototransistor. If the Phototransistors are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the Phototransistors.

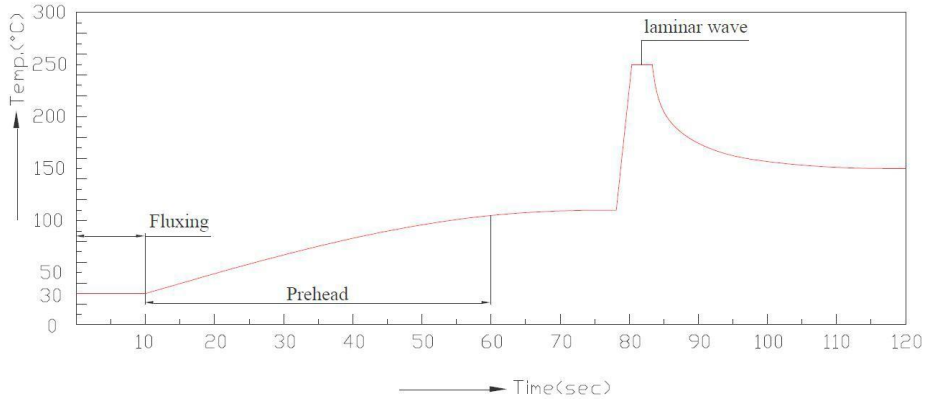
Soldering

1. Careful attention should be paid during soldering. When soldering, leave more than 3mm from solder joint to epoxy bulb, and soldering beyond the base of the tie bar is recommended.

2. Recommended soldering conditions:

Hand Soldering		DIP Soldering	
Temp. at tip of iron	300°C Max. (30W Max.)	Preheat temp.	100°C Max. (60 sec Max.)
Soldering time	3 sec Max.	Bath temp. & time	260 Max., 5 sec Max
Distance	3mm Min.(From solder joint to epoxy bulb)	Distance	3mm Min. (From solder joint to epoxy bulb)

3. Recommended soldering profile



4.Avoiding applying any stress to the lead frame while the Phototransistors are at high temperature particularly when soldering.

5.Dip and hand soldering should not be done more than one time

6.After soldering the Phototransistors, the epoxy bulb should be protected from mechanical shock or vibration until the Phototransistors return to room temperature.

7.A rapid-rate process is not recommended for cooling the Phototransistors down from the peak temperature.

8.Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the Phototransistors.

9.Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

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