PHOTOTRANSISTOR

ST-1KL3B

SIVAGO® SEMICONDUCTOR

Features

Narrow angular response

Durable

High reliability in demanding environments

Application

Optical switches

Optical detectors

Infrared sensors

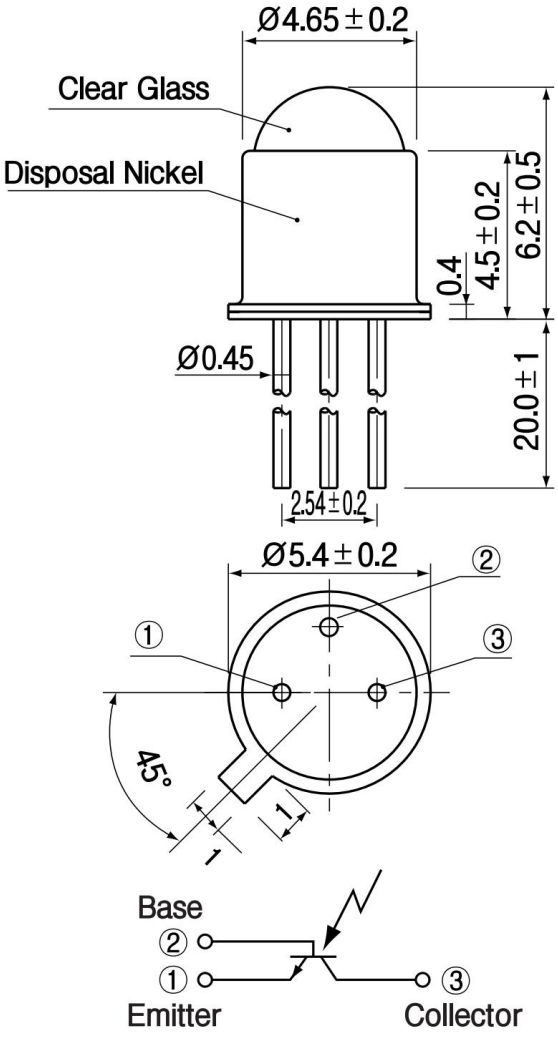
Encoders

Smoke detectors

Description

The ST-1KL3B is a high-sensitivity NPN silicon phototransistors mounted in durable, hermetically sealed TO-18 metal can which provide years of reliable performance, even under demanding conditions such as use outdoors.

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.

MAXIMUM RATINGS

(Ta=25℃)

Item	Symbol	Rating	Unit
C-E voltage	V_{CEO}	40	V
E-C voltage	V_{ECO}	6	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	150	mW
Operating temp.	Topr.	-30~+100	℃
Storage Temp.	Tstg.	-50~+150	℃
Soldering temp. *1	Tsol.	260	℃

*1. For MAX.5 seconds at the position of 2 mm from the package

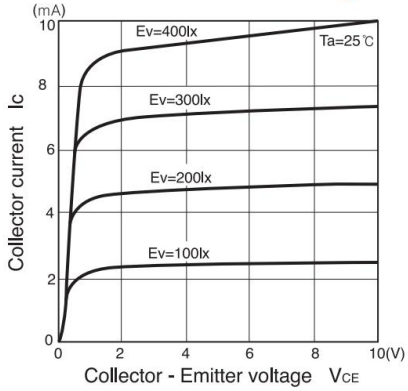
ELECTRO-OPTICAL CHARACTERISTICS

(Ta=25℃)

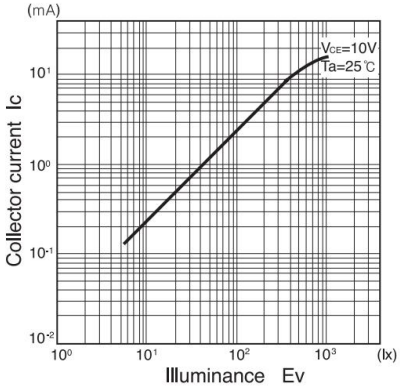
Item		Symbol	Conditions	Min.	Typ.	Max.	Unit.
Collector dark current		I_{CEO}	V_{CEO}=10V		1	200	nA
Light current		I_L	V_{CE}=10V, 200lx *2	1.5	5.0	15	mA
C-E saturation voltage		V_{CE}(sat)	I_C=5mA, 2,000lx *2		0.2	0.4	V
Switching speeds	Rise time	tr	V_{CC}=10V, I_C=5mA, R_L=100Ω		3.2		μsec.
	Fall time	tf			4.8		μsec.
Spectral sensitivity		λ			500~1,050		nm
Peak wavelength		λp			880		nm
Half anglee		△θ			±8		deg.

*2. Color temp.=2856K standard Tungsten lamp

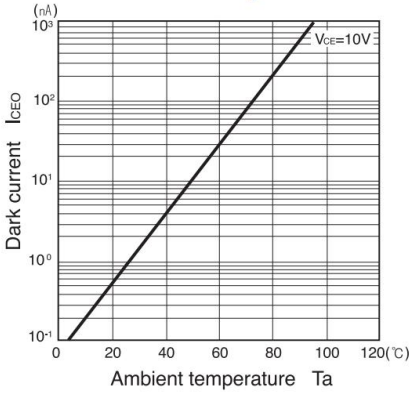
Collector current Vs. Collector - Emitter voltage



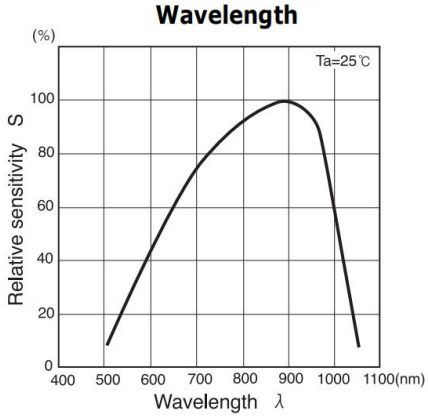
Collector current Vs. Illuminance



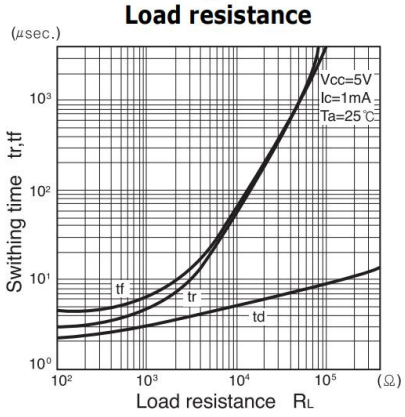
Dark current Vs. Ambient temperature



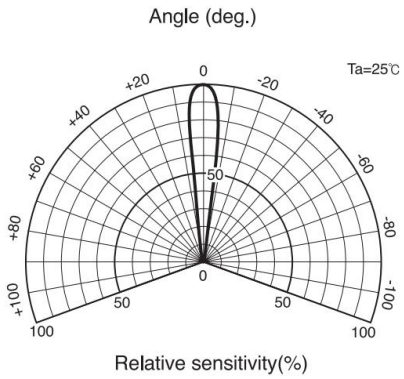
Relative sensitivity Vs. Wavelength



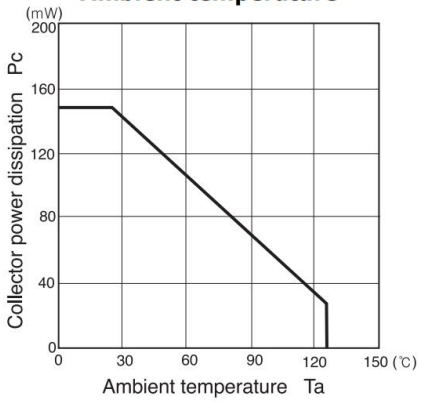
Swithing time vs. Load resistance

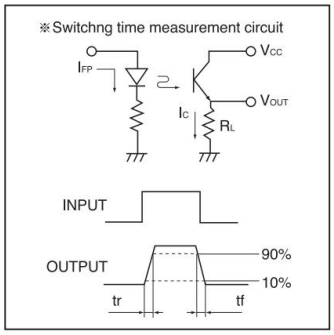


Radiant Pattern



Collector power dissipation Vs. Ambient temperature





Packing Quantity Specification

1. 500Pcs/1Bag,20 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.

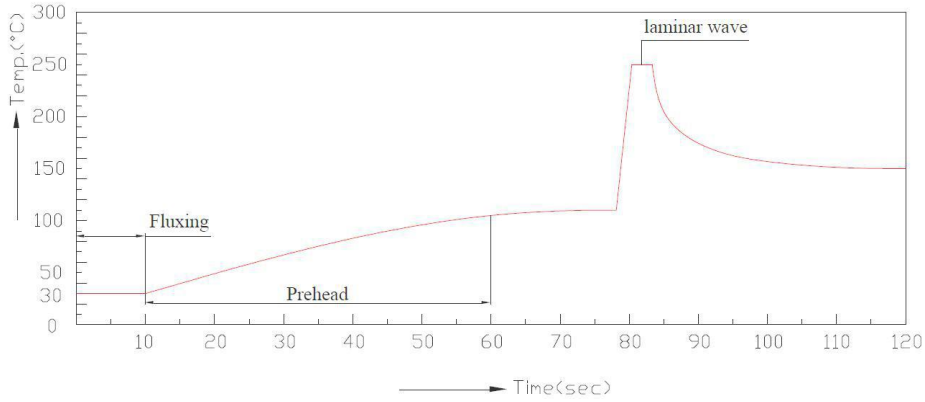
Soldering

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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