SMD INFRARED LED

KEL-121C

SIVAGO® SEMICONDUCTOR

Features

Small double-end package

Low forward voltage

Good spectral matching to Si photo detector

Package in 8mm tape on 7” diameter reel

Pb free

The product itself will remain within RoHS compliant version.

Compliance with EU REACH

Application

PCB mounted infrared sensor

Infrared emitting for miniature light barrier

Floppy disk drive

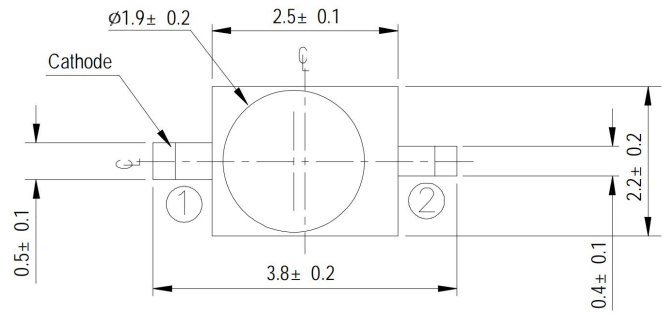
Optoelectronic switch

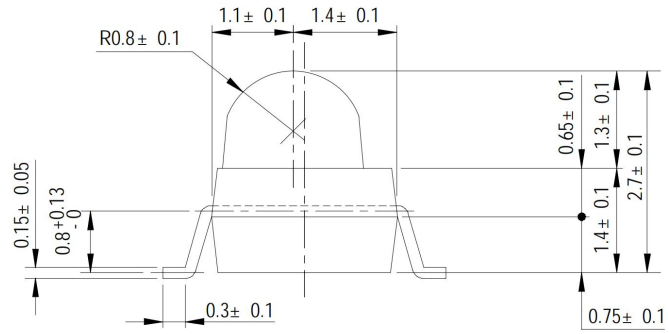
Smoke detector

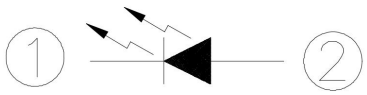
Description

KEL-121C is an infrared emitting diode in miniature SMD package which is molded in a water clear plastic with flat top view lens.The device is spectrally matched with silicon photodiode and phototransistor.

PACKAGE DIMENSIONS







1 Cathode

2 Anode

NOTES:

1.All dimensions are in millimeters

2.Tolerances unless dimensions ±0.1mm

3.Suggested pad dimension is just for reference only

Please modify the pad dimension based on individual need

ABSOLUTE MAXIMUM RATINGS AT TA =25℃

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Power dissipation		P_V	190	mW
Junction temperature		T_j	100	°C
Operating temperature range		T_{amb}	- 40 to + 85	°C
Storage temperature range		T_{stg}	- 40 to + 100	°C
Soldering temperature	t ≤ 5 s	T_{sd}	< 260	°C
Thermal resistance junction/ambient	Soldered on PCB, pad dimensions: 4 mm x 4 mm	R_{thJA}	400	°C

Notes: *1 Soldering time≦5 seconds.

ELECTRICAL OPTICAL CHARACTERISTICS AT TA=25°C

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I_F = 20 mA, t_p = 20 ms	V_F		1.2	1.5	V
	I_F = 1 A, t_p = 100 µs	V_F		2.6		V
Temperature coefficient of V_F	I_F = 1 mA	TK_{VF}		- 1.8		mV/K
Reverse current	V_R = 5 V	I_R			10	µA
Junction capacitance	V_R = 0 V, f = 1 MHz, E = 0	C_j		25		pF
Radiant intensity	I_F = 20 mA, t_p = 20 ms	I_e	3	7	15	mW/sr
Radiant power	I_F = 100 mA, t_p = 20 ms	ϕ_e		35		mW
Temperature coefficient of ϕ_e	I_F = 20 mA	$TK\phi_e$		- 0.6		%/K
Angle of half intensity		φ		± 12		deg
Peak wavelength	I_F = 100 mA	λ_p		940		nm
Spectral bandwidth	I_F = 100 mA	$\Delta\lambda$		50		nm
Temperature coefficient of λ_p	I_F = 100 mA	$TK\lambda_p$		0.2		nm/K
Rise time	I_F = 100 mA	t_r		800		ns
Fall time	I_F = 100 mA	t_f		800		ns
Virtual source diameter		d		1.2		mm

BASIC CHARACTERISTICS

T_{amb} = 25 °C, unless otherwise specified

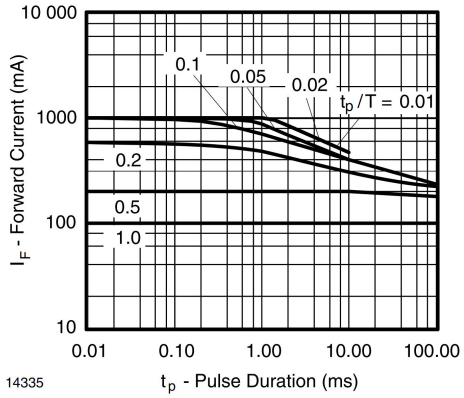


Fig. 3 - Pulse Forward Current vs. Pulse Duration

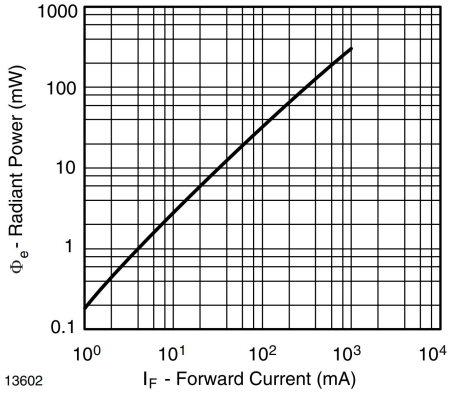


Fig. 6 - Radiant Power vs. Forward Current

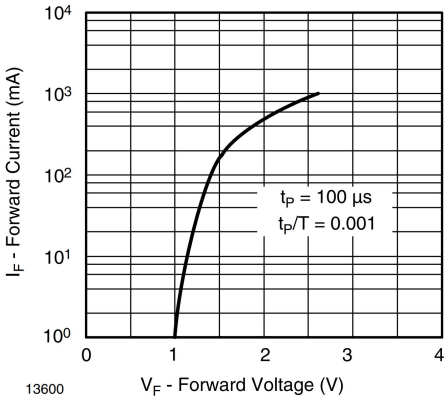


Fig. 4 - Forward Current vs. Forward Voltage

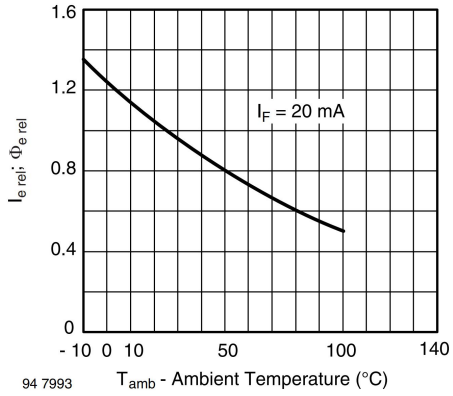


Fig. 7 - Relative Radiant Intensity/Power vs. Ambient Temperature

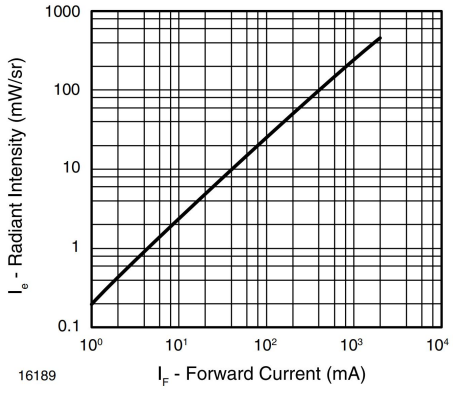


Fig. 5 - Radiant Intensity vs. Forward Current

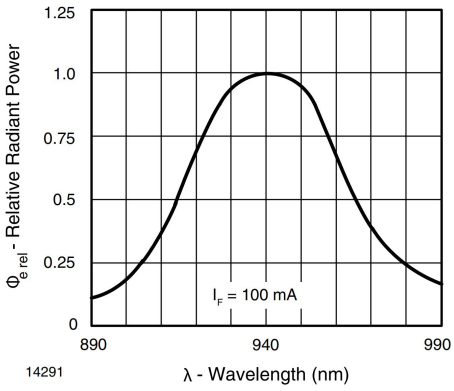


Fig. 8 - Relative Radiant Power vs. Wavelength

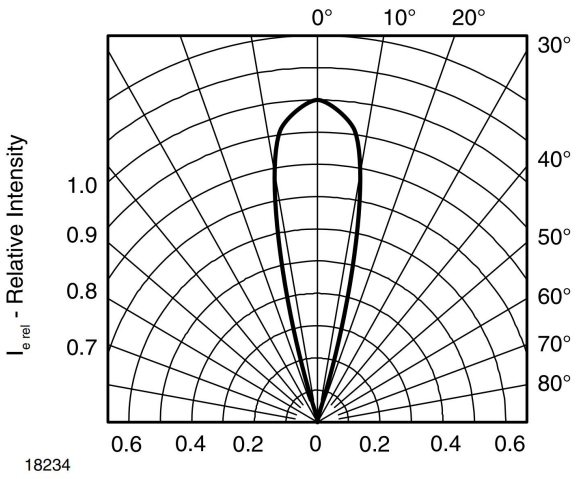


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

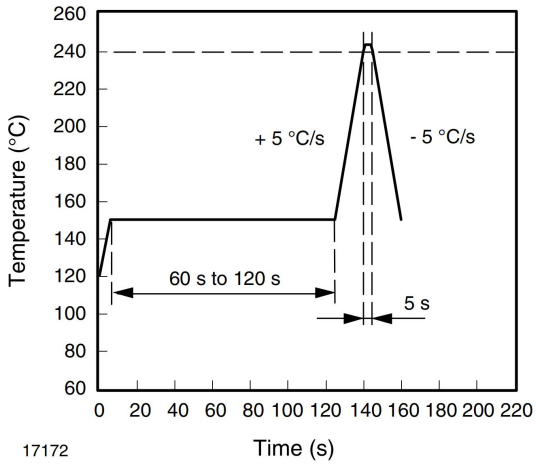


Fig. 10 - Lead Tin (SnPb) Reflow Solder Profile

Precautions For Use

1. Over-current-proof

   Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

   2.1 Do not open moisture proof bag before the products are ready to use.

   2.2 Before opening the package, the LEDs should be kept at 10℃~30℃ and 90%RH or less.

   2.3 The LEDs suggested be used within one year.

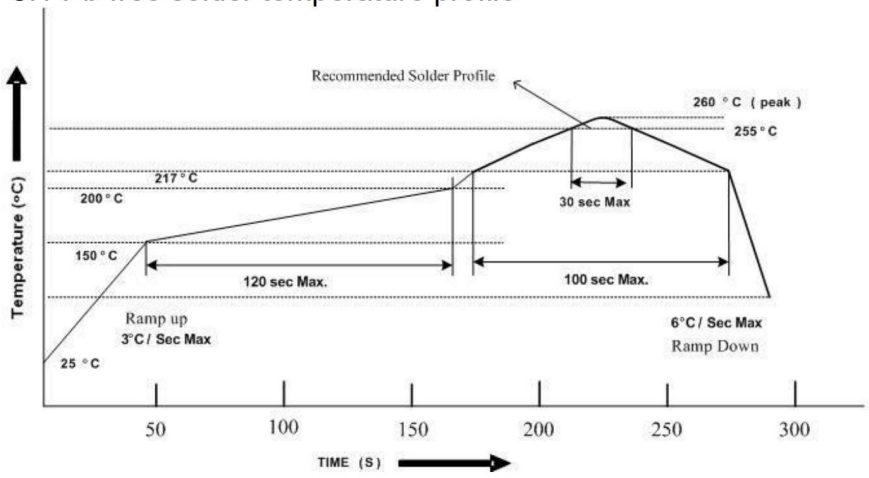
   2.4 After opening the package, the devices must be stored at 10°C~30°C and ≤ 60%RH, and used within 168 hours (floor life). If unused LEDs remain, it should be stored in moisture proof packages.

   2.5 If the moisture absorbent material (desiccant material) has faded or unopened bag has exceeded the shelf life or devices (out of bag) have exceeded the floor life, baking treatment is required.

   2.6 If baking is required, refer to IPC/JEDEC J-STD-033 for bake procedure or recommend the following conditions:
   96 hours at 60°C ± 5°C and < 5 % RH (reeled/tubed/loose units)

3. Soldering Condition

   3.1 Pb-free solder temperature profile



   3.2 Reflow soldering should not be done more than two times.

   3.3 When soldering, do not put stress on the LEDs during heating.

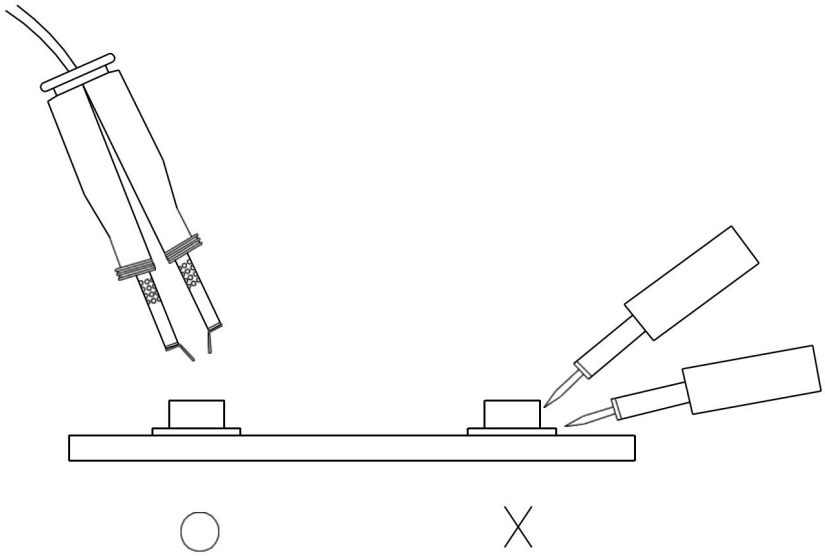
   3.4 After soldering, do not warp the circuit board.

4.Soldering Iron

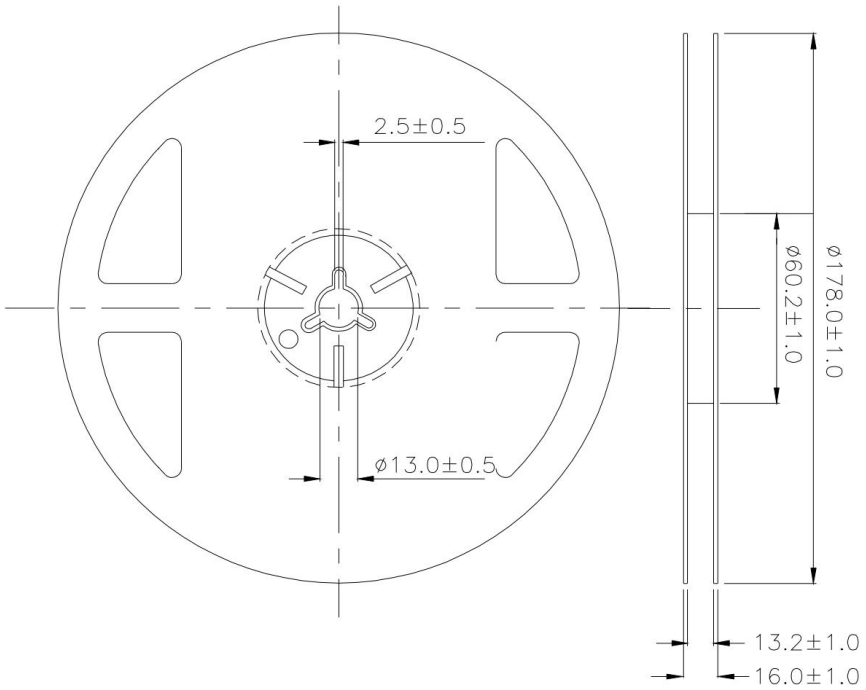
Each terminal is to go to the tip of soldering iron temperature less than 350℃ for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5.Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.

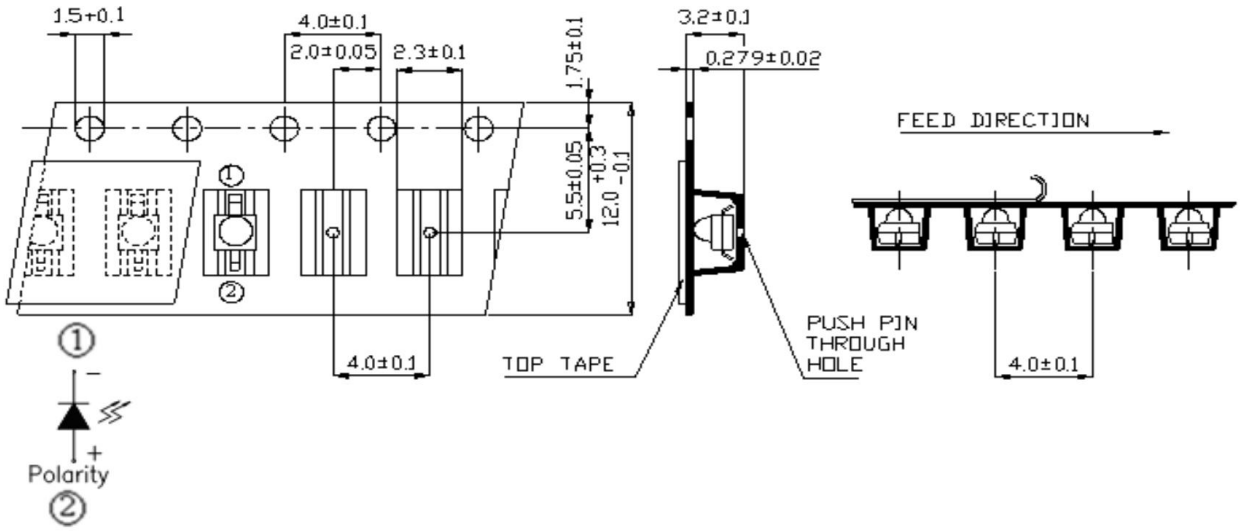


Package Dimensions



Note: The tolerances unless mentioned is ±0.1mm ,Unit = mm

Carrier Tape Dimensions:Loaded quantity 1000 PCS per reel



Note: The tolerances unless mentioned is ±0.1mm ,Unit = mm

Packing Quantity Specification

1. 1000Pcs/1Reel,10 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

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