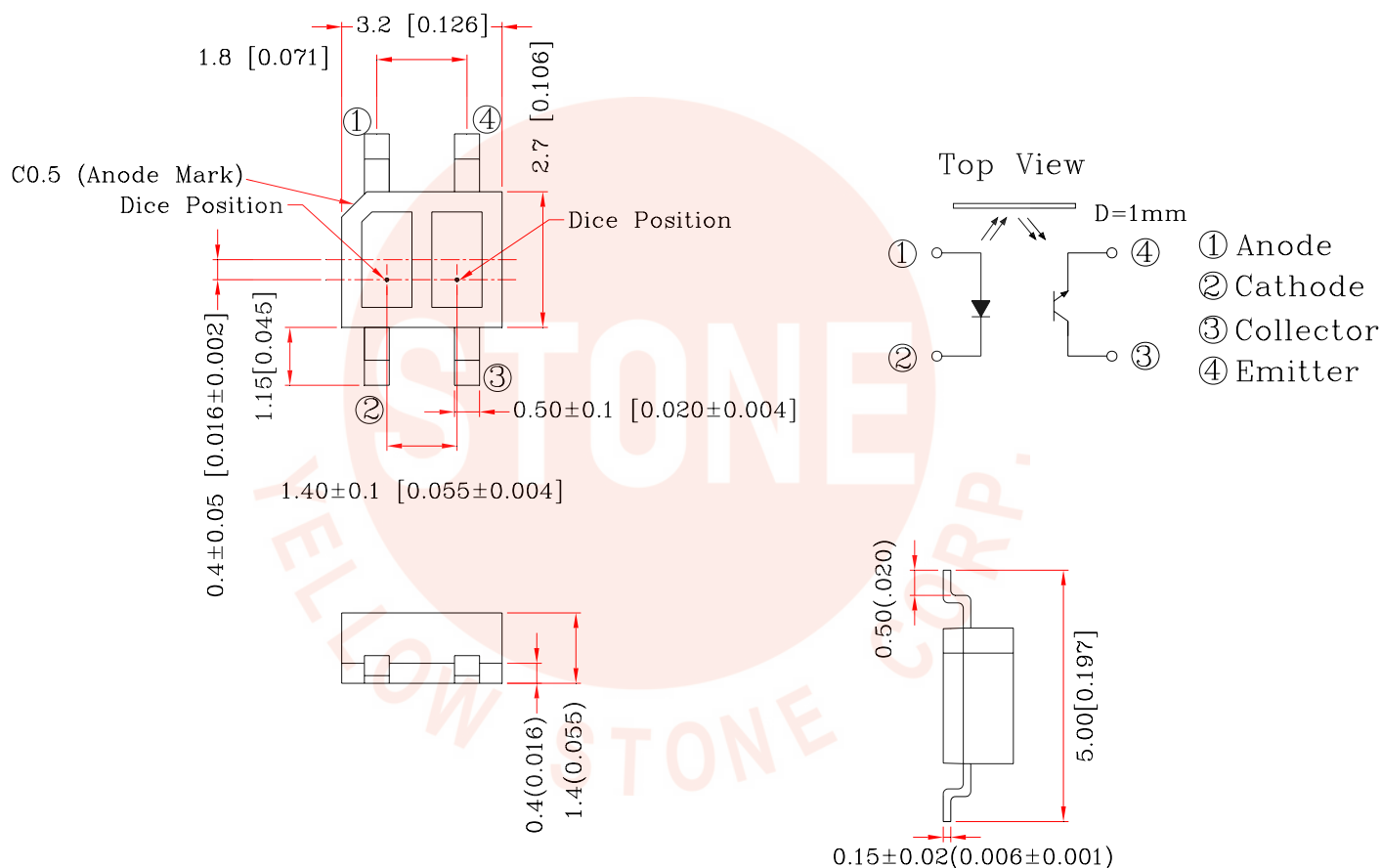


## ● Features:

- \* **Non-contact switching.**
- \* **For direct pc board or dual-in-line socket mounting.**
- \* **Fast switching speed.**
- \* **This product doesn't contain restriction substance, comply RoHS standard.**

## ● Package Dimensions



### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25\text{mm}$  unless otherwise specified.
3. Lead spacing is measured where the leads emerge from the package.
4. Specifications are subject to change without notice.

● **Absolute Maximum Rating (Ta=25°C)**

Item		Symbol	Rating	Unit
Input	Power Dissipation	Pd	75	mW
	Reverse Voltage	V <sub>R</sub>	5	V
	Forward Current	I <sub>F</sub>	50	mA
	Peak Forward Current (*1)	I <sub>FP</sub>	1	A
Output	Collector Power Dissipation	P <sub>C</sub>	100	mW
	Collector Current	I <sub>C</sub>	20	mA
	C-E Voltage	V <sub>CEO</sub>	30	V
	E-C Voltage	V <sub>ECO</sub>	5	V
Operating Temperature		Topr	-40~ +85	°C
Storage Temperature		Tstg	-40 ~ +100	°C
Soldering Temperature (*2)		Tsol	260	°C

(\*1) tw=100 μSec. 、T=10 mSec. (\*2) t=3 Sec

● **Electrical Optical Characteristics (Ta=25°C)**

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	BIN No.
Input	Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =20mA	—	1.2	1.5	V	
	Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	—	—	100	μA	
	Peak Wavelength	λ <sub>p</sub>	I <sub>F</sub> =10mA		940		nm	
Output	Dark Current	I <sub>D</sub>	V <sub>CE</sub> =10V	—	—	200	nA	
	C-E Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =0.25mA I <sub>F</sub> =10mA	—	—	0.4	V	
Light Current		I <sub>L</sub>	V <sub>CE</sub> =5V I <sub>F</sub> =10mA D=1.0mm (90% Reflective white paper)	80	—	240	μA	BIN A
				160	—	480		BIN B
				320	—	960		BIN C
				640	—	1920		BIN D
				1280		3840		BIN E
Speed	Rise Time	Tr	I <sub>FP</sub> =20mA V <sub>CE</sub> =5V R <sub>L</sub> =1000Ω	—	20	—	μsec	
	Fall Time	Tf		—	20	—	μsec	

● **Typical Electrical / Optical Characteristics Curves (Ta=25°C)**

Fig.1 Power Dissipation vs. Ambient Temperature

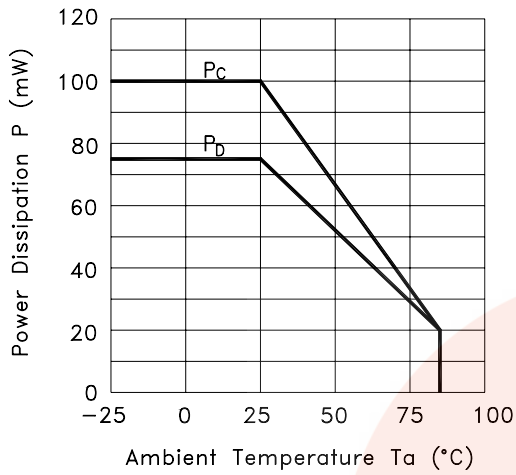


Fig.2 Forward Current vs. Forward Voltage

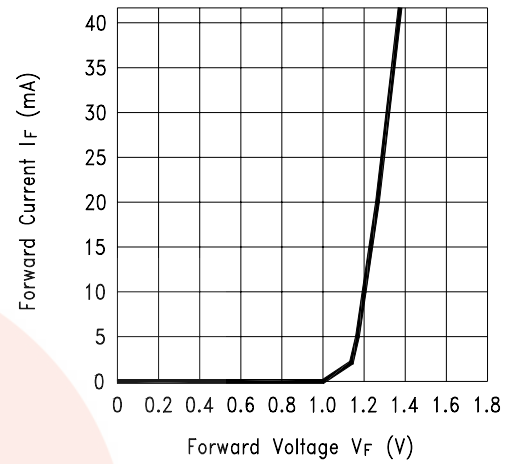


Fig.3 Collector Current vs. Collector-emitter Voltage

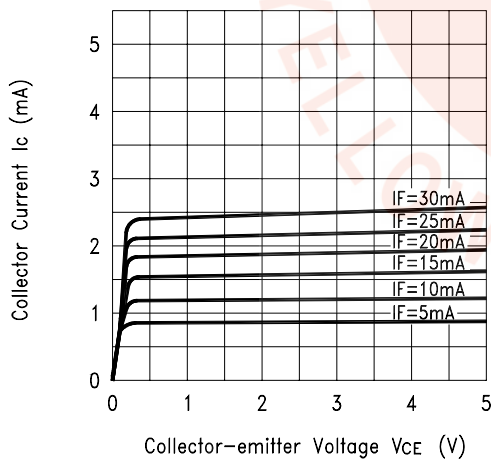
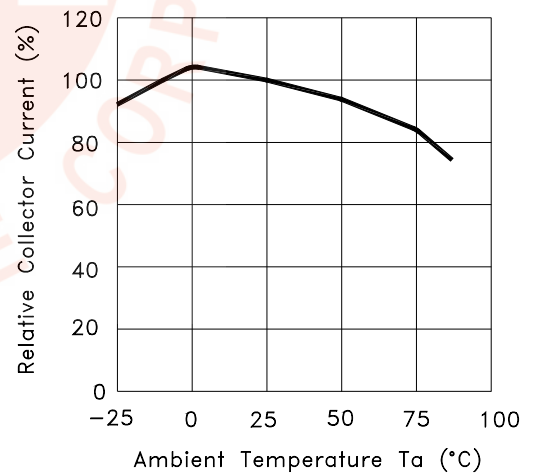


Fig.4 Collector Current vs. Ambient Temperature



● Typical Electrical / Optical Characteristics Curves (Ta=25°C)

Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

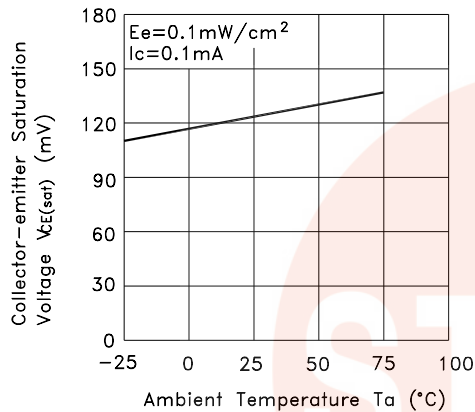


Fig.6 Response Time vs. Load Resistance

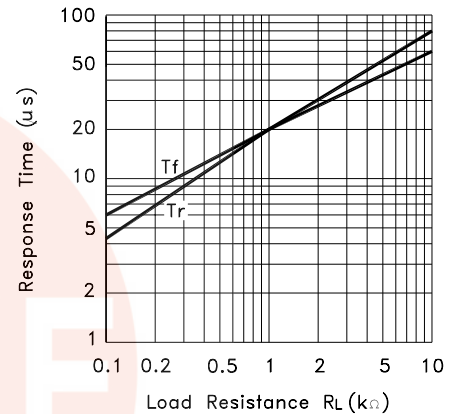
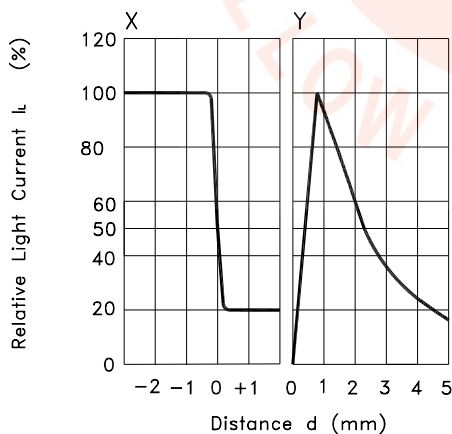
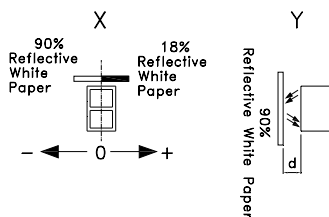


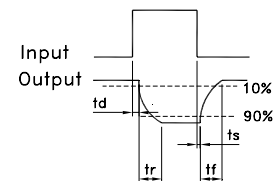
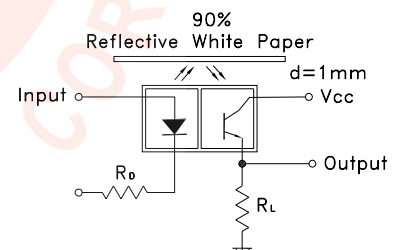
Fig.7 Sensing Position Characteristics (Typical)



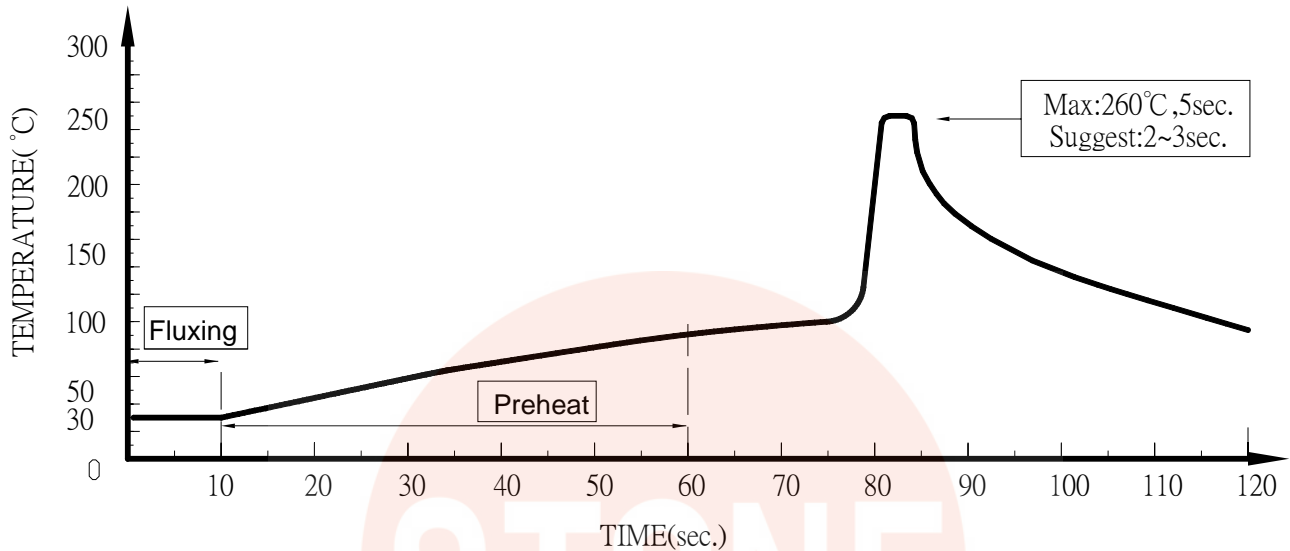
(Center of Optical axis)



Test Circuit for Response Time



## ● Dip Soldering

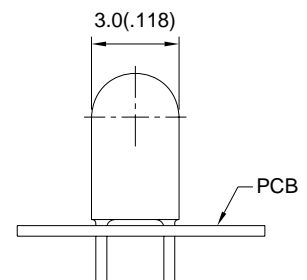


1. Please avoid any external stress applied to the lead-frames and epoxy while the LEDs are at high temperature, especially during soldering
2. DIP soldering and hand soldering should not be done more than one time.
3. After soldering, avoid the epoxy lens from mechanical shock or vibration until the LEDs are back to room temperature.
4. Avoid rapid cooling during temperature ramp-down process
5. Although the soldering condition is recommended above, soldering at the lowest possible temperature is feasible for the LEDs

## ● IRON Soldering

**A: Max: 350°C Within 3 sec. One time only.**

**B: The products of 3mm without flange, welding condition of flat plate PCB Max: 350°C Within 2 sec. One time only**



**● Handling :**

Care must be taken not to cause to the epoxy resin portion of LEDs while it is exposed to high temperature.

Care must be taken not rub the epoxy resin portion of LEDs with hard or sharp article such as the sand blast and the metal hook.

**● Notes for designing:**

Care must be taken to provide the current limiting resistor in the circuit so as to drive the LEDs within the rated figures. Also, caution should be taken not to overload LEDs with instantaneous voltage at the turning ON and OFF of the circuit.

When using the pulse drive care must be taken to keep the average current within the rated figures. Also, the circuit should be designed so as be subjected to reverse voltage when turning off the LEDs.

**● Storage:**

In order to avoid the absorption of moisture, it is recommended to solder LEDs as soon as possible after unpacking the sealed envelope.

If the envelope is still packed, to store it in the environment as following:

- (1) Temperature :  $5^{\circ}\text{C}$ - $30^{\circ}\text{C}$  ( $41^{\circ}\text{F}$ ) Humidity : RH 60% Max.
- (2) After this bag is opened, devices that will be applied to infrared reflow, vapor-phase reflow, or equivalent soldering process must be:
  - a. Completed within 168 hours.
  - b. Stored at less than 30% RH.
- (3) Devices require baking before mounting, if:
  - (2) a or (2) b is not met.
- (4) If baking is required, devices must be baked under below conditions:  
48 hours at  $60^{\circ}\text{C} \pm 3^{\circ}\text{C}$ .