

## Features

High sensitivity

Cut-Off visible wavelength

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

Compliance with EU REACH

This product itself will remain within RoHS compliant version.



## Application

Printer

Switch Scanner

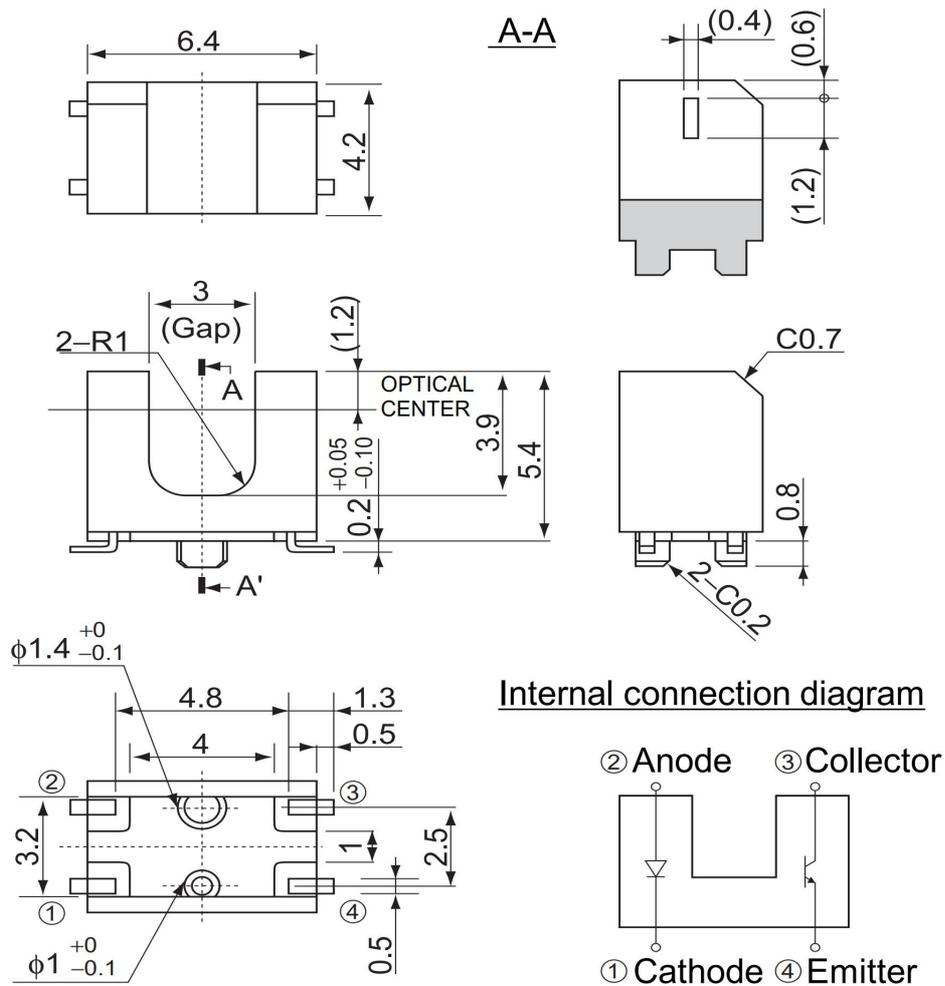
Non-contact Switching

## Description

The SMD type LA213T consists of an infrared emitting diode and an silicon phototransistor.

The phototransistor receives radiation from the IR only. This is the normal situation. But when a reflecting object close to opto interrupter, phototransistor receives the reflecting radiation and the different distance have different light current.

## PACKAGE DIMENSIONS



## NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25\text{mm}(.010\text{'})$  unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.

**ABSOLUTE MAXIMUM RATINGS AT TA =25°C**

Parameter		Symbol	Value	Unit
Input (Infrared light emitting diode)	Forward current	$I_F$	35	mA
	Reverse voltage	$V_R$	5	V
	Power dissipation	$P_D$	70	mW
Output (Phototransistor)	Collector-emitter voltage	$V_{CEO}$	30	V
	Emitter-collector voltage	$V_{ECO}$	4.5	V
	Collector current	$I_C$	30	mA
	Collector dissipation	$P_C$	80	mW
Operating temperature		$T_{opr}$	-30 to +85	°C
Storage temperature		$T_{stg}$	-40 to +85	°C

## ELECTRICAL OPTICAL CHARACTERISTICS AT TA=25°C

## 1) Input characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Forward voltage	$V_F$	$I_F = 10\text{mA}$	1.2	1.4	1.6	V
Reverse current	$I_R$	$V_R = 5\text{V}$	-	-	10	$\mu\text{A}$
Peak light emitting wavelength	$\lambda_p$	$I_F = 10\text{mA}$	-	850	-	nm

\* Non-coherent Infrared light emitting diode used.

## 2) Output characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Dark current	$I_{CEO}$	$V_{CE} = 10\text{V}$	-	-	0.5	$\mu\text{A}$
Peak sensitivity wavelength	$\lambda_p$		-	800	-	nm

\* This product is not designed to be protected against electromagnetic wave.

## 3) Transfer characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector current	$I_C$	$V_{CE} = 5\text{V}$ $I_F = 10\text{mA}$	0.18	0.9	-	mA
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 10\text{mA}$ $I_C = 0.1\text{mA}$	-	-	0.4	V
Response time	Rise time	$V_{CC} = 5\text{V}, I_F = 10\text{mA}$ $R_L = 100\Omega$	-	10	-	$\mu\text{s}$
	Fall time		-	10	-	

**TYPICAL ELECTRICAL / OPTICAL CHARACTERISTICS CURVES**

Fig.1 Relative Output Current vs.Distance (I)

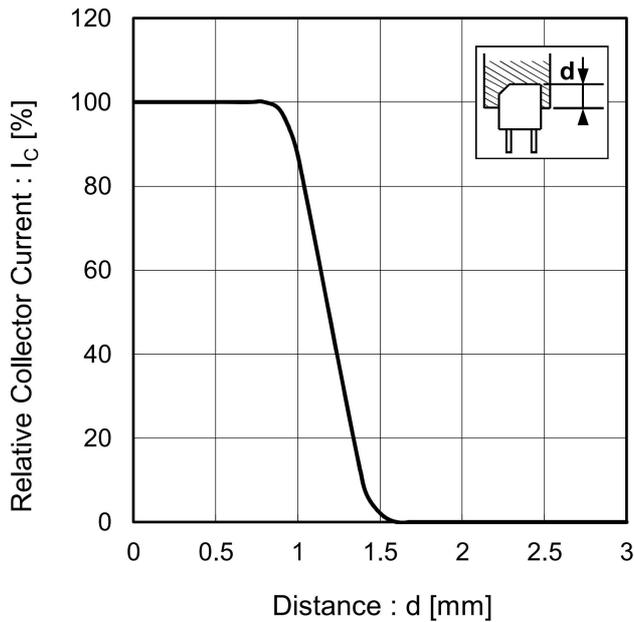


Fig.2 Relative Output Current vs.Distance (II)

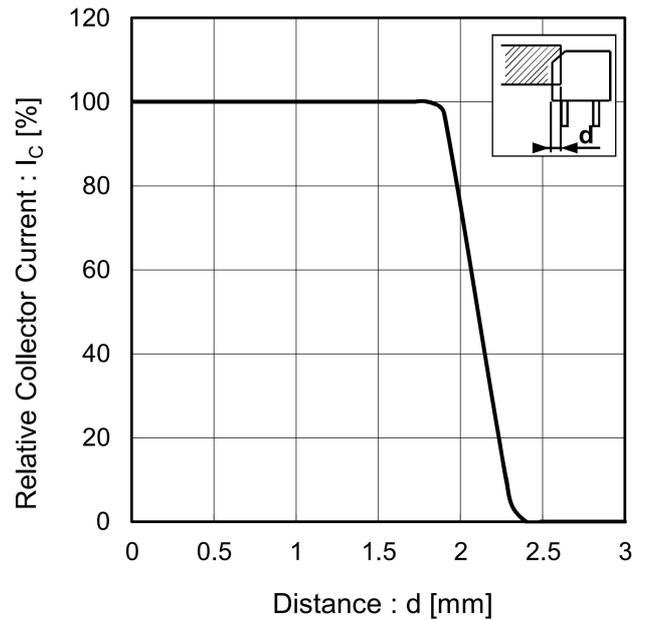


Fig.3 Forward Current Falloff

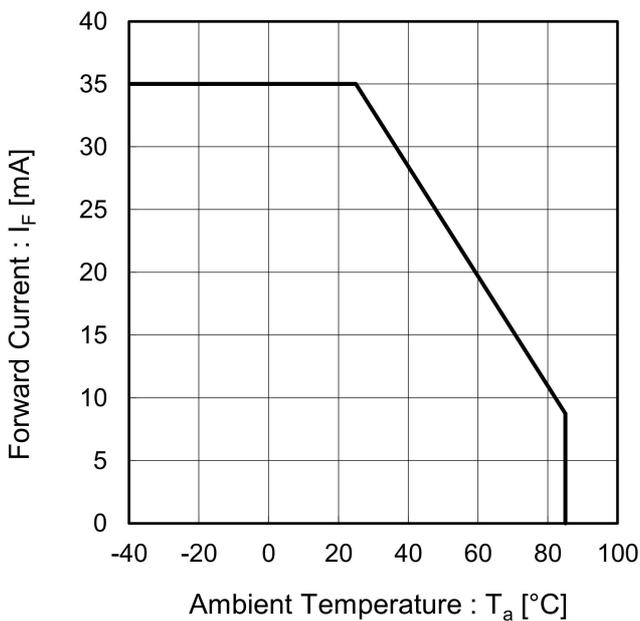


Fig.4 Power Dissipation / Collector Power Dissipation vs. Ambient Temperature

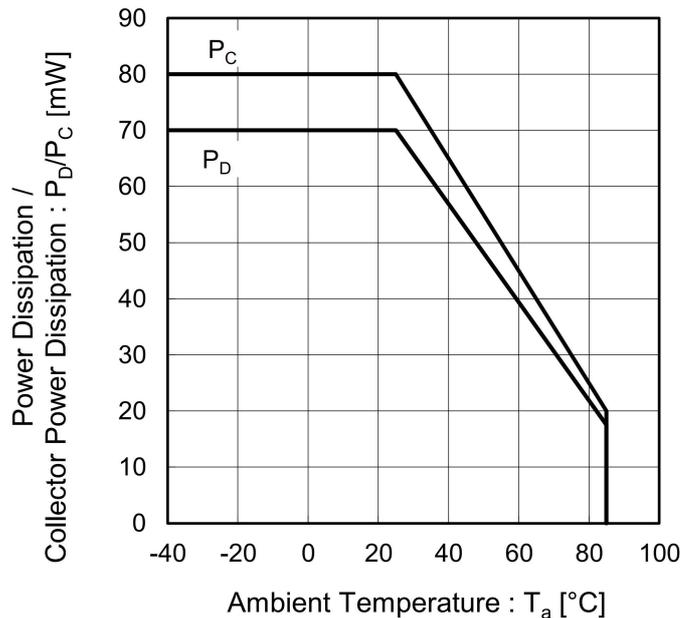


Fig.5 Forward Current vs. Forward Voltage

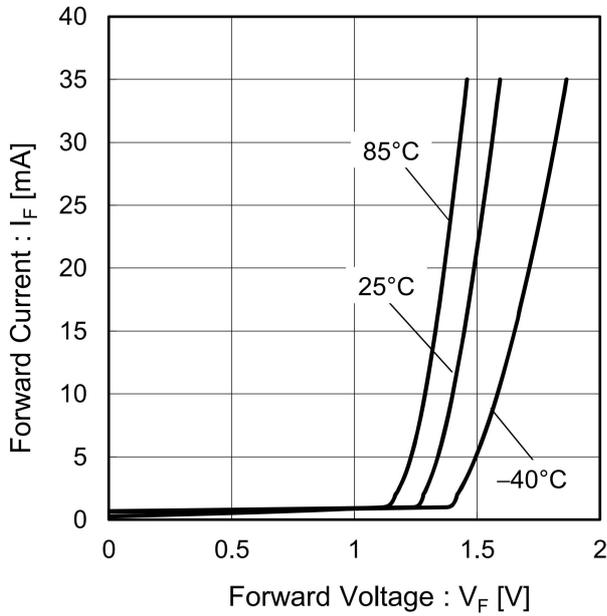


Fig.6 Collector Current vs. Forward Current

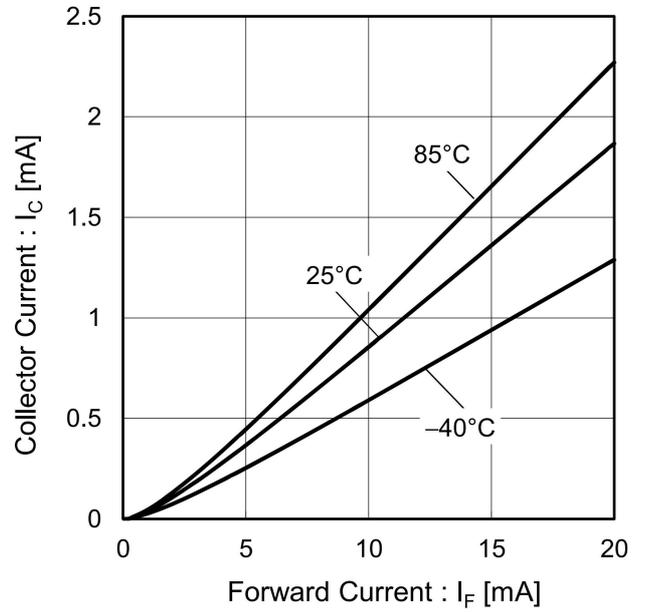


Fig.7 Relative Output vs. Ambient Temperature

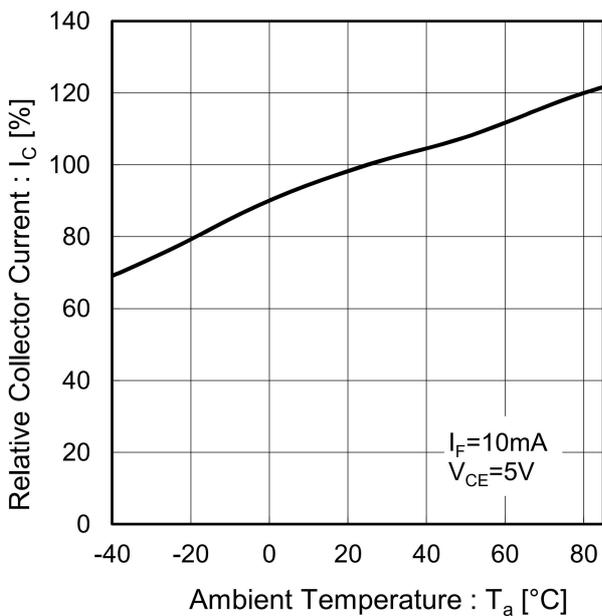


Fig.8 Response Time vs. Collector Current

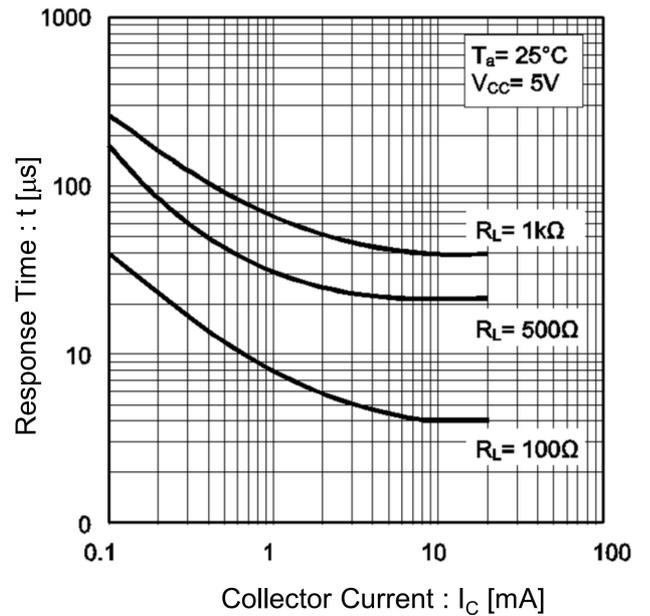


Fig.9 Dark Current vs. Ambient Temperature

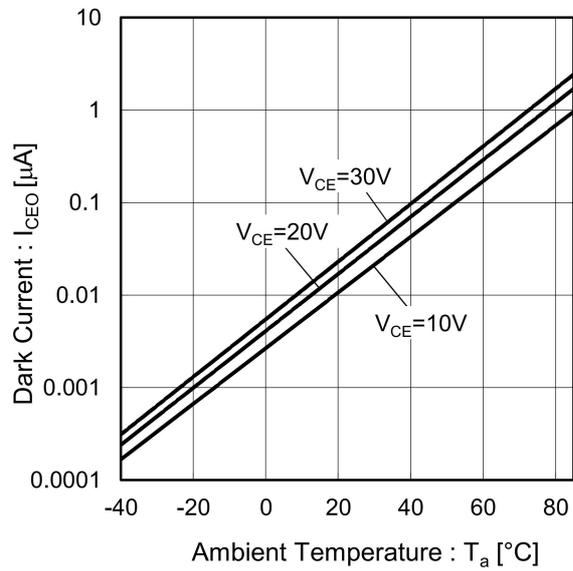
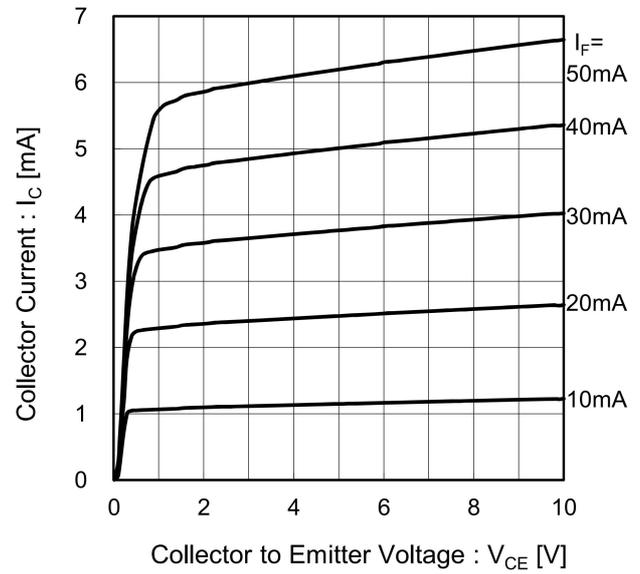


Fig.10 Output Characteristics



## Packing Quantity Specification

- 1.1000PCS/1Bag, 5Bags/1Box
- 2.10Boxes/1Carton

## Label Form Specification

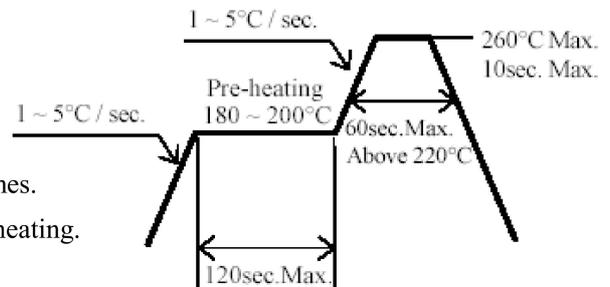
製品名 PRODUCT	
コードNo. CODE No.	
数量 Q'TY	
ロットNo. LOT No.	
備考 REMARKS	

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

## Notes

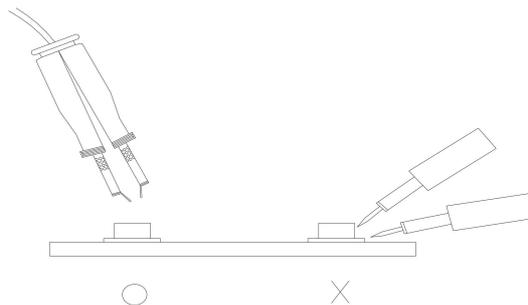
### Soldering Condition

- a) Pb-free solder temperature profile
- b) Reflow soldering should not be done more than two times.
- c) When soldering, do not put stress on the LEDs during heating.
- d) After soldering, do not warp the circuit board.



## 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.



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