



# Technical Data Sheet

## Top Phototransistor

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### PT67-21C/L41/TR8

#### Features

- Fast response time
- High photo sensitivity
- Small junction capacitance
- Package in 8mm tape on 7" diameter reels.
- Compatible with infrared and vapor phase reflow solder process.



#### Descriptions

- PT67-21C/L41/TR8 is a high speed silicon NPN epitaxial planar phototransistor in a compact surface-mountable package. It's compatible with automatic placement equipment and can withstand IR reflow, vapor phase reflow , and wave solder processes.

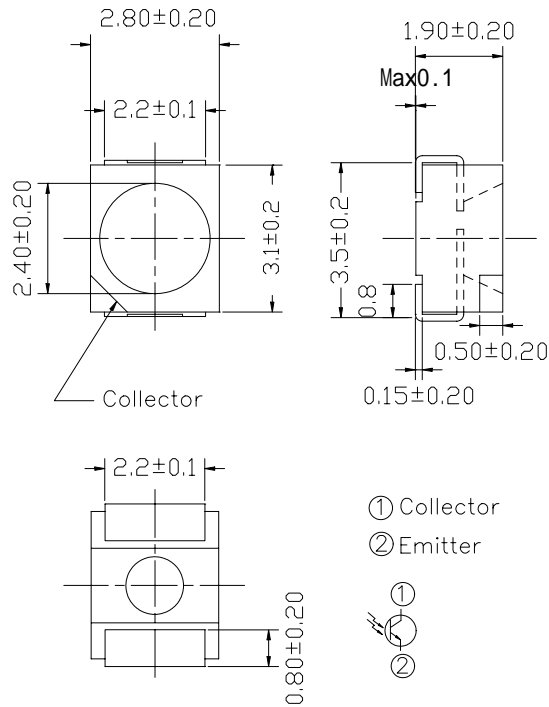
#### Applications

- Miniature switch
- Counters and sorter
- Position sensor
- Infrared applied system
- Encoder

#### Device Selection Guide

LED Part No.	Chip	Lens Color
	Material	
PT	Silicon	Water clear

**Package Dimensions**



- Notes:** 1.All dimensions are in millimeters  
 2.Tolerances unless dimensions  $\pm 0.1\text{mm}$

**Absolute Maximum Ratings (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	$T_{opr}$	-25 ~ +85	
Storage Temperature	$T_{stg}$	-40 ~ +85	
Soldering Temperature	$T_{sol}$	260	
Power Dissipation at(or below) 25 Free Air Temperature	$P_c$	75	mW

**Notes:** \*1:Soldering time 5 seconds.

**Electro-Optical Characteristics (Ta=25 )**

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Rang Of Spectral Bandwidth	0.5	---	400	---	1100	nm
Wavelength Of Peak Sensitivity	P	---	---	940	---	nm
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=100\ \mu A$ $E_e=0mW/cm^2$	30	---	---	V
Emitter-Collector Breakdown Voltage	$BV_{ECO}$	$I_E=100\ \mu A$ $E_e=0mW/cm^2$	5	---	---	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=2mA$ $E_e=1m\ W/cm^2$	---	---	0.4	V
Collector Dark Current	$I_{CEO}$	$V_{CE}=20V$ $E_e=0mW/cm^2$	---	---	100	nA
On State Collector Current	$I_{C(ON)}$	$V_{CE}=5V$ $E_e=1mW/cm^2$	0.3	1.0		mA
Rise Time	$t_r$	$V_{CE}=5V$ $I_C=1mA$ $R_L=1000$	---	15	---	$\mu S$
Fall Time	$t_f$		---	15	---	

**Typical Electro-Optical Characteristics Curves**

Fig.1 Collector Power Dissipation vs. Ambient Temperature

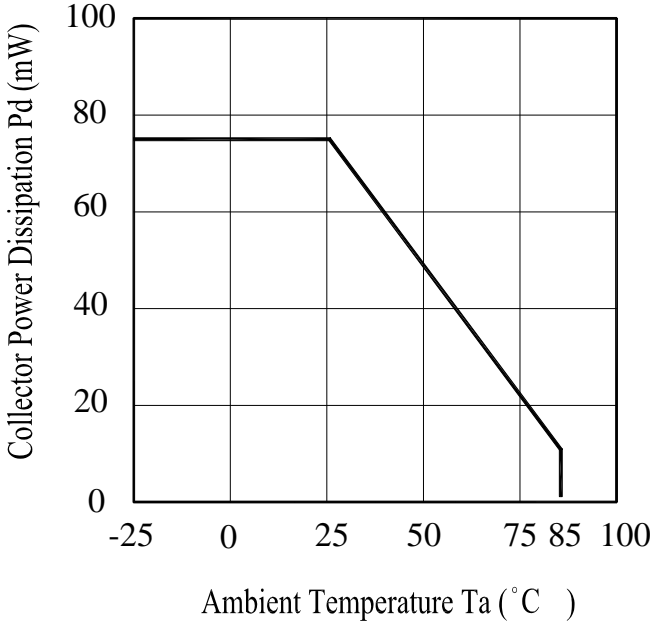


Fig.2 Spectral Sensitivity

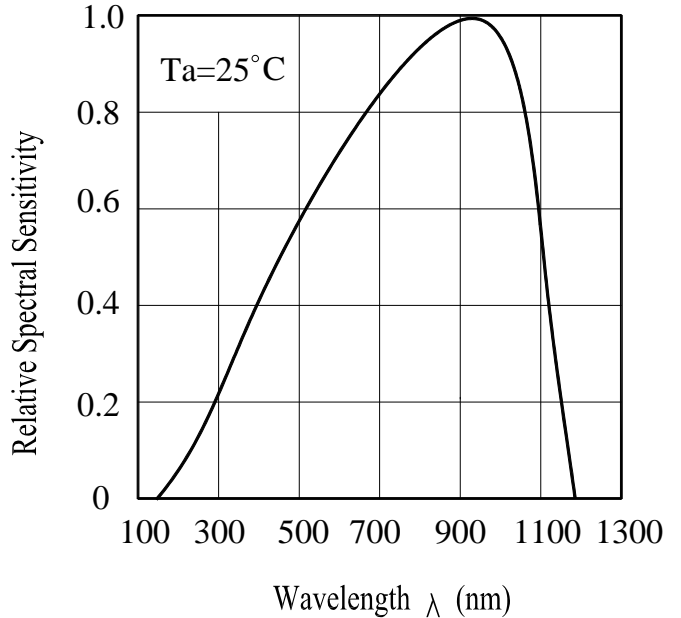


Fig.3 Relative Collector Current vs. Ambient Temperature

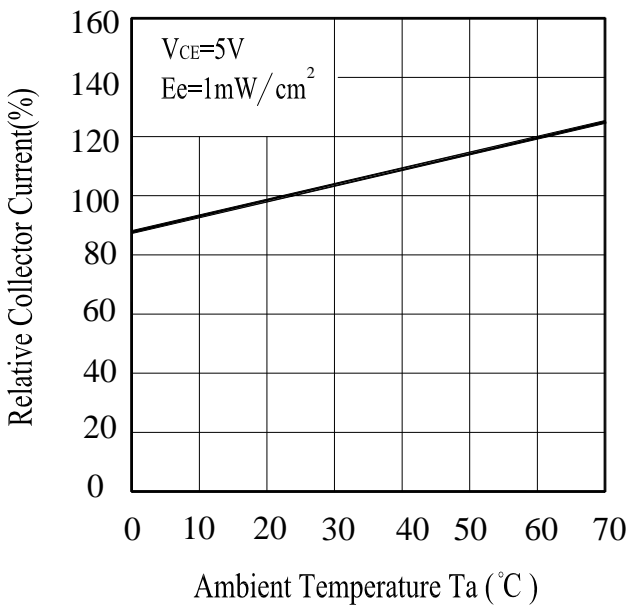
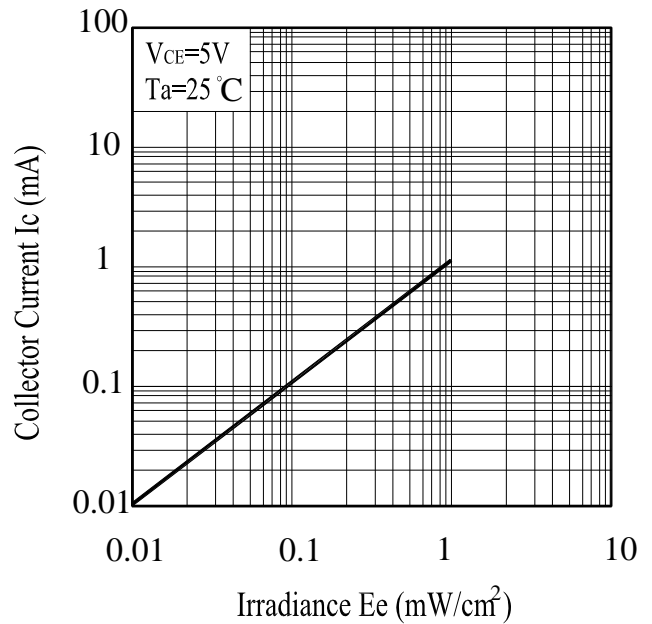


Fig.4 Collector Current vs. Irradiance



**Typical Electro-Optical Characteristics Curves**

Fig.5 Collector Dark Current vs.

Ambient Temperature

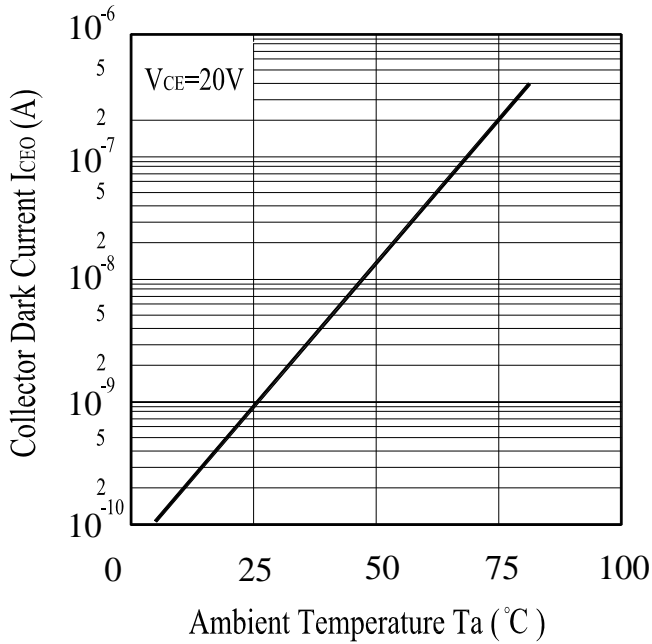
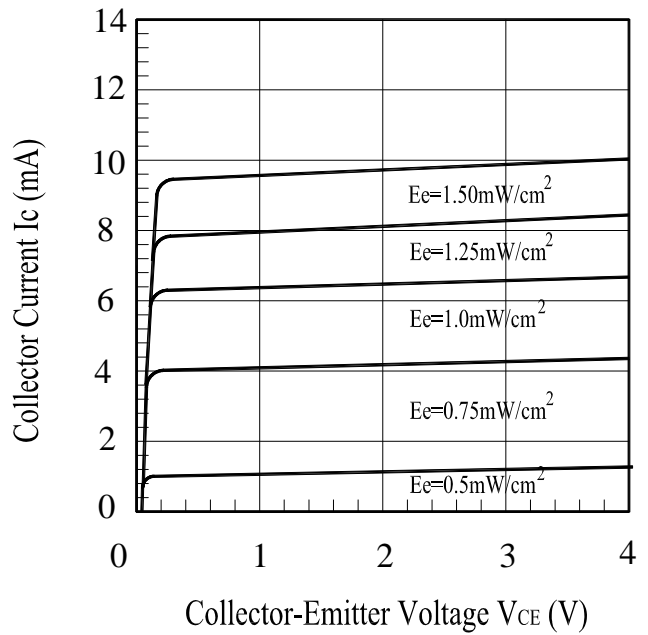
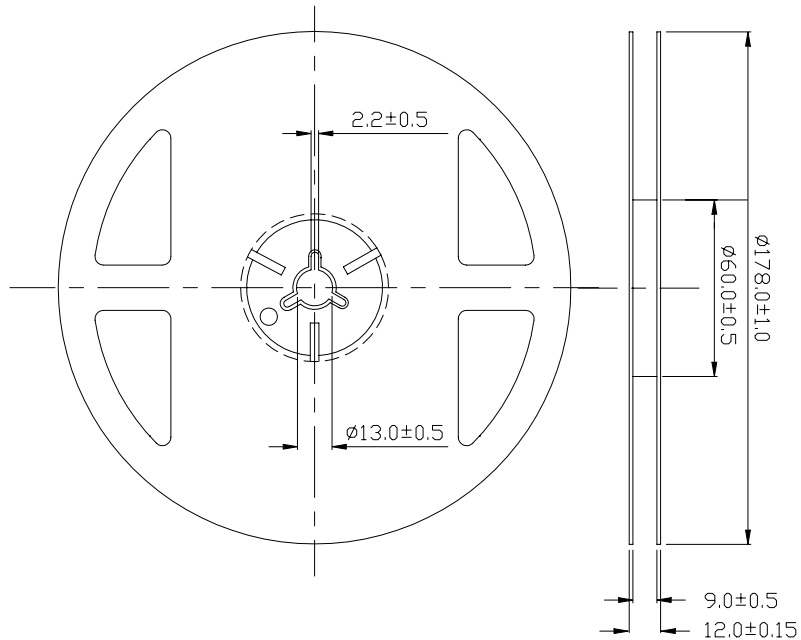


Fig.6 Collector Current vs.

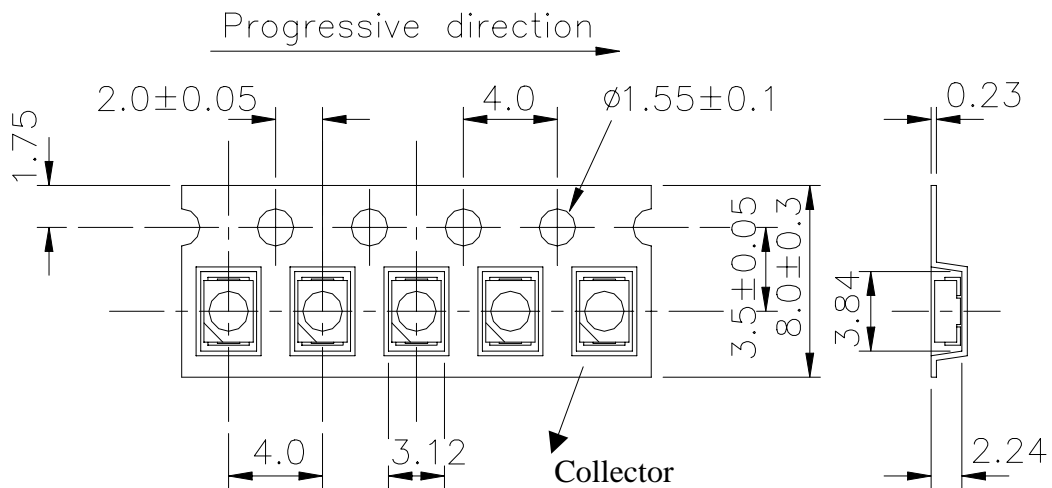
Collector-Emitter Voltage



**Package Dimensions**



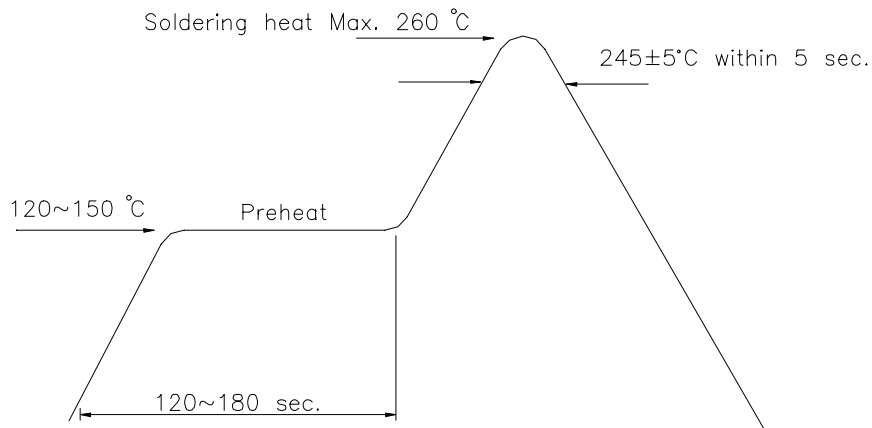
**Loaded Quantity Per Reel 2000PCS/Reel**



TOLERANCES UNLESS DIMENSION±0.1  
 ANGLE±0.5  
 UNIT:mm

**Soldering heat reliability(DIP)**

Please refer to the following figure

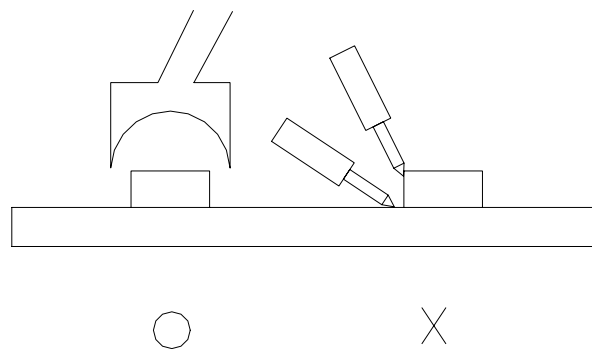


**Soldering Iron**

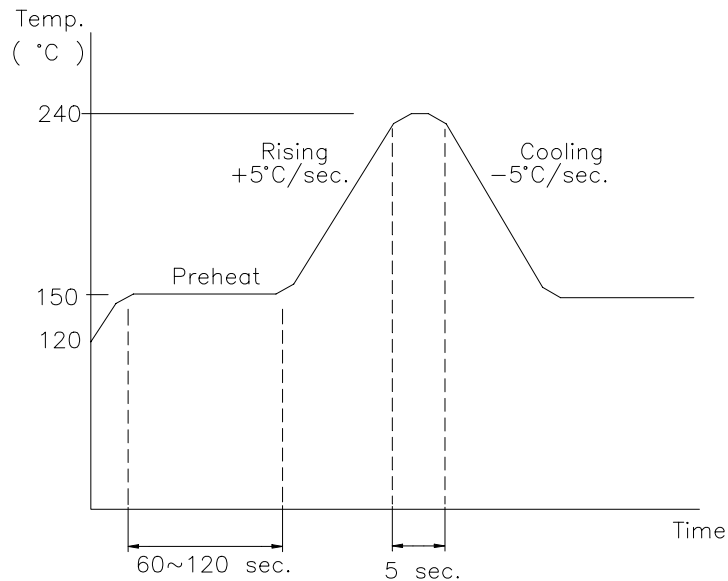
Basic spec is 5 sec when 260 . If temperature is higher , time should be shorter (+10 → -1sec ).Power dissipation of Iron should be smaller than 15W ,and temperature should be controllable. Surface temperature of the device should be under 230 .

**Rework**

- 1.Customer must finish rework within 5 sec under 245
- 2.The head of iron can not touch copper foil.
- 3.Twin-head type is preferred.



## Reflow Temp./Time



## 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 The operation of temperature and R.H are : 5 ~ 35 , R.H.60%.

2.2 Once the package is opened, the products should be used within a week.

Otherwise, they should be kept in a damp proof box with desiccation agent.

Considering the tape life, we suggest our customers to use products within a year (from production date).

2-3. If opened more than one week in an atmosphere 5 ~ 35 , R.H.60%, they should be treated at 60 ± 5 for 15hrs.

2-4. When you discover that the desiccant in the package has a pink color (normal=blue), you should treat them in the same conditions as 2.3





**Reliability Test Item And Condition**

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD : 10%

NO.	Item	Test Conditions	Test Hours/ Cycles	Sample Sizes	Failure Judgement Criteria	Ac/Re
1	REFLOW	TEMP. : 240 ± 5 5secs	6Mins	22pcs		0/1
2	Temperature Cycle	H : +85      30mins ↕ 5mins L : -55      30mins	50Cycles	22pcs	I <sub>C(ON)</sub> L× 0.8  L : Lower	0/1
3	Thermal Shock	H : +100      5mins ↕ 10secs L : -10      5mins	50Cycles	22pcs	Specification Limit	0/1
4	High Temperature Storage	TEMP. : +100	1000hrs	22pcs		0/1
5	Low Temperature Storage	TEMP. : -55	1000hrs	22pcs		0/1
6	DC Operating Life	V <sub>CE</sub> =5V	1000hrs	22pcs		0/1
7	High Temperature/ High Humidity	85 / 85% R.H	1000hrs	22pcs		0/1



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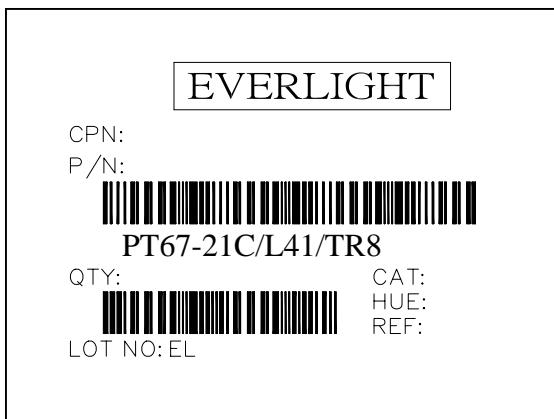
## PT67-21C/L41/TR8

### Packing Quantity Specification

1.2000Pcs/1Volume , 1Volume/1Bag

2.10Boxes/1Carton

### Label Form Specification



CPN: Customer's Production Number

P/N : Production Number

QTY: Packing Quantity

CAT: Ranks

HUE: Peak Wavelength

REF: Reference

LOT No: Lot Number

MADE IN TAIWAN: Production Place

### Notes

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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**EVERLIGHT ELECTRONICS CO., LTD.**  
Office: No 25, Lane 76, Sec 3, Chung Yang Rd,  
Tucheng, Taipei 236, Taiwan, R.O.C

Tel: 886-2-2267-2000, 2267-9936  
Fax: 886-2267-6244, 2267-6189, 2267-6306  
<http://www.everlight.com>