



Top Phototransistor

MODEL NO : PT42-21B

■ Features :

- Fast response time
- High photo sensitivity
- Small junction capacitance
- High reliability

■ Description :

- PT42-21B 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 :

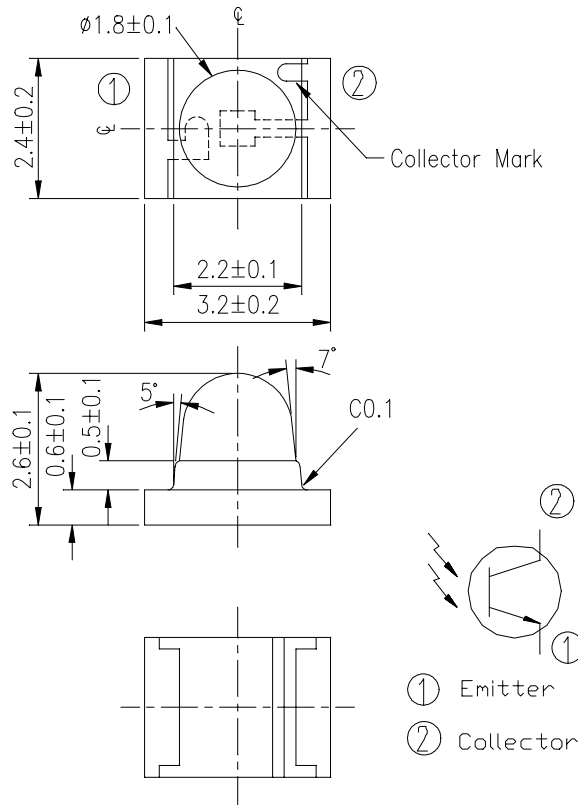
- Miniature switch
- Counters and sorter
- Interrupter
- Tape and card reader
- Encoder
- Position sensor

PART NO.	CHIP	LENS COLOR
	MATERIAL	
PT	Silicon	Black

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■ Package Dimensions :



■ Notes :

- 1.All dimensions are in millimeter.
- 2.General Tolerance: $\pm 0.1\text{mm}$
- 3.Lens color : Black transparent.
- 4.Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
- 5.These specification sheets include materials protected under copyright of EVERLIGHT corporation . Please don't reproduce or cause anyone to reproduce them without EVERLIGHT's consent.
- 6.When using this product , please observe the absolute maximum ratings and the instructions for use 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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■ Absolute Maximum Ratings at T_A = 25°C

Parameter	Symbol	Rating	Unit	Notice
Collector-Emitter Voltage	V _{CEO}	30	V	
Emitter-Collector-Voltage	V _{ECO}	5	V	
Collector Current	I _C	20	mA	
Operating Temperature	Topr	-25 ~ +85	°C	
Storage Temperature	Tstg	-40 ~ +85	°C	
Lead Soldering Temperature	Tsol	260	°C	
Power Dissipation at(or below) 25°C Free Air Temperature	P _C	75	mW	

■ Electronic Optical Characteristics :

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Collector-Emitter Breakdown Voltage	BV _{CEO}	30	----	----	V	I _C =100 μ A E _e =0mW/cm ²
Emitter-Collector Breakdown Voltage	BV _{ECO}	5	----	----	V	I _E =100 μ A E _e =0mW/cm ²
Collector-Emitter Saturation Voltage	V _{CE(sat)}	----	----	0.4	V	I _C =2mA E _e =1mW/cm ²
Rise Time	t _r	----	15	----	μ S	V _{CE} =5V I _C =1mA R _L =1000 Ω
Fall Time	t _f	----	15	----		
Collector Dark Current	I _{CEO}	----	----	100	nA	E _e =0mW/cm ² V _{CE} =20V
On State Collector Current	I _{C(on)}	1.5	2.0	----	mA	E _e =1mW/cm ² V _{CE} =5V
Wavelength of Peak Sensitivity	λ_p	----	980	----	nm	----
Rang of Spectrial Bandwith	$\lambda_{0.5}$	----	770--- 1200	----	nm	----

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■ Typical Electrical/Optical/Characteristics Curves :

Fig.1 Collector Power Dissipation vs. Ambient Temperature

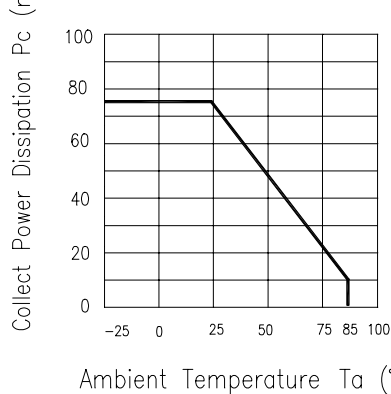


Fig.2 Collector Dark Current vs. Ambient Temperature

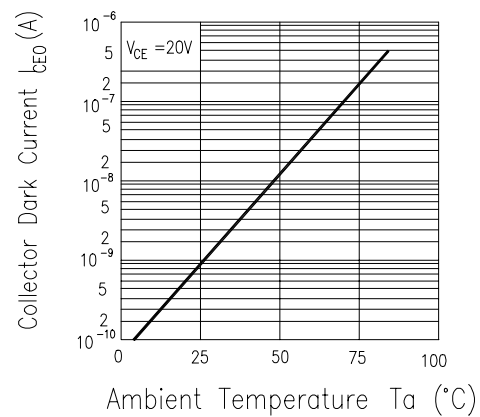


Fig. 3 Relative Collector Current vs. Ambient Temperature

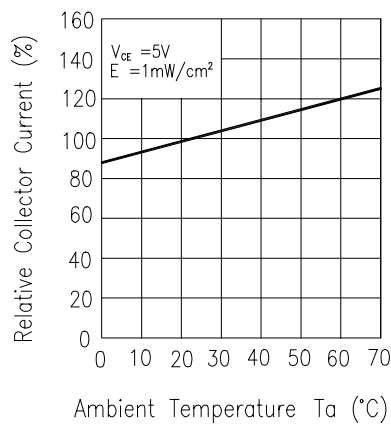


Fig.4 Collector Current vs. Irradiance

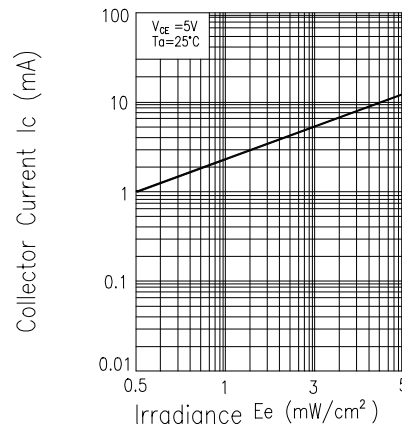


Fig.5 Spectral Sensitivity

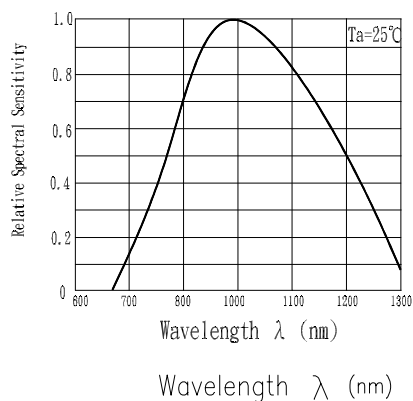
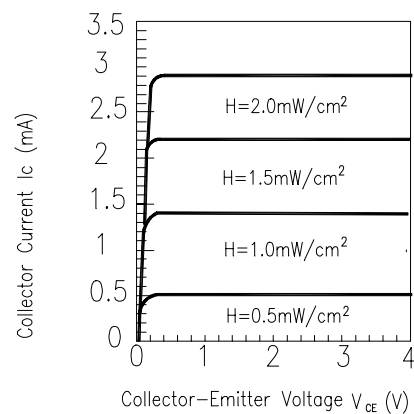


Fig.6 Collector Current vs. Collector-Emitter Voltage





DEVICE NUMBER : DPT-042-122

REV : 1.0

ECN : _____

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■ 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°C ± 5 °C 5 secs	6 mins	22 pcs	$I_{C(on)} \leq L \times 0.8$ L: Lower specification limit	0/1
2	Temperature Cycle	H : +85°C 30 mins  5 mins  L : -55°C 30 mins	50 cycles	22 pcs		0/1
3	Thermal Shock	H : +100°C 5 mins  10 secs  L : -10°C 5 mins	50 cycles	22 pcs		0/1
4	High Temperature Storage	TEMP. : +100°C	1000 hrs	22 pcs		0/1
5	Low Temperature Storage	TEMP. : -55°C	1000 hrs	22 pcs		0/1
6	DC Operating Life	V _{CE} =5V	1000 hrs	22 pcs		0/1
7	High Temperature / High Humidity	85°C / 85% R.H.	1000 hrs	22 pcs		0/1

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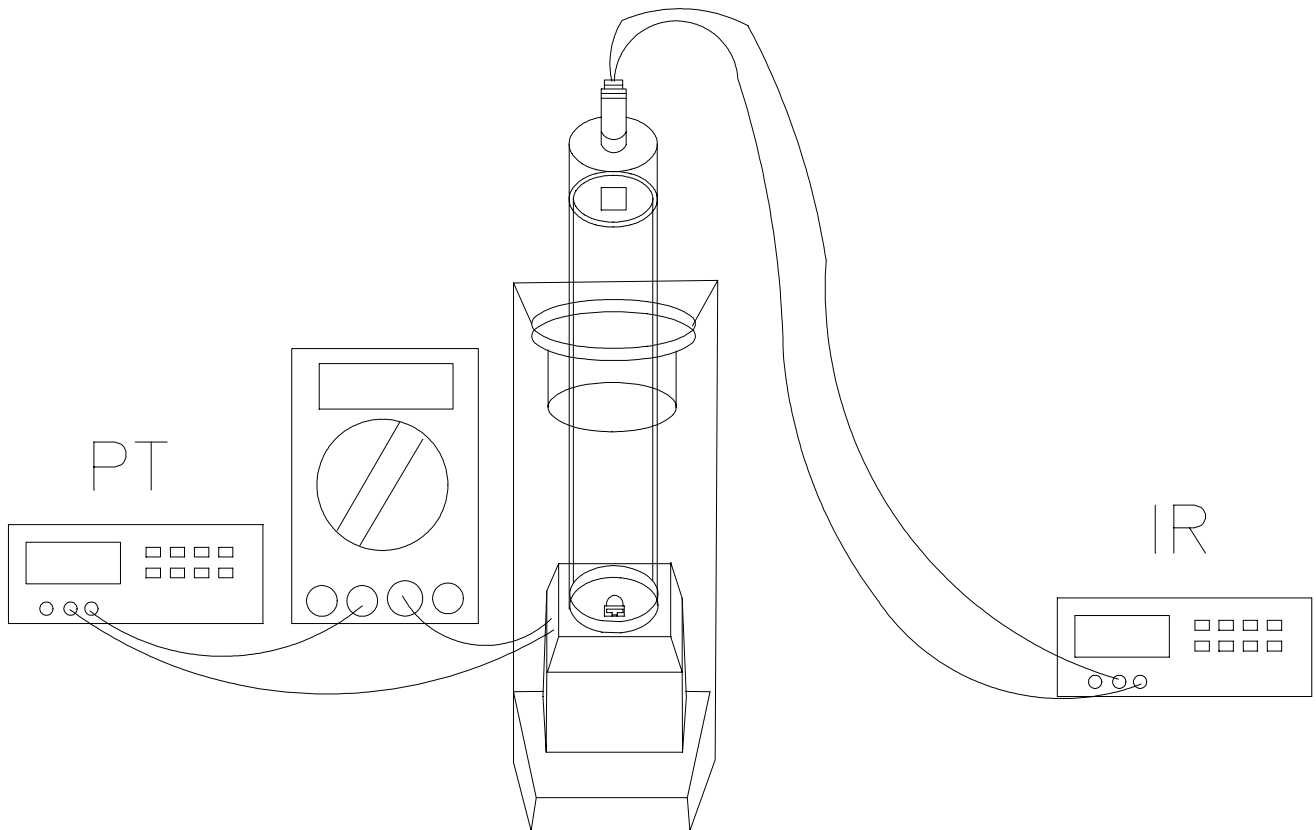
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■ Test Method For Reverse Light Current

Condition: $E_e=1\text{mW}/\text{cm}^2$, $V_{CE}=5\text{V}$

Test Item: Collector Current [$I_{C(on)}$]

(Unit: mA)

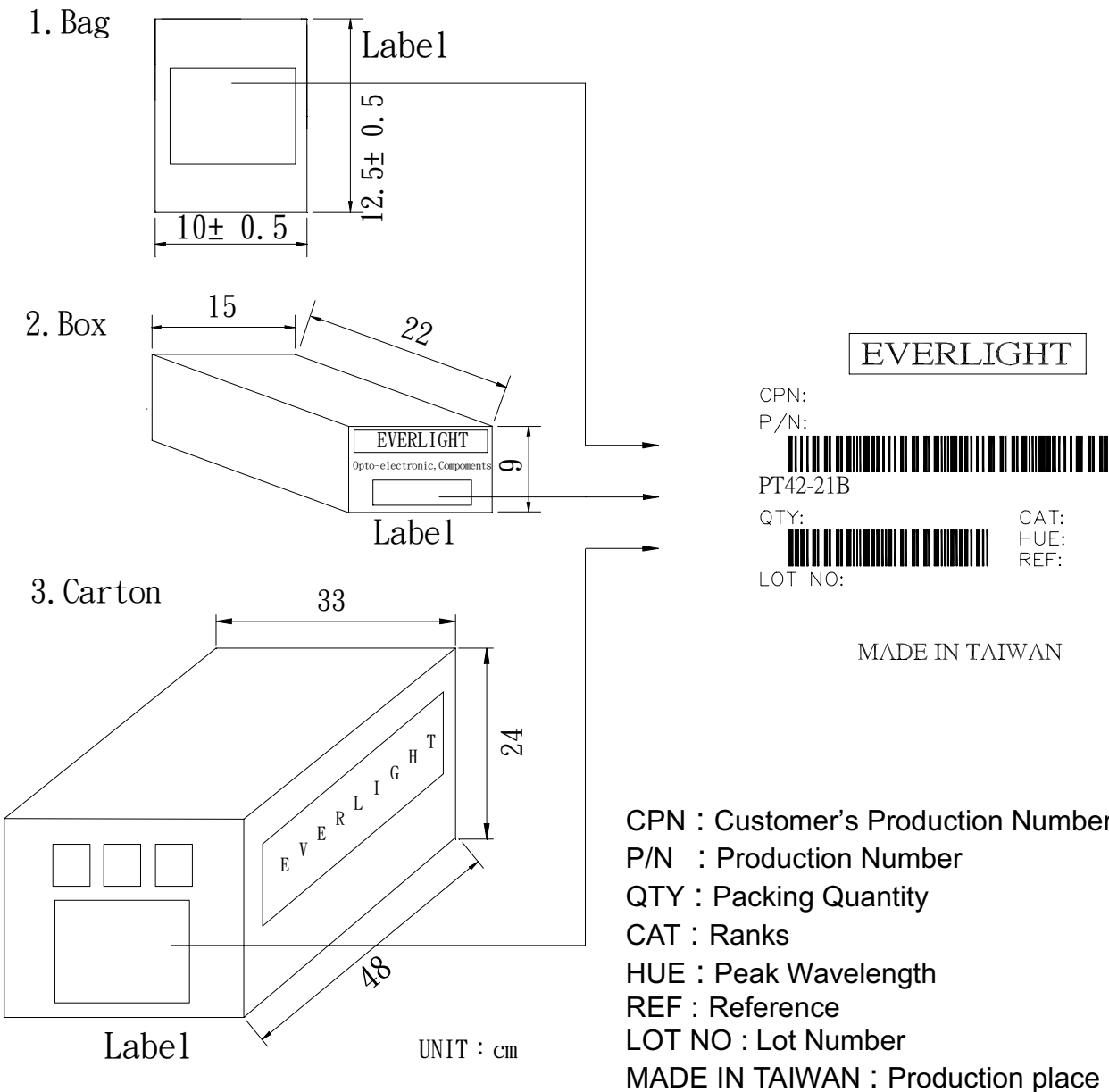




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■ Packing Specifications



■ Packing Quantity Specification

- 1. 1000 Pcs/1Bag , 20 Bags/1Box
- 2. 10 Boxes/1Carton