



## SMD Type Phototransistor with Daylight Filter

### Features

- Small double-end package
- High photo sensitivity
- High reliability
- Spectral range of sensitivity: 700-1100nm
- Fast Response time
- RoHS compliance

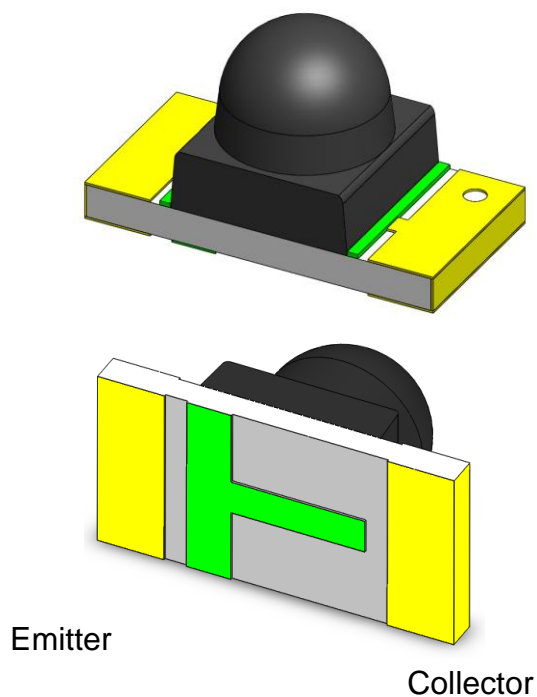
### Applications

- Infrared sensor

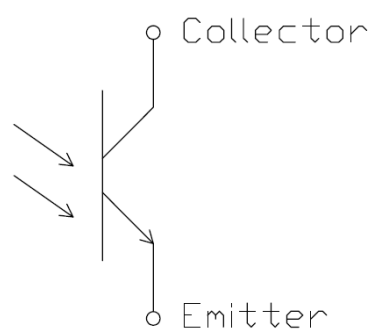
### Description

The PTP83216BT18 is silicon NPN Phototransistor housed in a miniature SMD package. The device comes with a superior filtering for visible light by utilizing special black molding compound.

### Package Outline



### Schematic





## SMD Type Phototransistor with Daylight Filter

## Absolute Maximum Rating at 25°C

Symbol	Parameters	Ratings	Units	Notes
I <sub>C</sub>	Collector Current	20	mA	
B <sub>V</sub> CE0	Collector-Emitter Voltage	35	V	1
B <sub>V</sub> ECO	Emitter-Collector Voltage	5	V	2
T <sub>opr</sub>	Operating Temperature	-40 ~ +85	°C	
T <sub>stg</sub>	Storage Temperature	-40 ~ +100	°C	
T <sub>sol</sub>	Soldering Temperature	260	°C	3
P <sub>to</sub>	Total Power Dissipation	150	mW	

## Optical Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
λ	Spectral Bandwidth	-	700	-	1100	nm	
λ <sub>P</sub>	Peak Sensitivity	-	-	880	-	nm	
θ <sub>1/2</sub>	View Angle	V <sub>CE</sub> =5V	-	±15	-	deg	

## Electrical Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
I <sub>CEO</sub>	Dark Current	E <sub>e</sub> =0mW /cm <sup>2</sup> V <sub>CE</sub> =20V	-	-	100	nA	
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	E <sub>e</sub> =1mW /cm <sup>2</sup> I <sub>C</sub> =1.4mA	-	-	0.4	V	
I <sub>C</sub>	Collector Light Current	E <sub>e</sub> =1mW /cm <sup>2</sup> λ <sub>P</sub> =940nm, V <sub>CE</sub> =5V	1.4	2.8	6.4	mA	4
C <sub>T</sub>	Terminal Capacitance	E <sub>e</sub> =0mW /cm <sup>2</sup> f=1MHz, V <sub>CE</sub> =5V	-	3.80	-	pF	



# SMD Type Phototransistor with Daylight Filter

## Switching Characteristics

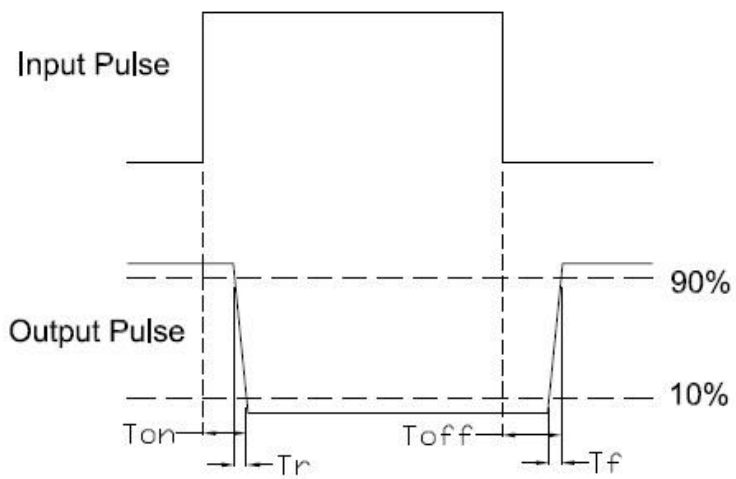
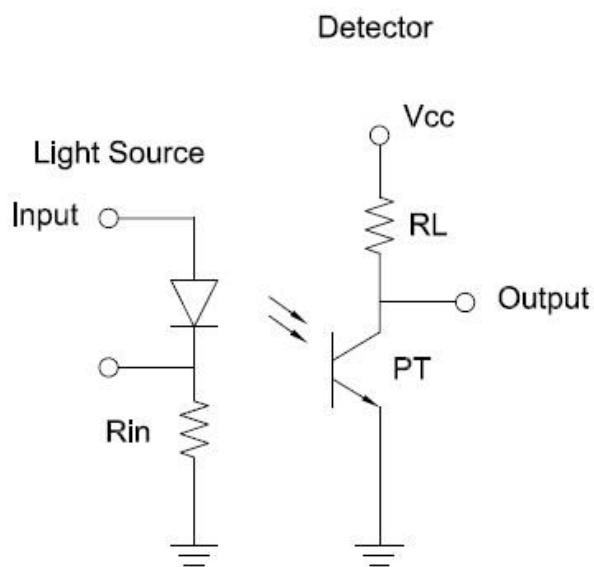
Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$t_r$	Rise Time	$V_{ce} = 5V, R_L = 100\Omega$ $I_C = 1.0mA$	-	6	-	$\mu s$	5
$t_f$	Fall Time		-	7	-		
$t_{on}$	Turn on Delay Time		-	11	-		
$t_{off}$	Turn off Delay Time		-	7.9	-		

**Notes:**

- 1 : Test conditions :  $I_C = 100\mu A, E_e = 0mW/cm^2$ .
- 2 : Test conditions :  $I_E = 100\mu A, E_e = 0mW/cm^2$ .
- 3 : Soldering time  $\leq 5$  seconds.
- 4 :  $I_C$  Bin Rank :

Bin Code	P3	P4	P5
Min	1.4	2.0	3.2
Max	2.8	4.4	6.4

5 : Test circuit:



Switching Time



### Typical Characteristic Curves

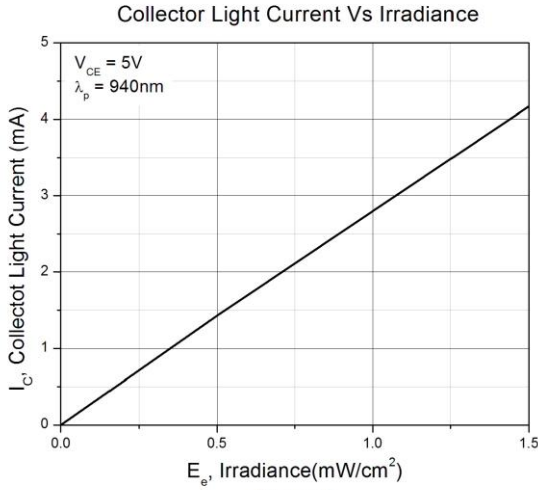


Figure 1

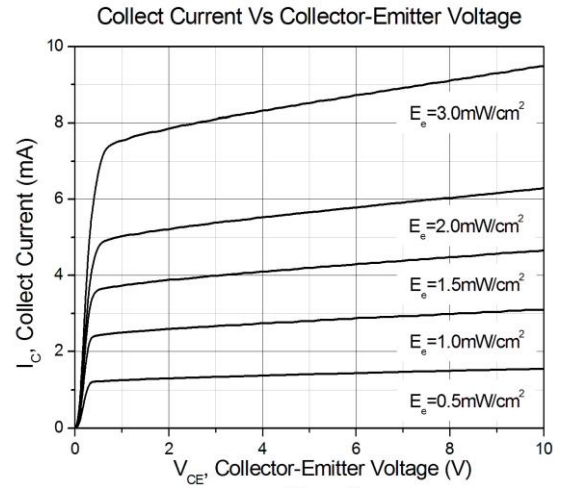


Figure 2

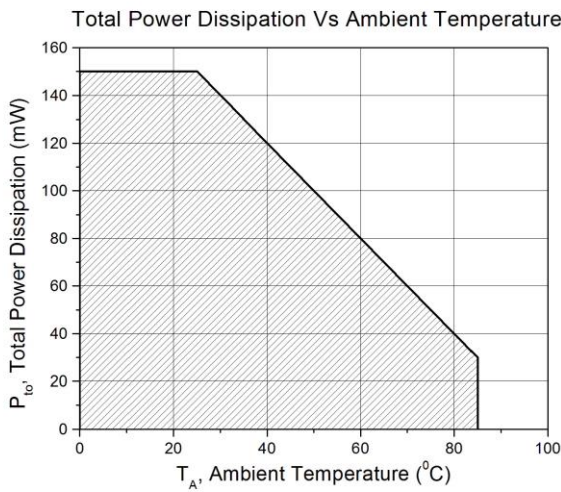


Figure 3

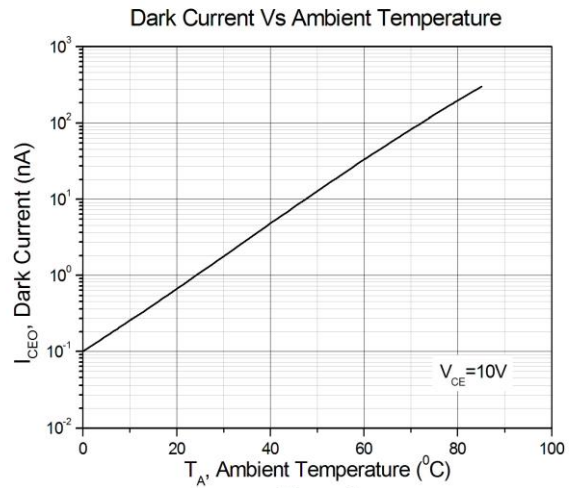


Figure 4

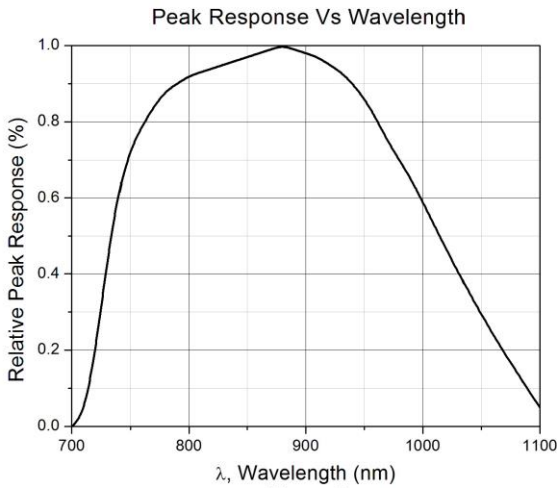


Figure 5

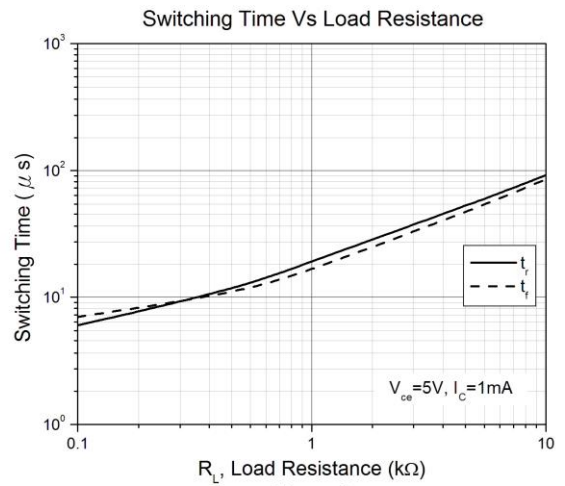
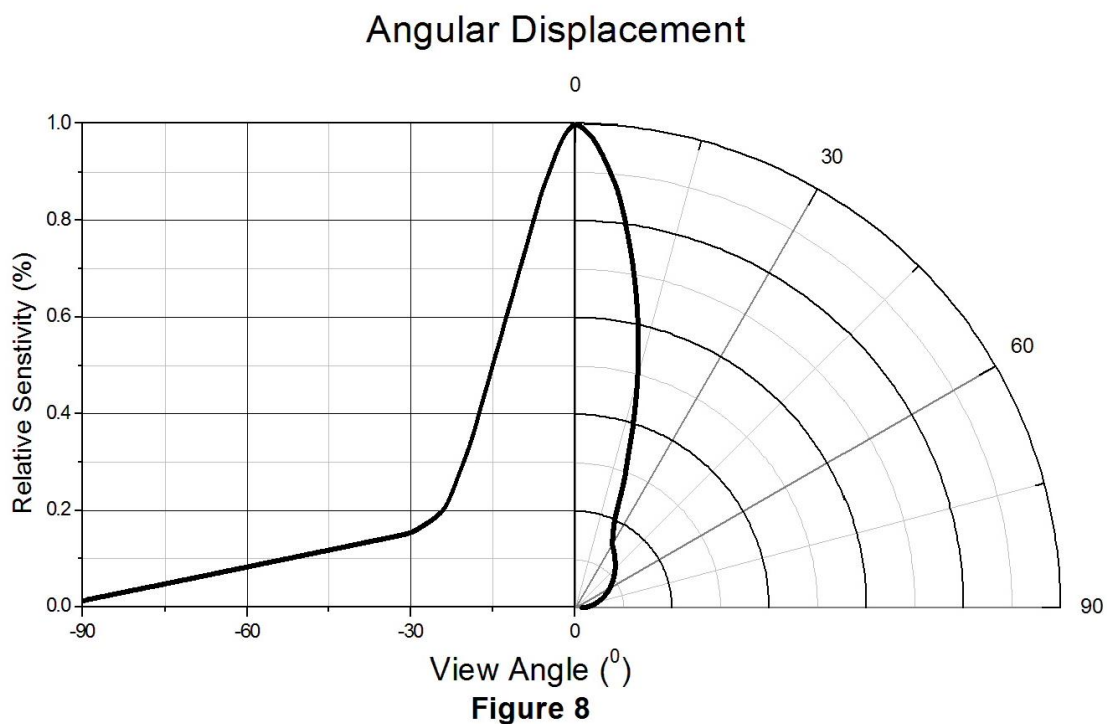
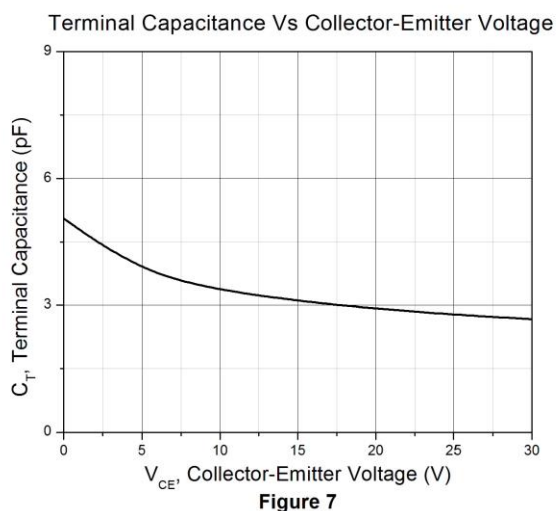


Figure 6



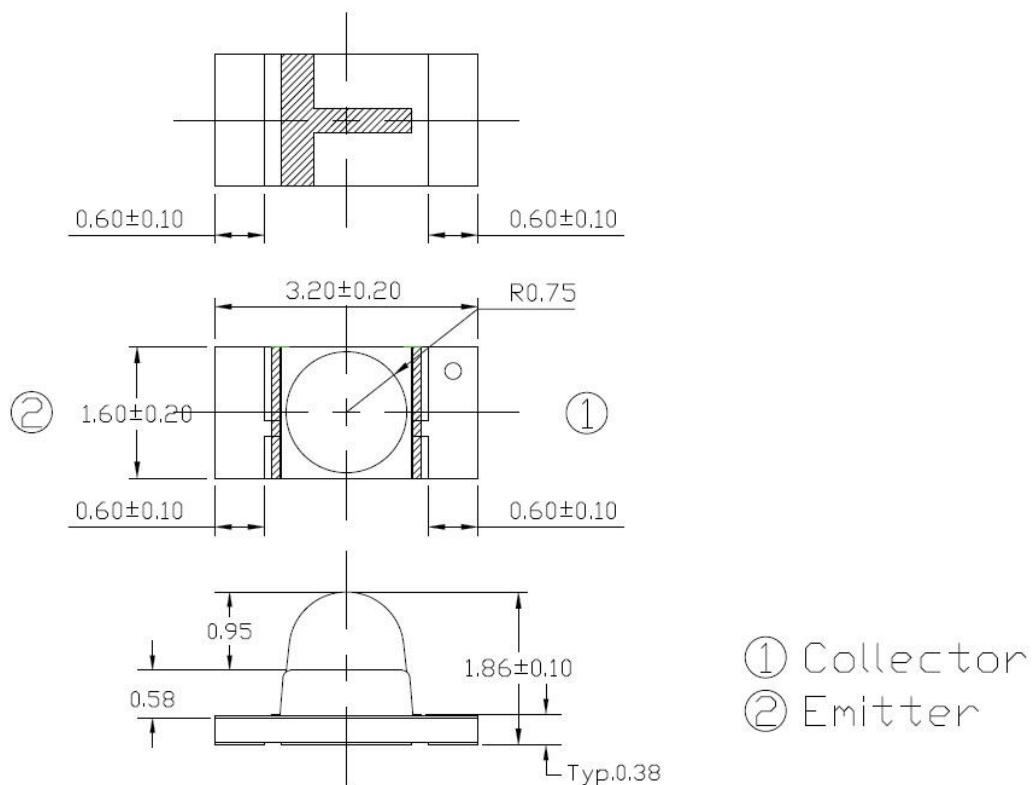
### Typical Characteristic Curves



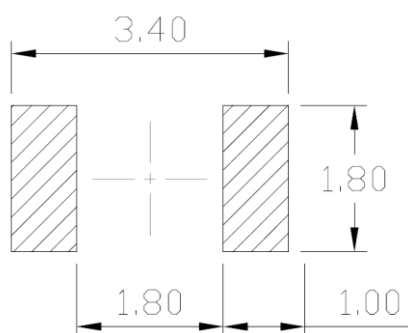


SMD Type Phototransistor with Daylight Filter

**Package Dimension** *All dimensions are in mm, unless otherwise stated*



**Recommended Soldering Mask** *All dimensions are in mm, unless otherwise stated*



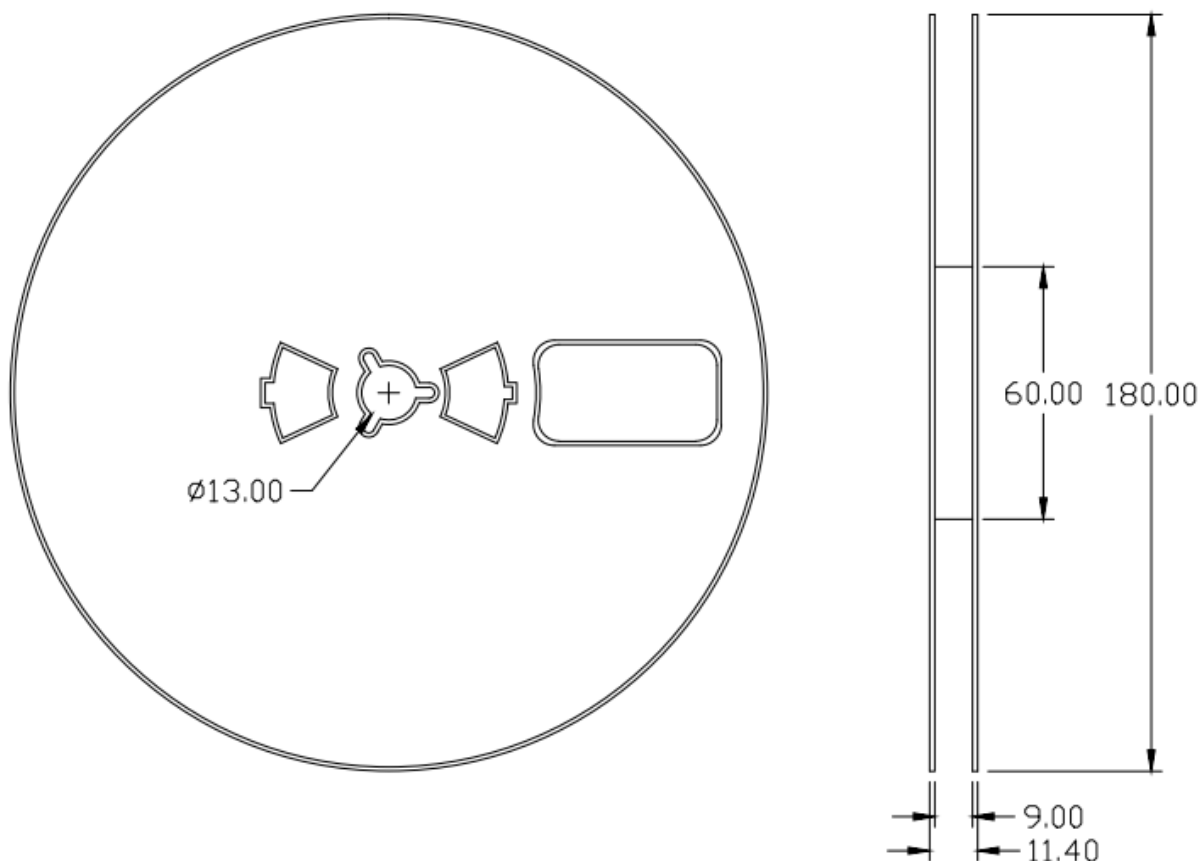
**Ordering Information**

Part Number	Description	Quantity
PTP83216BT18	Tape & Reel	2000 pcs

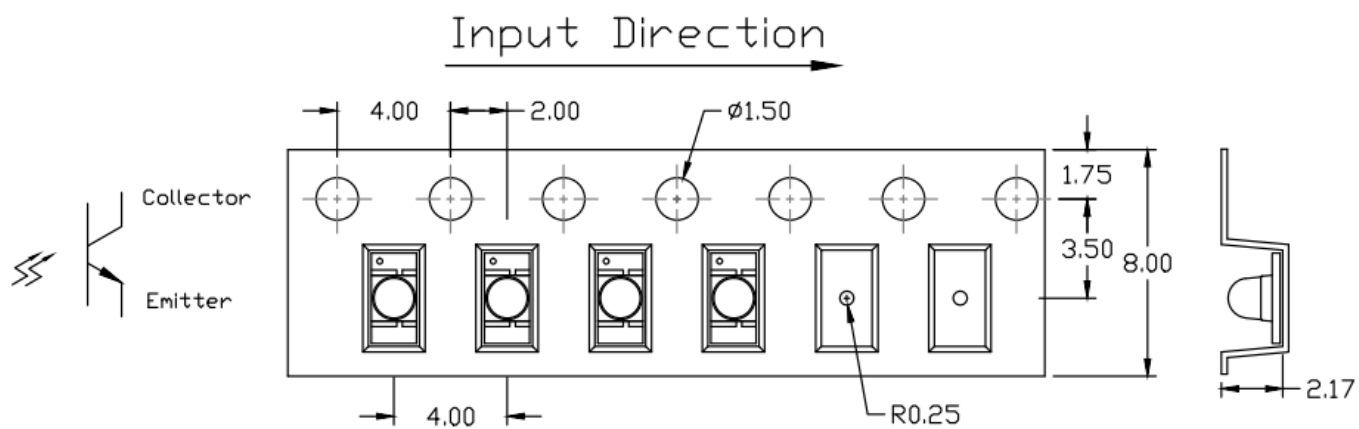


# SMD Type Phototransistor with Daylight Filter

## Reel Dimension *All dimensions are in mm, unless otherwise stated*



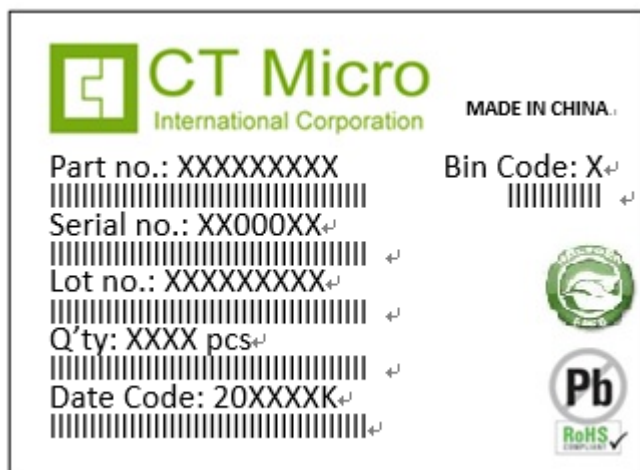
## Tape Dimension *All dimensions are in mm, unless otherwise stated*





# SMD Type Phototransistor with Daylight Filter

## Label Form Specification



Part no: CTM Production Number  
 Serial no: Production Number  
 Lot no: Lot number  
 Q'ty: Packing Quantity  
 Date Code: Manufacture Date  
 Bin Code: Ic Ranks  
 MADE IN CHINA: Production Place

## Storage Condition

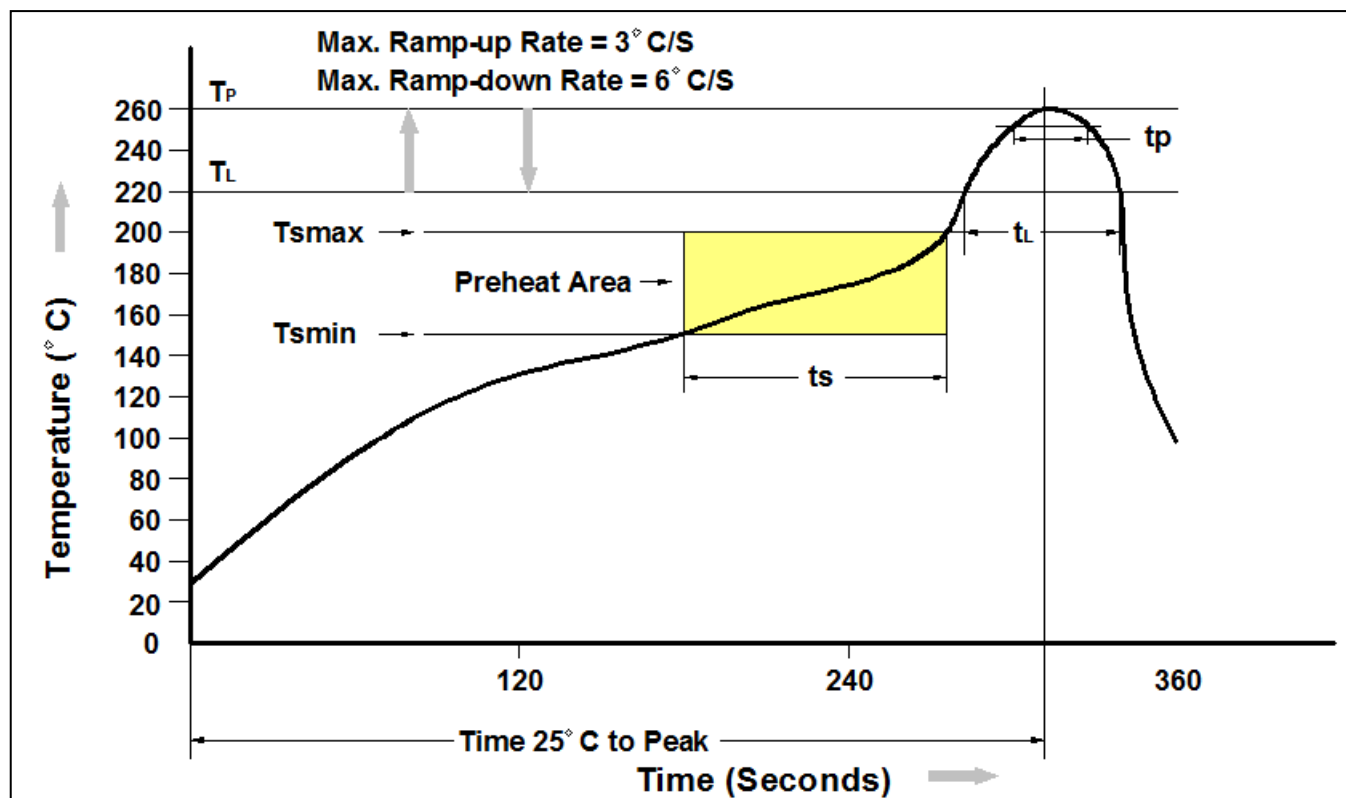
1. Do not open moisture proof bag before the products are ready to use.
2. The moisture barrier bag should be stored at 30°C and 90%R.H. max. before opening.  
Shelf life of non-opened bag is 12 months after the bag sealing date.
3. After opening the moisture barrier bag floor life is 168h at 30°C/60%RH. max. Unused LEDs should be resealed into moisture barrier bag. (Refer to J-STD-020 Standard)
4. If the moisture absorbent material has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the J-STD-033 Standard conditions.





## SMD Type Phototransistor with Daylight Filter

### Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmín)	150°C
Temperature Max. (Tsmáx)	200°C
Time (ts) from (Tsmín to Tsmáx)	60-120 seconds
Ramp-up Rate (tL to tp)	3°C/second max.
Liquidous Temperature (TL)	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (tp) within 5°C of 260°C	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.



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