PTP83010BT20

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

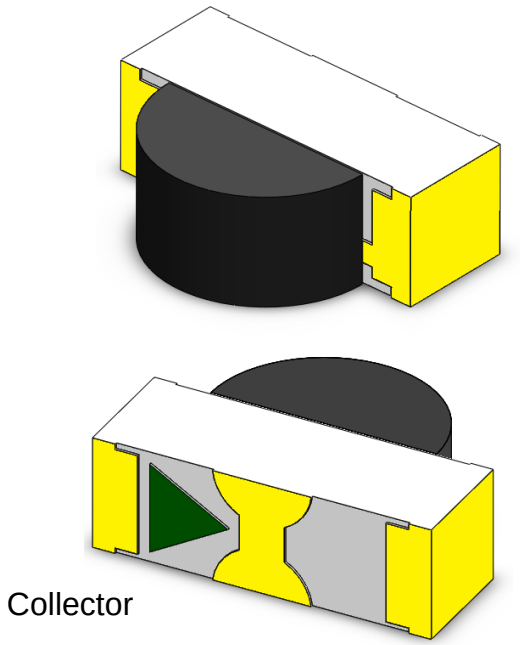
Description

The PTP83010BT20 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.

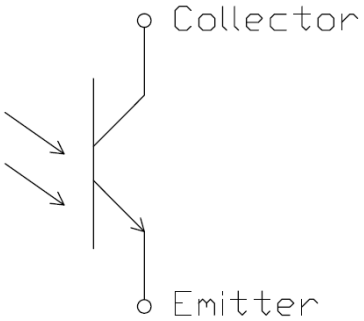
Applications

- Infrared sensor
- Infrared Touch Panel Solutions

Package Outline



Schematic



Absolute Maximum Rating at 25^{0}C

Symbol	*Parameters*	*Ratings*	*Units*	*Notes*
I_C	Collector Current	20	mA	
B_{VCEO}	Collector-Emitter Voltage	35	V	1
B_{VECO}	Emitter-Collector Voltage	5	V	2
T_{opr}	Operating Temperature	-40 ~ +85	^{0}C	
T_{stg}	Storage Temperature	-40 ~ +100	^{0}C	
T_{sol}	Soldering Temperature	260	^{0}C	3
P_{to}	Total Power Dissipation	150	mW	

Optical Characteristics

Symbol	*Parameters*	*Test Conditions*	*Min*	*Typ*	*Max*	*Units*	*Notes*
λ	Spectral Bandwidth	-	700	-	1100	nm	
λ_P	Peak Sensitivity	-	-	820	-	nm	
θ1/2	View Angle at X axis	V_{CE}=5V	-	±52.5	-	deg	4
	View Angle at Y axis		-	±57.5	-		

Electrical Characteristics

Symbol	*Parameters*	*Test Conditions*	*Min*	*Typ*	*Max*	*Units*	*Notes*
I_{CEO}	Dark Current	Ee=0mW /cm^2 V_{CE}=20V	-	-	100	nA	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	Ee=1mW /cm^2 I_C=0.2mA	-	-	0.4	V	
I_C	Collector Light Current	Ee=1mW /cm^2 λ_P=940nm, V_{CE}=5V	0.80	-	2.40	mA	
C_T	Terminal Capacitance	Ee=0mW /cm^2 f=1MHz ,V_{CE}=5V	-	3.80	-	pF	

Switching Characteristics

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

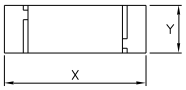
Notes:

1 : Test conditions : I_C=100μA, Ee=0mW/cm^2.

2 : Test conditions : I_E=100μA, Ee=0mW/cm^2.

3 : Soldering time≦5 seconds.

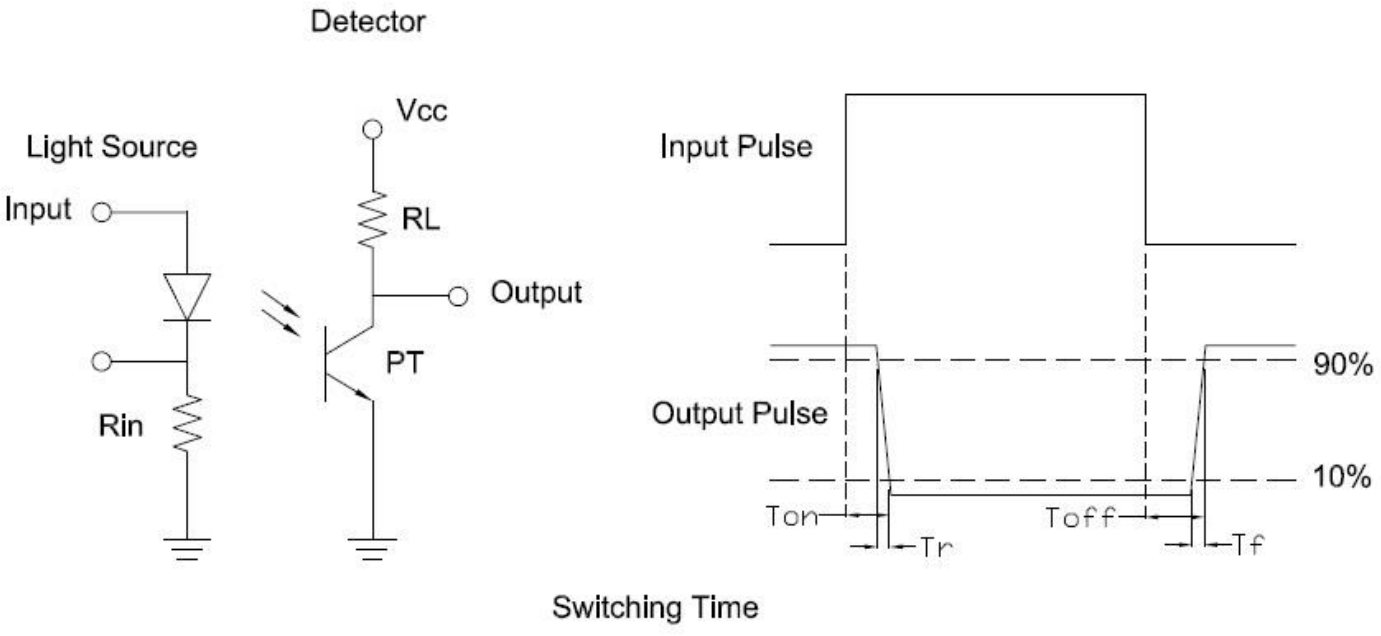
4 : Test condition :



5 : I_C Bin Rank : (Tolerance of Collector Light Current：±10%)

Bin Code	T3	T4
Min	0.80	1.60
Max	1.60	2.40

6 : Test circuit :



Switching Time

Typical Characteristic Curves

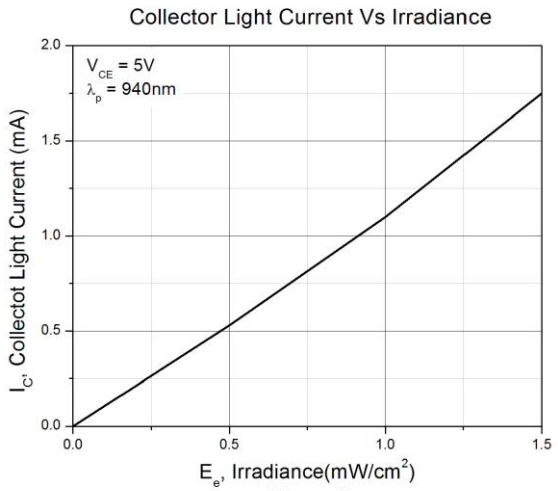


Figure 1

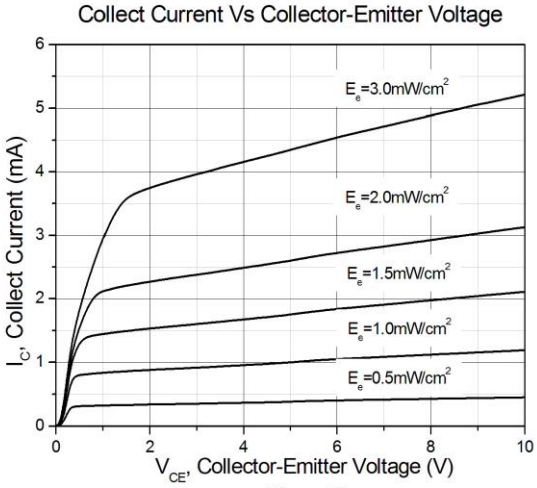


Figure 2

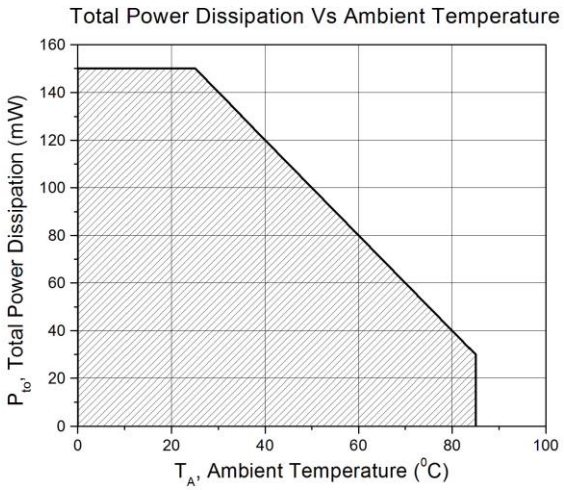


Figure 3

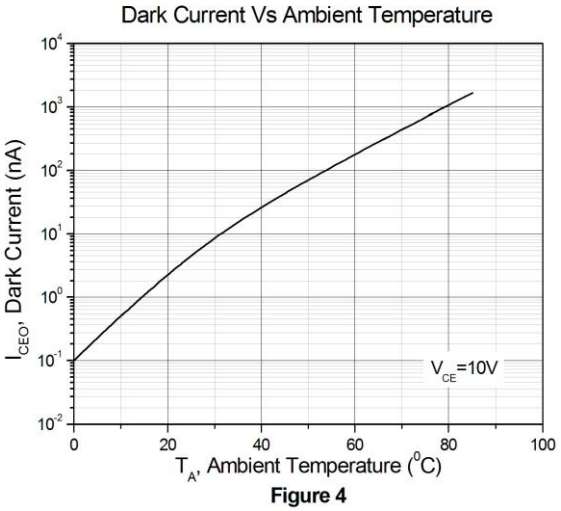


Figure 4

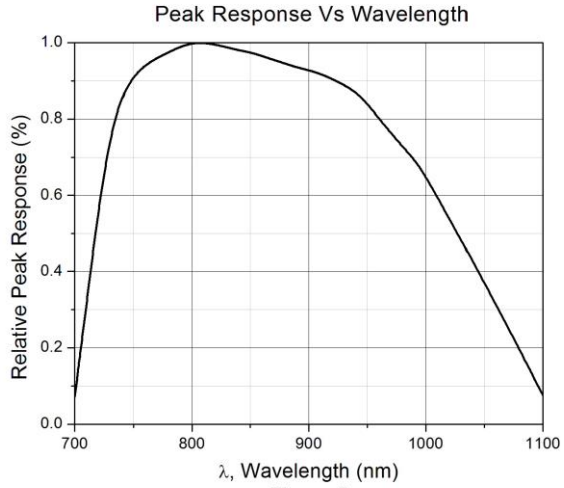


Figure 5

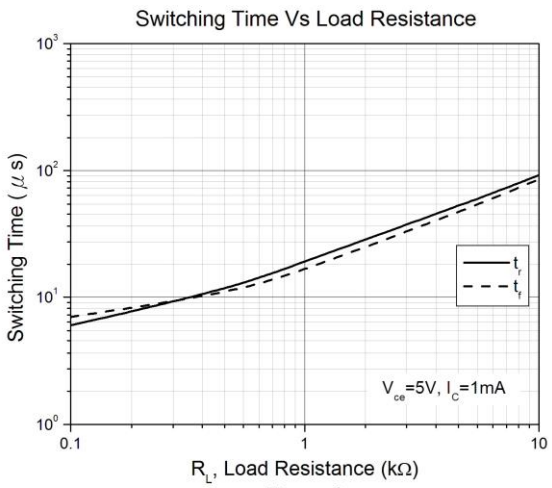


Figure 6

Typical Characteristic Curves

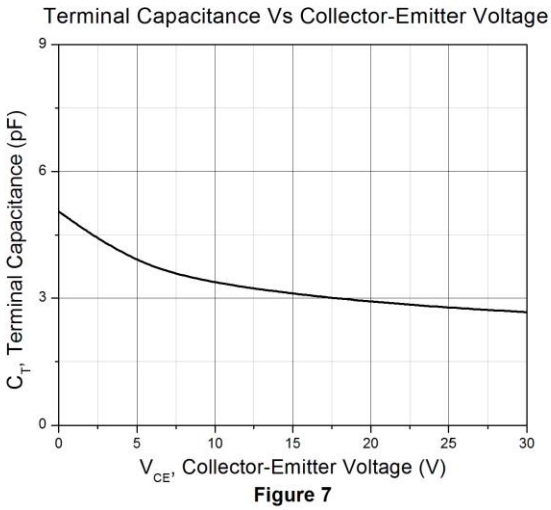


Figure 7

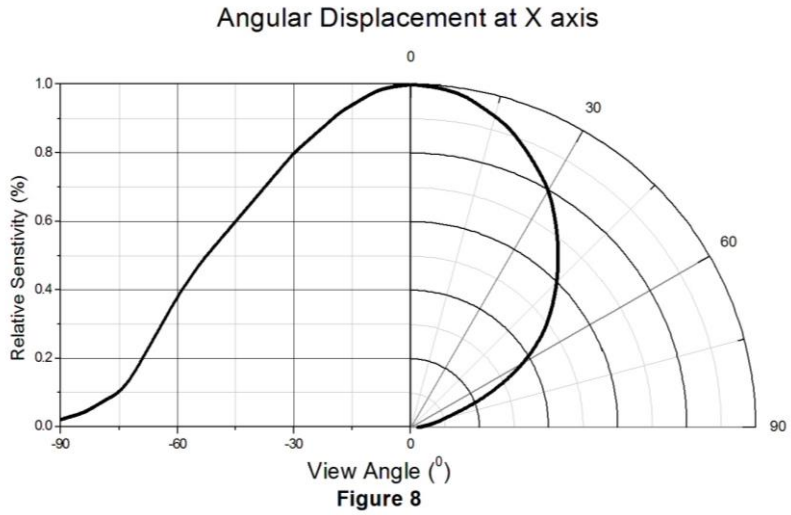


Figure 8

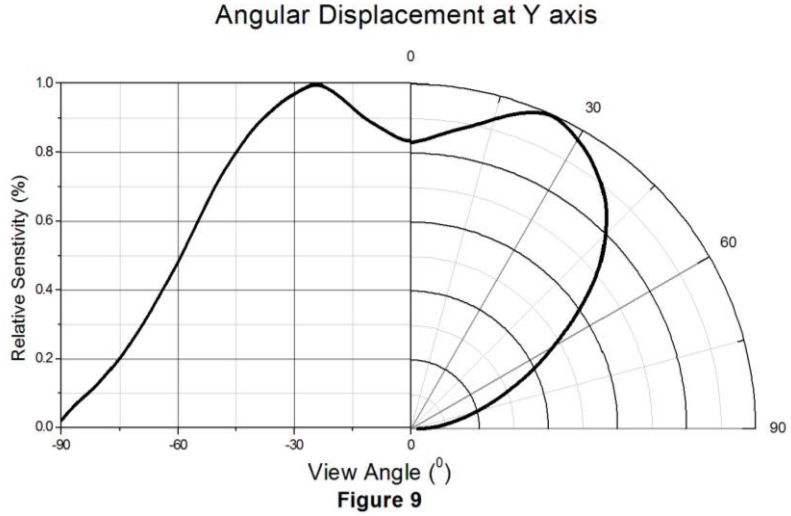
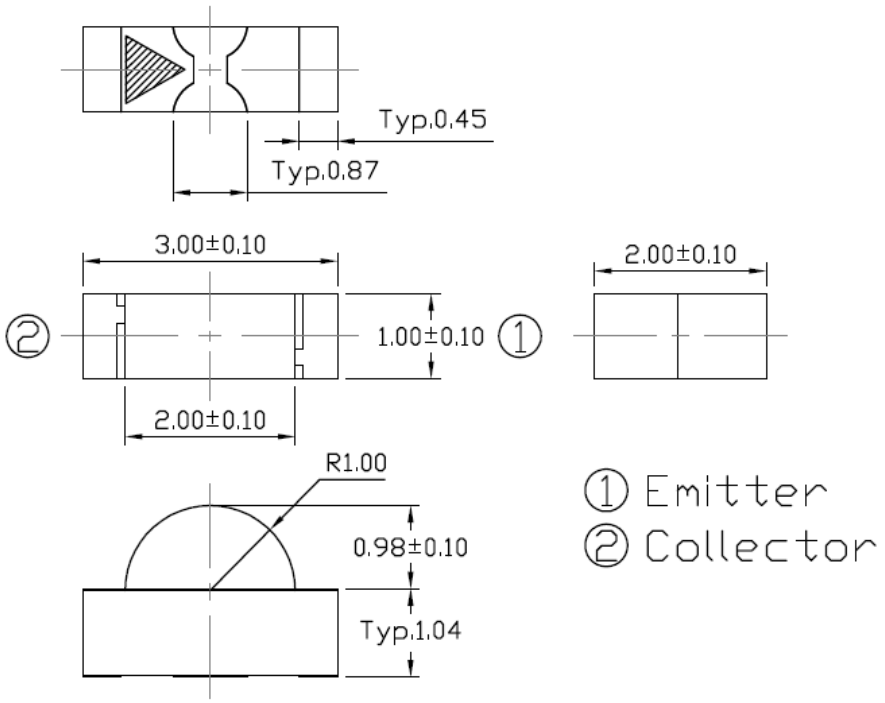
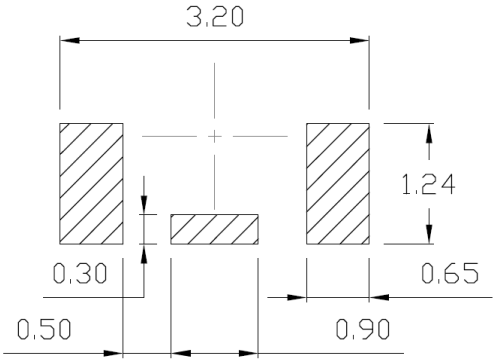


Figure 9

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



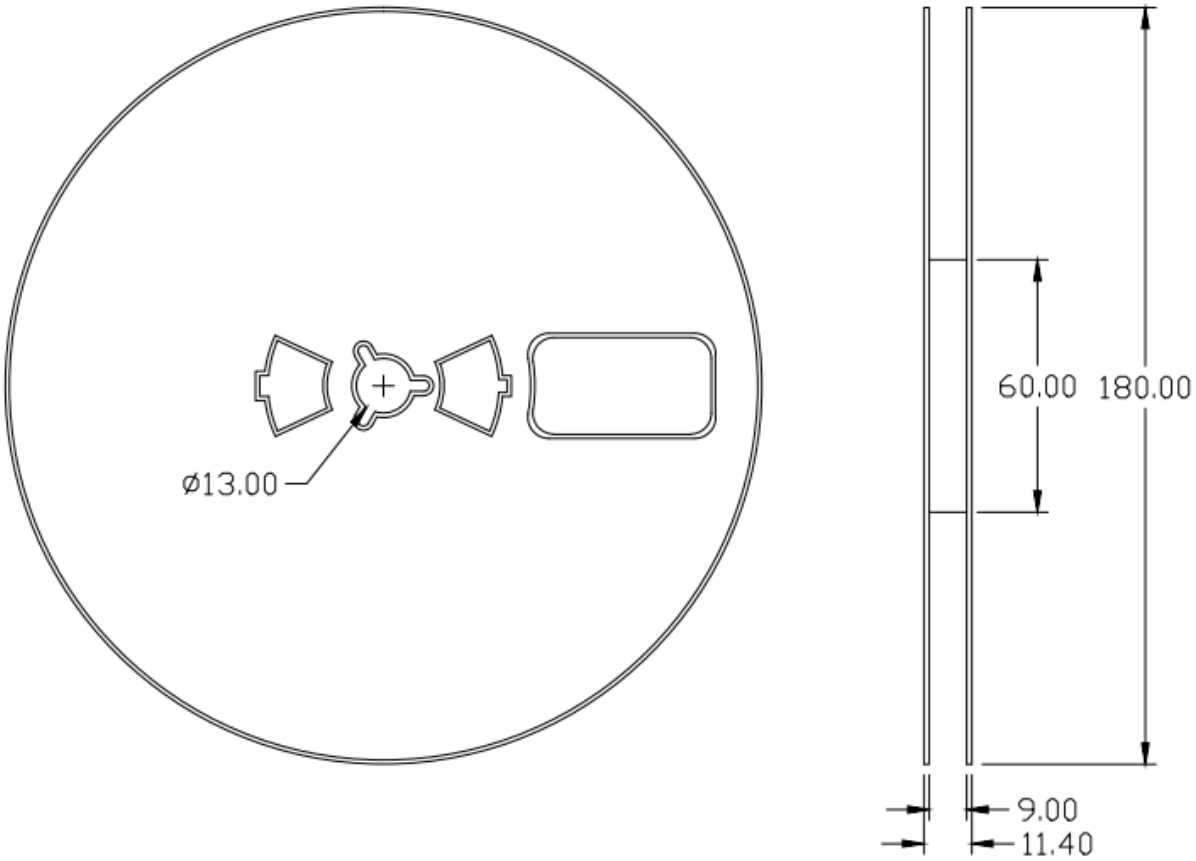
Recommended Soldering Mask *All dimensions are in mm, unless otherwise stated*



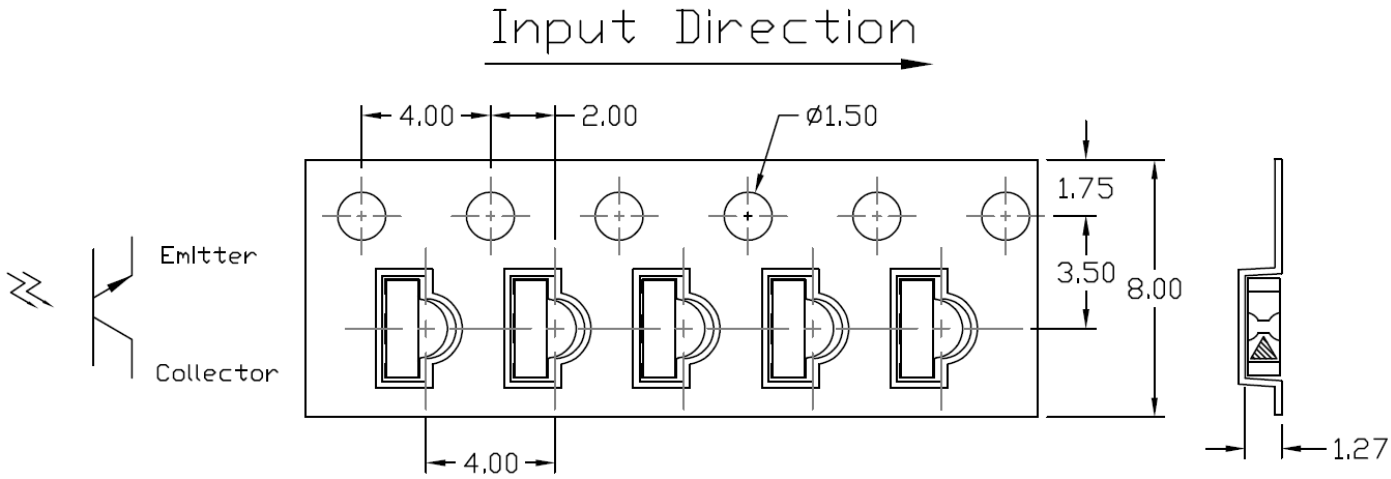
Ordering Information

Part Number	*Description*	*Quantity*
PTP83010BT20	Tape & Reel	3000 pcs

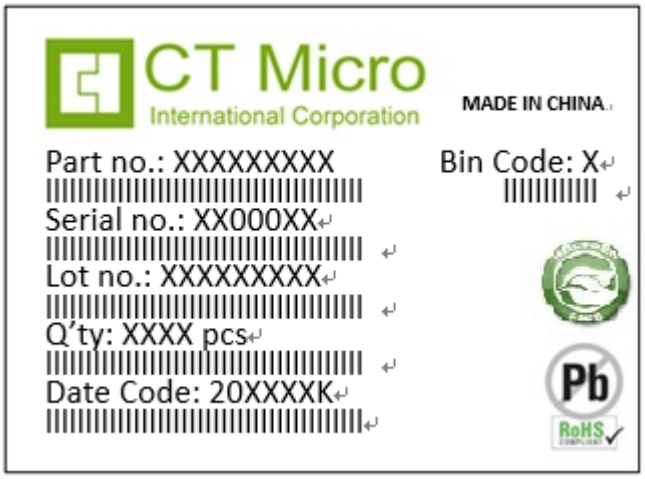
Reel Dimension *All dimensions are in mm, unless otherwise stated*



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



Label Form Specification



Part no: CTM Production Number

Serial no: Production Number

Lot no: Lot number

Q'ty: Packing Quantity

Date Code: Manufacture Date

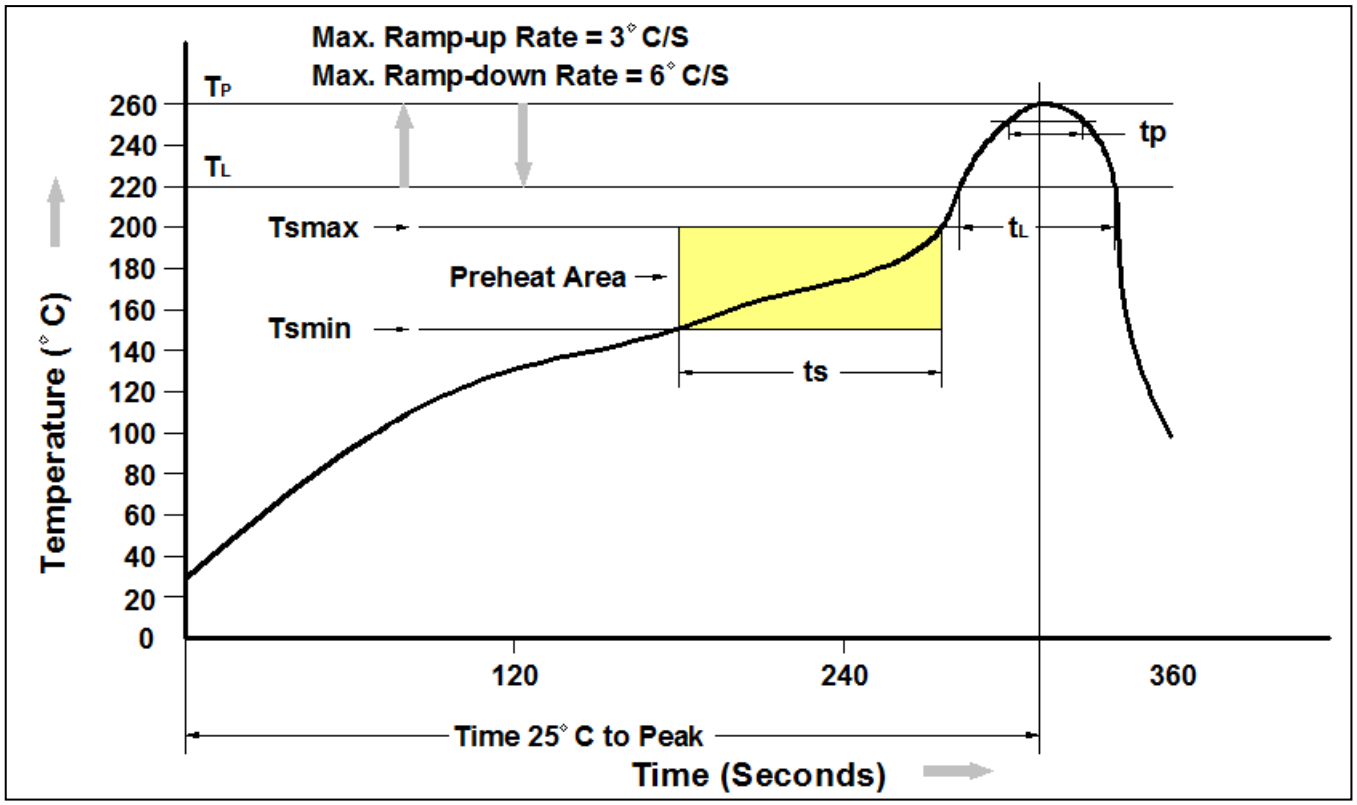
Bin Code: Ic Ranks

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.

Reflow Profile



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

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2. *A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.*