



SMD Type Phototransistor with Daylight Filter

Features

- Small double-end package
- High photo sensitivity
- High reliability
- Spectral range of sensitivity: 760-1100nm
- Fast Response time
- RoHS compliance

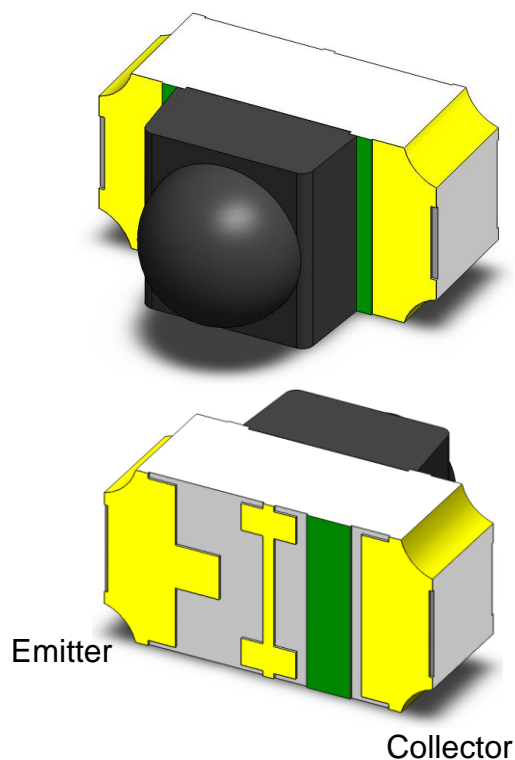
Applications

- Infrared sensor
- Infrared Touch Panel Solutions

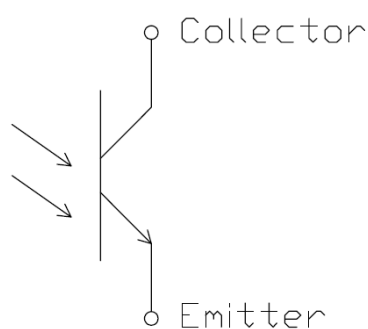
Description

The PTP83016BT24 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





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Absolute Maximum Rating at 25°C

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

Optical Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
λ	Spectral Bandwidth	-	760	-	1100	nm	
λ _P	Peak Sensitivity	-	-	880	-	nm	
θ _{1/2}	View Angle	V _{CE} =5V	-	±22.5	-	deg	

Electrical Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
I _{CEO}	Dark Current	E _e =0mW /cm ² V _{CE} =20V	-	-	100	nA	
V _{CE(sat)}	Collector-Emitter Saturation Voltage	E _e =1mW /cm ² I _C =1.4mA	-	-	0.4	V	
I _C	Collector Light Current	E _e =1mW /cm ² λ _P =940nm, V _{CE} =5V	1.4	2.8	4.4	mA	4
C _T	Terminal Capacitance	E _e =0mW /cm ² f=1MHz, V _{CE} =5V	-	3.80	-	pF	



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Switching Characteristics

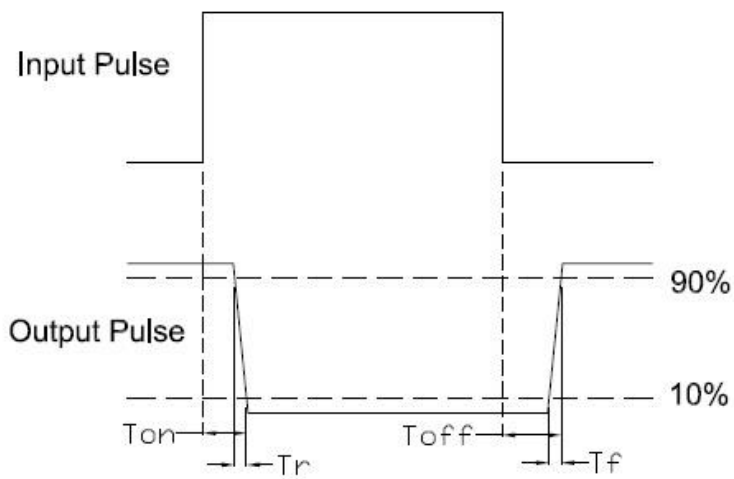
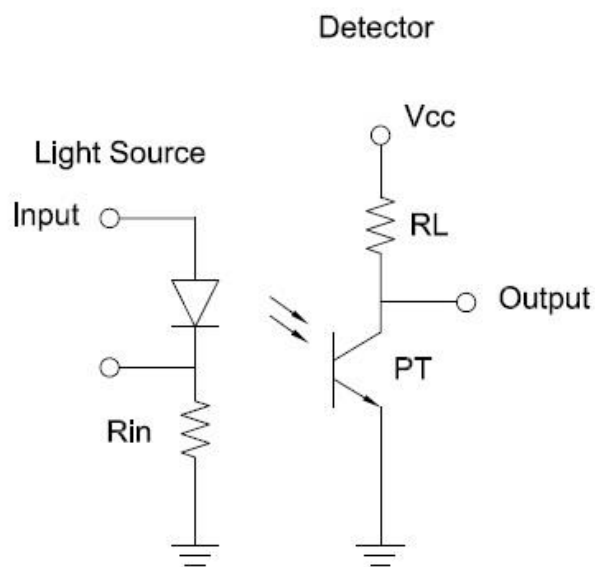
Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
t_r	Rise Time	$V_{ce} = 5V, R_L = 100\Omega$ $I_C = 1.0mA$	-	6	-	μs	5
t_f	Fall Time		-	7	-		
t_{on}	Turn on Delay Time		-	11	-		
t_{off}	Turn off Delay Time		-	7.9	-		

Notes:

- 1 : Test conditions : $I_C = 100\mu A, E_e = 0mW/cm^2$.
- 2 : Test conditions : $I_E = 100\mu A, E_e = 0mW/cm^2$.
- 3 : Soldering time ≤ 5 seconds.
- 4 : I_C Bin Rank : (Tolerance of Collector Light Current : $\pm 10\%$)

Bin Code	Ta	Tb
Min	1.4	2.4
Max	2.4	4.4

5 : Test circuit:



Switching Time



Typical Characteristic Curves

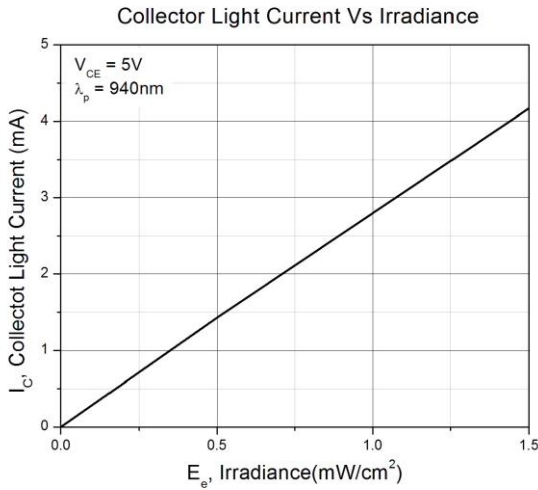


Figure 1

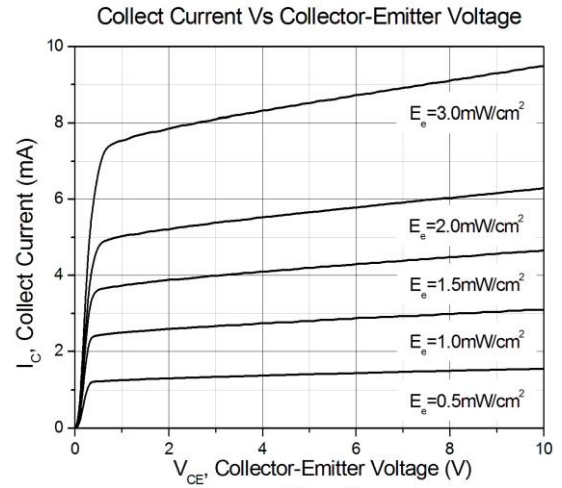


Figure 2

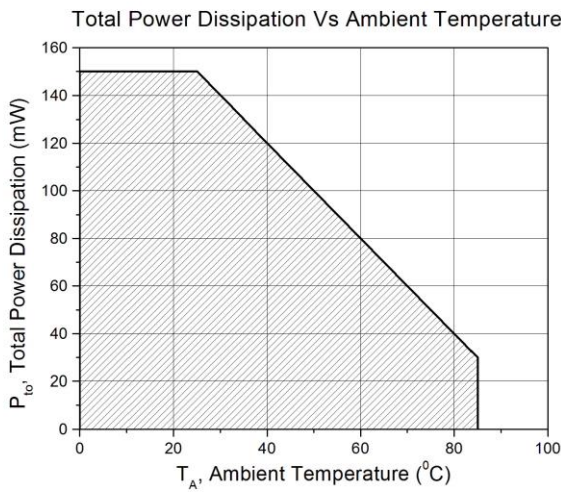


Figure 3

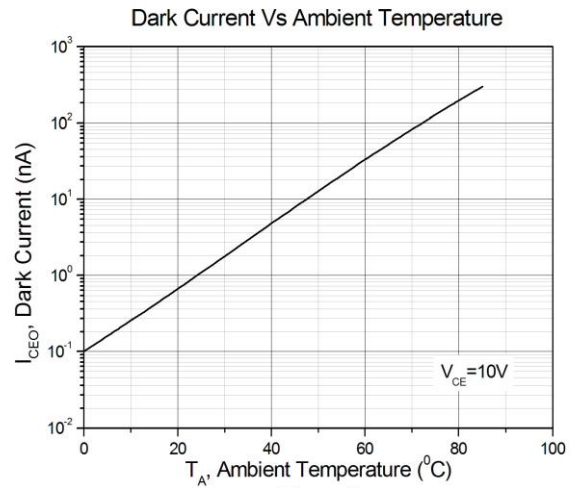


Figure 4

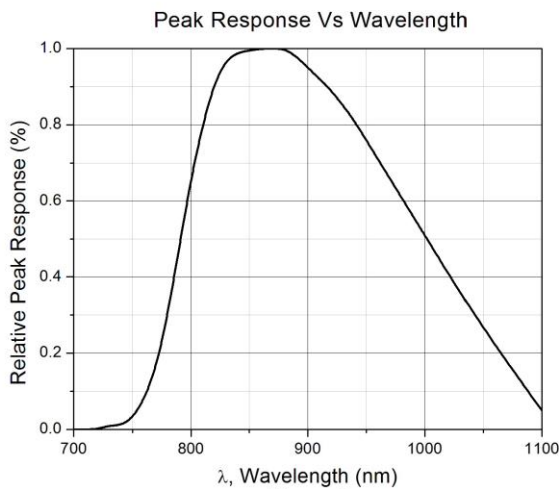


Figure 5

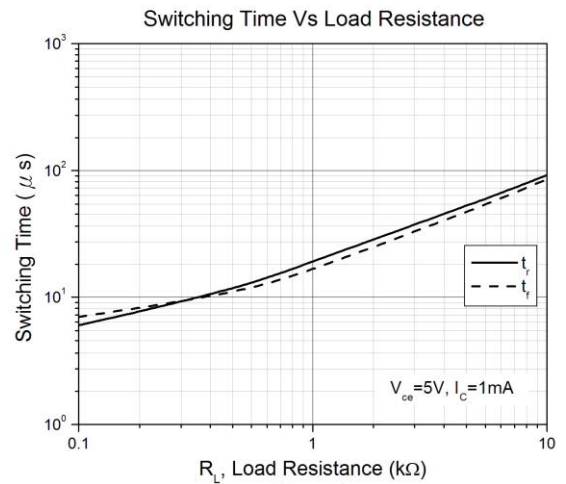
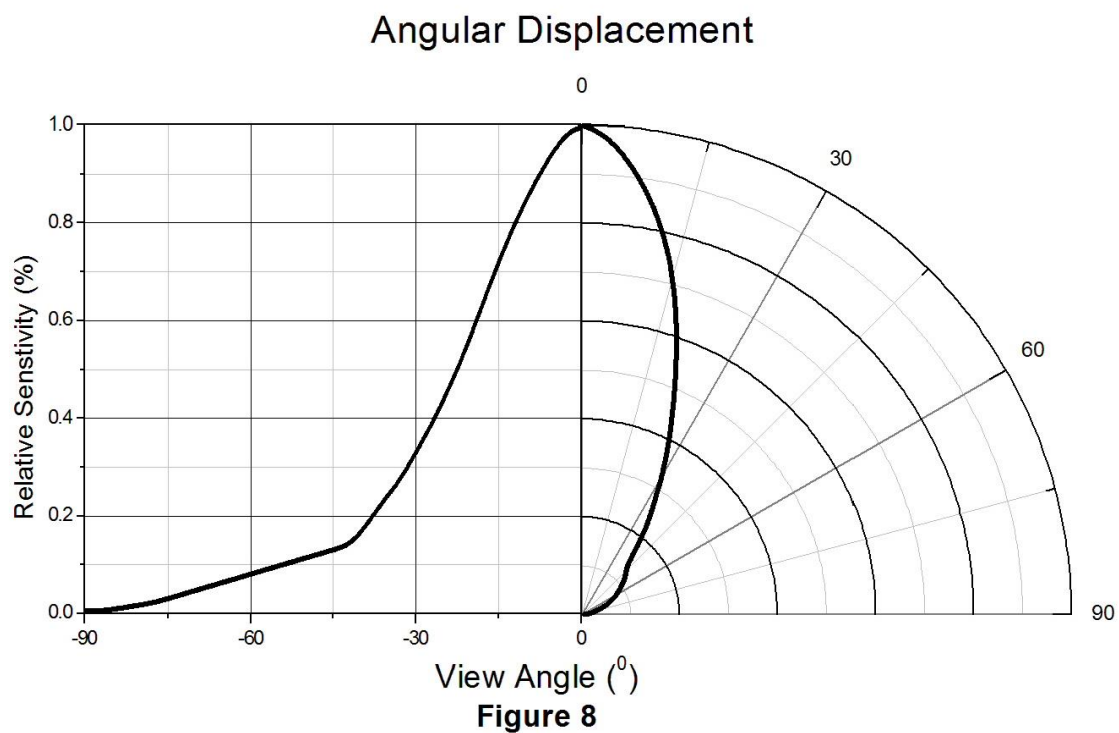
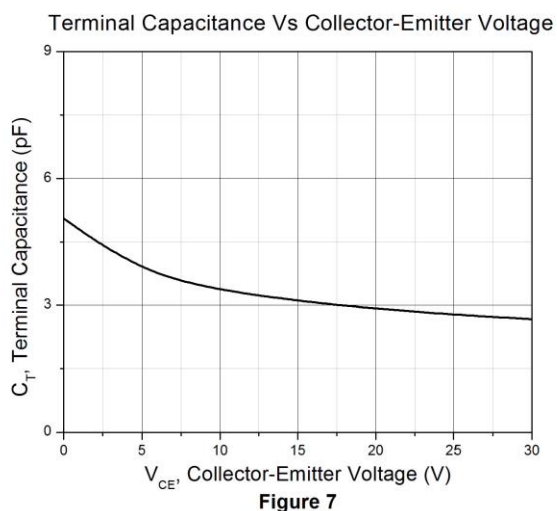


Figure 6



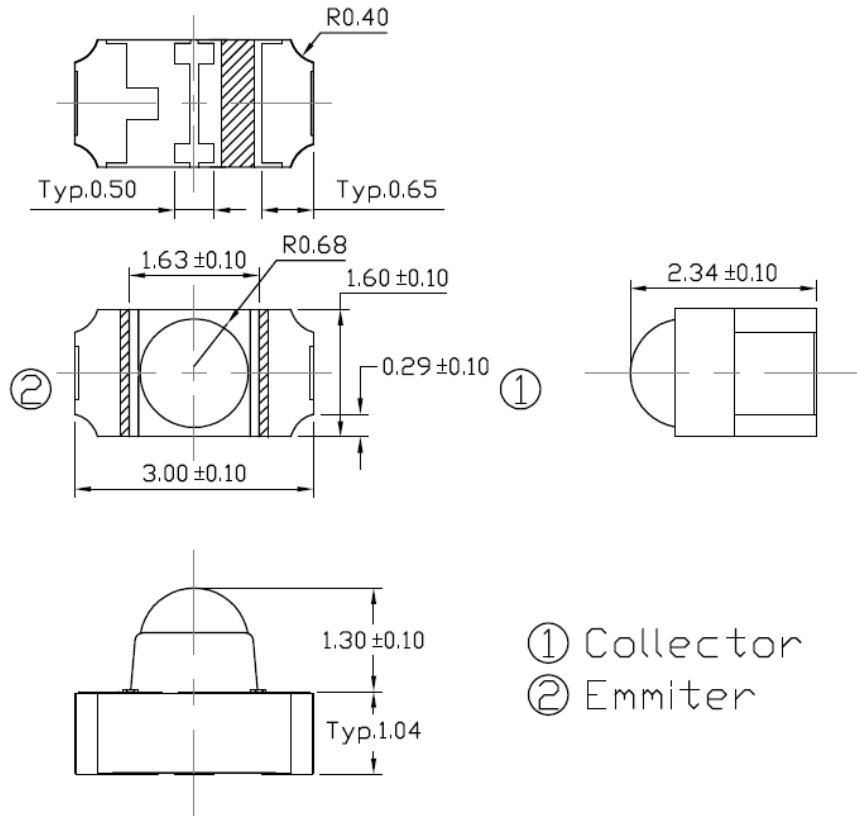
Typical Characteristic Curves



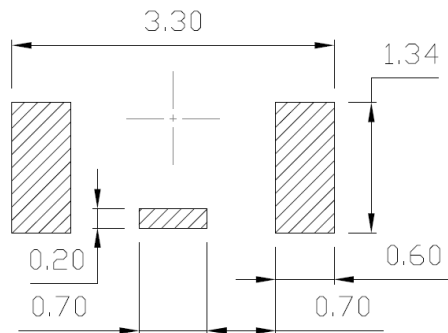


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Package Dimension *All dimensions are in mm, unless otherwise stated*



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



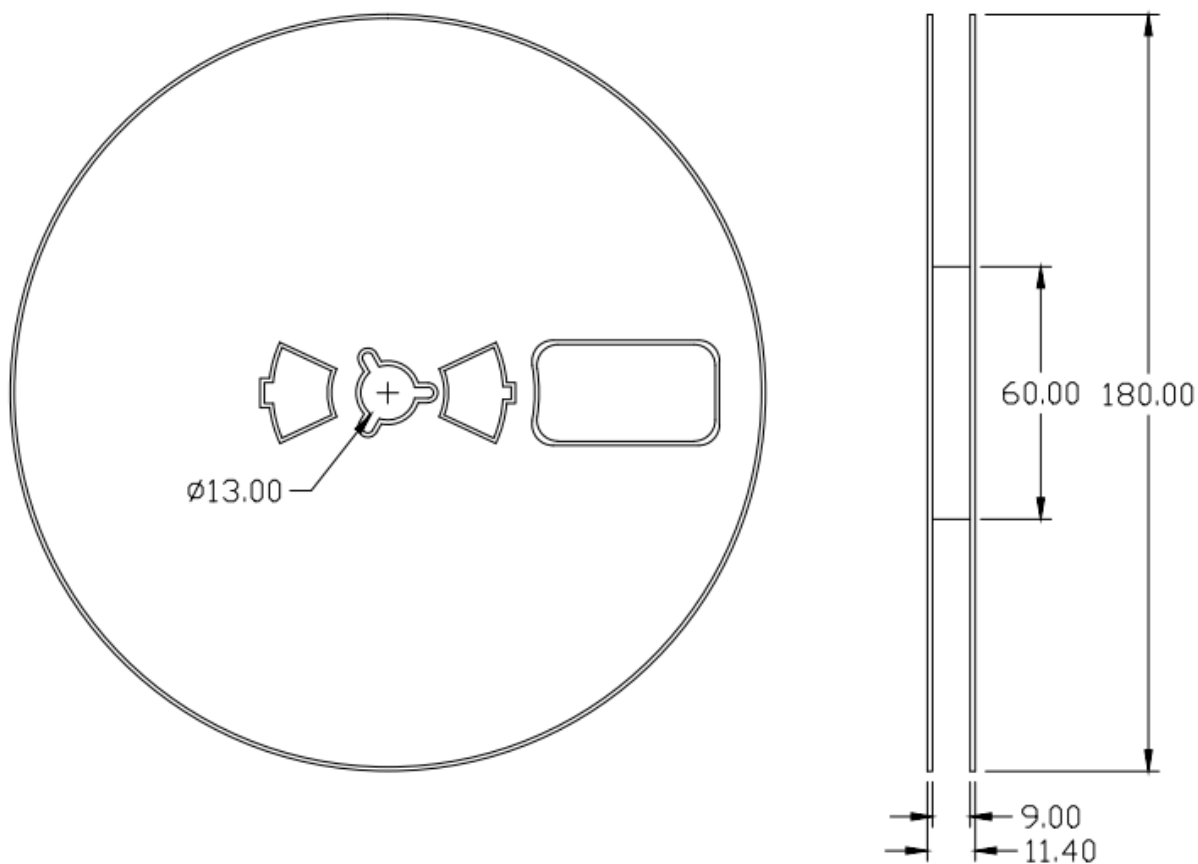
Ordering Information

Part Number	Description	Quantity
PTP83016BT24	Tape & Reel	2500 pcs

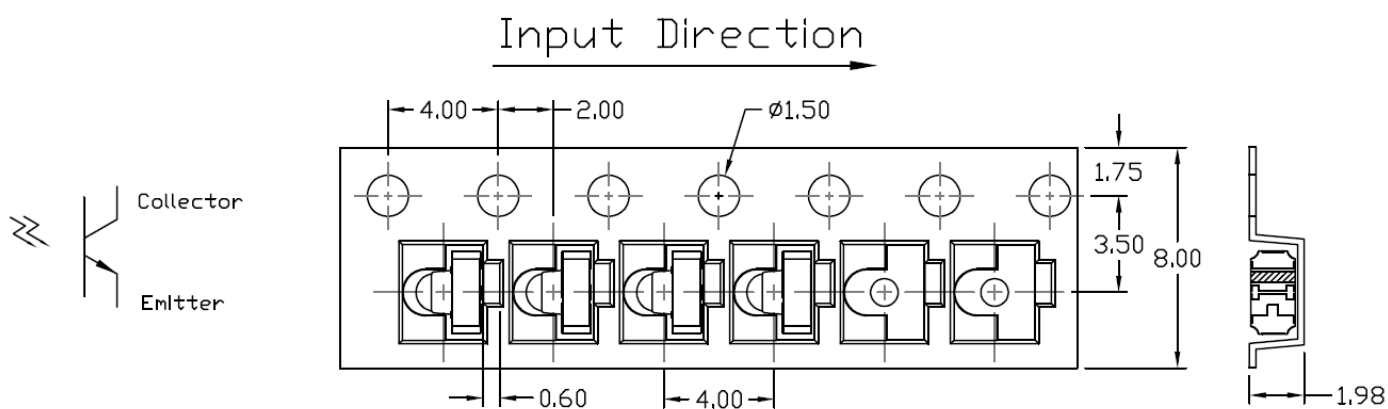


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Reel Dimension *All dimensions are in mm, unless otherwise stated*



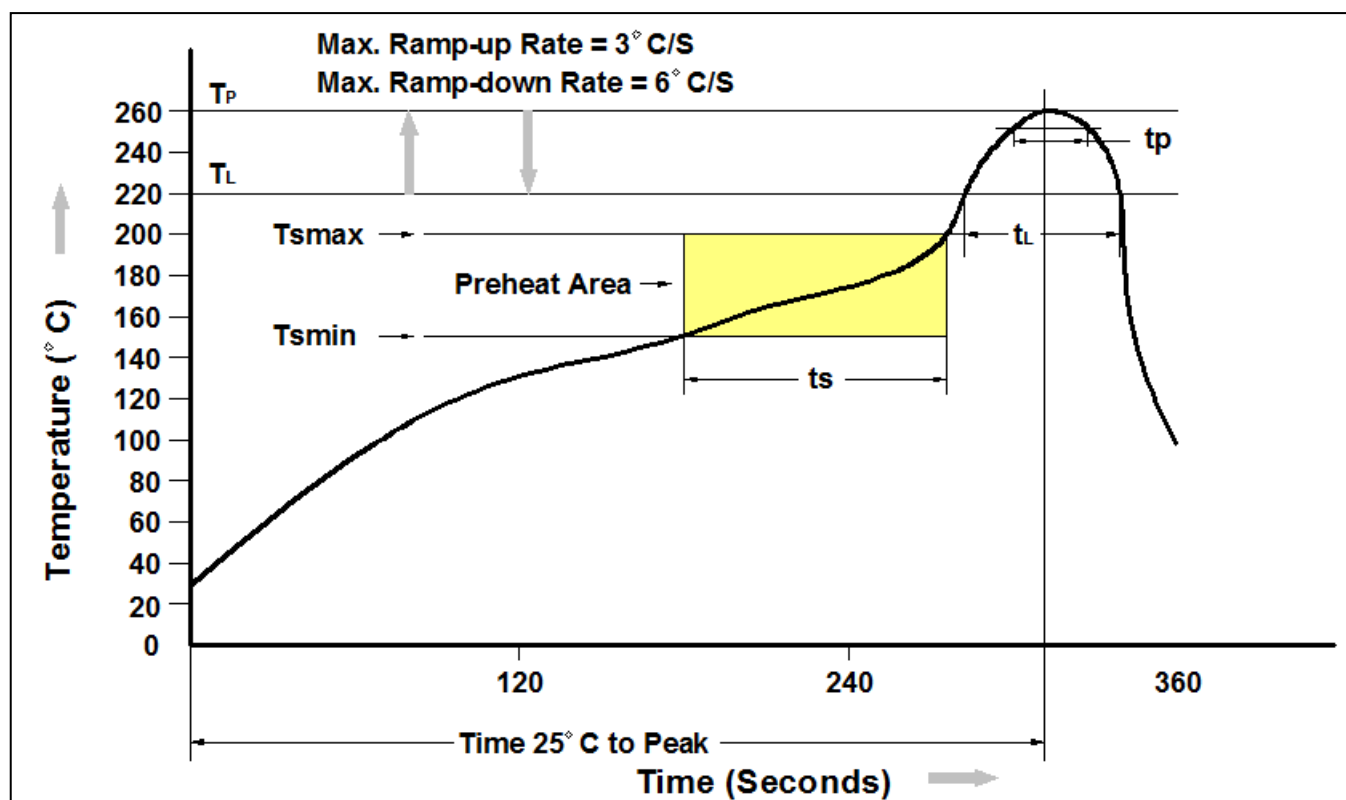
Tape Dimension *All dimensions are in mm, unless otherwise stated*





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Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T_{smin})	150°C
Temperature Max. (T_{smax})	200°C
Time (t_s) from (T_{smin} to T_{smax})	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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