



# GRP321608-ATC2

## Dual Wavelength SMD Type Emitter

### Features

- Top view 1206 package
- Viewing Angle =  $\pm 65^\circ$
- Compatible with infrared and vapor phase reflow solder process
- High reliability
- Dual dominant wavelength (G=520nm , R=621nm)
- RoHS compliance

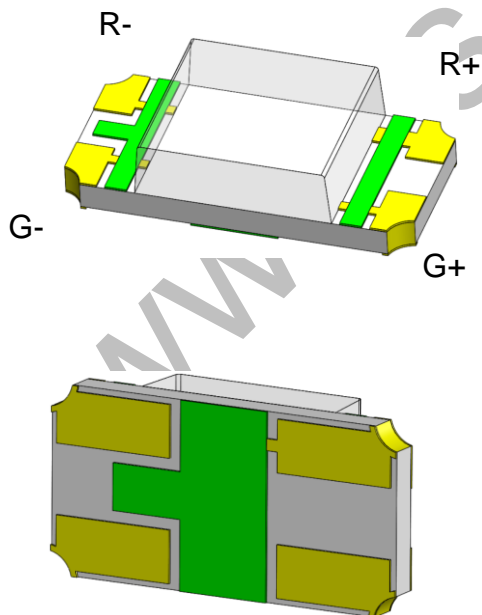
### Applications

- Optical indicator.
- Switch and Symbol Display.

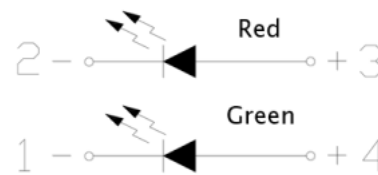
### Description

The GRP321608-ATC2 is a double LED housed in a miniature SMD package. The device has a dominant wavelength of 520nm and 621nm LED.

### Package Outline



### Schematic



**Absolute Maximum Rating at 25°C**

Symbol	Parameters		Ratings	Units	Notes
I <sub>F</sub>	Continuous Forward Current	G	25	mA	
		R	25		
I <sub>FP</sub>	Peak Forward Current	G	60	mA	1
		R	60		
V <sub>R</sub>	Reverse Voltage		5	V	
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	2
P <sub>D</sub>	Power Dissipation at(or below) 25°C Free Air Temperature	G	95	mW	
		R	60		

**Electro-Optical Characteristics** *TA = 25°C (unless otherwise specified)***Optical Characteristics (Green)**

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
I <sub>v</sub>	Luminous Intensity	I <sub>F</sub> =20mA	450	-	1120	mcd	3
λ <sub>p</sub>	Peak Wavelength	I <sub>F</sub> =20mA	-	516	-		
λ <sub>d</sub>	Dominant Wavelength	I <sub>F</sub> =20mA	510	-	525	nm	4
θ <sub>1/2</sub>	Angle of Half Intensity	I <sub>F</sub> =20mA	-	±65	-	deg	

**Electrical Characteristics**

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
V <sub>F</sub>	Forward Voltage	I <sub>F</sub> =20mA	2.7	-	3.5	V	
I <sub>R</sub>	Reverse Current	V <sub>R</sub> =5V	-	-	1	μA	

**Optical Characteristics (Red)**

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
I <sub>v</sub>	Luminous Intensity	I <sub>F</sub> =20mA	72	-	180	mcd	3
λ <sub>p</sub>	Peak Wavelength	I <sub>F</sub> =20mA	-	632	-		
λ <sub>d</sub>	Dominant Wavelength	I <sub>F</sub> =20mA	-	621	-	nm	
θ <sub>1/2</sub>	Angle of Half Intensity	I <sub>F</sub> =20mA	-	±65	-	deg	

**Electrical Characteristics**

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$V_F$	Forward Voltage	$I_F=20\text{mA}$	1.7	-	2.4	V	
$I_R$	Reverse Current	$V_R=5\text{V}$	-	-	1	$\mu\text{A}$	

**Notes:**

1.  $I_{FP}$  Conditions--Pulse Width  $\leq 100\mu\text{s}$  and Duty  $\leq 10\%$ .
2. Soldering time  $\leq 10$  seconds.
3. Bin Range of Luminous Intensity

Green				
Bin Code	Min	Max	Unit	Condition
U	450	715	mcd	$I_F=20\text{mA}$
V	715	1120		
Red				
Q	72	112	mcd	$I_F=20\text{mA}$
R	112	180		

Tolerance of: Luminous Intensity  $\pm 10\%$ 

4. Bin Range of Dominant Wavelength

Green				
Bin Code	Min	Max	Unit	Condition
A3	510	515	nm	$I_F=20\text{mA}$
A4	515	520		
A5	520	525		

Tolerance of Dominant Wavelength:  $\pm 1\text{nm}$ .



### Typical Characteristic Curves

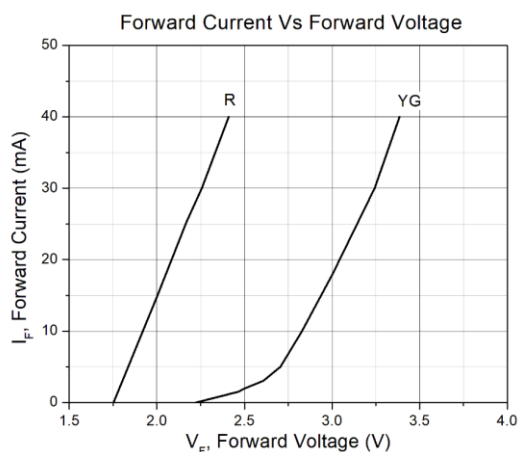


Figure 1

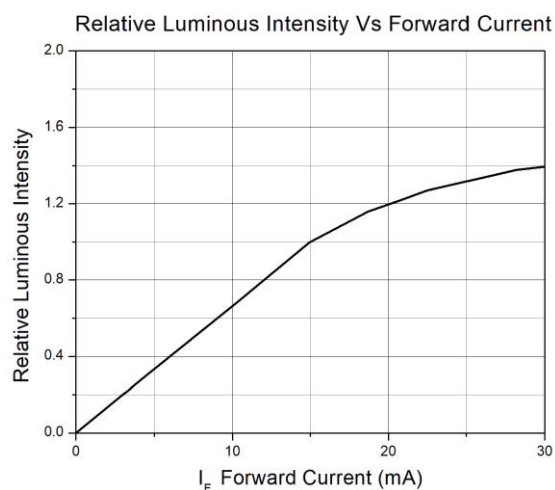


Figure 2

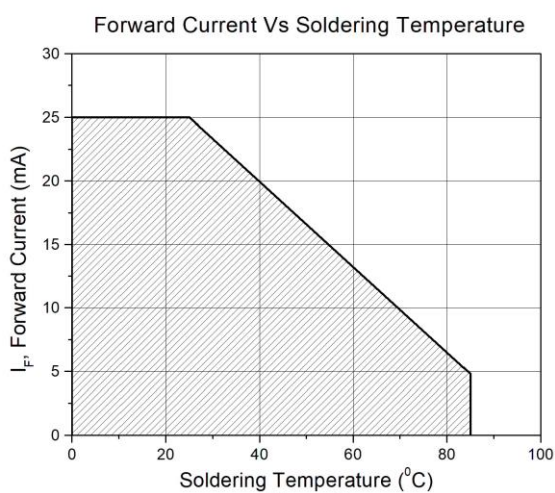


Figure 3

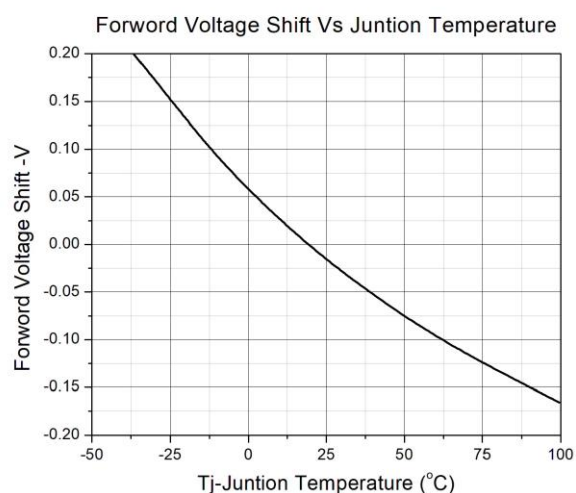


Figure 4

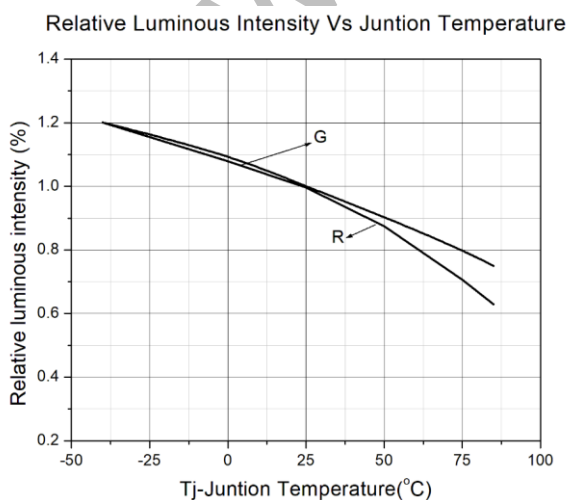


Figure 5

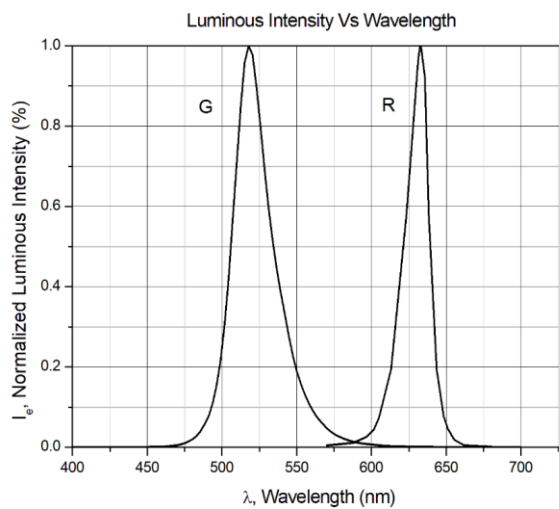


Figure 6



Typical Characteristic Curves

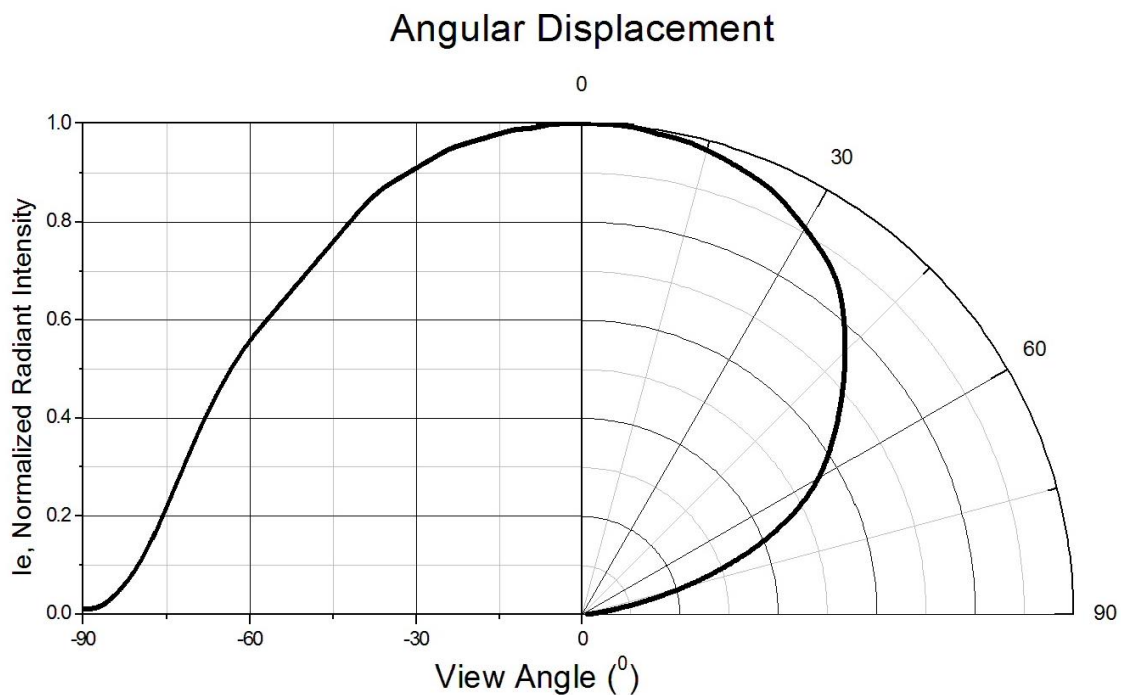
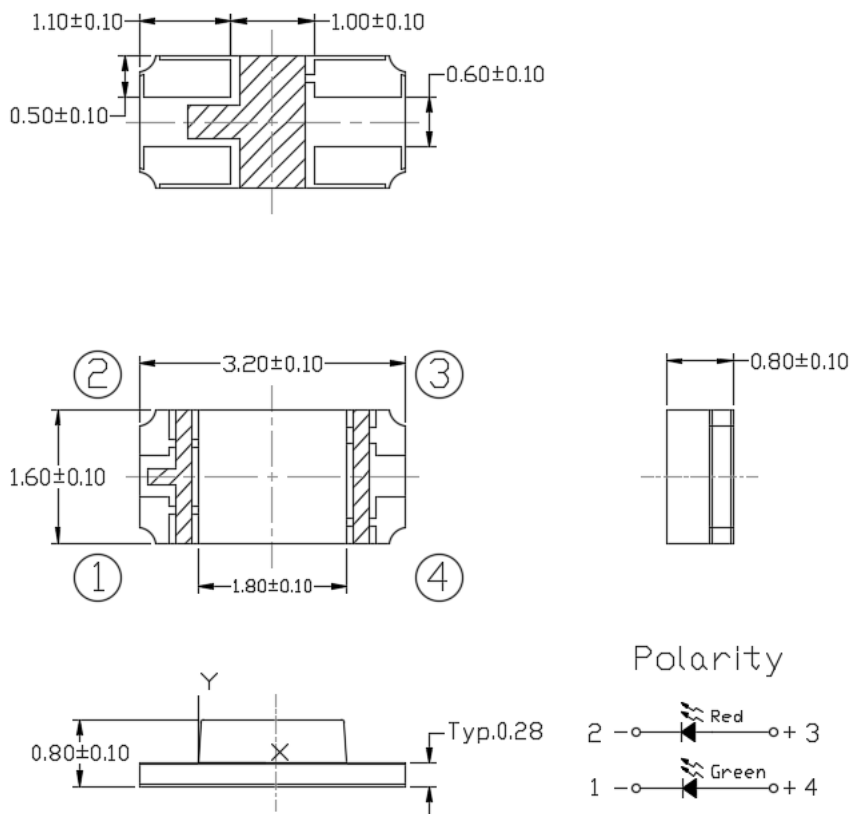


Figure 7

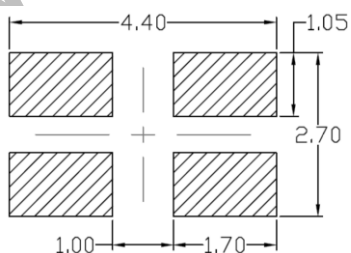


**Package Dimension** *All dimensions are in mm, unless otherwise stated*



Note: Tolerance unless mentioned is ±0.1mm.

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



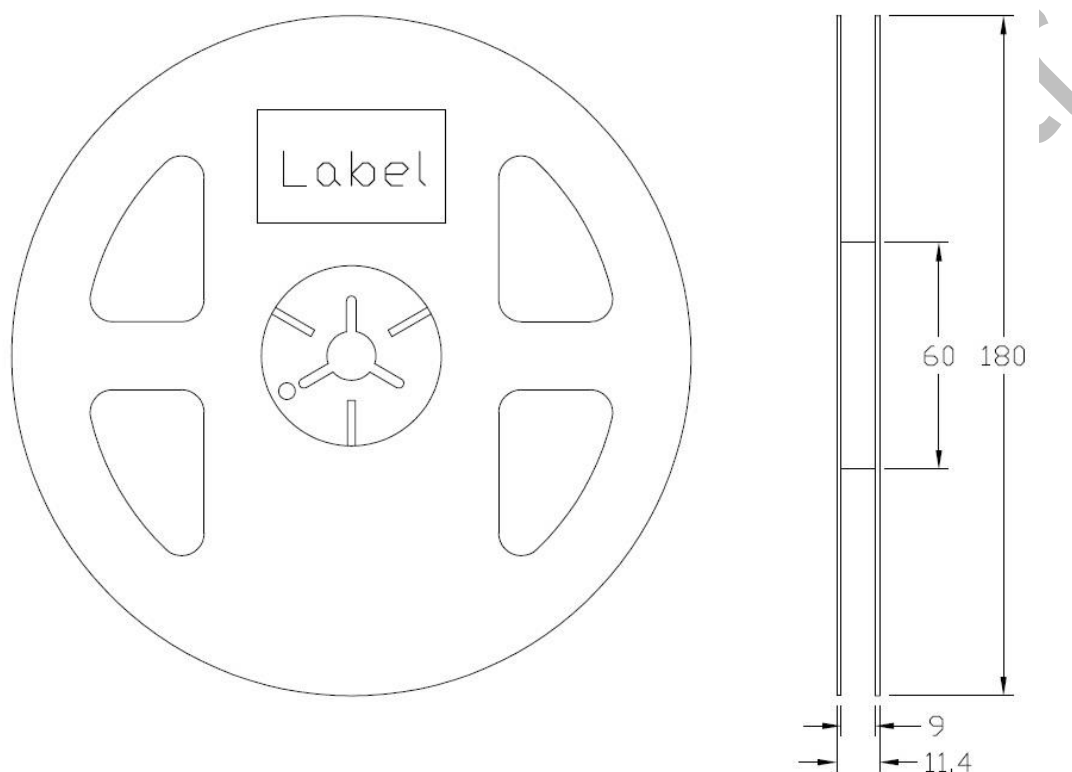
Note: Tolerance unless mentioned is ±0.1mm.

**Ordering Information**

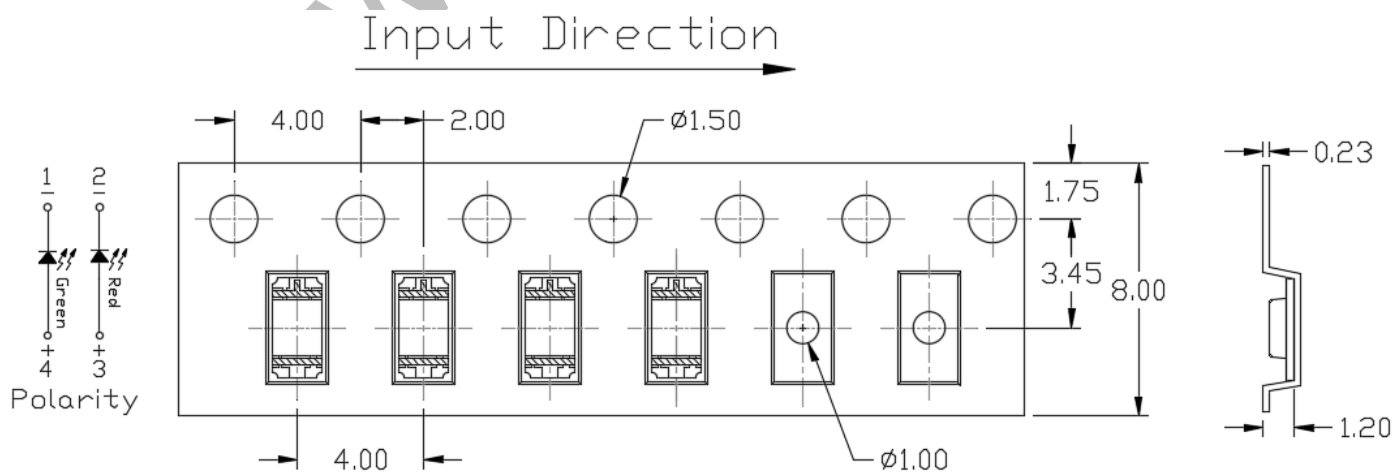
Part Number	Description	Quantity
GRP321608-ATC2	Tape & Reel	2000 pcs



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



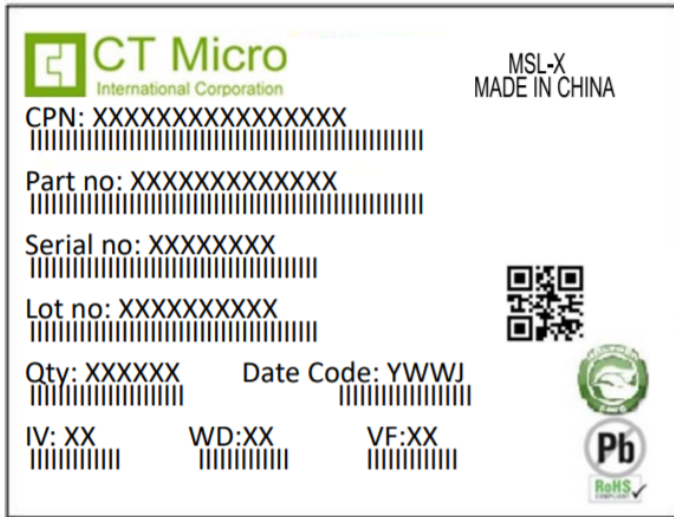
**Tape Dimension** *All dimensions are in mm, unless otherwise stated*



Note: Tolerance unless mentioned is  $\pm 0.1$ mm.



### Label Form Specification



CPN : Customer Part Number  
 Part no: CTM Production Number  
 Serial no: Production Number  
 Lot no: Lot number  
 Q'ty: Packing Quantity  
 Date Code: Manufacture Date  
 IV : Bin Code of Luminous Intensity  
 WD : Bin Code of Dominant Wavelength  
 VF : Bin Code of Forward Voltage  
 MADE IN CHINA: Production Place

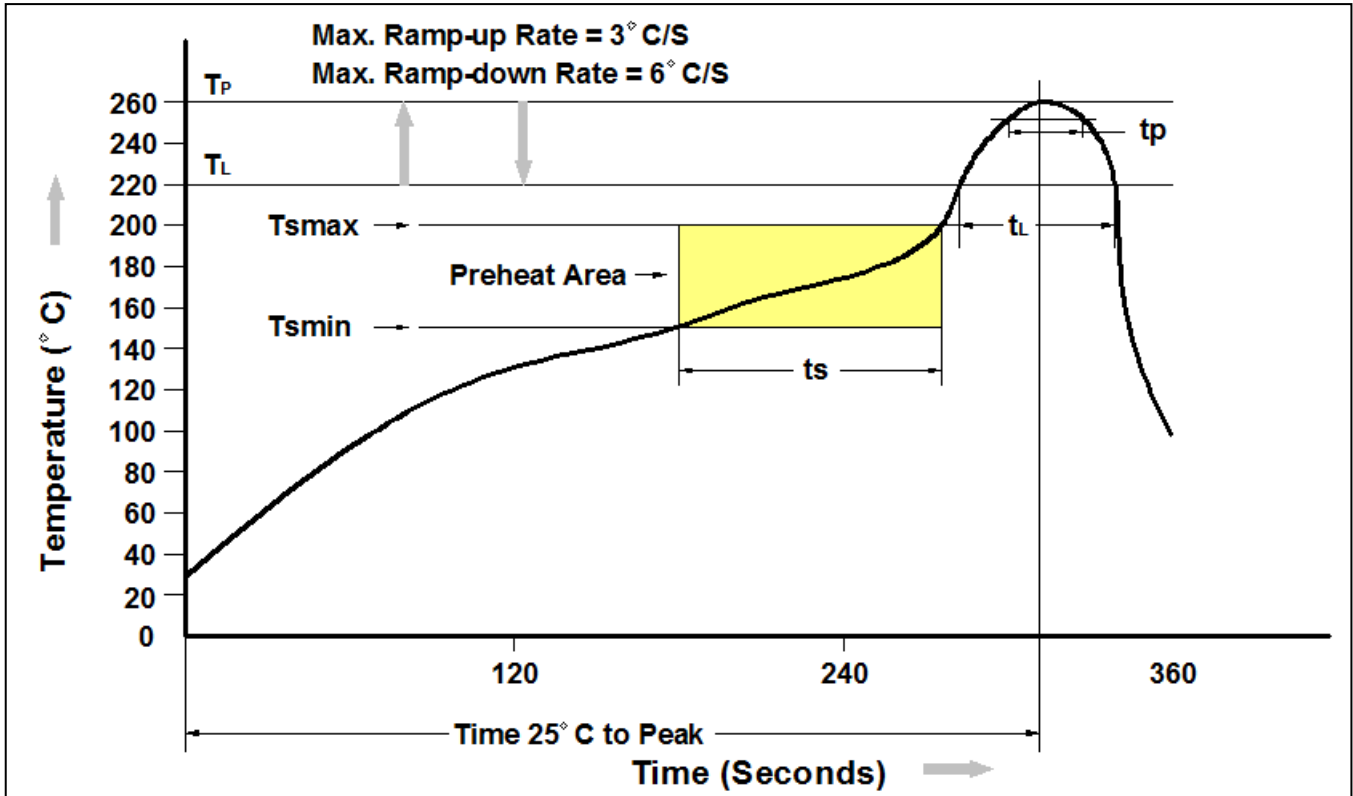
### Storage Condition

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 1 year 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. (T <sub>min</sub> )	150°C
Temperature Max. (T <sub>max</sub> )	200°C
Time (t <sub>s</sub> ) from (T <sub>min</sub> to T <sub>max</sub> )	60-120 seconds
Ramp-up Rate (t <sub>L</sub> to t <sub>P</sub> )	3°C/second max.
Liquidous Temperature (T <sub>L</sub> )	217°C
Time (t <sub>L</sub> ) Maintained Above (T <sub>L</sub> )	60 – 150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (t <sub>P</sub> ) within 5°C of 260°C	30 seconds
Ramp-down Rate (T <sub>P</sub> to T <sub>L</sub> )	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.



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