

## SMD ■ B

### 15-21-GPC-R7L2M2B0D-2T-AM



#### Features

- RoHS compliant
- Chip LED package.
- Colorless clear resin.
- Wide viewing angle 130°.
- Brightness: 14.0 to 28.0 mcd at 15mA.
- Qualification according to AEC-Q101.
- Precondition: Bases on JEDEC J-STD 020 Level 3.
- Automotive reflow profile (IR reflow or wave soldering)

#### Applications

- Automotive backlighting or indicator: Dashboard, switch, audio and video equipments...etc.
- Backlight: LCD, switches, symbol, mobile phone and illuminated advertising.
- Display for indoor and outdoor application.
- Ideal for coupling into light guides.
- Substitution of traditional light.
- Optical indicator.
- General applications.

## Device Selection Guide

Chip Materials	Emitted Color	Resin Color
AlGaInP	Pure Green	Water Clear

## Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	$V_R$	12	V
Forward Current	$I_F$	25	mA
Peak Forward Current (Duty 1/10 @1KHz)	$I_{FP}$	60	mA
Power Dissipation	$P_d$	60	mW
Junction Temperature	$T_j$	125	°C
Operating Temperature	$T_{opr}$	-40 ~ +100	°C
Storage Temperature	$T_{stg}$	-40 ~ +110	°C
Thermal Resistance	$R_{th\ J-A}$	800	K/W
	$R_{th\ J-S}$	450	K/W
ESD (Classification acc. AEC Q101)	$ESD_{HBM}$	2000	V
	$ESD_{MM}$	200	V
Soldering Temperature	$T_{sol}$	Reflow Soldering : 260 °C for 30 sec. Hand Soldering : 350 °C for 3 sec.	

## Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	14.0	-----	28.0	mcd	I <sub>F</sub> =15mA
Viewing Angle	2θ <sub>1/2</sub>	-----	130	-----	deg	I <sub>F</sub> =15mA
Peak Wavelength	λ <sub>p</sub>	-----	561	-----	nm	I <sub>F</sub> =15mA
Dominant Wavelength	λ <sub>d</sub>	557	----	564	nm	I <sub>F</sub> =15mA
Spectrum Radiation Bandwidth	Δλ	-----	20	-----	nm	I <sub>F</sub> =15mA
Forward Voltage	V <sub>F</sub>	1.75	----	2.35	V	I <sub>F</sub> =15mA
Reverse Current	I <sub>R</sub>	-----	-----	10	μA	V <sub>R</sub> =12V
Temperature coefficient of λ <sub>p</sub>	TC <sub>λ<sub>p</sub></sub>	-----	0.06	-----	nm/K	I <sub>F</sub> =15mA
Temperature coefficient of λ <sub>d</sub>	TC <sub>λ<sub>d</sub></sub>	-----	0.4	-----	nm/K	I <sub>F</sub> =15mA
Temperature coefficient of V <sub>F</sub>	TC <sub>V</sub>	-----	-2.3	-----	mV/K	I <sub>F</sub> =15mA

Note:

1. Tolerance of Luminous Intensity: ±11%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

## Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
L2	14.0	18.0	mcd	I <sub>F</sub> =15mA
M1	18.0	22.4		
M2	22.4	28.0		

Note:

Tolerance of Luminous Intensity: ±11%

## Bin Range of Dominant Wavelength

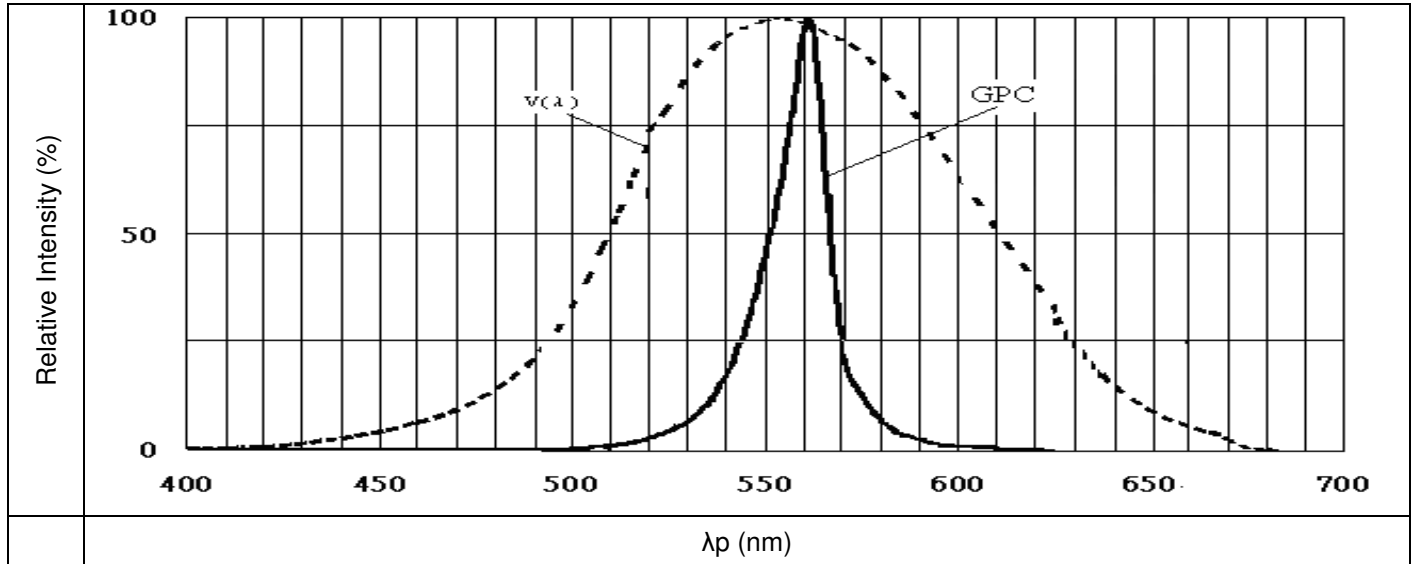
Bin Code	Min.	Max.	Unit	Condition
1	557	561	nm	I <sub>F</sub> =15mA
2	561	564		

Note:

Tolerance of Dominant Wavelength: ±1nm

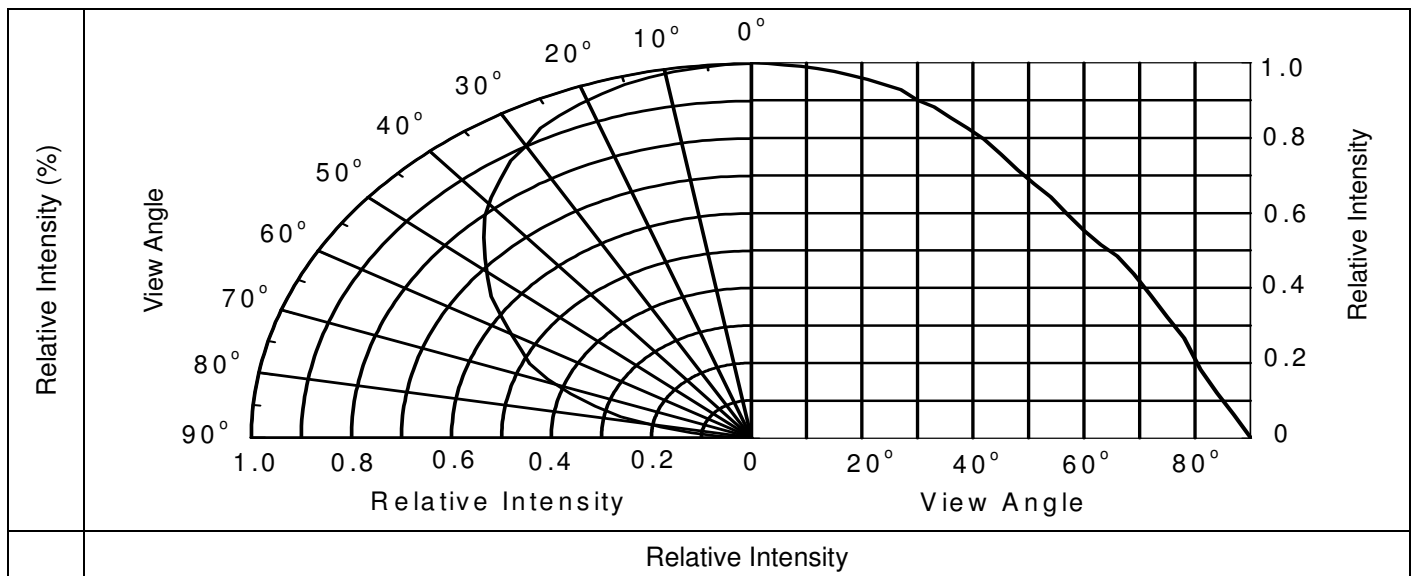
## Typical Electro-Optical Characteristics Curves

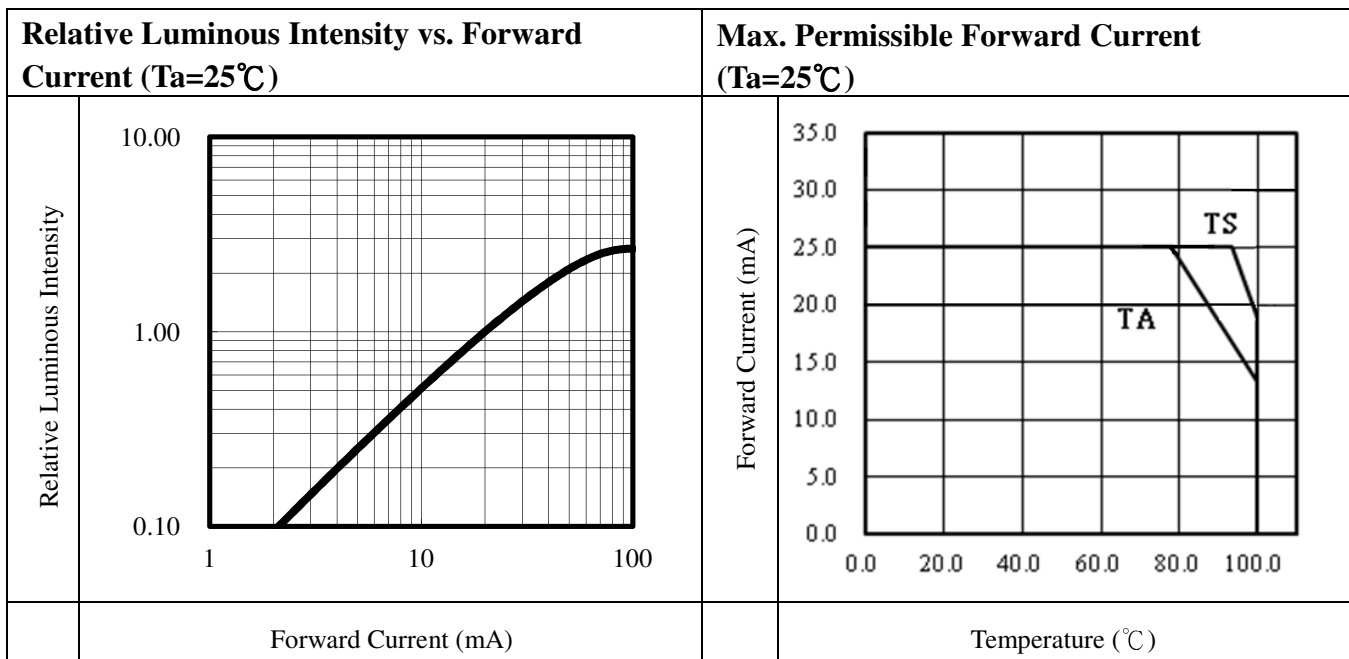
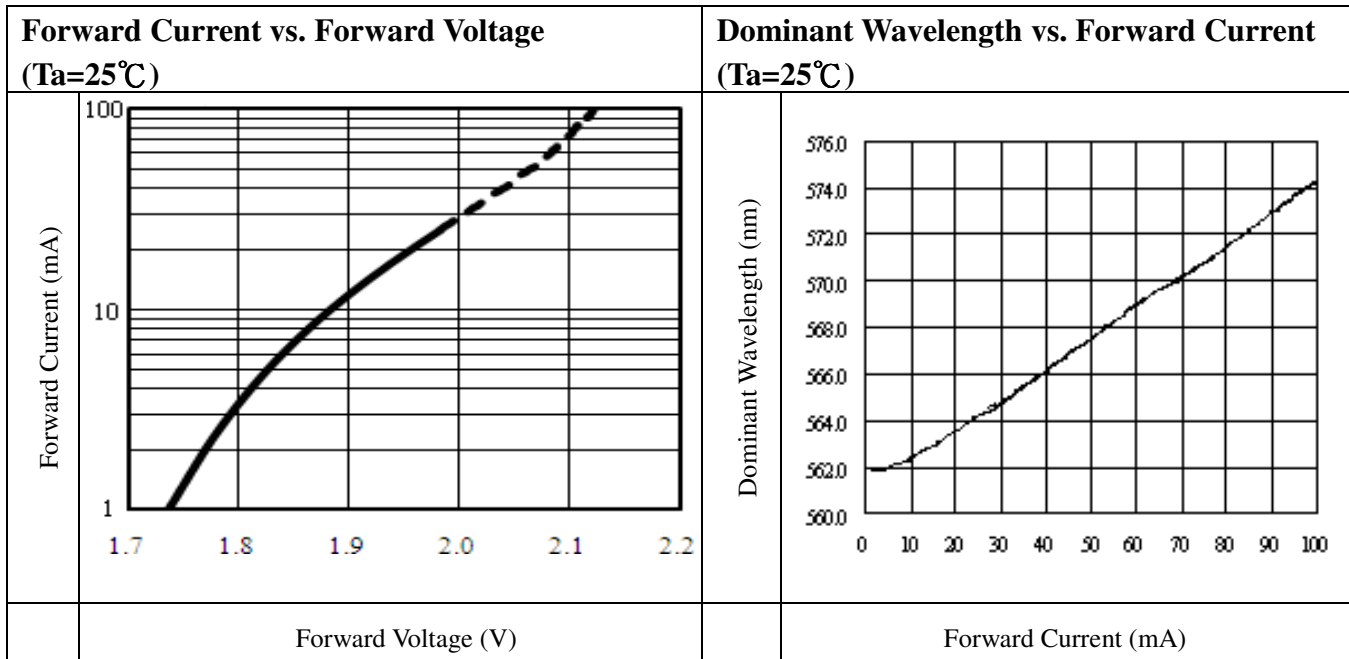
### Typical Curve of Spectral Distribution



Note:  $V(\lambda)$  = Standard eye response curve;  $I_F = 20\text{mA}$

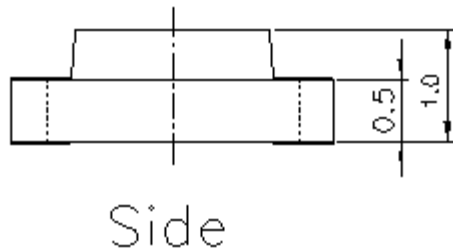
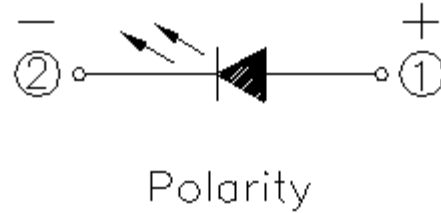
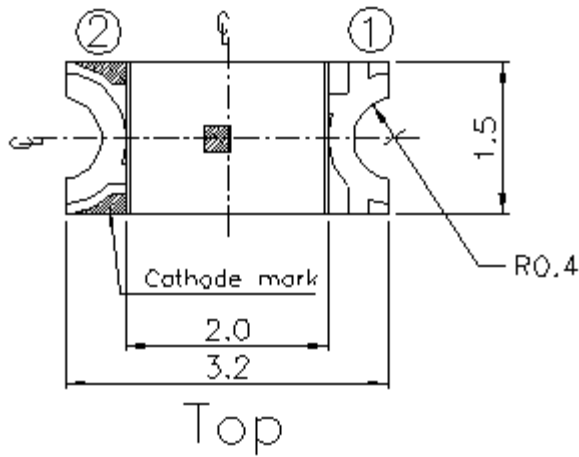
### Diagram Characteristics of Radiation



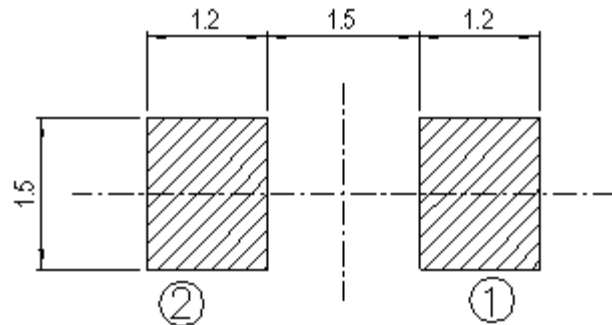
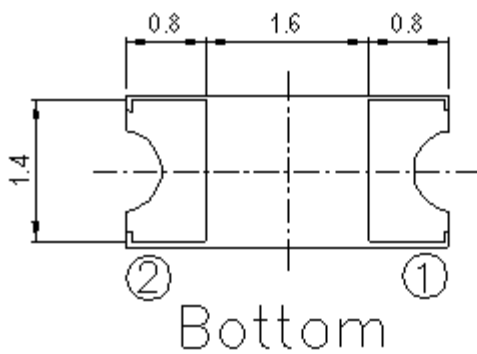


Relative Luminous Intensity vs. Junction Temperature		Relative Forward Voltage vs. Junction Temperature																																																	
Relative Luminous Intensity	<table border="1"> <caption>Data for Relative Luminous Intensity vs. Junction Temperature</caption> <thead> <tr> <th>Junction Temperature (°C)</th> <th>Relative Luminous Intensity</th> </tr> </thead> <tbody> <tr><td>10</td><td>1.25</td></tr> <tr><td>20</td><td>1.00</td></tr> <tr><td>30</td><td>0.80</td></tr> <tr><td>40</td><td>0.65</td></tr> <tr><td>50</td><td>0.50</td></tr> <tr><td>60</td><td>0.35</td></tr> <tr><td>70</td><td>0.25</td></tr> <tr><td>80</td><td>0.15</td></tr> <tr><td>90</td><td>0.08</td></tr> <tr><td>100</td><td>0.03</td></tr> <tr><td>110</td><td>0.00</td></tr> </tbody> </table>	Junction Temperature (°C)	Relative Luminous Intensity	10	1.25	20	1.00	30	0.80	40	0.65	50	0.50	60	0.35	70	0.25	80	0.15	90	0.08	100	0.03	110	0.00	Relative Forward Voltage	<table border="1"> <caption>Data for Relative Forward Voltage vs. Junction Temperature</caption> <thead> <tr> <th>Junction Temperature (°C)</th> <th>Relative Forward Voltage</th> </tr> </thead> <tbody> <tr><td>10</td><td>0.03</td></tr> <tr><td>20</td><td>0.00</td></tr> <tr><td>30</td><td>-0.03</td></tr> <tr><td>40</td><td>-0.06</td></tr> <tr><td>50</td><td>-0.09</td></tr> <tr><td>60</td><td>-0.12</td></tr> <tr><td>70</td><td>-0.15</td></tr> <tr><td>80</td><td>-0.18</td></tr> <tr><td>90</td><td>-0.21</td></tr> <tr><td>100</td><td>-0.24</td></tr> <tr><td>110</td><td>-0.27</td></tr> </tbody> </table>	Junction Temperature (°C)	Relative Forward Voltage	10	0.03	20	0.00	30	-0.03	40	-0.06	50	-0.09	60	-0.12	70	-0.15	80	-0.18	90	-0.21	100	-0.24	110	-0.27
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### Package Dimension



Recommend Sodering Pad



Suggested pad dimension is just for reference only.  
Please modify the pad dimension based on individual need.

Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

**Moisture Resistant Packing Materials**

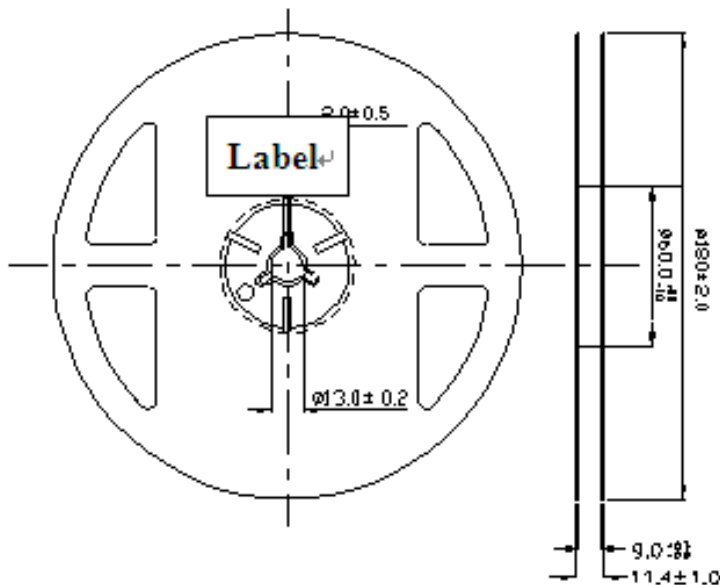
**Label Explanation**



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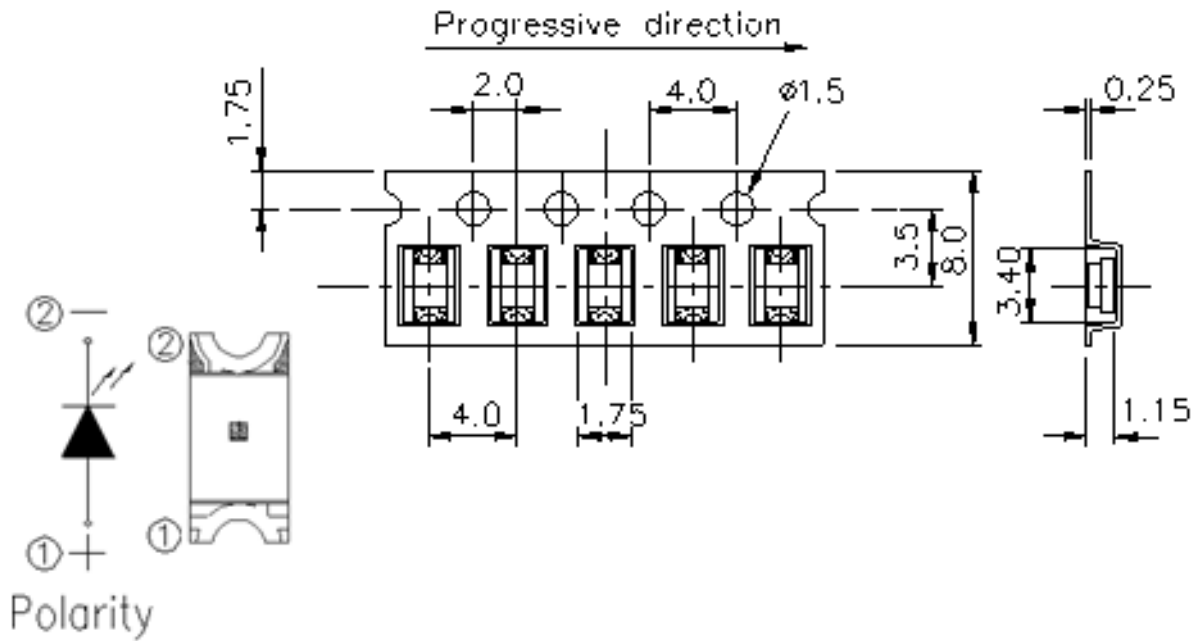
- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

**Reel Dimensions**



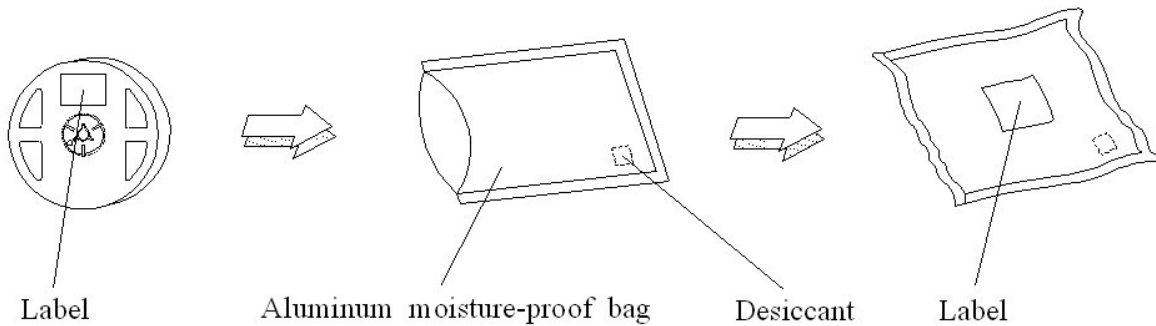
**Note:** The tolerances unless mentioned is  $\pm 0.1\text{mm}$ , Unit = mm

### Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel



Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

### Moisture Resistant Packing Process

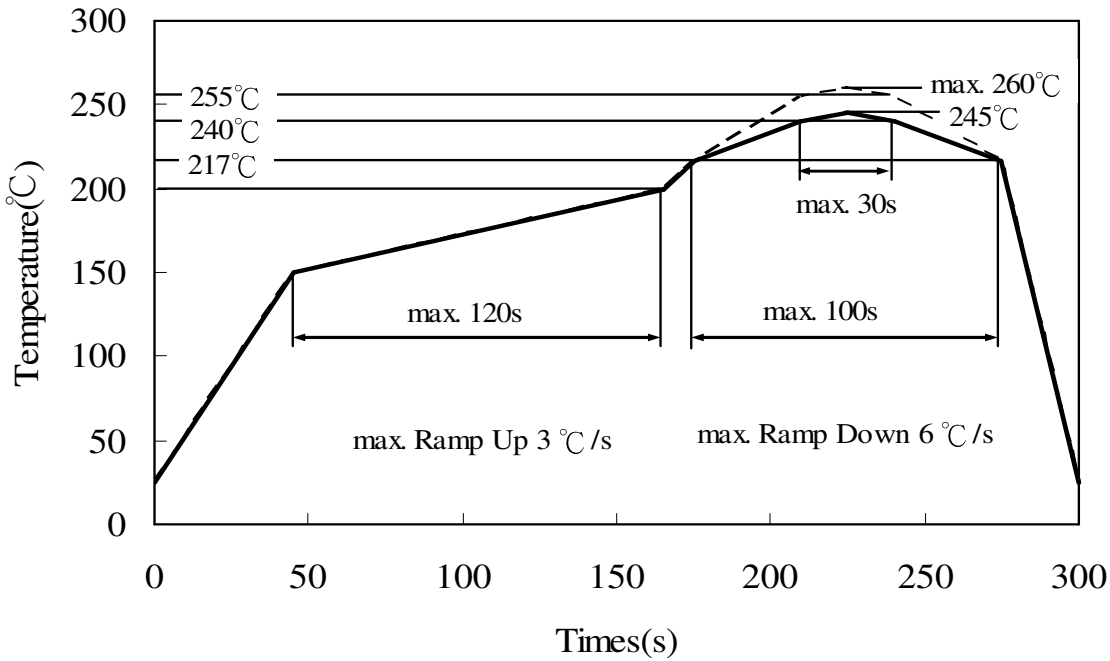


Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

**Precautions for Use**

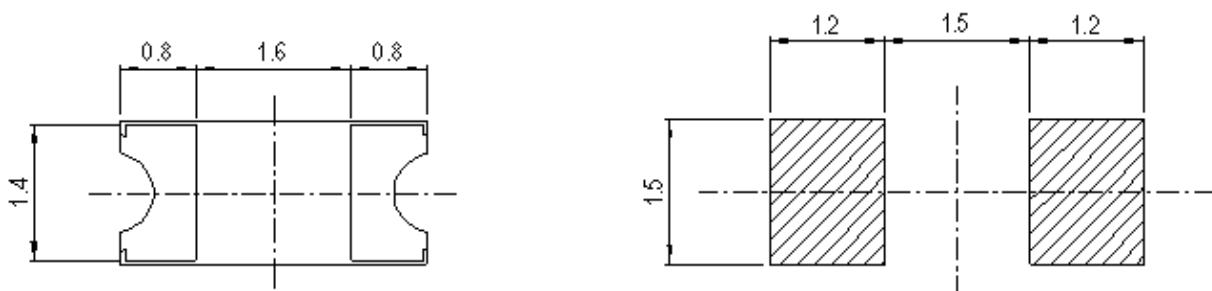
**1. Soldering Condition (Reference: IPC/JEDEC J-STD-020D)**

**(A) IR reflow**



**(B) Recommend soldering pad**

Recommend Soldering Pad



Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

2. Current limiting

A resistor should be used to limit current spikes that can be caused by voltage fluctuations. Otherwise damage could occur.

3. Storage

3.1 Moisture proof bag should only be opened immediately prior to usage.

3.2 Environment should be less than 30°C and 60% RH when moisture proof bag is opened.

3.3 After opening the package MSL Conditions stated on page 1 of this spec should not be exceeded.

3.4 If the moisture sensitivity card indicates higher than acceptable moisture, the component should be baked at min. 60deg +/-5deg for 24 hours.

4. Iron Soldering

Hand soldering is not recommended for regular production. These guidelines are for rework only. Soldering iron tip should contact each terminal no more than 3 sec at 350°C, using soldering iron with nominal power less than 25W. Allow min. 2 sec. between soldering intervals.

5. Usage

Do not exceed the values given in this specification.

**Application Restrictions**

1. High reliability applications such as military/aerospace, automotive safety/security systems, and medical equipment may require different product. If you have any concerns, please contact Everlight before using this product in your application. This specification guarantees the quality and performance of the product as an individual component. Do not use this product beyond the specification described in this document.

**Revision History:**

Rev.	Modified date	File modified contents
1	2009/8/6	New Spec.
2	2013/5/27	Change Release