



Technical Data Sheet

1206 Package Chip LED

15-21-S2SC-H6D9K2L2A0A-2T8-AM



Feature

- RoHS compliant.
- Chip LED package.
- Wide viewing angle 130°.
- Colorless clear resin.
- Wavelength: 605nm
- Brightness: 9 to 18 mcd at 2mA
- Inner reflector and white package.
- Useable in severe lead free processes with automotive reflow profile (IR reflow or wave soldering)

Applications

- Automotive audio and video equipments.
- 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.

Device Selection Guide

Chip	Emitted Color	Resin Color
Material		
AlGaInP	Brilliant Orange	Water Clear

**Technical Data Sheet****1206 Package Chip LED****15-21-S2SC-H6D9K2L2A0A-2T8-AM****Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating	Unit
Reverse Voltage	V _R	10	V
Forward Current	I _F	50	mA
Peak Forward Current (Duty 1/10 @1KHz)	I _{FP}	100	mA
Power Dissipation	P _d	120	mW
Junction Temperature	T _j	115	°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
Soldering Temperature	T _{sol}	Reflow Soldering : 260 °C for 30 sec. Hand Soldering : 350 °C for 3 sec.	
ESD (Classification acc. AEC Q101)	ESD _{HBM}	2000	V
	ESD _{MM}	200	V

**Technical Data Sheet****1206 Package Chip LED****15-21-S2SC-H6D9K2L2A0A-2T8-AM****Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I_v	9.0	-----	18.0	mcd	$I_F=2mA$
Viewing Angle	$2\theta_{1/2}$	-----	130	-----	deg	$I_F=2mA$
Peak Wavelength	λ_p	-----	611	-----	nm	$I_F=2mA$
Dominant Wavelength	λ_d	604	----	610	nm	$I_F=2mA$
Spectrum Radiation Bandwidth	$\Delta\lambda$	-----	17	-----	nm	$I_F=2mA$
Forward Voltage	V_F	1.55	----	2.15	V	$I_F=2mA$
Reverse Current	I_R	-----	-----	10	μA	$V_R=10V$
Temperature coefficient of λ_p	TC_{λ_p}	-----	0.13	-----	nm/K	$I_F=2mA$
Temperature coefficient of λ_d	TC_{λ_d}	-----	0.08	-----	nm/K	$I_F=2mA$
Temperature coefficient of V_F	TC_V	-----	-4.3	-----	mV/K	$I_F=2mA$

Note:

Tolerance of Luminous Intensity: $\pm 11\%$ Tolerance of Dominant Wavelength: $\pm 1nm$ Tolerance of Forward Voltage: $\pm 0.1V$

**Technical Data Sheet****1206 Package Chip LED****15-21-S2SC-H6D9K2L2A0A-2T8-AM****Bin Range of Luminous Intensity**

Bin Code	Min.	Max.	Unit	Condition
K2	9.00	11.5	mcd	I _F =2mA
L1	11.5	14.5		
L2	14.5	18.0		

Note:

Tolerance of Luminous Intensity: $\pm 11\%$ **Bin Range of Dominant Wavelength**

Bin Code	Min.	Max.	Unit	Condition
1	604	607	nm	I _F =2mA
2	607	610		

Note:

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

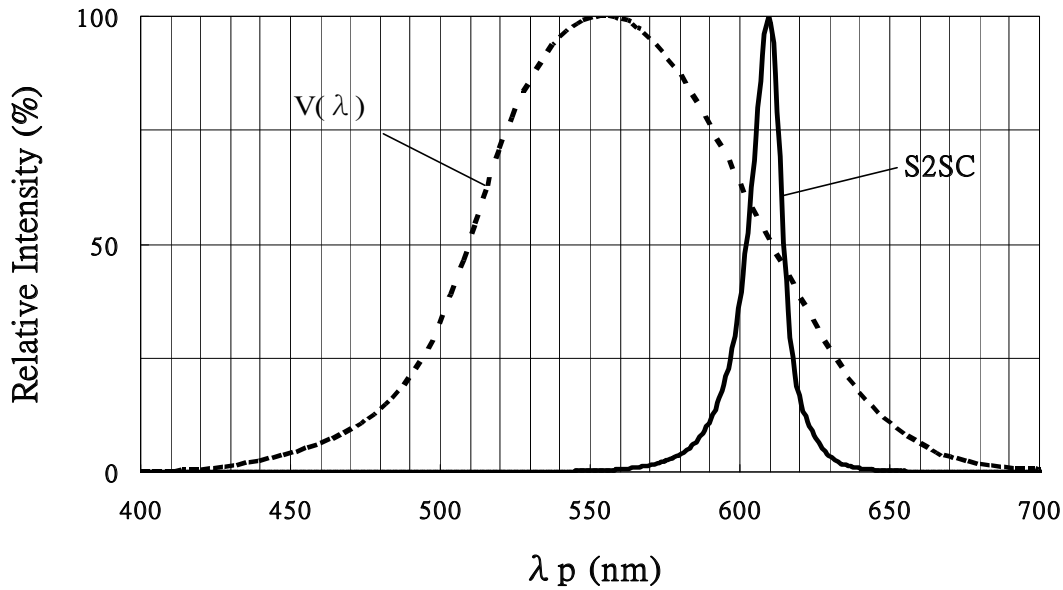
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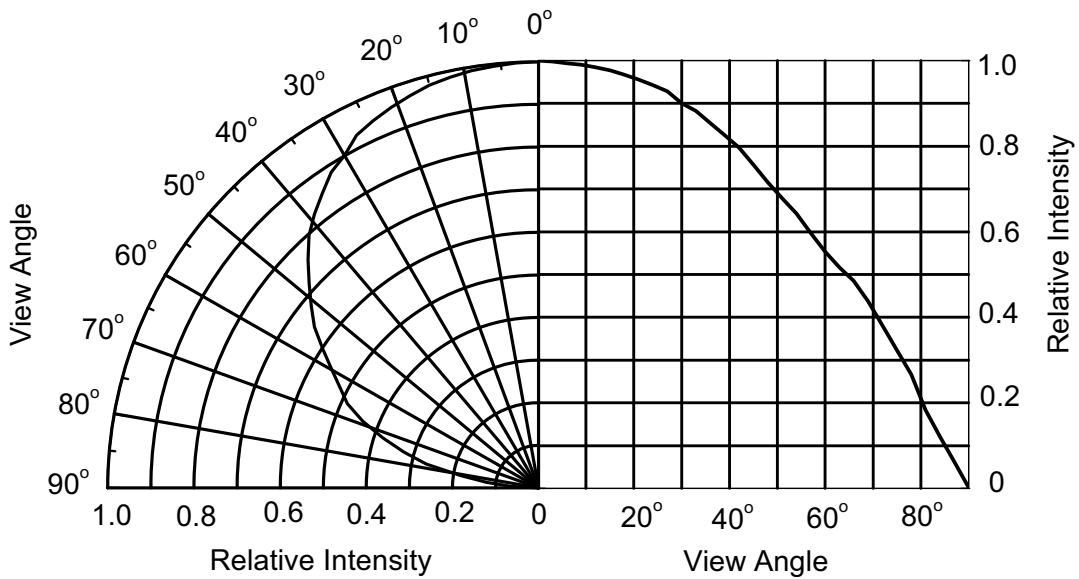
Typical Electro-Optical Characteristics Curves

Typical curve of spectral distribution:



Note: V(λ)=Standard eye response curve

Diagram characteristics of radiation

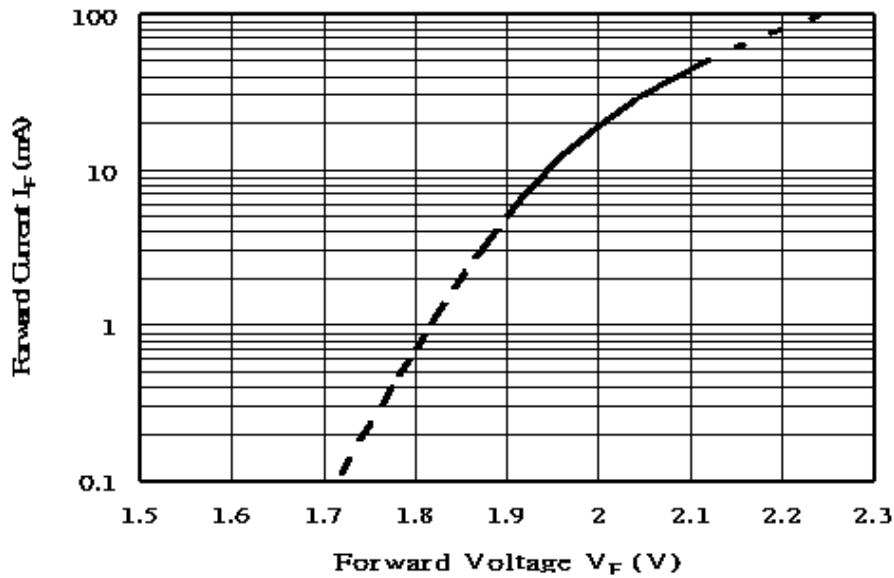


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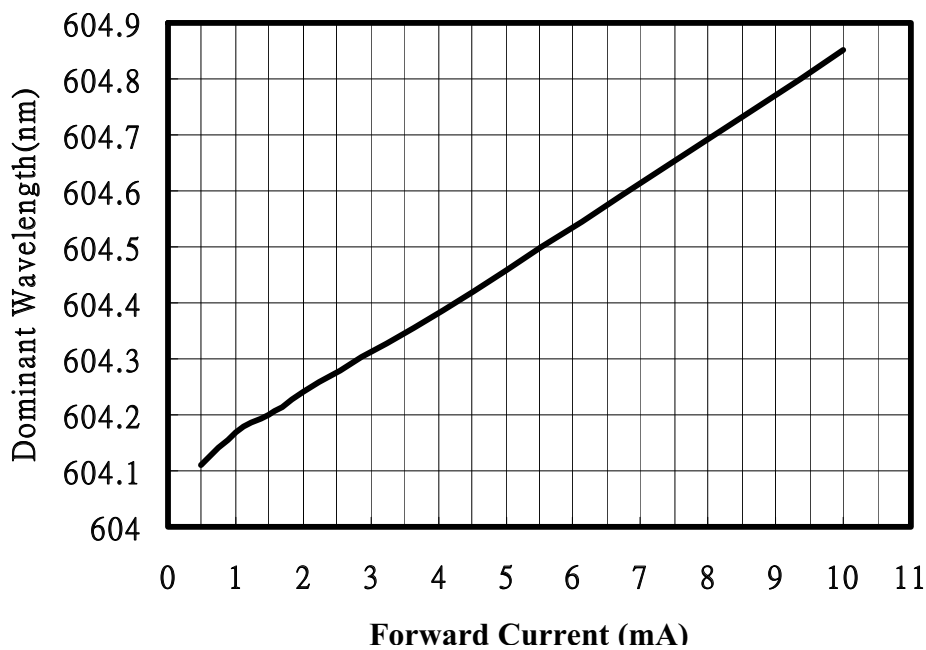
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Forward Current vs. Forward Voltage (Ta=25°C)



Dominant Wavelength vs. Forward Current (Ta=25°C)



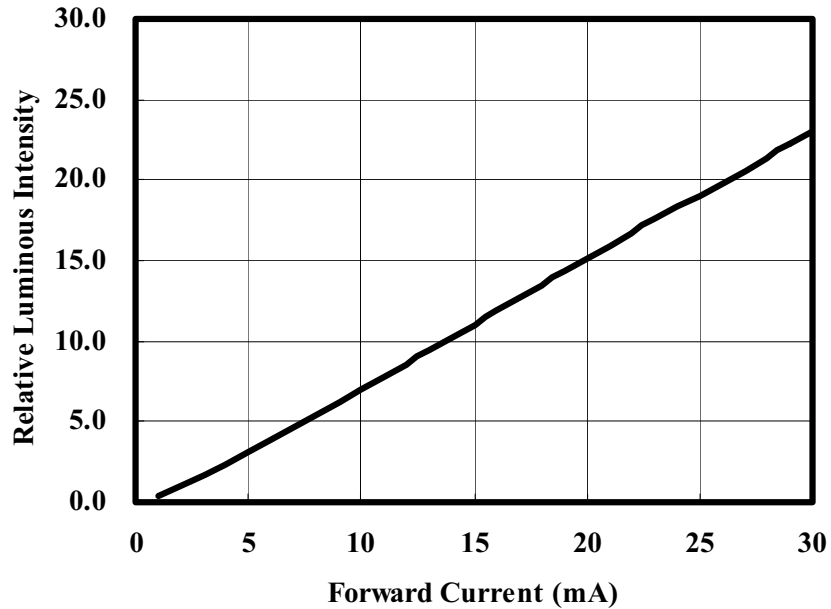


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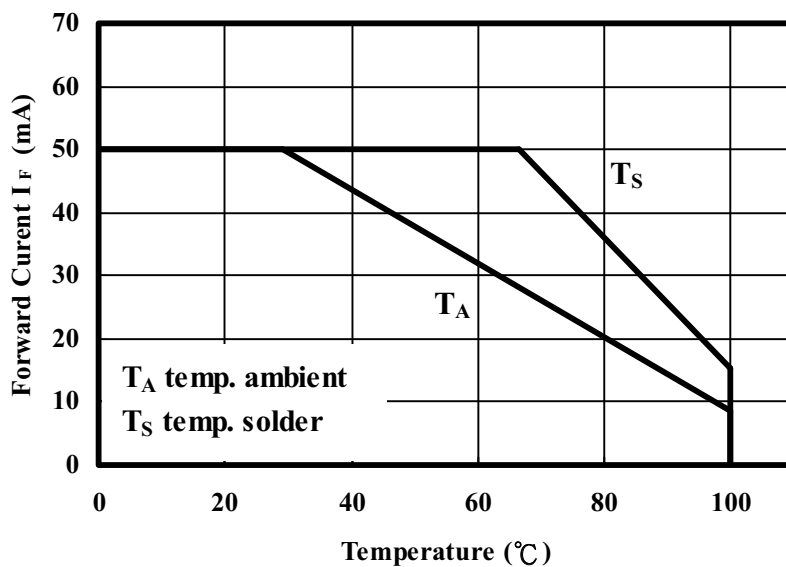
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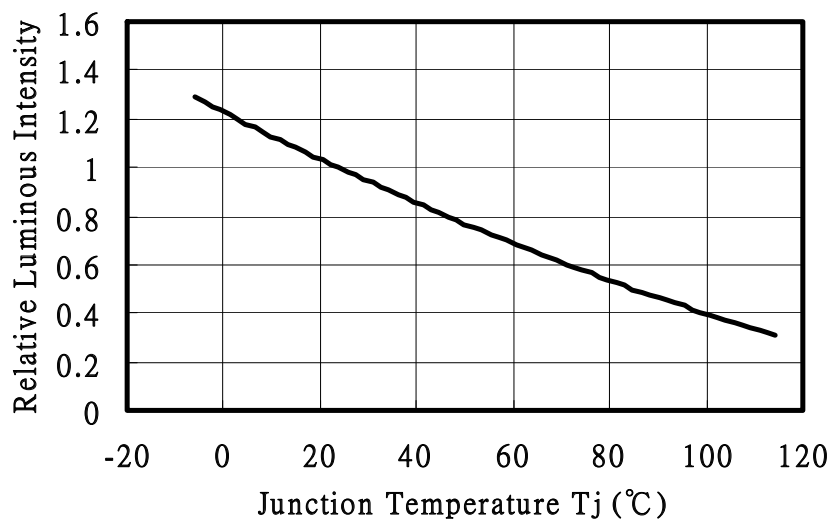
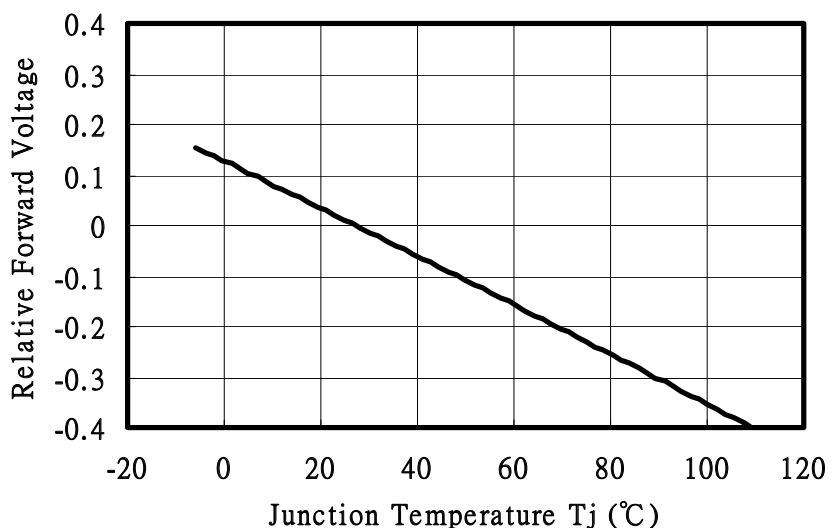
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Relative Luminous Intensity vs. Forward Current ($T_a=25^\circ\text{C}$)



Forward Current vs. Ambient and Solder Temperature



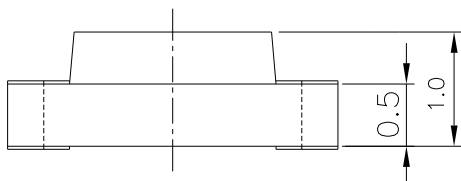
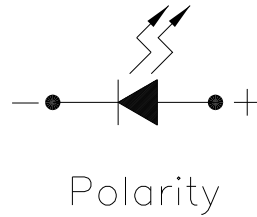
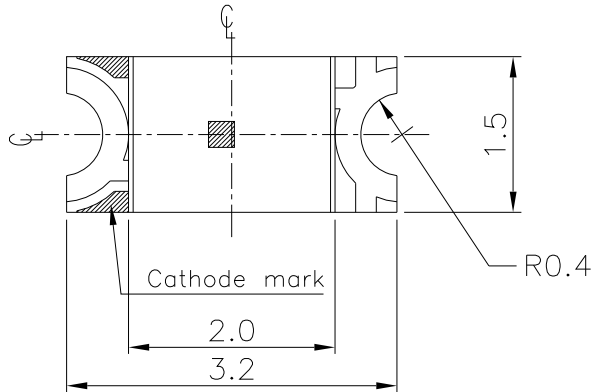
Technical Data Sheet**1206 Package Chip LED****15-21-S2SC-H6D9K2L2A0A-2T8-AM****Relative Luminous Intensity vs. Junction Temperature**Note: $f(T_j) = I_v / I_v(25^\circ\text{C})$; $I_F=2\text{mA}$ **Relative Forward Voltage vs. Junction Temperature**Note : $\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j)$; $I_F=2\text{mA}$

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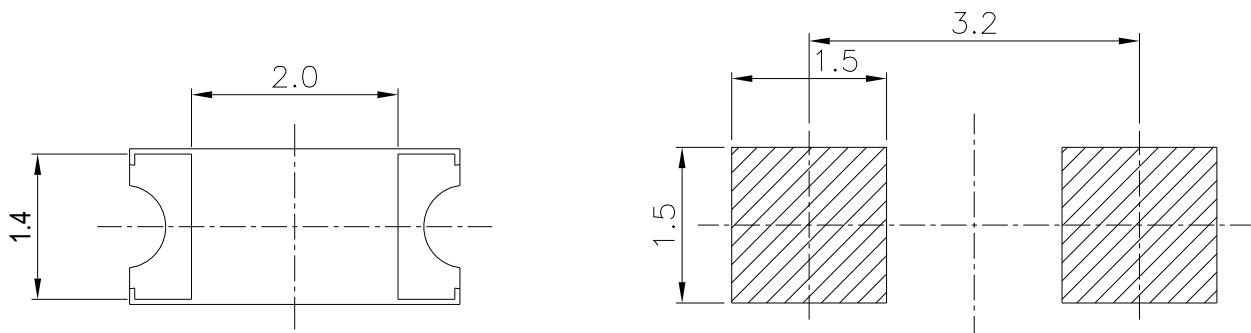
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Package Dimension



For reflow soldering (propose)



Note: Tolerances unless mentioned ± 0.1 mm. Unit = mm



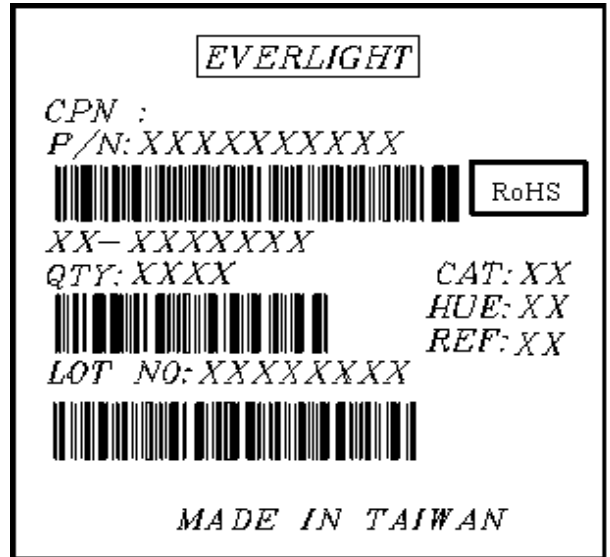
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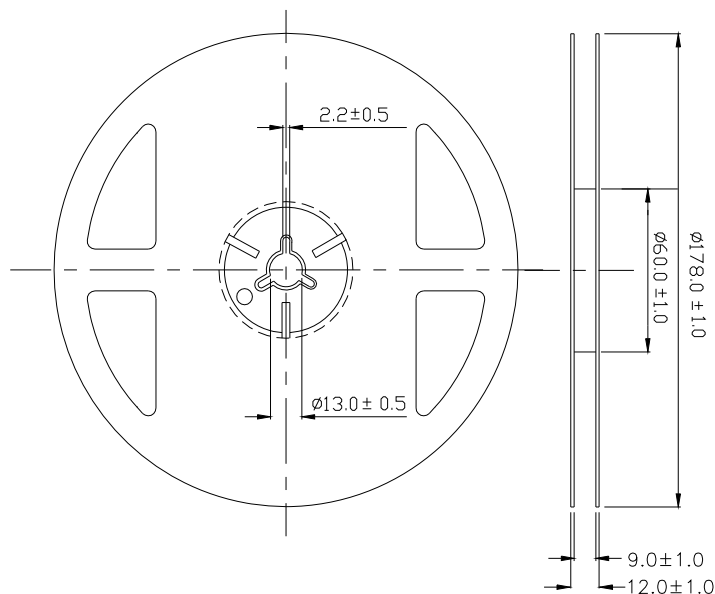
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Label Explanation

- 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



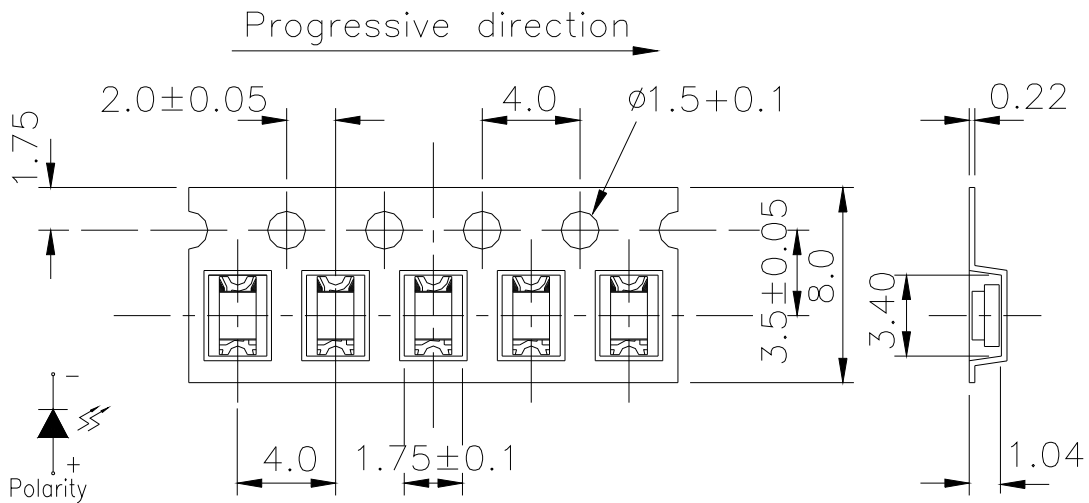
Note: Unit = mm

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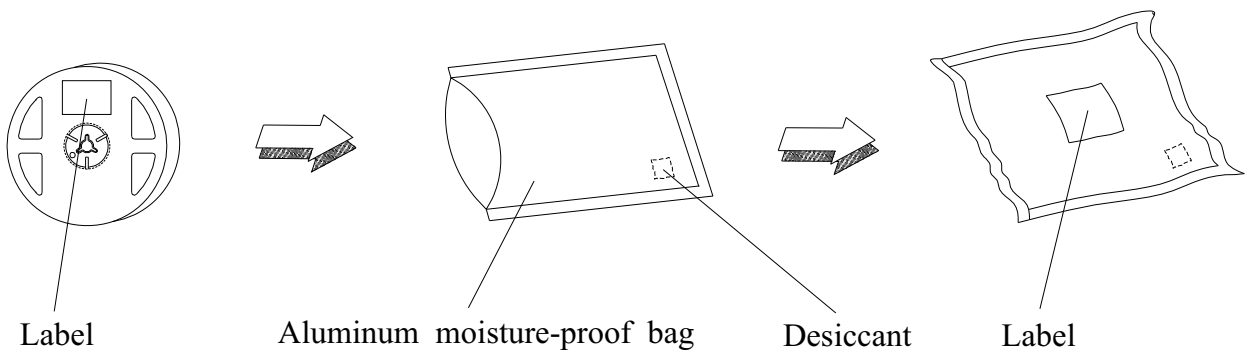
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Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel



Note: Tolerances unless mentioned ± 0.1 mm. Unit = mm

Moisture Resistant Packaging Process and Materials



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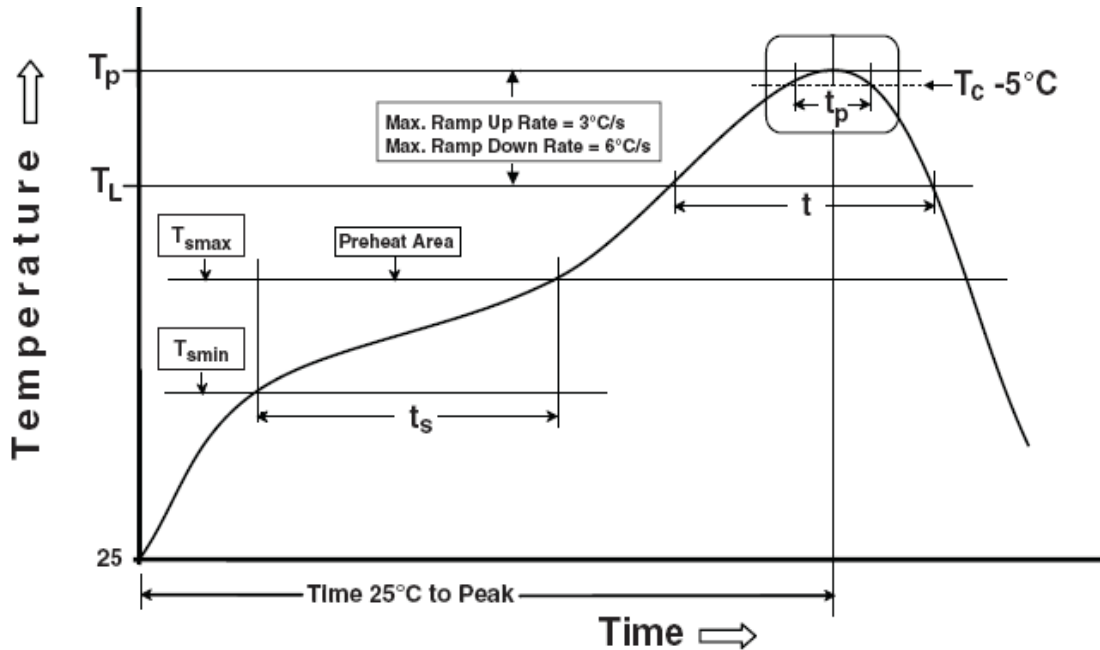
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Precautions for Use

1. Soldering Condition

1.1 (A) Maximum Body Case Temperature Profile for evaluation of Reflow Profile



Note:

Preheat

Temperature min (T_{smin})

Temperature max (T_{smax})

Time (T_{smin} to T_{smax}) (t_s)

Average ramp-up rate (T_{smax} to T_p)

Other

Liquidus Temperature (T_L)

Time above Liquidus Temperature (t_L)

Peak Temperature (T_p)

Time within 5 °C of Actual Peak Temperature: $T_p - 5^\circ\text{C}$

Ramp- Down Rate from Peak Temperature

Time 25°C to peak temperature

Reflow times

Reference: IPC/JEDEC J-STD-020D

150 °C

200°C

60-120 seconds

3 °C/second max.

217 °C

60-150 sec

260°C

30 s

6°C /second max.

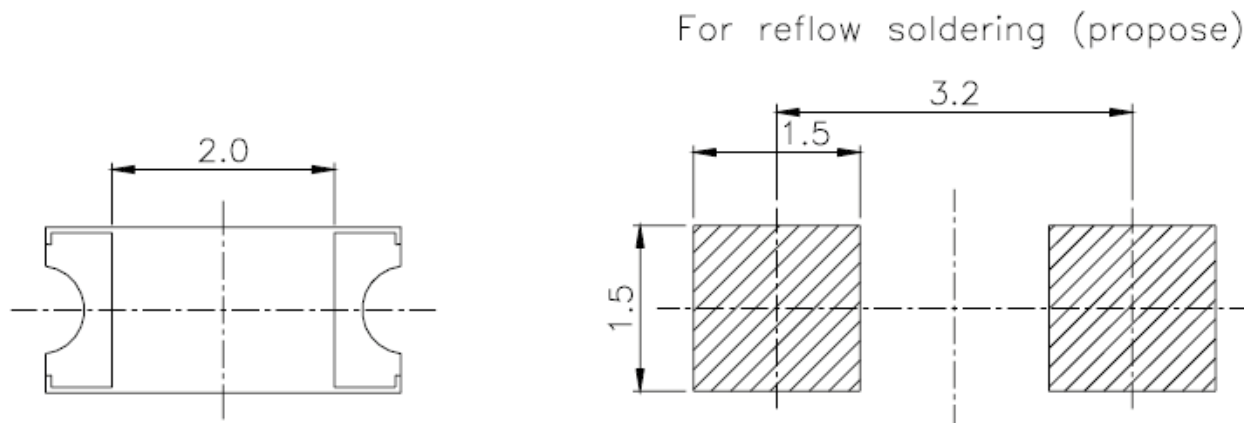
8 minutes max.

3 times

All parameters are maximum body case temperature values and cannot be considered as a soldering profile. The body temperature was measured by soldering a thermal couple to the soldering point of LEDs.

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(B) Recommend soldering pad



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 90% 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 25 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.