EVERLIGHT ELECTRONICS CO., LTD.

Technical Data Sheet

Mini Top View LEDs

65-21-G6C-B0P2R1B7E-2T8-AM

Feature

- RoHS compliant.
- P-LCC-2 package.
- Colorless clear resin.
- Wide viewing angle 120°.
- Inner reflector and white package.
- Brightness: 56 to 140mcd at 20mA.
- Qualification according to AEC-Q101 rev C.
- Precondition: Bases on JEDEC J-STD 020D Level 3.
- Useable in severe lead free processes with 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 Material	Emitted Color	Resin Color
AlGaInP	Brilliant Yellow Green	Green

Revision : 1 Release Date:2009-01-15 08:54:21.0
LifecyclePhase:正式發行 Expired Period: Forever

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Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	10	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	115	°C
Operating Temperature	T_{opr}	-40 ~ +100	°C
Storage Temperature	T_{stg}	-40 ~ +100	°C
Thermal Resistance	Rth $_{J-A}$	500	K/W
	Rth $_{J-S}$	400	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.	

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Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I_v	56	---	140	mcd	I_F =20mA
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	I_F =20mA
Peak Wavelength	λ_p	---	575	---	nm	I_F =20mA
Dominant Wavelength	λ_d	567.5	---	575.5	nm	I_F =20mA
Spectrum Radiation Bandwidth	$\Delta\lambda$	---	20	---	nm	I_F =20mA
Forward Voltage	V_F	1.7	---	2.4	V	I_F =20mA
Reverse Current	I_R	---	---	10	μA	V_R =10V
Temperature coefficient of λp	$TC_{\lambda p}$	---	0.13	---	nm/K	I_F =20mA
Temperature coefficient of λd	$TC_{\lambda d}$	---	0.12	---	nm/K	I_F =20mA
Temperature coefficient of V_F	TC_V	---	-2.5	---	mV/K	I_F =20mA

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

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Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
P2	56	71	mcd	I_F =20mA
Q1	71	90		
Q2	90	112		
R1	112	140		

Note:
Tolerance of Luminous Intensity: ±11%

Bin Range of Dominant Wavelength

Bin Code	Min.	Max.	Unit	Condition
C15	567.5	569.5	nm	I_F =20mA
C16	569.5	571.5		
C17	571.5	573.5		
C18	573.5	575.5		

Note:
Tolerance of Dominant Wavelength: ±1nm

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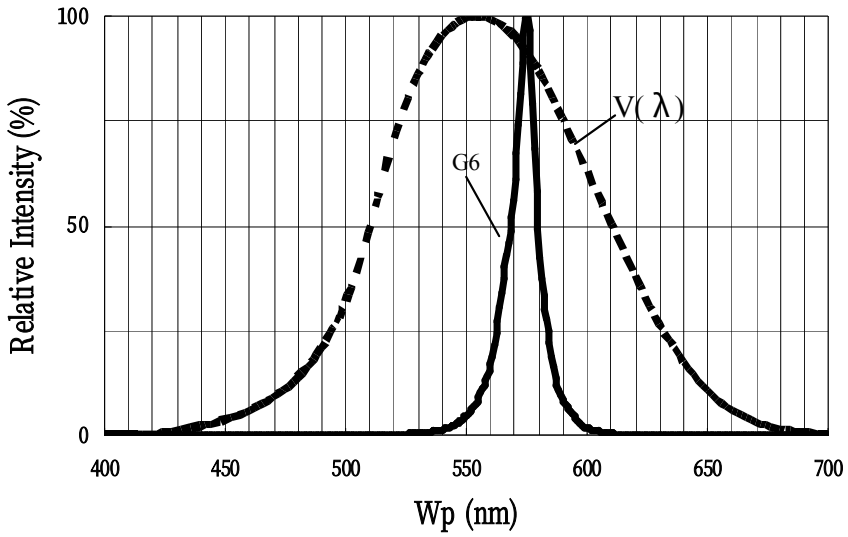
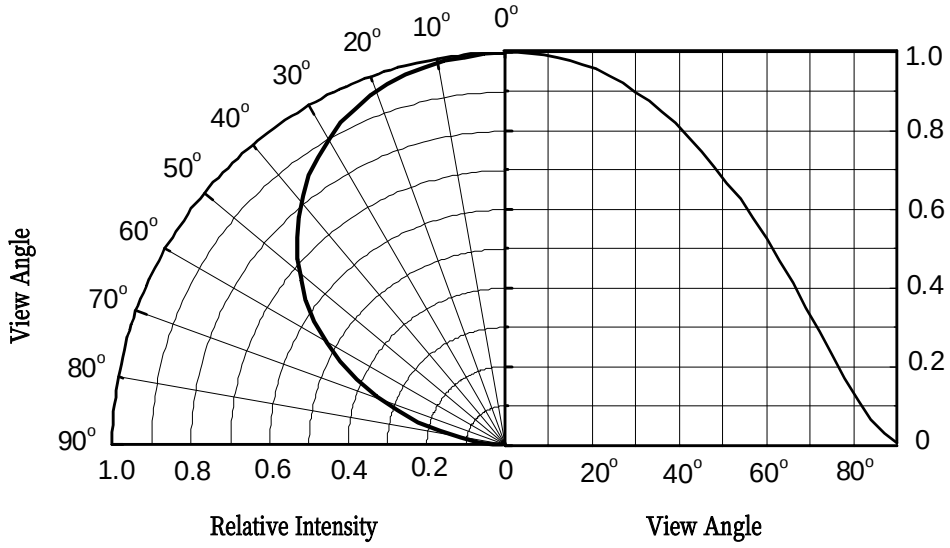
Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distributio

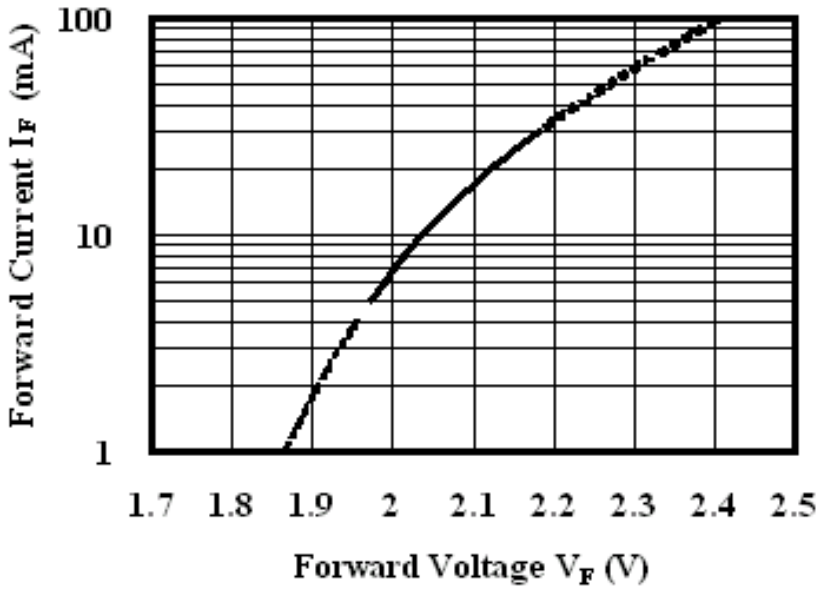


Note: V(λ)=Standard eye response curve; I_F =20mA

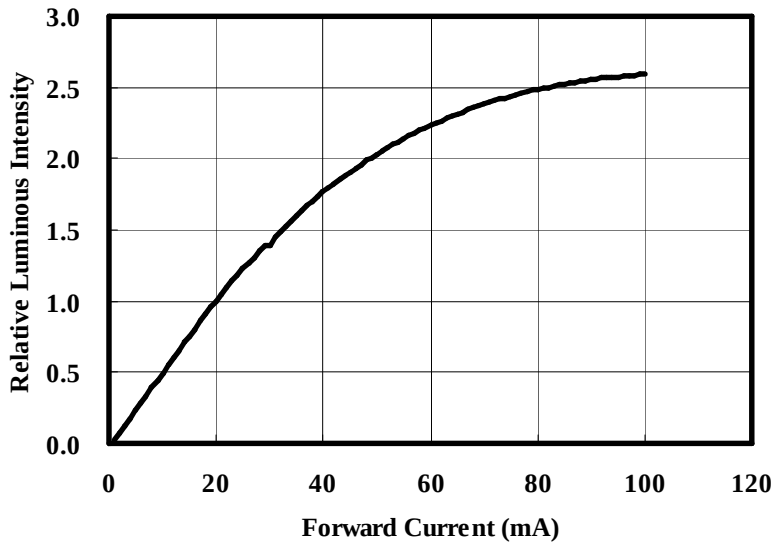
Diagram Characteristics of Radiation



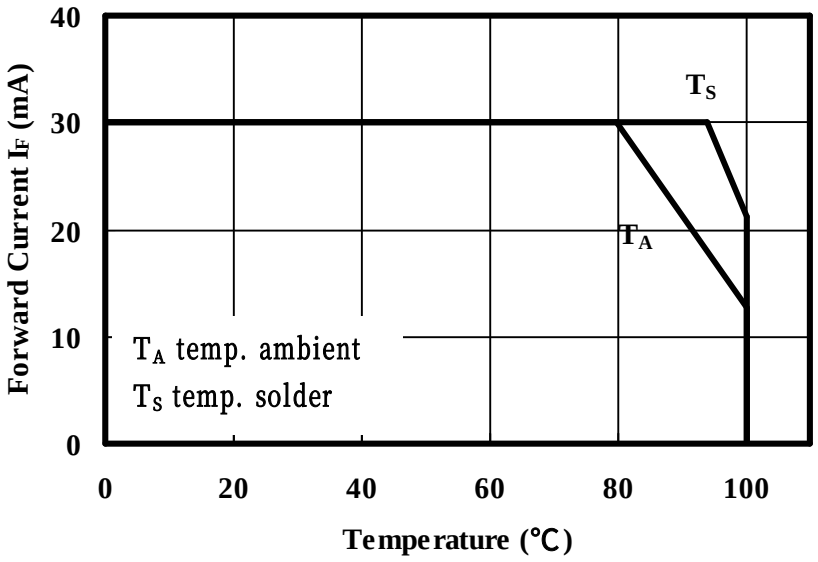
Forward Current vs. Forward Voltage (Ta=25°C)



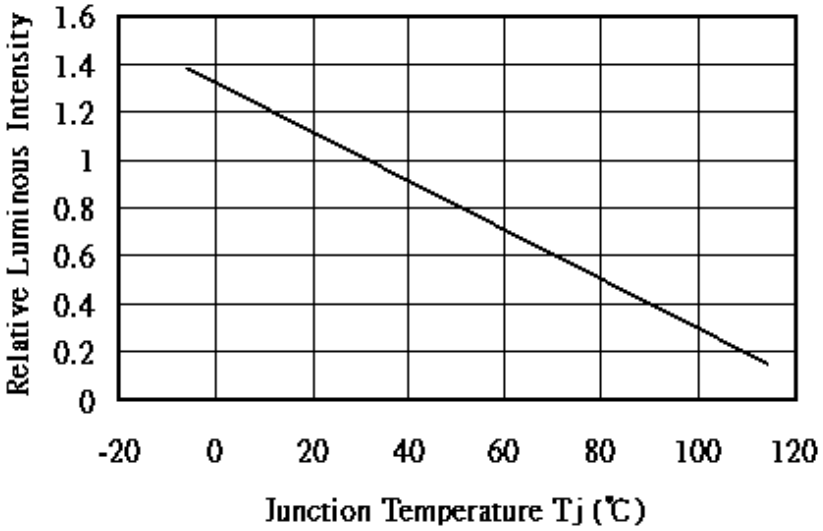
Forward Current vs. Relative Luminous Intensity (Ta=25°C)



Forward current vs. Ambient and Solder Temperature

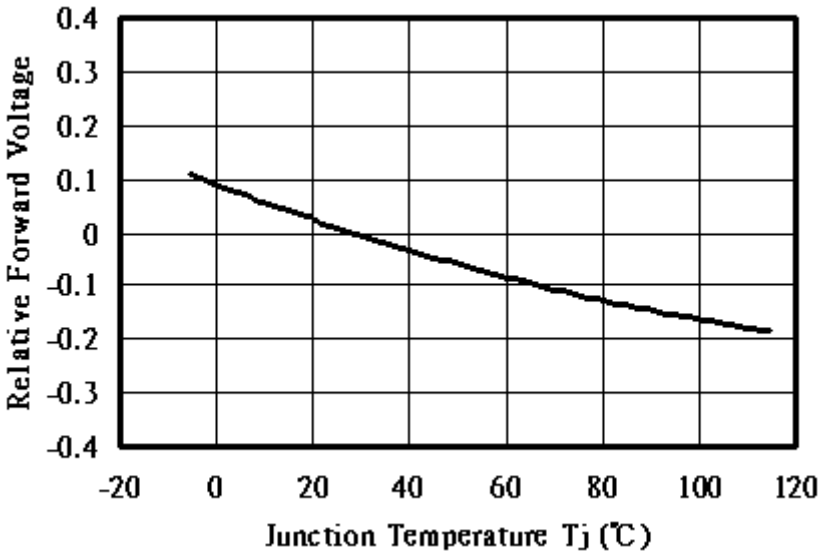


Relative Luminous Intensity vs. Junction Temperature



Note: f(Tj) = Iv / Iv(25°C); I_F =20mA

Relative Forward Voltage vs. Junction Temperature



Note: $\Delta V_F = V_F - V_F(25°C) = f(Tj)$; I_F =20mA

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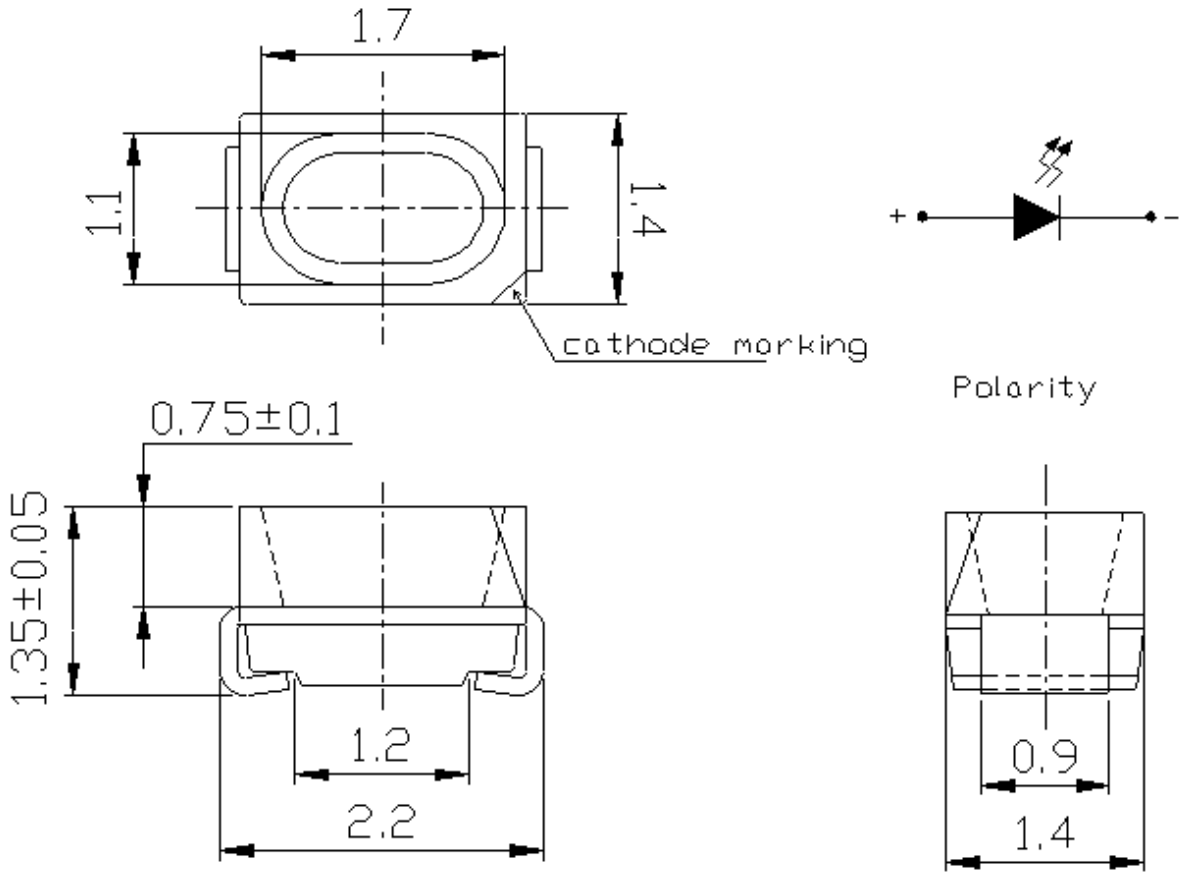
Package Dimension



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

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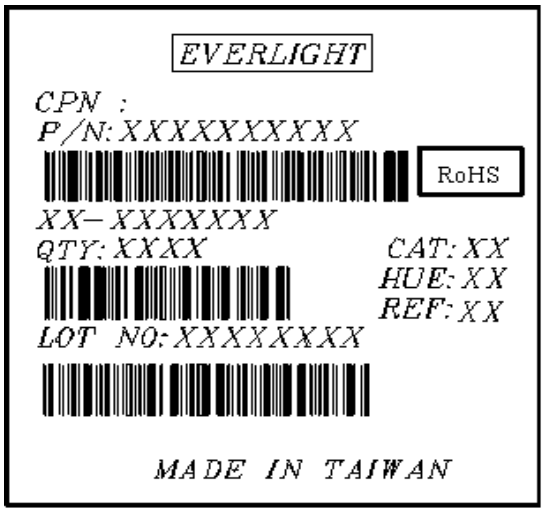
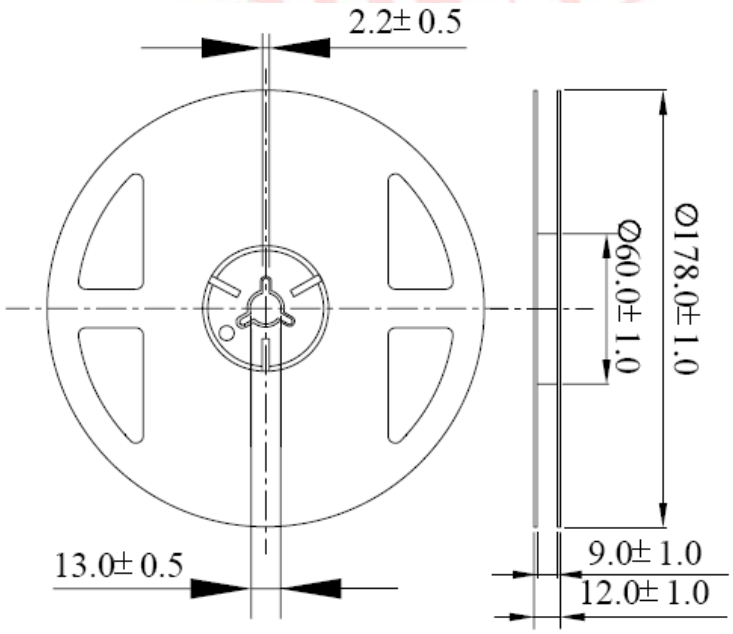
Moisture Resistant Packing Materials

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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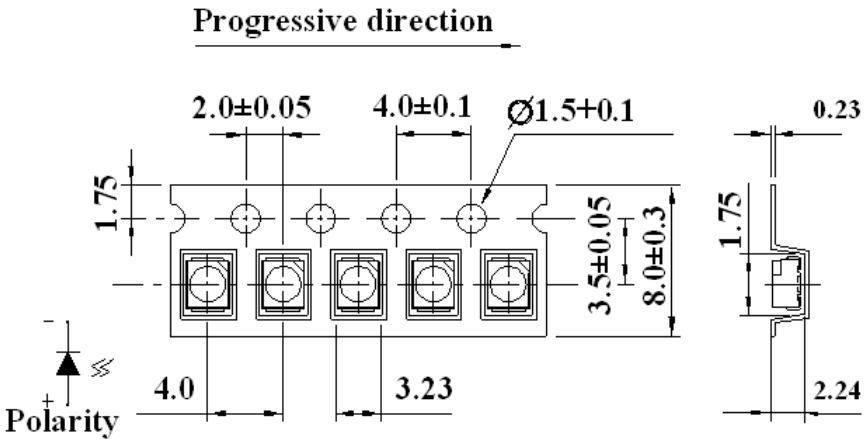
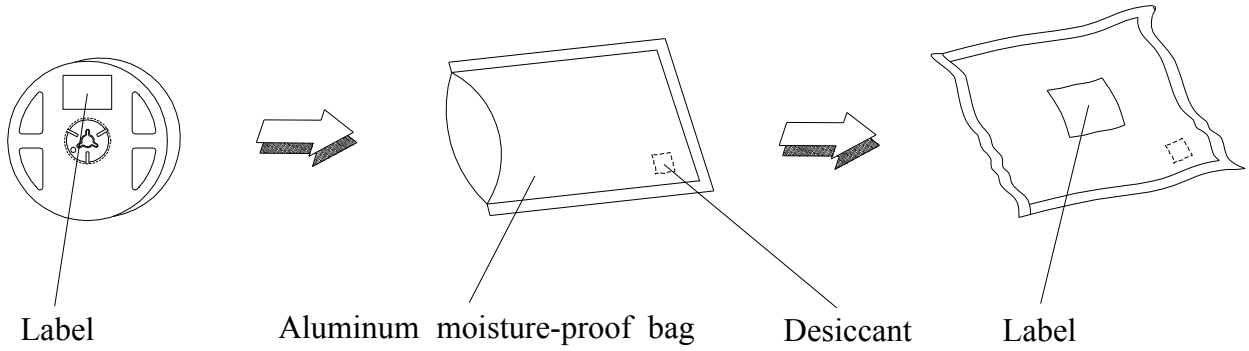
Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel



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

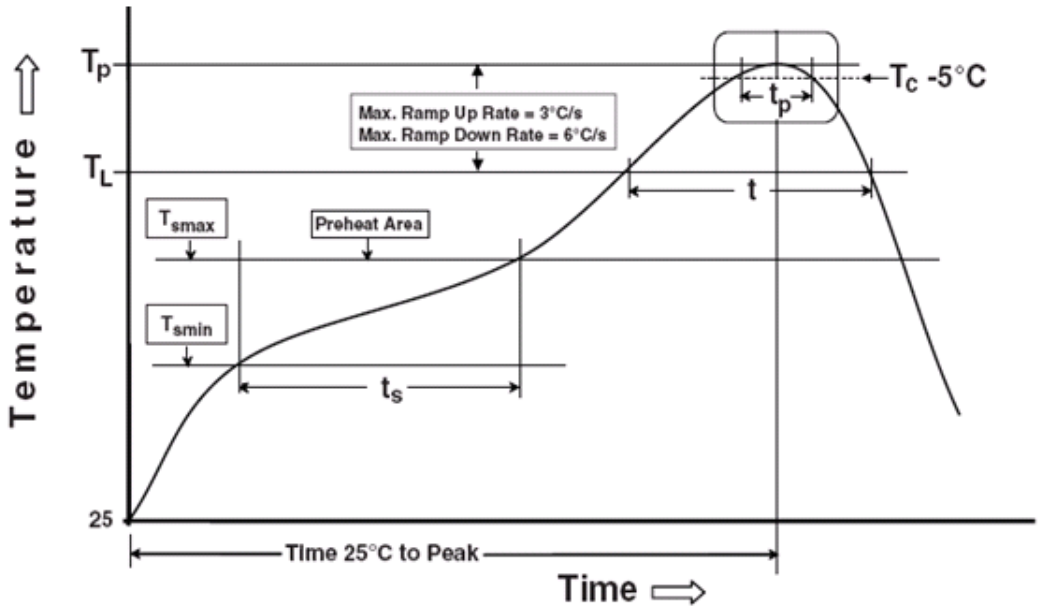
Moisture Resistant Packing Process



Precautions for Use

1. Soldering Condition

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



Note: Reference: IPC/JEDEC J-STD-020D

Preheat	
Temperature min (T_{smin})	150 °C
Temperature max (T_{smax})	200°C
Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds
Average ramp-up rate (T_{smax} to T_p)	3 °C/second max
Other	
Liquidus Temperature (T_L)	217 °C
Time above Liquidus Temperature (t_L)	60-150 sec
Peak Temperature (T_P)	260°C
Time within 5 °C of Actual Peak Temperature: T_P - 5°C	30 s
Ramp- Down Rate from Peak Temperature	6°C /second max.
Time 25°C to peak temperature	8 minutes max.
Reflow times	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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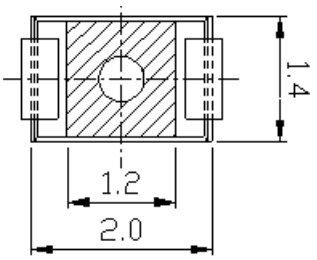

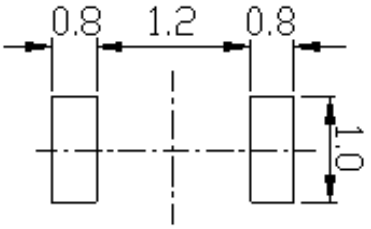

Note: Tolerances unless mentioned ±0.1mm. Unit = mm

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 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

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.

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