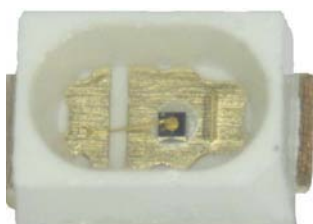


SMD ■ Mini Top View LEDs

65-21U-R7C-E8H2K1G1A-8T8-CS



Features

- White SMT package.
- Optical indicator.
- Wide viewing angle.
- Soldering methods: IR reflow soldering
- Available on tape and reel
- Pb-free
- The product itself will remain within RoHS compliant version.

Descriptions

The 65-21 series is available in soft orange, green, blue, and yellow. Due to the package design, the LED has wide viewing angle and optimized light coupling by inter reflector. Besides, LED is mounted top down and emits through the PCB. This feature makes the ideal for light pipe application.

Applications

- Optical indicators.
- Coupling into light guides.
- Backlighting (LCD, cellular phones, switches, keys, displays, illuminated advertising, general lighting).
- Coupling into light guides; Interior automotive lighting (e.g. dashboard backlighting, etc.).

Device Selection Guide

Chip Materials	Emitted Color	Resin Color
AlGaInP	Dark Red	Water Clear

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	12	V
Forward Current	I_F	30	mA
Peak Forward Current ($t \leq 10\mu s, D=0.005$)	I_{FP}	100	mA
Power Dissipation	P_d	66	mW
Junction Temperature	T_j	125	°C
Operating Temperature	T_{opr}	-40 ~ +100	°C
Storage Temperature	T_{stg}	-40 ~ +110	°C
Thermal Resistance	$R_{th\ J-A}$	500	K/W
	$R_{th\ J-S}$	300	K/W
ESD	ESD_{HBM}	2000	V
(Classification acc. AEC Q101)	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	I _v	3.55	-----	9.0	mcd	I _F =2mA
Viewing Angle	2θ _{1/2}	-----	120	-----	deg	I _F =2mA
Peak Wavelength	λ _p	-----	639	-----	nm	I _F =2mA
Dominant Wavelength	λ _d	624	-----	636	nm	I _F =2mA
Spectrum Radiation Bandwidth	Δλ	-----	20	-----	nm	I _F =2mA
Forward Voltage	V _F	1.7	-----	2.2	V	I _F =2mA
Reverse Current	I _R	-----	-----	10	μA	V _R =12V

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
H2	3.55	4.5	mcd	I _F =2mA
J1	4.5	5.6		
J2	5.6	7.1		
K1	7.1	9.0		

Note:

Tolerance of Luminous Intensity: ±11%

Bin Range of Dominant Wavelength

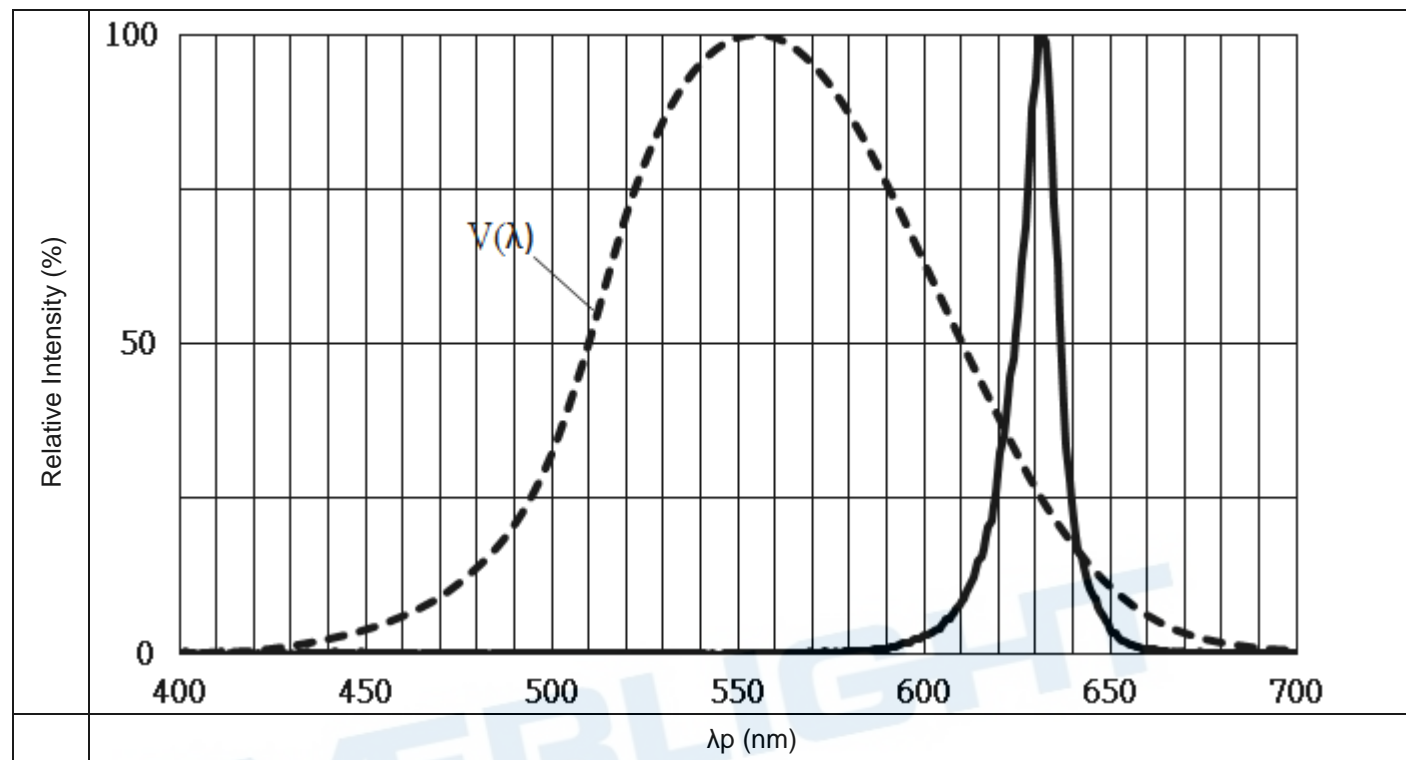
Bin Code	Min.	Max.	Unit	Condition
AA14	624	627	nm	I _F =2mA
AA15	627	630		
AA16	630	633		
AA17	633	636		

Note:

Tolerance of Dominant Wavelength: ±1nm

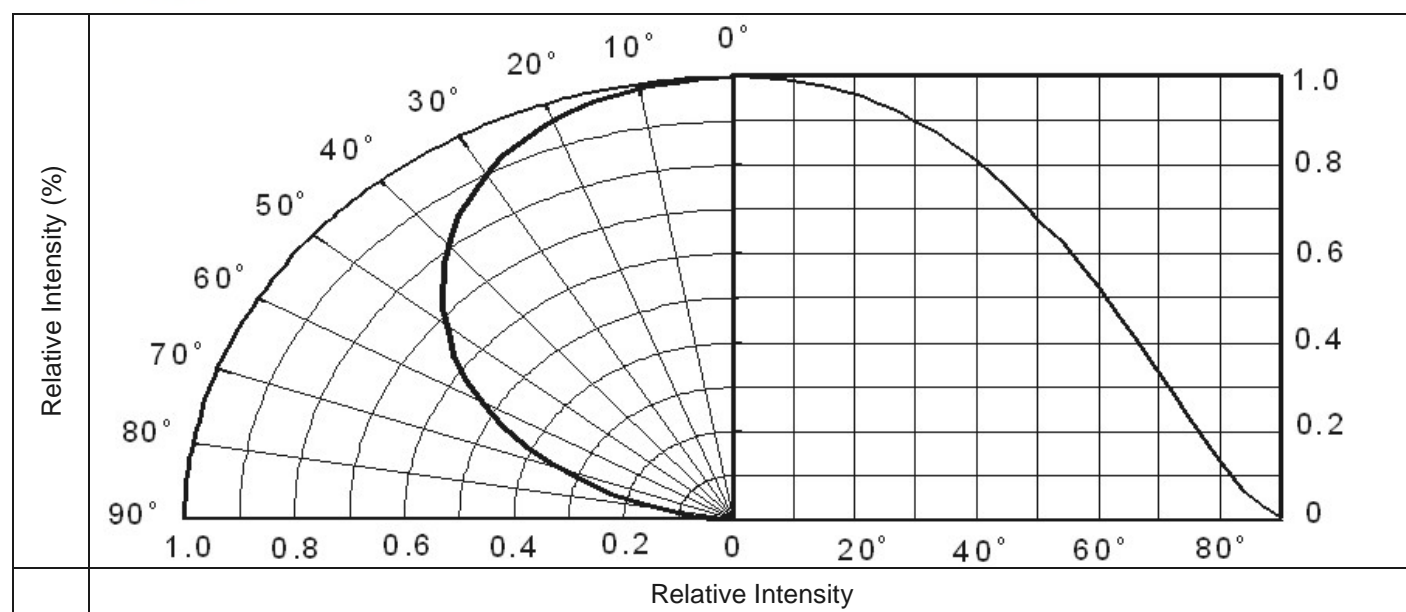
Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distribution

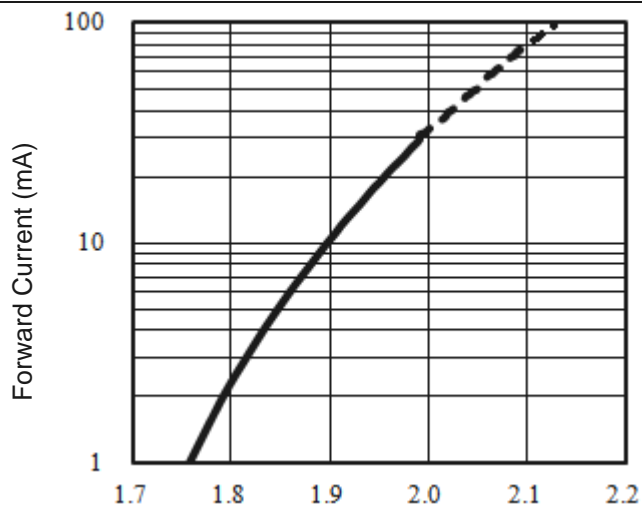


Note: $V(\lambda)$ =Standard eye response curve; $I_F = 2\text{mA}$

Diagram Characteristics of Radiation

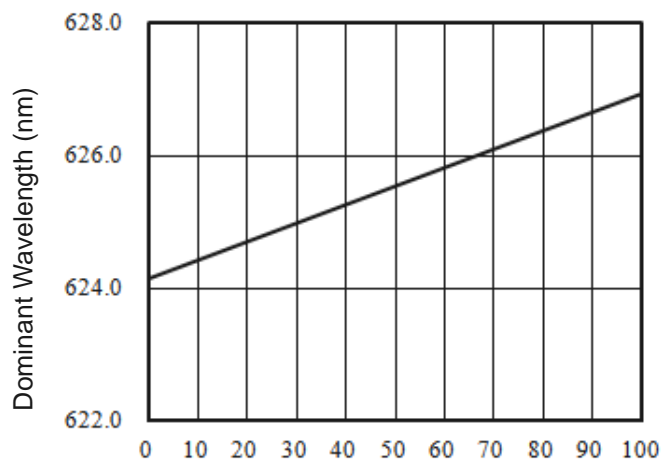


Forward Current vs. Forward Voltage (Ta=25°C)



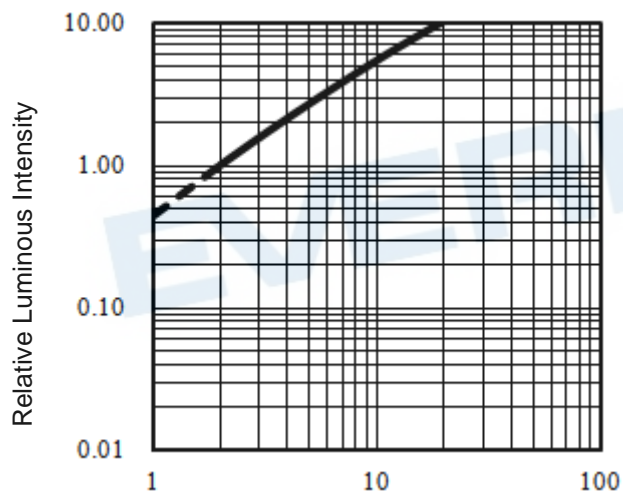
Forward Voltage (V)

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



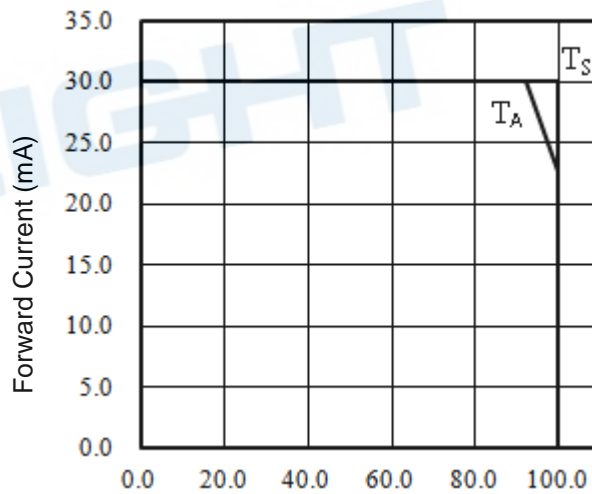
Forward Current (mA)

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



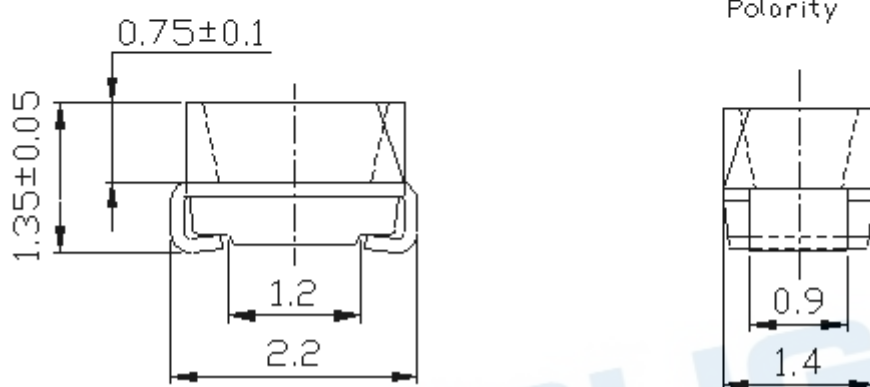
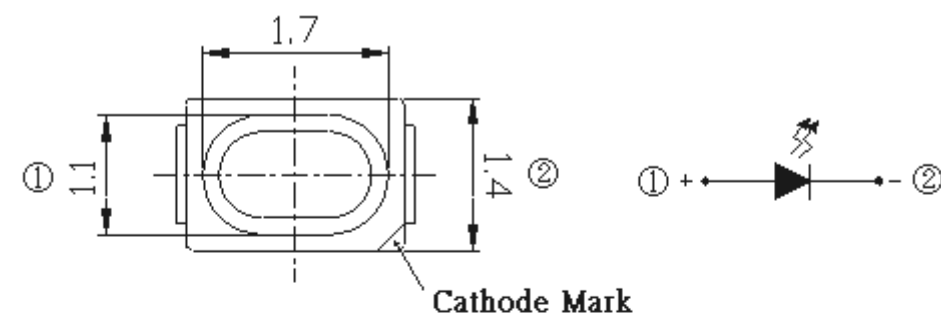
Forward Current (mA)

Max. Permissible Forwarded Current (Ta=25°C)



Temperature (°C)

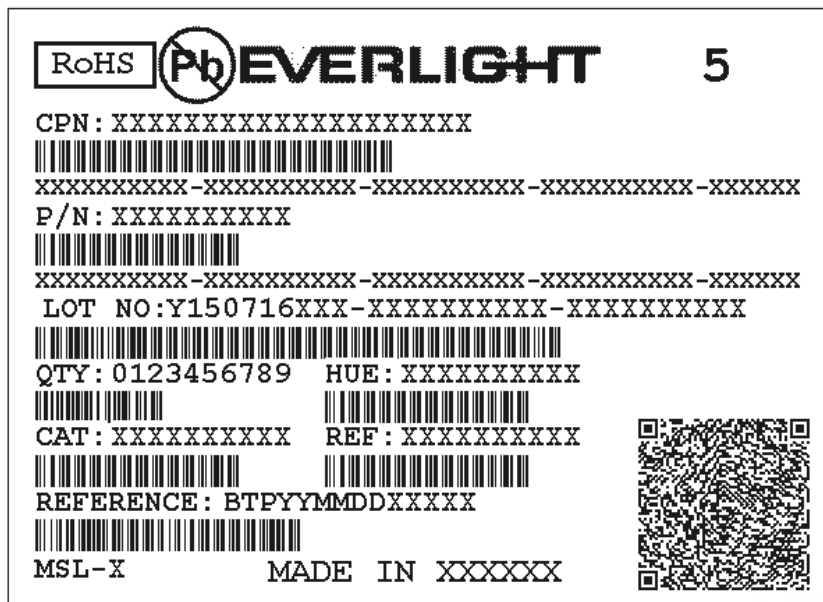
Package Dimension



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

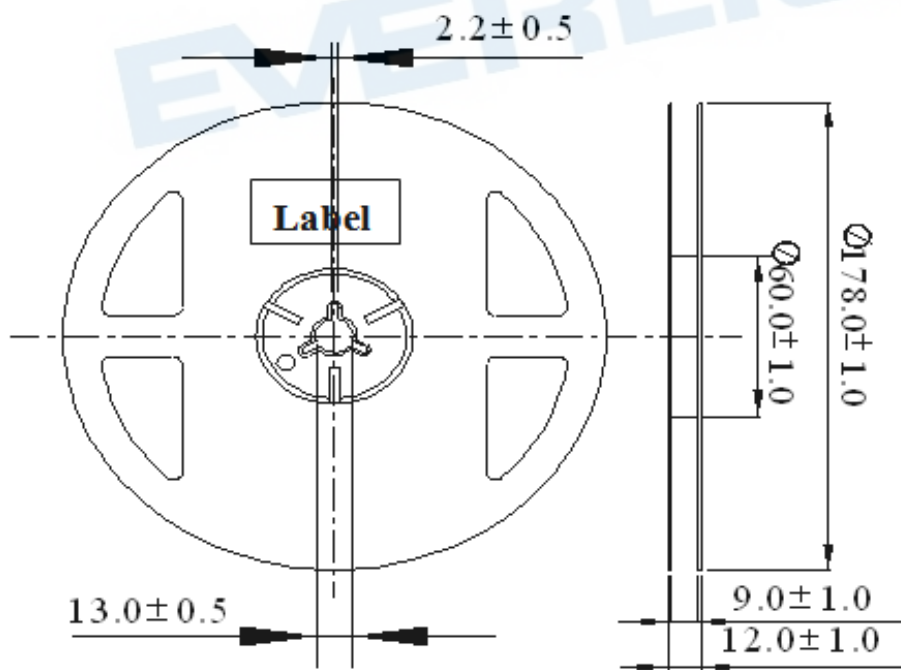
Moisture Resistant Packing Materials

Label Explanation

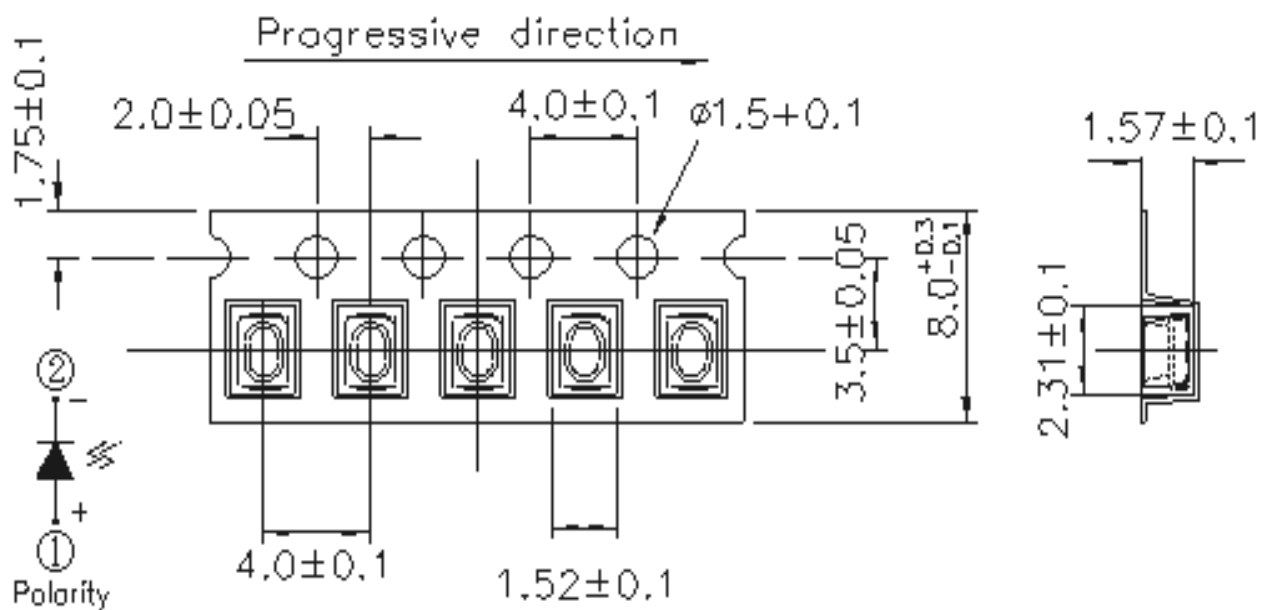


- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions

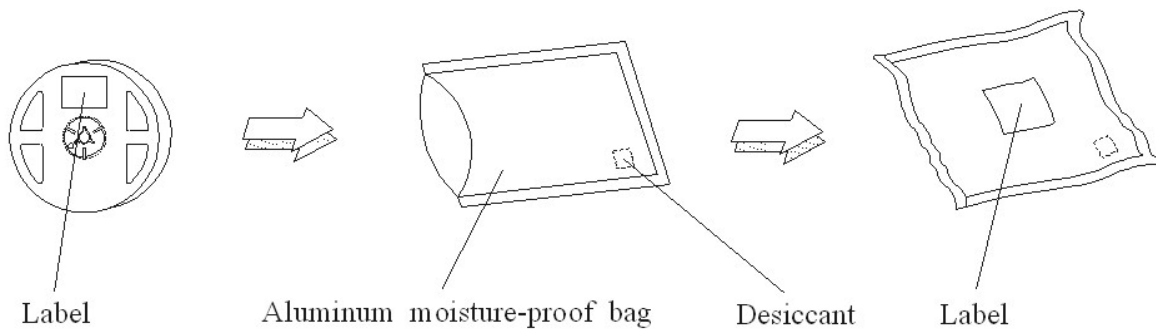


Carrier Tape Dimensions: Loaded Quantity 8000 pcs Per Reel



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

Moisture Resistant Packing Process

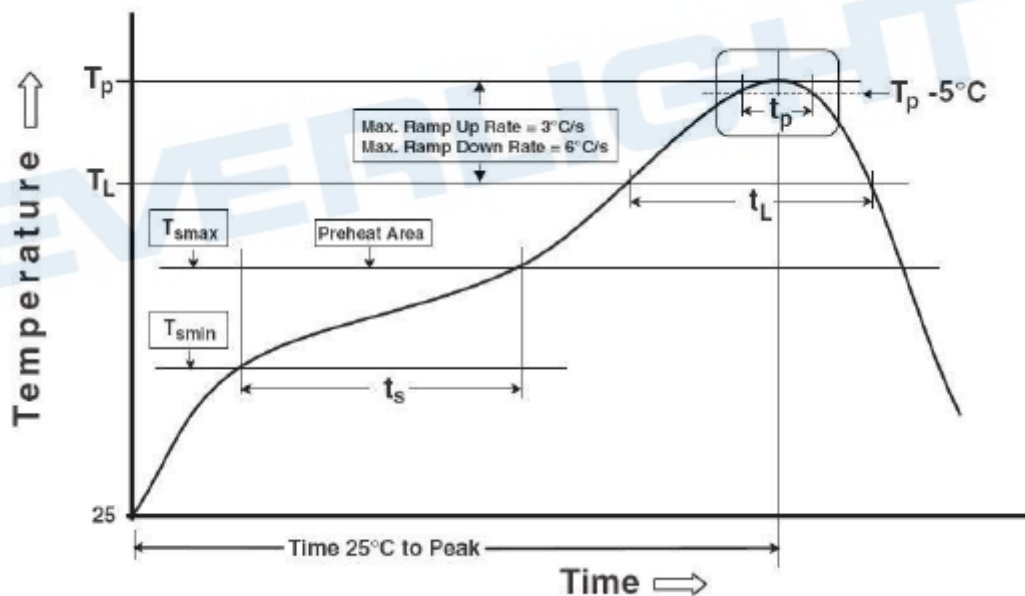


Note: Tolerances unless mentioned $\pm 0.1\text{mm}$. Unit = mm

Precautions for Use

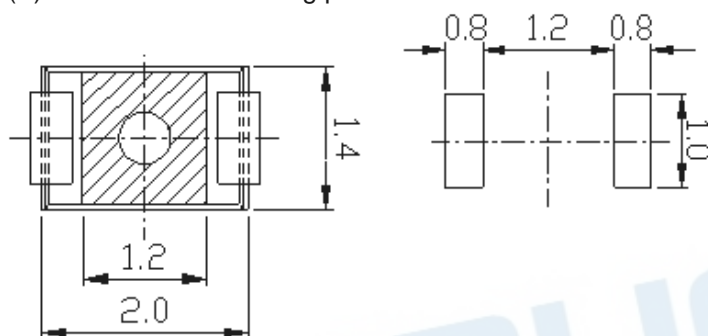
1. Over-current-proof

1.1 (A) Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).



Profile Feature	Pb-Free Assembly
Preheat Temperature min (T_{smin})	150°C
Preheat Temperature max (T_{smax})	200°C
Preheat Time t_s (T_{smin} to T_{smax})	60 – 120 seconds
Average ramp-up rate (T_{smax} to T_p)	3°C/second max.
Liquidous temperature (T_L)	217°C
Time at liquidous (t_L)	90 seconds min.
Peak package body temperature (T_p)	245°C min.
Time (t_p) within 5°C of the specified Peak package body temperature (T_p)	30 seconds min.
Average ramp-down rate (T_p to T_{smax})	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

1.2 (B) Recommend soldering pad



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

2. Storage

- 2.1 Do not open moisture proof bag before the products are ready to use.
- 2.2 Before opening the package: The LEDs should be kept at 30°C or less and 90%RH or less.
- 2.3 After opening the package: The LED's floor life is 168 hours under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.
- 2.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.
Baking treatment : 60±5°C for 24 hours.

3. Soldering Condition

- 3.1 Pb-free solder temperature profile
- 3.2 Reflow soldering should not be done more than two times.
- 3.3 When soldering, do not put stress on the LEDs during heating.
- 3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.

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.

EVERLIGHT

DISCLAIMER

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2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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Revision History

Rev.	Modified date	File modified contents
1	2016/12/22	New Spec