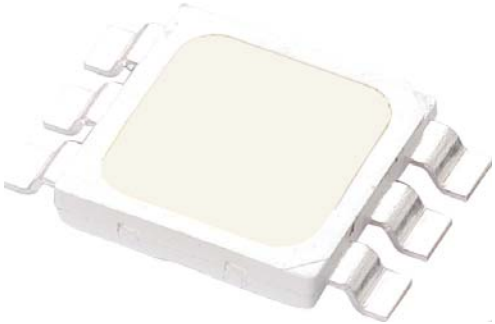
DATASHEET

EHP-A23/ RGB33-P01/TR

1W - Series



Features

- Feature of the device: Small package with high efficiency.
- Typical view angle: 120°
- ESD protection
- Soldering methods: SMT
- Grouping parameter: Brightness, Forward Voltage and wavelength.
- Moisture Sensitivity Level: 3
- The product itself will remain within RoHS compliant version.
- Halogen-free

Applications

- Interior automotive lighting (e.g. dashboard backlighting)
- Decorative and entertainment lighting (incl. fiber optic illumination)
- Reading light (aircraft, car, bus)
- Signal and symbol luminaries
- Marker lights (e.g. steps, exit ways, etc.)

Materials

Items	Description
Encapsulating Resin	Silicone resin
Electrodes	Ag plating copper alloy
Die attach	Silicone paste
Chip	G、B：InGaN
	R：AlGaInP

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Product Nomenclature

The product name is designated as below:

EHP-A23 / ABCDE – FGH /PQ

Designation:

ABC =chip combination
DE = internal coding
FGH = power consumption [1]
PQ = packaging type [2]

Notes

1. Table of power consumption :

Symbol	Description
P01	1W

2. Table of packaging types:

Symbol	Description
TR	Tape and Reel

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Absolute Maximum Ratings

Parameter		Symbol	Ratings	Unit
Max. DC Forward Current (mA)	Red	I_F	100	mA
	Green		100	
	Blue		100	
Max. Peak Pulse Current (mA) [1]	Red	I_{Pulse}	150	mA
	Green		150	
	Blue		150	
Max. Junction Temperature		T_J	110	°C
Operating Temperature		T_{Opr}	-40 ~ +85	°C
Storage Temperature		T_{Stg}	-40 ~ +100	°C
Max. Solder Pad Temperature		T_{Sol}	260	°C

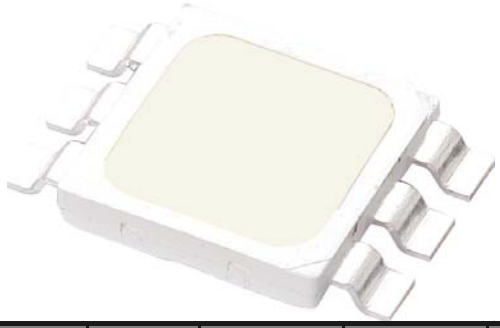
Notes:

1. tp ≦100ms, Duty cycle = 25%

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PN of the A23 series: Color LEDs



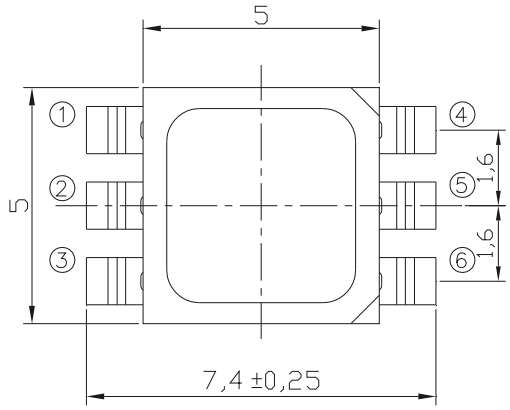
Parameter	Bin	Symbol	Min	Typ.	Max	Unit	Condition
Brightness[1]	Red	Φv	10	----	18	lm	IF1=100mA(R) [4] IF2=100mA(G) [4] IF3=100mA(B) [4]
	Green		18	----	35		
	Blue		3	----	7		
Forward Voltage[2]	Red	VF	1.8	----	2.6	V	
	Green		2.5	----	3.0		
	Blue		2.8	----	3.3		
Wavelength[3]	Red	λd	620	----	630	nm	
	Green		525	----	535		
	Blue		457	----	467		

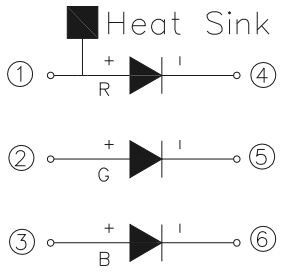
Notes:

1. Luminous flux measurement tolerance: ±10%.
2. Forward Voltage measurement tolerance: ± 0.1V.
3. Wavelength measurement tolerance: ±1nm
4. White point coordinates varied with wavelength changing.

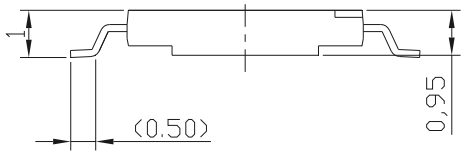
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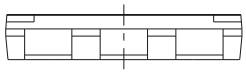
Mechanical Dimension

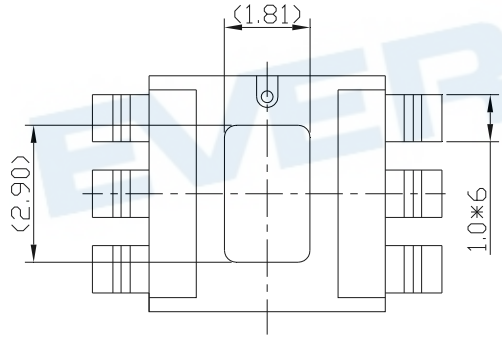




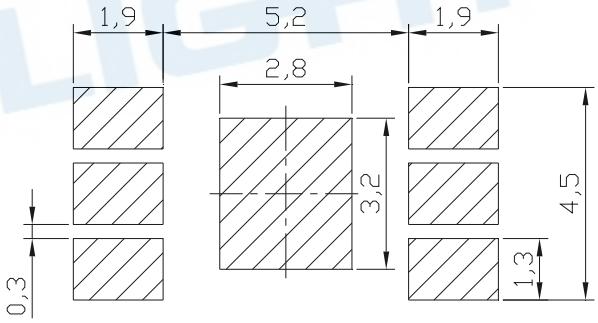
Polarity







Bot. view



Soldering patterns

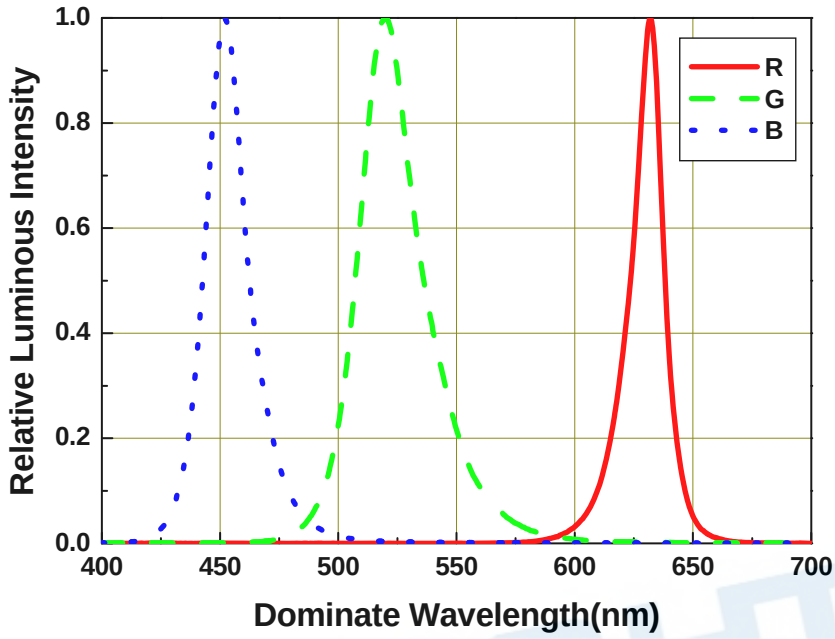
Notes.

1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ± 0.25mm.

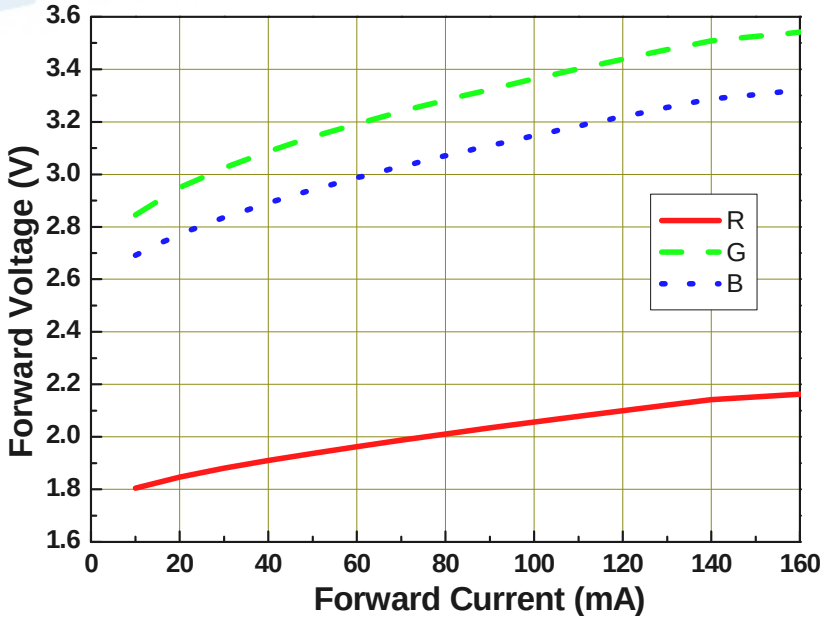
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Typical Electro-Optical Characteristic Curve

Relative Spectral Distribution
@ Solder Pad Temperature = 25℃

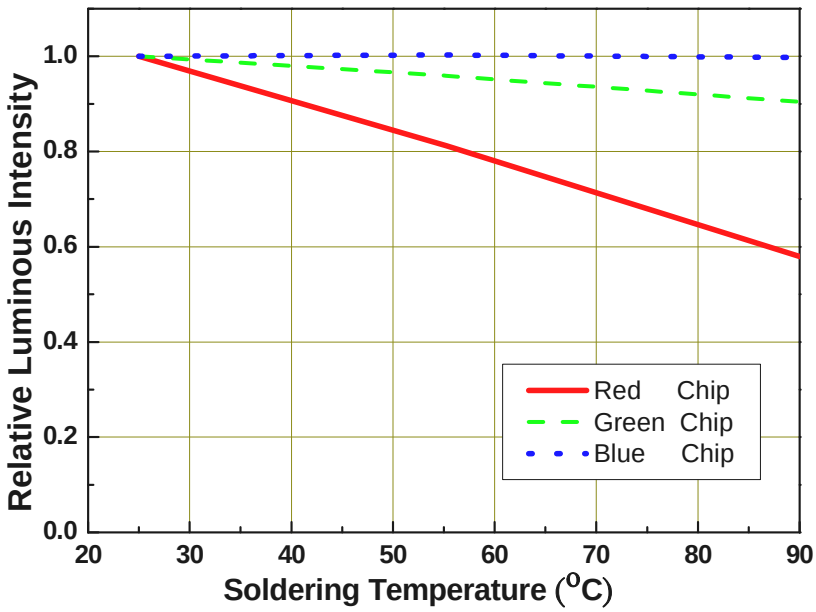


Forward Voltage vs. Forward Current
@ Solder Pad Temperature = 25℃

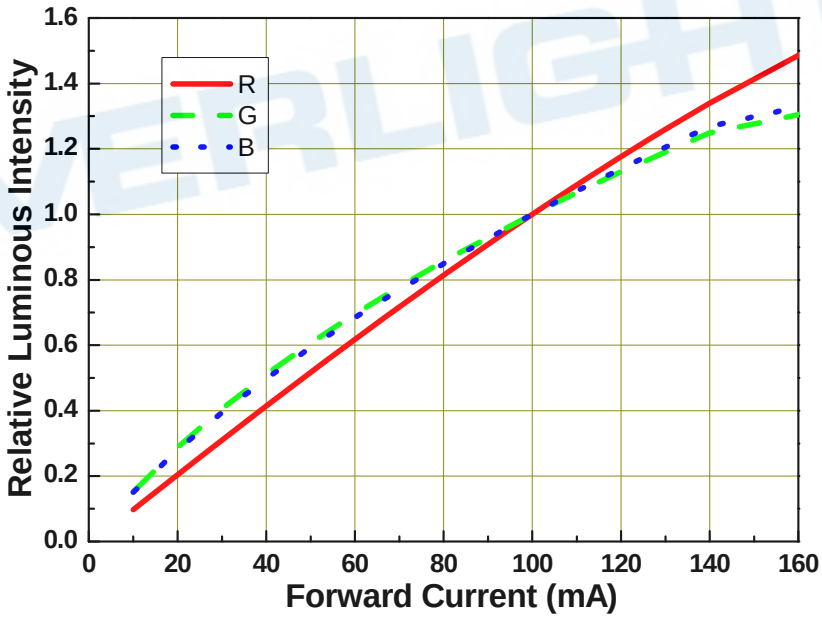


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Relative Luminous Intensity vs. Soldering Temperature varying

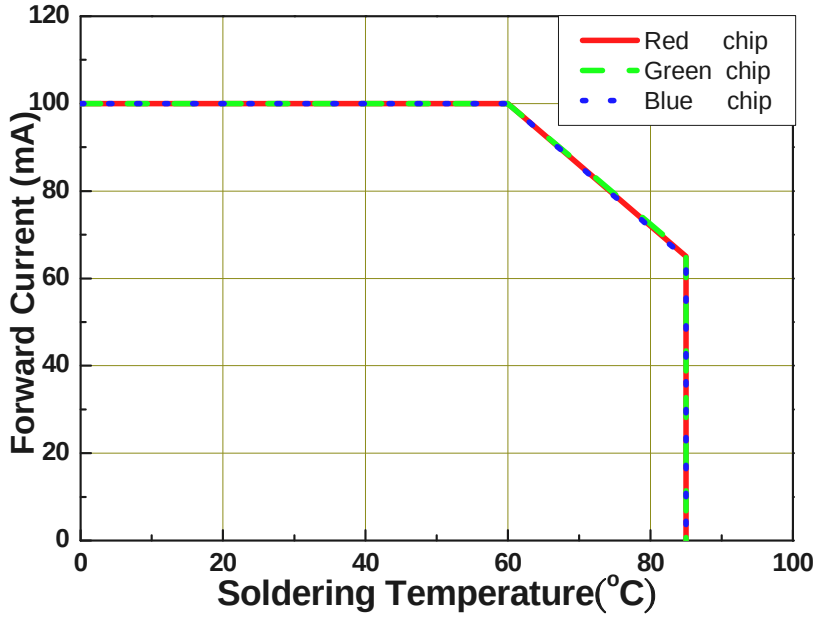


Relative Luminous Flux vs. Forward Current @ Solder Pad Temperature = 25℃

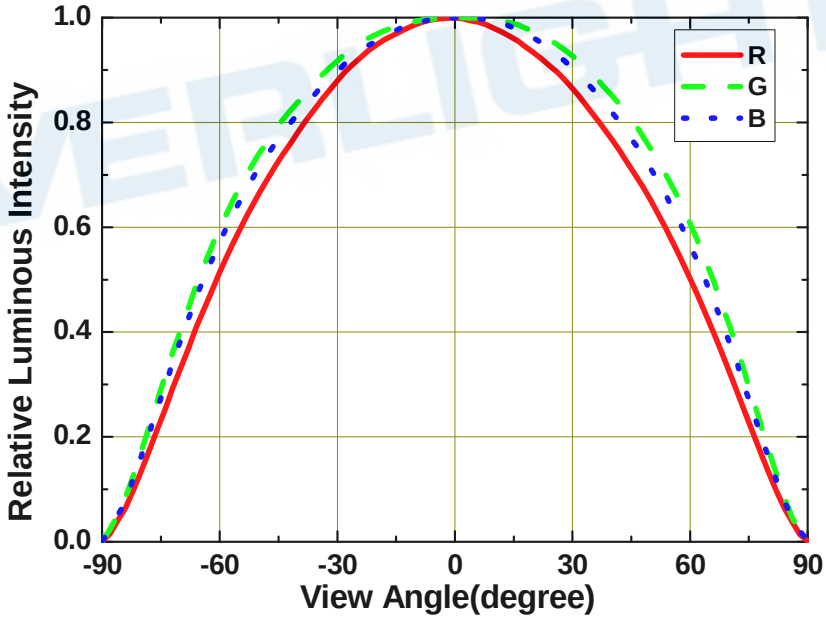


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Forward Current Derating Curve
@ Junction Temperature <110℃



Typical Diagram Characteristics of Radiation Patterns



Note:

1. $2\theta_{1/2}$ is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value.
2. Viewing angle tolerance is ± 5° .

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Product Labeling

Label Explanation

CPN: Customer Specification (when required)

P/N : Everlight Production Number

QTY: Packing Quantity

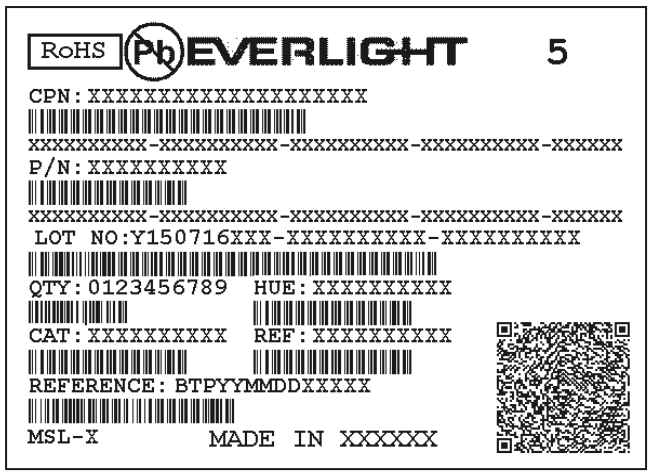
CAT: Luminous Flux (Brightness) Bin

HUE: Color Bin

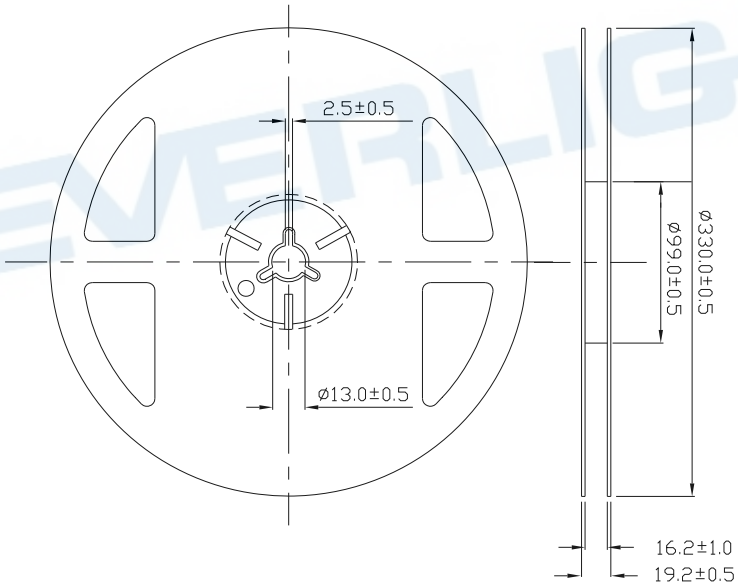
REF: Forward Voltage Bin

LOT No: Lot Number

MADE IN TAIWAN: Production Place



Reel Dimensions



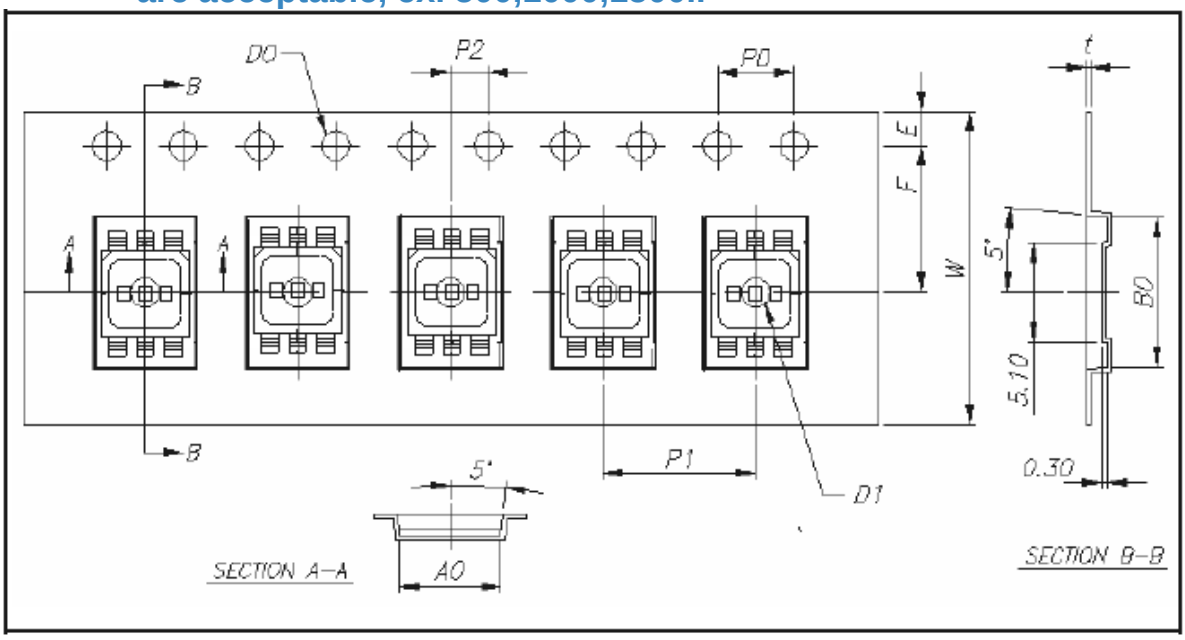
Note:

1. Dimensions are in millimeters.
2 Tolerances for fixed dimensions are ± 0.1mm.

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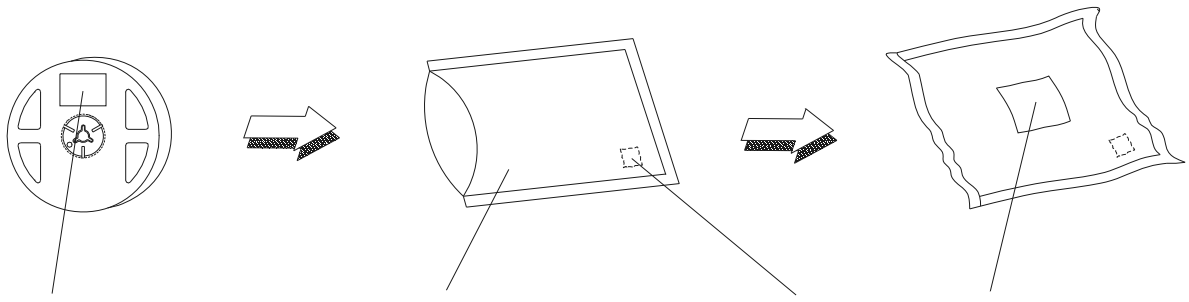
The amount of one reel is 2000pcs, and multiples of 500pcs per reel are acceptable, ex. 500,1000,1500..



Note:

1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ± 0.1mm.

Moisture Resistant Packaging



Label **Aluminum moisture-proof bag** **Desiccant** **Label**

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Reliability Data

Stress Test	Stress Condition	Stress Duration
Solderability	Tsol=260℃, 10sec	1 times
Reflow	Tsol=260℃, 5sec, 6min	3 times
Thermal Shock	H：+100℃ 20min. '∫ 20sec. 'L：－ 10℃ 20min.	200 Cycles
Temperature Cycle	H：+100℃ 15min. '∫ 5min. 'L：－ 40℃ 15min.	200 Cycles
High Temperature/Humidity Reverse Bias	Ta=85℃ , RH=85%	1000hours
High Temperature/Humidity Operation	Ta=85℃ , RH=85%, IF=65mA	1000hours
High Temperature Storage	Ta=85℃	1000hours
Low Temperature Storage	Ta=-40℃	1000hours
High Temperature Operation Life #1	Ta=25℃, IF=100mA	1000hours
High Temperature Operation Life #2	Ta=55℃, IF=100mA	1000hours
High Temperature Operation Life #3	Ta=85℃, IF=65mA	1000hours
Low Temperature Operation Life	Ta=-40℃, IF=100mA	1000hours
Power Temperature Cycle	H：+100℃ 15min. '∫ 5min. 'L：－ 40℃ 15min. IF=100mA,2min on/off	200cycles

*Im: BRIGHTNESS ATTENUATE DIFFERENCE(1000hrs)＜50%

*VF: FORWARD VOLTAGE DIFFERENCE＜20%

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Precautions of Use

Over-Current-Protection

- Thought the Everlight A23 has an ESD protection mechanism, customers must not use the device in reverse bias condition and should apply resistors for extra protection. Otherwise slight voltage shifts may cause significant current changes and may cause failure.

Storage Conditions

- Before the package is opened. The LEDs should be stored at 30°C or less and 90%RH or less after being shipped from EVERLIGHT and the storage life limits are 12 months.
- 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℃ for 24 hours.

DISCLAIMER

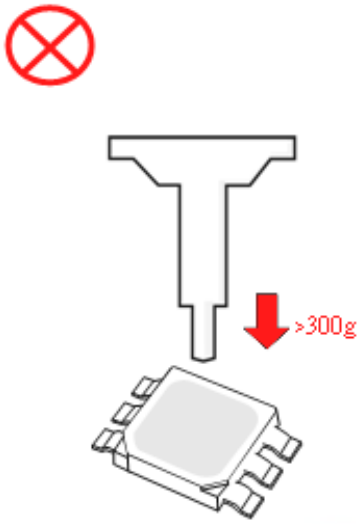
- EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
- The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
- The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
- 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.
- These specification sheets include materials protected under copyright of EVERLIGHT. Reproduction in any form is prohibited without obtaining EVERLIGHT's prior consent.
- This product is not intended to be used for military, aircraft, automotive, medical, life sustaining or life saving applications or any other application which can result in human injury or death. Please contact authorized EVERLIGHT sales agent for special application request.

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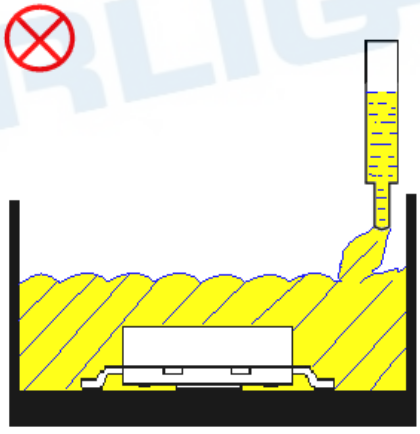
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Handling

- Do not put mechanical stress on the LED.
- Never touch the optical surface. The LED surface could be soiled or damaged, which could affect the optical performance of the LED.
- Avoid directly contacting the lens with a downward force of more than 300g.



- Sealing or potting with water proof silicone is not suitable for EHP-A23 products.



- In a low-humidity work environment, please handle the LEDs while appropriately grounded.
- It is recommended to handle the LEDs with powder-less latex gloves.

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Manual Handling

- When handling the product, do not apply direct pressure to the optical surface.



- Do not touch the resin with tweezers to avoid scratching or damaging the optical surface.



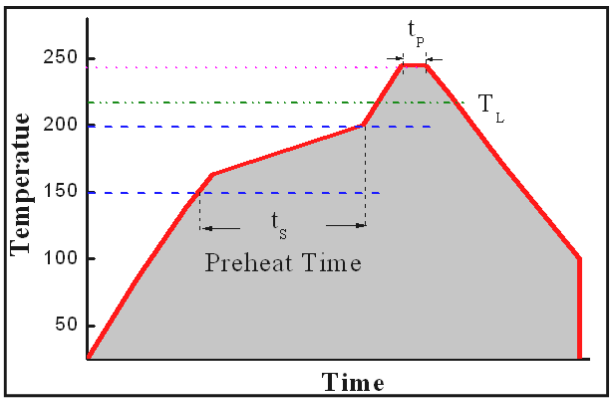
Thermal Management

- For maintaining high flux output and achieving maximum reliability, EHP-A23 series LEDs should be mounted on a metal core printed circuit board (MCPCB) or any other kind of heat sink with proper thermal connection to dissipate approximately 1W of thermal energy at 100mA operation.
- Heat dissipation or thermal conduction design is strongly recommended on PCB or MCPCB for reflow soldering purposes. Please refer to soldering patterns on Page 5.
- Sufficient thermal management must be implemented. Please refer to the graph “Forward Current Derating Curve “ on Page 8. The solder pad temperature must be kept under 80℃ at the driving current of 100mA. Otherwise, the junction temperature of die may exceed the limit at high current driving conditions and the LED’s lifetime may be decreased dramatically.

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Soldering Ion for Reflow Process

- EHP-A23 series are suitable for SMT process.
- Curing of glue in oven must be according to standard operation flow processes.



Profile Feature	Lead Free Assembly
Ramp-Up Rate	2-3 ℃/S
Preheat Temperature	150-200 ℃
Preheat Time (t_S)	60-120 S
Liquid Temperature (T_L)	217 ℃
Time maintained above T_L	60-90 S
Peak Temperature (T_P)	240±5 ℃
Peak Time (t_P)	Max 20 S
Ramp-Down Rate	3-5 ℃/S

- Reflow soldering should not be done more than twice.
- In the soldering process, stress on the LEDs during heating should be avoided.
- After soldering, do not warp the circuit board.

Soldering Ion for Manual Soldering Process

- For prototype builds or small series production runs it is possible to place and solder the LEDs by hand.
- Dispense thermal conductive glue or grease on the substrates and follow its curing specifications. Gently press LED housing to closely connect LED and substrate.
- It is recommended to hand solder the leads with a solder tip temperature of 280°C for less than 3 seconds, at a time and with a soldering iron of less than 25W. Solder at intervals of two seconds or more.
- Take caution and be aware that damaged products are often a result of improper hand soldering techniques.

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