Harvatek Surface Mount CHIP LEDs Data Sheet
B36S3RGB-F6C0001HOU1930

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Life Support Policy

HARVATEK's products are not authorized for use as critical components in life support devices or systems without the express written approval of the President of HARVATEK or HARVATEK INTERNATIONAL. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

Product Specifications

Item	Specification	Material	Quantity
Luminous Intensity(Iv)	Red : 32 mcd typical Green : 46 mcd typical Blue : 8 mcd typical R@5mA;G/B@2mA/ Ts= 25^{O} C; Tolerance ±10%		
Dominant Wavelength	Red : 621 nm typical Green : 532 nm typical Blue : 470 nm typical R@5mA;G/B@2mA/ Ts= 25^{O} C;Tolerance ± 0.5nm		
Forward Voltage	Red : 2.4 V maximum Green : 3.1 V maximum Blue : 3.1 V maximum R@5mA;G/B@2mA/ Ts= 25^{O} C;Tolerance ± 0.05V		
I_r	< =1 μA @ V_R = 5 V		
Resin	Dark	Epoxy	
Carrier tape	EIA 481-1A specs	Conductive black tape	24000pcs/reel
Reel	EIA 481-1A specs	Conductive black	
Label	HT standard	Paper	
Packing bag	250x230mm	Aluminum laminated bag/ no-zipper	One reel per bag
Carton	HT standard	Paper	Non-specified

Others:

Each immediate box consists of 28 reels. The 28 reels may not necessarily have the same lot number or the same bin combinations of Iv, λ_D and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label.

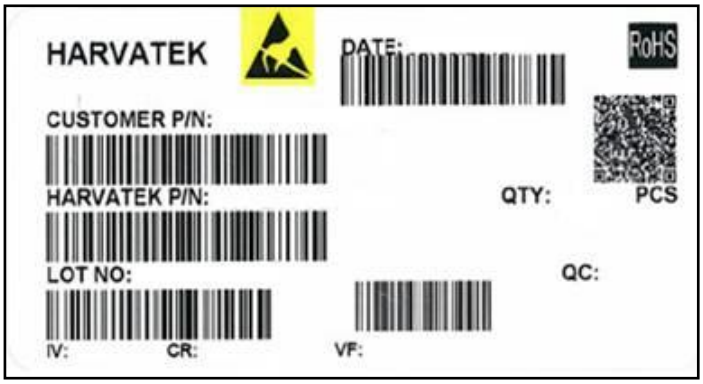
※Remarks: This product should be operated in forward bias. If a reverse voltage is continuously applied to the product, such operation can cause migration resulting in LED damage.

ATTENTION: Electrostatic Discharge (ESD) protection

The symbol to the left denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlGaInP, GaN, or/and InGaN based chips are **STATIC SENSITIVE devices**. ESD precaution must be taken during design and assembly.

If manual work or processing is needed, please ensure the device is adequately protected from ESD during the process.

Label Specifications



■Harvatek P/N:

B 36S 3 RGB- F6C- 0001 HO

Product	Package size	Dice Q'ty	Color	Current	Series Number	Taping
PCB	0.69(L) x 0.69(W) x 0.5(H) mm	3 : Tri.	RGB(Full color)	R:5mA G:2mA B:2mA	X001~XZZZ	1.Taping style 2. Q'ty

■Lot No.:

1	2	3	4	5	6	7	8	9	10
E	1	A	1	A	2	2	L	1	2
Code 1 2		Code 3	Code 4	Code 5	Code 6	Code 7	Code 8	Code 9	Code 10
		Mfg. Year	Mfg. Month	Mfg. Date	Consecutive number		Special code		
Internal Tracing Code		2020-L 2021-M 2022-P 2023-Q … 2026-T 2027-V … 2030-Y 2031-Z …	1:Jan. 2:Feb. … A:Oct. B:Nov. C:Dec.	1:A 2:B 3:C … 26:Z 27:7 28:8 29:9 30:3 31:4	01~ZZ		000~ZZZ		

Specifications Range

■Luminous Intensity (Iv) Bin: R@5mA;G/B @2mA

B36S3RGB Series								
IV								
Red			Green			Blue		
HF3	21.3	26.7	HG3	30	37.5	HB3	5.4	6.8
HG1	24	30	HH1	33.5	42	HC1	6	7.5
HG2	26.7	33.5	HH2	37.5	47	HC2	6.8	8.5
HG3	30	37.5	HH3	42	52.5	HC3	7.5	9.4
HH1	33.5	42	HJ1	47	60	HD1	8.5	10.7
HH2	37.5	47	HJ2	52.5	65.7	HD2	9.4	12
HH3	42	52.5	HJ3	60	75	HD3	10.7	13.4

Note: It maintains a tolerance of ±10% on Luminous Intensity

Dominant Wavelength (λ_D) Bin: R@5mA;G/B @2mA

B36S3RGB Series								
WD								
Red			Green			Blue		
RH2	618	623	GH1	526	530	BH1	464	468
RH3	623	628	GH2	528	532	BH2	466	470
RH4	628	633	GH3	530	534	BH3	468	472
			GH4	532	536	BH4	470	474
			GH5	534	538			

Note: It maintains a tolerance of ±0.5nm on Color Bin

Forward Voltage (Vf) Bin: R@5mA;G/B @2mA

B36S3RGB Series								
Vf								
Red			Green			Blue		
E18	1.6	2.4	F2A	2.1	3.1	F2A	2.1	3.1

Note: It maintains a tolerance of ±0.05V on forward voltage measurements

Product Features

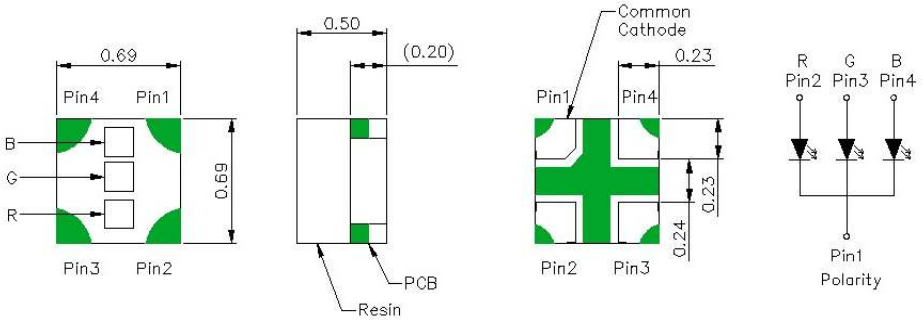
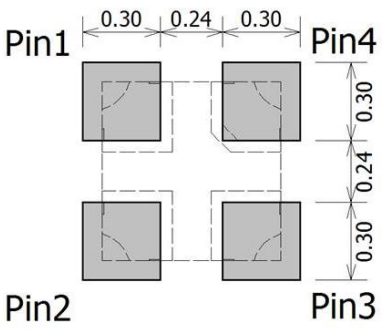
Electro-Optical Characteristics

($T_{Soldering}$ 25℃)

Code for parts	Lighting Color	Material	Forward Voltage (V)		Dominant Wavelength /Chromaticity Coordinate	Iv (mcd)	IF (mA)	Viewing Angle $2\theta\frac{1}{2}$
			typ.	Max	TYP. nm / CIE (X,Y)	Typ.		
B36S3RGB-F6	Red	AlGanInP	1.9	2.4	621	32	5	120
B36S3RGB-F6	Green	InGaN	2.5	3.1	532	46	2	
B36S3RGB-F6	Blue	InGaN	2.6	3.1	470	8	2	

Package Outline Dimension and Recommended Soldering Pattern for Reflow Soldering

(Unit :mm Tolerance: +/-0.1)

Outline Dim.	Suggest Soldering Pattern
	
Soldering terminals may shift in the x, y direction.	

Absolute Maximum Ratings(絕對最大額定值)

(T_S 25 °C)

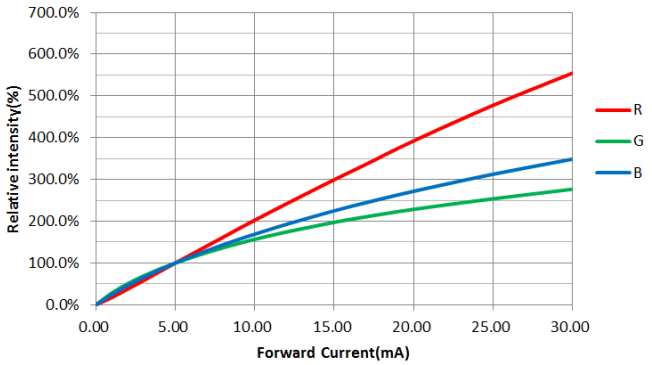
Series (系列)	P_D (mW) (消耗功率)	I_F (mA) (順向電流)	IFP (mA) (脈衝順向電流)	VR (反向電壓)	T_{OP} (°C) (操作溫度)	T_{ST} (°C) (儲存溫度)
Color	Power Dissipation	Forward Current	Pulse Forward Current	Reverse Voltage	Operation Temperature	Storage Temperature
Red/	24.4	5	20	5	-30~+80	-40~+85
Green		2				
Blue		2				

** Condition for I_{FP} is pulse of 1/10 duty and 0.1msec width

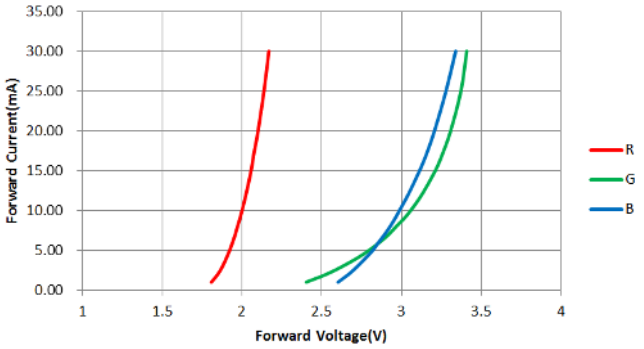
Remarks:This product should be operated in forward bias.If a reverse voltage is continuously applied to the product, such operation can cause migration resulting in LED damage.

Characteristics of B36S3RGB

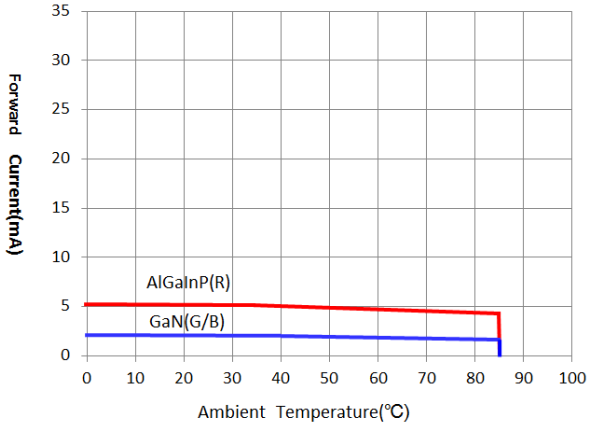
Relative Intensity vs. Forward Current



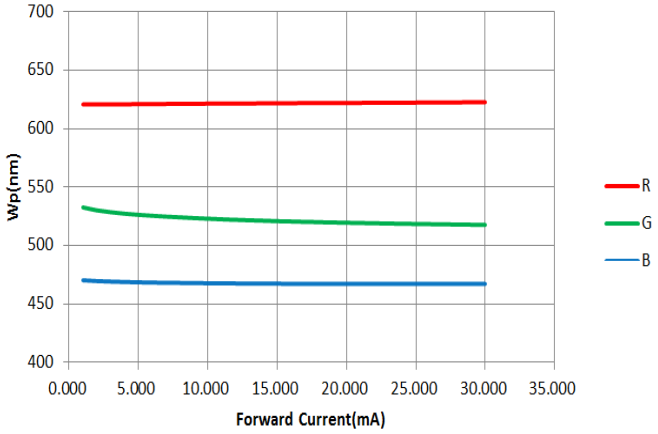
Forward Voltage vs. Forward Current

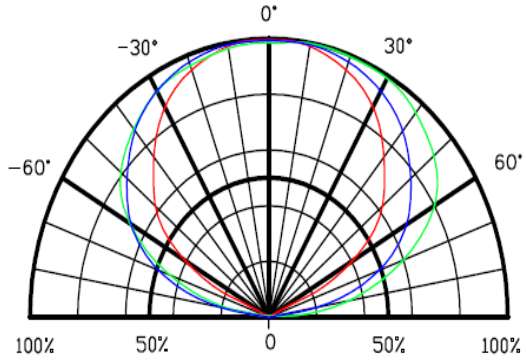


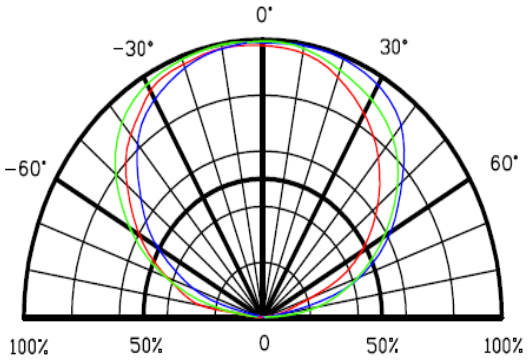
Forward Current vs. Ambient Temperature



Wavelength vs. Forward Current





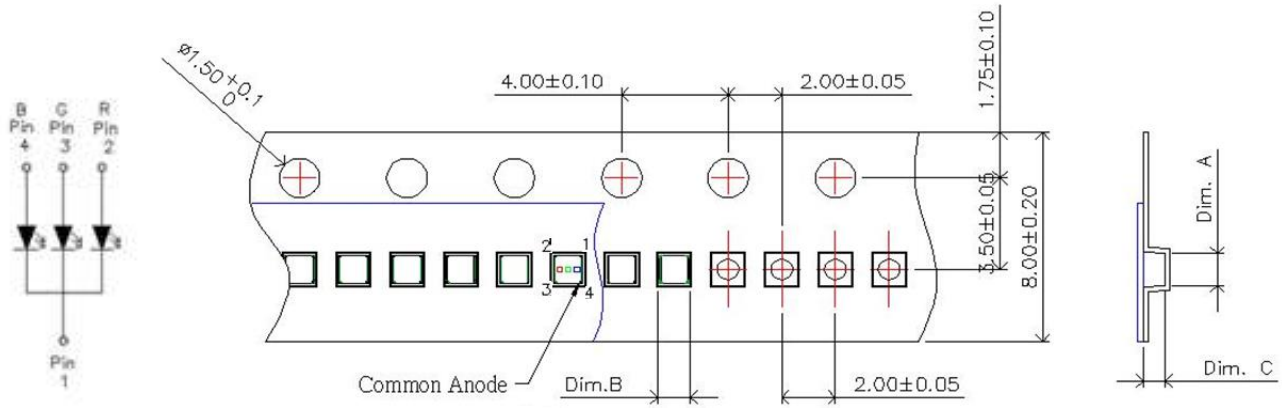


Precaution for Use

1. The chips should not be used directly in any type of fluid such as water, oil, organic solvent, etc.
2. When the LEDs are illuminating, the maximum ambient temperature should be first considered before operation.
3. LEDs must be stored in a clean environment. A sealed container with a nitrogen atmosphere is necessary if the storage period is over 3 months after shipping.
4. The LEDs must be used within 4weeks after unpacked. Unused products must be repacked in an anti-electrostatic package, folded to close any opening and then stored in a dry and cool space.
5. The appearance and specifications of the products may be modified for improvement without further notice.
6. The LEDs are sensitive to the static electricity and surge. It is strongly recommended to use a grounded wrist band and anti-electrostatic glove when handling the LEDs. If a voltage over the absolute maximum rating is applied to LEDs, it will damage LEDs. Damaged LEDs will show some abnormal characteristics such as remarkable increase of leak current, lower turn-on voltage and getting unlit at low current.

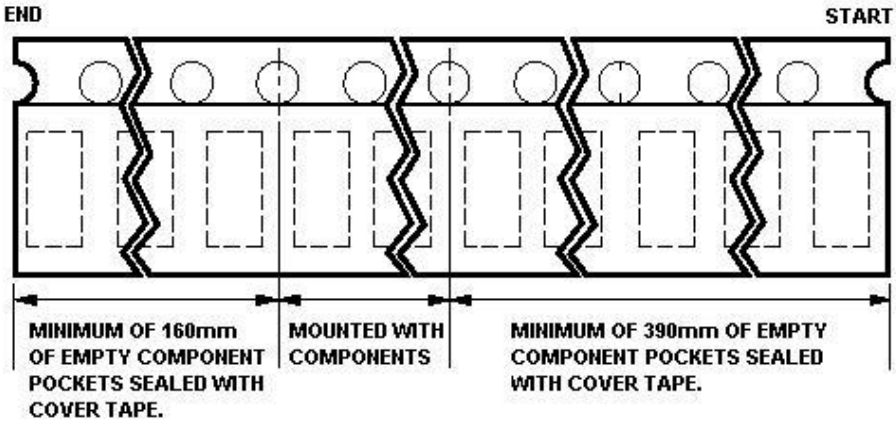
Packaging

Tape Dimension

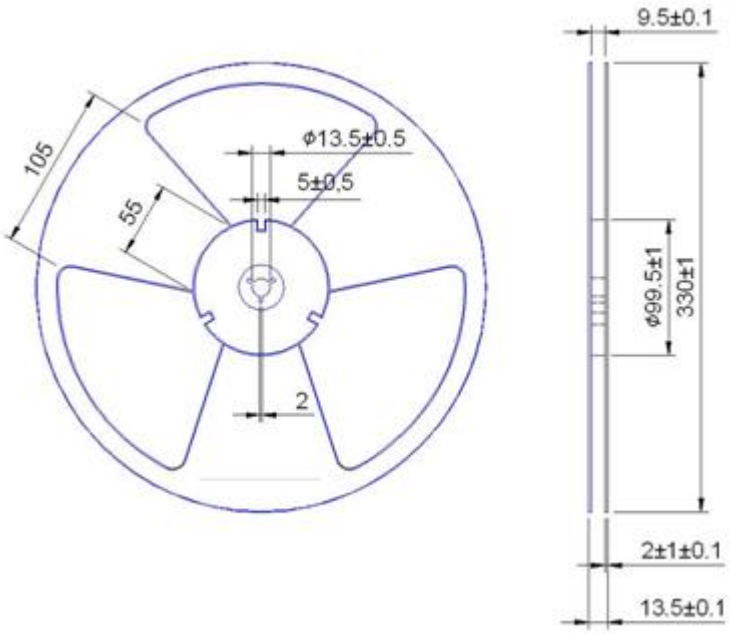


Dim. A	Dim. B	Dim. C	Q'ty/Reel
0.77±0.03	0.77±0.03	0.55±0.05	24K

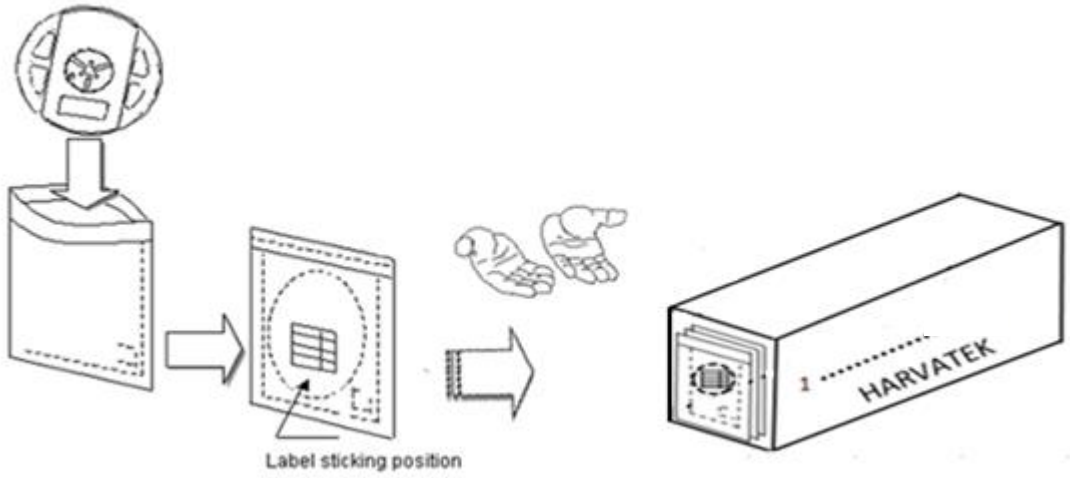
Unit: mm



Reel Dimension



Packing



28 boxes per carton is available depending on shipment quantity.

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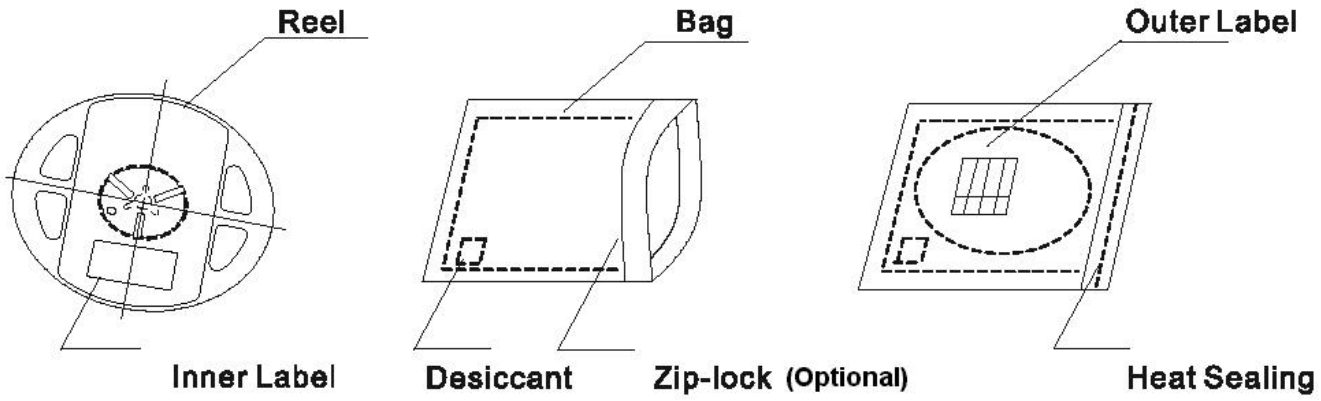
Dry Pack

All SMD optical devices are **MOISTURE SENSITIVE**. Avoid exposure to moisture at all times during transportation or storage. Every reel is packaged in a moisture protected anti-static bag. Each bag is properly sealed prior to shipment.

A humidity indicator will be included in the moisture protected anti-static bag prior to shipment.

The packaging sequence is as follows:



Baking

Baking before soldering is recommended when the package has been unsealed for 4weeks.
The conditions are as followings:

1. MBB open≤672hrs, 50±3℃×(3hrs).
2. MBB open>672hrs, 50±3℃×(8~12hrs)and<5%RH, taped reel type.
3. 100±3℃×(45min~1hr), bulk type.
4. 130±3℃×(15min~30min), bulk type.

Precautions

1. Avoid exposure to moisture at all times during transportation or storage.
2. Anti-Static precaution must be taken when handling GaN, InGaN, and AlGaInP products.
3. It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage beyond the specified limit.
4. Avoid operation beyond the limits as specified by the absolute maximum ratings.
5. Avoid direct contact with the surface through which the LED emits light.
6. If possible, assemble the unit in a clean room or dust-free environment.

Handling of Silicone Resin LEDs

Handling Indications

During processing, mechanical stress on the surface should be minimized as much as possible.

Sharp objects of all types should not be used to pierce the sealing compound.

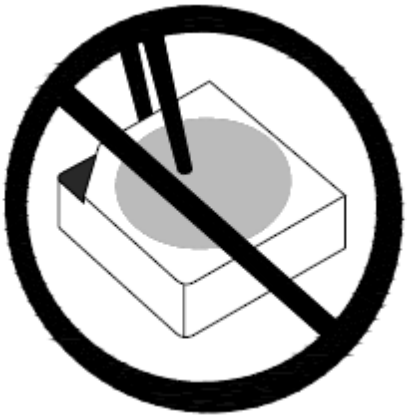


Figure 1

In general, LEDs should only be handled from the side. By the way ,this also applies to LEDs without a silicone sealant, since the surface can also become scratched.

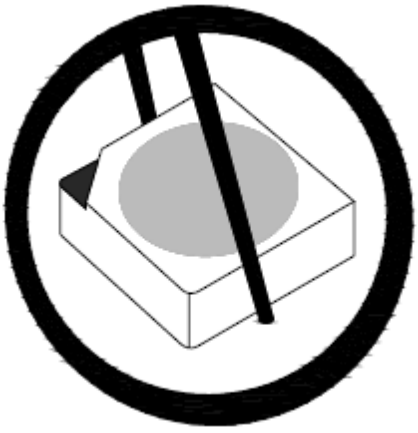


Figure 2

When populating boards in SMT production, there are basically no restrictions regarding the from of the pick and place nozzle, except that mechanical pressure on the surface of the resin must be prevented.

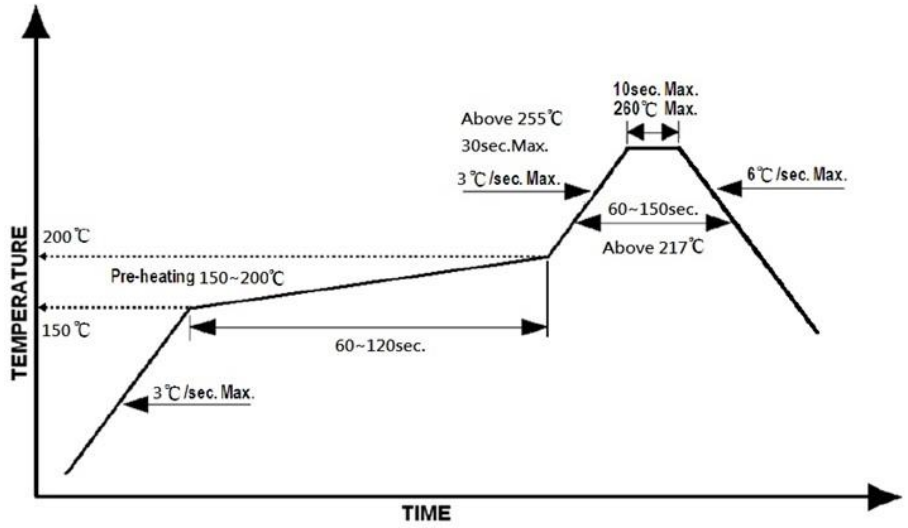
This is assured by choosing a pick and place nozzle which is large than LEDs reflector area.

Reflow Soldering

Recommend soldering paste specifications:

1. Operating temp.: Above 217 ^{O}C ,60~150 sec.
2. Peak temp.:260 ^{O}CMax.,10sec Max.
3. Reflow soldering should not be done more than two times.
4. Never attempt next process until the component is cooled down to room temperature after reflow.
5. The recommended reflow soldering profile (measured on the surface of the LED terminal) is as following:

Lead-free Solder Profile



Reworking

- Rework should be completed within 5 seconds under 260 ^{O}C.
- The iron tip must not come in contact with the copper foil.
- Twin-head type is preferred.

Cleaning

Following are cleaning procedures after soldering:

- An alcohol-based solvent such as isopropyl alcohol (IPA) is recommended.
- Temperature x Time should be 50^{o}C x 30sec. or <30^{o}C x 3min
- Ultrasonic cleaning: < 15W/ bath; bath volume ≤ 1liter
- Curing: 100 ^{O}C max, <3min

Cautions of Pick and Place

- Avoid stress on the resin at elevated temperature.
- Avoid rubbing or scraping the resin by any object.
- Electric-static may cause damage to the component. Please ensure that the equipment is properly grounded. Use of an ionizer fan is recommended.

Revise History

Rev.	Descriptions	Date	Page
-	-	27/07/2022	-