Harvatek Surface Mount Phototransistor Data Sheet
B15W1PT--H9B000112U1930

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DISCLAIMER

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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
Spectral Bandwidth λ_D	700nm~1100nm @ V_{CE}=5V / T_S = 25℃		
Peak Sensitivity λ_P	940nm @ V_{CE}=5V / T_S = 25℃		
Collector Light Current I_C	0.6mA~3.0 mA @Ee = 1mW/cm^2;λ_P=940nm, V_{CE}=5V		
Resin	Black	Epoxy	
Carrier tape	EIA 481-1A specs	Conductive black tape	
Reel	EIA 481-1A specs	Conductive black	
Label	HT standard	Paper	
Packing bag	220x240mm	Aluminum laminated bag/ no-zipper	One reel per bag
Carton	HT standard	Paper	Non-specified

Others:

Each immediate box consists of 5 reels. The 5 reels may not necessarily have the same lot number or the same bin combinations of Iv, CIE and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.

Note :This is shipped test conditions

※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.

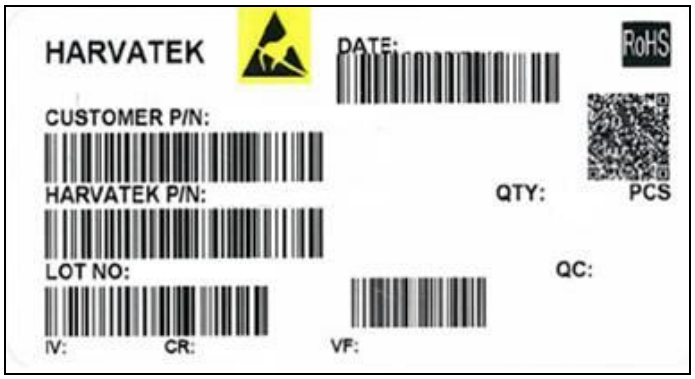
ATTENTION: Electrostatic Discharge (ESD) protection



The symbol to the left denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips and Silicon semiconductor is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, 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 15W 1 PT-- H9B 0001 12 U1930

Product	Dice Q'ty	Voltage	Taping	Customer Code
PCB	1:Single	5V	1. Taping style 2. Q'ty	Customer Product Code

Package	Type	Series Number
3.2(L)x1.6(W)x1.85(H) mm	PT: Phototransistor	X001~XZZZ

■ 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	2010-A 2011-B 2012-C ... 2018-I/J 2019-K ... 2022-N 2023-P ...	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		

Absolute Maximum Rating at 25℃

Symbol	Parameters	Ratings	Units	Notes
V_{CEO}	Collector-Emitter Voltage	30	V	
V_{ECO}	Emitter-Collector Voltage	5	V	
I_C	Collector Current	20	mA	
T_{opr}	Operating Temperature	-40 ~ +85	℃	
T_{stg}	Storage Temperature	-40 ~ +100	℃	
T_{sol}	Soldering Temperature	260	℃	1

Notes:

1. Soldering time≦5 seconds.

Electro-Optical Characteristics

Symbol	Parameters	Test conditions	Min	Typ	Max	Units	Notes
$\lambda_{0.5}$	Range Of Spectral Bandwidth	---	700	-	1100	nm	
λ_P	Wavelength Of Peak Sensitivity	---	-	940	-	nm	
BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C=100μA E_e=0mW/cm²	30	-	-	V	
BV_{ECO}	Emitter-Collector Breakdown Voltage	I_E=100μA E_e=0mW/cm²	5	-	-	V	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=2mA E_e=1mW/cm²	-	-	0.4	V	
I_{CEO}	Collector Dark Current	V_{CE}=20V E_e=0mW/cm²	-	-	100	nA	
$I_{C(ON)}$	On State Collector Current	E_e=1mW/cm² λ_P=940nm, V_{CE}=5V	-	2	-	mA	2
t_r	Rise Time	V_{CE}=5V, I_C=1mA R_L=1000Ω	-	15	-	μS	3
t_f	Fall Time		-	15	-	μS	

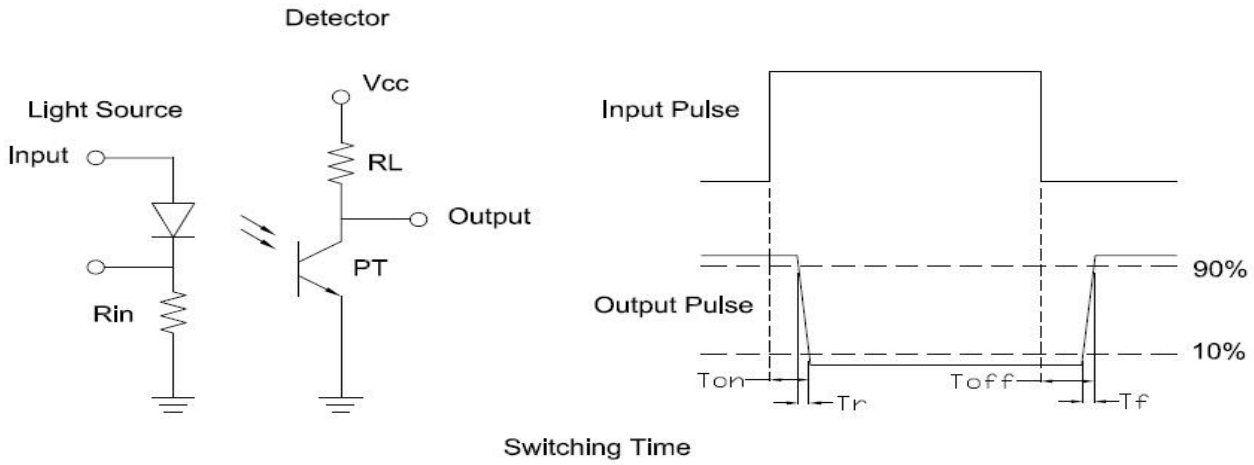
Notes:

2. Ic Bin Rank：:

Bin Code	B1
Min	0.6
Max	3.0

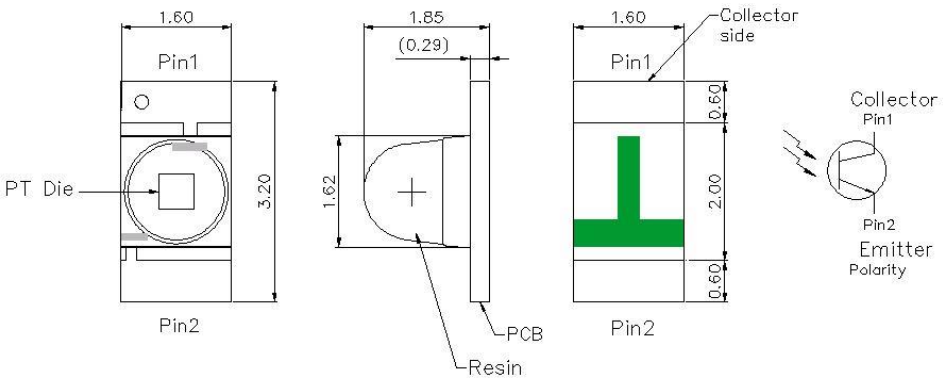
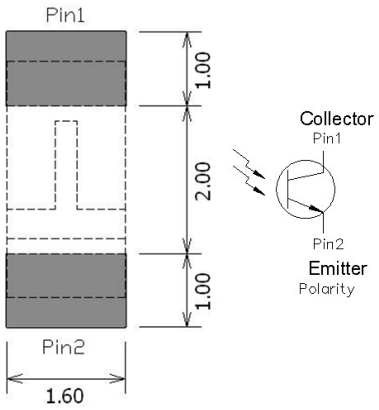
Notes:

3. Test circuit：:



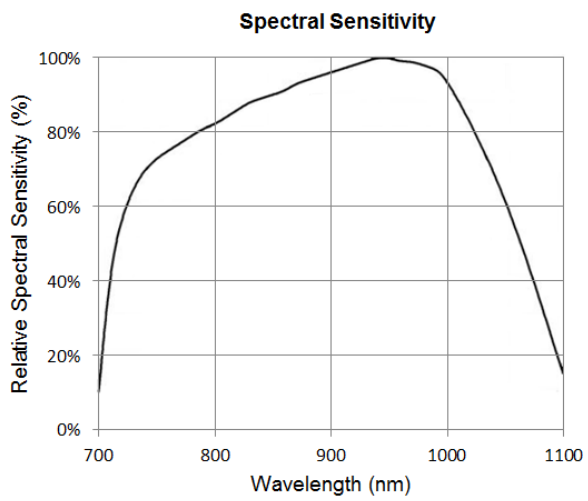
Package Outline Dimension and Recommended Soldering Pattern for Reflow Soldering

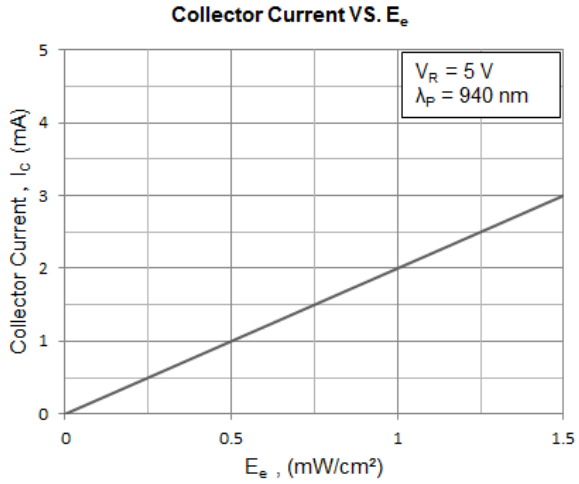
(Unit: mm Tolerance: +/-0.1)

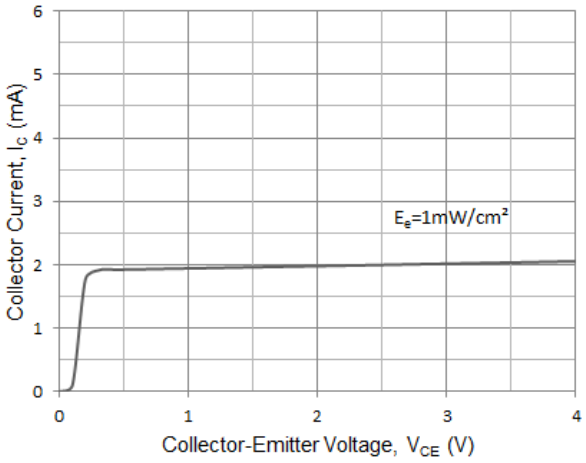
Outline Dim.	Soldering Pattern
	

Soldering terminals may shift in the x, y direction.

Characteristics of B15W1PT





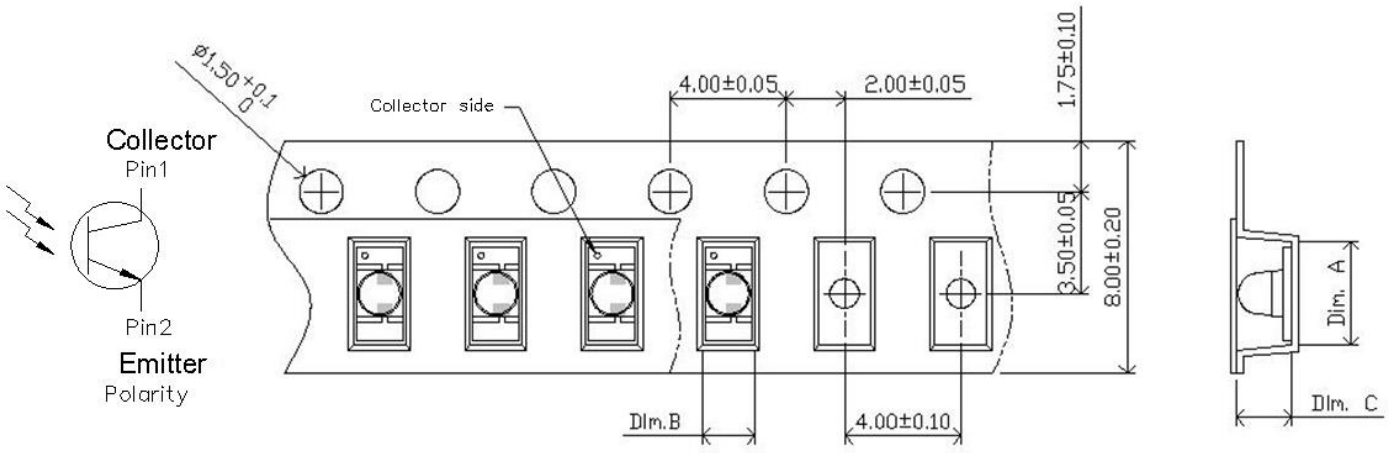


Precaution for Use

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 4 weeks 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.

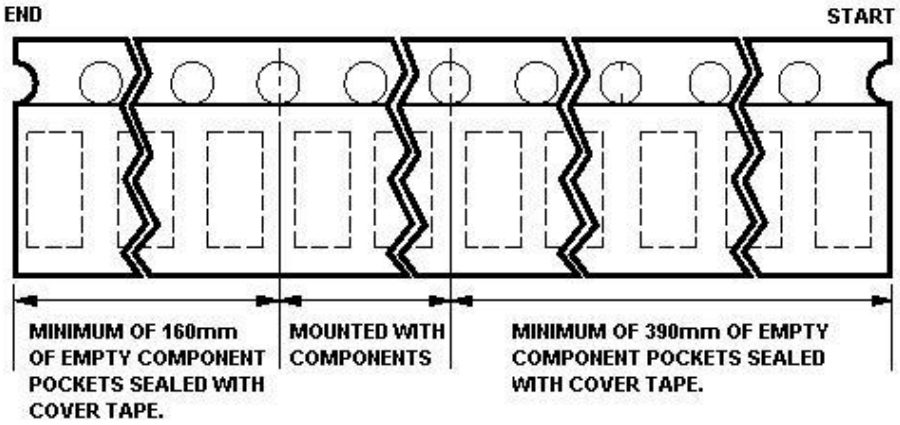
Packaging

Tape Dimension

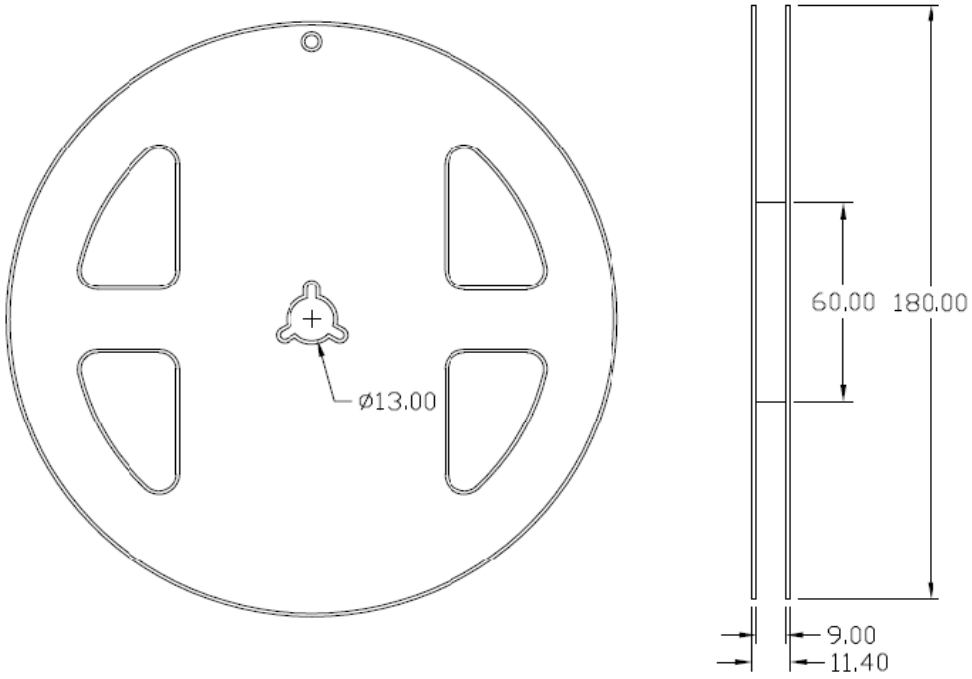


Dim. A	Dim. B	Dim. C	Q'ty/Reel
3.37±0.10	1.78±0.10	2.17±0.10	2K

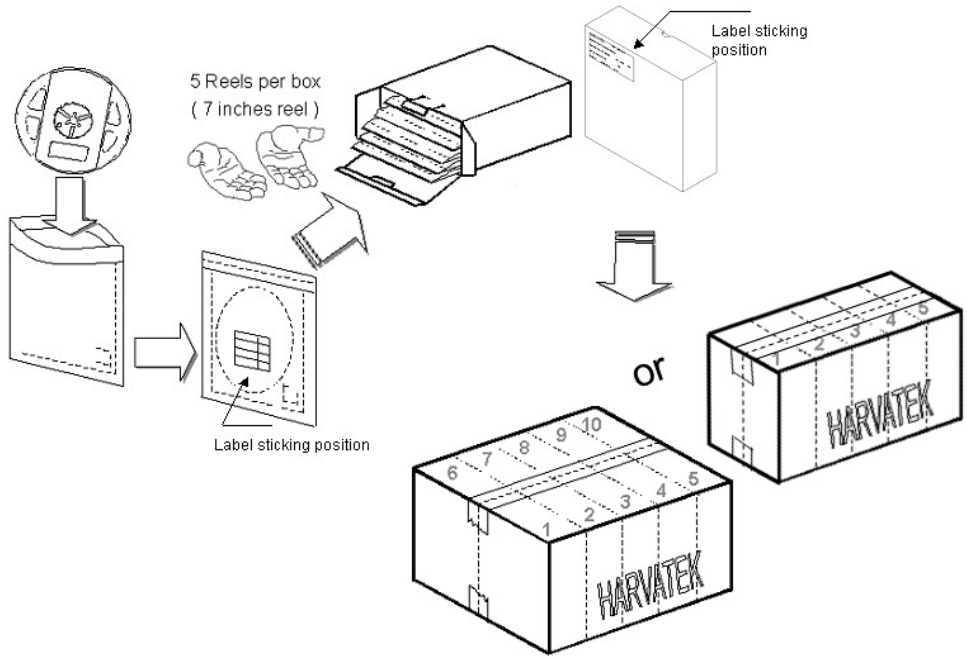
Unit: mm



Reel Dimension



Packing



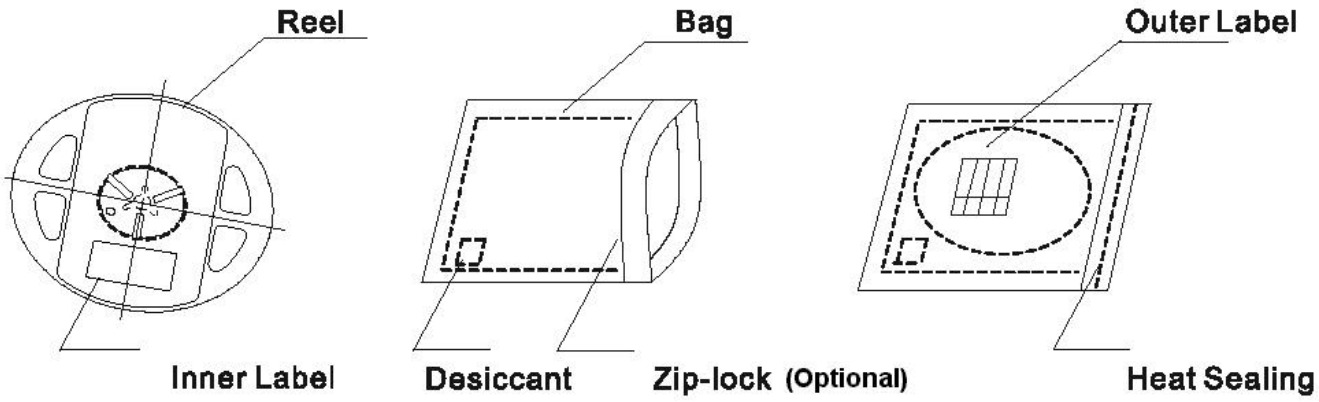
5 or 10 boxes per carton is available depending on shipment quantity.

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 4 weeks. The conditions are as followings:

1. 60±3℃×(12~24hrs)and<5%RH, taped reel type.
2. 100±3℃×(45min~1hr), bulk type.
3. 130±3℃×(15min~30min), bulk type.

Precautions

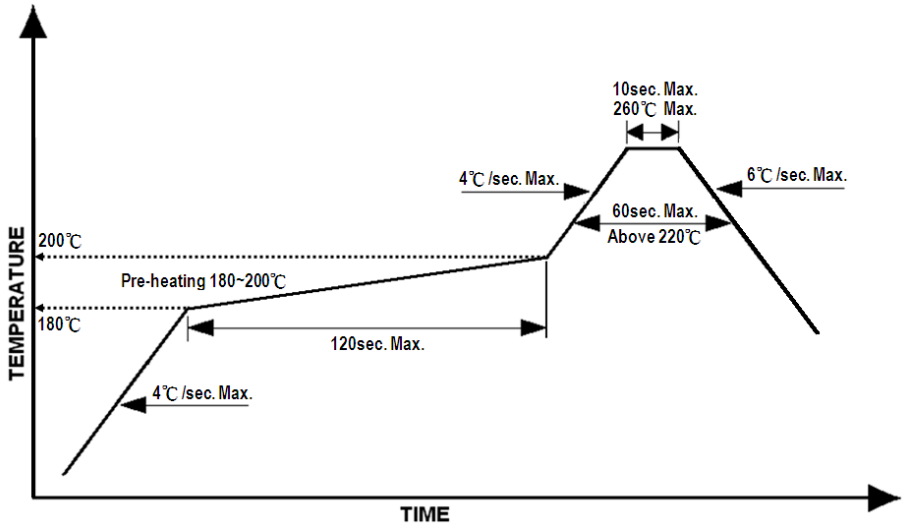
1. Avoid exposure to moisture at all times during transportation or storage.
2. Anti-Static precaution must be taken when handling GaN, InGaN, and AlInGaP products.
3. It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage beyond the 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.

Reflow Soldering

Recommend soldering paste specifications:

1. Operating temp.: Above 220℃ ,60sec
2. Peak temp.:260℃ Max.,10sec Max.
3. Reflow soldering should not be done more than two times.
4. Never take next process until the component is cooled down to room temperature after reflow.
5. The recommended reflow soldering profile (measuring on the surface of the LED terminal) is following:

Lead-free Solder Profile



Reworking

- Rework should be completed within 5 seconds under 260℃.
- 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℃ x 30sec. or <30℃ x 3min
- Ultra sonic cleaning: < 15W/ bath; bath volume ≤ 1liter
- Curing: 100℃ 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
1.0	-	09/28/2017	
1.1	$V_{CE(sat)}$ Test conditions & Characteristics	10/05/2017	6&8
1.2	CHIP LEDs >> Phototransistor / Revise item name	12/21/2017	1&5
1.3	Revise bin range	05/22/2018	6
1.4	Revise Typ. of On State Collector Current / Revise Characteristics	08/02/2018	6 , 8
1.5	Revise Absolute Maximum Rating of Voltage	04/11/2019	6
1.6	Absolute Maximum Rating: BV_{CEO}、BV_{ECO}→V_{CEO}、C_{ECO}	07/16/2019	6

Unikeyic Electronics

Global Electronic Components Distributor

Click to view pricing, inventory, delivery, and lifecycle information:

HARVATEK:

B1A81USD-20C000313U1930 B1931URO-20D000114U1930 B19Y1USD-20C000113U1930
F1081NG--20C000542U1930 B1911NB--20C005314U1930 B2102UGNB20C000233U1930
HV-317464/230/SURSUBW-F3.0-U1930 B17T2UONG20D000314U1930 B1811UD--20C000413U1930
B2841NB--20C001414U1930 HV-32223/260/SYGX-U1930 HV-I8UG60G-MP9AA-U1930
B1A81UYG-20C000313U1930 B3SK3RGB-F6C0001HOU1930 B2102UDUG20C000133U1930
B15P1PD--H9B000113U1930 B1811TX--05PP05413U1930 B1811USD-20C000613U1930
B2592USNG20D0001L2U1930 F1081IRP-A1C000142U1930 V1081NB--20C000342U1930
T1341MND-20P000712U1930 T15B1USD-20C000112U1930 B15W1IR--20C000112U1930
B2161USD-20C000334U1930 B2592UONG20C0002L2U1930 B3C73RBG02D0006H4U1930
HV-32312/260/XSUB-U1930 B12H1UY--20D000134U1930 T4642PTIRM3B000351U1930