

Harvatek Surface Mount CHIP LEDs Data Sheet
C35T1IRP-B4C5201X1U1930
Preliminary

Official Product	HT Part No. C35T1IRP-B4C520X1U1930			
Tentative Product	*****	*****		
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DISCLAIMER.....	3
LIFE SUPPORT POLICY.....	3
PRODUCT SPECIFICATIONS.....	4
ATTENTION: ELECTROSTATIC DISCHARGE (ESD) PROTECTION	4
LABEL SPECIFICATIONS.....	5
ELECTRO-OPTICAL CHARACTERISTICS	6
PACKAGE OUTLINE DIMENSION AND RECOMMENDED SOLDERING PATTERN FOR REFLOW	
SOLDERING.....	7
CHARACTERISTICS OF C35T1IRP	8
PRECAUTION FOR USE.....	9
PACKAGING	10
TAPE DIMENSION	10
REEL DIMENSION.....	11
PACKING.....	11
DRY PACK	12
BAKING.....	12
PRECAUTIONS	12
REFLOW SOLDERING	13
REWORKING.....	13
CLEANING.....	13
CAUTIONS OF PICK AND PLACE	14
REVISE HISTORY	14

Official Product	HT Part No. C35T1IRP-B4C520X1U1930			
Tentative Product	*****	*****		
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		10/15/2024	Preliminary	Page 2/14

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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.

Official Product	HT Part No. C35T1IRP-B4C520X1U1930			
Tentative Product	*****	*****		
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		10/15/2024	Preliminary	Page 3/14

Product Specifications

Item	Specification	Material	Quantity
Peak Wavelength λ_p	Typ:850 nm @700mA/ $T_s=25^{\circ}\text{C}$;Tolerance: $\pm 1\text{nm}$		
Radiometric Power P_o	Typ:650 mW @700mA / $T_s=25^{\circ}\text{C}$;Tolerance: $\pm 10\%$		
Forward Voltage V_F	Typ:2.0 V @700mA/ $T_s=25^{\circ}\text{C}$;Tolerance: $\pm 0.1\text{V}$		
Reverse Current I_R	< 10 μA @ $V_R = 5\text{ V}$		
Resin	Clear	Epoxy	
Carrier tape	EIA 481-1A specs	Conductive black tape	
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 5 reels. The 5 reels may not necessarily have the same lot number or the same bin combinations of I_v , λ_D and V_f . 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

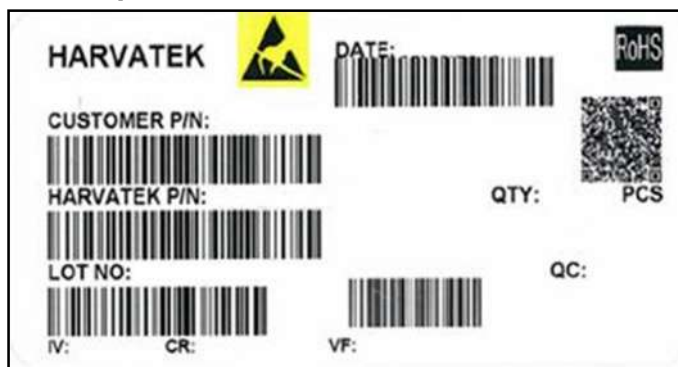


The symbol to the left denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlGaInP, GaN, or/and InGaN based chips are **STATIC SENSITIVE devices**. ESD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

Official Product	HT Part No. C35T1IRP-B4C520X1U1930			
Tentative Product	*****	*****		
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		10/15/2024	Preliminary	Page 4/14

Label Specifications



■Harvatek P/N:

C 35T 1 IRP- B4C- 5201 X1

Product	Package	Dice Q'ty	Color	Current	Series Number	Taping
Ceramic	3.45(L)x3.45(W)x2.3(H) mm	1:Single	IRP: 850 nm	700 mA	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		2010-A		1:A	01~ZZ		000~ZZZ		
		2011-B		2:B					
		2012-C	1:Jan.	3:C					
		...	2:Feb.	...					
		2018-I/J	...	26:Z					
		2019-K	A:Oct.	27:7					
		...	B:Nov.	28:8					
		2022-N	C:Dec.	29:9					
		2023-P		30:3					
		...		31:4					

Official Product	HT Part No. C35T1IRP-B4C520X1U1930			
Tentative Product	*****	*****		
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		10/15/2024	Preliminary	Page 5/14

Absolute Maximum Rating at 25°C

Symbol	Parameters	Ratings	Units	Notes
I_F	Forward Current	700	mA	
I_{FP}	Pulse Forward Current	1000	mA	1
P_D	Power Dissipation	2.5	W	
V_R	Reverse Voltage	5	V	
T_J	Junction Temperature	115	°C	
T_{opr}	Operating Temperature	-25~+75	°C	
T_{stg}	Storage Temperature	-30~+85	°C	
T_{sol}	Soldering Condition	Reflow Soldering : 260°C , 10 Sec. Hand Soldering : 300°C , 3 Sec.		

Notes:

- Condition of IFP: Pulse 1/10 duty and 0.1 msec width.

Electro-Optical Characteristics

Symbol	Parameters	Test conditions	Min	Typ	Max	Units	Notes
λ_P	Peak Wavelength	$I_F=700mA$	842	852	867	nm	2
P_O	Radiometric Power	$I_F=700mA$	500	650	-	mW	3
I_e	Radiant Intensity	$I_F=700mA$	-	185		mW/Sr	
V_F	Forward Voltage	$I_F=700mA$	1.6	2.0	2.4	V	4
RO_{J-B}	Thermal Resistance Junction to Board	$I_F=700mA$	-	5	-	°C/W	
$\Delta\lambda$	Spectral Line Half-Width	$I_F=700mA$	-	35	-	nm	
I_R	Reverse Current	$V_R=5V$	-	-	10	μA	
$2\theta_{1/2}$	Viewing Angle	$I_F=700mA$	-	120	-	Deg	

Notes:

- Peak Wavelength (λ_P) Bin:

Color	Bin Code	Spec. Range
IRP	D	830-870 nm

Peak wavelength measurement tolerance: ±10%

Official Product	HT Part No. C35T1IRP-B4C520X1U1930			
Tentative Product	*****	*****		
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		10/15/2024	Preliminary	Page 6/14

3. Radiometric Power (Po) Bin:

Color	Bin Code	Spec. Range
IRP	RK	500-600 mW
	RL	600-700 mW

Radiometric Power measurement tolerance: $\pm 10\%$

4. Forward Voltage (V_F) Bin:

Color	Bin Code	Spec. Range
IRP	E18	1.6-2.4 V

It maintains a tolerance of $\pm 0.1V$ on forward voltage measurements

Package Outline Dimension and Recommended Soldering Pattern for Reflow Soldering

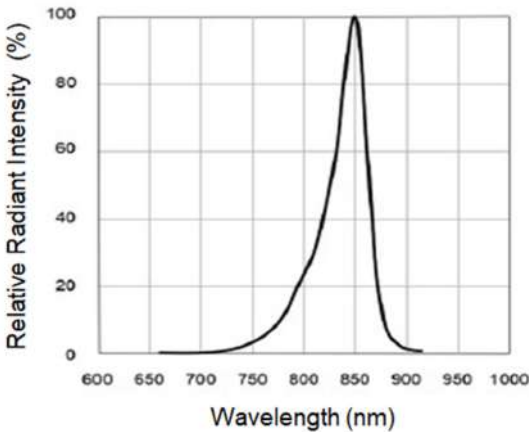
(Unit: mm; Tolerance: ± 0.1)

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

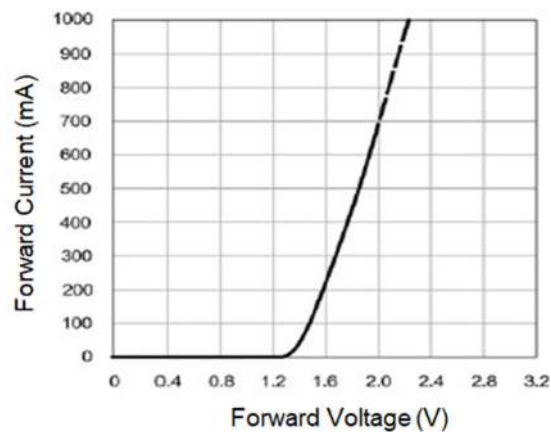
Official Product	HT Part No. C35T1IRP-B4C520X1U1930		
Tentative Product	*****	*****	
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.	10/15/2024	Preliminary	Page 7/14

Characteristics of C35T1IRP

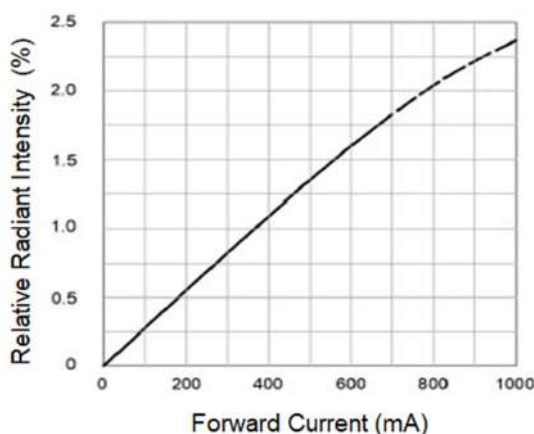
Relative Spectral Emission



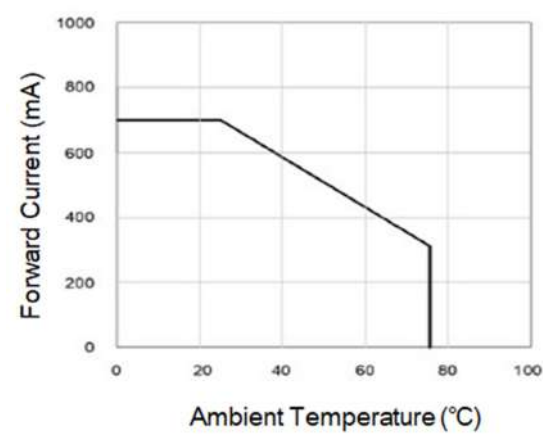
Forward Current V.S. Forward Voltage



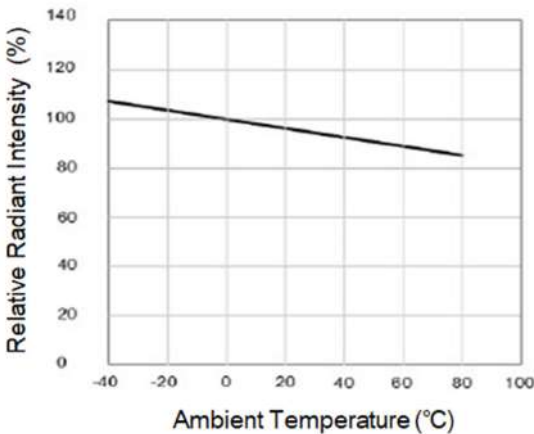
Relative Radiant Intensity V.S. Forward Current



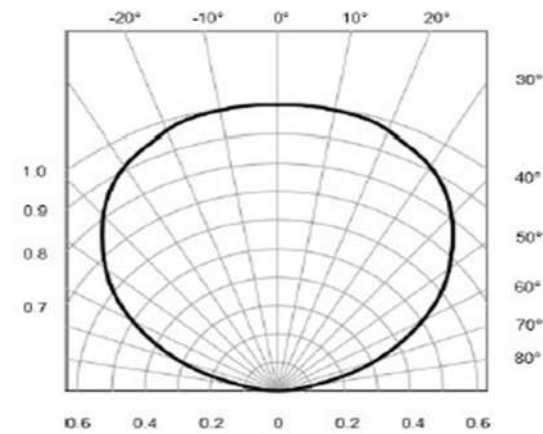
Forward Current Derating Curve



Relative Radiant Intensity V.S. Ambient Temperature



Spatial Distribution



Official Product	HT Part No. C35T1IRP-B4C520X1U1930		
Tentative Product	*****	*****	
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		10/15/2024	Preliminary
			Page 8/14

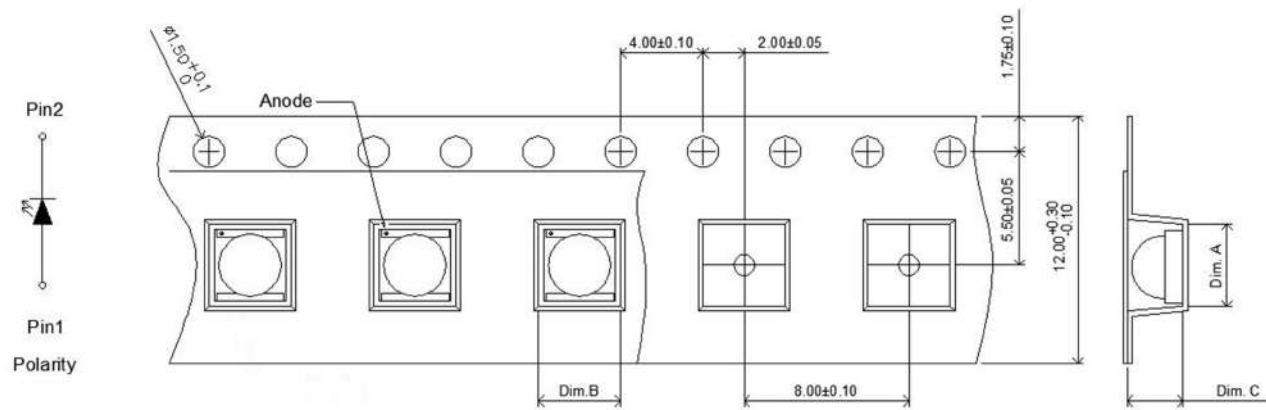
Precaution for Use

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.

Official Product	HT Part No. C35T1IRP-B4C520X1U1930			
Tentative Product	*****	*****		
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		10/15/2024	Preliminary	Page 9/14

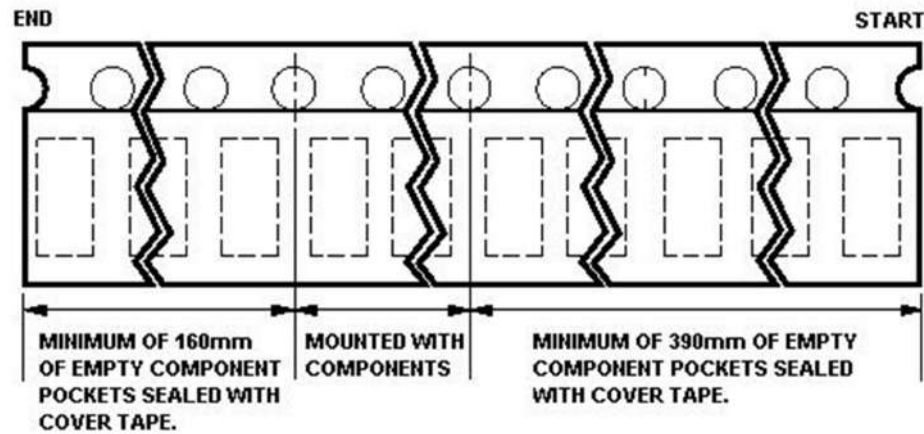
Packaging
Tape Dimension

Top View Top Mount



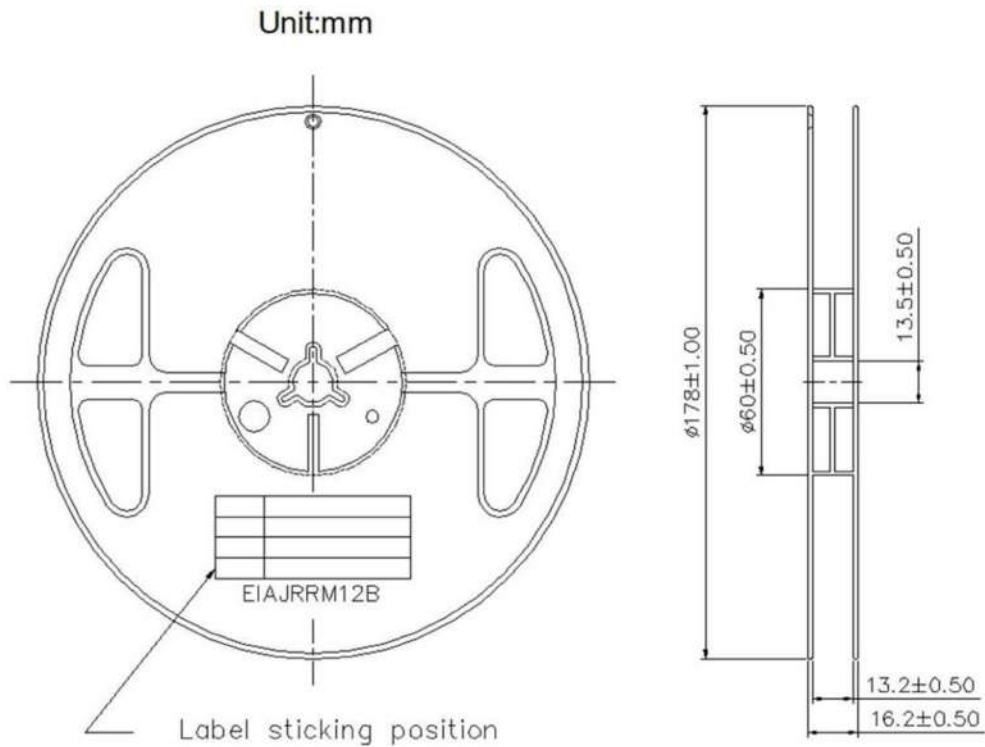
Dim. A	Dim. B	Dim. C	Q'ty/Reel
4.00±0.10	4.00±0.10	2.70±0.10	1000ea

Unit: mm

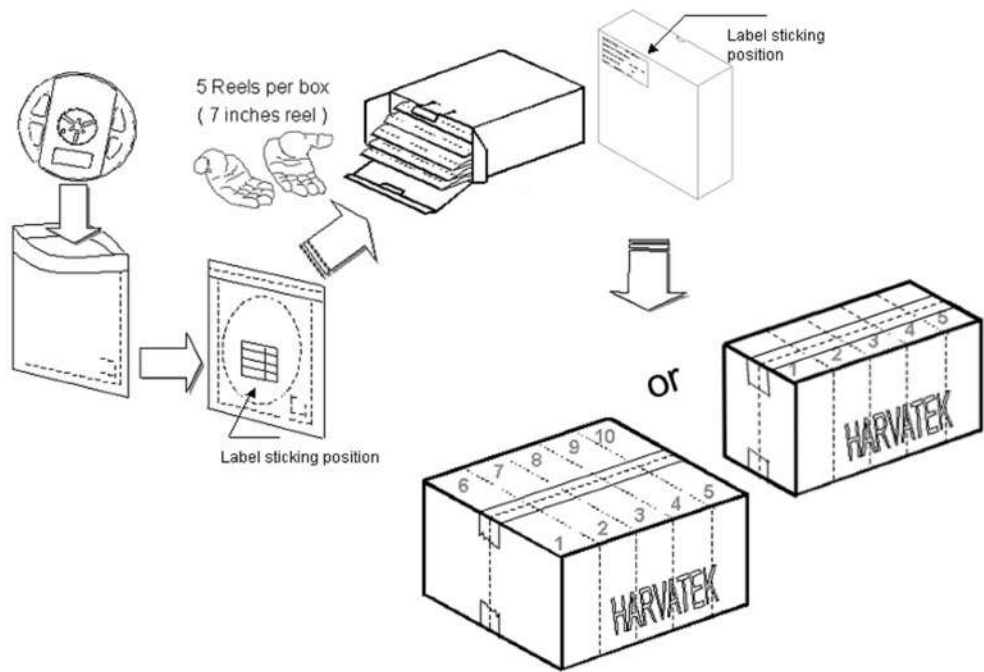


Official Product	HT Part No. C35T1IRP-B4C520X1U1930			
Tentative Product	*****	*****		
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		10/15/2024	Preliminary	Page 10/14

Reel Dimension



Packing



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

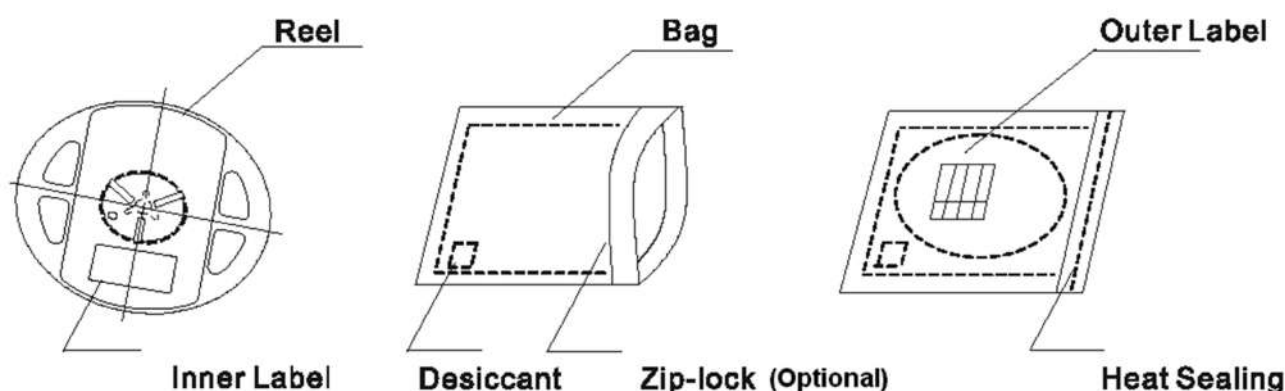
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Tentative Product	*****	*****	
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		10/15/2024	Preliminary Page 11/14

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. $60\pm3^{\circ}\text{C}\times(12\sim24\text{hrs})$ and $<5\%\text{RH}$, taped reel type.
2. $100\pm3^{\circ}\text{C}\times(45\text{min}\sim1\text{hr})$, bulk type.
3. $130\pm3^{\circ}\text{C}\times(15\text{min}\sim30\text{min})$, 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.

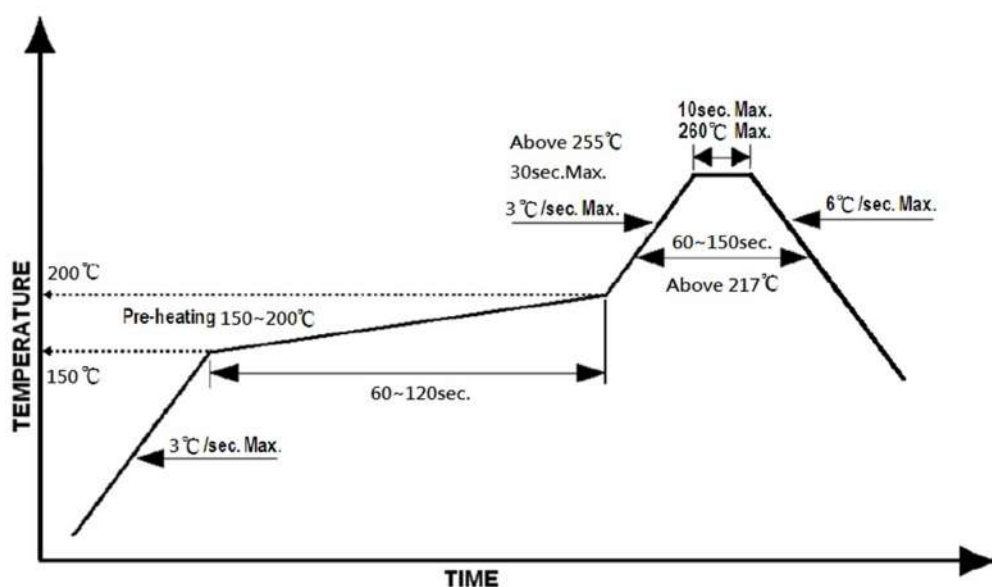
Official Product	HT Part No. C35T1IRP-B4C520X1U1930			
Tentative Product	*****	*****		
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Reflow Soldering

Recommend soldering paste specifications:

1. Operating temp.: Above 217°C ,60~150 sec.
2. Peak temp.:260°C Max. 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°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°C x 30sec. or <30°C x 3min
- Ultrasonic cleaning: < 15W/ bath; bath volume ≤ 1liter
- Curing: 100°C max, <3min

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Tentative Product	*****	*****		
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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
Preliminary	-	10/15/2024	-

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Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		10/15/2024	Preliminary	Page 14/14