Harvatek Surface Mount LED Data Sheet
HT-U16D Series

Preliminary

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

Product	Emission Color	Technology	Test Current I_F (mA)	Forward Voltage V_F (V)	Orderable Part Number
HT-U16DUSD	Ultra Bright Orange	AlInGaP	20	2.7 typ.	HT-U16DUSD-XXXX
HT-U16DNG	Green	InGaN	20	3.3 typ.	HT-U16DNG-XXXX
HT-U16DNBH	Blue	InGaN	150	3.3 typ.	HT-U16DNBH-XXXX
HT-U16DSWH	White	InGaN	150	3.3 typ.	HT-U16DSWH-XXXX

	Specification	Material	Quantity
ESD	2000V (HBM)		
Resin	Water clear	Silicone	
Carrier tape	Per EIA 481-1A specs	Conductive black tape	1000pcs per reel
Reel	Per 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	

Others:

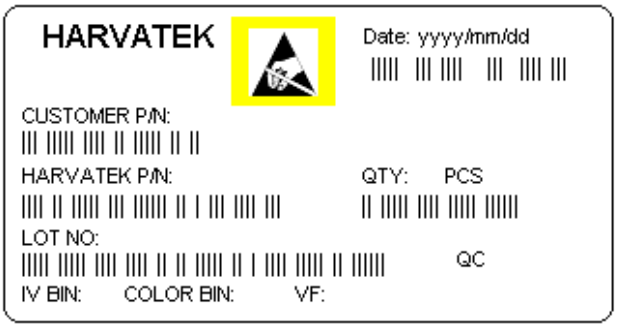
Each immediate box consists of 5 reels. The 5 reels may not necessarily have the same lot number or the same bin combinations of Iv, λ_D and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.

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 AlInGaP, GaN, or/and InGaN based chips are **STATIC SENSITIVE devices**. ESD precaution must be taken during design and assembly.

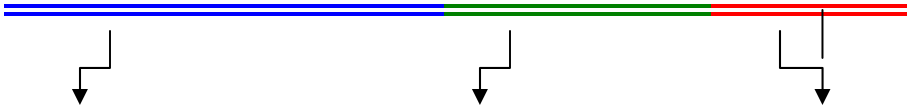
If manual work or processing is needed, please ensure the device is adequately protected from ESD during the process.

Label Specifications



■ Harvatek P/N:

H T - U16D YYY - XXXX



Series Name	Emitting Color	Customer Code
HT-U16D HT: Harvatek U16D: Mid-power series 3.5 (L) x 2.8 (W) x 1.3 (H) mm	**YYY** USD: Super Bright Orange@20mA NG: Green@20mA NBH: Blue@150mA SWH: White@150mA	**XXXX** Customer Product Code

Lot No.:

1	2	3	4	5	6	7	8	9	10
P	**1**	**2**	**2**	**3**	**0**	**A**	**-**	**D**	**T**

Code 1	Code 2	Code 3	Code 4, 5	Code 6, 7	Code 9	Code 10
	Mfg. Year	Mfg. Month	Mfg. Date	Lots	Resin Color	Packaging
Internal Tracing Code	Z: 2000 1: 2001 2: 2002 3: 2003 …..	1: Jan. 2: Feb. …. 9: Sep. A: Oct. B: Nov. C: Dec.	1~31/ (30)	01~99, A,B,C…	D: Diffused C: Clear	T: Tape & Reel

■ Luminous Intensity (Iv) Bin:

Bin	Luminous Intensity Range (mcd)		Bin	Luminous Intensity Range (mcd)	
	Minimum	Maximum		Minimum	Maximum
			Z2	1270.0	1440.0
AA1	1440.0	1610.0	AA2	1610.0	1800.0
AB1	1800.0	2010.0	AB2	2010.0	2250.0
AC1	2250.0	2530.0	AC2	2530.0	2850.0
AD1	2850.0	3200.0	AD2	3200.0	3600.0
AE1	3600.0	4000.0	AE2	4000.0	4500.0
AES1	3600.0	4000.0	AES2	4000.0	4350.0
AFS1	4350.0	4710.0	AFS2	4710.0	5100.0
AF1	4500.0	5000.0	AF2	5000.0	5600.0
AG1	5600.0	6300.0	AG2	6300.0	7150.0
AH1	7150.0	8000.0	AH2	8000.0	9000.0
AJ1	9000.0	10000.0			

@150mA / Ta=25^{O} C, Tolerance: ± 10%

■ Luminous Flux Bin:

Rank Code	Symbol	Condition	Min.	Typ.	Max.	Unit
PN	ΦV	I_F=150mA	18.0	-	23.5	lm
PP			23.5	-	30.6	

@150mA / Ta=25^{O} C, Tolerance: ± 10%

■ Wavelength (λ) Bin:

Bin	Wavelength Range (nm)					
	Super Bright Orange (USD)		True Green (NG)		Blue (NB)	
	Min	Max	Min	Max	Min	Max
-	615.0	630.0				
A			515.0	520.0	460.0	464.0
B			520.0	525.0	464.0	468.0
C			525.0	530.0	468.0	472.0
D			530.0	535.0	472.0	476.0
E			535.0	540.0	476.0	480.0
F					480.0	485.0
H						
J						

@150mA / Ta=25^{O} C, Tolerance: ± 0.5nm

■ Forward Voltage (V_F) Bin:

Color	Bin Code	Spec. Range
Blue (NB)	H6	3.0 – 3.2 V
Green (NG)	J5	3.2 – 3.4 V
White (TW)	J6	3.4 – 3.6 V
Super Bright Orange (USD)	G6	2.6 – 2.8 V
	H5	2.8 – 3.0 V

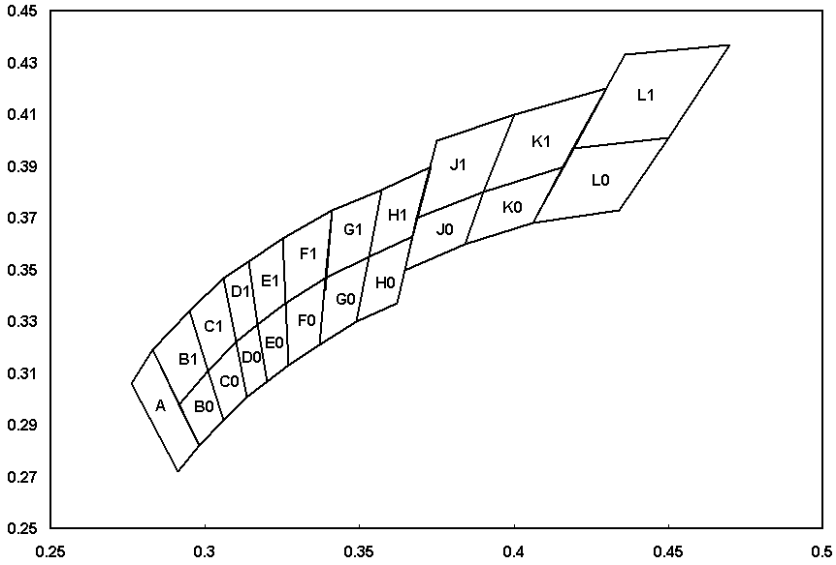
@150mA / Ta=25℃, Tolerance: ± 0.05 V

Correlated Color Temperature Rank (TW only)

Color	Condition	Bin Code	Min.	Typ.	Max.
Warm White	I_F=150mA	L1	2,750	3,000	3,250
		L0	2,750	3,000	3,250
		K1	3,250	3,500	3,750
		K0	3,250	3,500	3,750
		J1	3,750	4,000	4,250
		J0	3,750	4,000	4,250
		H1	4,250	4,500	4,750
		H0	4,250	4,500	4,750
Pure White		G1	4,750	5,000	5,250
		G0	4,750	5,000	5,250
		F1	5,250	5,500	5,750
		F0	5,250	5,500	5,750
		E1	5,750	6,000	6,250
		E0	5,750	6,000	6,250
		D1	6,250	6,500	6,750
		D0	6,250	6,500	6,750
Cold White	I_F=150mA	C1	6,750	7,000	7,500
		C0	6,750	7,000	7,500
		B1	7,500	8,000	8,500
		B0	7,500	8,000	8,500
		A	8,500	9,000	9,500

Tolerance: ±5%

Correlated Color Temperature and Chromaticity Correlation (TW only)



@150mA / Ta=25℃, Tolerance: ± 0.01

Product Characteristics

Absolute Maximum Ratings

Product	Emission Color	P_d (mW)	I_F (mA)	I_{FP}* (mA)	V_R (V)	T_{OP} (°C)	T_{ST} (°C)
HT-U16DUSD	Ultra Bright Orange						
HT-U16DNG	Green						
HT-U16DNBH	Blue	570	180	200	5	-40~+100	-40~+100
HT-U16DSWH	White	570	180	200	5	-40~+100	-40~+100

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

Electro-Optical Characteristics

(T_a = 25 °C)

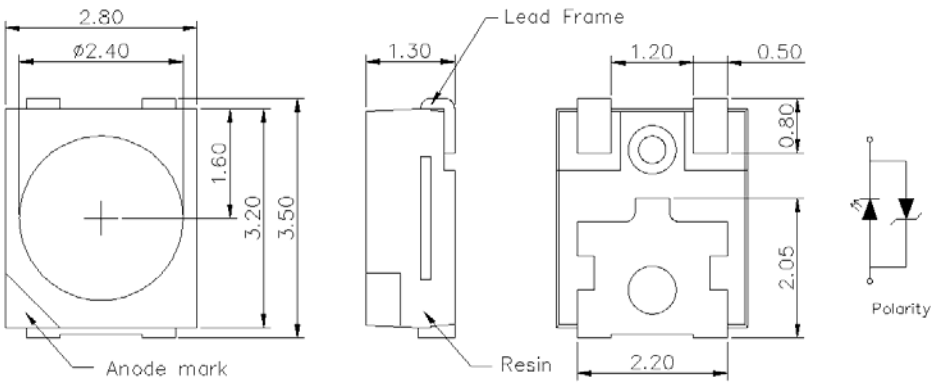
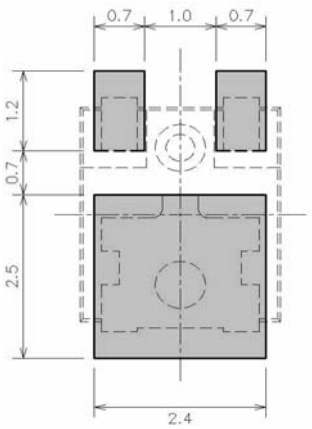
Product	Emission Color	I_F(mA)	V_F(V)		λ(nm)			Iv (mcd)	
			typ	max	λ_D	λ_P	△λ	min	typ
HT-U16DUSD	Ultra Bright Orange	20	2.8	3.0	622	636	17	2500.0	6200.0
HT-U16DNG	Green	20	3.3	3.6	527	520	40	4850.0	5025.0
HT-U16DNBH	Blue	150	3.3	3.6	465	468	40	1220.0	1340.0

Product	Emission Color	I_F(mA)	V_F(V)		λ(nm)			ΦV (lm)	
			typ	max	λ_D	λ_P	△λ	min	typ
HT-U16DSWH	White	150	3.3	3.6	X=0.29 Y=0.31			18.1	23

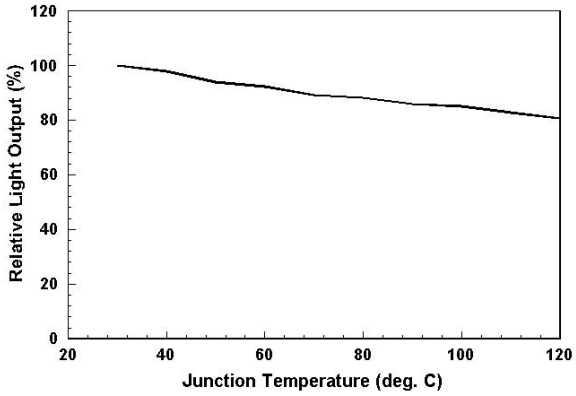
* Per NIST standard

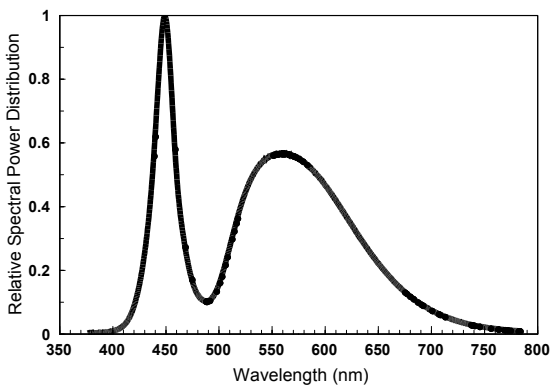
Package Outline Dimension and Recommended Soldering Pattern

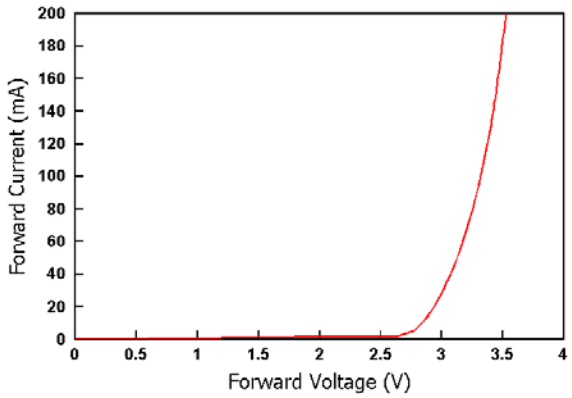
Unit: mm Tolerance: +/-0.1

Outline Dimension	Solder Pattern
	
Soldering terminals may shift in the x, y direction.	Unit: mm

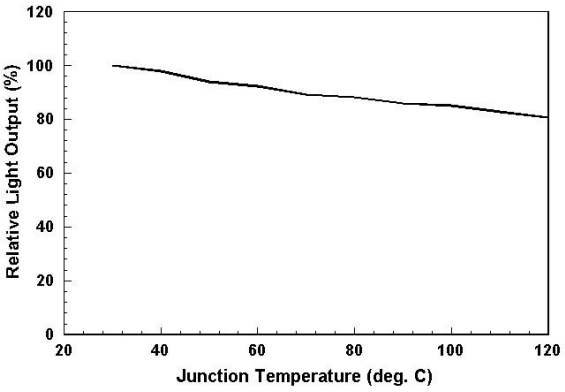
Characteristic Curves for NB

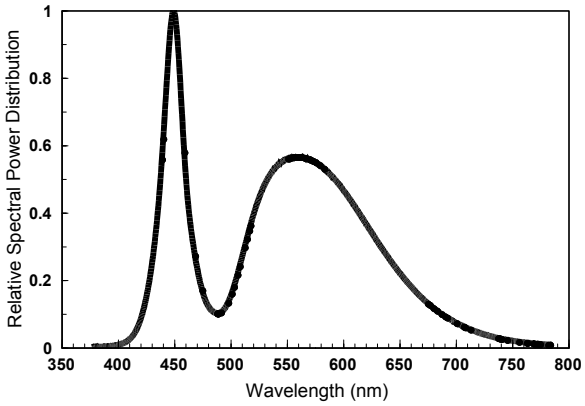


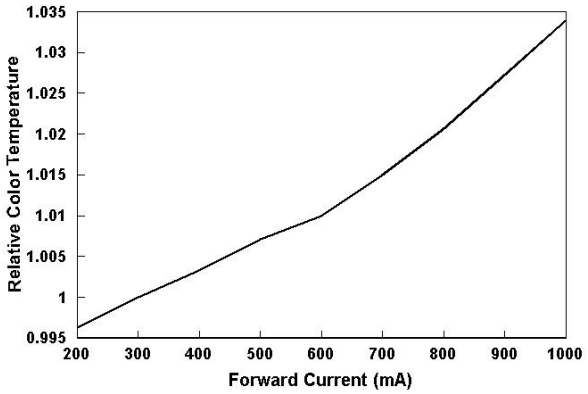


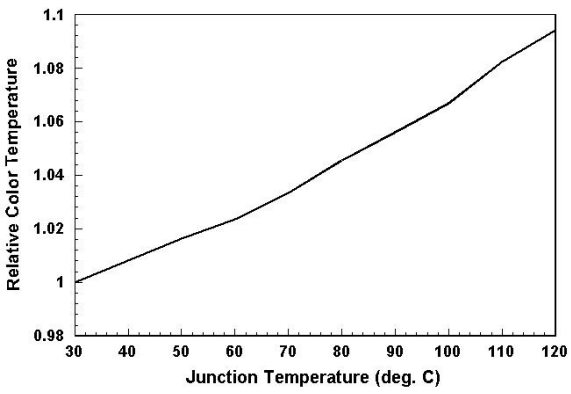


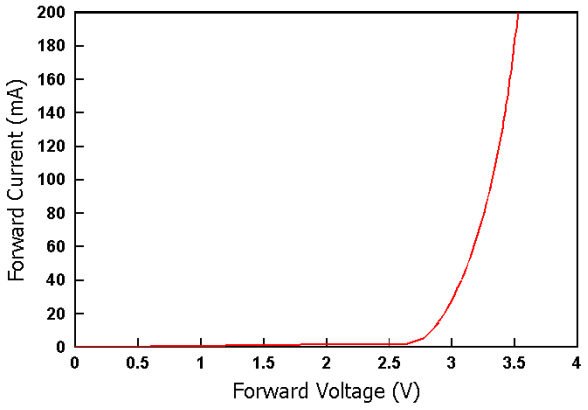
Characteristic curves for TW

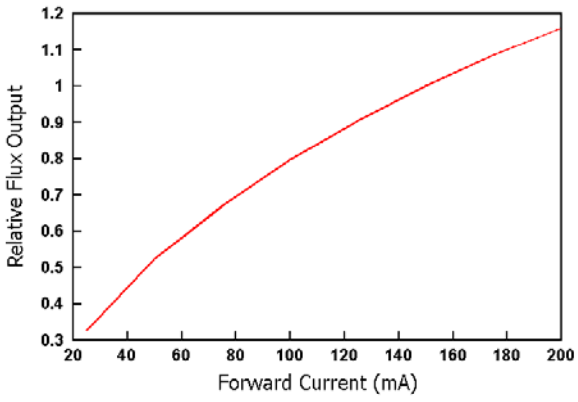






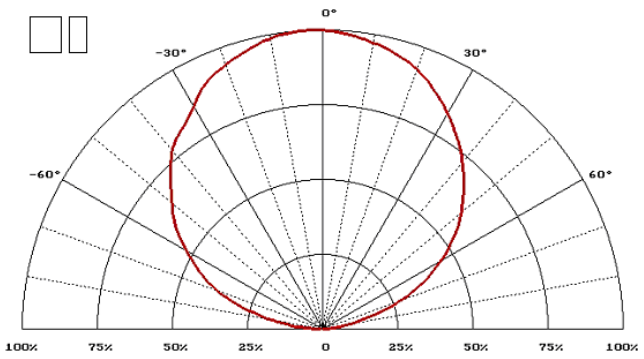




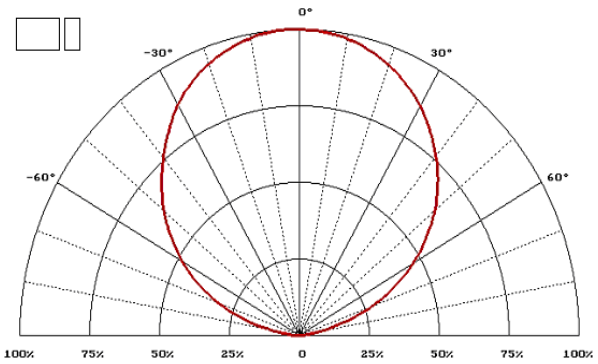


Radiation Pattern

Directive Characteristics

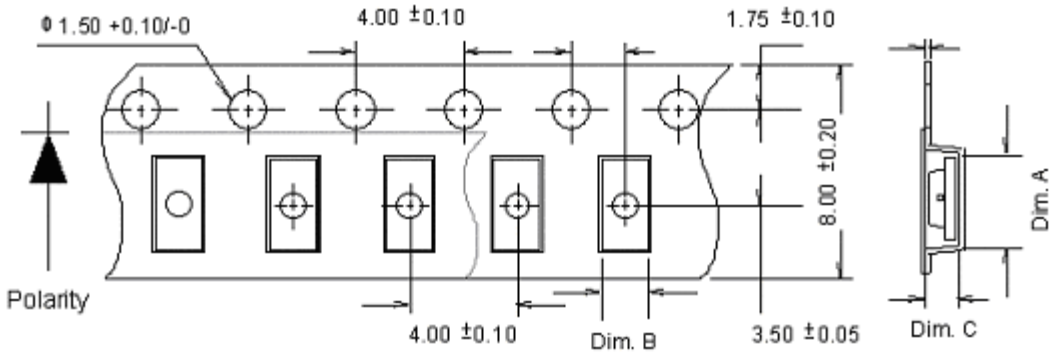


Directive Characteristics



Packaging

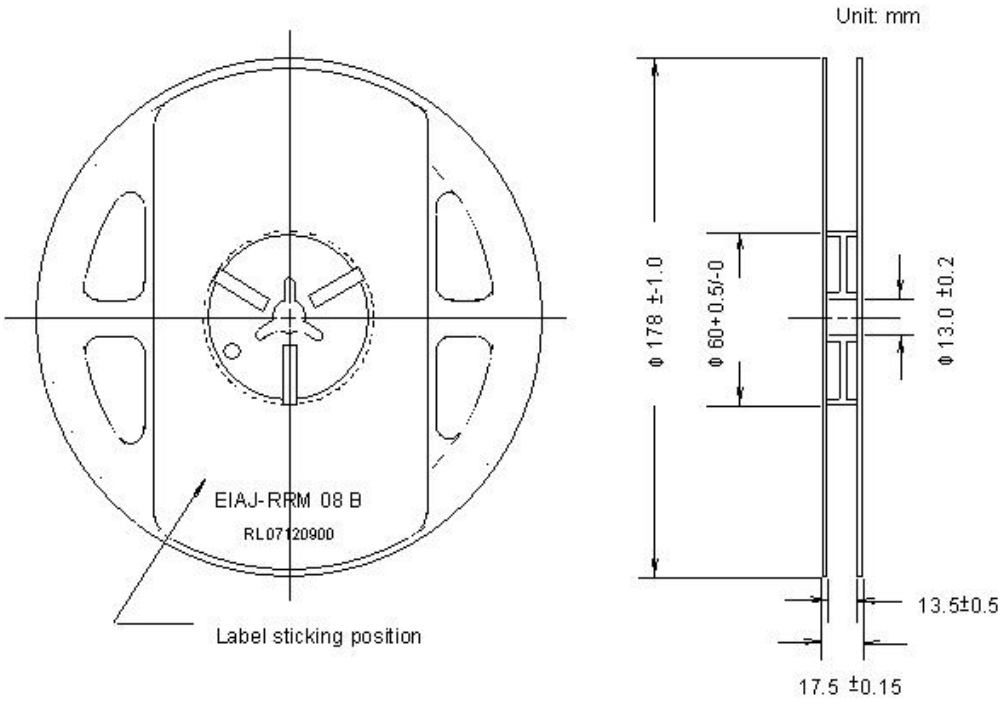
Tape Dimension



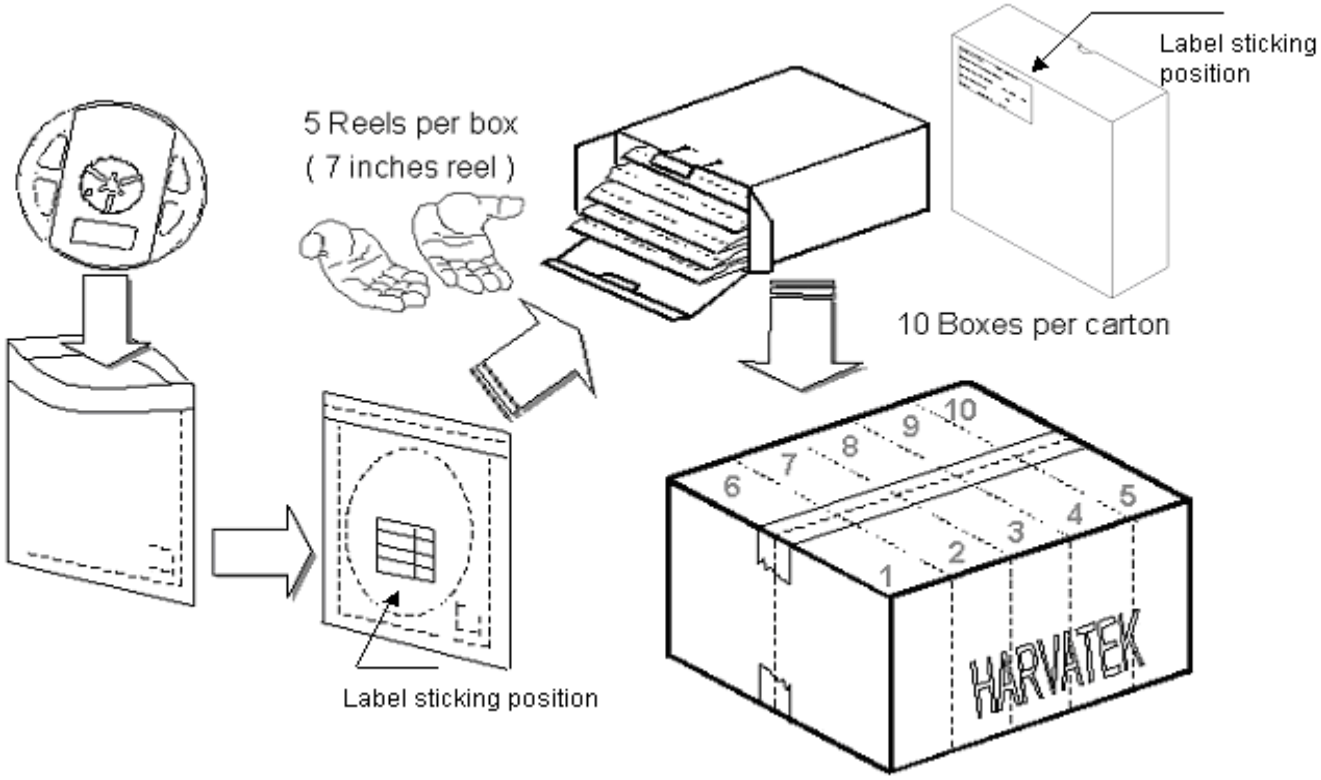
Part No.	Dim. A	Dim. B	Dim. C	Q'ty/Reel
HT-U16D	3.7+/-0.1mm	3.0+/-0.1mm	1.5+/-0.1mm	2K

Unit: mm

Reel Dimension



Packing



5 boxes per carton is available depending on shipment quantity.

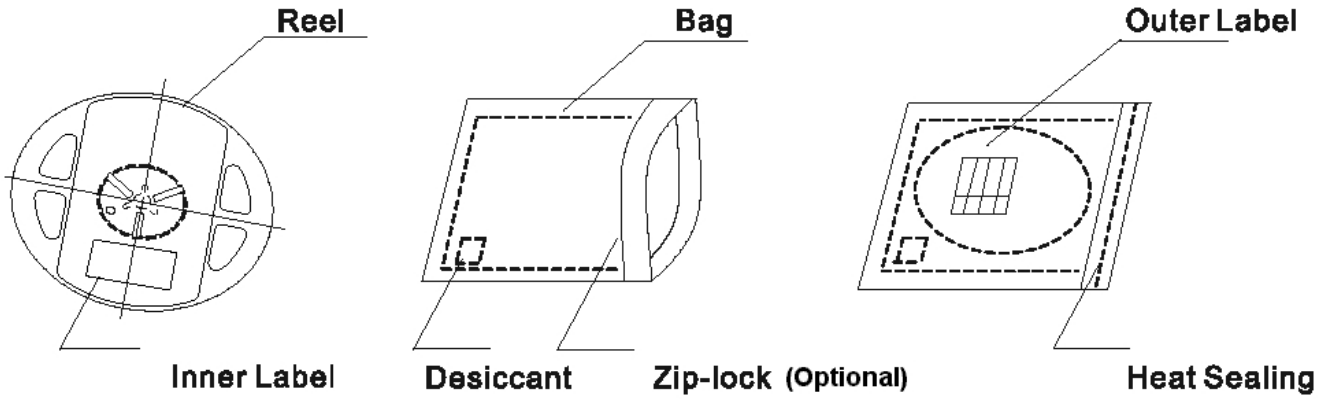
	Specification	Material	Quantity
Carrier tape	Per EIA 481-1A specs	Conductive black tape	2000pcs per reel
Reel	Per EIA 481-1A specs	Conductive black	
Label	HT standard	Paper	
Packing bag	220x240mm	Aluminum laminated bag/ no-zipper	One reel per bag
Carton	HT standard	Paper	Non-specified
Others: Each immediate box consists of 5 reels. The 5 reels may not necessarily have the same lot number or the same bin combinations of Iv, λ_D and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.			

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.

Upon request, a humidity indicator will be included in the moisture protected anti-static bag prior to shipment.

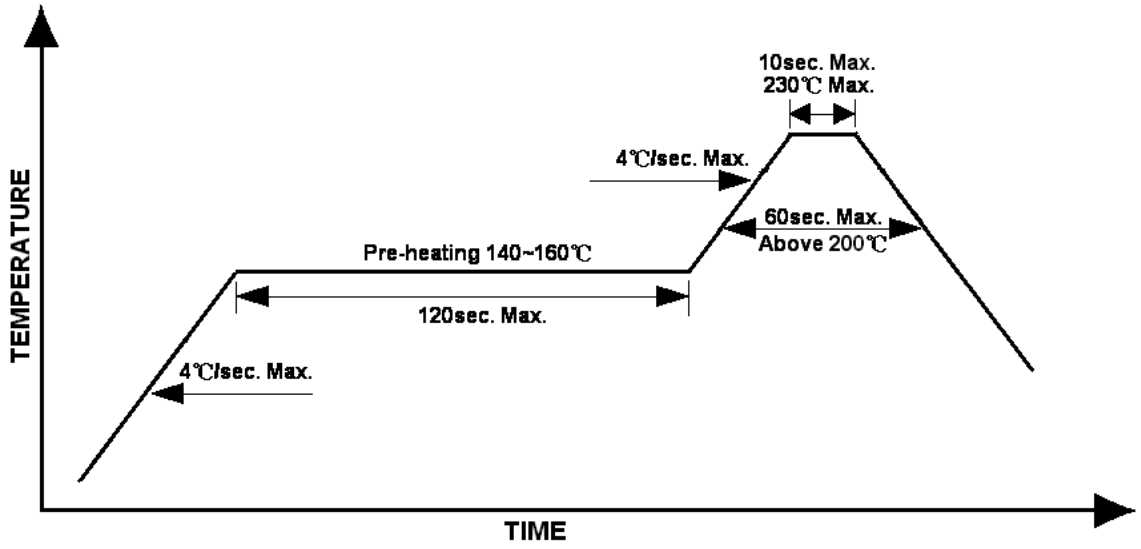
The packaging sequence is as follows:



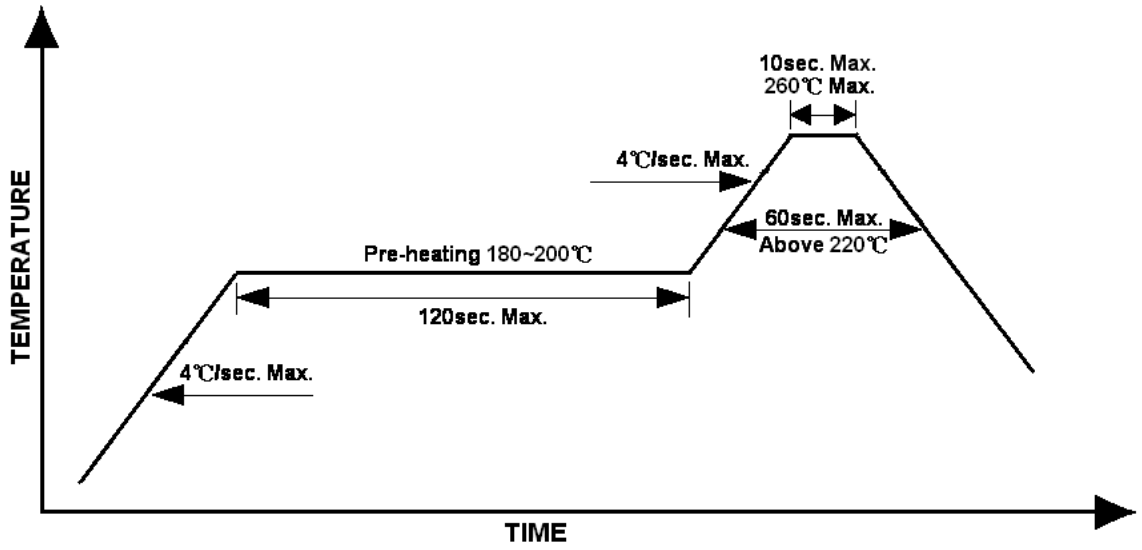
Reflow Soldering

- Recommended tin glue specifications: melting temperature in the range of 178~192 ^{O}C
- The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):

Lead Solder Profile



Lead-free Solder Profile



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.

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
- Ultra sonic 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.
- Electro-static may cause damage to the component. Please ensure that the equipment is properly grounded. Use of an ionizer fan is recommended.

Revision History

Changes since last revision	Page	Version No.	Revision Date
New format		1.0	09-18-2008

LifeElectronics
Живое партнерство

ООО «ЛайфЭлектроникс» **“LifeElectronics” LLC**

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- *Конкурентоспособные цены и скидки постоянным клиентам.*
- *Специальные условия для постоянных клиентов.*
- *Подбор аналогов.*
- *Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.*

- *Приемлемые сроки поставки, возможна ускоренная поставка.*
- *Доставку товара в любую точку России и стран СНГ.*
- *Комплексную поставку.*
- *Работу по проектам и поставку образцов.*
- *Формирование склада под заказчика.*

- *Сертификаты соответствия на поставляемую продукцию (по желанию клиента).*
- *Тестирование поставляемой продукции.*
- *Поставку компонентов, требующих военную и космическую приемку.*
- *Входной контроль качества.*
- *Наличие сертификата ISO.*

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- *Регистрацию проекта у производителя компонентов.*
- *Техническую поддержку проекта.*
- *Защиту от снятия компонента с производства.*
- *Оценку стоимости проекта по компонентам.*
- *Изготовление тестовой платы монтаж и пусконаладочные работы.*

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