

**Harvatek Surface Mount Chip LED Data Sheet
HT-E17C1BP**

Official Product	Product: HT-E17C1BP		Data Sheet No.
Tentative Product	*****		HT-E17C1BP Series
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 23, 2013	Version of 1.0	Page 1/20

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DISCLAIMER

HARVATEK reserves the right to make changes without further notice to any products herein to improve reliability, function or design. HARVATEK does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights, nor the rights of others.

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.

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Product Specifications

	Specification	Material	Quantity
Iv	100lm typ. @500mA 220lm typ. @1000mA Ta=25° C, ±10%		
Correlated Color Temperature	6000K Typ. @200mA / Ta=25° C, Tolerance x,y±0.01		
Vf	3.15V typ. @500mA 3.5V typ. @1000mA Ta=25° C, ±0.1 V		
Ir	≥ 500µA @ Vr=5V / Ta=25° C		
Resin	White	Silicone Resin	
Carrier tape	Per EIA 481-1A specs	Plastic Tape	1000pcs per reel
Reel	Per EIA 481-1A specs	Plastic 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.

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.

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Label Specifications

HARVATEK TECHNOLOGIES		Date: yyyy/mm/dd
CUSTOMER P/N: 		
HARVATEK P/N: 	QTY: PCS 	
LOT NO: 	QC	
IV BIN: COLOR BIN: VF:		

Harvatek P/N:

H T - E 1 7 C 1 B P - Y Y Y Y

Series Name	Emitting Color	Customer Code
HT-E17C1 HT: Harvatek E17C1: 2.0 (L) x 1.6 (W) x 0.65 (H) mm	BP: White	YYYY Customer Product Code (TBD)

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 2013-D . .	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		

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■ Luminous Intensity (Iv) Bin:

Rank Code	Symbol	Condition	Min.	Typ.	Max.	Unit
PU1	ΦV	I _F =500mA	87.4	-	99.6	lm
PU2			99.6	-	113.6	
PV1			113.6	-	129.5	

Rank Code	Symbol	Condition	Min.	Typ.	Max.	Unit
PX1	ΦV	I _F =1000mA	192	-	218.9	lm
PX2			218.9	-	249.6	
PY1			249.6	-	284.6	

■ Forward Voltage (V_F) Bin:

Rank Code	Symbol	Condition	Min.	Typ.	Max.	Unit
PD	V _F	I _F =500mA	2.79	-	3.03	V
PE			3.03	-	3.27	
PF			3.27	-	3.51	
PG			3.51	-	3.75	

Rank Code	Symbol	Condition	Min.	Typ.	Max.	Unit
PE	V _F	I _F =1000mA	3.03	-	3.27	V
PF			3.27	-	3.51	
PG			3.51	-	3.75	

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■ Chromaticity Bin:

	Rank D0			
X	0.3135	0.31	0.317	0.32
Y	0.301	0.322	0.329	0.307

	Rank D0			
X	0.31	0.306	0.314	0.317
Y	0.322	0.347	0.353	0.329

	Rank E0			
X	0.32	0.317	0.326	0.327
Y	0.307	0.329	0.337	0.313

	Rank E1			
X	0.317	0.314	0.325	0.326
Y	0.329	0.353	0.362	0.337

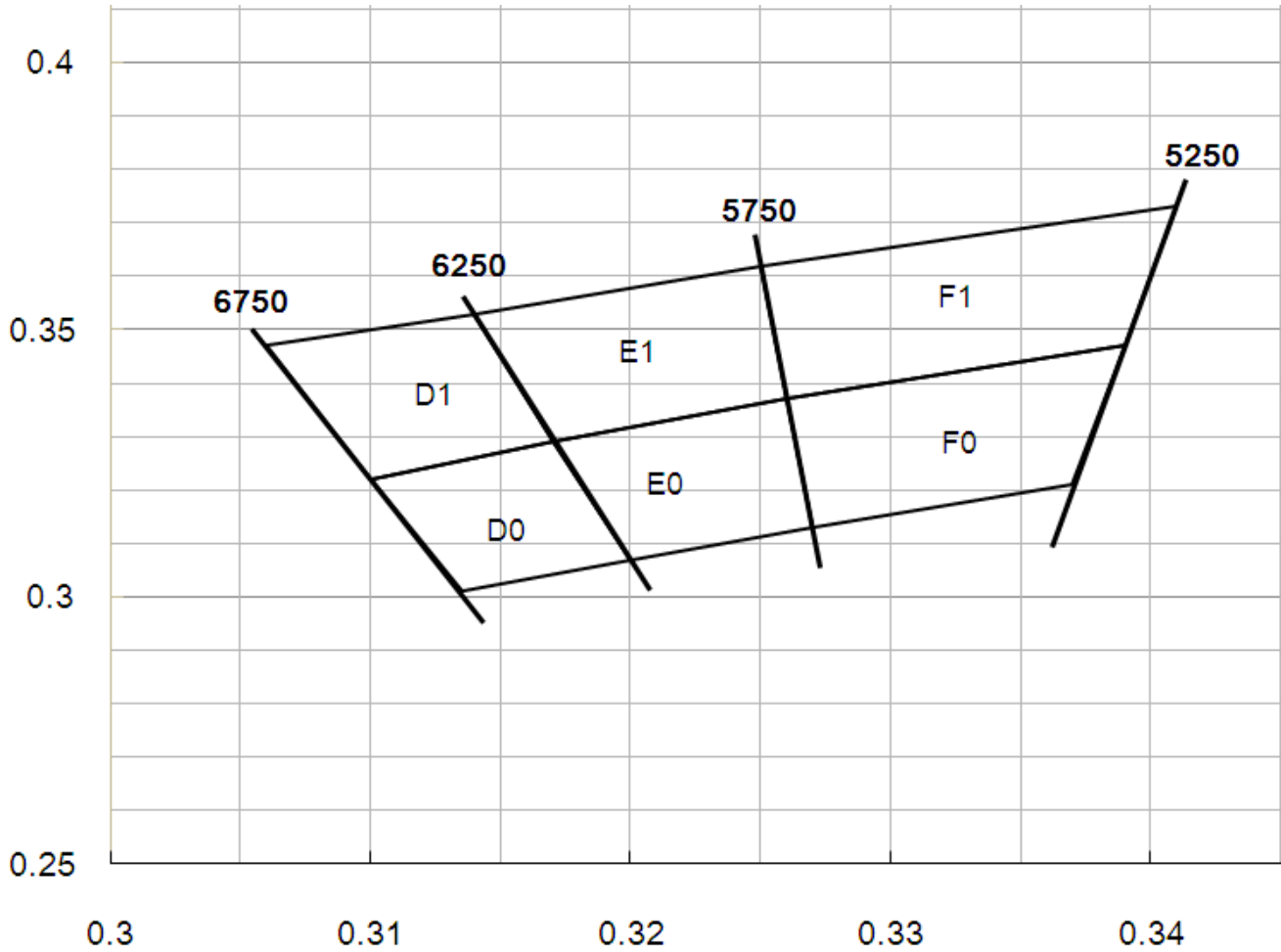
	Rank F0			
X	0.327	0.326	0.339	0.337
Y	0.313	0.337	0.347	0.321

	Rank F1			
X	0.326	0.325	0.341	0.339
Y	0.337	0.362	0.373	0.347

Bin Code	Min.	Typ.	Max.	Unit	Condition
F0	5250	5500	5750	K	I _F =500mA I _F =1000mA
F1	5250	5500	5750		
E0	5750	6000	6250		
E1	5750	6000	6250		
D0	6250	6500	6750		
D1	6250	6500	6750		

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■ **Color Temperature Coordinates**



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Product Characteristics

Absolute Maximum Ratings

Product	Emission Color	I _F (mA)	I _{FP} * (mA)	V _R (V)	T _{sol} (°C)	T _{OP} (°C)	T _{ST} (°C)
HT-E17C1BP	White	200	500	5	260	-30°C~+85°C	-40°C~+120°C
		200	1000				

* 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.

Electro-Optical Characteristics

(T_a 25 °C)

Product	Emission Color	I _F (mA)	V _F (V)		Correlated Color Temperature (CCT)			I _v (lm)
			typ	max	Min	typ	max	Typ
HT-E17C1BP	White	500	3.39	3.75	5250	-	6750	100
		1000	3.27	3.75	5250	-	6750	220

* Per NIST standards

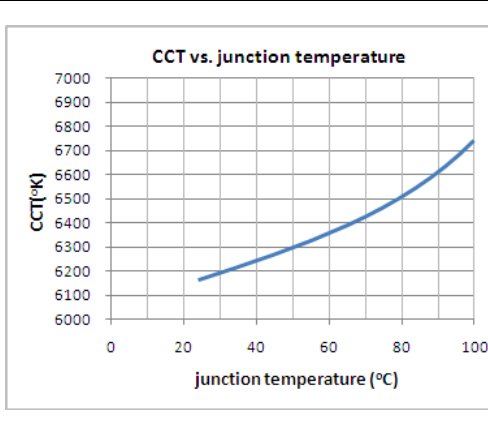
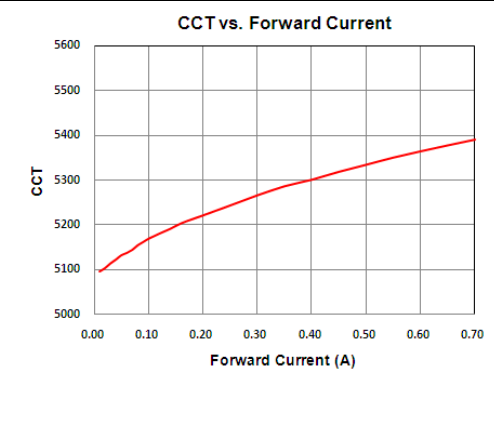
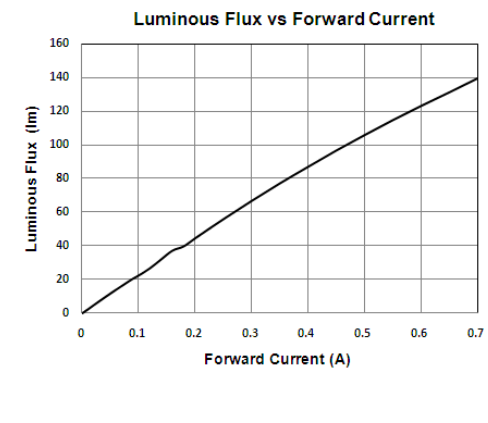
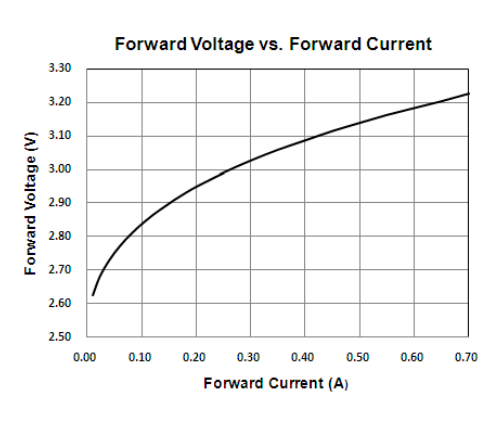
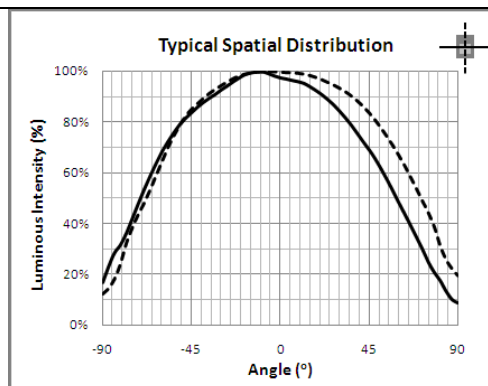
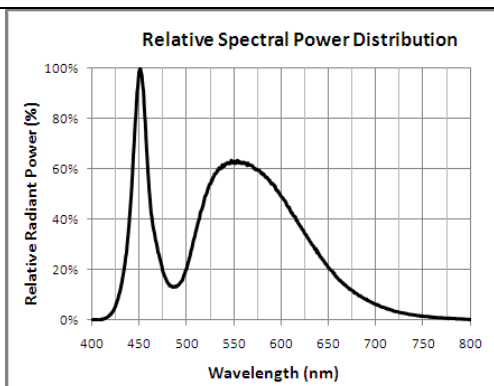
**Package Outline Dimension
Recommended Soldering Pattern for Reflow Soldering**

Unit: mm Tolerance: +/-0.1

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

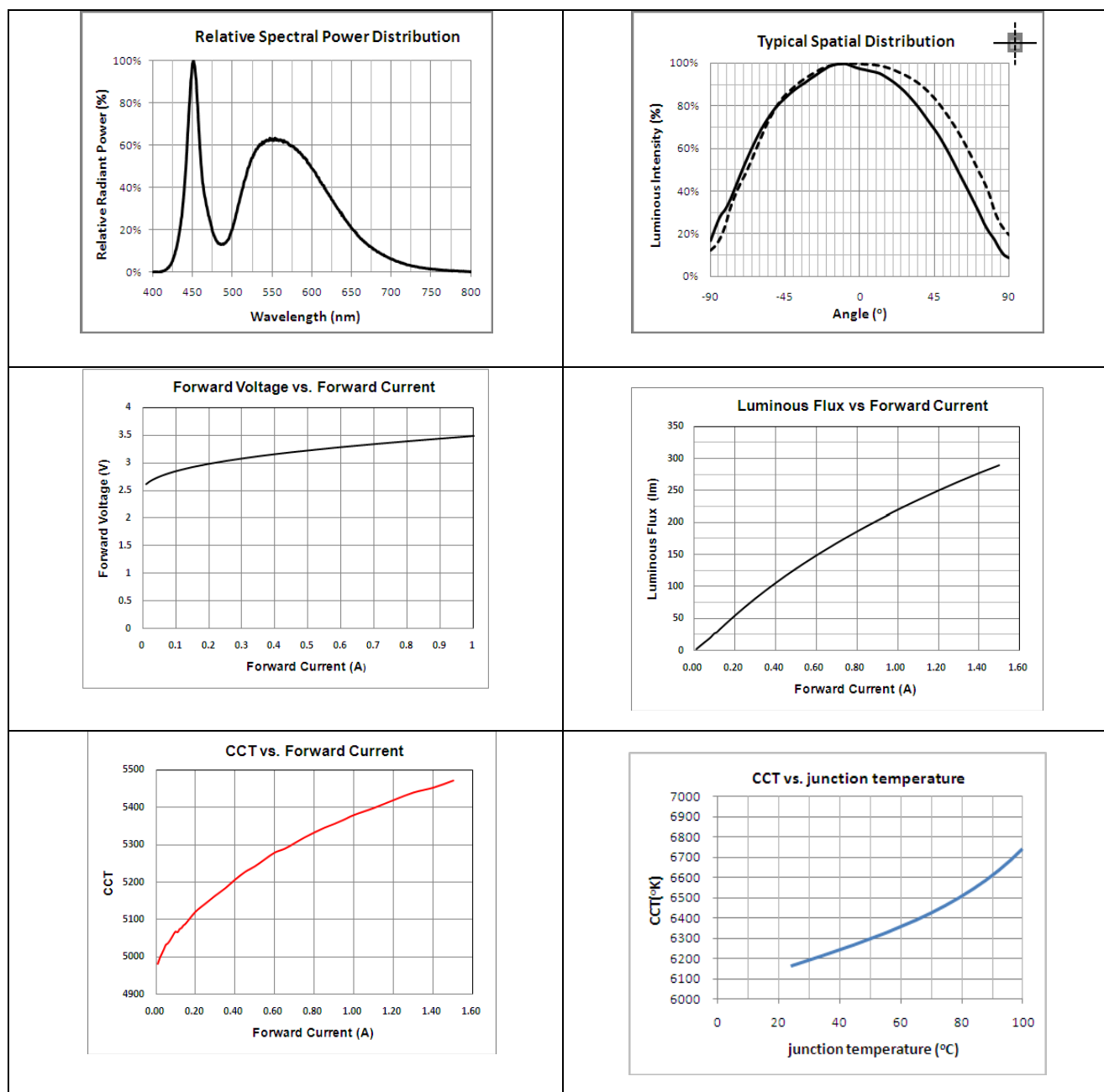
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Characteristic Curves for TW @500mA



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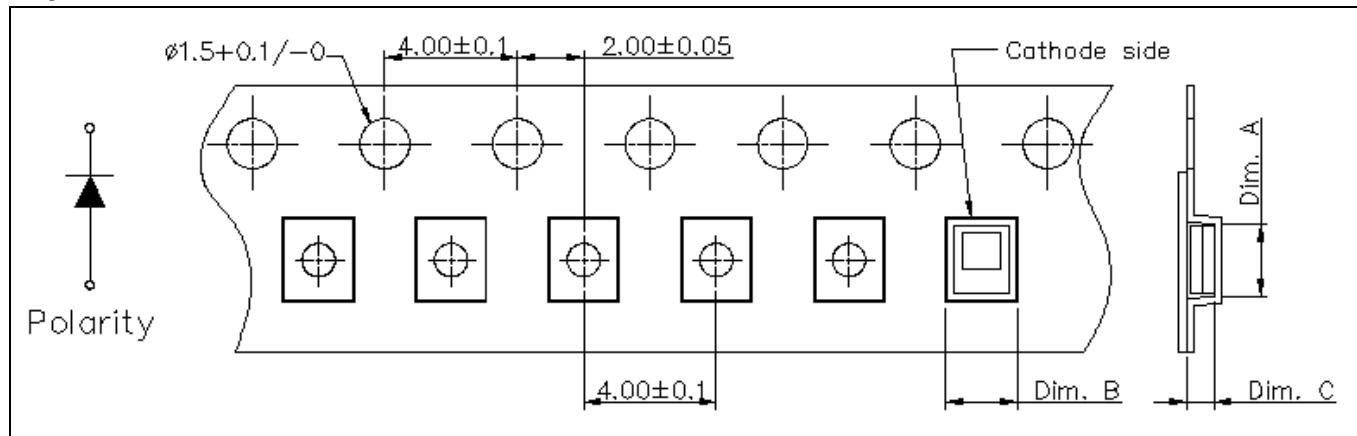
Characteristic Curves for TW @1000mA



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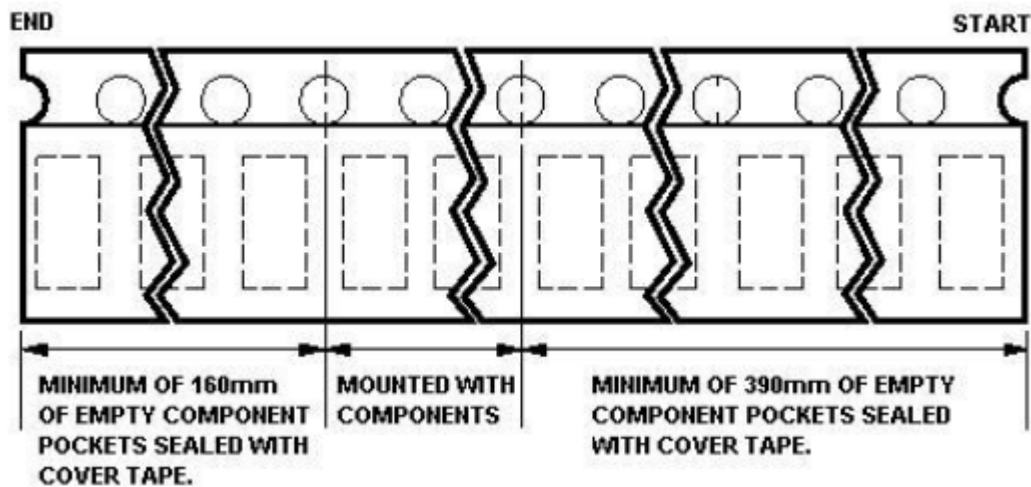
Packaging

Tape Dimension



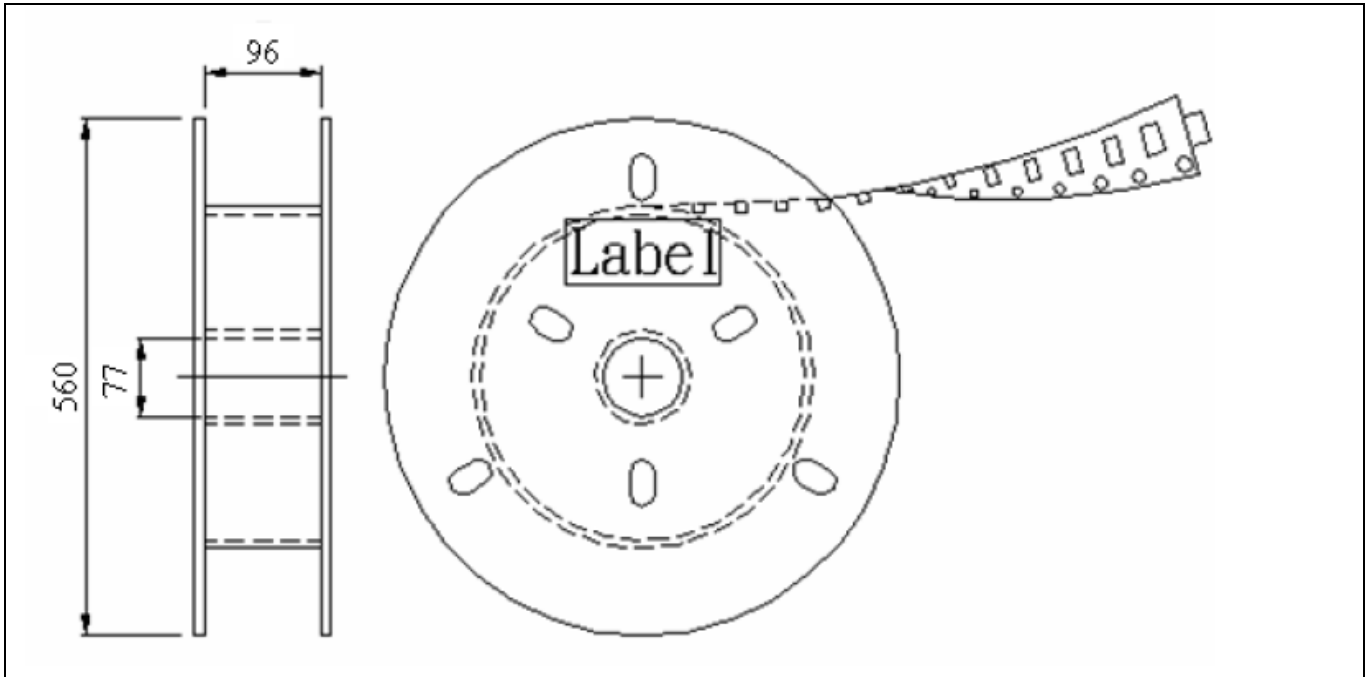
Part No.	Dim.A	Dim.B	Dim.C	Q'ty/Reel
HT-E17C1	2.28+/-0.05	1.85+/-0.05	0.95+/-0.05	1K

Unit: mm

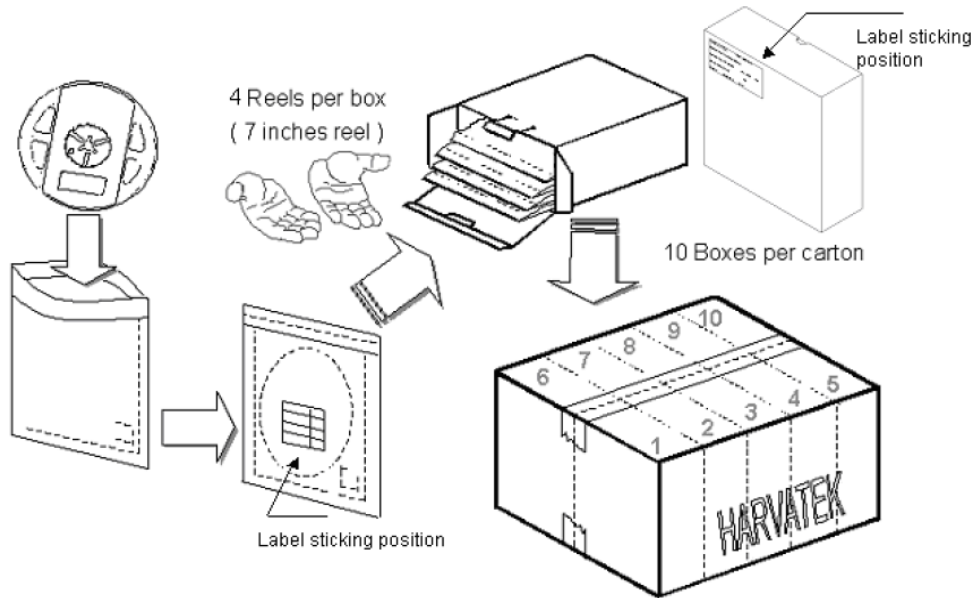


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Reel Dimension



Packing



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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 are recommended to be used within seven days after unpacked. In accordance with MSL 2a: After the bag is opened, devices that will be subjected to infrared reflow, vapor-phase reflow, or equivalent processing must be mounted within 672 hours at factory conditions of $\leq 30^{\circ}\text{C}/60\%\text{RH}$.
- (5) The appearance and specifications of products may be modified for improvement. We will provide PCN for any change or improvement.
- (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.

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LEDs and Eye Safety:

In the 1993 edition of IEC-60825-1, LEDs were included: “Throughout this part 1 light emitting diodes (LED) are included whenever the word “laser” is used. “The CENELEC document EN 60825-1 contains all the technical content of the IEC standard.

The scope of the IEC standard states that “...products which are sold to other manufacturers for use as components of any system for subsequent sale are not subject to IEC 60825-1, since the final product will itself be subject to this standard. ”Therefore, it is important to determine the Laser Safety Class of the final product. However, it is important that employees working with LEDs are trained to use them safely.

Most of the products containing LEDs will fall in either Class 1 or Class 2. A Class 1 label is optional. HT-E17C1BP is a Class 1 LED product.

If a label is not used, this description must be included in the information for the user.

Amendment 2 to IEC 60825-1 is expected to be published in January 2001. The CENELEC equivalent is expected to follow three months after the IEC publication. This document contains increased Class 1 and Class 2 limits, as well as the introduction of less restrictive Class 1M and Class 2M.

For the exact classification and further information, the IEC document can be used:

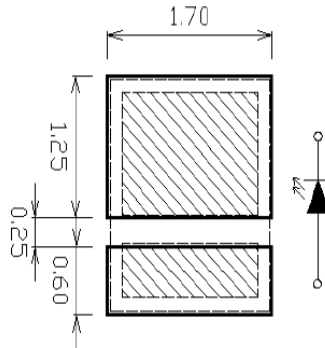
IEC-60825-1 ISBN 2-8318-4169-0

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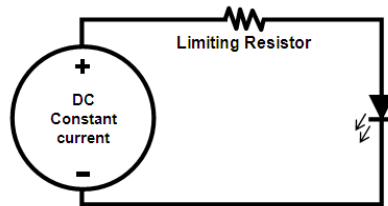
Precaution of Application

Designing 1: Soldering Pattern

The dimensions of the recommended soldering pattern may not meet every user. Please confirm and study first before designing the soldering pattern in order to obtain the best performance of soldering. Recommended soldering pattern is listed below:



Designing 2: Circuit Layout



Designing 3: Max Rating

Any application should refer to the specifications of absolute maximum ratings.

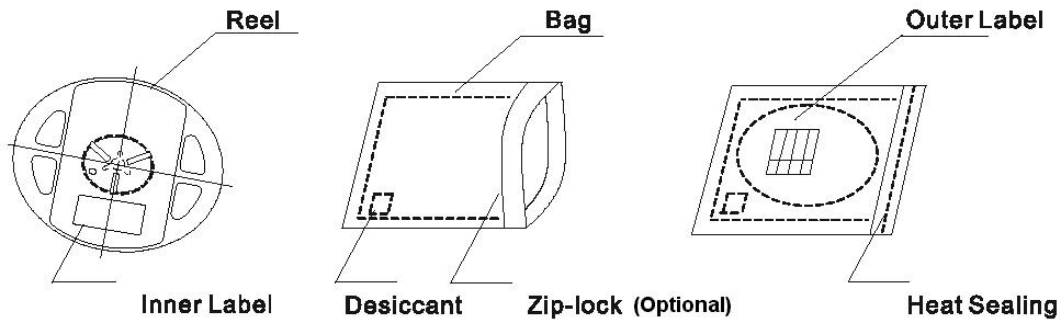
Dry Pack

Any SMD optical device, like this chip LED, is **MOISTURE SENSITIVE device**. Avoid absorbing moisture at any time during transportation or storage. Every reel will be packaged in the moisture barrier anti-static bag (Specific bag material will depend upon customers" requirement or option). And the bag is well sealed before shipment.

By customer's requirement, we will put a humidity indicator in each moisture barrier anti-static bag before shipment.

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The package



Storage

It's recommended to store the products in the following conditions:

Humidity: 60 %RH Max.

Temperature: 5°C ~30°C (41°F~86°F)

1. Shelf life in sealed bag: 12 month at <40 °C and <90%RH. (Base on aluminum laminated moisture barrier bag.)
2. After the bag is opened, devices that will be subjected to infrared reflow, vapor-phase reflow, or equivalent processing must be:
 - 2.1 Mounted within 72 hours at factory conditions of $\leq 30^{\circ}\text{C} / 60\% \text{ RH}$, or
 - 2.2 Stored at $\leq 20\% \text{ RH}$ with zip-lock sealed.

Baking

It's recommended to bake before soldering once the pack is unsealed open & re-sealed after 72 hours. The conditions are as followings:

60 $\pm 3^{\circ}\text{C} \times (12 \sim 24 \text{hrs})$ and < 5% RH, taped reel type

100 $\pm 3^{\circ}\text{C} \times (45 \text{min} \sim 1 \text{hr})$, bulk type

130 $\pm 3^{\circ}\text{C} \times (15 \sim 30 \text{min})$, bulk type

Soldering

Manual soldering (We do not recommend this method strongly.)

Soldering wire: 63/37 Sn/Pb, flux contained.

To prevent cracking, please bake before manual soldering, if the device is subject to moisture.

Temperature at tip of soldering tool : 300 °C ± 5 °C Max.(25W)

It's banned to load any stress on the resin during soldering.

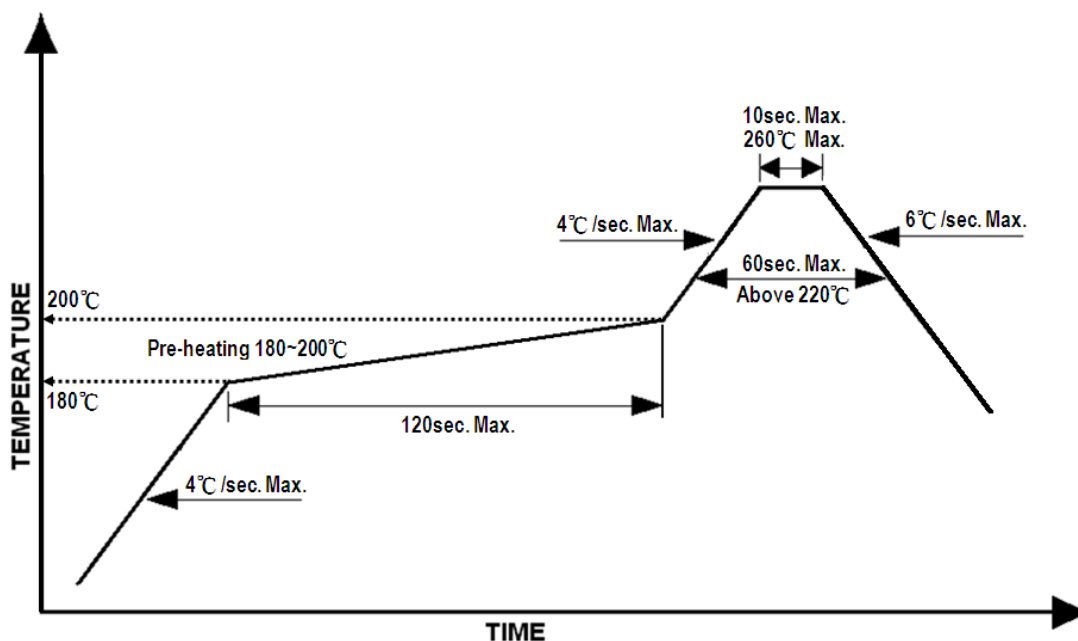
Soldering time: 3 ± 1 sec

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Reflow Soldering

1. Recommend soldering paste specifications:
2. Operating temp.: Above 220°C, 60sec
3. Peak temp.:260°C Max., 10sec Max.
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



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Cleaning

The conditions of cleaning after soldering:

An alcohol-based solvent such as isopropyl alcohol (IPA) is recommended.

Temperature×Time: <50°C×30sec, or <30°C×3min

Ultra sonic cleaning: < 15W/ bath; Bath volume: 1liter max.

Curing: 100 °C max, <3min

Do not contact with component on the assembly board.

Cautions of Pick and Place

It should be avoided to load stress on the resin during high temperature.

Avoid rubbing or scraping the resin by any object.

Electric-static may cause damage to the component. Please confirm that the equipment grounding well. Using an ionizer fan is recommended.

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Revision History

Changes since last revision	Page	Version No.	Revision Date
Initial release		1.0	06-23-2013

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