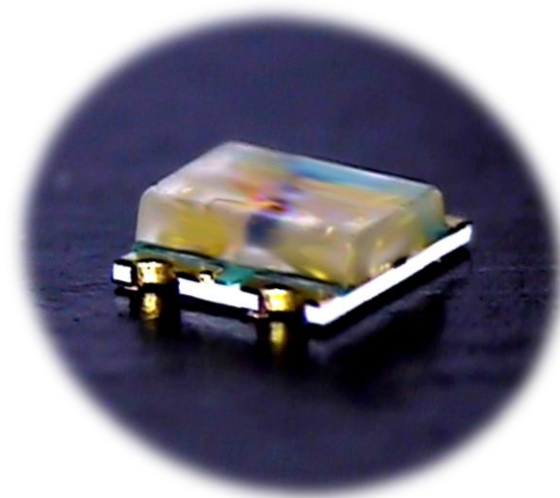


**Harvatek Surface Mount CHIP LED Data Sheet  
E3823RGB-10D-000114**



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Tentative Product	*****	*****	*****
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			Page 1/15

<b>DISCLAIMER</b> .....	3
<b>LIFE SUPPORT POLICY</b> .....	3
<b>PRODUCT SPECIFICATIONS</b> .....	4
<b>LABEL SPECIFICATIONS</b> .....	5
<b>BIN CODE</b> .....	6
<b>PRODUCT FEATURES</b> .....	7
<b>ELECTRO-OPTICAL CHARACTERISTICS</b> .....	7
<b>PACKAGE OUTLINE DIMENSION AND RECOMMENDED SOLDERING PATTERN FOR REFLOW SOLDERING</b> .....	8
<b>ABSOLUTE MAXIMUM RATINGS</b> .....	8
<b>CHARACTERISTICS OF E3823RGB</b> .....	9
<b>PRECAUTION FOR USE</b> .....	10
<b>PACKAGING</b> .....	11
<b>TAPE DIMENSION</b> .....	11
<b>REEL DIMENSION</b> .....	12
<b>PACKING</b> .....	12
<b>DRY PACK</b> .....	13
<b>BAKING</b> .....	13
<b>PRECAUTIONS</b> .....	13
<b>REFLOW SOLDERING</b> .....	14
<b>REWORKING</b> .....	14
<b>CLEANING</b> .....	14
<b>REVISE HISTORY</b> .....	15

Official Product	HT Part No. E3823RGB-10D-000114		
Tentative Product	*****	*****	
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		01/20/2015	Version 1.0
		Page 2/15	

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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. E3823RGB-10D-000114		
Tentative Product	*****	*****	
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.	01/20/2015	Version 1.0	Page 3/15

## Product Specifications

	Specification	Material	Quantity
Luminous Intensity(Iv)	R : Max:120mcd;min:80 mcd G : Max:450 mcd;min:310 mcd B : Max:120mcd;min:80 mcd R/G/B@10mA/ Ts= 25° C;Tolerance ±10%		
WD	R : Max:635nm;min:615nm G : Max:535nm;min:515nm B : Max:479nm;min:469nm R/G/B@10mA/ Ts= 25° C;Tolerance ± 0.5nm		
Vf	R : Max:2.40V;min:1.60V G : Max:3.30V;min:2.50V B : Max:3.30V;min:2.50V R/G/B@10mA/ Ts= 25° C;Tolerance ± 0.05V		
Ir/Vr	R:0~1uA@ VR=5V B/G: >500uA @ VR=0.8V		
Vfp	R : >1.35V@1uA G : >1.9V@1uA B : >1.9V@1uA R/G/B@10mA/ Ts= 25° C;Tolerance ± 0.05V		
Resin	Diffused	Epoxy	
Carrier tape	EIA 481-1A specs	Conductive black tape	4000pcs/reel
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

Official Product	HT Part No. E3823RGB-10D-000114		
Tentative Product	*****	*****	
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		01/20/2015	Version 1.0
			Page 4/15

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.

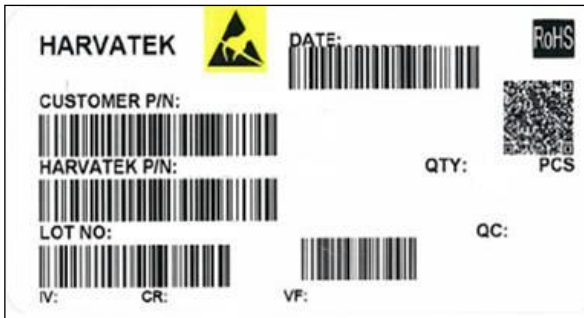
**ATTENTION: Electrostatic Discharge (ESD) protection**



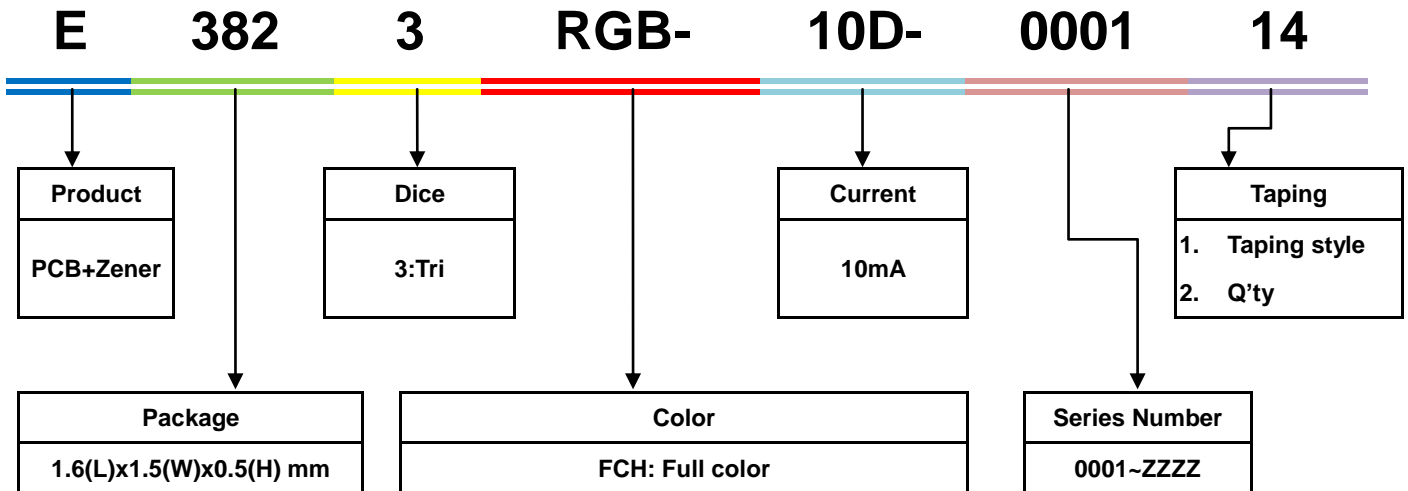
The symbol to the left denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are **STATIC SENSITIVE devices**. ESD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



Official Product	HT Part No. E3823RGB-10D-000114		
Tentative Product	*****	*****	*****
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.	01/20/2015	Version 1.0	Page 5/15

■ 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		

Bin code

■ Luminous Intensity (Iv)

HT-E3823RGB @10 mA bin code								
IV								
Red			Green			Blue		
FA1	80	120	FB1	310	450	FA1	80	120

Note: It maintains a tolerance of ±10% on IV

■ Dominant Wavelength (λD)

HT-E3823RGB @10 mA bin code								
WD								
Red			Green			Blue		
R1	615	635	G1	515	535	B1	469	474
						B2	474	479

Note: It maintains a tolerance of ±0.5nm on WD

Official Product	HT Part No. E3823RGB-10D-000114							
Tentative Product	*****				*****			
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.					01/20/2015	Version 1.0	Page 6/15	

## ■ Forward Voltage (Vf)

HT-E3823RGB @10 mA bin code								
Vf								
Red			Green			Blue		
E18	1.6	2.4	G7	2.5	2.7	G7	2.5	2.7
-			G8	2.7	2.9	G8	2.7	2.9
-			H7	2.9	3.1	H7	2.9	3.1
-			H8	3.1	3.3	H8	3.1	3.3

Note: It maintains a tolerance of  $\pm 0.05V$  on Vf

## Product Features

### Electro-Optical Characteristics

( $I_F$  Red & Green & Blue @10mA,  $T_a$  25 °C)

Part number	Emitting Color	Forward Voltage(VF)		Wavelength (nm) typ.			$I_v$ (mcd)		IF(mA)	Viewing Angle 2 $\theta$ 1/2
		typ.	max.	$\lambda_D$	$\lambda_p$	$\Delta\lambda$	min.	typ.		
E3823RGB-10	Ultra Bright Red	1.9	2.4	620	628	14	80	120	10	120
	Green	2.9	3.3	530	520	32	310	450		
	Blue	2.9	3.3	470	465	20	80	120		

Official Product	HT Part No. E3823RGB-10D-000114			
Tentative Product	*****	*****		
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### Package Outline Dimension and Recommended Soldering Pattern for Reflow Soldering

(Unit: mm Tolerance: +/-0.05)

Outline Dim.	Soldering Pattern
<p>Soldering terminals may shift in the x, y direction.</p>	

### Absolute Maximum Ratings

(T<sub>Soldering</sub> 25°C)

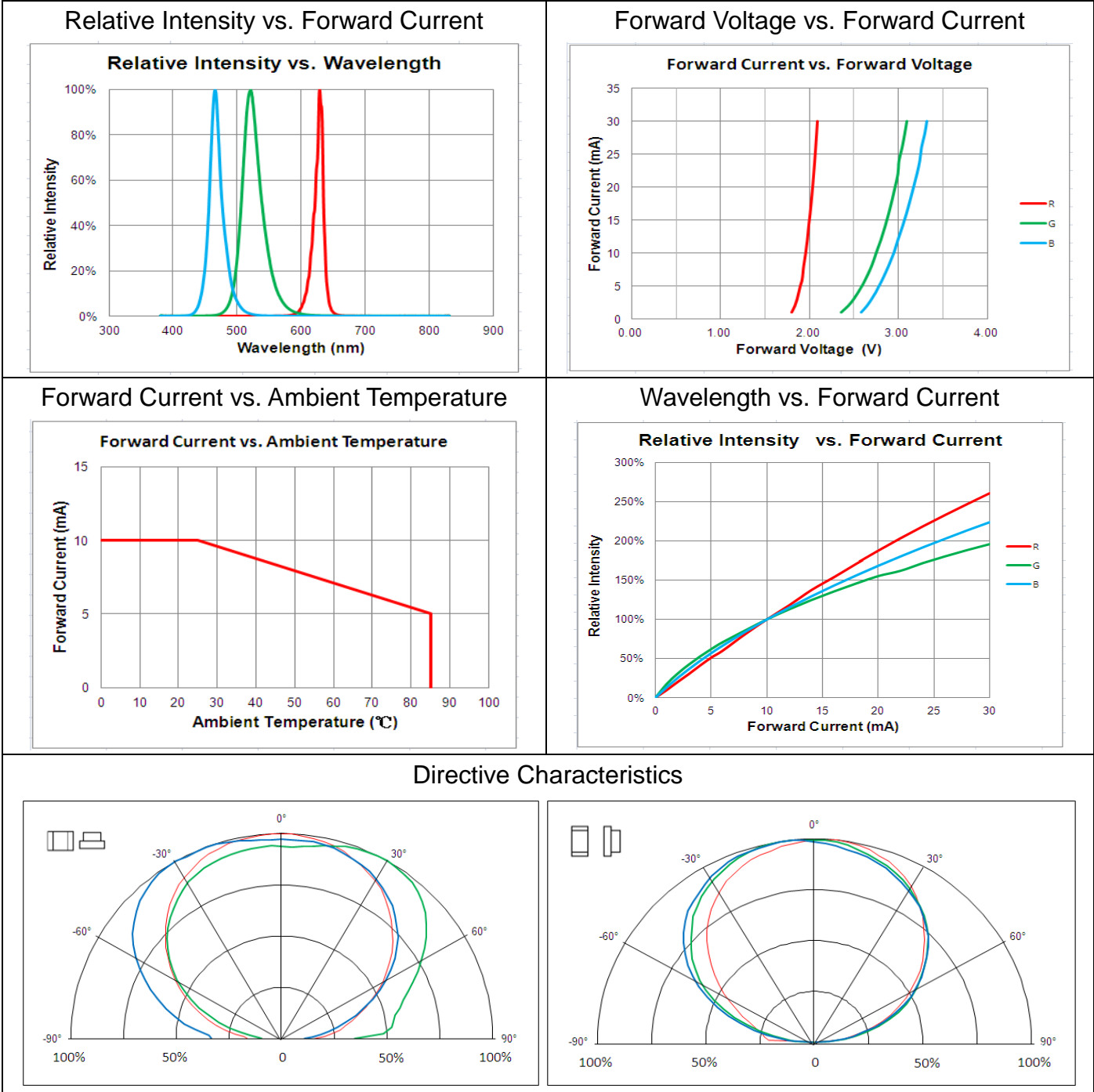
Series	P <sub>D</sub> (mW)	I <sub>F</sub> (mA)	I <sub>FP</sub> (mA)*	T <sub>OP</sub> (°C)	T <sub>ST</sub> (°C)
Color	Power Dissipation	Forward Current	Pulse Forward Current	Operating Temperature	Storage Temperature
Red	30	10	30	-40~+85	-40~+100
Blue/Green	35	10	30		

\* Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width

Official Product	HT Part No. E3823RGB-10D-000114		
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		Page 8/15	



## Characteristics of E3823RGB



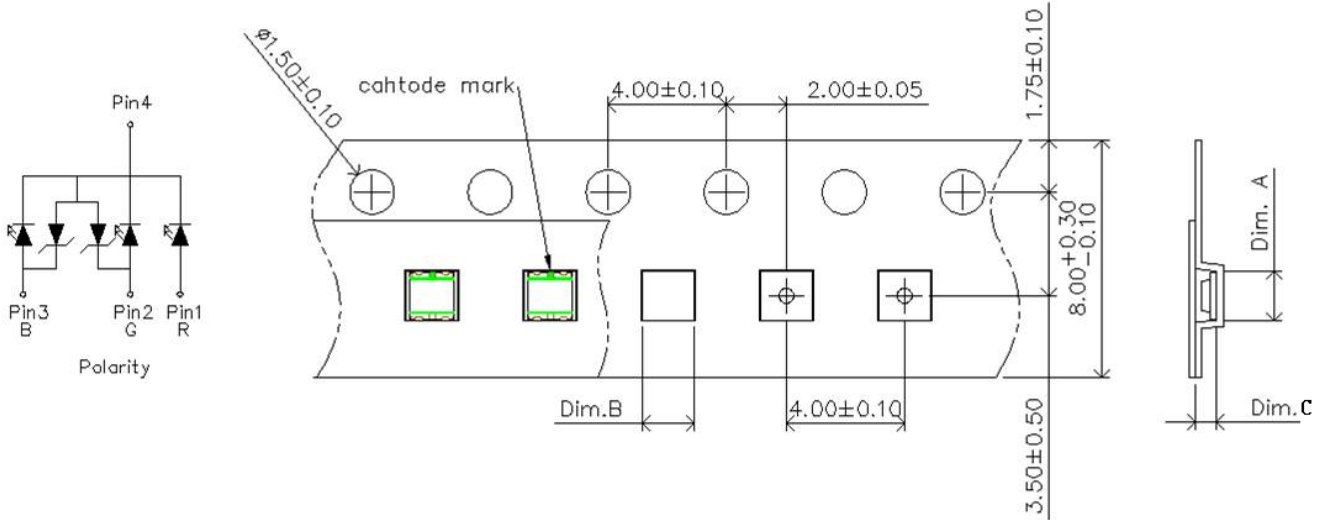
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Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		01/20/2015	Version 1.0
			Page 9/15

### 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.

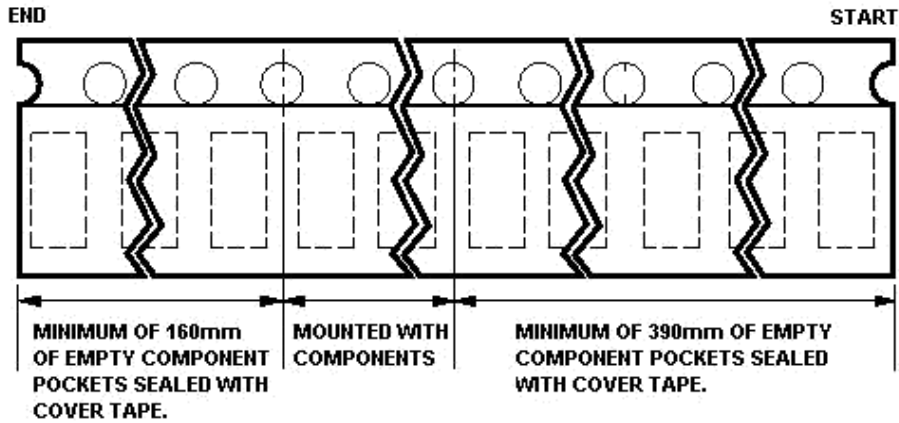
Official Product	HT Part No. E3823RGB-10D-000114		
Tentative Product	*****	*****	
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**Packaging**  
**Tape Dimension**



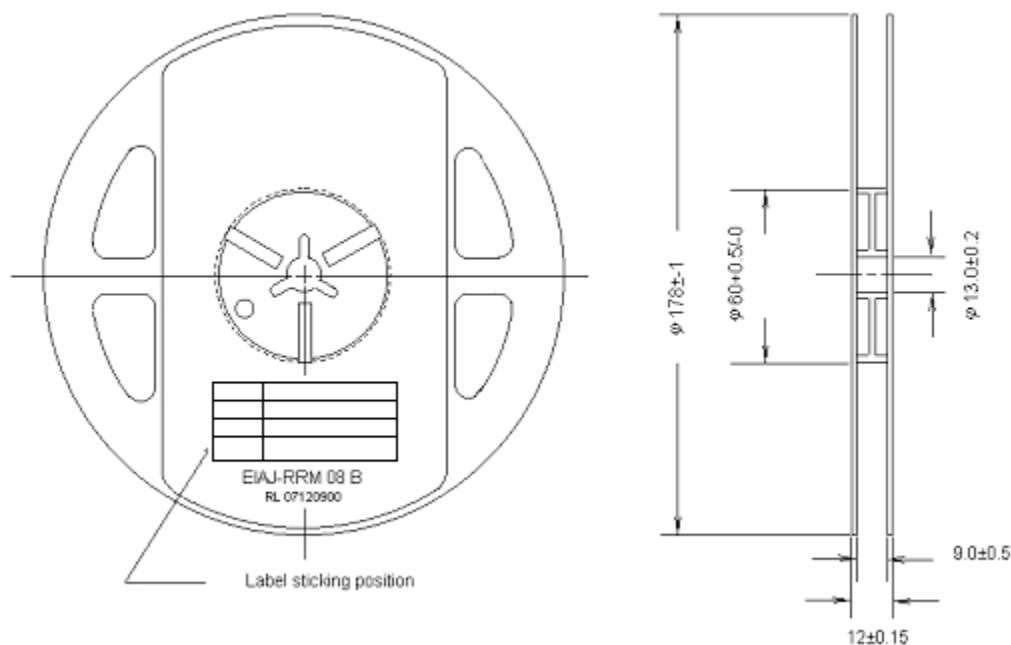
Dim. A	Dim. B	Dim. C	Q'ty/Reel
1.65±0.05	1.75±0.05	0.70±0.05	4K

Unit: mm

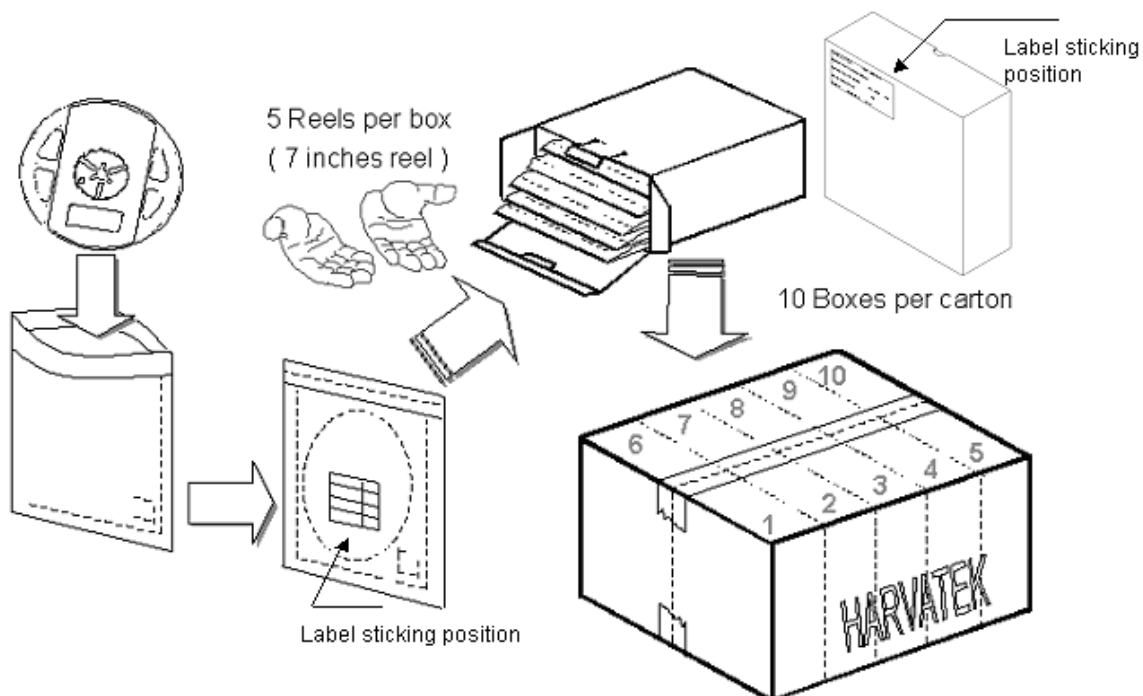


Official Product	HT Part No. E3823RGB-10D-000114		
Tentative Product	*****	*****	
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## Reel Dimension



## Packing



5 boxes per carton is available depending on shipment quantity.

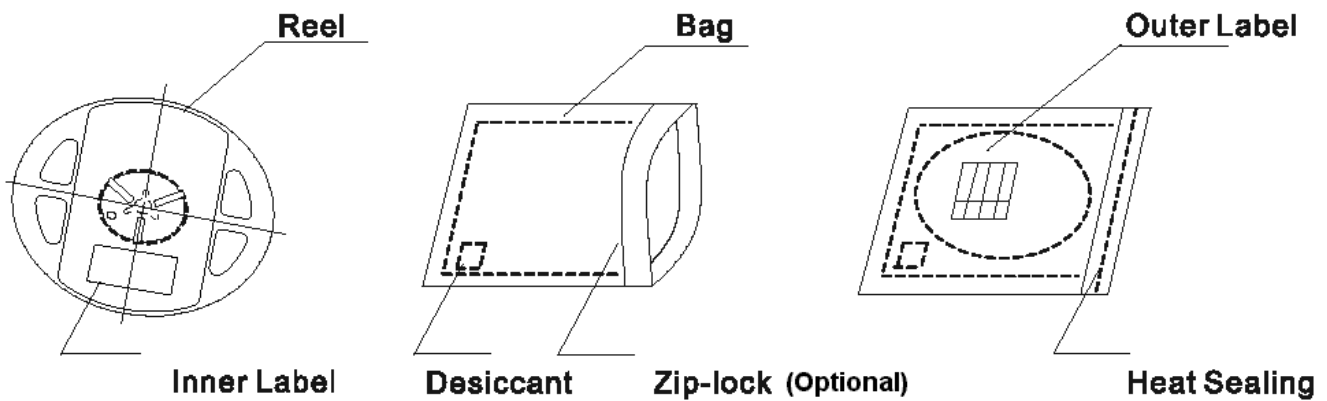
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Tentative Product	*****	*****	
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### Dry Pack

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.

Upon request, 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°C x(12~24hrs)and<5%RH, taped reel type.
2. 100±3°C x(45min~1hr), bulk type.
3. 130±3°C x(15min~30min), bulk type.

### Precautions

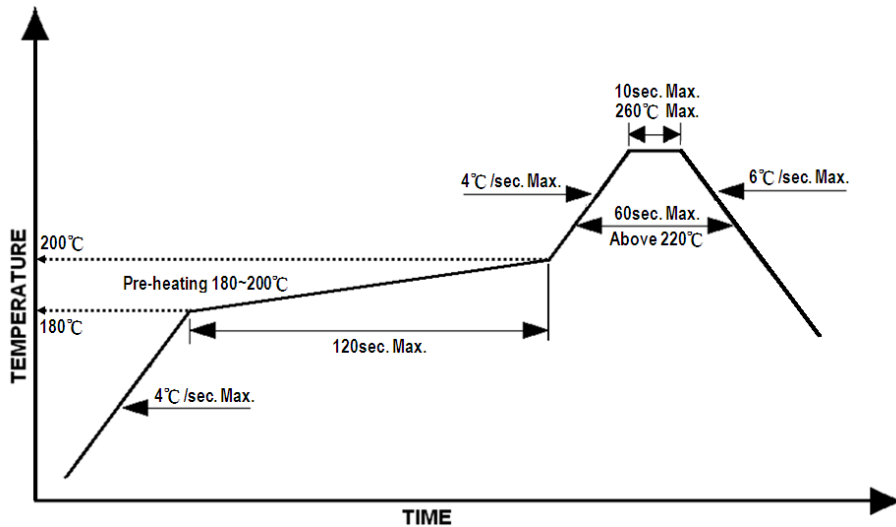
1. Avoid exposure to moisture at all times during transportation or storage.
2. Anti-Static precaution must be taken when handling GaN, InGaN, and AlInGaP products.
3. It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage beyond the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

Official Product	HT Part No. E3823RGB-10D-000114		
Tentative Product	*****	*****	*****
Specifications are subject to changes for improvement without advance notice. Proprietary data, drawings, company confidential all rights reserved.		01/20/2015	Version 1.0 Page 13/15

## Reflow Soldering

Recommend soldering paste specifications:

1. Operating temp.: Above 220 °C ,60 sec.
2. Peak temp.:260 °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:
6. 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
- Ultra sonic cleaning: < 15W/ bath; bath volume ≤ 1liter
- Curing: 100 °C max, <3min

Official Product	HT Part No. E3823RGB-10D-000114		
Tentative Product	*****	*****	
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