



Spec No.	Date	Page	Ver.
Z-008-00	2004/7/16	1/7	A-00

# Super Flux LED

**PART NO. : EOZ-ZBRHCD0-TK**

## Product Description

Super Flux LEDs are made with super high brightness LED chips and low thermal resistance package. The low thermal resistance package allows the lighting designers to drive these LEDs at higher current than the conventional through-hole LEDs. The advanced AlGaInP technology from UEC provides extremely high and stable light output over long period of time. With UEC's GB Chips, Super Flux LEDs can generate the same level of optical performance as it is by Lumileds' TS grade Piranha. Because Super Flux LED can emit more light, uniform and unique illuminated appearance, as it allows the lighting designer to reduce the number of LEDs required through the efficient optical design and high-current electrical design.

Excellence opto-electrical Inc. uses the brightest Red, Amber, Blue, and Green LED chips in this product family. The designers can select the most suitable color for many lighting applications, such as automobile signals, garden lightings, special lightings for building and electronic signs, and etc.



EXCELLENCE OPTO. INC.		
APPROVED	REVIEWED	PREPARED
<i>Jimmy Tsai</i>	<i>Ader Wu</i>	<i>Cathy Huang</i>
CUSTOMER		
APPROVED	REVIEWED	PREPARED

Spec No.	Date	Page	Ver.
Z-008-00	2004/7/16	2/7	A-00

# PART NO : EOZ-ZBRHCD0-TK

## Features

- ◆ High Luminance
- ◆ Low Thermal Resistance
- ◆ Low Profile
- ◆ Meet SAE/ECE/JIS Automotive Color Requirements
- ◆ Design for High Current Operation

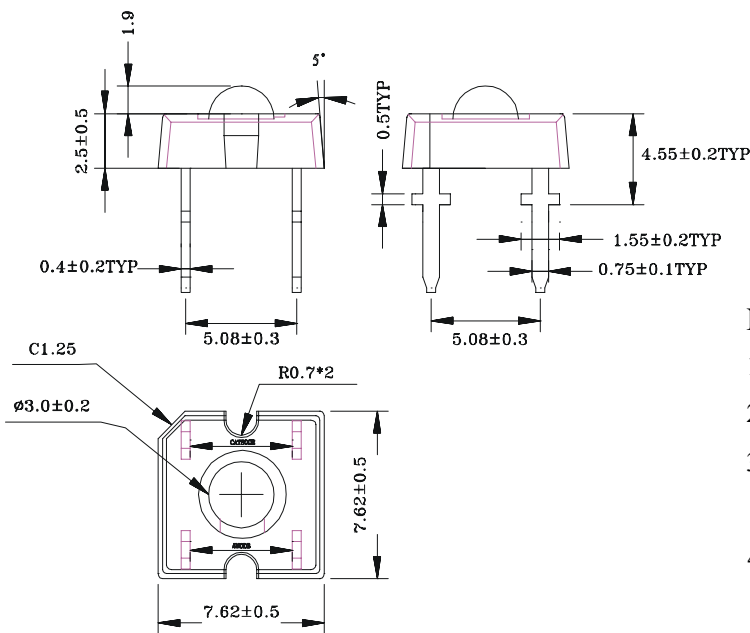
## Applications

- ◆ Automotive Exterior Lighting
- ◆ Electronic Signs and Signals
- ◆ Specialty Lighting

## Benefits

- ◆ Fewer LED Requirement
- ◆ Lower Application Cost

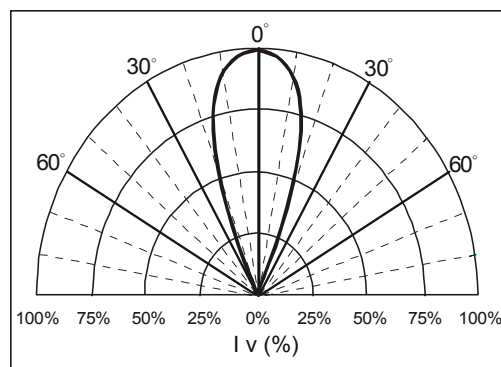
## Outline Drawings



## Notes:

1. All dimensions are in millimeters.
2. Tolerance is  $\pm 0.20$ mm unless otherwise noted.
3. Protruded resin under bottom surface of epoxy is 1.5mm max.
4. Lead spacing is measured where the leads emerge from the package.

## Beam Pattern



# PART NO : EOZ-ZBRHCD0-TK

## Absolute Maximum Ratings at $T_A=25^\circ\text{C}$

Parameter	MAX.	Unit
DC Forward Current <sup>[a]</sup> ( $I_F$ )	70	mA
Power Dissipation	224	mW
Reverse Voltage ( $V_R$ )	10	V
LED Junction Temperature	125	$^\circ\text{C}$
Operating Temperature Range <sup>[b]</sup>	-40 to + 85	$^\circ\text{C}$
Storage Temperature Range	-40 to +100	$^\circ\text{C}$
Lead Soldering Condition [4mm(.157") away from epoxy]	260 $\pm$ 5 $^\circ\text{C}$ for 5 Seconds	

**Note:** [1] Design of heat dissipation should be considered.

[2]The allowable operating current at different operation temperature, please take reference from Fig 4 page 4.

## Electrical and Optical Characteristics at $T_A=25^\circ\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Total Luminous Flux	$\Phi_v$	2000	2500	---	mlm	$I_F=70\text{mA}$
Viewing Angle	$2\theta_{1/2}$	---	40	---	Deg	$I_F=70\text{mA}$
Dominant Wavelength	$\lambda_d$	619	623	630	nm	$I_F=70\text{mA}$
Spectra Half width	$\Delta\lambda$	---	25	---	nm	$I_F=70\text{mA}$
Forward Voltage	$V_F$	2.4	2.7	3.2	V	$I_F=70\text{mA}$
Reverse Current	$I_R$	---	---	100	$\mu\text{A}$	$V_R=10\text{V}$
Thermal Resistance $\theta_{j-a}$		200(Typ.)			$^\circ\text{C}/\text{W}$	$I_F=70\text{mA}$
Thermal Resistance $\theta_{j-pin}$		125(Typ.)			$^\circ\text{C}/\text{W}$	$I_F=70\text{mA}$

Rank of flux	D	E	F
Total Flux $\Phi_v$ (mlm) @ $I_F = 70\text{mA}$	2000-2750	2750-3850	3850-5400

### Note:

- Viewing angle 0.9V is the include dangle at which 90% of total luminous flux is captured.
- All ranks of total luminous flux will be included in every shipment.
- Measurement Uncertainty of the Total flux:  $\pm 15\%$
- Measurement Uncertainty of the Dominant Wavelength:  $\pm 1\text{nm}$
- Measurement Uncertainty of the Voltage:  $\pm 0.05\text{V}$

Spec No.	Date	Page	Ver.
Z-008-00	2004/7/16	4/7	A-00

# PART NO : EOZ-ZBRHCD0-TK

## Typical Electrical / Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

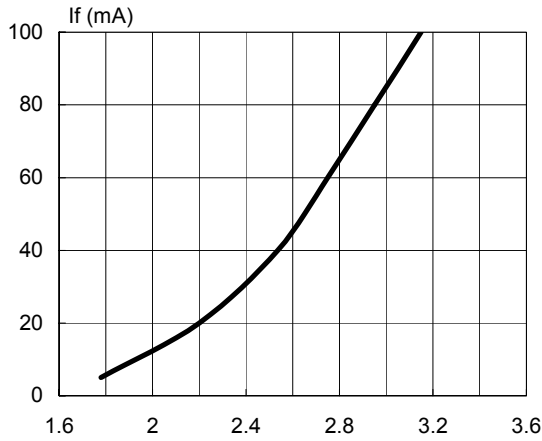


Fig.1 Forward Current vs. Forward Voltage

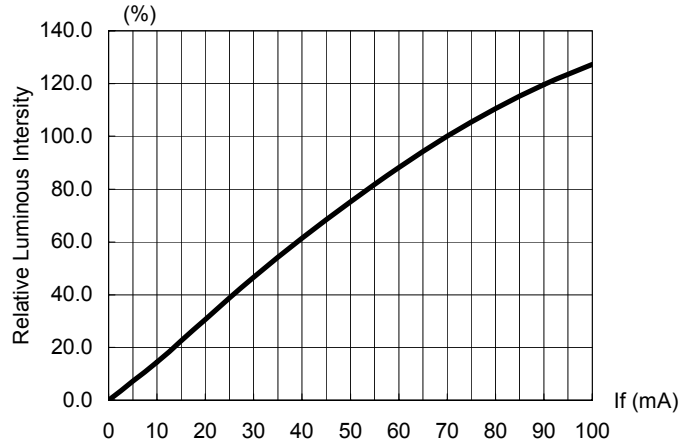


Fig.2 Luminous Intensity vs. Forward Current

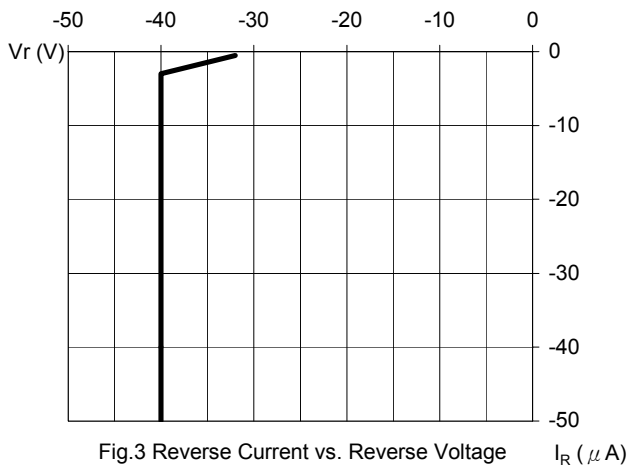


Fig.3 Reverse Current vs. Reverse Voltage

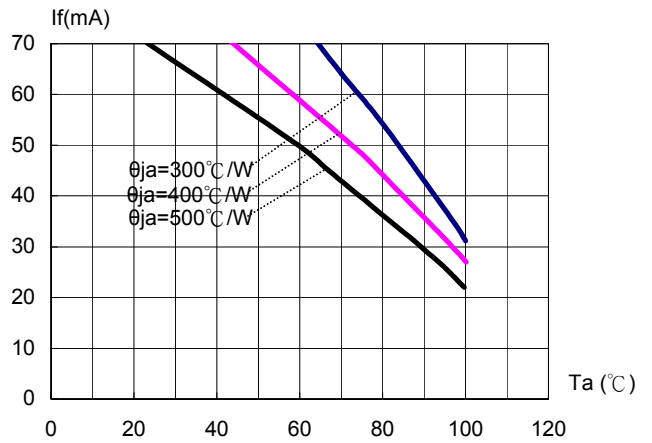


Fig.4 Allowable Forward Current vs. Ambient Temperature

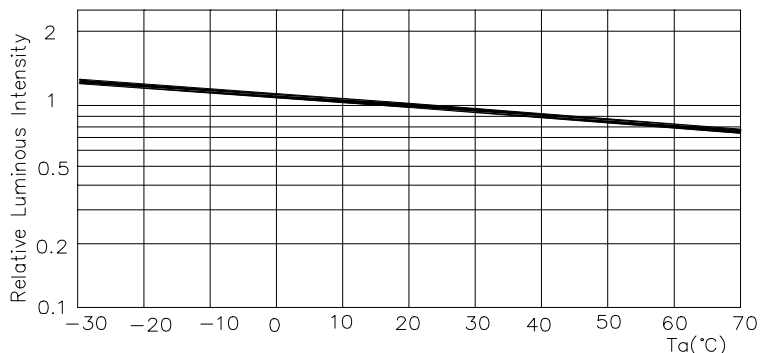


Fig.5 Luminous Intensity at If=70mA vs. Ambient Temperature

Note: The data shown above are examples and are not guaranteed.

Spec No.	Date	Page	Ver.
Z-008-00	2004/7/16	5/7	A-00

# PART NO : EOZ-ZBRHCD0-TK

## Reliability Criteria & Results

EOI'S LED Lamps passes the reliability test in compliance with on MIL standards.

### 1. Test Conditions, Accept Criteria & Results:

Classification	Test Item	Standard Test Method	Test Conditions	Duration	Units Tested	Acc/Rej Criteria	Number of Damaged
Life Test	Operating Life Test (OLT)	MIL-STD-750D Method 1026.3	$T_A=25^{\circ}\text{C}$ , $I_F=70\text{mA}$	1000 hrs.	100	0 / 1	0/100
Environment Test	High Temperature Storage (HTS)	MIL-STD-750D Method 1032.1	$T_A=100^{\circ}\text{C}$	1000 hrs.	100	0 / 1	0/100
	Low Temperature Storage (LTS)	MIL-STD-750D Method 1032.1	$T_A=-40^{\circ}\text{C}$	1000 hrs.	100	0 / 1	0/100
	Temp. & Humidity with Bias (THB)	MIL-STD-750D Method 103B	$T_A=60^{\circ}\text{C}$ , $\text{RH}=90\%$ $I_F=45\text{mA}$	500 hrs.	100	0 / 1	0/100
	Thermal Shock Test (TST)	MIL-STD-750D Method 1056.1	$0^{\circ} \leftrightarrow 100^{\circ}\text{C}$ 2min 2min	100 cycles	100	0 / 1	0/100
	Temperature Cycling Test (TCT)	MIL-STD-750D Method 1051.5	$-40^{\circ}\text{C} \sim 25^{\circ}\text{C} \sim 100^{\circ}\text{C} \sim 25^{\circ}\text{C}$ 30min 5min 30min 5min	100 cycles	100	0 / 1	0/100
Mechanical Test	Solderability	MIL-STD-750D Method 2026.4	$235 \pm 5^{\circ}\text{C}$ , 5 sec	1 time	30	0 / 1	0/30
	Resistance to Soldering Heat	MIL-STD-750D Method 2031.1	$260 \pm 5^{\circ}\text{C}$ , 10 sec	1 time	30	0 / 1	0/30
	Lead Integrity	MIL-STD-750D Method 2036.3	Load 2.5N (0.25kgf) $0^{\circ} \sim 90^{\circ} \sim 0^{\circ}$ , bend	3 times	30	0 / 1	0/30

### 2. Reliability Criteria:

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Voltage (Forward)	$V_F$	$I_F=70\text{ mA}$	—	$\text{ULS} \times 1.1$ *
Current (Reverse)	$I_R$	$V_R=5\text{ V}$	—	$\text{ULS} \times 2.0$ *
Luminous Intensity	$I_V$	$I_F=70\text{ mA}$	$\text{ITV} \times 0.3$ **	

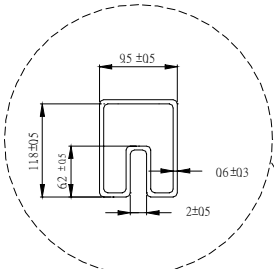
\* ULS : Upper Limit of Specification.

\*\* ITV : Initial Test Value.

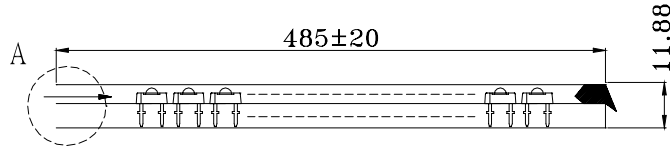
Spec No.	Date	Page	Ver.
Z-008-00	2004/7/16	6/7	A-00

# PART NO : EOZ-ZBRHCD0-TK

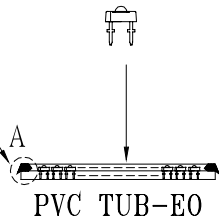
## Shipment Package



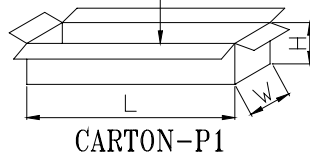
A圖(1:10)



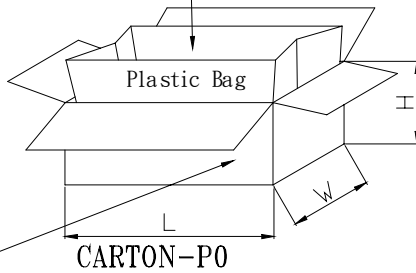
506-PVC TUB-EO  
 (60PCS/PER TUBE)



506-CARTON-P1  
 H : 85mm  
 L : 510mm  
 W : 120mm  
 3000PCS/PER CARTON



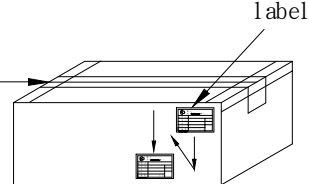
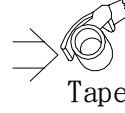
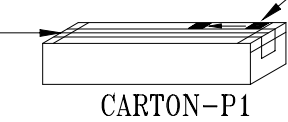
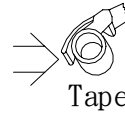
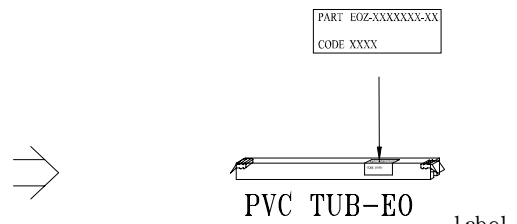
Plastic Bag  
 H : 400mm  
 L : 510mm  
 W : 230mm  
 1PCS/PER CARTON



506-CARTON-P0  
 H : 260mm  
 L : 520mm  
 W : 240mm  
 18K PCS/PER CARTON

EOI EXCELLENCE OPTO. INC. <small>A MEMBER OF UEC GROUP</small>		
PART NO.		
LOT NO.		QC:
Code		
DATE		
QUANTITY	pcs	
<small>NO. XXXXXX-XXXXXX</small>		

label



Attach the TAB on the side of the outer box from up-right to down-left

Spec No.	Date	Page	Ver.
Z-008-00	2004/7/16	7/7	A-00

# **PART NO : EOZ-ZBRHCD0-TK**

## **Cautions On LED Handling**

1. The light output of LED might injure human eyes, directly look at the LED without protection is prohibited.
2. Static electricity will damage the LEDs. It is recommended to use a wrist band or anti-electrostatic glove while handling the LEDs.
3. The leads should be bent at the point from the base of the epoxy bulb while forming the leads.
4. LEDs may be damaged by heat caused by soldering process, please use suitable solder temperature to avoid heat damage.

## **Terms and Conditions**

1. EOI warrants all sold LEDs which conform to the specifications approved by the customers.
2. Any LED supplied by EOI that does not conform to the specifications which both parties agreed upon, customer should claim within 90 days after receipt. EOI should repair or replace the LEDs at EOI's best effort.
3. EOI will not be responsible for any failed LEDs which was caused by mishandling or using the LEDs exceeding the operating conditions that EOI suggested.
4. EOI's LED products are designed and manufactured for general electronic equipment (such as household appliances, communication equipment, office equipment, electronic instrumentation and so on). If customer's application requires extra undocumented quality or reliability, which might concern human safety, it is recommended to consult with EOI in advance.
5. EOI's liability for defective LED lamps shall be limited to replacement, under no circumstance, shall EOI be liable for consequential damages or profit lose.
6. EOI and customer shall both confirm the specifications herein, and all quality related matters will base on comply with the specifications that both parties agreed upon.
7. Any modifications of the design or manufacturing process taken place will affect the characteristics, performance or reliability. Customer's approval is required.

The specification approval sheet requires signatures from both parties to become effective.