

# Technical Data Sheet

## 5 mm Round White LED (T-13/4)

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### 3294-15/T2C9-1HMB

#### Features

- Popular T-13/4 colorless 5mm package.
- High luminous power.
- Typical chromaticity coordinates  $x=0.29$ ,  $y=0.28$  according to CIE1931.
- Bulk, available taped on reel.
- ESD-withstand voltage: up to 4KV
- The product itself will remain within RoHS compliant version.



#### Descriptions

- The series is designed for application required high luminous intensity.
- The phosphor filled in the reflector converts the blue emission of InGaN chip to ideal white.

#### Applications

- Outdoor Displays
- Optical Indicators
- Backlighting
- Marker Lights

#### Device Selection Guide

PART NO.	Chip		Lens Color
	Material	Emitted Color	
3294-15/T2C9-1HMB	InGaN	White	Water Clear

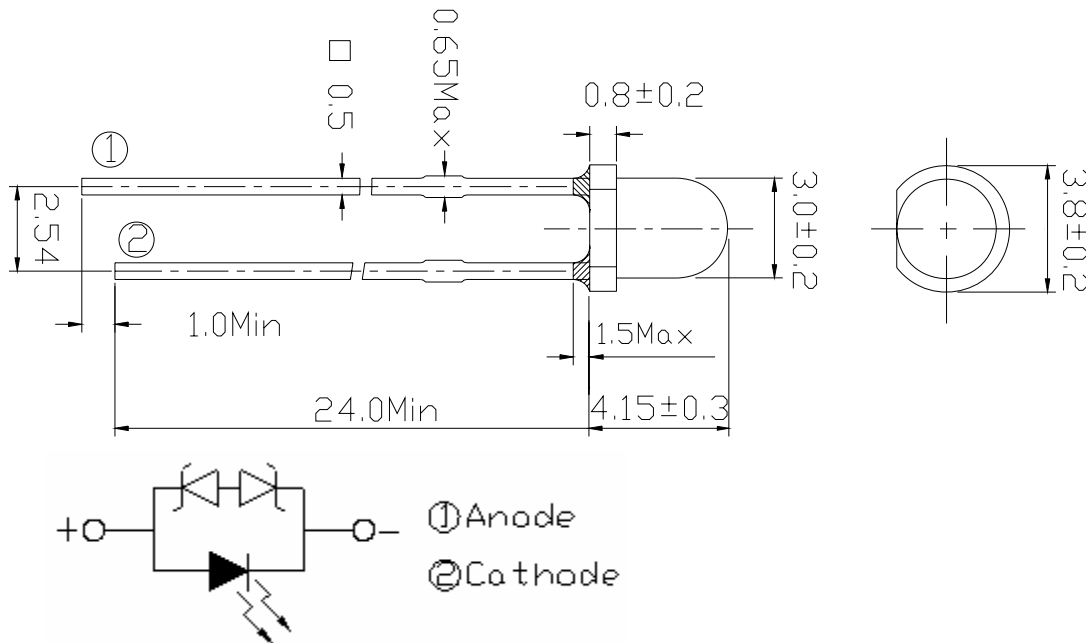


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### Package Dimensions



#### Notes:

1. All dimensions are in millimeters, and tolerance is 0.25mm except being specified.
2. Lead spacing is measured where the lead emerges from the package.
3. Protruded resin under flange is 1.5mm Max. LED.

### Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Continuous Forward Current	I <sub>F</sub>	30	mA
Peak Forward Current(Duty /10 @ 1KHZ)	I <sub>FP</sub>	100	mA
Reverse Voltage	V <sub>R</sub>	5	V
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +100	°C
Soldering Temperature (T=5 sec)	T <sub>sol</sub>	260 ± 5	°C
Power Dissipation	P <sub>d</sub>	100	mW
Zener Reverse Current	I <sub>Z</sub>	100	mA
Electrostatic Discharge	ESD	4K	V

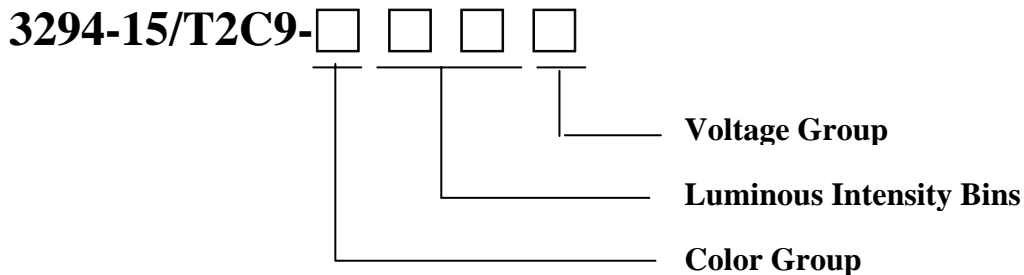


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### Production Designation



### Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =20mA	3.0	----	4.0	V
Zener Reverse Voltage	V <sub>Z</sub>	I <sub>Z</sub> =5mA	5.2	----	----	V
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	----	----	50	uA
Luminous Intensity	I <sub>V</sub>	I <sub>F</sub> =20mA	715	----	2250	mcd
Viewing Angle	2θ 1/2	I <sub>F</sub> =20mA	----	100	----	deg
Chromaticity Coordinates	x	I <sub>F</sub> =20mA	----	0.29	----	
	y		----	0.28	----	



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### Luminous Intensity Combination (mcd at 20mA)

Rank	Min	Max
H	715	900
J	900	1125
K	1125	1425
L	1425	1800
M	1800	2250

\*Measurement Uncertainty of Luminous Intensity:  $\pm 15\%$

### Forward Voltage Combination (V at 20mA)

Group	B				
Rank	1	2	3	4	5
Min.	3.00	3.20	3.40	3.60	3.80
Max.	3.20	3.40	3.60	3.80	4.00

\*Measurement Uncertainty of Forward Voltage :  $\pm 0.1V$

### Color Combination ( at 20mA)

Group	Bins
1	A1+A0+B3+B4+B5+B6+C0

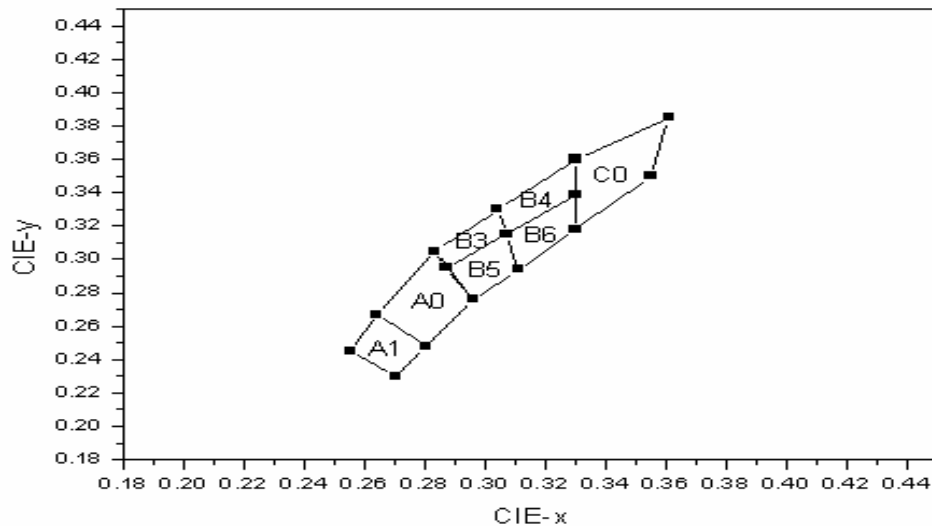


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### CIE Chromaticity Diagram



### Color Ranks (IF=20mA , Ta=25°C)

Color Ranks		CIE			
A1	X	0.255	0.264	0.28	0.27
	Y	0.245	0.267	0.248	0.23
A0	X	0.264	0.283	0.296	0.28
	Y	0.267	0.305	0.267	0.248
B3	X	0.283	0.304	0.307	0.287
	Y	0.305	0.33	0.315	0.295
B4	X	0.304	0.33	0.33	0.307
	Y	0.33	0.36	0.339	0.315
B5	X	0.287	0.307	0.311	0.296
	Y	0.295	0.315	0.294	0.276
B6	X	0.307	0.33	0.33	0.311
	Y	0.315	0.339	0.318	0.294
C0	X	0.33	0.361	0.355	0.33
	Y	0.36	0.385	0.35	0.318

\*Measurement uncertainty of the color coordinates :  $\pm 0.01$



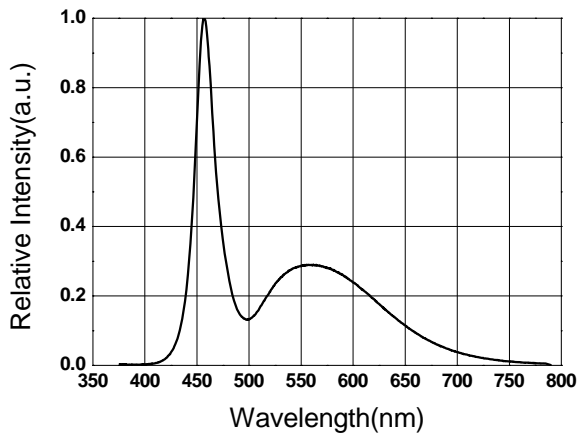
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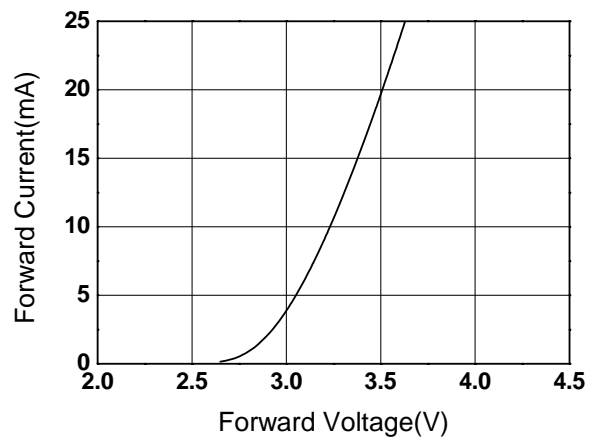
### 3294-15/T2C9-1HMB

#### Typical Electro-Optical Characteristics Curves

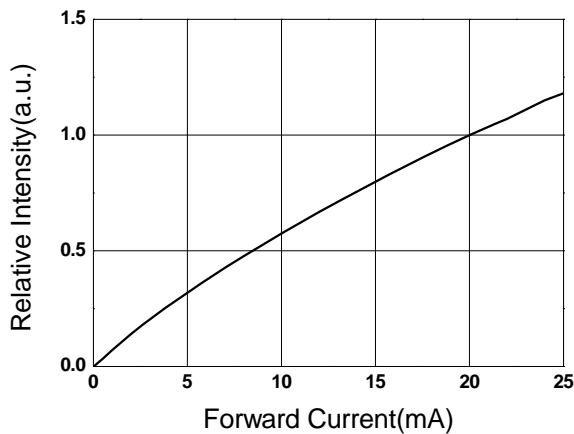
Relative Intensity vs. Wavelength



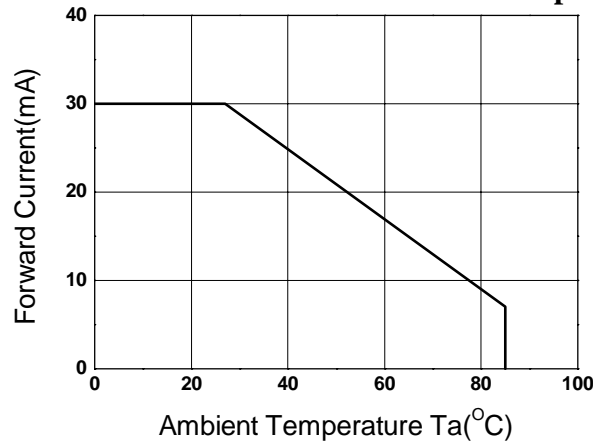
Forward Current vs. Forward Voltage



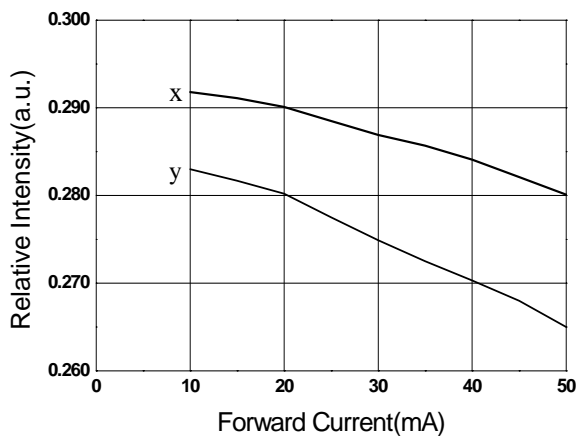
Relative Intensity vs. Forward Current



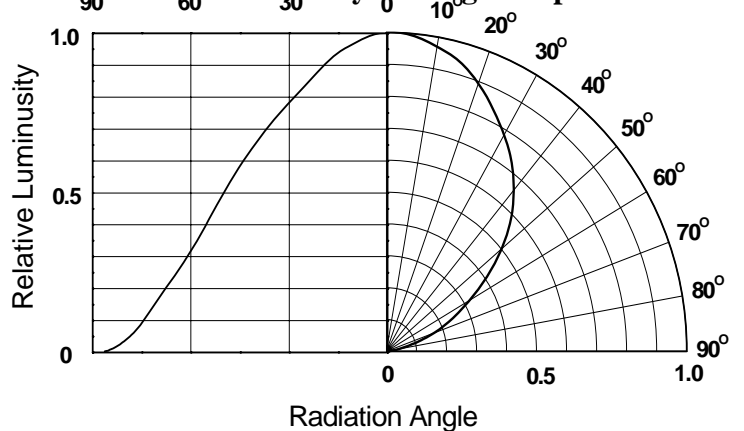
Forward Current vs. Ambient Temp.



Chromaticity Coordinate vs. Forward Current



Relative Intensity vs. Angle Displacement








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### Label Form Specification

<b>EVERLIGHT</b>	
CPN:	
P/N:	
 <b>RoHS</b>	
3294-15/T2C9-1HMB	
QTY :	CAT:
	HUE:
LOT NO :	REF:
	
MADE IN TAIWAN	

CPN: Customer's Production Number  
 P/N: Production Number  
 QTY: Packing Quantity  
 CAT: Ranks of Luminous Intensity and Forward Voltage  
 HUE: Color Rank  
 REF: Reference  
 LOT No: Lot Number  
 MADE IN TAIWAN: Production Place



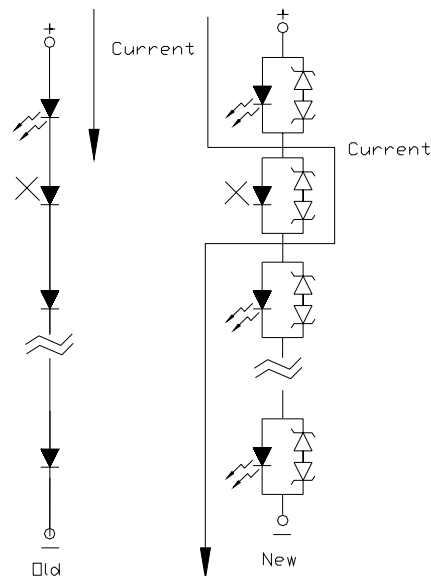
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### Notes

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
3. These specification sheets include materials protected under copyright of EVERLIGHT corporation. Please don't reproduce or cause anyone to reproduce them without EVERLIGHT's consent.
4. Below the zener reference voltage  $V_z$ , all the current flows through LED and as the voltage rises to  $V_z$ , the zener diode "breakdown." If the voltage tries to rise above  $V_z$  current flows through the zener branch to keep the voltage at exactly  $V_z$ .
5. When the LED is connected using serial circuit, if either piece of LED is no light up but current can't flow through causing others to light down. In new design, the LED is parallel with zener diode. if either piece of LED is no light up but current can flow through causing others to light up







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### 6. Soldering Condition

Careful attention should be paid during soldering. When soldering, leave more than 3mm from solder joint to case, and soldering beyond the base of the tie bar is recommended.

Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.

Recommended soldering conditions:

Hand Soldering		DIP Soldering	
Temp. at tip of iron	400°C Max. (30W Max.)	Preheat temp.	100°C Max. (60 sec Max.)
Soldering time	3 sec Max.	Bath temp.	265 Max.
Distance	3mm Min.(From solder joint to case)	Bath time.	5 sec Max.
		Distance	3mm Min.

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