

# High-Intensity LED in Plastic T-1<sup>3</sup>/<sub>4</sub> Package



## OVLGx0CyB9 Series

### Features:

- Narrow beam angle
- High brightness LED
- Water clear plastic package
- UV resistant epoxy



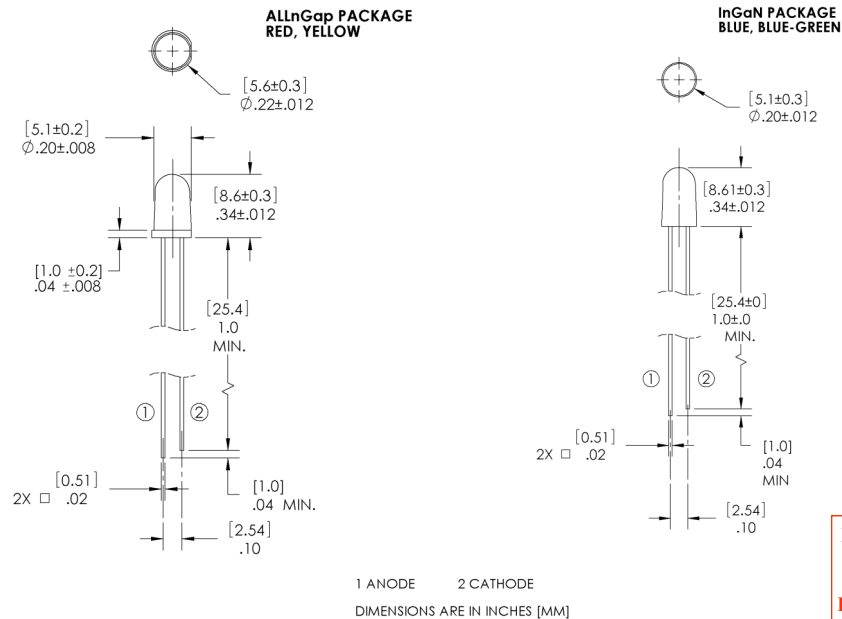
### Description:

Each device in the **OVLG Series** is a high intensity LED mounted in a clear plastic T-1<sup>3</sup>/<sub>4</sub> package. Each device incorporates an integral molded lens that enables a narrow beam angle and provides an even emission pattern. Designed to produce light over a wide range of drive currents, these LEDs are useful in applications that require a higher on-axis brightness than that achievable with standard lamps.

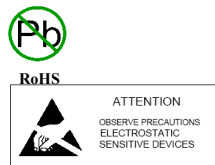
### Applications:

- Indoor/outdoor applications
- Variable message boards
- Store front signage

Part Number	Material	Emitted Color	Intensity Typ. mcd	Lens Color
OVLGB0C6B9	InGaN	Blue	7,200	Clear
OVLGC0C6B9		Blue-Green	23,000	
OVLGS0C8B9	AlInGaP	Red	14,000	
OVLGY0C9B9		Yellow	14,000	



**DO NOT LOOK DIRECTLY  
AT LED WITH  
UNSHIELDED EYES OR  
DAMAGE TO RETINA MAY**



### General Note

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### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Storage Temperature Range		-40 ~ +100 °C
Operating Temperature Range		-40 ~ +100 °C
Reverse Voltage		5 V
Continuous Forward Current	Blue, Blue-Green	25 mA
	Red, Yellow	50 mA
Peak Forward Current (10% Duty Cycle, 1 kHz)		100 mA
Power Dissipation	Blue, Blue-Green	100 mW
	Red, Yellow	120 mW
Current Linearity vs Ambient Temperature	Blue, Blue-Green	-0.29 mA/° C
	Red, Yellow	-0.72 mA/° C
LED Junction Temperature		125° C
Electrostatic Discharge Classification (JEDEC-JESD22-A114F)		Class 1C
Lead Soldering Temperature (3 mm from the base of the epoxy bulb) <sup>1</sup>		260° C / 5 seconds

### Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	COLOR	MIN	TYP	MAX	UNITS	CONDITIONS
$I_V$	Luminous Intensity	Blue	4,360	7,200	----	mcd	$I_F = 20\text{ mA}$
		Blue-Green	11,970	23,000	----		
		Red	8,550	14,000	----		
		Yellow	8,550	14,000	----		
$V_F$	Forward Voltage	Blue	2.6	3.2	4.0	V	$I_F = 20\text{ mA}$
		Blue-Green					
		Red	1.8	2.0	2.4		
		Yellow					
$I_R$	Reverse Current	Blue	----	----	10	$\mu\text{A}$	$V_R = 5\text{ V}$
		Blue-Green					
		Red					
		Yellow					
$\lambda_D$	Dominant Wavelength	Blue	460	470	475	nm	$I_F = 20\text{ mA}$
		Blue-Green	499	505	511		
		Red	620	623	630		
		Yellow	585	589	595		
20% $\theta$ -H	50% Power Angle	Blue	----	15	----	deg	$I_F = 20\text{ mA}$
		Blue-Green	----	15	----		
		Red	----	8	----		
		Yellow	----	8	----		

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## OVLGx0CyB9 Series

### Typical Electro-Optical Characteristics Curves—Blue & Blue-Green

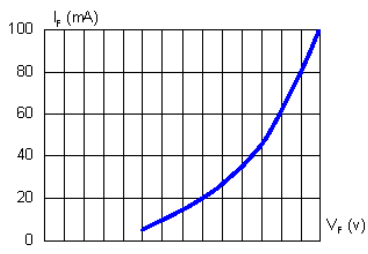


Fig.1 Forward Current vs. Forward Voltage

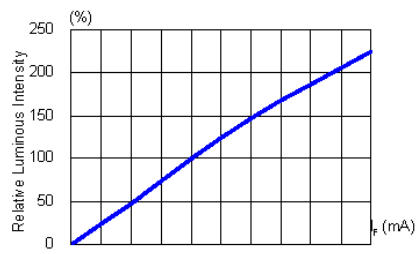


Fig.2 Luminous Intensity vs. Forward Current

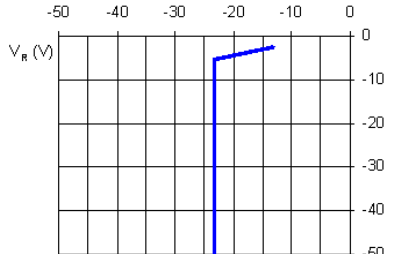


Fig.3 Reverse Current vs. Reverse Voltage

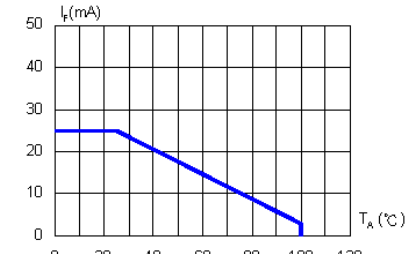


Fig.4 Allowable Forward Current vs. Ambient Temperature

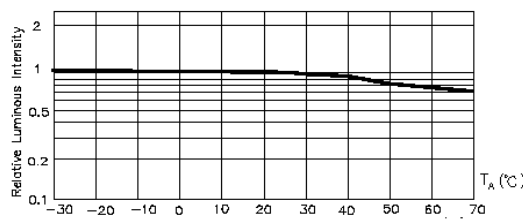


Fig.5 Luminous Intensity at I<sub>f</sub> = 20mA vs. Ambient Temperature

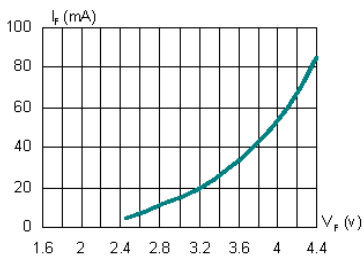


Fig.1 Forward Current vs. Forward Voltage

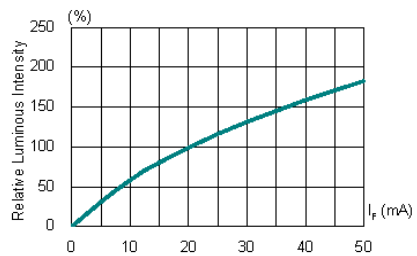


Fig.2 Luminous Intensity vs. Forward Current

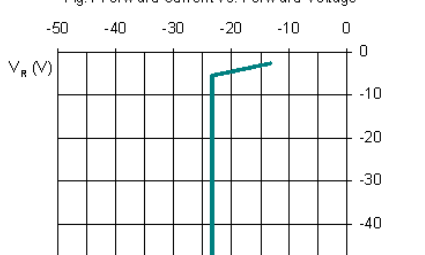


Fig.3 Reverse Current vs. Reverse Voltage

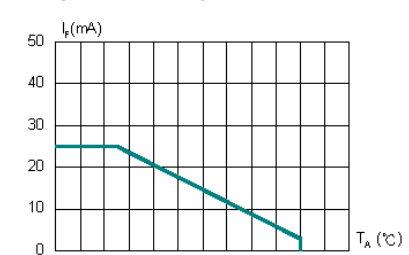


Fig.4 Allowable Forward Current vs. Ambient Temperature

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## OVLGx0CyB9 Series

### Typical Electro-Optical Characteristics Curves—Red & Yellow

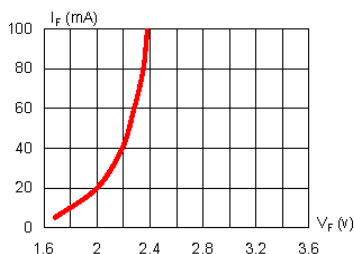


Fig.1 Forward Current vs. Forward Voltage

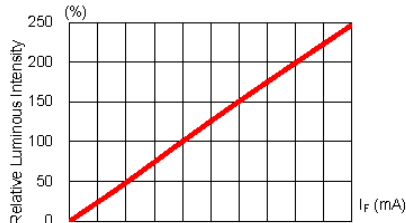


Fig.2 Luminous Intensity vs. Forward Current

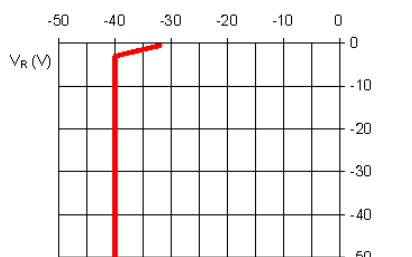


Fig.3 Reverse Current vs. Reverse Voltage



Fig.4 Allowable Forward Current vs. Ambient Temperature

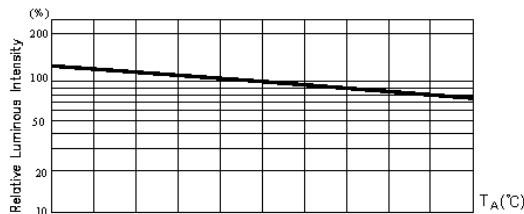


Fig.5 Luminous Intensity at I<sub>F</sub> = 20mA vs. Ambient Temperature

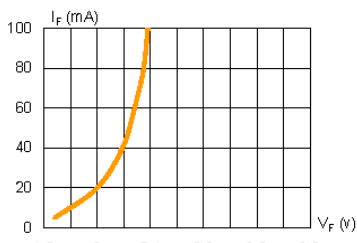


Fig.1 Forward Current vs. Forward Voltage

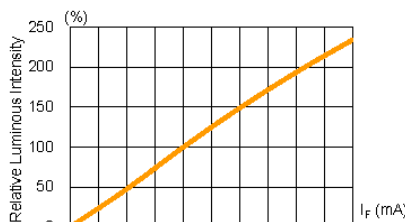


Fig.2 Luminous Intensity vs. Forward Current

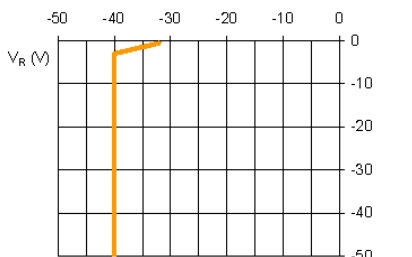


Fig.3 Reverse Current vs. Reverse Voltage

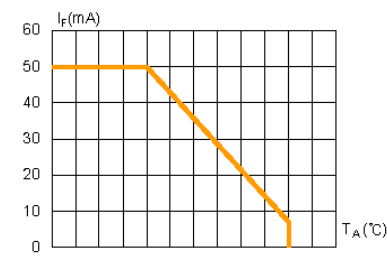


Fig.4 Allowable Forward Current vs. Ambient Temperature

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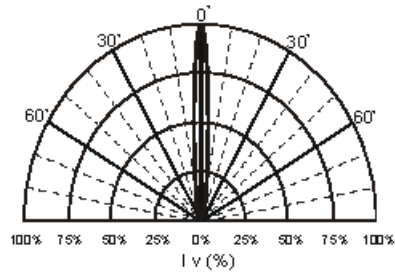
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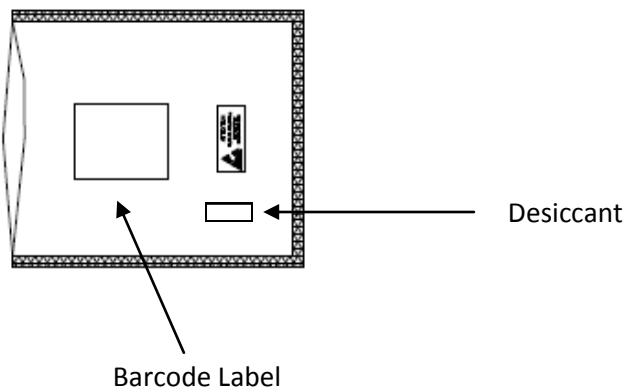


## OVLGx0CyB9 Series

Beam Angle:



Packaging: 500 pcs per anti-static bag with desiccant



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### Reliability Test

LED lamps are checked by reliability tests based on MIL standards.

#### 1. Test Conditions, Acceptable Criteria & Results

Classification	Test Item	Std. Test Method	Test Conditions	Duration	Unit	Acc / Rej Criteria	Result
Life Test	Operation Life Test (OLT)	MIL-STD-750D Method 1026.3	T <sub>A</sub> =25°C , I <sub>F</sub> =30mA *	1000 Hrs	100	0 / 1	Pass
Environmental Test	High Temperature Storage (HTS)	MIL-STD-750D Method 1032.1	T <sub>A</sub> =100°C	1000 Hrs	100	0 / 1	Pass
	Low Temperature Storage (LTS)	MIL-STD-750D Method 1032.1	T <sub>A</sub> =-40°C	1000 Hrs	100	0 / 1	Pass
	Temp. & Humidity with Bias (THB)	MIL-STD-750D Method 103B	T <sub>A</sub> =85°C , Rh=85% I <sub>F</sub> =20mA	500 Hrs	100	0 / 1	Pass
	Thermal Shock Test (TST)	MIL-STD-750D Method 1056.1	0°C ~ 100°C 2min 2min	100 cycles	100	0 / 1	Pass
	Temperature Cycling Test (TCT)	MIL-STD-750D Method 1051.5	-40°C ~ 25°C ~ 100°C ~ 25°C 30min 5min 30min 5min	100 cycles	100	0 / 1	Pass
Mechanical Test	Solderability	MIL-STD-750D Method 2026.4	235±5°C , 5 sec.	1 time	20	0 / 1	Pass
	Resistance to Soldering Heat	MIL-STD-750D Method 2031.1	260±5°C , 5 sec.	1 time	20	0 / 1	Pass
	Lead Integrity	MIL-STD-750D Method 2036.3	Load 2.5N (0.25kgf) 0°~90°~0° , bend	3 times	20	0 / 1	Pass

Remark: ( \* ) I<sub>F</sub> = 30mA for AllnGaP chip; I<sub>F</sub> = 20mA for InGan chip  
( \*\* ) I<sub>F</sub> = 20mA for AllnGaP chip; I<sub>F</sub> = 10mA for InGan chip

#### 2. Failure Criteria (T<sub>A</sub> = 25°C):

Test Item	Symbol	Test Conditions	Criteria for Judgment	
			Min.	Max
Luminous Intensity	I <sub>V</sub>	I <sub>F</sub> = 20mA	LSLx0.7 **	
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 20mA		USLx1.1 *

( \* ) USL: Upper Standard Level, ( \*\* ) LSL: Lower Standard Level