

High-Intensity LED in Plastic T-1¾ Package

OVLGx0CyB9 Series



Features:

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

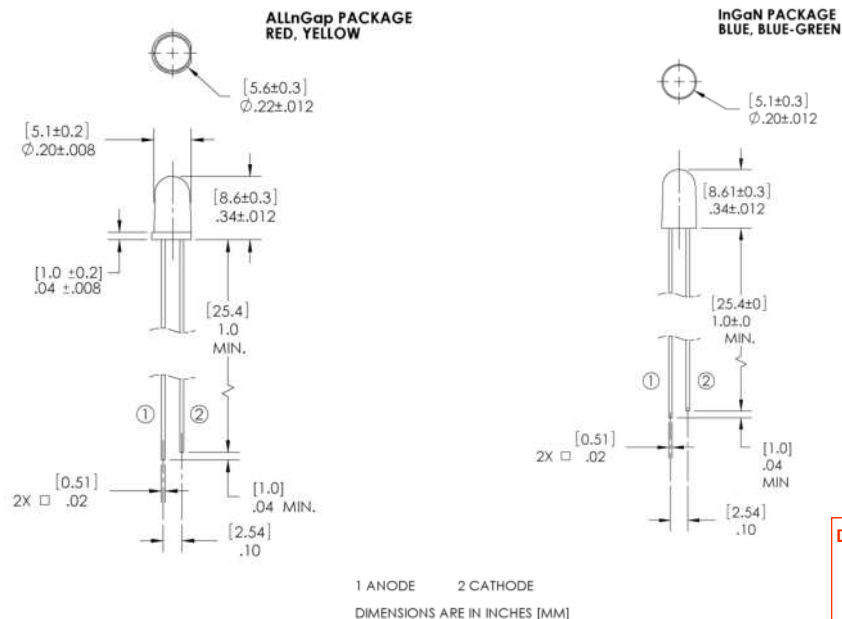
Description:

Each device in the **OVLG Series** is a high intensity LED mounted in a clear plastic T-1¾ 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
- Indicators

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	



RoHS



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

General Note

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T-1¾ Package

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Electrical Specifications

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) ¹		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 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 mA
		Blue-Green					
		Red	1.8	2.0	2.4		
		Yellow					
I _R	Reverse Current	Blue	----	----	10	μA	V _R = 5 V
		Blue-Green					
		Red					
		Yellow					
λ _D	Dominant Wavelength	Blue	460	470	475	nm	I _F = 20 mA
		Blue-Green	499	505	511		
		Red	620	623	630		
		Yellow	585	589	595		
2Θ½H-H	50% Power Angle	Blue	----	15	----	deg	I _F = 20 mA
		Blue-Green	----	15	----		
		Red	----	8	----		
		Yellow	----	8	----		

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High-Intensity LED in Plastic T-1 $\frac{3}{4}$ Package

OVLGx0CyB9 Series



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

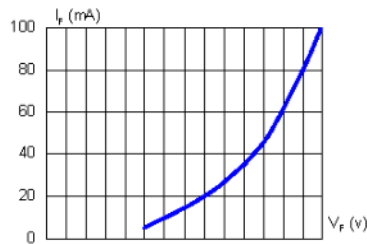


Fig.1 Forward Current vs. Forward Voltage

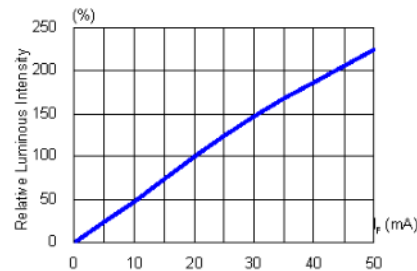


Fig.2 Luminous Intensity vs. Forward Current

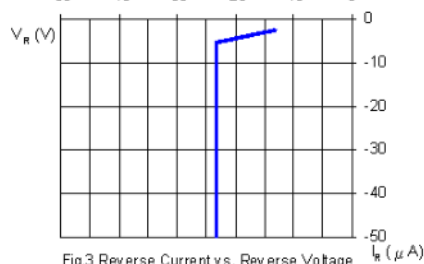


Fig.3 Reverse Current vs. Reverse Voltage

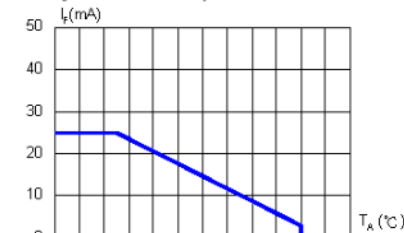


Fig.4 Allowable Forward Current vs. Ambient Temperature

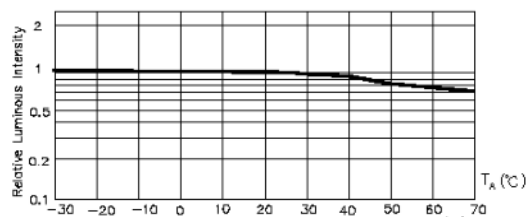


Fig.5 Luminous Intensity at $I_F = 20mA$ vs. Ambient Temperature

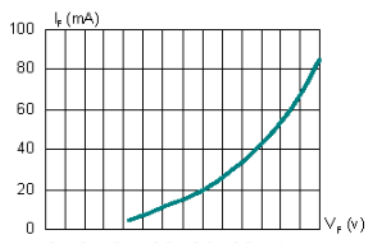


Fig.1 Forward Current vs. Forward Voltage

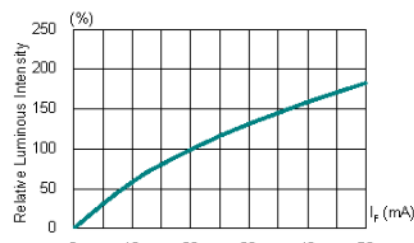


Fig.2 Luminous Intensity vs. Forward Current

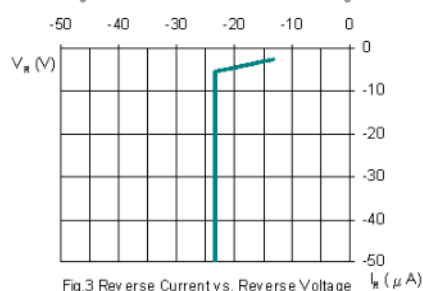


Fig.3 Reverse Current vs. Reverse Voltage

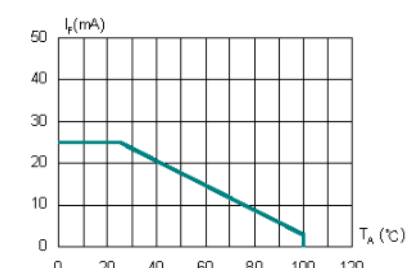


Fig.4 Allowable Forward Current vs. Ambient Temperature

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High-Intensity LED in Plastic T-1 $\frac{3}{4}$ Package

OVLGx0CyB9 Series



Typical Electro-Optical Characteristics Curves—Red & Yellow

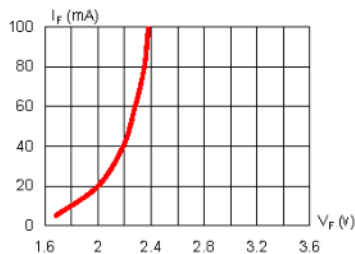


Fig.1 Forward Current vs. Forward Voltage

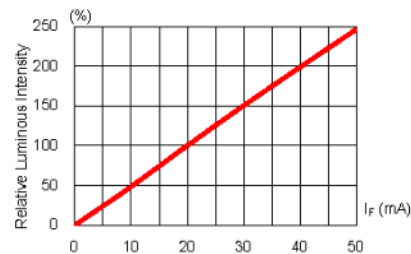


Fig.2 Luminous Intensity vs. Forward Current

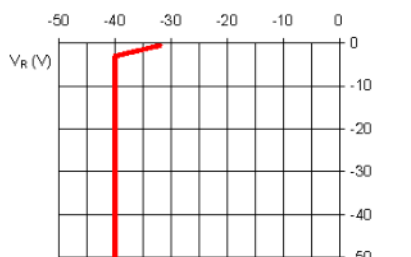


Fig.3 Reverse Current vs. Reverse Voltage

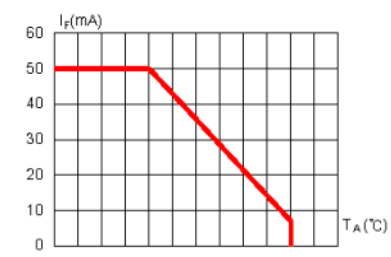


Fig.4 Allowable Forward Current vs. Ambient Temperature

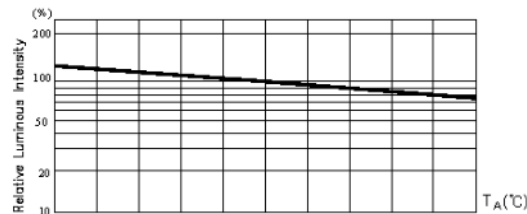


Fig.5 Luminous Intensity at $I_F = 20$ mA vs. Ambient Temperature

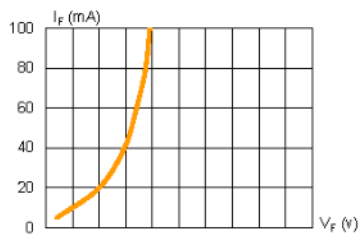


Fig.1 Forward Current vs. Forward Voltage

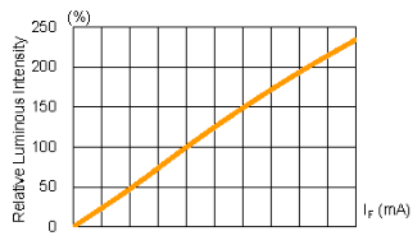


Fig.2 Luminous Intensity vs. Forward Current

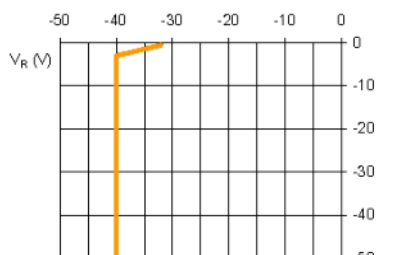


Fig.3 Reverse Current vs. Reverse Voltage

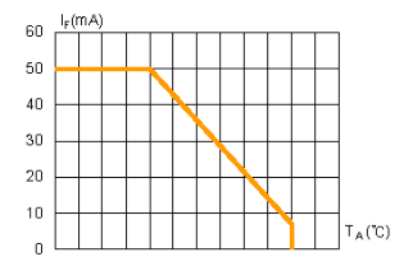


Fig.4 Allowable Forward Current vs. Ambient Temperature

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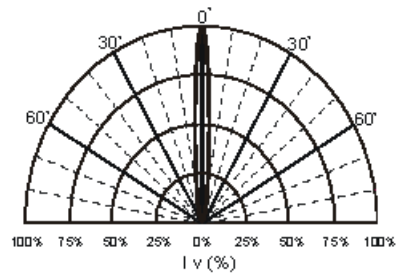
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T-1 $\frac{3}{4}$ Package

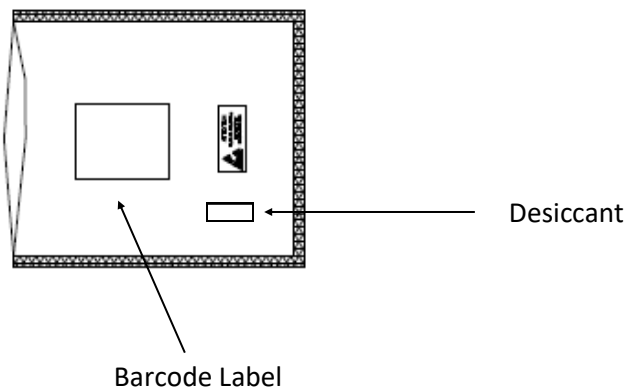
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Beam Angle:



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	$T_A=25^{\circ}\text{C}$, $I_F=30\text{mA}$ *	1000 Hrs	100	0 / 1	Pass
Environmental Test	High Temperature Storage (HTS)	MIL-STD-750D Method 1032.1	$T_A=100^{\circ}\text{C}$	1000 Hrs	100	0 / 1	Pass
	Low Temperature Storage (LTS)	MIL-STD-750D Method 1032.1	$T_A=-40^{\circ}\text{C}$	1000 Hrs	100	0 / 1	Pass
	Temp. & Humidity with Bias (THB)	MIL-STD-750D Method 103B	$T_A=85^{\circ}\text{C}$, Rh=85% $I_F=20\text{mA}$	500 Hrs	100	0 / 1	Pass
	Thermal Shock Test (TST)	MIL-STD-750D Method 1056.1	$0^{\circ}\text{C} \sim 100^{\circ}\text{C}$ 2min 2min	100 cycles	100	0 / 1	Pass
	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	Pass
Mechanical Test	Solderability	MIL-STD-750D Method 2026.4	$235\pm 5^{\circ}\text{C}$, 5 sec.	1 time	20	0 / 1	Pass
	Resistance to Soldering Heat	MIL-STD-750D Method 2031.1	$260\pm 5^{\circ}\text{C}$, 5 sec.	1 time	20	0 / 1	Pass
	Lead Integrity	MIL-STD-750D Method 2036.3	Load 2.5N (0.25kgf) $0^{\circ}\sim 90^{\circ}\sim 0^{\circ}$, bend	3 times	20	0 / 1	Pass

Remark: (*) $I_F = 30\text{mA}$ for AlInGaP chip; $I_F = 20\text{mA}$ for InGaN chip

(**) $I_F = 20\text{mA}$ for AlInGaP chip; $I_F = 10\text{mA}$ for InGaN chip

2. Failure Criteria ($T_A = 25^{\circ}\text{C}$):

Test Item	Symbol	Test Conditions	Criteria for Judgment	
			Min.	Max
Luminous Intensity	I_V	$I_F = 20\text{mA}$	LSLx0.7 **	
Forward Voltage	V_F	$I_F = 20\text{mA}$		USLx1.1 *

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

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