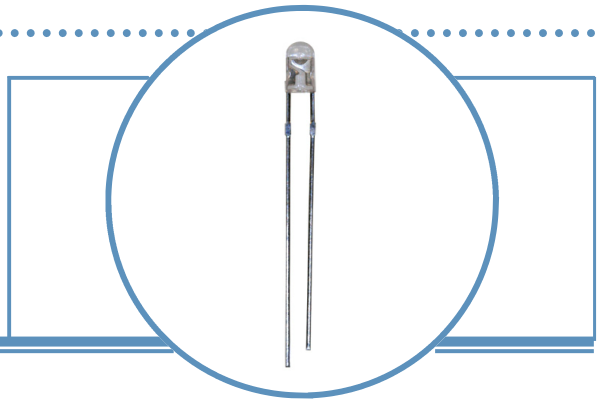
Round Through-Hole LED Lamp (3 mm)

TT electronics
OPTEK Technology

OVLBx4C7 Series

- High brightness with well-defined spatial radiation patterns
- UV-resistant epoxy lens
- Choice of blue, green, red or yellow
- No stand-offs

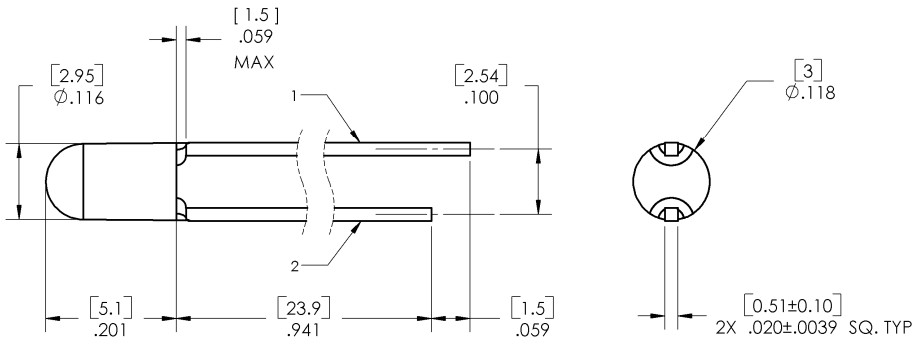


Each **OVLBx4C7** series device is a high-intensity LED mounted in a clear plastic T-1 package. The LED provides a well-defined and even emission pattern. Its UV-resistant epoxy lens makes this device an optimal solution for outdoor applications.

Applications

- Pedestrian signals
- Signage and architectural lighting
- Backlighting
- Automotive
- Outdoor/indoor displays

Part Number	Material	Emitted Color	Intensity Typ. mcd	Lens Color
OVLBB4C7	InGaN	Blue	900	Water Clear
OVLBG4C7	InGaN	Green	4500	Water Clear
OVLBR4C7	AlInGaP	Red	1900	Water Clear
OVLBY4C7	AlInGaP	Yellow	1800	Water Clear



1 ANODE 2 CATHODE

DIMENSIONS ARE IN: [MILLIMETERS] INCHES

RoHS

ATTENTION
OBSERVE PRECAUTIONS
ELECTROSTATIC
SENSITIVE DEVICES

Leadframe material is iron alloy with tin-plated leads

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

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
Phone: (972) 323-2200 or (800) 341-4747 FAX: (972) 323-2396 visibleLED@optekinc.com www.optekinc.com

Absolute Maximum Ratings
T_A = 25° C unless otherwise noted

Storage Temperature Range		-40 ~ +100 ℃
Operating Temperature Range		-40 ~ +85 ℃
Reverse Voltage		5 V
Continuous Forward Current	Blue, Green	20 mA
	Red, Yellow	30 mA
Peak Forward Current (10% Duty Cycle, 1 kHz)	Blue, Green	50 mA
	Red, Yellow	100 mA
Power Dissipation	Blue, Green	80 mW
	Red, Yellow	78 mW
Current Linearity vs Ambient Temperature	Blue, Green	-0.2 mA/° C
	Red, Yellow	-0.5 mA/° C
LED Junction Temperature		125° C
Lead Soldering Temperature (3 mm from the base of the epoxy bulb)[1]		260° C / 5 seconds

Electrical Characteristics
T_A = 25° C unless otherwise noted

SYMBOL	PARAMETER	COLOR	MIN	TYP	MAX	UNITS	CONDITIONS
I_V	Luminous Intensity	Blue	525	900	----	mcd	I_F = 20 mA
		Green	2520	4500	----		
		Red	1135	1900	----		
		Yellow	1135	1800	----		
V_F	Forward Voltage	Blue	----	3.4	4.0	V	I_F = 20 mA
		Green	----	3.4	4.0		
		Red	----	2.0	2.6		
		Yellow	----	2.0	2.6		
I_R	Reverse Current	Blue	----	----	50	µA	V_R = 5 V
		Green	----	----	50		
		Red	----	----	10		
		Yellow	----	----	10		
λ_D	Dominant Wavelength	Blue	460	465	475	nm	I_F = 20 mA
		Green	519	525	531		
		Red	620	628	640		
		Yellow	585	589	595		
2Θ½H-H	50% Power Angle		----	45	----	deg	I_F = 20 mA

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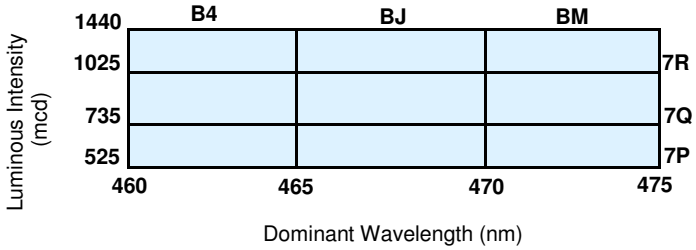
Standard Bins (I_F = 20 mA)

Lamps are sorted to luminous intensity (I_V) and dominant wavelength (λ_D) bins shown.
Orders may be filled with any or all bins contained as below.

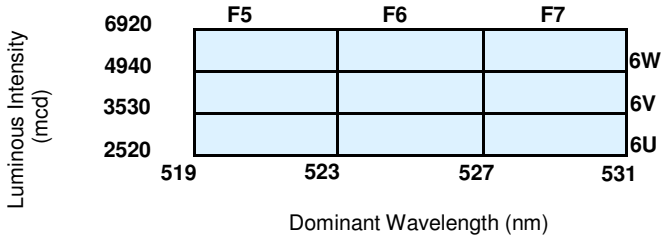
OVLBB4C7 (BLUE)



Forward Voltage (V_F)

Rank	H	J	K	L
Voltage	2.6–3.0	3.0–3.3	3.3–3.6	3.6–4.0

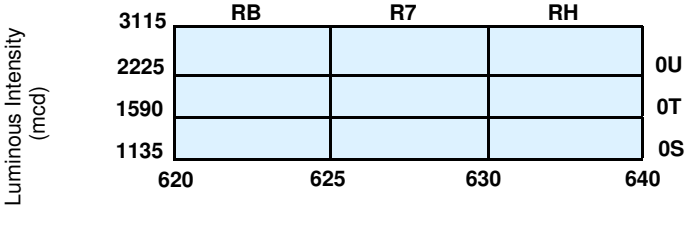
OVLBG4C7 (GREEN)



Forward Voltage (V_F)

Rank	H	J	K	L
Voltage	2.6–3.0	3.0–3.3	3.3–3.6	3.6–4.0

OVLBR4C7 (RED)



Forward Voltage (V_F)

Rank	G	H	J	6
Voltage	1.8–2.0	2.0–2.2	2.2–2.4	2.4–2.6

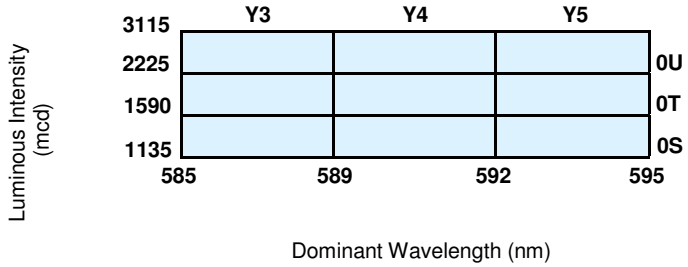
Important Notes:

1. All ranks will be included per delivery, rank ratio will be based on the chip distribution.
2. To designate luminous intensity ranks, please contact OPTEK.
3. Pb content <1000 PPM.

Standard Bins (I_F = 20 mA)

Lamps are sorted to luminous intensity (I_V) and dominant wavelength (λ_D) bins shown.
Orders may be filled with any or all bins contained as below.

OVLBY4C7 (YELLOW)



Forward Voltage (V_F)

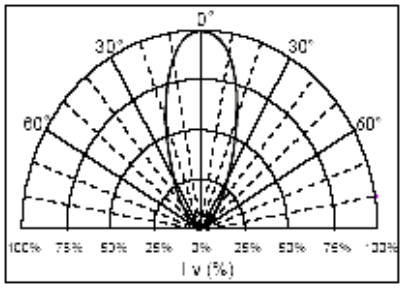
Rank	G	H	J	6
Voltage	1.8–2.0	2.0–2.2	2.2–2.4	2.4–2.6

Important Notes:

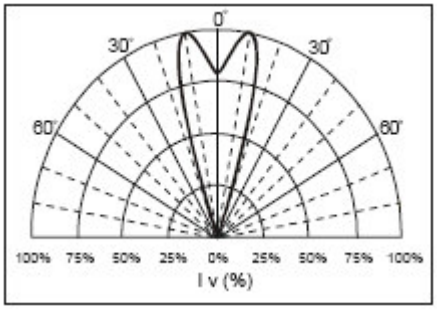
1. All ranks will be included per delivery, rank ratio will be based on the chip distribution.
2. To designate luminous intensity ranks, please contact OPTEK.
3. Pb content <1000 PPM.

Beam Pattern

(BLUE) and **(GREEN)**



(RED) and **(YELLOW)**



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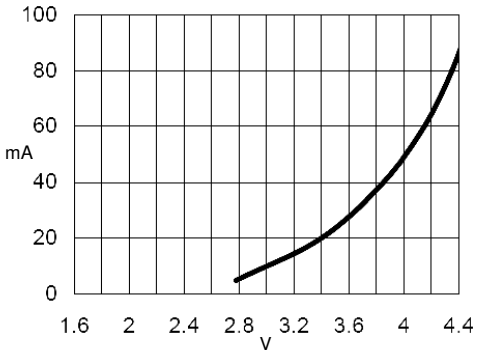
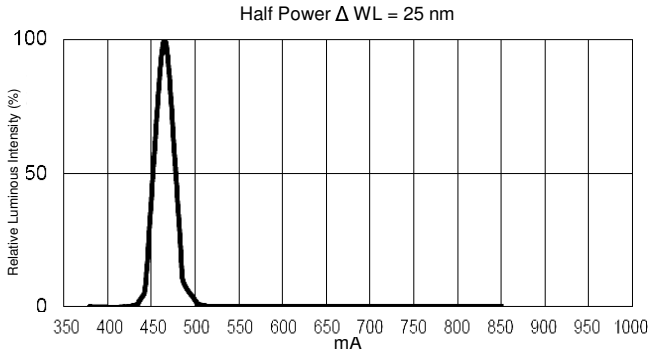
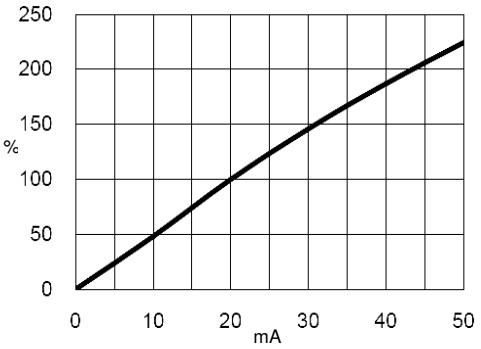
Typical Electro-Optical Characteristics Curves (BLUE)



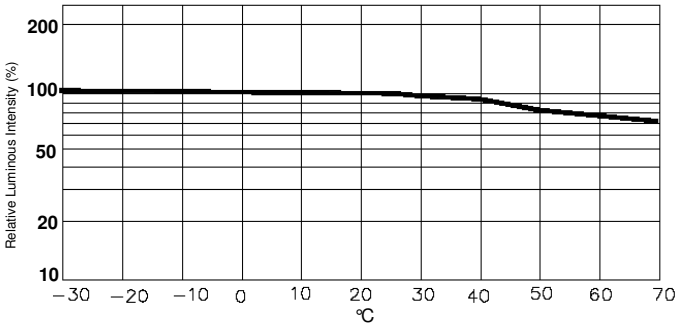
Forward Current vs Forward Voltage



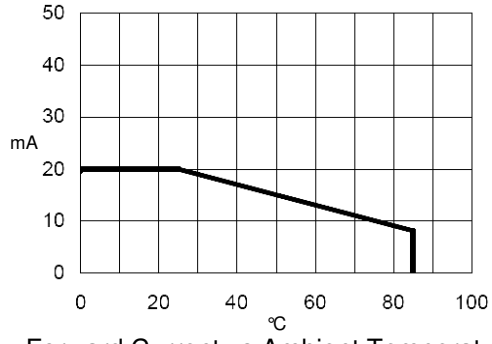
Relative Luminous Intensity vs Wavelength



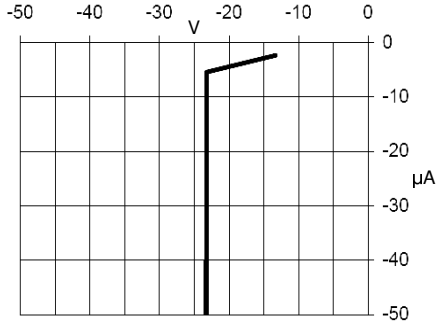
Relative Luminous Intensity vs Forward Current



Relative Luminous Intensity vs Ambient Temperature

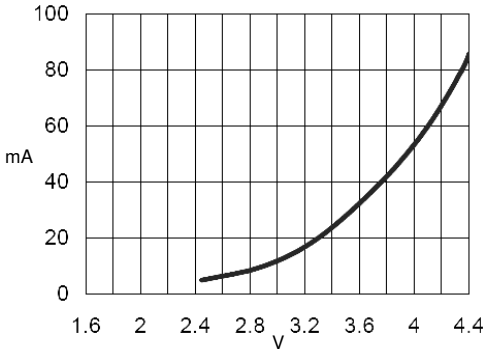


Forward Current vs Ambient Temperature

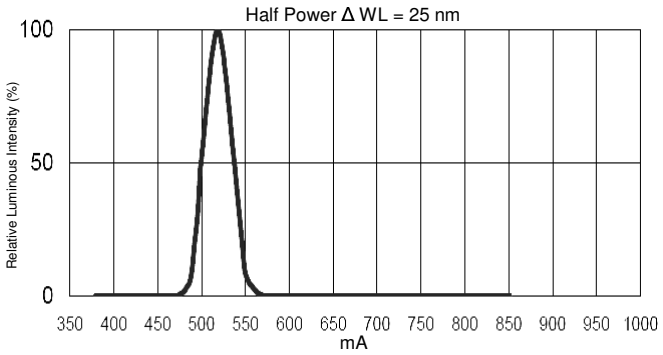


Reverse Current vs Reverse Voltage

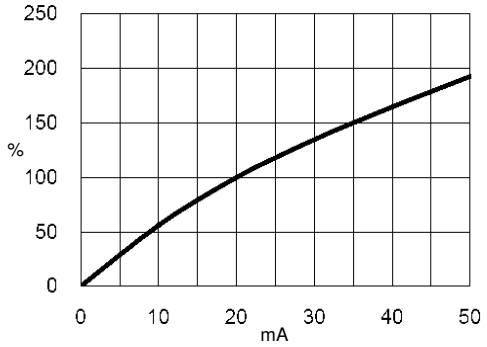
Typical Electro-Optical Characteristics Curves (GREEN)



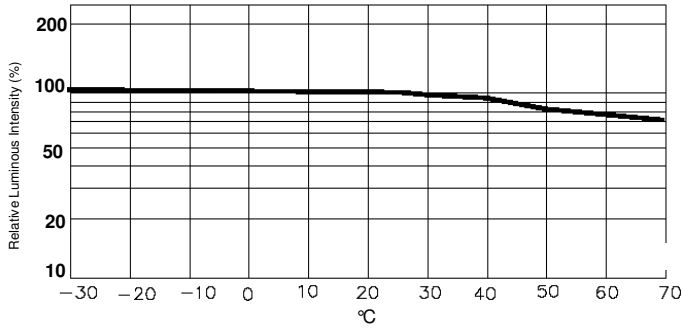
Forward Current vs Forward Voltage



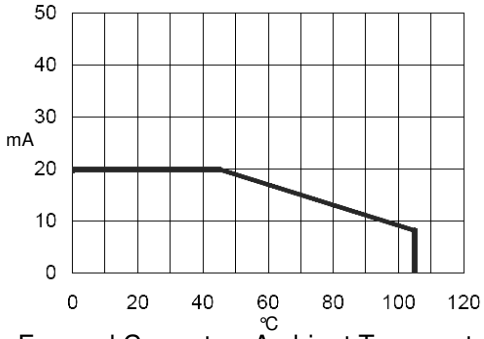
Relative Luminous Intensity vs Wavelength



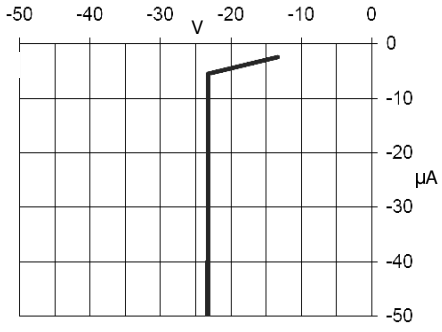
Relative Luminous Intensity vs Forward Current



Relative Luminous Intensity vs Ambient Temperature



Forward Current vs Ambient Temperature



Reverse Current vs Reverse Voltage

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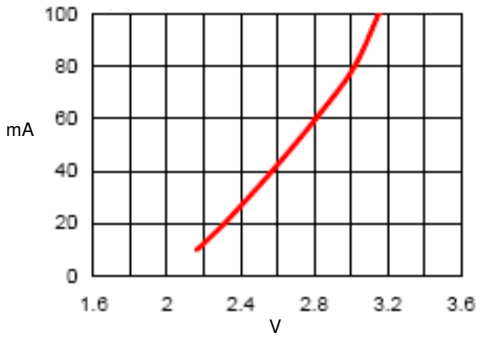
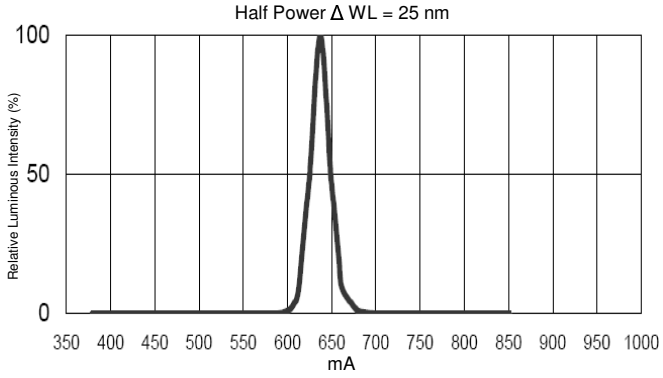
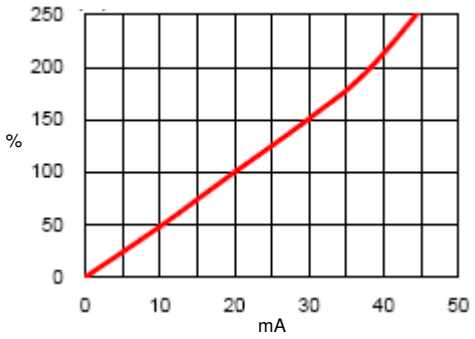
Typical Electro-Optical Characteristics Curves (RED)



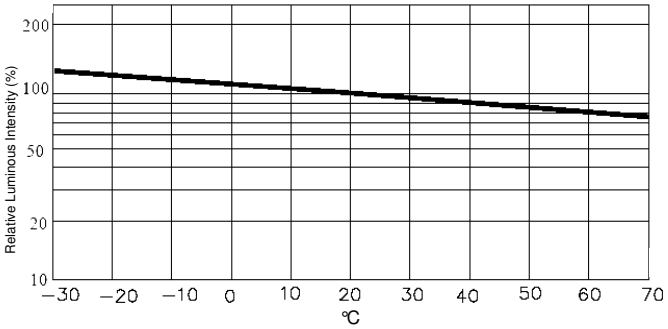
Forward Current vs Forward Voltage



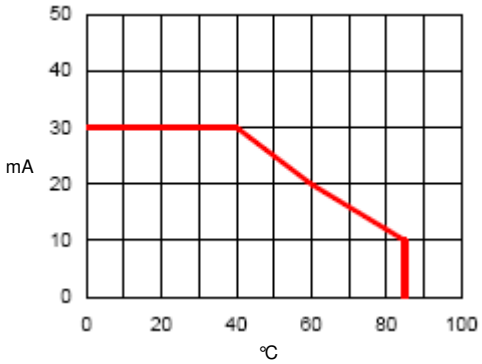
Relative Luminous Intensity vs Wavelength



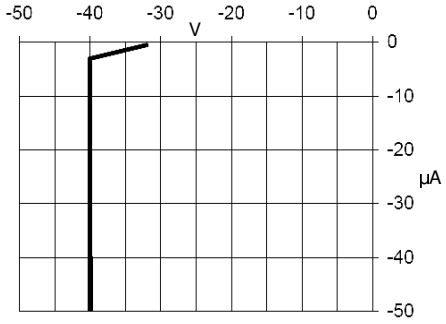
Relative Luminous Intensity vs Forward Current



Relative Luminous Intensity vs Ambient Temperature

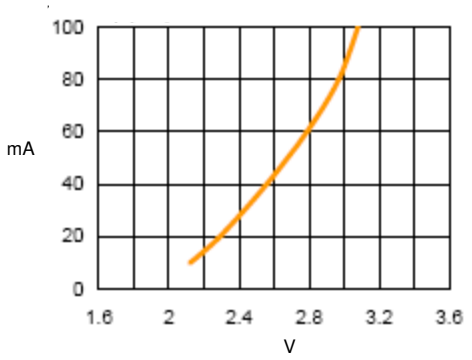


Forward Current vs Ambient Temperature

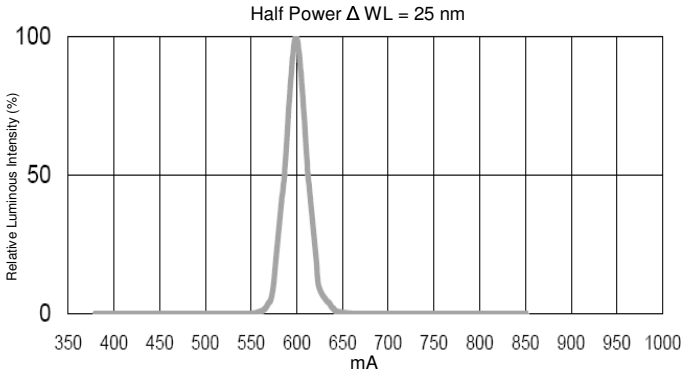


Reverse Current vs Reverse Voltage

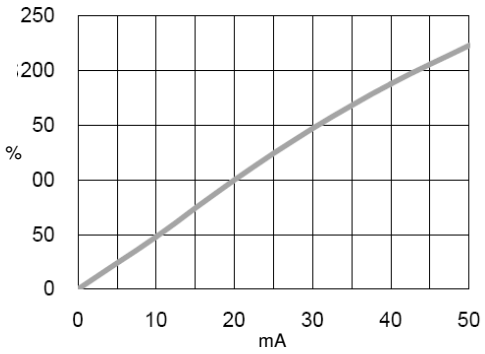
Typical Electro-Optical Characteristics Curves (YELLOW)



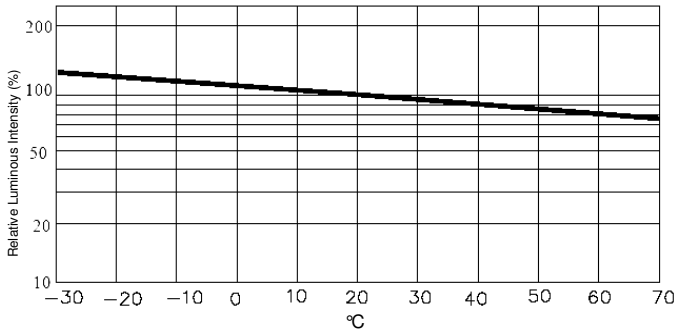
Forward Current vs Forward Voltage



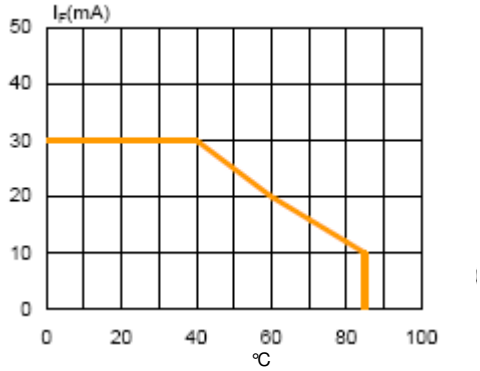
Relative Luminous Intensity vs Wavelength



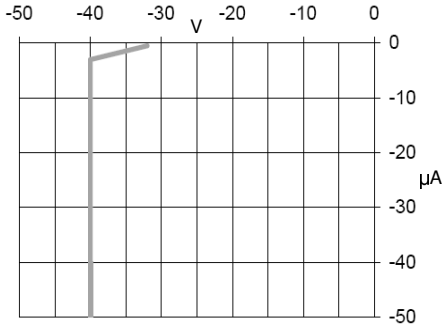
Relative Luminous Intensity vs Forward Current



Relative Luminous Intensity vs Ambient Temperature



Forward Current vs Ambient Temperature



Reverse Current vs Reverse Voltage

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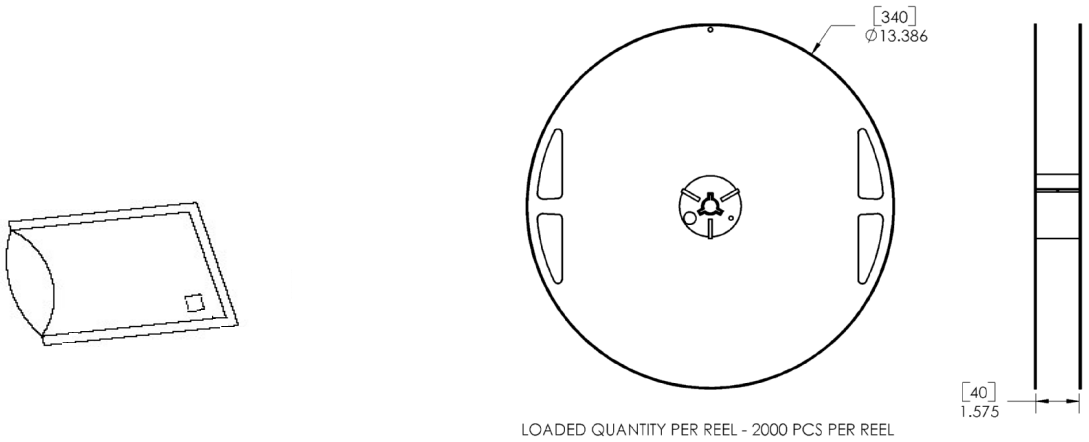
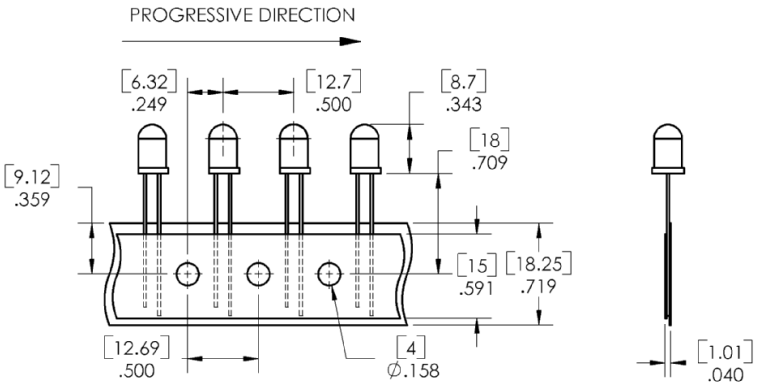
Packing Information: 500 per bulk bag with desiccant or available on 13-inch reel



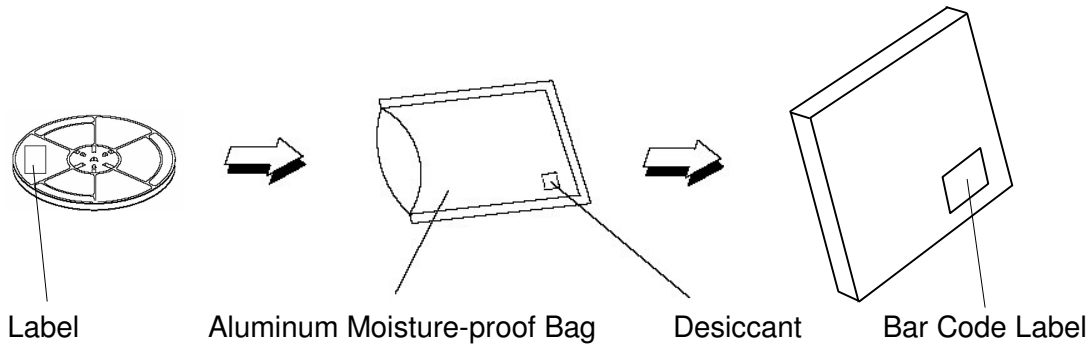
LOADED QUANTITY PER REEL - 2000 PCS PER REEL

Carrier Tape Dimensions: Loaded quantity 2000 pieces per reel



DIMENSIONS ARE IN INCHES AND [MILLIMETERS].

Moisture Resistant Packaging



OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

Reliability Test

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

Classi-fication	Test Item	Standard 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℃ , I_F =30mA *	1000 Hrs	100	0 / 1	Pass
Environment Test	High Temperature Storage (HTS)	MIL-STD-750D Method 1032.1	T_A=100℃	1000 Hrs	100	0 / 1	Pass
	Low Temperature Storage (LTS)	MIL-STD-750D Method 1032.1	T_A=－40℃	1000 Hrs	100	0 / 1	Pass
	Temp. & Humidity with Bias (THB)	MIL-STD-750D Method 103B	T_A=85℃ , Rh=85% I_F =20mA **	500 Hrs	100	0 / 1	Pass
	Thermal Shock Test (TST)	MIL-STD-750D Method 1056.1	0℃ ~ 100℃ 2min 2min	100 cycles	100	0 / 1	Pass
	Temperature Cycling Test (TCT)	MIL-STD-750D Method 1051.5	-40℃ ~25℃~ 100℃ ~25℃ 30min 5min 30min 5min	100 cycles	100	0 / 1	Pass
Mechanical Test	Solderability	MIL-STD-750D Method 2026.4	235±5℃ , 5 sec	1 time	20	0 / 1	Pass
	Resistance to Soldering Heat	MIL-STD-750D Method 2031.1	260±5℃ , 10 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_F =30mA for AlInGaP chip ; I_F =20mA for InGaN chip
(**) I_F =20mA for AlInGaP chip ; I_F =10mA for InGaN chip

2. Failure Criteria (T_A =25℃):

Test Item	Symbol	Test Conditions	Criteria for Judgment	
			Min.	Max.
Luminous Intensity	I_V	I_F =20 mA	LSL×0.7 **	
Voltage (Forward)	V_F	I_F =20 mA		USL×1.1 *

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

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