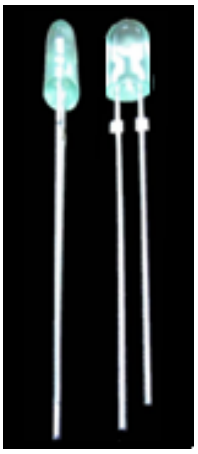
Bright View Electronics

OVAL LED LAMP BVU-359GN9M

■ Description



- Dice Material： GaN Green
- Light Color： Green Color
- Lens Color： Green Tinted Diffused
- Stand-Off P/N： BVU-359GN9M R

■ Features

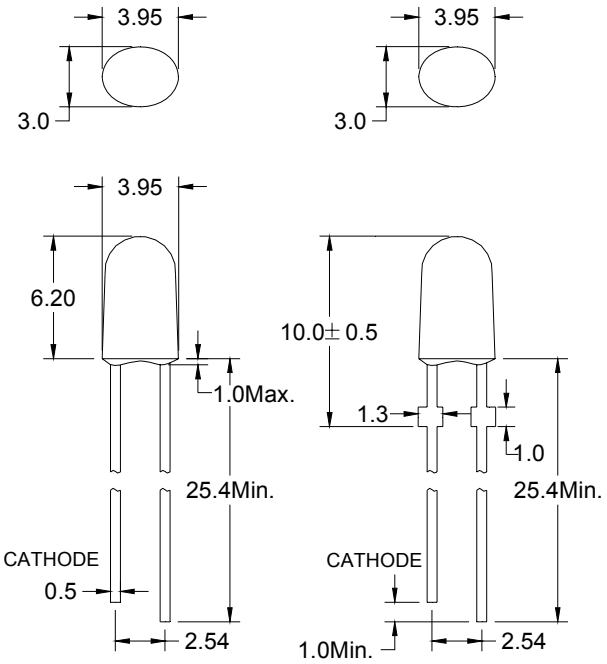
- Well defined spatial radiation pattern
- Viewing angle：major axis 110°
  minor axis 50°
- High luminous output
- Superior resistance to moisture

■ Applications

- Commercial outdoor advertising
- Battery power equipment
- Telecommunication indicators

OVAL LED LAMP **BVU-359GN9M**

■ Outline Dimensions： (mm)



Leadframe orientation parallel

Tolerance：± 0.25 mm

■ Part Numbering System：

B V U - 3 5 9 G N 9 M R

- R — Stand-offs code
- M — Lens Color Code
- N — Dice Code
- 9 — Lens Configuratuion Code
- U — Product Code

■ Sub Part Numbering :

Please also refer to the label on product bags and cartons.

■ Absolute Maximum Ratings at Ta = 25℃

PARAMETER	symbol	MAX.	UNIT
Power Dissipation (P_D)	P_D	120	mW
Continuous Forward Current (I_F)	I_F	30	mA
Peak Forward Current (1/10 Duty Cycle , 0.1ms Pulse Width) (I_{FP}	I_{FP}	100	mA
Reverse Voltage (V_R)	V_R	5	V
Derating Linear From 25℃		0.4	mA/℃
Operating Temperature Range (Topr)	Topr	－30 to ＋80	°C
Storage Temperature Range (Tstg)	Tstg	－40 to ＋100	°C
Lead Solder Temperature 1.6mm Below Package (Tsld)	Tsld	260 ℃ for 5 sec.1 team.	

■ Electro-Optical Characteristicsat at Ta = 25℃

PARAMETER	SYMBOL	TEST CONDITION	VALUES			UNIT
			MIN.	TYP.	MAX.	
Forward Voltage	V_F	I_F=20mA	–	3.3	4.0	V
Reverse Current	I_R	V_R= 5V	–	–	10	μA
Peak Emission Wavelength	λp	I_F=20mA	–	520	–	nm
Dominant Wavelength	λd	I_F=20mA	–	525	–	nm
Viewing Angle at 50% Iv	2θ 1/2	I_F=20mA	–	110/50	–	Deg.

■ Bin Grade Limits (I_F = 20 mA) Luminous Intensity / mcd

Tolerance：± 15%

Bin	J	K	L	M	N	O
Min.	1000	1300	1680	2180	2800	3600
Max.	1300	1680	2180	2800	3600	4650

■ Bin Grade Limits (I_F = 20 mA) Dominant Wavelength / nm

Bin	PG	PH	PI	PJ	PK	PL
Min.	518	521	524	527	530	533
Max.	521	524	527	530	533	536

Please contact our sales department for more information.

■ Bin Grade Limits (I_F = 20 mA) Forward Voltage / v

Bin	28	30	32	34	36	38	40
Min.	2.8	3.0	3.2	3.4	3.6	3.8	4.0
Max.	3.0	3.2	3.4	3.6	3.8	4.0	4.2

Please contact our sales department for more information.

Characteristics Data

GaN Green LED

TYPICAL ELECTRICAL / OPTICAL CHARACTERISTIC CURVES

FIG. 1 Forward Current vs. Forward Voltage (Ta = 25 °C)

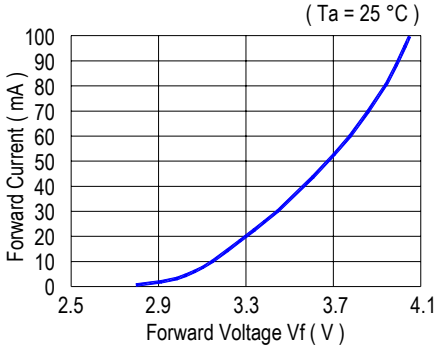


FIG. 2 Relative Intensity vs. Forward Current (Ta = 25 °C)

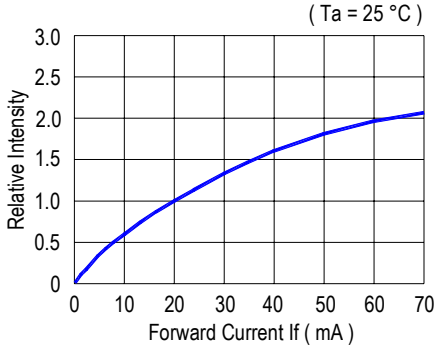


FIG. 3 Forward Voltage vs. Temperature

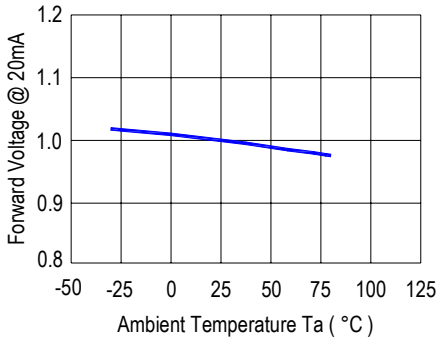


FIG. 4 Relative Intensity vs. Temperature

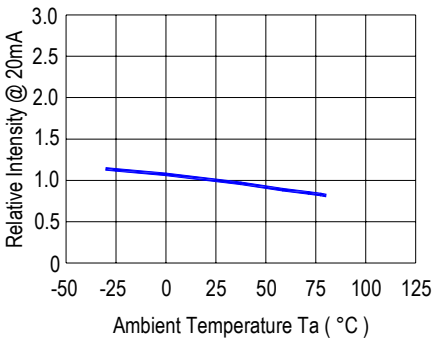


FIG. 5 Relative Intensity vs. Wavelength (λp) (Ta = 25 °C)

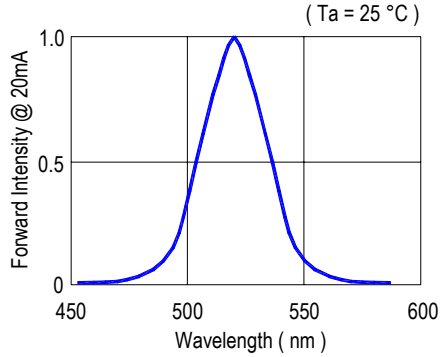
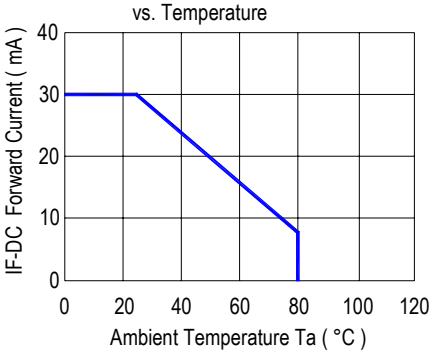
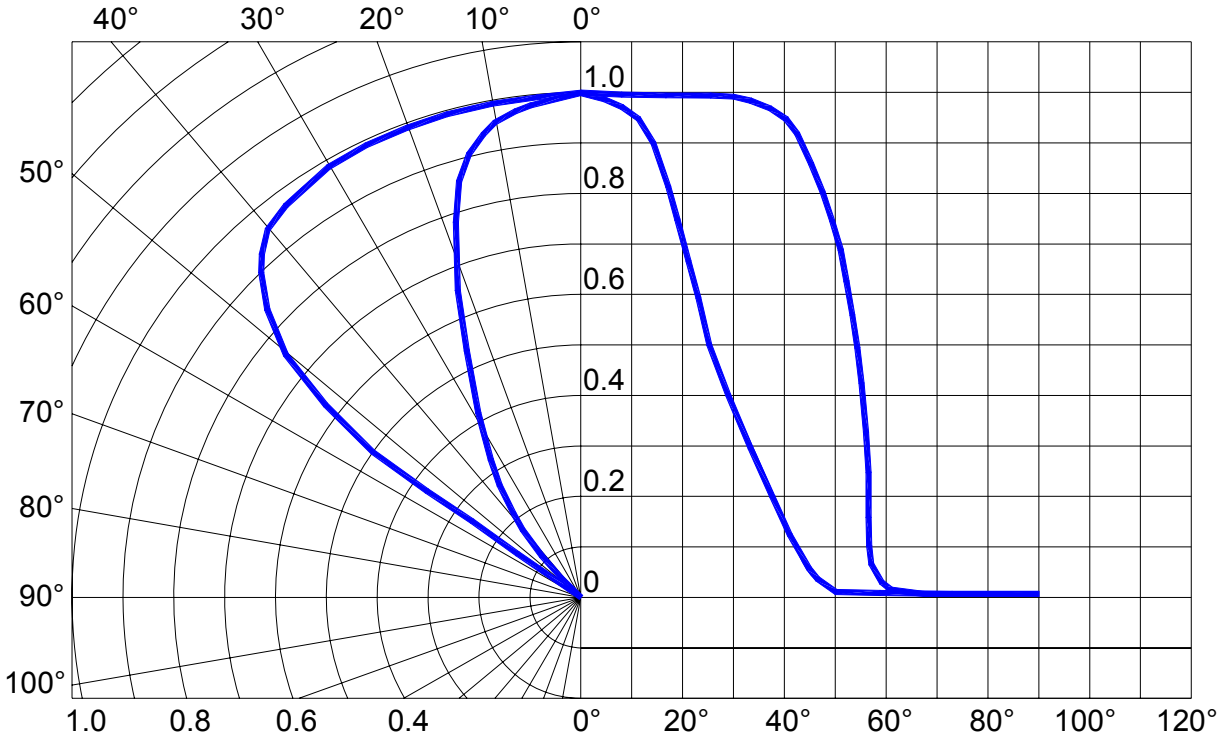


FIG. 6 Maximum Forward Current vs. Temperature



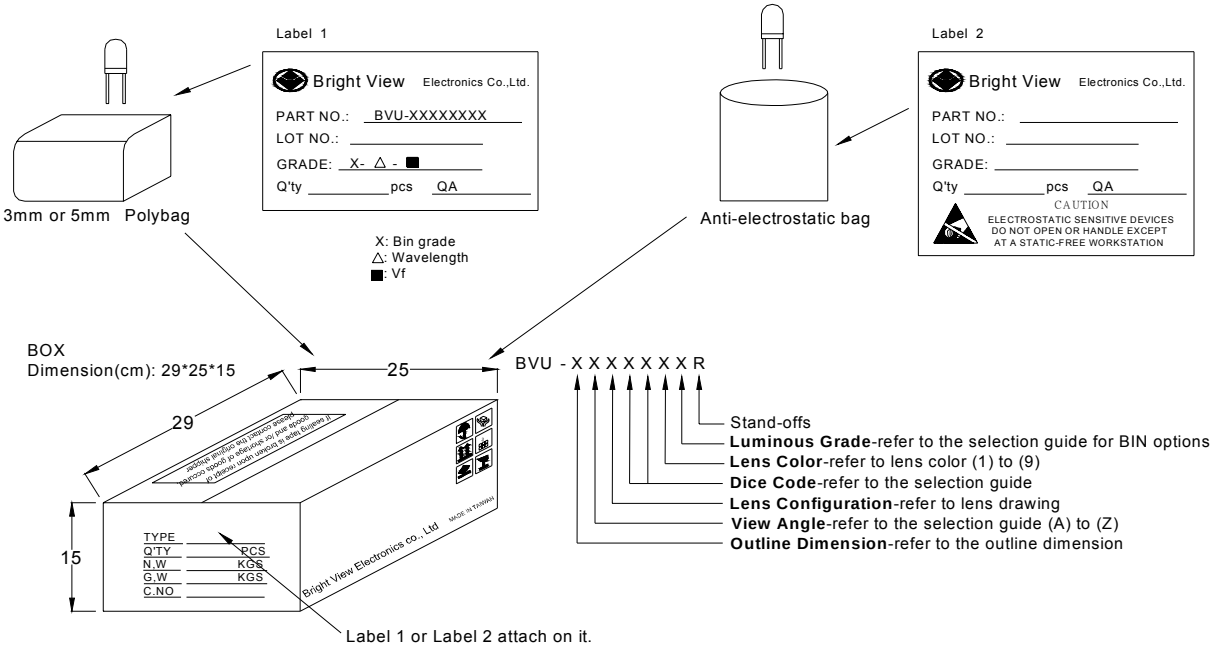
■ **Radiation Characteristic：**

Ta=25℃

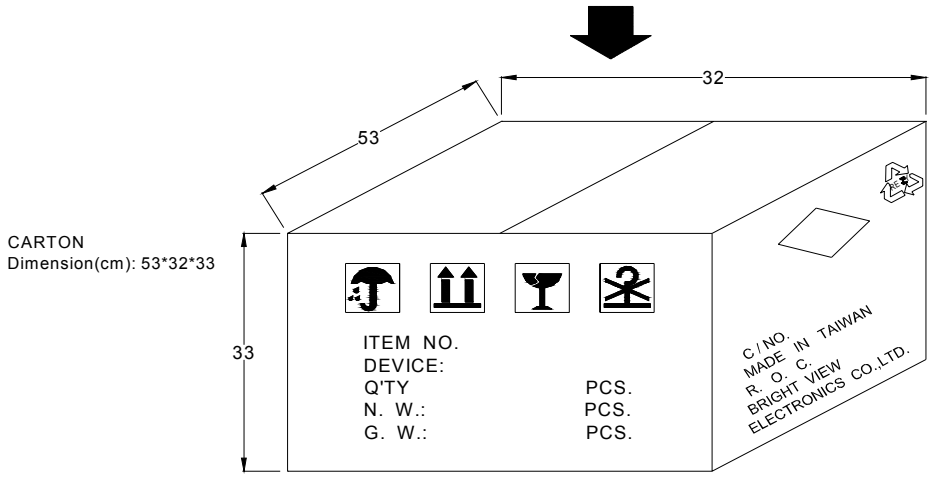


OVAL LED LAMP BVU-359GN9M

■ Packaging :



Device	Q'ty / Polybag (pcs)	Polybag / Box A	Fig.
5mm(T-1 3/4)	1000pcs	14 bags	Label 1
3mm(T-1)	1000pcs	20 bags	Label 1
Blue / Green / White	500pcs	18 bags	Label 2



4 Boxes / Carton

5mm : 56,000pcs

3mm : 80,000pcs

Blue / Green / White : 36,000pcs

■ Reliability Test Items and Conditions

(1)TEST ITEMS AND RESULTS

TEST ITEM	Standard Test Method	Test Conditions	Note	Number of Damaged
Resistance to Soldering Heat	JEITA ED-4701 300 302	Tsld=260 ± 5℃, 5sec. 3mm from the base of the epoxy bulb	1 times	0/100
Solderability	JEITA ED-4701 300 303	Tsld=235 ± 5℃, 5sec. (using flux)	1 time over 95%	0/100
Thermal Shock		0℃ ~ 100℃ 30min. 30min.	100 cycles	0/100
Temperature Cycle	JEITA ED-4701 100 105	-40℃ ~ 25℃ ~ 100℃ ~ 25℃ 30min. 5min. 30min. 5min.	100 cycles	0/100
Moisture Resistance Cyclic	JEITA ED-4701 200 203	25℃ ~ 65℃ ~ -10℃ 90%RH 24hrs./1cycle	10 cycles	0/100
Terminal Strength (bending test)	JEITA ED-4701 400 401	Load 5N (0.5kgf) 0° ~ 90° ~ 0° bend 2 times	Nonoticeable damage	0/100
Terminal Strength (pull test)	JEITA ED-4701 400 401	Load 10N (1kgf) 10 ± 1 sec.	Nonoticeable damage	0/100
High Temperature Storage	JEITA ED-4701 200 201	Ta=100℃	1000hrs.	0/100
Temperature Humidity Storage	JEITA ED-4701 100 103	Ta=60℃, RH=90%	1000hrs.	0/100
Low Temperature Storage	JEITA ED-4701 200 202	Ta=-40℃	1000hrs.	0/100
Steady State Operating Life		Ta=25℃, IF=25mA	1000hrs.	0/100
Steady State Operating Life of High Humidity Heat		60℃,RH=90%, IF=20mA	500hrs.	0/100
Steady State Operating Life of Low Temperature		Ta=-30℃, IF=20mA	1000hrs.	0/100

(2)CRITERIA FOR JUDGING DAMAGE

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min	Max
Forward Voltage	V_F	I_F=20mA	—	U.S.L.*) x 1.1
Reverse Current	I_R	V_R=5V	—	U.S.L.*) x 2.0
Luminous Intensity	I_V	I_F=20mA	L.S.L.**) x 0.7	—

*) U.S.L. : Upper Standard Level **) L.S.L. : Lower Standard Level

■ Cautions :

(1) Lead Forming

- ∗ When forming leads, the leads should be bent at a point at least 3mm from the base of the epoxy bulb. Do not use the base of the leadframe as a fulcrum during lead forming.
- ∗ Lead forming should be done before soldering.
- ∗ Do not apply any bending stress to the base of the lead. The stress to the base may damage the LED's characteristics or it may break the LEDs.
- ∗ When mounting the LEDs onto a printed circuit board, the holes on the circuit board should be exactly aligned with the leads of the LEDs. If the LEDs are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the LEDs.

(2) Storage Conditions

- ∗ The LEDs should be stored at 30°C or less and 70%RH or less after being shipped from Bright View and the storage life limits are 3 months. If the LEDs are stored for 3 months or more, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material.
- ∗ Bright View LED leadframes are comprised of a silver plated copper alloy. The silver surface may be affected by environments which contain corrosive gases and so on. Please avoid conditions which may cause the LED to corrode, tarnish or discolor. This corrosion or discoloration may cause difficulty during soldering operations. It is recommended that the LEDs be used as soon as possible.
- ∗ Please avoid rapid transitions in ambient temperature, especially, in high humidity environments where condensation can occur.

(3) Heat Generation

- ∗ Thermal design of the end product is of paramount importance. Please consider the heat generation of the LED when making the system design. The coefficient of temperature increase per input electric power is affected by the thermal resistance of the circuit board and density of LED placement on the board, as well as other components. It is necessary to avoid intense heat generation and operate within the maximum ratings given in this specification.
- ∗ The operating current should be decided after considering the ambient maximum temperature of LEDs.

(4) Cleaning

- ∗ It is recommended that isopropyl alcohol be used as a solvent for cleaning the LEDs. When using other solvents, it should be confirmed beforehand whether the solvents will dissolve the resin or not. Freon solvents should not be used to clean the LEDs because of worldwide regulations.
- ∗ Do not clean the LEDs by the ultrasonic. When it is absolutely necessary, the influence of ultrasonic cleaning on the LEDs depends on factors such as ultrasonic power and the assembled condition. Before cleaning, a pre-test should be done to confirm whether any damage to the LEDs will occur.

(5) Soldering

- ∗ Although the recommended soldering conditions are specified in the below table, dip or soldering at the lowest possible temperature is desirable.
- ∗ A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.
- ∗ Dip soldering and hand solding should not be done more than one time.
- ∗ When it is necessary to clamp the LEDs to prevent soldering failure, it is important to minimize the mechanical stress on the LEDs.
- ∗ Cut the LED leadframes at room temperature. Cutting the leadframes at high temperature may cause failure of the LEDs.
- ∗ Solder the LED no closer than 3mm from the base of the epoxy bulb. Soldering beyond the the tie bar is recommended.
- ∗ Recommended soldering conditions

Hand Soldering		Dip Soldering	
Temperature	350℃ Max.	Pre-Heat	120℃ Max.
Soldering Time	3 seconds Max.	Pre-Heat Time	60 seconds Max.
Position	No closer than 3 mm from the base of the epoxy bulb.	Solder Bath Temperatu	260℃ Max.
		Dipping Time	5 seconds Max.
		Dipping Position	No lower than 3 mm from the base of the epoxy bulb.

- ∗ Soldering time: 3 sec. Max.(one time only).
- ∗ Leave 3mm of minimum distance from the base of the epoxy.

(6) ESD (eletrostatic discharge) protection (base on machine mode)

- ∗ The product is Gallium Nitride (GaN) based light emitting diode (LED) and is extremely sensitive to ESD. Users are strongly recommended to take necessary meter to test the static electricty and avoid ESD when handling this product.
- ∗ Bright View's BA, GN, WI ,WG series products are GaN based and are classified as ”Class 1” (ESD endurance 50V or lower), any manufacturing site or workstation where GaN devices are handled should be rated at 50V or below.
- ∗ Proper grounding of machines (via 1MΩ), using static disspative mats, containers, working uniforms and shoes are considered to be effective against ESD.
- ∗ An ionizer is recommended in the facility or environment where ESD may be generated easily, and soldering iron with a grounded tip is also recommended.
- ∗ When inspecting the final products in which LEDs are assembled, it is recommended to check whether the assembled LEDs are damaged by ESD or not. It is simple to find damaged LEDs by light-on or VF test at lower current (below 1mA is recommended).
- ∗ ESD damaged LEDs will show some unusual characteristics such as the remarkable increasing of leak current, the decreasing of forward voltage, or the LEDs do not light on at the low current.

(7) Other

- ∗ Care must be taken to ensure that the reverse voltage will not exceed the absolute maximum rating when using the LEDs with matrix drive.

- ∗ The LEDs described in this brochure are intended to be used for ordinary electronic equipment (such as office equipment, communications equipment, measurement instruments and household appliances). Consult Bright View sales staff in advance for information on the applications in which exceptional quality and reliability are required, particularly when the failure or malfunction of the LEDs may directly jeopardize life or health (such as for airplanes, aerospace, submersible repeaters, nuclear reactor control systems, automobiles, traffic control equipment, life support systems and safety devices).

- ∗ The appearance and specifications of the product may be modified for improvement without notice.