ROITHNER LASERTECHNIK GmbH
WIEDNER HAUPTSTRASSE 76 1040 VIENNA AUSTRIA
TEL. +43 1 586 52 43 -0, FAX. -44, OFFICE@ROITHNER-LASER.COM

VL370-5-15

TECHNICAL DATA

UV LED, 5 mm InGaN

Features

- Zener diode is built in the protective circuit against static electricity
- Low Voltage DC Operated
- High Power Intensity
- Complies with RoHS Directive

Specifications (25°C)

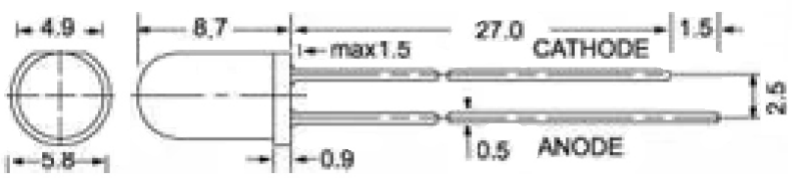
Item	Symbol	Value	Unit
Absolute Maximum Ratings			
DC Forward Current	I_F	30	mA
Peak Pulse Forward Current *	I_{FP}	100	mA
Allowable Reverse Current	I_R	50	mA
Power Dissipation	P_D	80	mW
Operating Temperature	T_{OP}	-40 … +85	°C
Storage Temperature	T_{STG}	-40 … +100	°C
Soldering Temperature (for 5 sec.)	T_{SOL}	260 ± 5	°C

* Note: 1/10 duty cycle, 0.1 ms pulse width

Item	Symbol	Min.	Typ.	Max.	Unit
Optical Specifications					
CW Output Power *[1]	P_O	2.0	-	4.0	mW
Peak Wavelength *[2]	λ_P	365	370	375	nm
Viewing Angle	φ		15		deg.
Electrical Specifications					
Forward Current	I_F	-	20	-	mA
Forward Voltage *[3]	V_F	3.2	-	4.2	V

* Note:
1. Peak wavelength measurement allowance is ± 2 nm
2. Optical ouput measurement allowance is ± 10%
3. Forward voltage measurement allowance is ± 0.2 V

Outline Dimensons

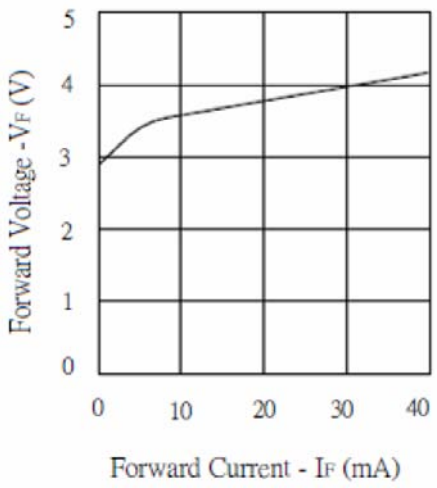


Device Materials

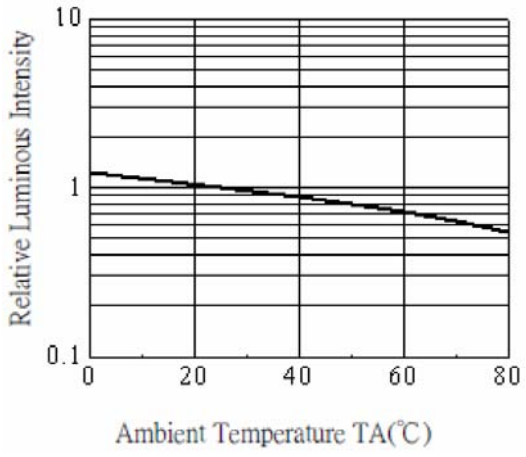
Item	Material
Chip Die	InGaN based
Zener Diode	Si
Lead Frame	Ag Plating, Iron Alloy
Bonding wire	Au
Encapsulation	UV-resistant Epoxy Resin (Water Clear)

Typical Performance Curves

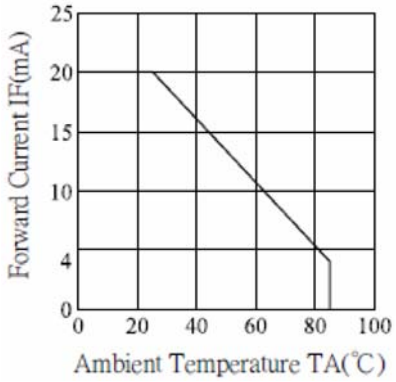
Forward Voltage vs. Forward Current



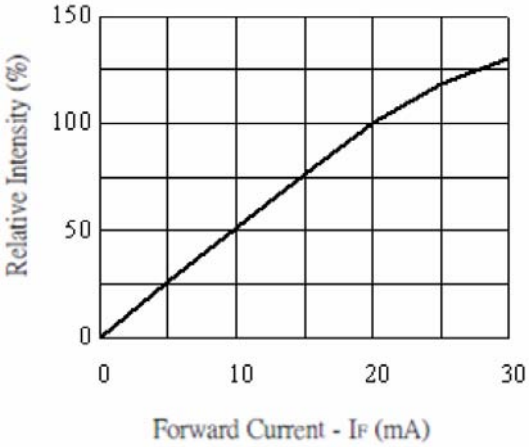
Relative Luminous Intensity vs. Ambient Temperature



Forward Current vs. Ambient Temperature



Relative Intensity vs. Forward Current



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Reliability

1. Test item and result

No.	Test Item	Standard Test Methode	Test Conditions	Note	Sample	Pass
1	Steady State operating Life	Internal Ref.	I_F=20mA, Ta=25°C	1000 Hr	20	OK
2	Soldering Test	JEITA ED-4701 330 302	Tsol=260 ± 5°C, 3sec 3mm from the base of the epoxy bulb	2 Times	60	OK
3	Themal Shock	JESD22-A106-A	-40°C … +85°C	84 Cycles	20	OK
4	Temperature Cycle	JESD22-A104-A	-35°C … +75°C	168 Cycles	20	OK
5	High Temperature Storage	JESD22-A103-A	Tstg=100°C	1000 Hr	20	OK
6	Low Temperature Storage	Internal Ref.	Tstg=-40°C	1000 Hr	20	OK
7	High Temperature High Humidity	JESD22-A101-B	Ta=85°C, RH=85%	1000 Hr	20	OK
8	On-Off Test	Internal Ref.	2sec ON, 2sec OFF I_F=20mA	100000 cycle	20	OK

2. Criteria for judging the damage

Item	Symbol	Test Conditions	Criteria for Judgment	
			Min.	Max.
Forward Voltage	V_F	I_F=20mA	-	U.S.L x 1.1
Optical Power Ouput	P_O	I_F=20mA	L.S.L x 0.7	-

* Note:
1. U.S.L: Upper Standard Level
2. L.S.L: Lower Standard Level

Precaution for Use

1. Cautions

- This device is a UV LED, which radiates UV light during operation.
- DO NOT look directly into the UV light or look through the optical system. To prevent in adequate exposure of UV radiation, wear UV protective glasses.

2. Lead Forming

- When forming leads, the leads should be bent at a point at least 3 mm from the base of the lead. 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 mounted the LEDs onto the printed circuit board, the holes on the circuit board should be exactly aligned with the leads of LEDs. If the LEDs are mounted with stress at the leads, it causes deterioration of the lead and it will degrade the LEDs.

3. Soldering Conditions

- Solder the LEDs no closer than 3 mm from the base of the lead.
- Recommended soldering conditions:

Dip Soldering	
Pre-Heat	120 °C Max.
Pre-Heat Time	60 Seconds Max.
Solder Bath Temperature	260 °C Max.
Dipping Time	5 Seconds Max.
Dipping Position	No lower than 3 mm from the base of the epoxy bulb

- DO NOT apply any stress to the lead particularly when heat.
- The LEDs must not be reposition after soldering.
- After soldering the LEDs, the lead should be protected from mechanical shock or vibration until the LEDs return to room temperature.
- 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 leads at room temperature. Cutting the leads at high temperature may cause the failure of the LEDs.

4. Static Electricity

- The LEDs are very sensitive to Static Electricity and surge voltage. So it is recommended that a wrist band or an anti-electrostatic glove be used when handling the LEDs.
- All devices, equipment and machinery must be grounded properly. It is recommended that precautions should be taken against surge voltage to the equipment that mounts the LEDs.

5. Heat Generation

- The powered LEDs generate heat. Heat dissipation should be considered in the application design to avoid the environmental conditions for operation in excess of the absolute maximum ratings.