



UVTOP290-FW-SMD

- Deep Ultraviolet Light Emission Source
- 295 nm, 2.0 mW
- 3535 Ceramic SMD Package
- Low Thermal Resistance
- ESD Protection
- Horticulture, Food Preservation



Description

UVTOP290-FW-SMD is a deep ultraviolet light emission source, based on **AlGaN** quantum structures, typically emitting at **295 nm** with an optical output power of **2.0 mW @ 20 mA**. It comes in hermetically sealed ceramic SMD package with flat glass window, protective **Zener diode**, and **low thermal resistance**. UVTOP290-FW-SMD is widely used for horticulture, food preservation, reptile lighting, and phototherapy applications

Maximum Rating ($T_{CASE} = 25^{\circ}C$)

Parameter	Symbol	Values		Unit
		Min.	Max.	
Power Dissipation, DC	P_D		220	mW
Forward Current*	I_F		30	mA
Operating Temperature*	T_{OPR}	- 30	+ 60	$^{\circ}C$
Storage Temperature	T_{STG}	- 30	+ 100	$^{\circ}C$

* Operation close to the absolute maximum ratings may affect device reliability

Electro-Optical Characteristics ($T_{CASE} = 25^{\circ}C$, $I_F = 20$ mA)

Parameter	Symbol	Values			Unit
		Min.	Typ.	Max.	
Peak Wavelength* ¹	λ_P	290	295	300	nm
Spectral Width (FWHM)	$\Delta\lambda$		11		nm
Forward Voltage* ²	V_F	5.0	6.0	7.0	V
Radiated Power* ³	P_O		2		mW
Beam Angle	$2\Theta_{1/2}$		120		deg.
Thermal Resistance	R_{th}		21.5		$^{\circ}C/W$

*¹wavelength measurement tolerance: ± 3 nm

*²forward voltage measurement tolerance: ± 3 %

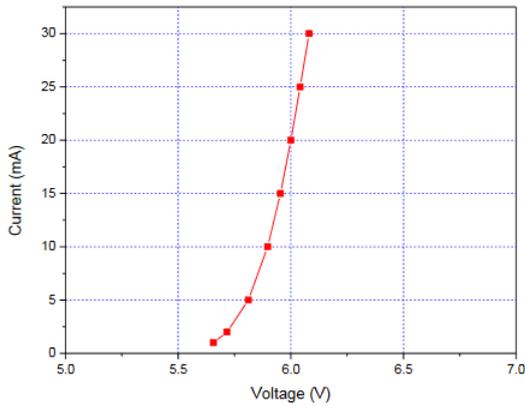
*³output power measurement tolerance: ± 10 %



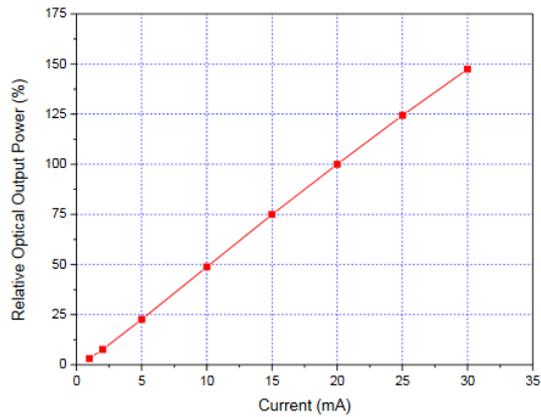


Performance Characteristics

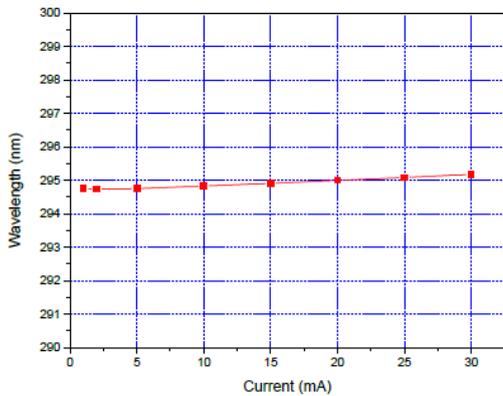
Forward Current vs. Forward Voltage



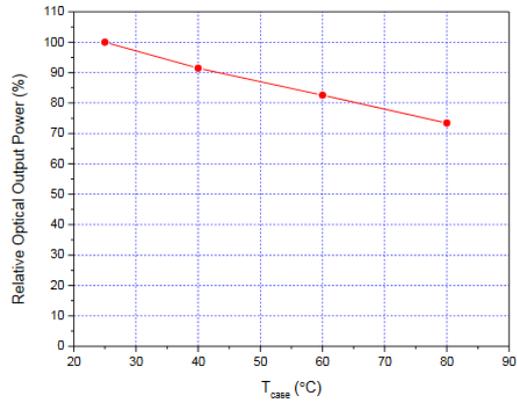
Rel. Optical Power vs. Forward Current



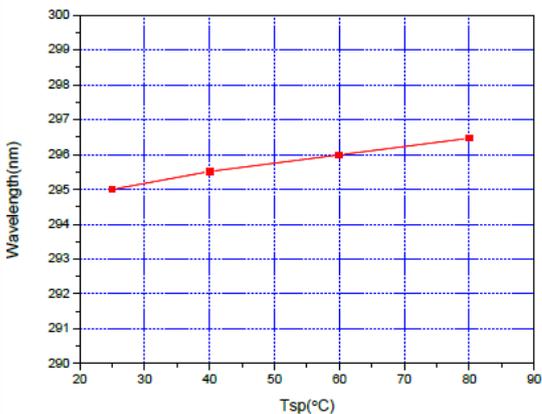
Peak Wavelength vs. Forward Current



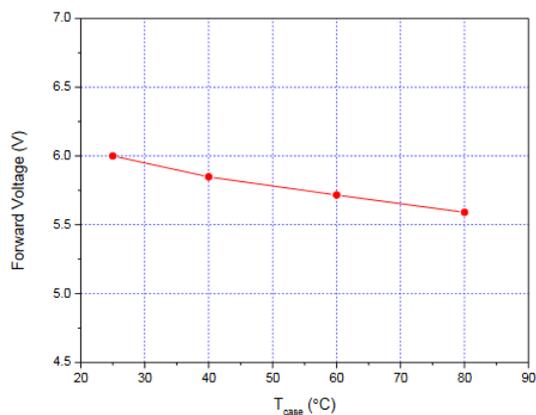
Rel. Optical Power vs. Case Temperature



Peak Wavelength vs. Case Temperature*



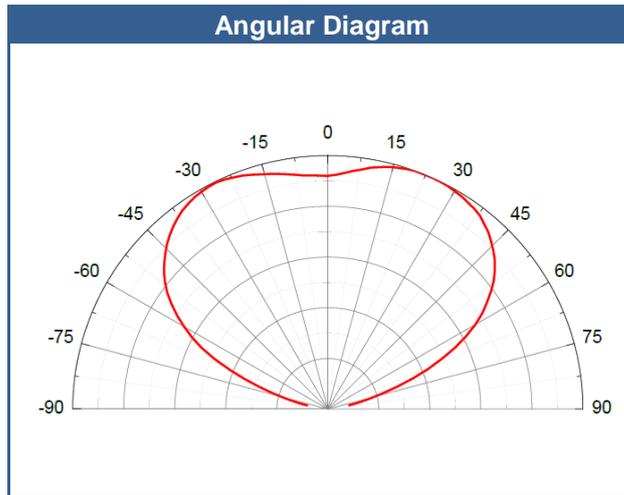
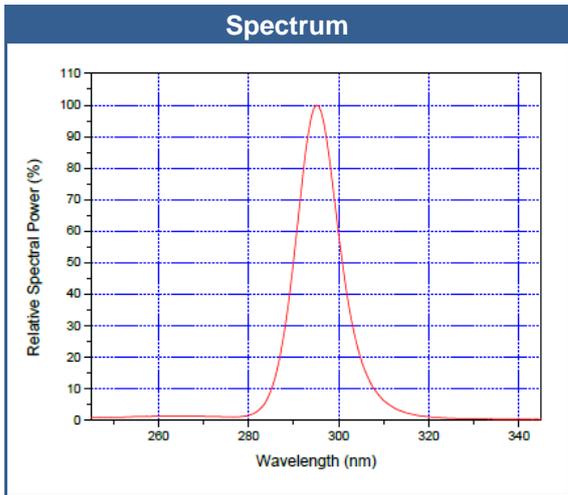
Forward Voltage vs. Case Temperature*



*temperature at the solder point

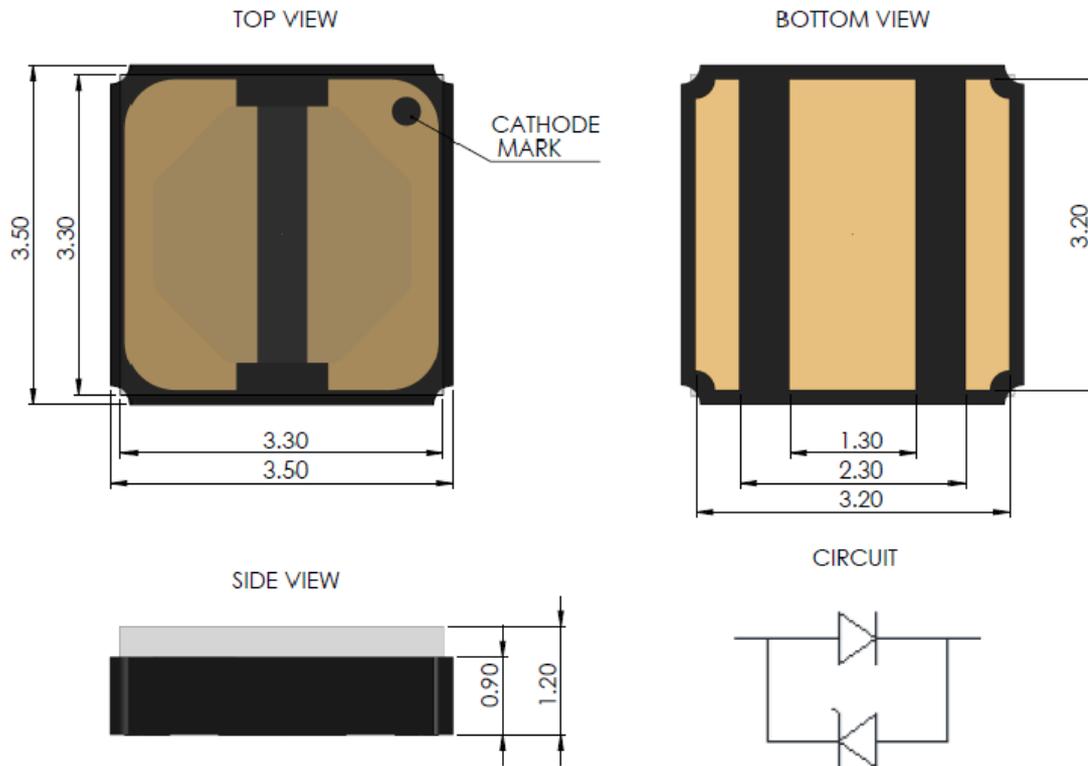


Performance Characteristics



Outline Dimensions

3535 SMD package

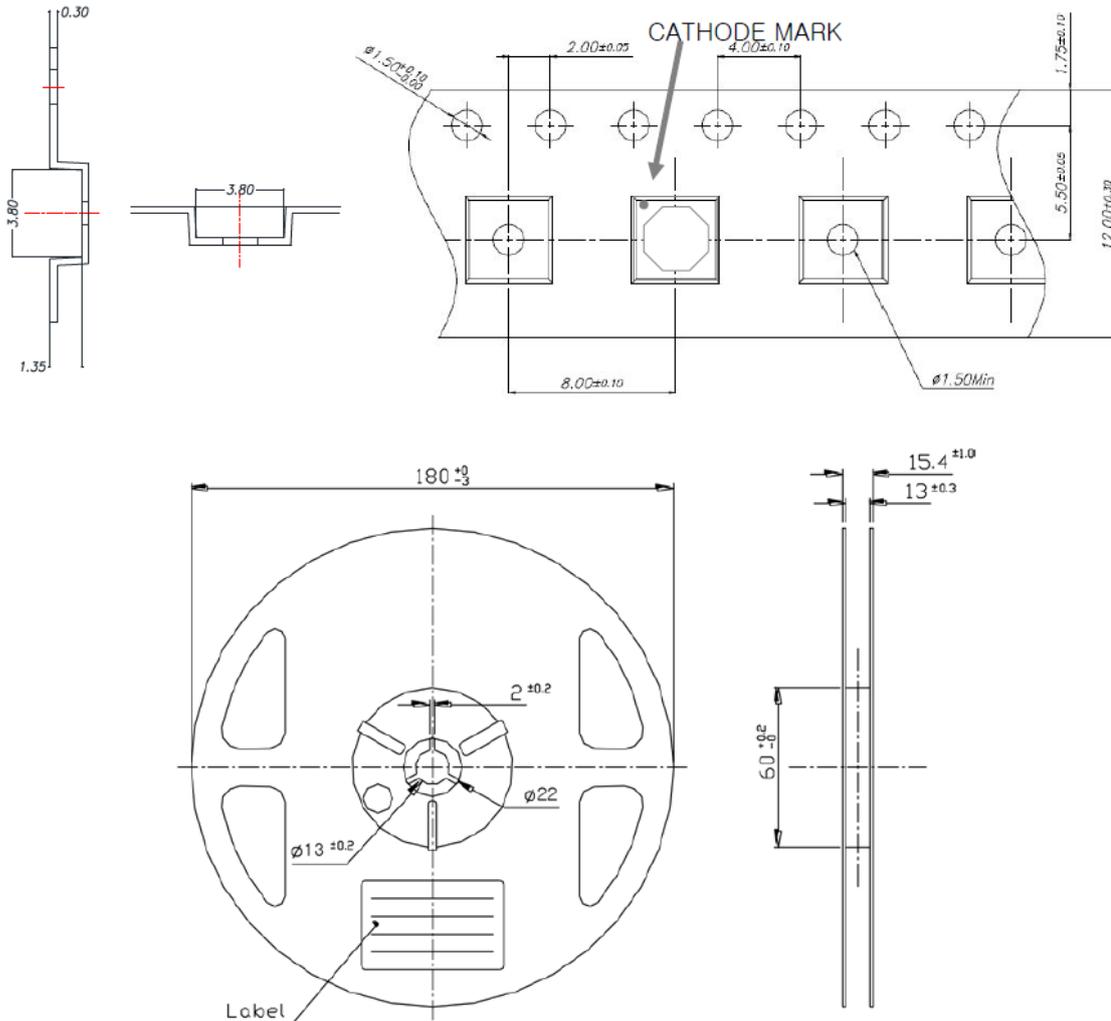


All dimensions in mm



Packaging Information

All carrier tapes conform to EIA-481, Automated Component Handling Systems standard

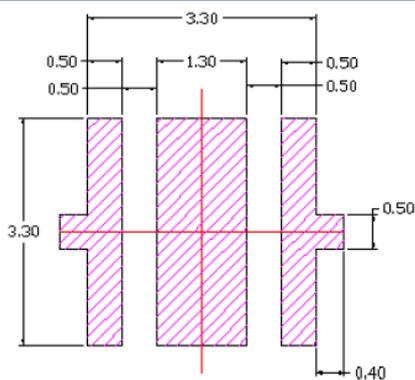


- all dimensions in mm
- 100/500 pcs / reel



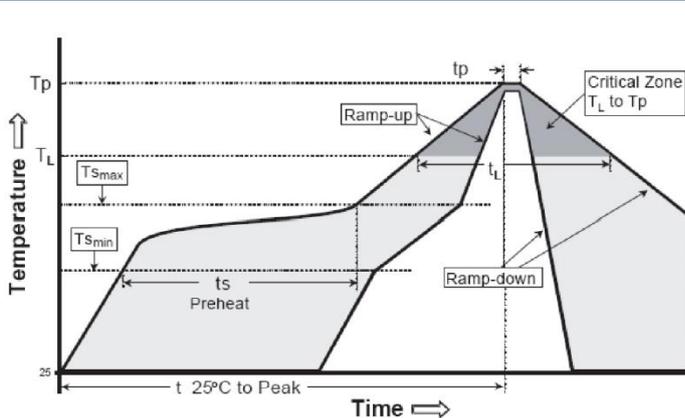
Soldering Information

Recommended Solder Pad Layout



- all dimensions in mm
- drawing not to scale

Recommended Reflow Soldering Profile



- IPC/JDEC J-STD-020C

Profile Parameters	Lead-based Solder	Lead-free Solder
Average Ramp-Up Rate (T _{SMAX} to T _P)	< 3 °C/s	< 3 °C/s
Minimum Preheat Temperature (T _{Smin})	100 °C	150 °C
Maximum Preheat Temperature (T _{Smax})	150 °C	200 °C
Preheat Time (T _{Smin} to T _{Smax})	60-120 s	60-180 s
Time Maintained Above: Temperature (T _L)	183 °C	217 °C
Time Maintained Above: Time (t _L)	60-90 s	60-90 s
Peak Temperature (T _P)	215 °C	228 °C
Time within 5 °C of Actual Peak Temp. (t _p)	10-30 s	20-40s
Ramp-Down Rate	< 6 °C/s	< 6 °C/s
Time 25 °C to Peak Temperature	< 6 min.	< 8 min.

Reflow Information:

- UVTOP SMD reflow characteristics are compatible with JEDEC J-STD-020C
- **It is recommended to follow the solder profile of the solder paste manufacturer**
- It is recommended to evaluate the soldering process through several test PCB's and subsequent X-ray or shear testing of the devices
- The solder should show minimum indication of voids or solder grains.
- A "no clean" solder paste is recommended
- For consistent results a solder pencil printer or automated dispense system is suggested
- For cleaning after reflow, isopropyl alcohol or water is recommended
- Do not use ultrasonic cleaning

Do not wave solder or hand solder UVTOP SMD LEDs



Precautions for Use

Cleaning:

Cleaning with isopropyl alcohol or water recommended

DO NOT USE ultrasonic cleaners

Static Electricity:

UVTOP are sensitive to electrostatic discharge (ESD). Precautions against ESD must be taken when handling or operating these LEDs. Surge voltage or electrostatic discharge can result in complete failure of the device.

UV-Radiation:

During operation these LEDs do emit **high intensity ultraviolet light**, which is hazardous to skin and eyes, and may cause cancer. Do avoid exposure to the emitted UV light. **Protective glasses are recommended.** It is further advised to attach a warning label on products/systems that do utilize UV-LEDs:



Operation:

- **Do only operate UVTOP LEDs with a current source.**
Current of a LED is an exponential function of the voltage across it. Usage of current regulated drive circuits is mandatory.
- Compliance to the maximum electrical specifications is paramount.
- Do never exceed the absolute maximum rating of the product.
- These LEDs are not designed to be used under negative bias.
- These LEDs are not designed to be used in any type of fluid (water, oil, organic solvent,...)
- These LEDs are susceptible to heat generation. Use care to design an end product with adequate thermal management to ensure LEDs do not exceed maximum recommended temperatures.

ANY ATTEMPT TO DRIVE THESE LEDs WITH A VOLTAGE SOURCE WILL CAUSE DAMAGE AND POSSIBLE COMPLETE FAILURE OF THE PRODUCT

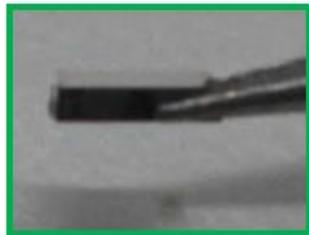
Storage:

- It is recommended to store UVTOP LEDs in a moisture proof bag with a desiccant, and to reseal the bag after opening.
- If the LEDs are stored for more than 3 months, a sealed container with nitrogen atmosphere should be used
- **Recommended storage temperature: 5-30 °C**
- **Recommended storage relative humidity: < 50 %**
- Prolonged exposure to moisture can adversely affect the performance of the LEDs
- If the bag has been opened for more than 168 hours, and the color of the desiccant changes, the LEDs should be dried for 10-12 hours at 55-65 °C
- The conditions for resealing are as follows: Temperature 5-40 °C, relative humidity < 30 %



Handling:

- Do not rapidly cool the device after soldering
- Do not apply mechanical stress or excess vibration during the cooling process
- LEDs should not be mounted on warped areas of the PCB
- **Do not touch the glass lens with any sharp tools such as tweezers**



- Avoid leaving fingerprints on the glass lens
- Do avoid any excessive mechanical pressure on the LEDs surface
- Do not handle this product with acid or sulfur material in sealed space

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