



## UVTOP280-FW-SMD

- Deep Ultraviolet Light Emission Source
- 285 nm, 2.0 mW
- 3535 Ceramic SMD Package
- Low Thermal Resistance
- ESD Protection
- ➔ Chemical and Biological Analysis



### Description

**UVTOP280-FW-SMD** is a deep ultraviolet light emission source, based on **AlGaN** quantum structures, typically emitting at **285 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**. **UVTOP280-FW-SMD** is widely used for fluorescent spectroscopy, chemical and biological analysis, horticulture, and medical application

### Maximum Rating (T<sub>CASE</sub> = 25°C)

Parameter	Symbol	Values		Unit
		Min.	Max.	
Power Dissipation, DC	P <sub>D</sub>		220	mW
Forward Current*	I <sub>F</sub>		30	mA
Operating Temperature*	T <sub>OPR</sub>	- 30	+ 60	°C
Storage Temperature	T <sub>STG</sub>	- 30	+ 100	°C

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

### Electro-Optical Characteristics (T<sub>CASE</sub> = 25°C, I<sub>F</sub> = 20 mA)

Parameter	Symbol	Values			Unit
		Min.	Typ.	Max.	
Peak Wavelength* <sup>1</sup>	λ <sub>P</sub>	280	285	290	nm
Spectral Width (FWHM)	Δλ		11		nm
Forward Voltage* <sup>2</sup>	V <sub>F</sub>	5.0	6.0	7.0	V
Radiated Power* <sup>3</sup>	P <sub>O</sub>		2		mW
Beam Angle	2Θ <sub>1/2</sub>		120		deg.
Thermal Resistance	R <sub>th</sub>		21.5		°C/W

\*<sup>1</sup>wavelength measurement tolerance: ± 3 nm

\*<sup>2</sup>forward voltage measurement tolerance: ± 3 %

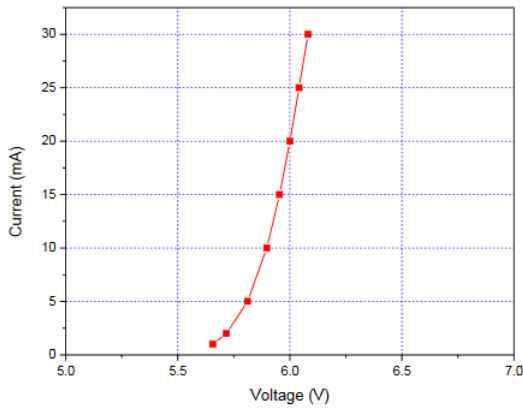
\*<sup>3</sup>output power measurement tolerance: ± 10 %



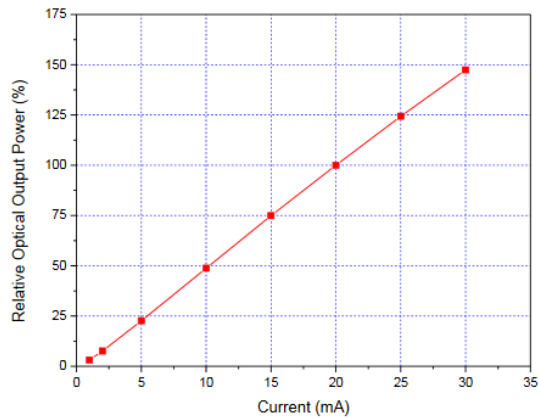


## Performance Characteristics

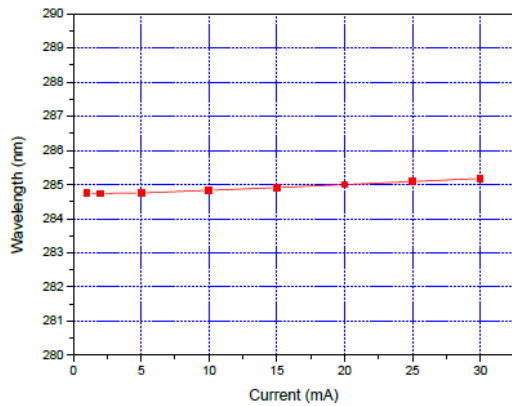
### Forward Current vs. Forward Voltage



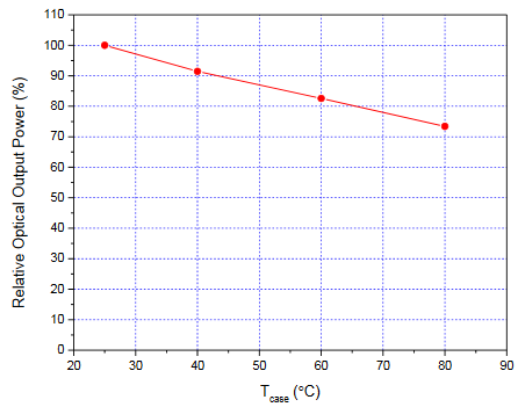
### Rel. Optical Power vs. Forward Current



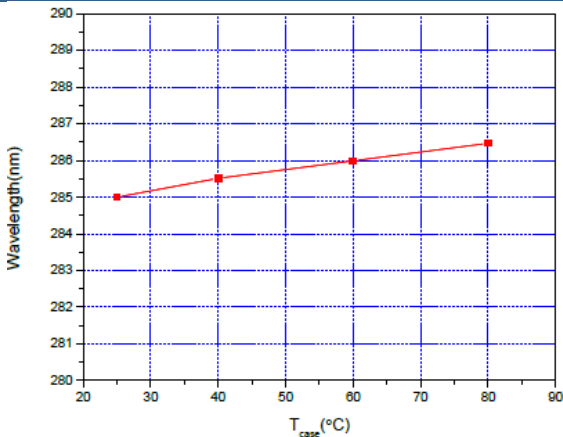
### Peak Wavelength vs. Forward Current



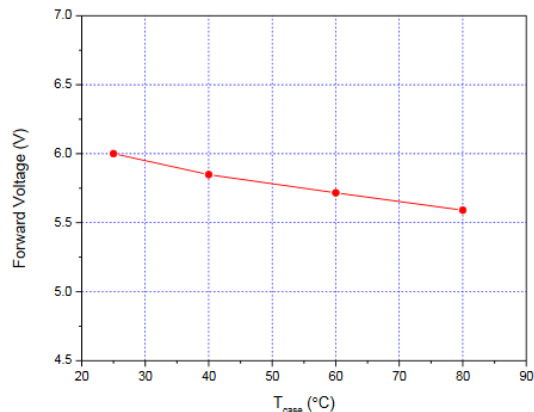
### Rel. Optical Power vs. Case Temperature



### Peak Wavelength vs. Case Temperature\*



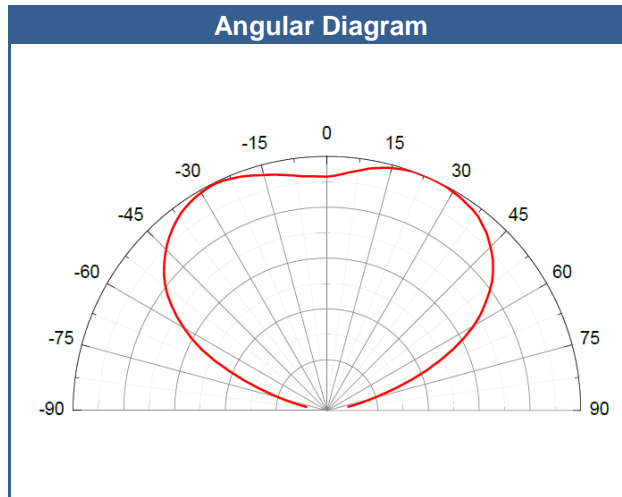
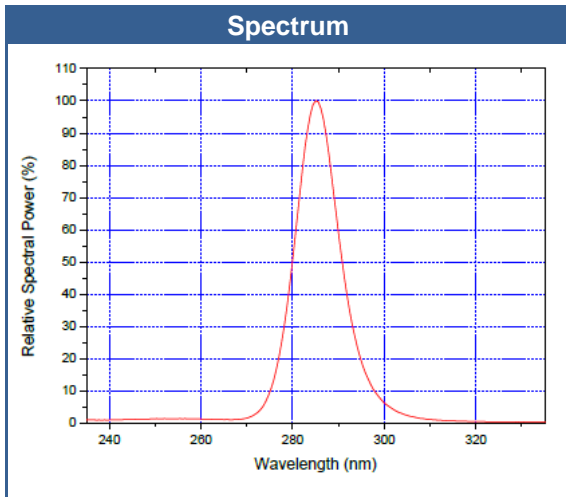
### Forward Voltage vs. Case Temperature\*



\*temperature at the solder point

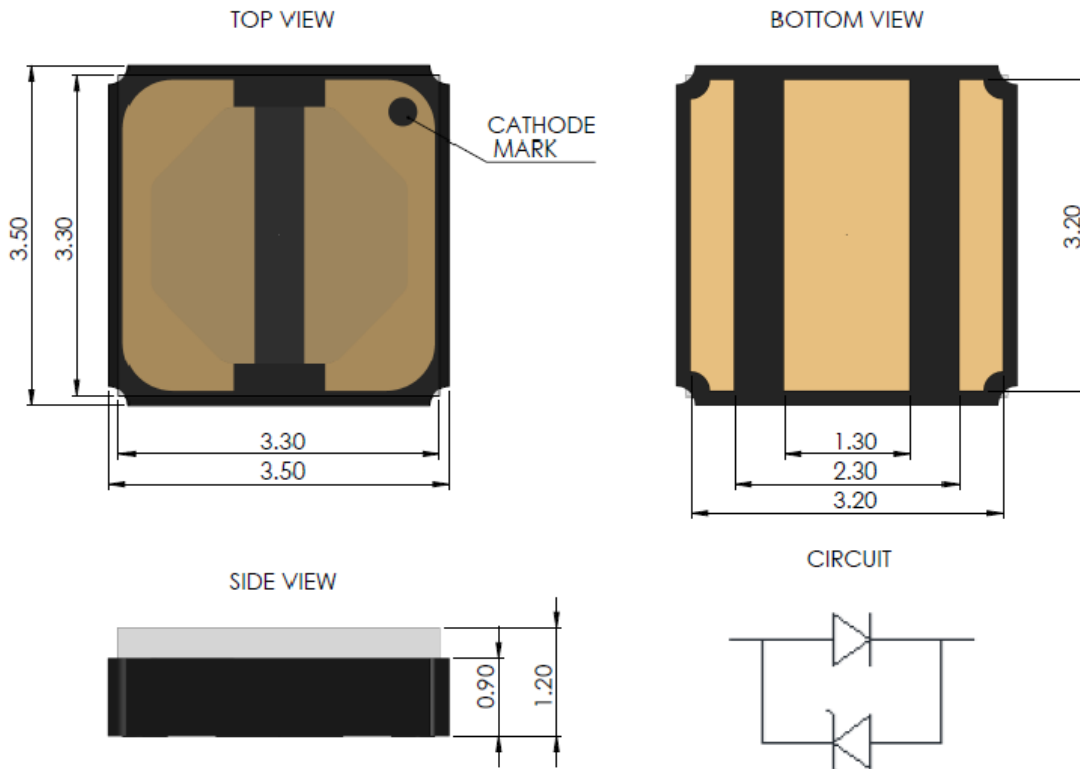


## Performance Characteristics



## Outline Dimensions

3535 SMD package

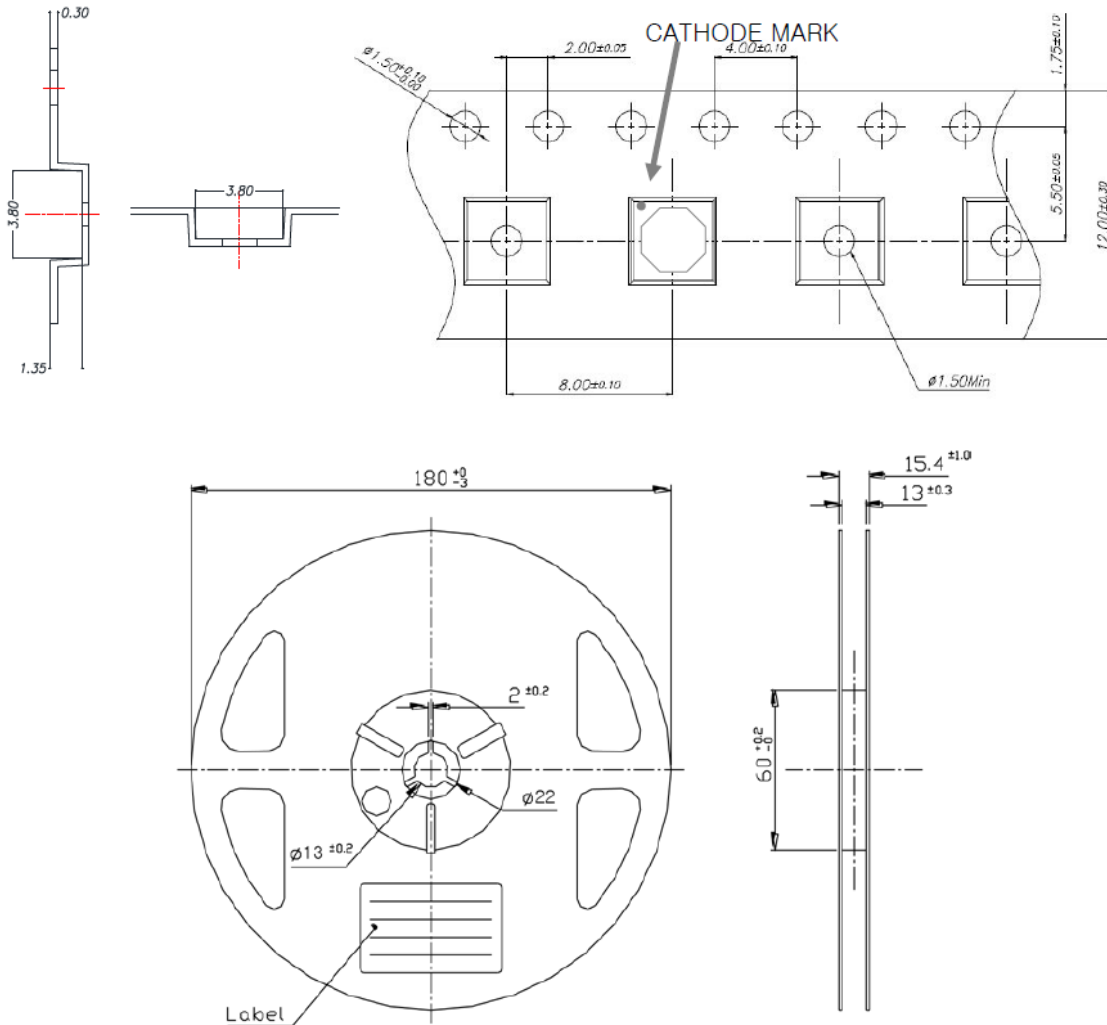


All dimensions in mm



## Packaging Information

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

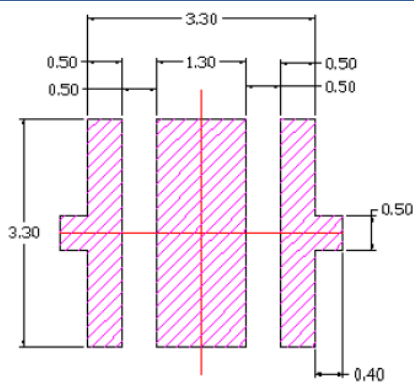


- all dimensions in mm
- 100/500 pcs / reel



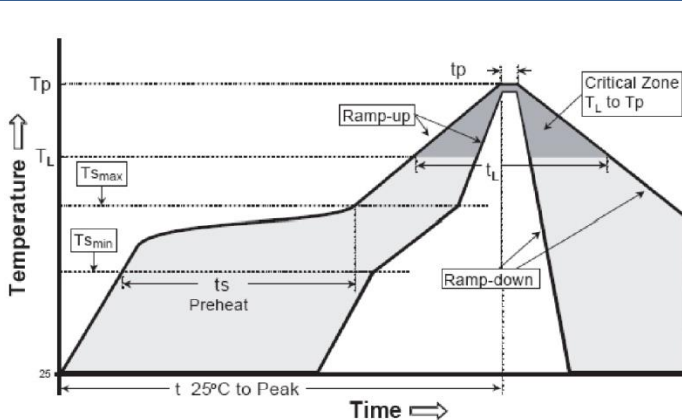
## Soldering Information

### 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 <sub>SMAX</sub> to T <sub>P</sub> )	< 3 °C/s	< 3 °C/s
Minimum Preheat Temperature (T <sub>Smin</sub> )	100 °C	150 °C
Maximum Preheat Temperature (T <sub>Smax</sub> )	150 °C	200 °C
Preheat Time (T <sub>Smin</sub> to T <sub>Smax</sub> )	60-120 s	60-180 s
Time Maintained Above: Temperature (TL)	183 °C	217 °C
Time Maintained Above: Time (tL)	60-90 s	60-90 s
Peak Temperature (T <sub>P</sub> )	215 °C	228 °C
Time within 5 °C of Actual Peak Temp. (tp)	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**

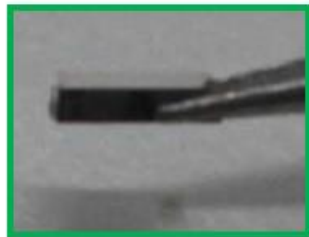
### Storage:

- 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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