

Peak Emission Wavelength: 280nm

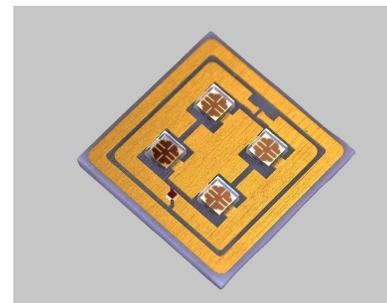
The MTSM280UV4-C6870-25 is a high power deep ultraviolet light emitting diode with peak emission wavelengths from 275nm to 285nm. The LED is sealed in a ceramic package. It incorporates a state of the art surface mount device (SMD) design and low thermal resistance.

FEATURES

- > Deep ultraviolet LED
- > Low thermal resistance
- > SMT solderable

APPLICATIONS

- > Horticulture
- > Biochemical sensing
- > UV curing



Absolute Maximum Ratings (Ta=25°C)



ITEMS	SYMBOL	RATINGS	UNIT
Forward Current [1]	If	700	mA
Operating Temperature [2]	Topr	-10 to 55	°C
Storage Temperature [3]	Tstg	-30 to 85	°C
Junction Temperature [4]	Tj	100	°C

Notes:

[1] Please drive this product within the range specified by the derating curve on the graph in Chapter 7. "Reference Data and Derating Curve".

[2] Operating Temperature refers to solder point temperature, Ts. Please use this product at temperature within the range specified by the derating curve on the graph in Chapter 7 "Reference Data and Derating Curve", and see, Section (A) "Thermal Management".

[3] Storage Temperature refers to ambient temperature, Ta.

[4] Please see Section (A) Thermal Management".

Electrical & Optical Characteristics (Ta = 25°C)

ITEMS	SYMBOL	CONDITION	Min.	Typ.	Max.	UNIT
Peak Wavelength	λ_p	IF=700mA	275	280	285	nm
Radiant Flux	Po	IF=700mA	250	360	--	mW
Forward Voltage	Vf	IF=700mA	9	12	14	V
FWHM	$\Delta\lambda$	IF=700mA	--	12	20	nm
Viewing Angle	$2\theta_{1/2}$	IF=700mA	140 (Side to Side)			deg
Thermal Resistance	Rth	IF=700mA	--	3.3	4	°C/W

*Forward Voltage Tolerance: ± 0.1 V

Electrostatic Discharge (ESD) Protection

*Peak Wavelength Tolerance: ± 3 nm

ESD protection device is built in this product.

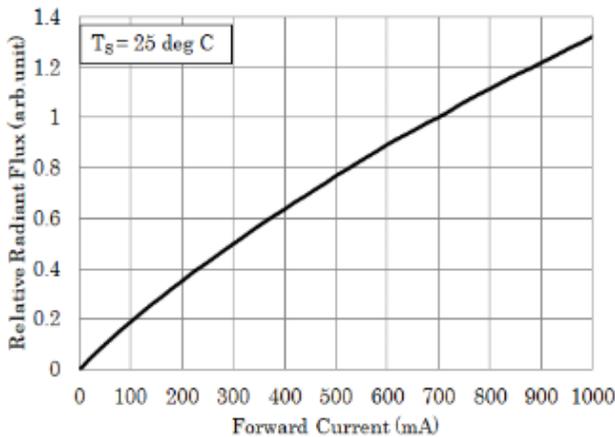
*Radiant Flux Tolerance: ± 10 %

ESD Protection Voltage Level: ± 2.0 kV (HBM, 1.5 k ohm, 100 pF)

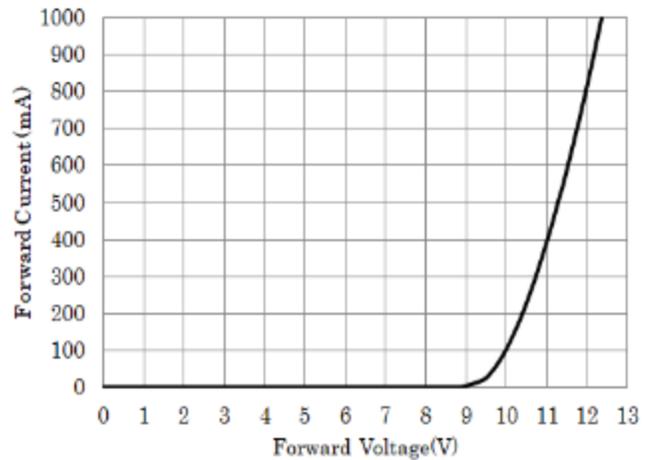
7. Reference Data and Derating Curve

Note: All characteristics shown in this section are for reference only and are not guaranteed.

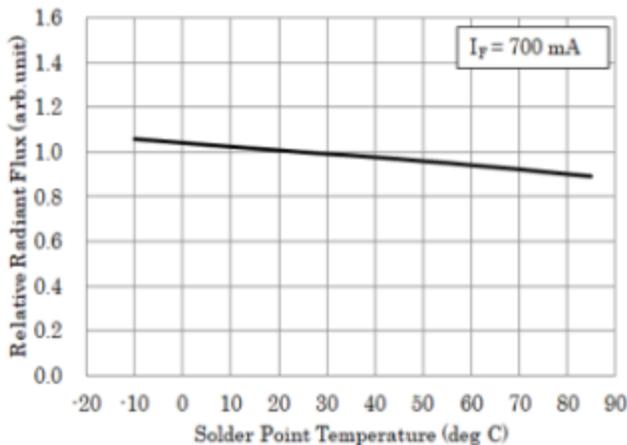
■ Forward Current vs Relative Radiant Flux



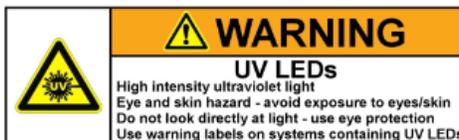
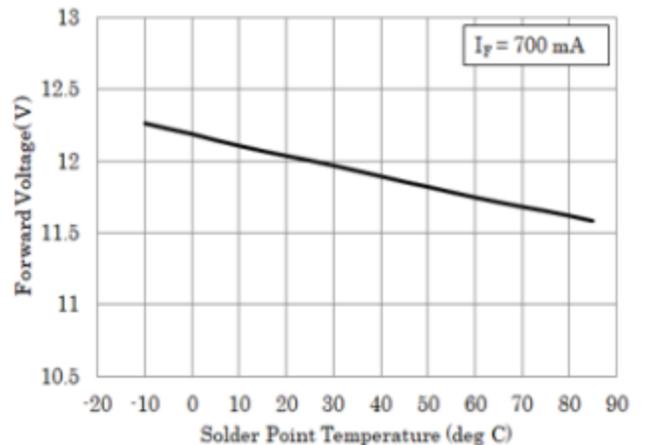
■ Forward Voltage vs Forward Current



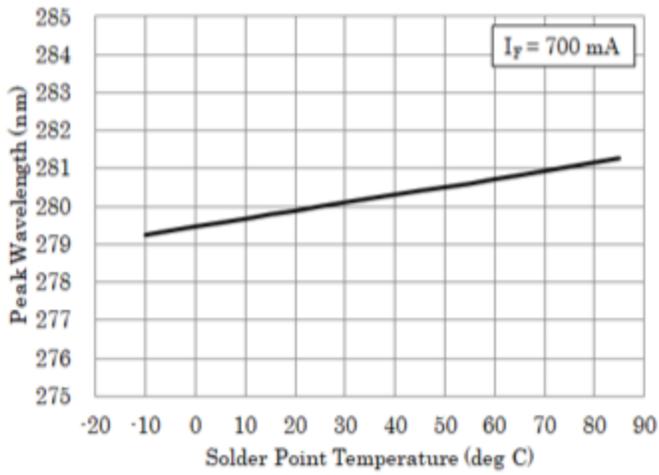
■ Solder Point Temperature vs Relative Radiant flux



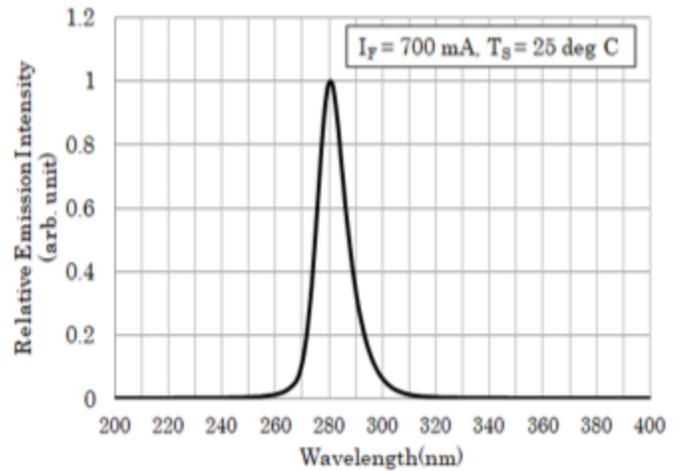
■ Solder Point Temperature vs Forward Voltage



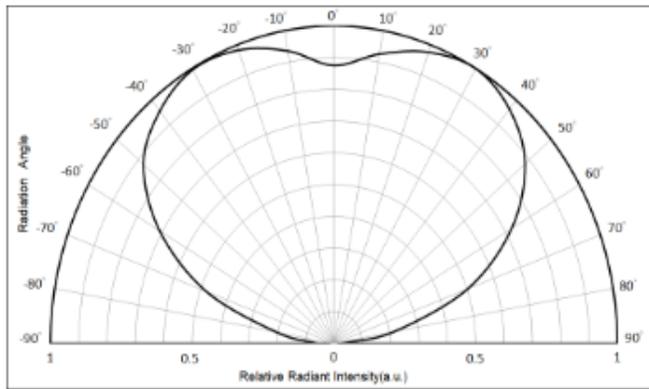
■ Solder Point Temperature vs Peak Wavelength



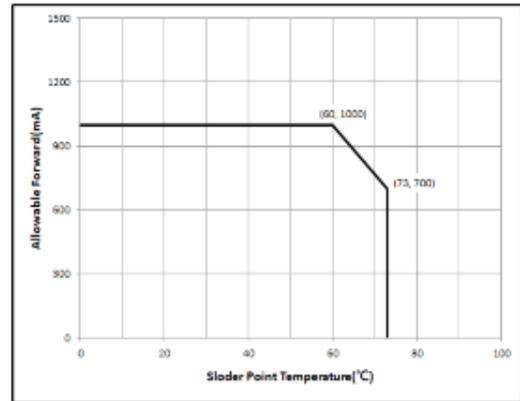
■ Spectrum



■ Directivity (Side to side direction)



■ Derating Curve

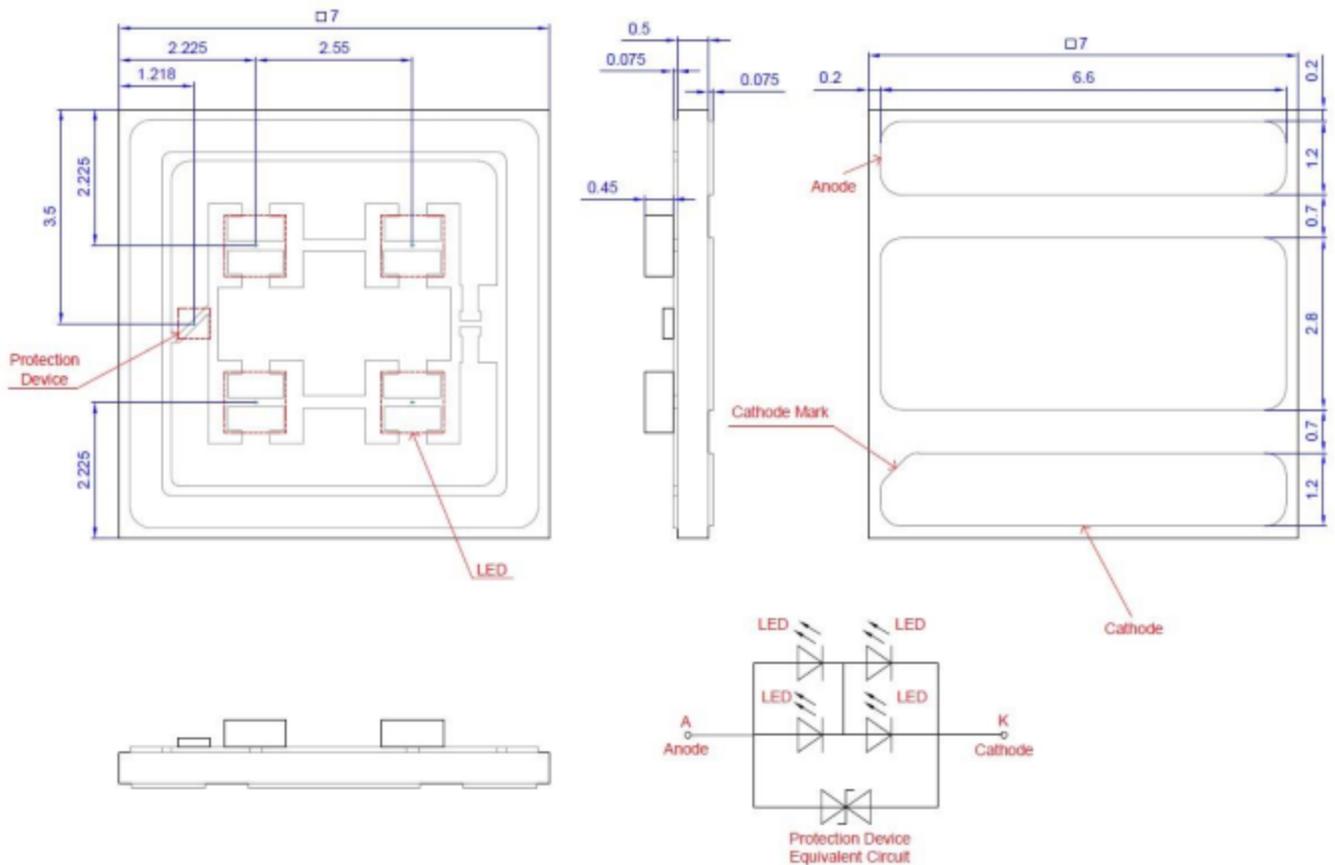


WARNING

UV LEDs
High intensity ultraviolet light
Eye and skin hazard - avoid exposure to eyes/skin
Do not look directly at light - use eye protection
Use warning labels on systems containing UV LEDs

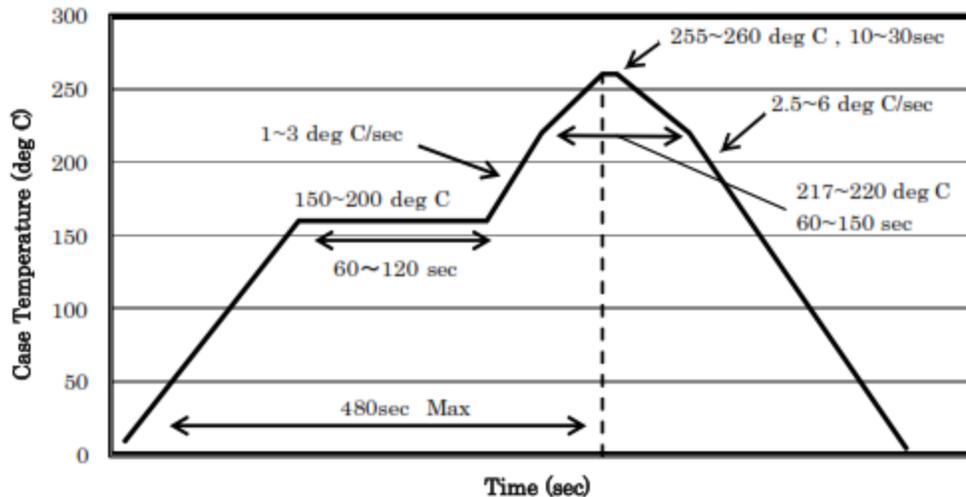
8. Outline Dimensions, Main Materials and Electric Circuit

Items	Materials
Package Materials	Ceramics
Electrodes Materials	Au-plated



(Unit: mm, Tolerance: ± 0.2)

9. Recommended Reflow Soldering Condition (Lead-Free Solder)



NOTES:

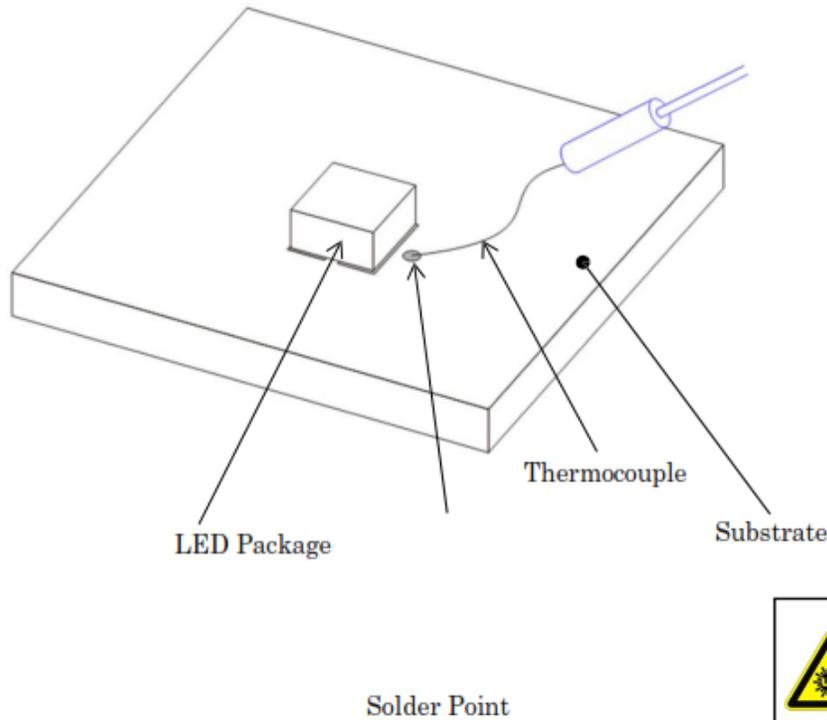
- 1) REFLOW SOLDERING ONLY. This product is not applicable to flow or hand soldering.
- 2) Do not rework by melting the solder again.
- 3) Allowable Reflow Cycles: 2
- 4) When the products are handled by surface mounters, the suction collet and suction force should be adjusted appropriately to avoid mechanical stress on the product.
- 5) Carefully control the ramp-up rate of the reflow process. When using reflow soldering equipment that heats the whole product, temperature difference between the solder point and the product surface may occur. If the heating is too rapid, non-uniform temperature rise and non-uniform thermal expansion may cause damage to the product.
- 6) The peak temperature shown in the figure is the maximum and must not be exceeded.
- 7) Inappropriate soldering operation may result in insufficient solder connection.
- 8) Excessive amount of solder paste causes much more mechanical stress, which may lead to the solder crack. Be sure to confirm the proper amount of solder paste.
- 9) Insufficient amount of solder causes less bonding strength, which may lead to the detachment of the product from the board.
- 10) Be sure that the storage time and conditions after opening the moisture barrier bag are within the range specified in "Cautions" chapter below.
- 11) Carefully make sure that the products can be properly soldered before using the products expiring the maximum storage period.
- 12) Avoid rapid cooling from the peak temperature.
- 13) Halogen free solder flux is recommended. Make sure to prevent the contamination of the light-emitting face of the product.
- 14) Nitrogen reflow soldering is recommended.
- 15) Use grounded soldering equipment.

(A) Thermal Management

- 1) The junction temperature that exceeds the absolute maximum ratings conditions in this document may lead to the failure of this product, even if it happened for a short period of time. Also, this product is not designed to work at the absolute maximum ratings conditions for extended periods, and we do not guarantee the product reliability that is operating at the absolute maximum ratings conditions. The junction temperature is affected by the solder point temperature, which is determined by the PCB's thermal resistance and the ambient temperature. Measure the solder point temperature to ensure that the junction temperature described as below does not exceed the maximum junction temperature.

$$\text{Junction Temperature: } T_j \text{ (deg C)} = T_s \text{ (deg C)} + I_F \text{ (A)} \times V_F \text{ (V)} \times R_{J-S} \text{ (deg C / W)}$$

Determine the drive current according to the solder point temperature and take appropriate measures for heat dissipation.



REFERENCE DRAWING: Measurement of Solder Point Temperature (Ts)

The information contained herein is subject to change without notice.

2026-01-14