

Features

- 4545 UVC LED
- ROHS and REACH Compliant
- MSL 3 qualified according to J-STD 020

Description

The IN-C45PPCTGU1 is a high-power UVC LED. It is a SMD type LED which can be used in various applications.

Applications

- Medical applications
- Industrial facility applications

Recommended Solder Pattern

(Suggest Stencil $t=0.12$ mm)

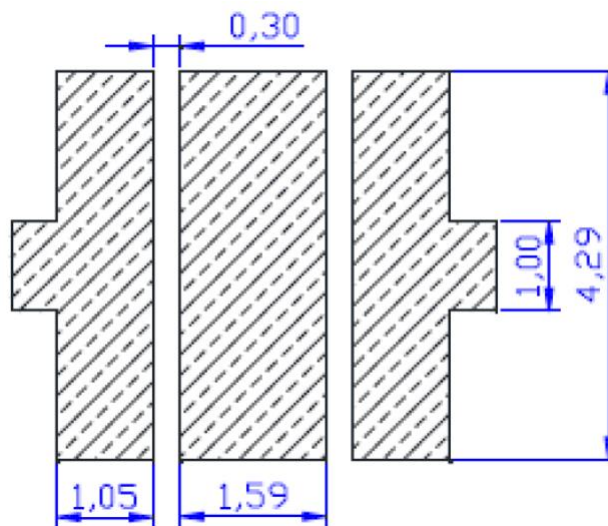


Figure 1. IN-C45PPCTGU1 Recommended Solder Pattern

Note:

All dimensions are in millimeters.
Tolerance is ± 0.1 mm unless other specified.

Package Dimensions

(All dimensions are in mm, tolerance is ± 0.1 mm)

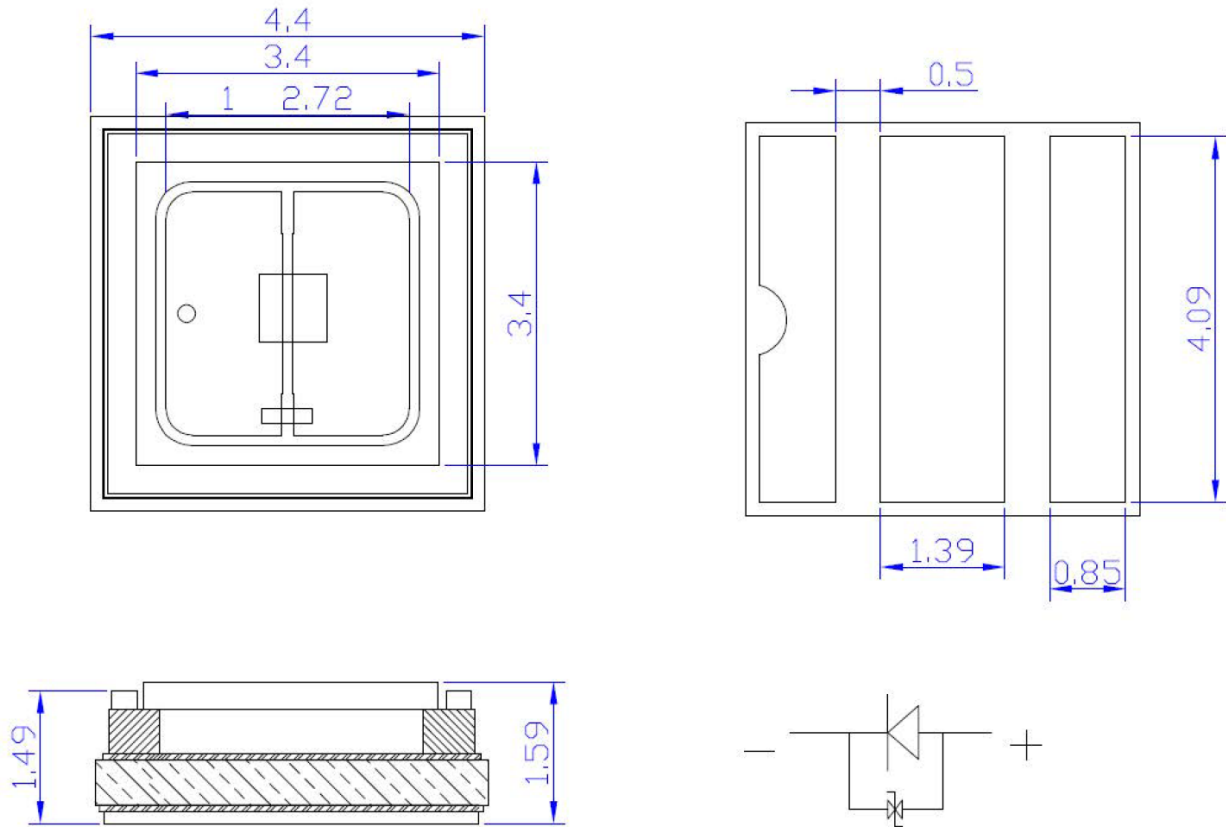


Figure 2. IN-C45PPCTGU1 Package Dimension

Absolute Maximum Rating at 25°C

| Characteristics | Symbol | Min. | Typical | Max. | Unit |
|---------------------------|--------|------|---------|------|------|
| DC Forward Current | IF | | 150 | | mA |
| Power Dissipation | Pd | | 1.4 | | W |
| Junction Temperature | Tj | | | 60 | °C |
| Reverse Voltage | VR | | 5.0 | | V |
| Storage Temperature Range | Tstg | -40 | – | 100 | °C |
| Operating Temperature | Topr | -10 | – | 60 | °C |
| Soldering Temperature | Tsol | | 260 | | °C |

Notes:

1. Operating the LED beyond the listed maximum ratings may affect device reliability and cause permanent damage.
2. The LEDs are not designed to be driven in reverse bias.

Electronic-Optical Characteristics (Ambient Temp: 25°C)

| Characteristics | Symbol | Min. | Typical | Max. | Unit |
|---------------------|------------------|------|---------|------|------|
| DC Forward Current | IF | | 100 | | mA |
| Forward Voltage | VF | 5.0 | 6.0 | 7.0 | V |
| Radiant Flux | Φ_e | 10 | 15 | | mW |
| Peak Wavelength | λ_p | 270 | 275 | 280 | nm |
| Thermal Resistance | RTHJ-S | | 12.5 | | °C/W |
| Spectrum Half Width | $\Delta\lambda$ | | 11 | | nm |
| Viewing Angle | 2 $\theta_{1/2}$ | | 120 | | Deg |
| Reverse Current | I _r | | | 10 | μA |

Note:

1. Forward Voltage (Vf): ±0.1V
2. Peak Wavelength(λ_p): ±5.0nm
3. Radiant Flux(Φ_e): ±10%
4. Viewing angle(2 $\theta_{1/2}$) ± 10°

ESD Precaution

ATTENTION: Electrostatic Discharge (ESD) protection

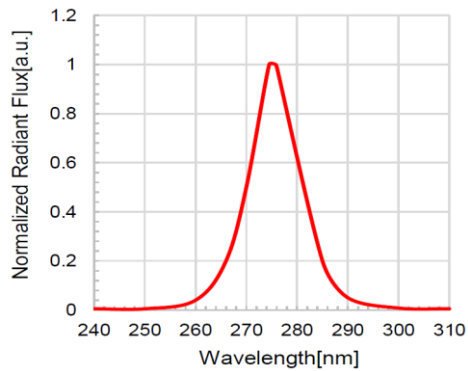


The symbol above denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are STATIC SENSITIVE devices. ESD precaution must be taken during design and assembly. If manual work or processing is needed, please ensure the device is adequately protected from ESD during the process.

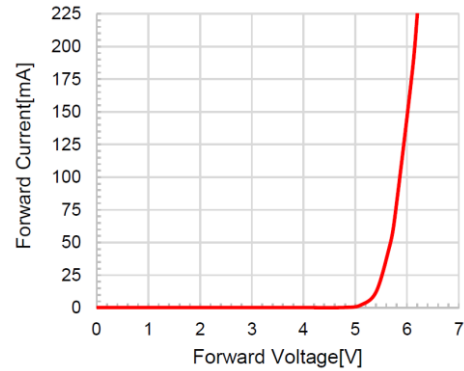
Please be advised that normal static precautions should be taken in the handling and assembly of this device to prevent damage or degradation which may be induced by electrostatic discharge (ESD).

Typical Characteristics Curves

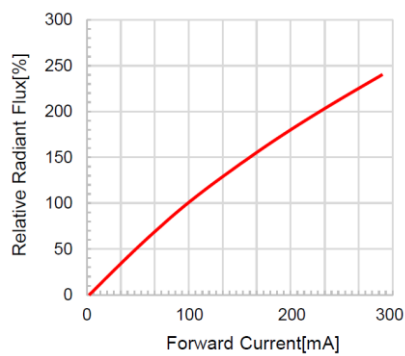
Relative Spectral Power Distribution



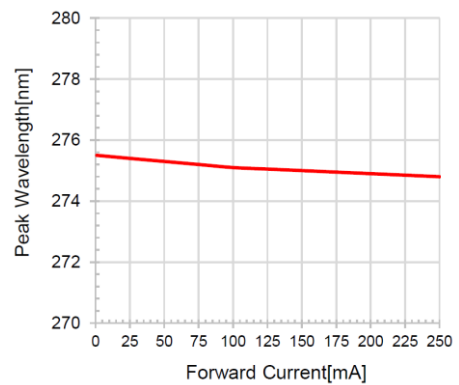
Forward Current vs. Forward Voltage (Ta=25°C)



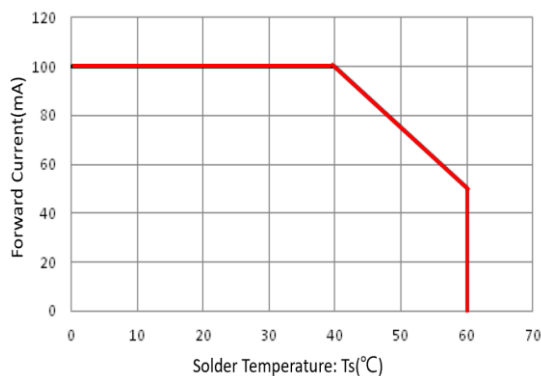
Relative Radiant Flux vs. Forward Current (Ta=25°C)



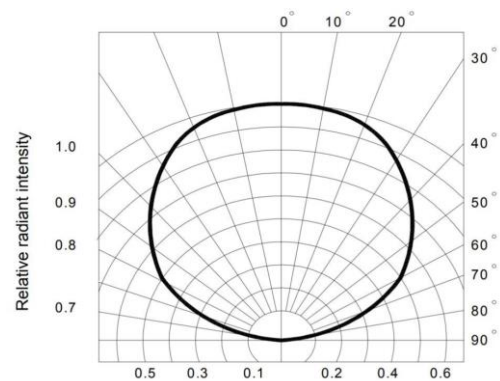
Peak wavelength Forward Current (Ta=25°C)



Derating



Radiation Characteristics



Notes:

Viewing angle (2θ1/2) ± 10°

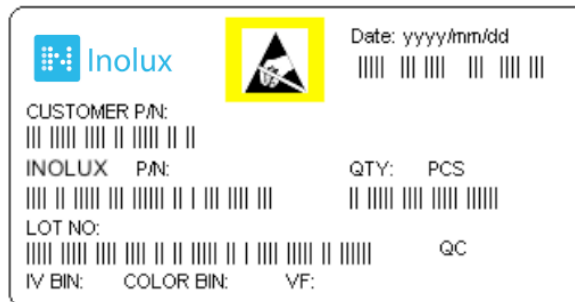
Ordering Information

| Peak Wavelength Range | Beam Angle | Forward Voltage(V) | | Part Number |
|-----------------------|------------|--------------------|-----|---------------|
| | | Min | Max | |
| U1: 270~280nm | 120° | 5.0 | 7.0 | IN-C45PPCTGU1 |

Notes:

1. Forward voltage (VF) $\pm 0.5V$, Radiometric Power (Po) $\pm 15\%$.

Label Specifications



Inolux P/N:

| I | N | - | C | 4 | 5 | PPC | T | G | U1 | - | X | X | X | X |
|------------|---|---|------------------|-----------------------------|---|-----------|---------------|---------|----------------|---|----------------------|---|---|---|
| | | | Material | Package | | Variation | Orientation | Current | Color | | Customized Stamp-off | | | |
| Inolux SMD | | | C = Ceramic Type | 45PPC = 4.5 x 4.5, 120 Deg. | | | T = Top Mount | G=100mA | U1 = 270-280nm | | | | | |

Lot No.:

| Z | 2 | 0 | 1 | 7 | 01 | 24 | 001 |
|------------------|--------------------------|---|---|---|-------|------|--------|
| Internal Tracker | Year (2017, 2018,) | | | | Month | Date | Serial |

Forward Voltage Binning

| | | Voltage unit: V@100mA | |
|-------------------|----------|-----------------------|-----|
| Peak Wavelength | Bin Code | Min | Max |
| U1 270nm-280nm | A | 5.0 | 6.0 |
| | B | 6.0 | 7.0 |

Notes:

1. Binning current is 100 mA

Radiant flux (Power) binning

| Bin Code (100mA) | Min. Po (mW) | Typ. Po (mW) |
|------------------|--------------|--------------|
| P1 | 10 | 15 |

Notes:

1. Binning current is 100mA

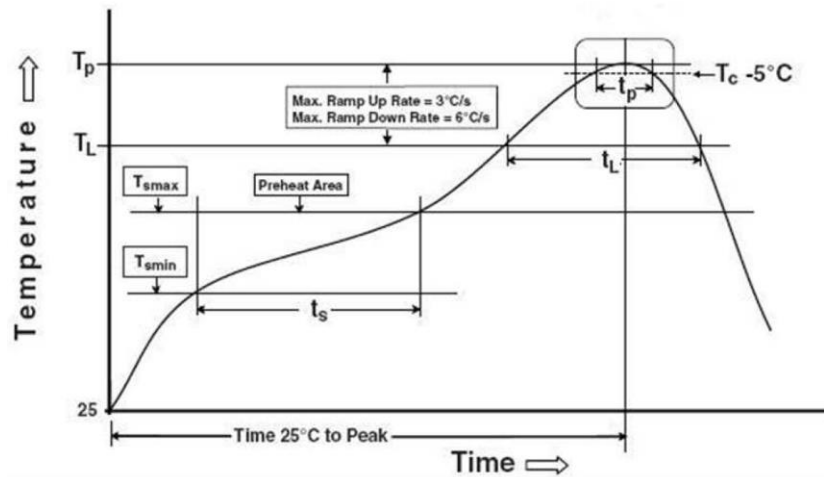
Peak wavelength binning reference table

| Bin code (100mA) | Min. Wp (nm) | Max. Wp (nm) |
|------------------|--------------|--------------|
| W280 | 270.0 | 280.0 |

Notes:

1. Peak-wavelength (Wp) tolerance: ± 2.0 nm
2. Testing Current 100mA

Reflow Soldering



| Profile Feature | Lead Free Assembly |
|------------------------------------------------------|--------------------|
| Average Ramp-Up Rate (T_L to T_P) | 3°C / second max |
| Preheat Temperature Min (T_{Smin}) | 150°C |
| Preheat Temperature Max (T_{Smax}) | 200°C |
| Preheat Time (t_s) | 60 – 120 seconds |
| Time Maintained Above Temperature (T_L) | 217°C |
| Time Maintained Above Time (t_L) | 60 – 150 seconds |
| Peak / Classification Temperature (T_P) | 260°C * |
| Time Within 5°C of Actual Peak Temperature (t_P) | 10~30 seconds |
| Ramp – Down Rate (T_P to T_L) | 6°C / second max |
| Time 25°C to Peak Temperature | 8 minutes max |

The recommended peak temperature is 245°C. The maximum soldering temperature should be controlled under 260°C

Soldering Iron

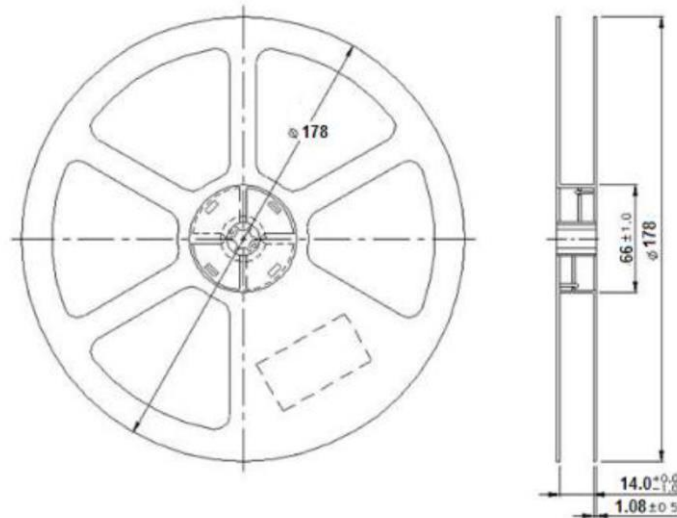
Basic Spec is ≤ 4 sec. when 260°C (+10°C \rightarrow -1 second). Power dissipation of Iron should be less than 15W. Surface temperature should be under 230°C

Rework

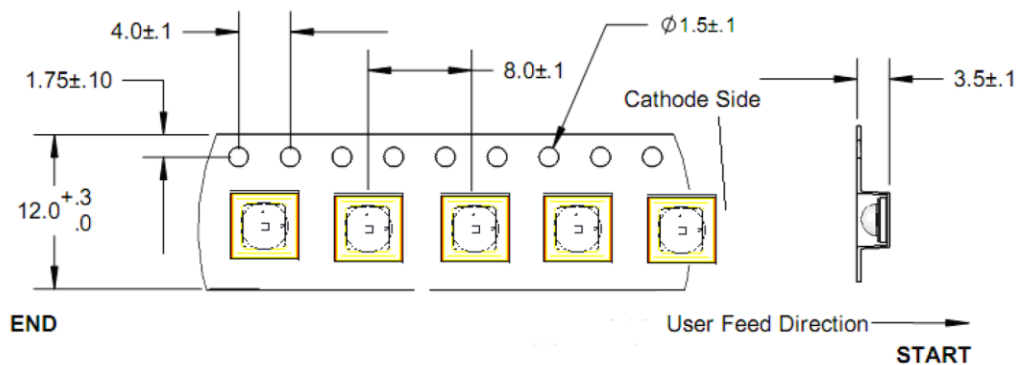
Rework should be completed within 4 second under 245°C

Packing

Reel



Tape



Notes:

1. Each Reel (minimum number of pieces is 100 and maximum is 500 (120D) is packed in a moisture-proof bag along with 2 packs of desiccant and a humidity indicator card.
2. Part No., Lot No., quantity should be indicated on the label of the moisture-proof bag and the cardboard box.

Precautions

1. Recommendation for using LEDs

1.1 The lens of LEDs should not be exposed to dust or debris. Excessive dust and debris may cause a drastic decrease in the luminosity.

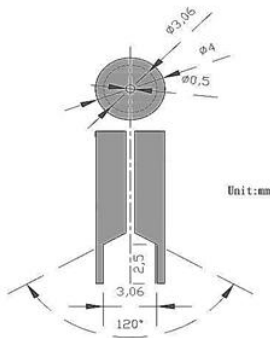
1.2 Avoid mechanical stress on LED lens.

1.3 Do not touch the LED lens surface. It would affect the optical performance of the LED due to the LED lens' damage.

1.4 Pick & place tools are recommended for the remove of LEDs from the factory tape & reel packaging

2. Pick & place nozzle

The pickup tool was recommended and shown as below



3. Lens handling

Please follow the guideline to pick LEDs

3.1 Use tweezers to pick LEDs

3.2 Do not touch the lens by using tweezers

3.3 Do not touch lens with fingers

3.4 Do not apply more than 4N of lens (400g) directly onto the lens

4. Lens cleaning

In the case which a small amount of dirt and dust particles remain on the lens surface, a suitable cleaning solution can be applied.

4.1 Try a gentle wiping with dust-free cloth

4.2 If needed, use dust-free cloth and isopropyl alcohol to gently clean the dirt from the lens surface.

4.3 Do not use other solvents as they may directly react with the LED assembly

4.4 Do not use ultrasonic cleaning which will damage the LEDs

Revision History

| Changes since last revision | Page | Version No. | Revision Date |
|-----------------------------|------|-------------|---------------|
| Initial Release | | 1.0 | 03-19-2021 |
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