

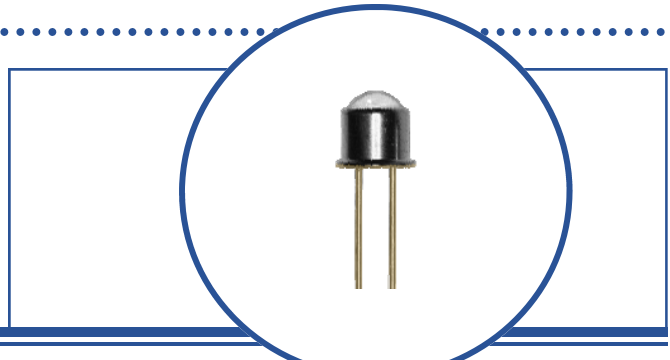
Ultraviolet (UV) Metal Can LED

OUE8A Series



Features:

- Peak Wavelengths from 380 nm to 425 nm
- Uniform Optical Light Pattern
- High Pulse Current
- Hermetic TO-46 Metal Can Package
- RoHs Compliant—No Mercury
- ESD Protected



The **OUE8A Series** offers an energy-efficient hermetic TO-46 metal can packaged UV LED source providing a uniform optical light pattern, high current pulse capability, ESD protection and a long operating lifespan. Devices have a 18° typical emission angle with peak wavelengths from 375 nm to 425 nm. In order to meet critical wavelength requirements of the industry, the **OUE8A Series** is divided into groups each with a total wavelength range of only 5 nm. Each wavelength range is subdivided into optical power output ranges from a minimum of 1.8 mW to over 17.0 mW based on power out specifications listed below.

Applications:

- Adhesive-Ink Photo Catalyst Curing
- Currency / Passport Validation
- Spectroscopy
- Forensic
- Medical

| Part Number | Emission Angle | Peak Wavelength (nm) | Optical Power Output (mW) | |
|-------------|----------------|-------------------------|---------------------------|---------|
| | | I _F = 100 mA | I _F = 100 mA | |
| | | Range | Minimum | Maximum |
| OUE8A380Y1 | 18 | 375 to 380 | 1.8 | 8.1 |
| OUE8A385Y1 | | 380 to 385 | 1.8 | 8.1 |
| OUE8A390Y1 | | 385 to 390 | 1.8 | 8.1 |
| OUE8A395Y1 | | 390 to 395 | 3.1 | 9.8 |
| OUE8A400Y1 | | 395 to 400 | 5.8 | 13.4 |
| OUE8A405Y1 | | 400 to 405 | 5.8 | 13.4 |
| OUE8A410Y1 | | 405 to 410 | 5.8 | 13.4 |
| OUE8A415Y1 | | 410 to 415 | 7.3 | 15.4 |
| OUE8A420Y1 | | 415 to 420 | 7.3 | 15.4 |
| OUE8A425Y1 | | 420 to 425 | 7.3 | 15.4 |

Part Number Guide

OUE8 A XXX Y 1

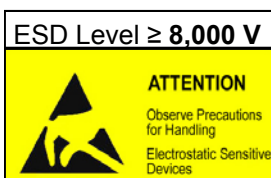
Optek UV TO-46 LED Series

Sequence Numbers (A→Z)

Packaging 1 – Tray Pack
Power Output (mW) - A through J
Wavelength (nm) Identifier



RoHs



Warnings and Handling Instructions

UV-LEDs emit invisible ultraviolet radiation when in operation, which may be harmful to eyes or skin, even for brief periods. Do NOT look directly into the UV-LED during operation. Be sure that you and all persons in the vicinity wear adequate "UV" Safety protection for eyes and skin. If you incorporate a UV-LED into a product, be sure to provide appropriate WARNING labels.

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

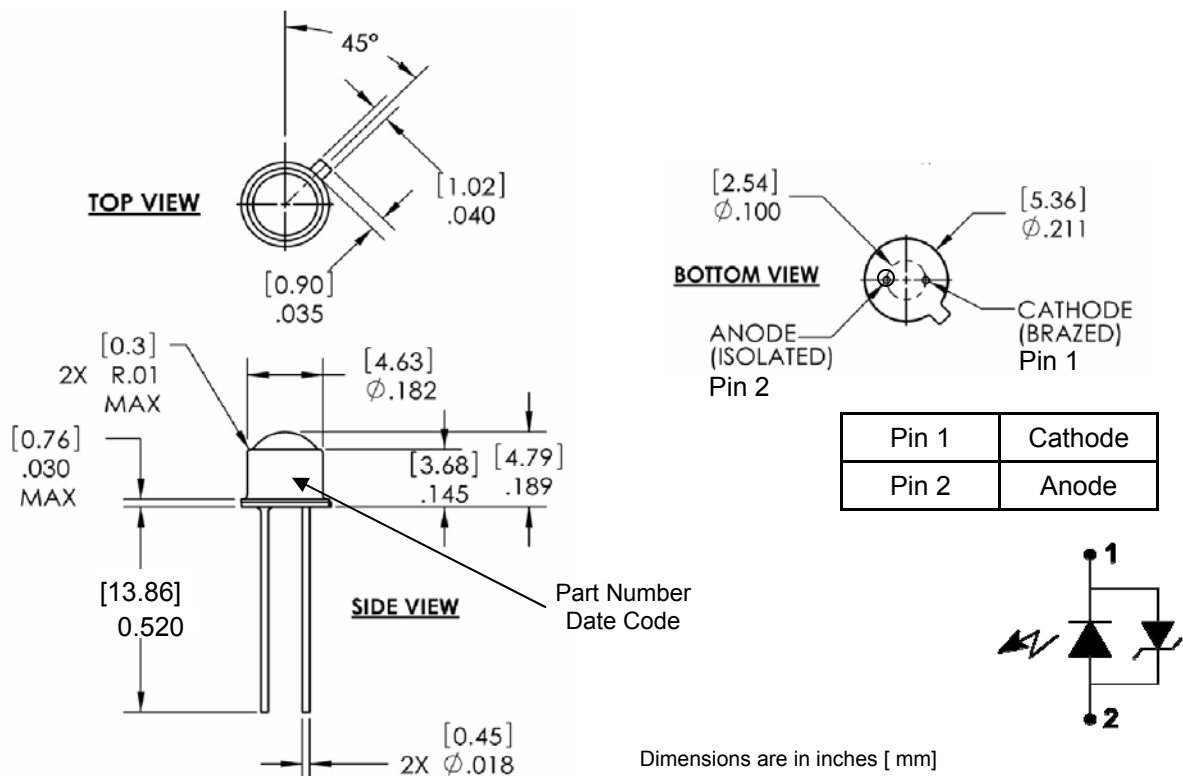
| | |
|---|-----------------------|
| Storage Temperature Range | -40° C to +125° C |
| Operating Temperature Range | -40° C to +85° C |
| Allowable Reverse Current (I_R) | 85 mA |
| Continuous Forward Current | 100 mA |
| Peak Pulsed Forward Current (Pulse Width 100 usec @ 10% duty cycle) | 1.6 A |
| Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 seconds with soldering iron] | 260° C ⁽¹⁾ |
| Power Dissipation | 370 mW |

Notes:

1. RMA flux is recommended. Duration can be extended to 10 seconds maximum when wave soldering.

Electrical & Optical Characteristics ($T_A = 25^{\circ}\text{C}$ unless otherwise noted)

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|-------------------------------|--|-----|-------|-----|--------|------------------------|
| V_F | Forward Voltage | 3.0 | 3.3 | 3.7 | V | $I_F = 100 \text{ mA}$ |
| $\Delta V_F / \Delta T$ | V_F Temperature Co-efficient | | -4.8 | | mV/°C | |
| $\Delta \lambda_P$ | Spectral Half Width | - | 12 | - | nm | |
| $\Delta \lambda_P / \Delta T$ | Peak Spectral Shift with Temperature | - | 0.035 | - | nm/°C | |
| $\Delta P_O / \Delta T$ | Power Output Drop Temperature Co-efficient | - | -0.2 | - | %/°C | |
| θ_{HP} | Emission Angle at Half Power Points | - | 18 | - | Degree | $I_F = 20 \text{ mA}$ |



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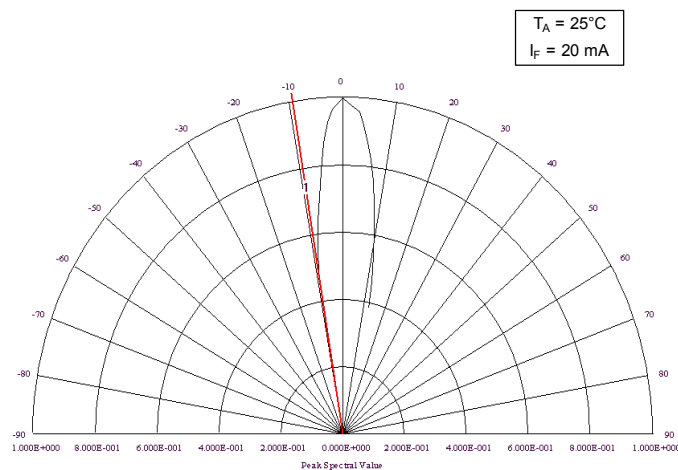
Standard Optical Power Bins

- Devices are sorted to Optical Power Out (mW) as shown below.
- Unless designated, orders may be filled with any or all bins contained.

| Power Bin Identification | Optical Power Out (mW) $I_F = 100 \text{ mA @ } 25^\circ\text{C}$ | |
|--------------------------|--|-------------|
| | Bin Minimum | Bin Maximum |
| OUE8AxxxA | 0.5 | 2.0 |
| OUE8AxxxB | 1.8 | 3.5 |
| OUE8AxxxC | 3.1 | 4.9 |
| OUE8AxxxD | 4.5 | 6.5 |
| OUE8AxxxE | 5.8 | 8.1 |
| OUE8AxxxF | 7.3 | 9.8 |
| OUE8AxxxG | 8.8 | 11.5 |
| OUE8AxxxH | 10.4 | 13.4 |
| OUE8AxxxI | 12.1 | 15.4 |
| OUE8AxxxJ | 13.9 | 17.6 |

- Where xxx = Part Number Wavelength (nm) on page 1
- Parts for a specific Power Bin are subject to availability.

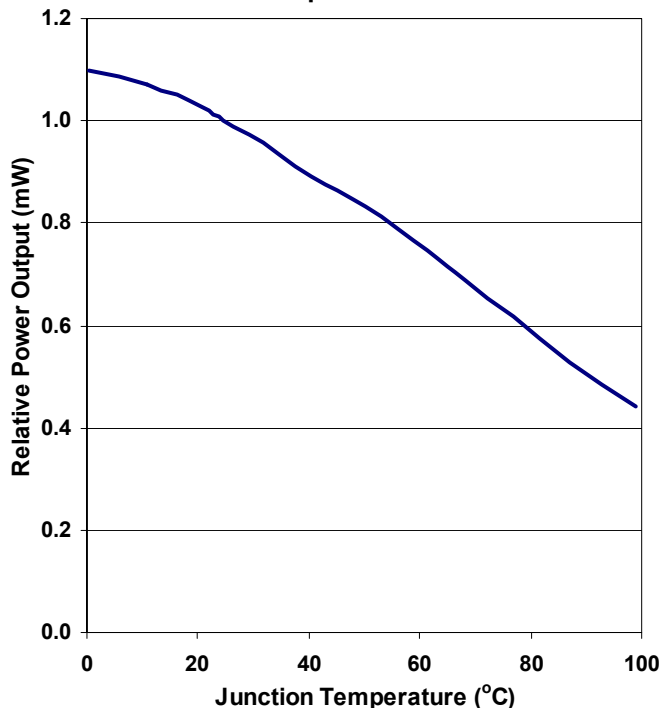
Spatial Intensity Distribution



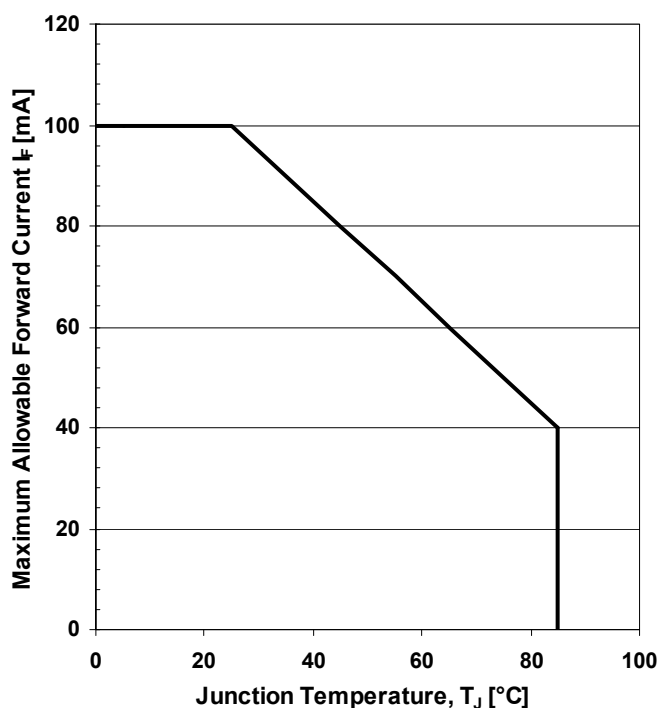
18 degrees Typical
Normalized Spectral Intensity vs. Angular Displacement

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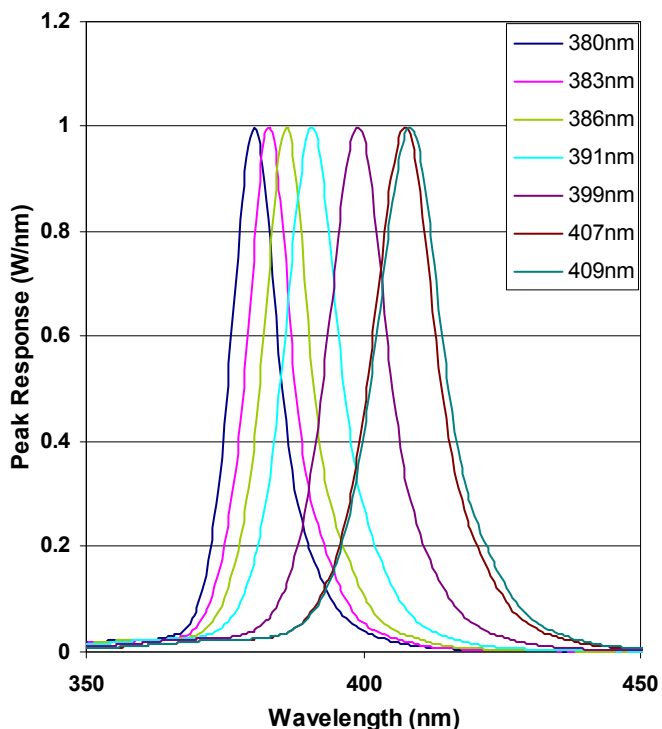
Relative Power Output vs Junction Temperature



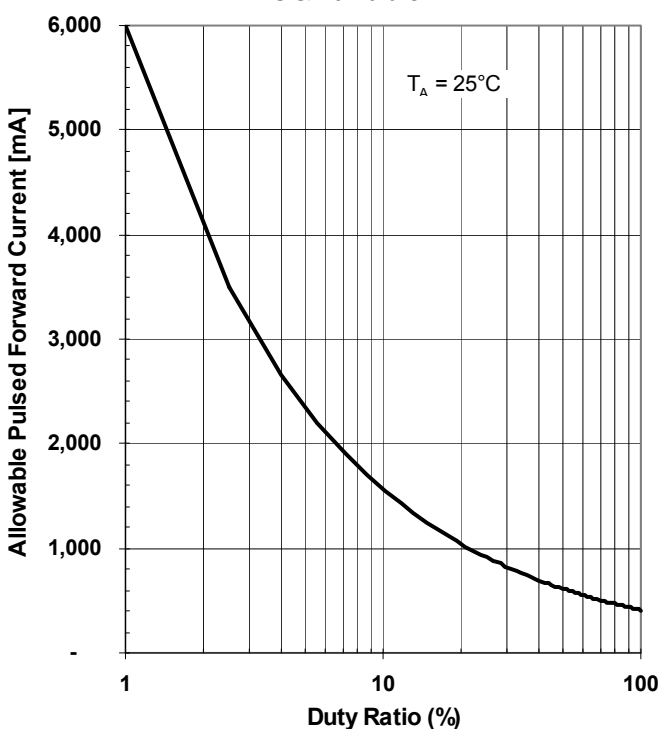
Junction Temperature vs. Maximum Allowable Forward Current



Normalized Peak Spectral Responses

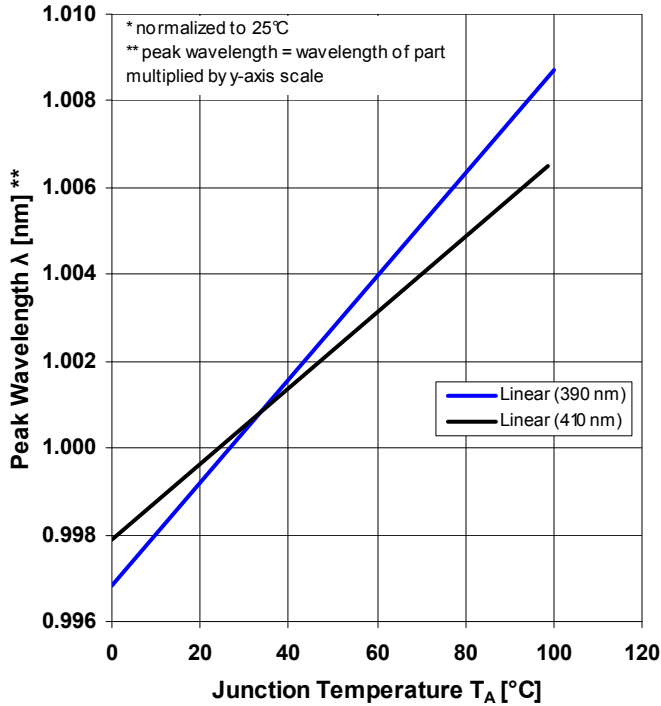


Duty Ratio vs. Allowable Forward Current
 $T = 1$ ms & variable PW

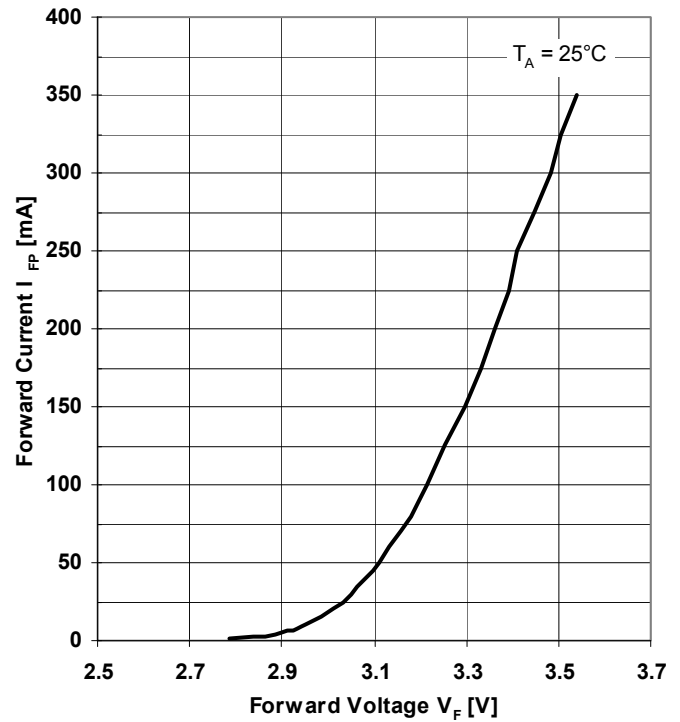


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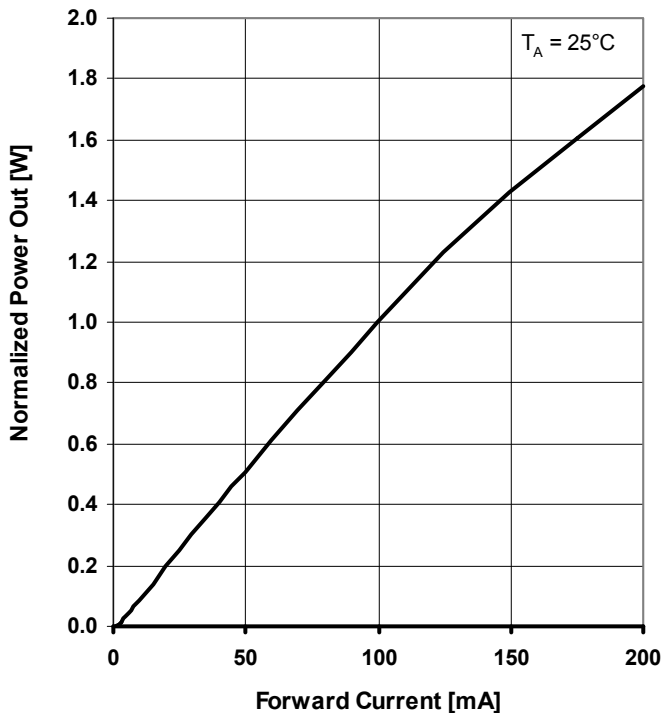
Peak Wavelength vs Junction Temperature



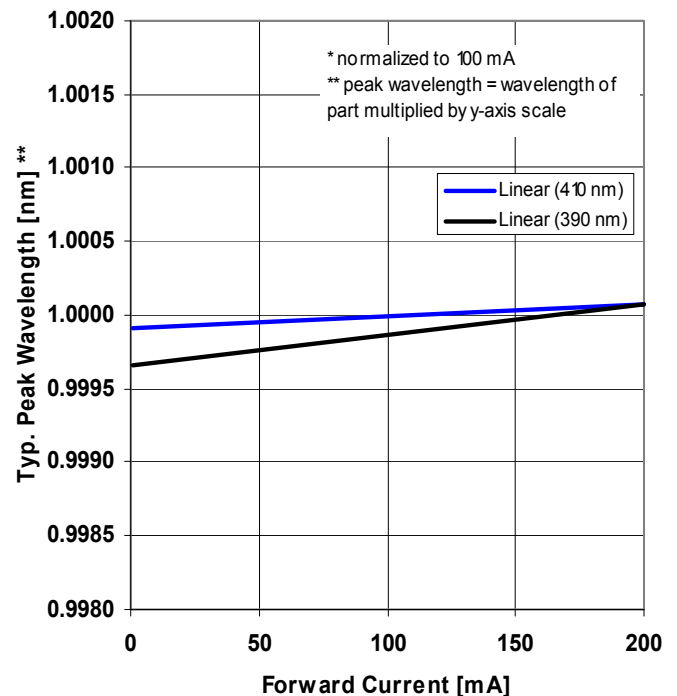
Forward Voltage vs. Forward Current



Typical Power Out vs. Forward Current



Typical Peak Wavelength vs. Forward Current



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Reliability Test

| ITEM | CONDITION | NOTE | FAILURES |
|--------------------------------|---|------------|----------|
| Life Test | $T_A = RT, I_F = 20 \text{ mA}$ | 1000 hrs | 0/22 |
| Temperature Humidity Operating | $T_A = RT, I_F = 20 \text{ mA}, RH = 90\%$ | 1000 hrs | 0/22 |
| High Temperature Operating | $T_A = 80^\circ\text{C}, I_F = 5 \text{ mA}$ | 1000 hrs | 0/22 |
| Low Temperature Operating | $T_A = -40^\circ\text{C}, I_F = 20 \text{ mA}$ | 1000 hrs | 0/22 |
| Thermal Shock | $T_A = -40^\circ\text{C}$ (30 min) to $+85^\circ\text{C}$ (30 min) [Transfer Time: 5 sec, 1 cycle = 1hr] | 100 cycles | 0/22 |
| Resistance to Soldering Heat | $T_s = 260 \pm 5^\circ\text{C}, \text{Time} = 5 \pm 1 \text{ sec}$ | 1 time | 0/11 |
| High Temperature Storage | $T_A = +100^\circ\text{C}$ | 1000 hrs | 0/22 |
| Low Temperature Storage | $T_A = -40^\circ\text{C}$ | 1000 hrs | 0/22 |

Criteria for judging damage

| ITEM | SYMBOL | MEASURING CONDITION | CRITERIA FOR JUDGEMENT | |
|----------------------|--------|-----------------------|------------------------|-----------|
| | | | Minimum | Maximum |
| Forward Voltage | V_F | $I_F = 20 \text{ mA}$ | - | USL X 1.1 |
| Optical Power Output | P_O | $I_F = 20 \text{ mA}$ | LSL X 0.5 | - |

Notes:

1. I_F = Forward Current
2. LSL = Lower Specification Limit
3. RH = Relative humidity
4. RT = Room Temperature ~ 25°C
5. T_A = Ambient Temperature
6. T_S = Solder Temperature
7. USL = Upper Specification Limit

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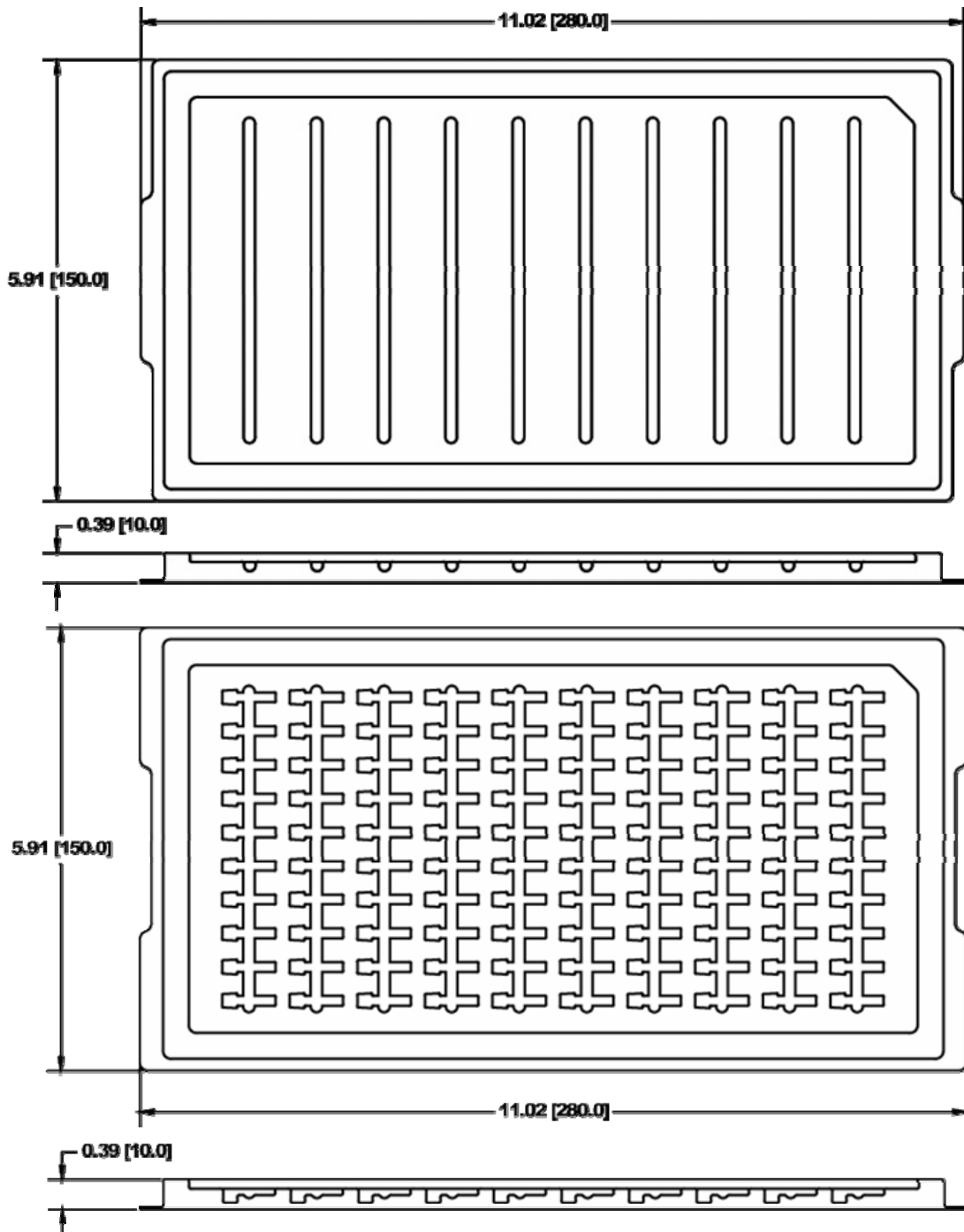
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Shipping Information:

Optek UV LEDs are shipped in black conductive trays made for ESD sensitive devices. Each tray contains up to 100 pieces and is then sealed in a plastic ESD bag. Tray dimensions are in inches (mm).



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