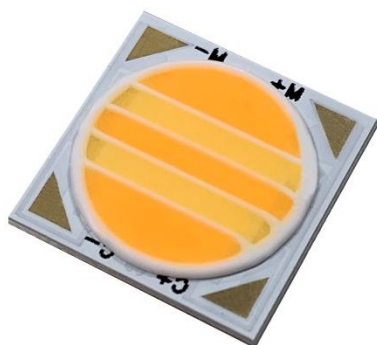




**ProLight PAPE-8FQL-D2750**  
**8W Dual Color COB**  
**Technical Datasheet**  
**Version: 1.1**

# ProLight Opto ProEngine Series

## Features

- High flux density of lighting source
- Good color uniformity
- RoHS compliant
- Energy Star binning structure, neutral white and warm white with 3 steps guarantee.
- More energy efficient than incandescent and most halogen lamps
- No UV
- Long lifetime
- 5 year warranty

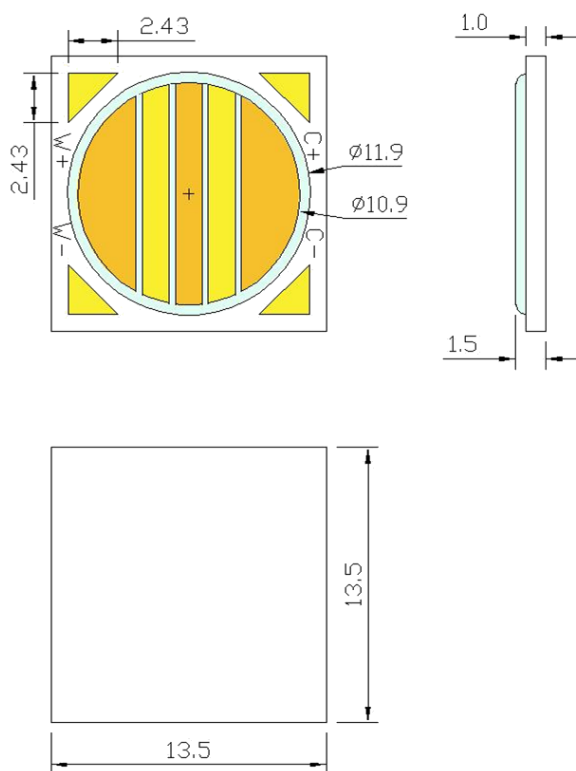
## Main Applications

- Spot lighting
- Down lighting

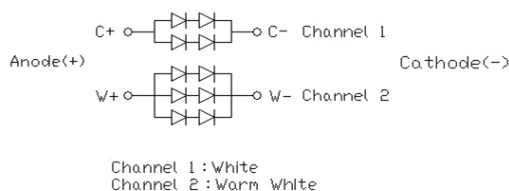
## Introduction

- The 8W multi-chip power ProEngine Series is designed with 2 channels, providing color temperature changes from 5000K to 2700K remaining similar flux.
- The superficial illuminating nature makes it the preference in applications including downlighting, spot lighting and accent lighting at restaurant, hotel, studio, historical spot and home.

## Mechanical Dimensions



Circuit Diagram



### Notes:

1. Solder pads are labeled "+" and "-" to denote positive and negative, respectively.
2. Drawing not to scale.
3. All dimensions are in millimeters.
4. Unless otherwise indicated, tolerances are  $\pm 0.30\text{mm}$ .
5. **Please do not use a force of over 0.3kgf impact or pressure on the lens of the LED, otherwise it will cause a catastrophic failure.**

\*The appearance and specifications of the product may be modified for improvement without notice.

## Flux Characteristics at 250mA, $T_c = 25^\circ\text{C}$

| Radiation Pattern | Color     | Part Number<br>COB | Luminous Flux $\Phi_v$ (lm) |         | CRI<br>Min. |
|-------------------|-----------|--------------------|-----------------------------|---------|-------------|
|                   |           |                    | Minimum                     | Typical |             |
| Lambertian        | Channel 1 | PAPE-8FQL-D2750    | 900                         | 1010    | 90          |
|                   | Channel 2 |                    | 870                         | 970     | 90          |

- ProLight maintains a tolerance of  $\pm 7\%$  on flux and power measurements.
- ProLight maintains a tolerance of  $\pm 2$  on CRI measurements.
- Please do not drive at rated current more than 1 second without proper heat sink.

## Electrical Characteristics at 250mA, $T_c = 25^\circ\text{C}$

| Color     | Forward Voltage $V_F$ (V) |      |      | Thermal Resistance<br>Junction to Board ( $^\circ\text{C}/\text{W}$ ) |
|-----------|---------------------------|------|------|-----------------------------------------------------------------------|
|           | Min.                      | Typ. | Max. |                                                                       |
| Channel 1 | 35.0                      | 37.0 | 39.0 | 3.9                                                                   |
| Channel 2 | 33.0                      | 35.0 | 37.0 |                                                                       |

- ProLight maintains a tolerance of  $\pm 1\text{V}$  for Voltage measurements.

## Optical Characteristics at 250mA, $T_c = 25^\circ\text{C}$

| Color     | Bin Code | Color Temperature CCT |        |        | Total<br>included<br>Angle<br>(degrees)<br>$\theta_{0.90V}$ | Viewing<br>Angle<br>(degrees)<br>$2\theta_{1/2}$ |
|-----------|----------|-----------------------|--------|--------|-------------------------------------------------------------|--------------------------------------------------|
|           |          | Min.                  | Typ.   | Max.   |                                                             |                                                  |
| Channel 1 | V0       | 4790 K                | 5000 K | 5260 K | 160                                                         | 120                                              |
| Channel 2 | M0       | 2660 K                | 2700 K | 2790 K | 160                                                         | 120                                              |

- ProLight maintains a tolerance of  $\pm 5\%$  for CCT measurements.

## Electro-Optical Characteristics, $T_j = 25^{\circ}\text{C}$

| $I_F$ (mA) | $V_F$ (V) | Power (W) | Channel 1 |       |
|------------|-----------|-----------|-----------|-------|
|            |           |           | Flux (lm) | lm/W  |
| 70         | 32.95     | 2.31      | 320.1     | 138.8 |
| 140        | 34.68     | 4.86      | 606.8     | 125.0 |
| 200        | 36.00     | 7.20      | 834.5     | 115.9 |
| 250*       | 37.00     | 9.25      | 1010.0    | 109.2 |
| 315        | 38.24     | 12.05     | 1224.6    | 101.7 |

| $I_F$ (mA) | $V_F$ (V) | Power (W) | Channel 2 |       |
|------------|-----------|-----------|-----------|-------|
|            |           |           | Flux (lm) | lm/W  |
| 70         | 31.93     | 2.23      | 295.0     | 128.3 |
| 140        | 33.26     | 4.66      | 570.5     | 119.1 |
| 200        | 34.25     | 6.85      | 794.2     | 112.7 |
| 250*       | 35.00     | 8.75      | 970.0     | 107.8 |
| 315        | 35.93     | 11.32     | 1190.8    | 102.3 |

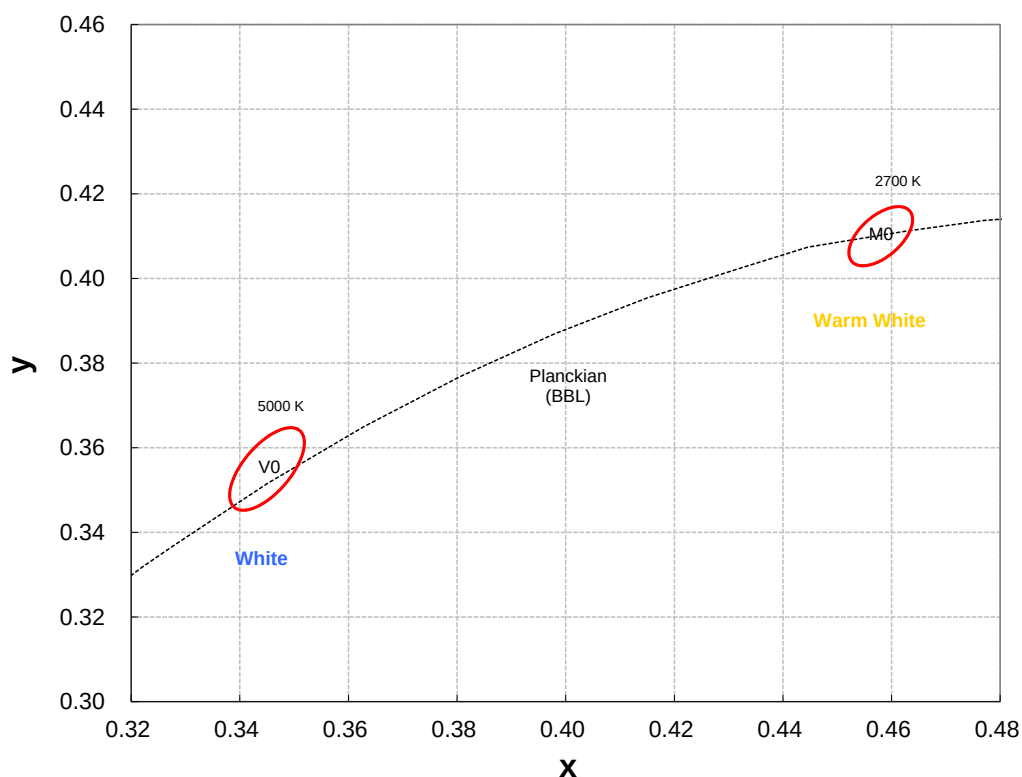
● All values are reference only.

## Absolute Maximum Ratings

| Parameter                                               | Channel 1/Channel 2                         |
|---------------------------------------------------------|---------------------------------------------|
| Max DC Forward Current (mA)                             | 315                                         |
| Peak Pulsed Forward Current (mA)                        | 350 (less than 1/10 duty cycle@1KHz)        |
| ESD Sensitivity<br>(HBM per MIL-STD-883E Method 3015.7) | $\pm 2000\text{V}$                          |
| LED Junction Temperature                                | $120^{\circ}\text{C}$                       |
| Operating Board Temperature                             | $-40^{\circ}\text{C} - 105^{\circ}\text{C}$ |
| at Maximum DC Forward Current                           |                                             |
| Storage Temperature                                     | $-40^{\circ}\text{C} - 120^{\circ}\text{C}$ |
| Reverse Voltage                                         | Not designed to be driven in reverse bias   |

## Color Bin

### Channel 1 and Channel 2 Binning Structure Graphical Representation



### Channel 1 and Channel 2 Bin Structure

| Bin Code |   | Center | Oval parameter      | Typ. CCT (K) |
|----------|---|--------|---------------------|--------------|
| M0       | x | 0.4580 | a 0.0081            | 2700         |
|          | y | 0.4100 | b 0.0042            |              |
|          |   |        | $\theta^\circ$ 53.7 |              |
|          |   |        |                     |              |

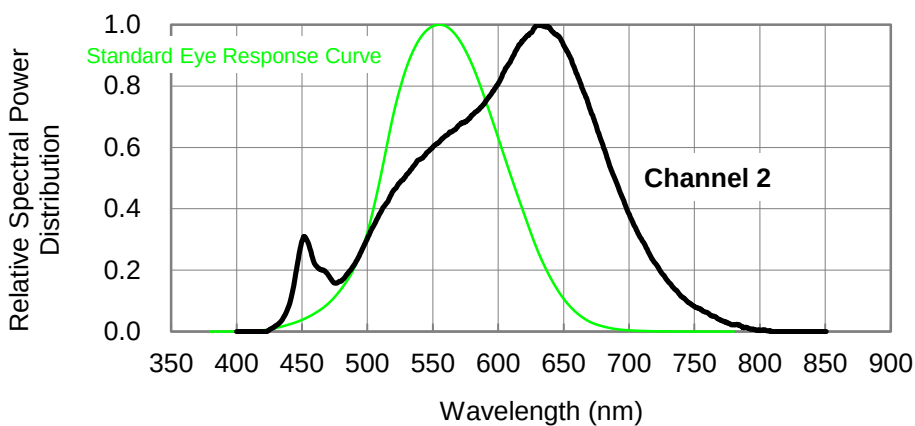
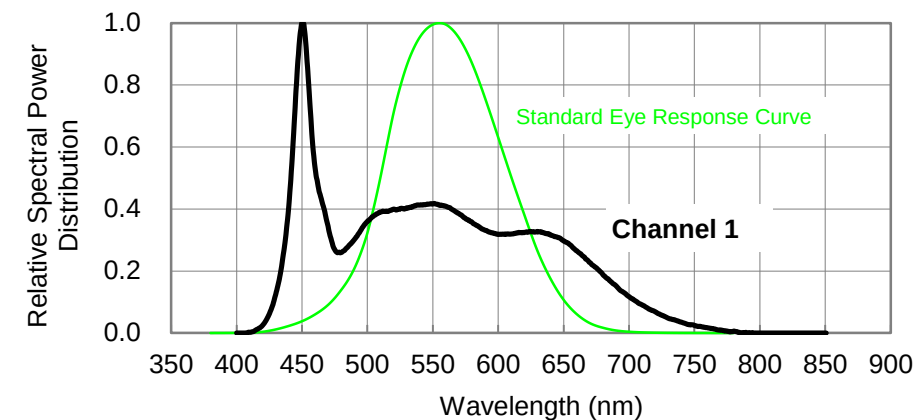
- Color range stay within MacAdam “3-step” ellipse from the chromaticity center.
- The chromaticity center refers to ANSI C78.377.
- Tolerance on each color bin (x , y) is  $\pm 0.005$

| Bin Code |   | Center | Oval parameter       | Typ. CCT (K) |
|----------|---|--------|----------------------|--------------|
| V0       | x | 0.3450 | a 0.01096            | 5000         |
|          | y | 0.3550 | b 0.00472            |              |
|          |   |        | $\theta^\circ$ 59.62 |              |
|          |   |        |                      |              |

- Color range stay within MacAdam “4-step” ellipse from the chromaticity center.
- The chromaticity center refers to ANSI C78.377.
- Tolerance on each color bin (x , y) is  $\pm 0.005$

## Color Spectrum, $T_j = 25^{\circ}\text{C}$

### 1. Dual Color : 2700K~5000K



## Forward Current Relative Characteristics

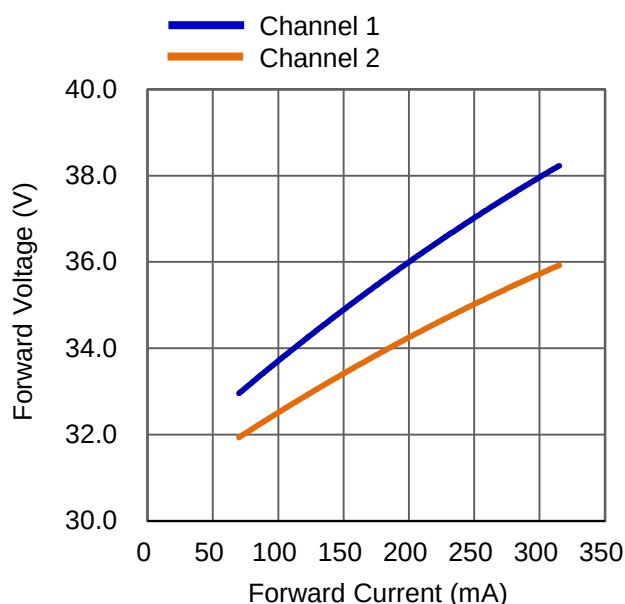


Fig 1. Forward Current vs. Forward Voltage at  $T_c=25^\circ\text{C}$ .

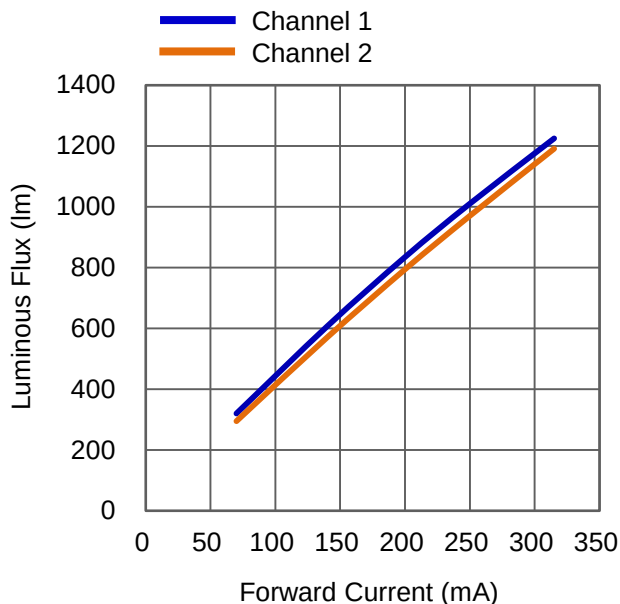
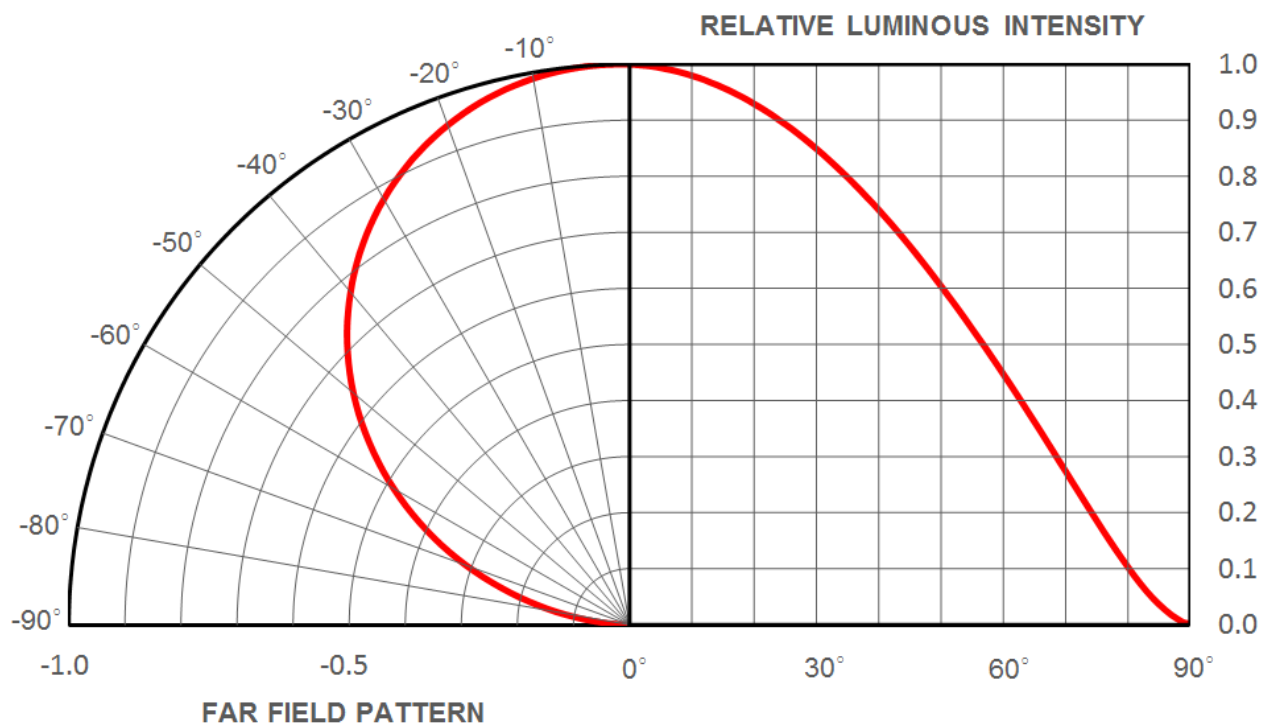


Fig 2. Forward Current vs. Relative Luminous Flux at  $T_c=25^\circ\text{C}$ .

## Reference CCT Table

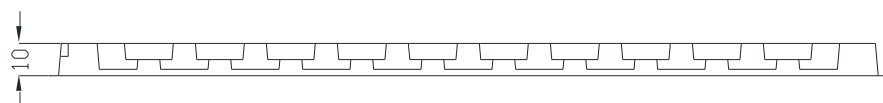
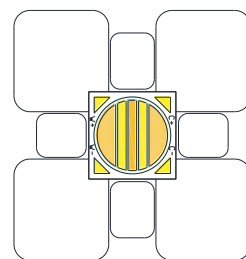
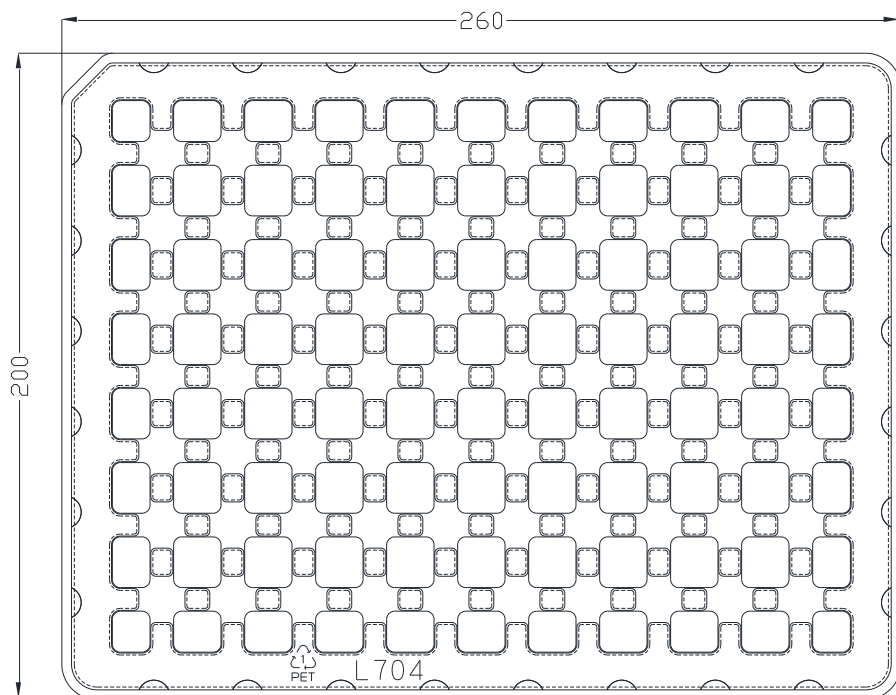
| Channel 2 Current(mA) | CCT   | Channel 1 Current(mA) |
|-----------------------|-------|-----------------------|
| 315                   | 2700K | 0                     |
| 250                   | 3000K | 65                    |
| 180                   | 3500K | 135                   |
| 90                    | 4000K | 225                   |
| 0                     | 5000K | 315                   |

## Typical Representative Spatial Radiation Pattern





## Packing Specifications



Product 70 pcs/tray

### Notes:

1. Drawing not to scale.
2. All dimensions are in millimeters.
3. Unless otherwise indicated, tolerances are  $\pm 0.20\text{mm}$ .

## Recommended Soldering Condition

- Please use lead free and “no clean ” solders.
- Soldering shall be implemented using a soldering tip at a temperature lower than 350 °C, and shall be finished within 3.5 seconds for each pad.
- During the soldering process, put the LEDs on materials whose conductivity is poor enough not to radiate heat of soldering.
- Properly solder tin wires before soldering them to LEDs.
- Avoid touching the silicone lens with the soldering iron.
- Please prevent flux from touching to the silicone lens.
- Please solder evenly on each pad.
- Contacts number of a soldering tip should be within twice for each pad.
- Next process of soldering should be carried out after the LEDs have return to ambient temperature.

\*ProLight cannot guarantee if usage exceeds these recommended conditions.

Please use it after sufficient verification is carried out on your own risk if absolutely necessary.

## Precaution for Use

- The modules light output are intense enough to cause injury to human eyes if viewed directly. Precautions must be taken to avoid looking directly at the modules with unprotected eyes.
- The modules are sensitive to electrostatic discharge. Appropriate ESD protection measures must be taken when working with the modules. Non-compliance with ESD protection measures may lead to damage or destruction of the product.
- Chemical solvents or cleaning agents must not be used to clean the modules. Mechanical stress on the Emitters must be avoided. It is best to use a soft brush, damp cloth or low-pressure compressed air.
- The products should be stored away from direct light in dry location.
- The appearance, specifications and flux bin of the product may be modified for improvement without notice. Please refer to the below website for the latest datasheets.  
<http://www.prolightopto.com/>

## Handling of Silicone Lens LEDs

Notes for handling of silicone lens LEDs

- Please do not use a force of over 0.3kgf impact or pressure on the silicone lens, otherwise it will cause a catastrophic failure.
- Avoid touching the silicone lens and the optical area of the COB Array especially by sharp tools such as Tweezers
- Avoid touching the silicone lens especially by sharp tools such as Tweezers.
- Avoid leaving fingerprints on the silicone lens.
- Please store the LEDs away from dusty areas or seal the product against dust.
- Please do not mold over the silicone lens with another resin. (epoxy, urethane, etc)

