



**HERCULUX**  
恒坤光电

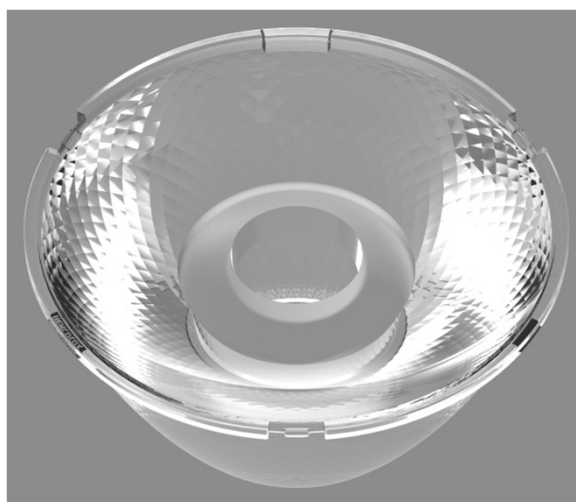
Chengdu HercuLux Photoelectric  
Technology Co.,Ltd  
**Product Approval**

Approval number:

Customer:

Manufacturer: Chengdu HercuLux Photoelectric Technology Co.,Ltd

| PN                         | Code         | Product                |
|----------------------------|--------------|------------------------|
| HK-HG-83@40-15-D19-21-1g-1 | 1. 01. 02480 | HK Dark 83@40-15° lens |
| HK-HG-83@40-24-D19-21-1g-1 | 1. 01. 02441 | HK Dark 83@40-24° lens |
| HK-HG-83@40-36-D19-21-1g-1 | 1. 01. 02481 | HK Dark 83@40-36° lens |
| HK-HG-83@40-50-D19-21-1g-1 | 1. 01. 02491 | HK Dark 83@40-50° lens |
| HK-HG-83@40-70-038-21-1g-1 | 1. 01. 12848 | HK Dark 83@40-70° lens |



| Supplier confirmation |  |      |  | Client confirmation                  |  |      |  |
|-----------------------|--|------|--|--------------------------------------|--|------|--|
| Proposed              |  | DATE |  | Qualified <input type="checkbox"/>   |  | DATE |  |
| Project manager       |  | DATE |  | Unqualified <input type="checkbox"/> |  | DATE |  |
| Audit                 |  | DATE |  | Audit                                |  | DATE |  |
| Approved              |  | DATE |  | Approved                             |  | DATE |  |
| Stamp                 |  | DATE |  | Stamp                                |  | DATE |  |

(Confirmation of acceptance by both parties must be signed and sealed)

Factory: Chengdu Shuangliu District, lot industrial park 2 road HercuLux Photoelectric Park

Phone: 028-85887727 (801) 028-85887990 (801)

Fax: 028-85887730

<http://www.herculux.com/>

Sales Dept: Shenzhen Nanshan District Nanshan Cloud Valley Innovation Industrial Park Comprehensive Service Building, 501-

TEL: 0755-2937 1541

FAX: 0755-2907 5140

\*Approval In duplicate, for both supplier and customer.

# Disclaimer

Please use this product within the permitted range and environment according to the structure and material of the product. If the usage exceeds the recommended value, please test and verify by yourself. If the product is damaged due to out-of-range use, our company will not be responsible for the warranty.

Product material:

Customized products: The specifications and models of materials used are subject to the agreement between the two parties.

Conventional products: As a product that we continuously research and improve, under the premise of ensuring the quality and availability of the product, our company reserves the right to change the material. If the material specification and model change, without prior notice.

product data:

The measurement data and dimensional tolerances of the 2D drawings in the product data sheet of this acknowledgement are for reference only, and the final size shall prevail in kind.

The measurement data presented in this acknowledgment is a performance test of the product based on our company's internal test conditions and quality requirements, and the reported data is a typical value of the average results of multiple measurements. Therefore, in some cases, the actual product may deviate from the data provided. We reserve the right to notify you in advance of this data.

Product changes and improvements:

Changes and improvements of customized products are subject to the agreement between the two parties in the contract or technical documents.

As the conventional products that we continue to research and improve, our company reserves the right to make technical changes to its products, and reserves the right to make changes to data resulting from improvements without prior notice.

Operation cautions:

1. Please wear clean gloves during product assembly to prevent product surface contamination.
2. Try to avoid touching the optical surface of the lens when taking the lens.
3. When the surface of the product is polluted, please wipe it gently with a soft cotton cloth dipped in analytically pure neutral solvent. It is forbidden to use industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA monomer, etc.) wipe.
4. The lens made of PC should not be exposed to direct sunlight in the storage and use environment. If the lens turns yellow or cracks due to long-term sunlight exposure, our company will not be responsible for the warranty.

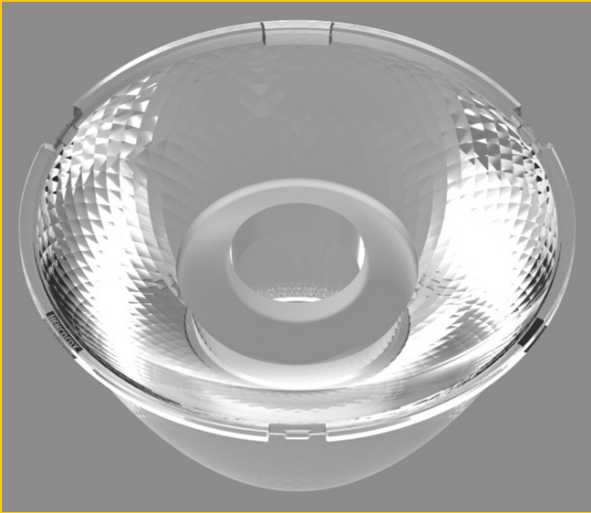


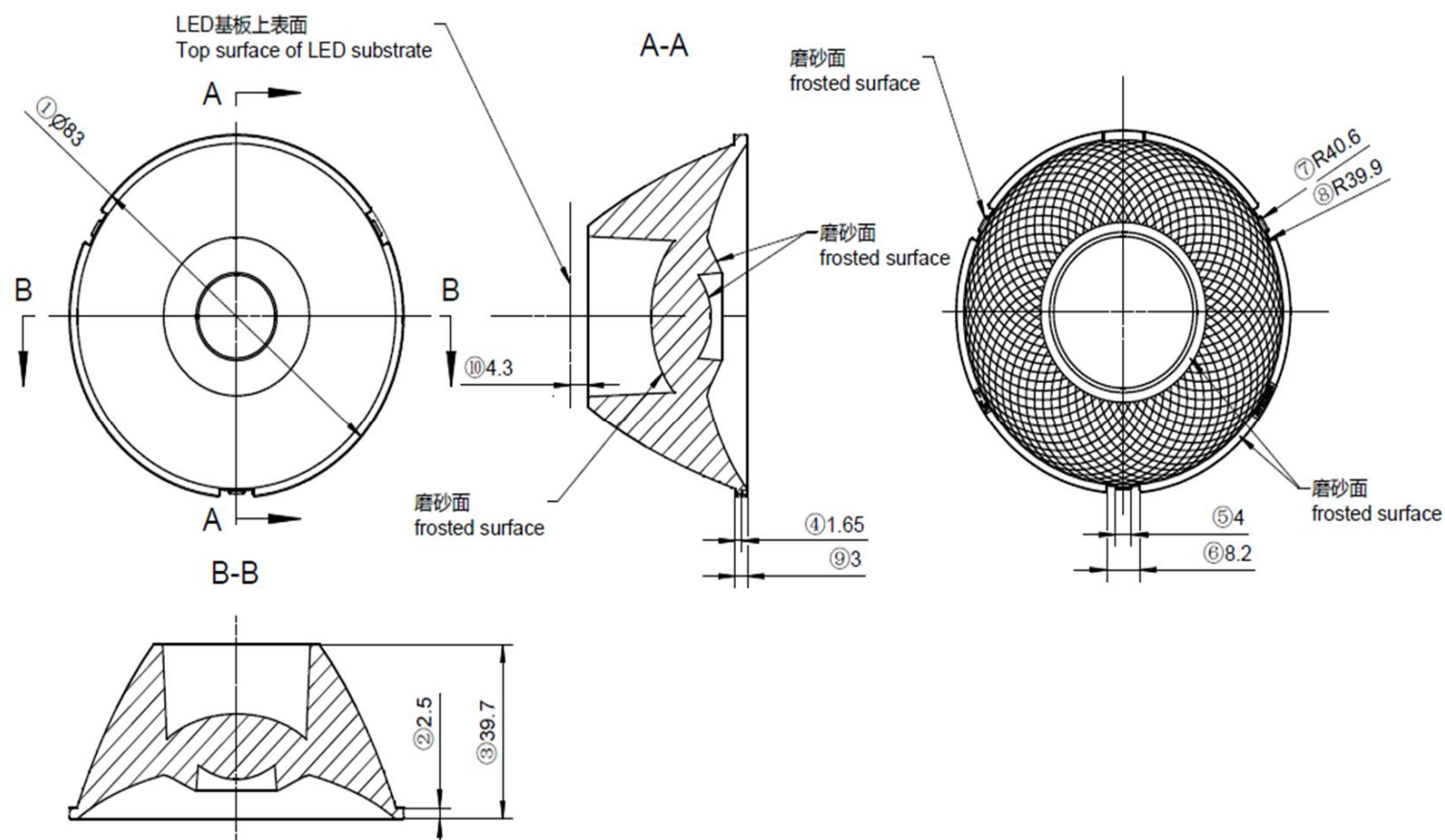
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# Basic product information

<http://www.herculux.com/>

Date updated: 2024/10/10

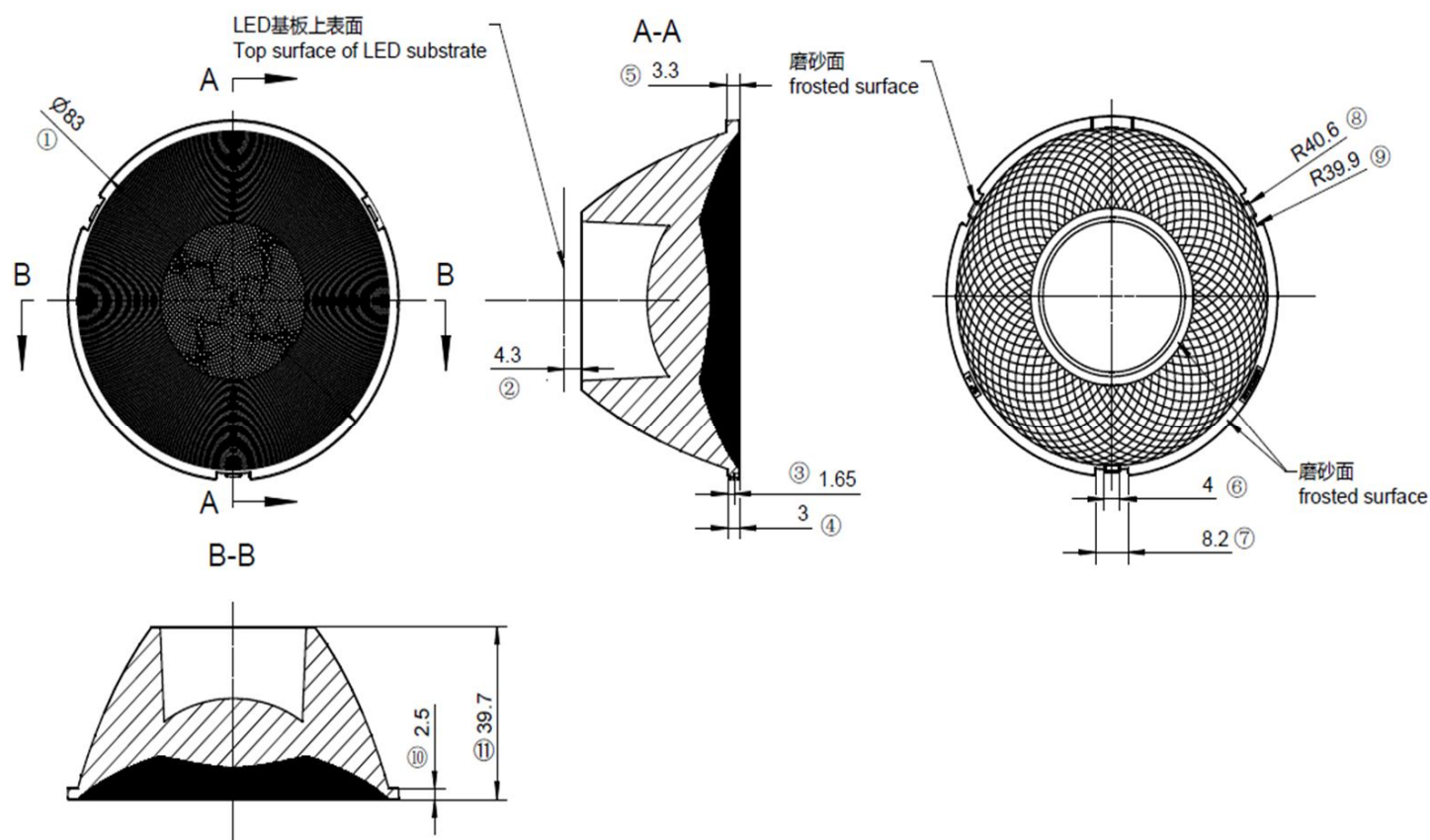
|                        |                                                                                                       |
|------------------------|-------------------------------------------------------------------------------------------------------|
| Product Picture:       |                     |
| Size(L*W*H/Φ*H):       | Φ83mm*H39.7mm                                                                                         |
| Material:              | PMMA                                                                                                  |
| Effiency:              | \                                                                                                     |
| Temperature(Topr):     | Material extreme temperature resistance: -40°C to +100°C<br>long-term use temperature: -40°C to +80°C |
| FWHM:                  | 15°、24°、36°、50°、70°                                                                                   |
| Matched LES:           | D19                                                                                                   |
| Recommended MAX power: | 35W                                                                                                   |

**Technical remark:**

1. The 3D map is not indicated for rounded corners and draft angle.
2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
3. The surface has no flash, shrinkage, bubbles and other defects.
- \*4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required:  $Ra < 3.2\mu m$

|                  |  |  |                        |      |                            |     |        |
|------------------|--|--|------------------------|------|----------------------------|-----|--------|
| Optical design   |  |  | HK Dark 83@40-15° lens |      | HK-HG-83@40-15-D19-21-1g-1 |     |        |
| Structure design |  |  |                        |      | 1.01.02480                 |     |        |
| Review           |  |  |                        |      | number of draw             | qty | weight |
| Validation       |  |  | Material:              | PMMA | CDHK                       |     |        |

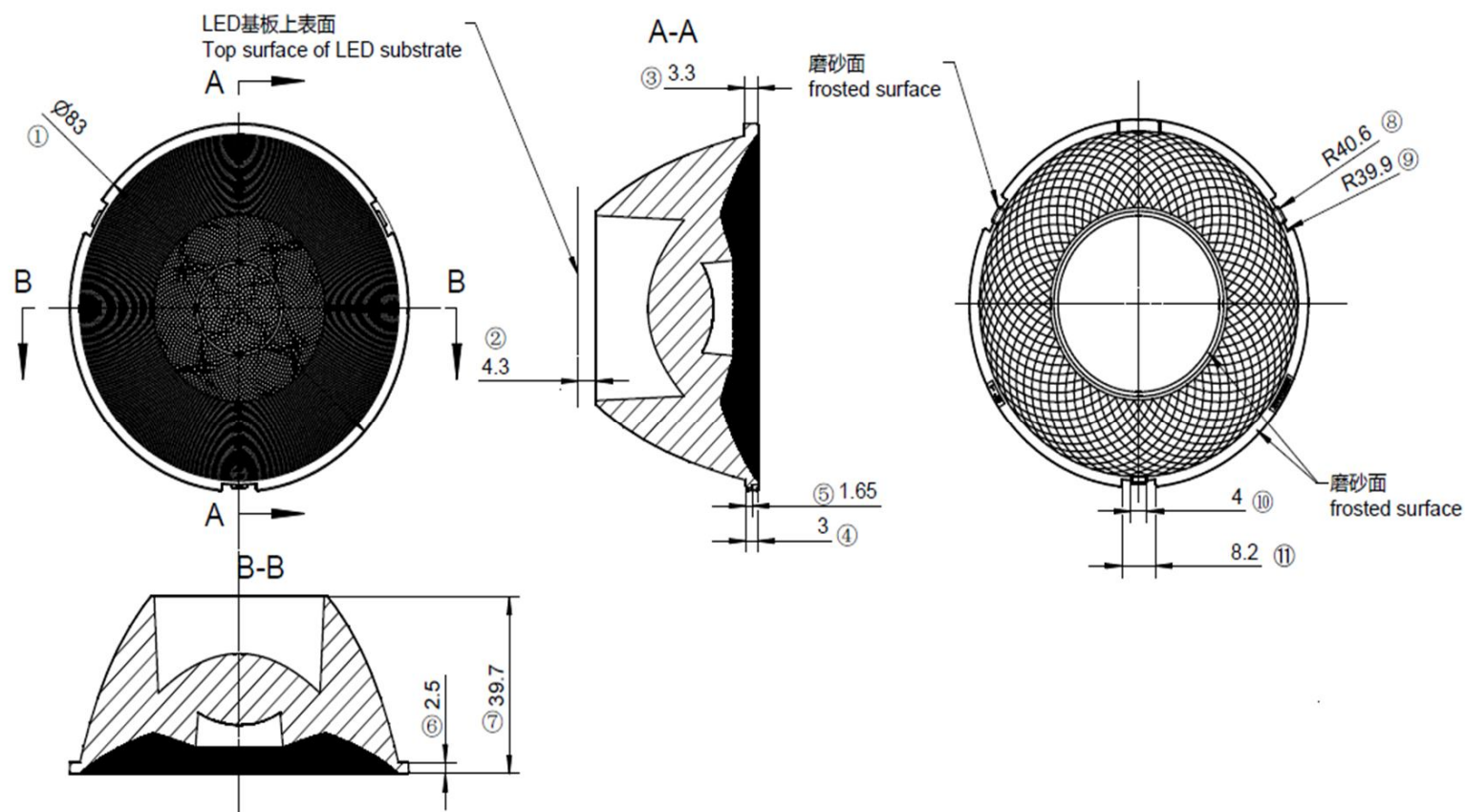
| MT5<br>Tolerance<br>table | Basic size   | <3   | 3~10  | 10~24 | 24~65 | 65~140 | 140~250 | 250~450 | >450 |  |  |
|---------------------------|--------------|------|-------|-------|-------|--------|---------|---------|------|--|--|
|                           | olerance val | ±0.1 | ±0.15 | ±0.2  | ±0.35 | ±0.50  | ±0.80   | ±1.2    | ±2.0 |  |  |

**Technical remark:**

1. The 3D map is not indicated for rounded corners and draft angle.
2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
3. The surface has no flash, shrinkage, bubbles and other defects.
- \*4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required:  $Ra < 3.2\mu m$

|                  |  |  |                        |  |  |                            |     |        |
|------------------|--|--|------------------------|--|--|----------------------------|-----|--------|
| Optical design   |  |  | HK Dark 83@40-24° lens |  |  | HK-HG-83@40-24-D19-21-1g-1 |     |        |
| Structure design |  |  |                        |  |  | 1.01.02441                 |     |        |
| Review           |  |  |                        |  |  | number of draw             | qty | weight |
| Validation       |  |  | Material: PMMA         |  |  | CDHK                       |     |        |

| MT5<br>Tolerance<br>table | Basic size   | <3   | 3~10  | 10~24 | 24~65 | 65~140 | 140~250 | 250~450 | >450 |  |  |
|---------------------------|--------------|------|-------|-------|-------|--------|---------|---------|------|--|--|
|                           | olerance val | ±0.1 | ±0.15 | ±0.2  | ±0.35 | ±0.50  | ±0.80   | ±1.2    | ±2.0 |  |  |

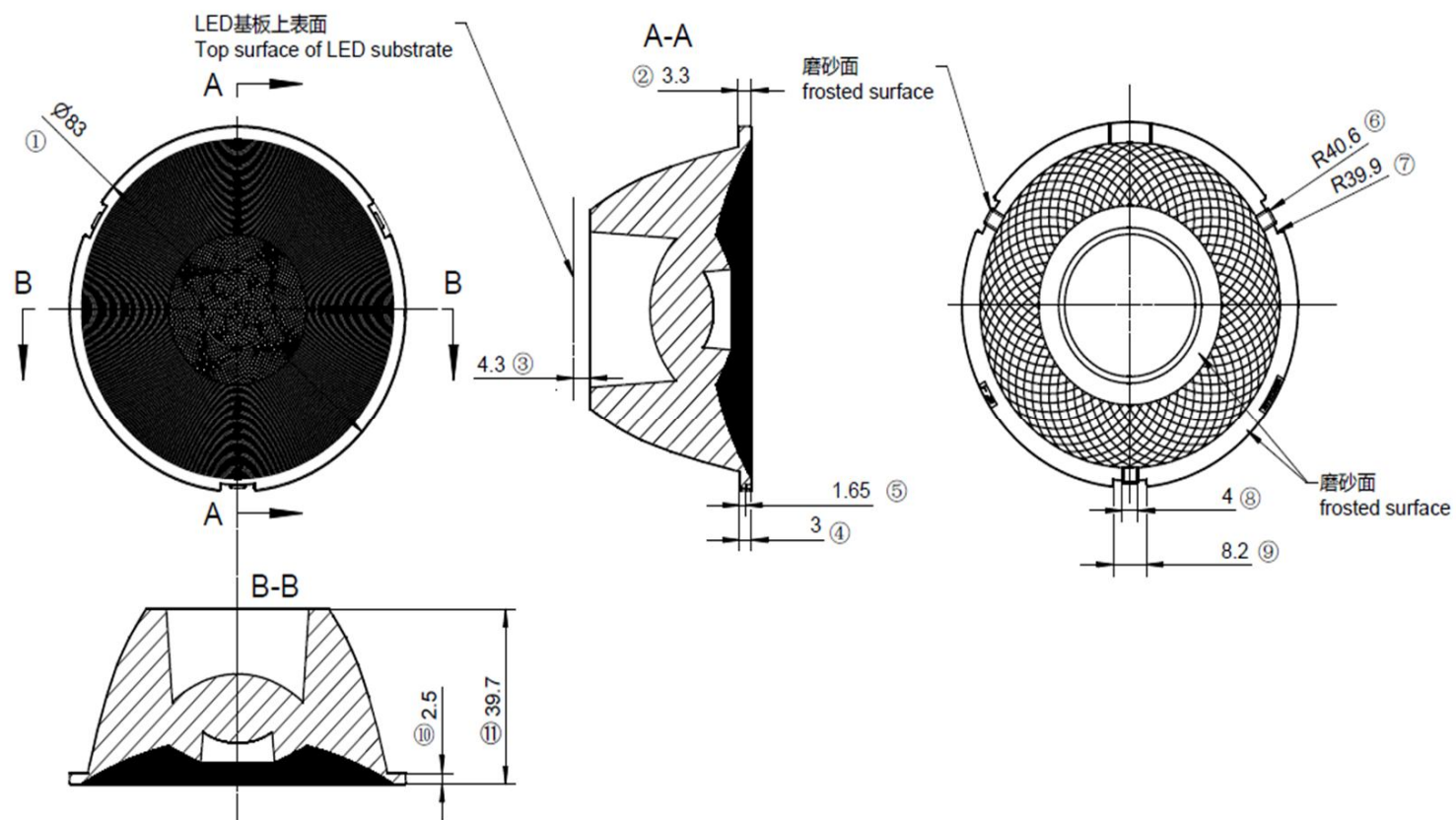
**Technical remark:**

1. The 3D map is not indicated for rounded corners and draft angle.
2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
3. The surface has no flash, shrinkage, bubbles and other defects.
- \*4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required:  $Ra < 3.2\mu m$

|                  |  |  |                        |  |                            |     |        |
|------------------|--|--|------------------------|--|----------------------------|-----|--------|
| Optical design   |  |  | HK Dark 83@40-36° lens |  | HK-HG-83@40-36-D19-21-1g-1 |     |        |
| Structure design |  |  |                        |  | 1.01.02481                 |     |        |
| Review           |  |  |                        |  | number of draw             | qty | weight |
| Validation       |  |  | Material: PMMA         |  | CDHK                       |     |        |

|                           |               |      |       |       |       |        |         |         |      |  |  |  |
|---------------------------|---------------|------|-------|-------|-------|--------|---------|---------|------|--|--|--|
| MT5<br>Tolerance<br>table | Basic size    | <3   | 3~10  | 10~24 | 24~65 | 65~140 | 140~250 | 250~450 | >450 |  |  |  |
|                           | tolerance val | ±0.1 | ±0.15 | ±0.2  | ±0.35 | ±0.50  | ±0.80   | ±1.2    | ±2.0 |  |  |  |

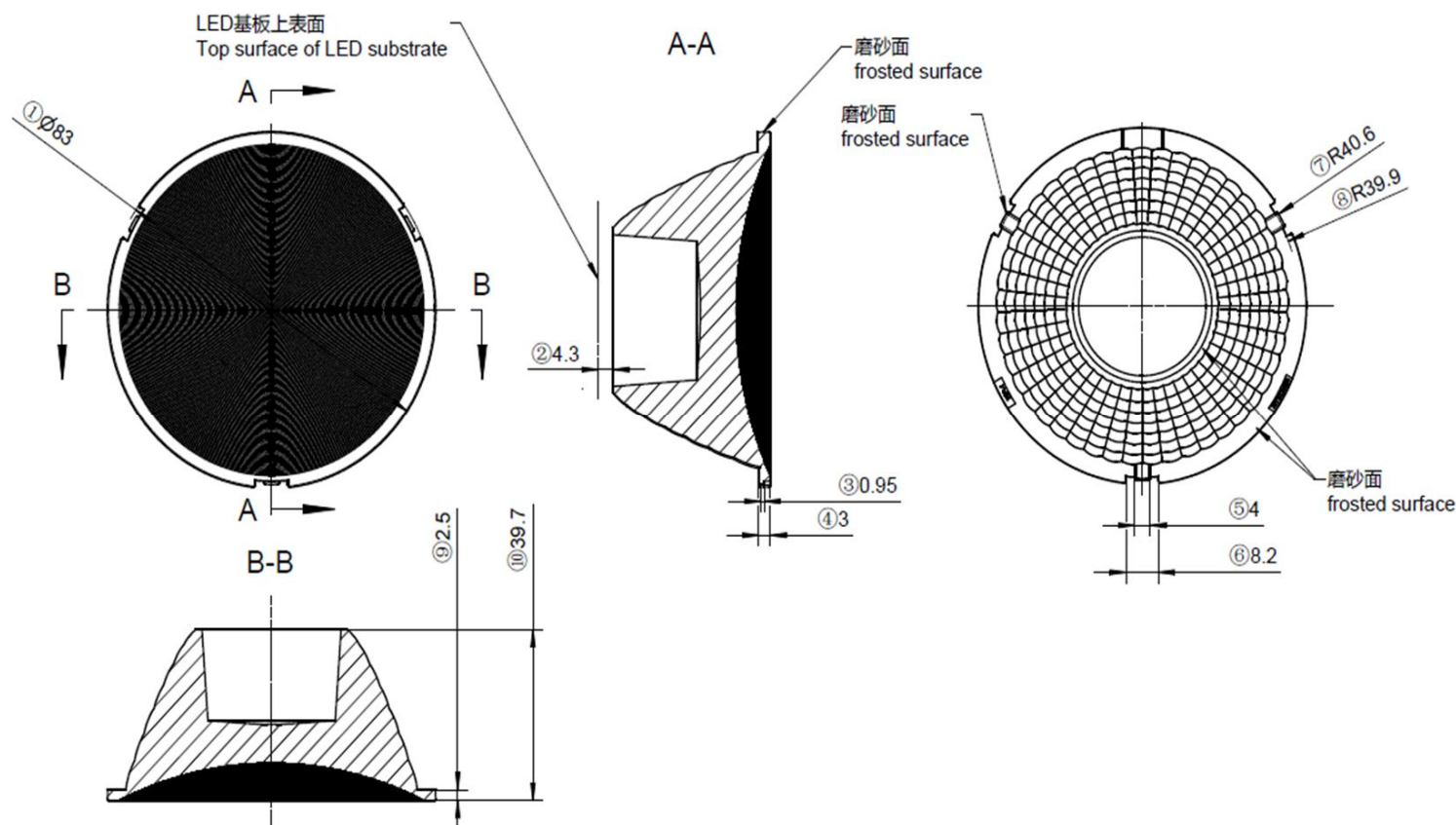


**Technical remark:**

1. The 3D map is not indicated for rounded corners and draft angle.
2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
3. The surface has no flash, shrinkage, bubbles and other defects.
- \*4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required:  $Ra < 3.2\mu m$

|                  |  |  |                        |  |                            |     |        |
|------------------|--|--|------------------------|--|----------------------------|-----|--------|
| Optical design   |  |  | HK Dark 83@40-50° lens |  | HK-HG-83@40-50-D19-21-1g-1 |     |        |
| Structure design |  |  |                        |  | 1.01.02491                 |     |        |
| Review           |  |  |                        |  | number of draw             | qty | weight |
| Validation       |  |  | Material: PMMA         |  | CDHK                       |     |        |

|                           |               |      |       |       |       |        |         |         |      |  |  |  |
|---------------------------|---------------|------|-------|-------|-------|--------|---------|---------|------|--|--|--|
| MT5<br>Tolerance<br>table | Basic size    | <3   | 3~10  | 10~24 | 24~65 | 65~140 | 140~250 | 250~450 | >450 |  |  |  |
|                           | tolerance val | ±0.1 | ±0.15 | ±0.2  | ±0.35 | ±0.50  | ±0.80   | ±1.2    | ±2.0 |  |  |  |

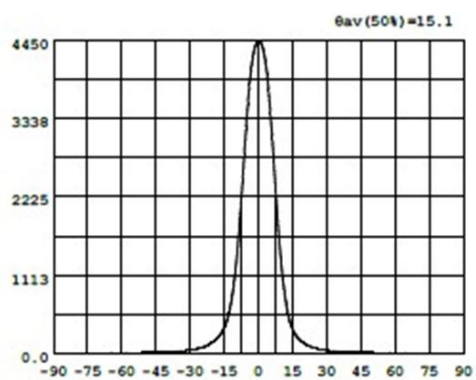
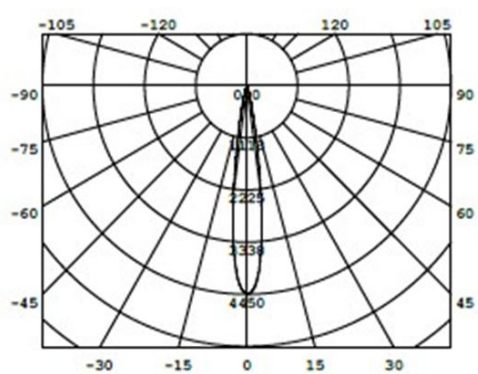
**Technical remark:**

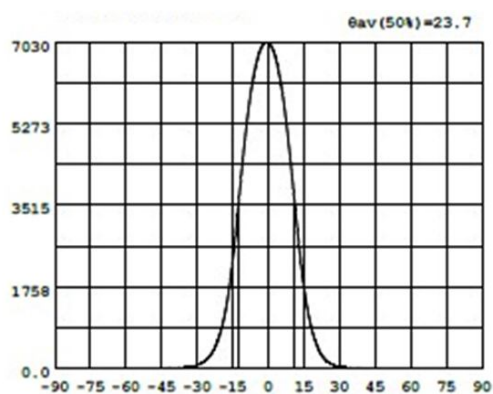
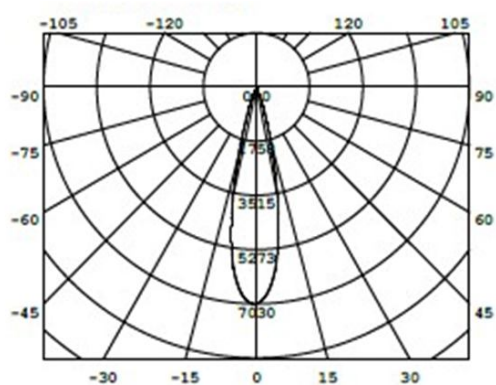
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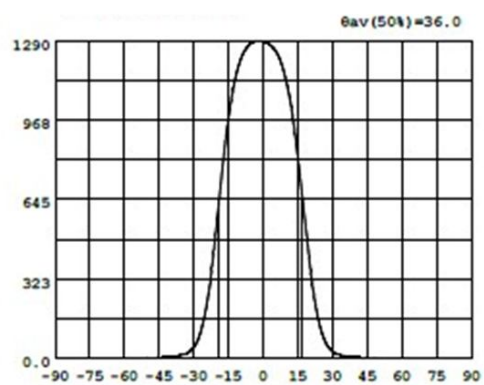
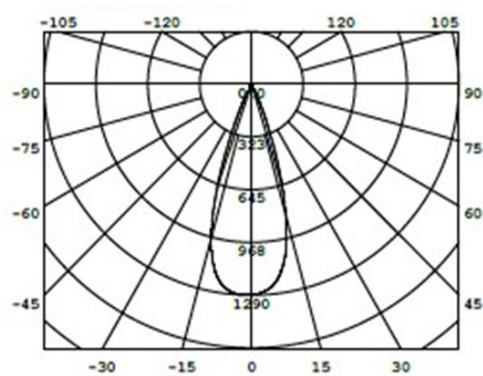
|                  |  |  |                        |      |                            |     |        |
|------------------|--|--|------------------------|------|----------------------------|-----|--------|
| Optical design   |  |  | HK Dark 83@40-70° lens |      | HK-HG-83@40-70-038-21-1g-1 |     |        |
| Structure design |  |  |                        |      | 1.01.12848                 |     |        |
| Review           |  |  |                        |      | number of draw             | qty | weight |
| Validation       |  |  | Material:              | PMMA | CDHK                       |     |        |

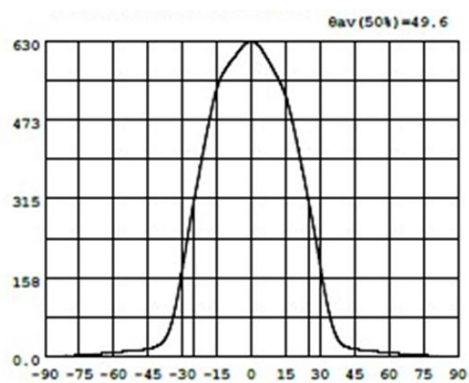
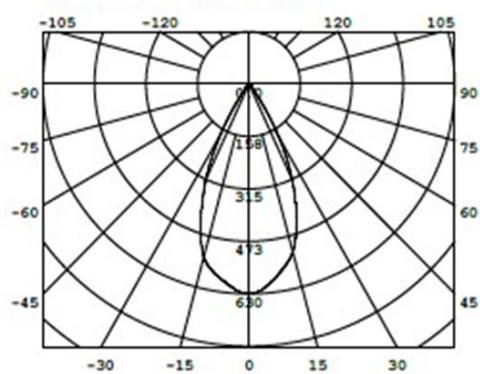
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|---------------------------|--------------|------|-------|-------|-------|--------|---------|---------|------|--|--|--|
|                           | olerance val | ±0.1 | ±0.15 | ±0.2  | ±0.35 | ±0.50  | ±0.80   | ±1.2    | ±2.0 |  |  |  |

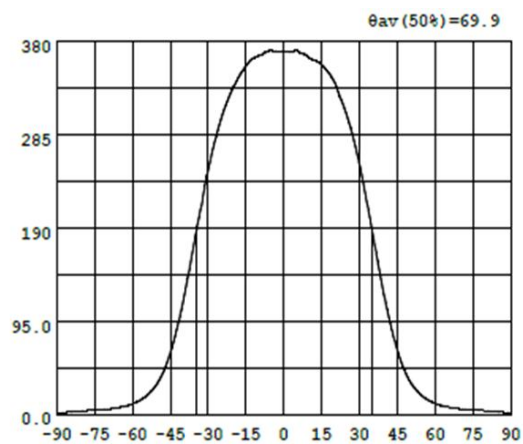
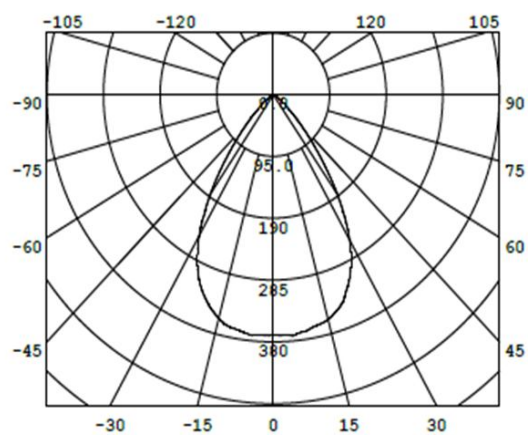


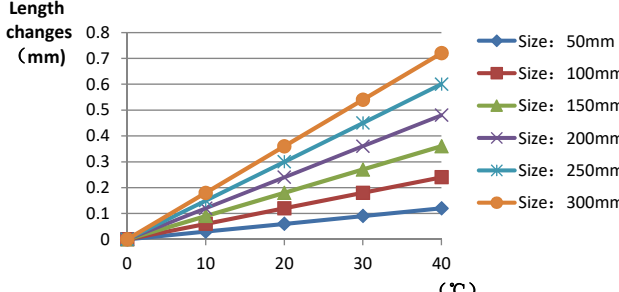




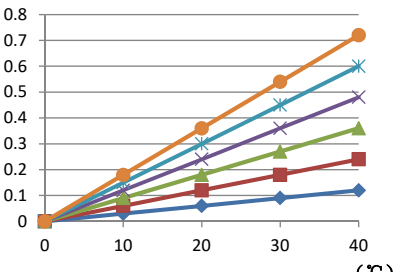


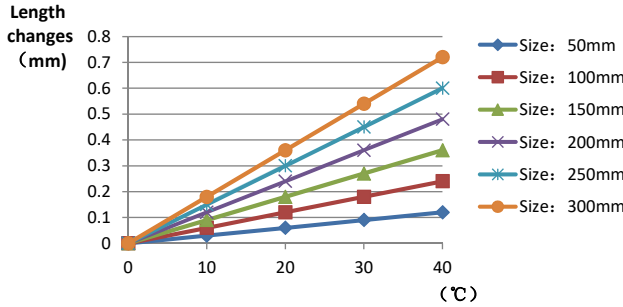


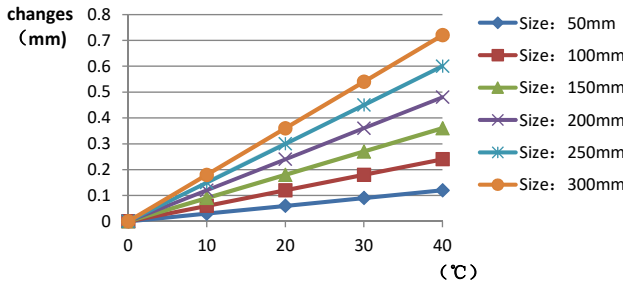


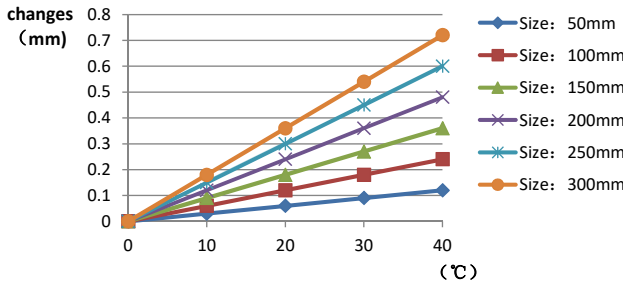
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                      |                              |                  |              |              |              |              |          |                                                                                              |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------|--------------|--------------|--------------|--------------|----------|----------------------------------------------------------------------------------------------|--|
| 1.Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Standard size                                                                                                                                                                                                                                                                                                                                        | Upper Size limit             | Lower size limit | Test result1 | Test result2 | Test result3 | Test result4 | Judgment | Remarks                                                                                      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | diameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 83                                                                                                                                                                                                                                                                                                                                                   |                              |                  | 82.97        | 82.88        | 82.87        | 82.9         |          | Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test. |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | height                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 39.7                                                                                                                                                                                                                                                                                                                                                 |                              |                  | 39.65        | 39.63        | 39.63        | 39.66        |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | thickness                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2.5                                                                                                                                                                                                                                                                                                                                                  |                              |                  | 2.6          | 2.61         | 2.66         | 2.59         |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Gate shear can not affect the appearance of the lamp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                      |                              |                  |              |              |              |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                      |                              |                  |              |              |              |              |          |                                                                                              |  |
| 2.Appearance Quality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                     | E                            | No burr          | No burr      | No burr      | No burr      | OK           |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                      |                              | No stains        | No stains    | No stains    | No stains    |              |          |                                                                                              |  |
| 3.Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PMMA                                                                                                                                                                                                                                                                                                                                                 |                              |                  |              | Color        | Transparent  |              | OK       |                                                                                              |  |
| 4.Optical index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Testing LED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                      | D19                          |                  |              |              |              |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The size and rated power of the light-emitting surface (LES) of the COB recommended by this lens should conform to the parameters in the product basic information table. if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.The Dark series lenses are designed with a cross over design for good anti-glare effect, so we do not recommend to add a honeycomb to the lens.<br>If you put a honeycomb on top of the lens, it is easy to overheat the honeycomb due to the high output at the focal point of the Dark series, which may cause the risk of melting of the lens. |                                                                                                                                                                                                                                                                                                                                                      |                              |                  |              |              |              |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FWHM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                      | See light distribution curve |                  |              |              |              |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | angle                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                      |                              | 15.1°            | 15.4°        | 15.2°        | 15.1°        |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | K-value (CD/LM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                      |                              | 9.13             | 8.92         | 9.07         | 9.15         |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Efficiency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                      |                              |                  |              |              |              |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Facula                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                      | See the signature sample     |                  |              |              |              |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Comprehensive judgment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                      | Qualified                    |                  |              |              |              |              |          |                                                                                              |  |
| Remarks:<br>1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.<br>2、Ambient temperature on the size of the product refer to the table on the right                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <div>PMMA product size changes with temperature table</div> <div><div>Length changes (mm)</div><div><div>Size: 50mm</div><div>Size: 100mm</div><div>Size: 150mm</div><div>Size: 200mm</div><div>Size: 250mm</div><div>Size: 300mm</div></div><div>(℃)</div></div> |                              |                  |              |              |              |              |          |                                                                                              |  |
| Precautions:<br>1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.<br>2. Try to avoid touching the total reflection surface when taking the lens.<br>3. The lens surface is contaminated. Only use a soft cotton cloth dipped in analytically pure neutral solvent to wipe gently. Do not wipe with industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA Body, etc.).<br>4. The working temperature of the lens should be within the temperature resistance limit of the lens material. Exceeding the temperature resistance limit will cause the lens to crack or melt and affect the service life of the lens. It is recommended that the upper surface temperature of the LED colloid should be less than 120 degrees. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                      |                              |                  |              |              |              |              |          |                                                                                              |  |

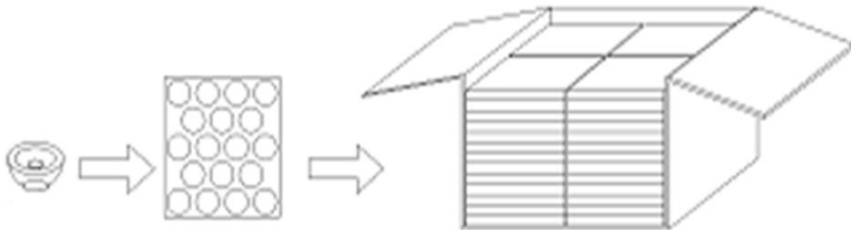


|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                 |                  |                  |              |              |              |              |          |                                                                                              |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|--------------|--------------|--------------|--------------|----------|----------------------------------------------------------------------------------------------|--|
| 1.Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Standard size                                                                                                                                                                                                                                                                                                                                                   | Upper Size limit | Lower size limit | Test result1 | Test result2 | Test result3 | Test result4 | Judgment | Remarks                                                                                      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | diameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 83                                                                                                                                                                                                                                                                                                                                                              |                  |                  | 82.95        | 82.89        | 82.88        | 82.85        |          | Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test. |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | height                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 39.7                                                                                                                                                                                                                                                                                                                                                            |                  |                  | 39.69        | 36.67        | 36.67        | 36.69        |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | thickness                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2.5                                                                                                                                                                                                                                                                                                                                                             |                  |                  | 2.7          | 2.72         | 2.72         | 2.74         |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Gate shear can not affect the appearance of the lamp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                 |                  |                  |              |              |              |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                 |                  |                  |              |              |              |              |          |                                                                                              |  |
| 2.Appearance Quality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                                | E                | No burr          | No burr      | No burr      | No burr      | OK           |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                 |                  | No stains        | No stains    | No stains    | No stains    |              |          |                                                                                              |  |
| 3.Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PMMA                                                                                                                                                                                                                                                                                                                                                            |                  |                  |              | Color        | Transparent  |              |          | OK                                                                                           |  |
| 4.Optical index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Testing LED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | D19                                                                                                                                                                                                                                                                                                                                                             |                  |                  |              |              |              |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The size and rated power of the light-emitting surface (LES) of the COB recommended by this lens should conform to the parameters in the product basic information table. if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.The Dark series lenses are designed with a cross over design for good anti-glare effect, so we do not recommend to add a honeycomb to the lens.<br>If you put a honeycomb on top of the lens, it is easy to overheat the honeycomb due to the high output at the focal point of the Dark series, which may cause the risk of melting of the lens. |                                                                                                                                                                                                                                                                                                                                                                 |                  |                  |              |              |              |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FWHM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | See light distribution curve                                                                                                                                                                                                                                                                                                                                    |                  |                  |              |              |              |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | angle                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                 |                  | 23.7°            | 23.6°        | 24.2°        | 23.6°        |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | K-value (CD/LM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                 |                  | 5.44             | 5.51         | 5.35         | 5.51         |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Efficiency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                 |                  |                  |              |              |              |              |          |                                                                                              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Facula                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | See the signature sample                                                                                                                                                                                                                                                                                                                                        |                  |                  |              |              |              |              |          |                                                                                              |  |
| Comprehensive judgment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Qualified                                                                                                                                                                                                                                                                                                                                                       |                  |                  |              |              |              |              |          |                                                                                              |  |
| Remarks:<br>1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.<br>2、Ambient temperature on the size of the product refer to the table on the right                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <div>PMMA product size changes with temperature table</div> <div><div>Length changes (mm)</div><div><div><div>Size: 50mm</div><div>Size: 100mm</div><div>Size: 150mm</div><div>Size: 200mm</div><div>Size: 250mm</div><div>Size: 300mm</div></div></div><div>(℃)</div></div> |                  |                  |              |              |              |              |          |                                                                                              |  |
| Precautions:<br>1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.<br>2. Try to avoid touching the total reflection surface when taking the lens.<br>3. The lens surface is contaminated. Only use a soft cotton cloth dipped in analytically pure neutral solvent to wipe gently. Do not wipe with industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA Body, etc.).<br>4. The working temperature of the lens should be within the temperature resistance limit of the lens material. Exceeding the temperature resistance limit will cause the lens to crack or melt and affect the service life of the lens. It is recommended that the upper surface temperature of the LED colloid should be less than 120 degrees. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                 |                  |                  |              |              |              |              |          |                                                                                              |  |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                  |                                                                                                                                                                                                                                                                                                              |                  |              |              |              |              |          |                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|--------------|--------------|--------------|----------|----------------------------------------------------------------------------------------------|
| 1.Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Standard size                                    | Upper Size limit                                                                                                                                                                                                                                                                                             | Lower size limit | Test result1 | Test result2 | Test result3 | Test result4 | Judgment | Remarks                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | diameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 83                                               |                                                                                                                                                                                                                                                                                                              |                  | 82.97        | 83.06        | 83.02        | 82.97        |          | Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test. |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | height                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 39.7                                             |                                                                                                                                                                                                                                                                                                              |                  | 39.6         | 39.58        | 39.62        | 39.59        |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | thickness                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2.5                                              |                                                                                                                                                                                                                                                                                                              |                  | 2.61         | 2.62         | 2.62         | 2.6          |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Gate shear can not affect the appearance of the lamp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                  |                                                                                                                                                                                                                                                                                                              |                  |              |              |              |              |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                  |                                                                                                                                                                                                                                                                                                              |                  |              |              |              |              |          |                                                                                              |
| 2.Appearance Quality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | See attachment "Appearance Inspection Standards" | E                                                                                                                                                                                                                                                                                                            | No burr          | No burr      | No burr      | No burr      | OK           |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                  |                                                                                                                                                                                                                                                                                                              | No stains        | No stains    | No stains    | No stains    |              |          |                                                                                              |
| 3.Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PMMA                                             |                                                                                                                                                                                                                                                                                                              |                  |              | Color        | Transparent  |              | OK       |                                                                                              |
| 4.Optical index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Testing LED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                  | D19                                                                                                                                                                                                                                                                                                          |                  |              |              |              |              |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The size and rated power of the light-emitting surface (LES) of the COB recommended by this lens should conform to the parameters in the product basic information table. if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.The Dark series lenses are designed with a cross over design for good anti-glare effect, so we do not recommend to add a honeycomb to the lens.<br>If you put a honeycomb on top of the lens, it is easy to overheat the honeycomb due to the high output at the focal point of the Dark series, which may cause the risk of melting of the lens. |                                                  |                                                                                                                                                                                                                                                                                                              |                  |              |              |              |              |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FWHM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                  | See light distribution curve                                                                                                                                                                                                                                                                                 |                  |              |              |              |              |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | angle                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                  |                                                                                                                                                                                                                                                                                                              |                  | 35.2°        | 35.5°        | 35.7°        | 36.0°        |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | K-value (CD/LM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                  |                                                                                                                                                                                                                                                                                                              |                  | 2.95         | 2.92         | 2.87         | 2.85         |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Efficiency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                  |                                                                                                                                                                                                                                                                                                              |                  |              |              |              |              |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Facula                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                  | See the signature sample                                                                                                                                                                                                                                                                                     |                  |              |              |              |              |          |                                                                                              |
| Comprehensive judgment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                  | Qualified                                                                                                                                                                                                                                                                                                    |                  |              |              |              |              |          |                                                                                              |
| Remarks:<br>1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.<br>2、Ambient temperature on the size of the product refer to the table on the right                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                  | <div>PMMA product size changes with temperature table</div> <div><div>Length changes (mm)</div><div>Size: 50mm<br/>Size: 100mm<br/>Size: 150mm<br/>Size: 200mm<br/>Size: 250mm<br/>Size: 300mm</div><div>(℃)</div></div> |                  |              |              |              |              |          |                                                                                              |
| Precautions:<br>1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.<br>2. Try to avoid touching the total reflection surface when taking the lens.<br>3. The lens surface is contaminated. Only use a soft cotton cloth dipped in analytically pure neutral solvent to wipe gently. Do not wipe with industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA Body, etc.).<br>4. The working temperature of the lens should be within the temperature resistance limit of the lens material. Exceeding the temperature resistance limit will cause the lens to crack or melt and affect the service life of the lens. It is recommended that the upper surface temperature of the LED colloid should be less than 120 degrees. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                  |                                                                                                                                                                                                                                                                                                              |                  |              |              |              |              |          |                                                                                              |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                                |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|--------------|--------------|--------------|--------------|----------|------------------------------------------------------------------------------------------------|--|
| 1.Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Standard size                                                                                                                                                                                                                                                                                             | Upper Size limit | Lower size limit | Test result1 | Test result2 | Test result3 | Test result4 | Judgment | Remarks                                                                                        |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | diameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 83                                                                                                                                                                                                                                                                                                        |                  |                  | 82.8         | 82.77        | 82.76        | 82.81        |          | Test environment : In 20 °C - 25 °C environment to achieve thermal equilibrium after the test. |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | height                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 39.7                                                                                                                                                                                                                                                                                                      |                  |                  | 39.68        | 39.72        | 39.7         | 39.66        |          |                                                                                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | thickness                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2.5                                                                                                                                                                                                                                                                                                       |                  |                  | 2.6          | 2.7          | 2.75         | 2.69         |          |                                                                                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Gate shear can not affect the appearance of the lamp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                                |  |
| 2.Appearance Quality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                          | E                | No burr          | No burr      | No burr      | No burr      | OK           |          |                                                                                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                           |                  | No stains        | No stains    | No stains    | No stains    |              |          |                                                                                                |  |
| 3.Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PMMA                                                                                                                                                                                                                                                                                                      |                  |                  |              | Color        | Transparent  |              |          | OK                                                                                             |  |
| 4.Optical index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Testing LED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | D19                                                                                                                                                                                                                                                                                                       |                  |                  |              |              |              |              |          |                                                                                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The size and rated power of the light-emitting surface (LES) of the COB recommended by this lens should conform to the parameters in the product basic information table. if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.The Dark series lenses are designed with a cross over design for good anti-glare effect, so we do not recommend to add a honeycomb to the lens.<br>If you put a honeycomb on top of the lens, it is easy to overheat the honeycomb due to the high output at the focal point of the Dark series, which may cause the risk of melting of the lens. |                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FWHM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | See light distribution curve                                                                                                                                                                                                                                                                              |                  |                  |              |              |              |              |          |                                                                                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | angle                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                           |                  | 49.2°            | 49.6°        | 49.5°        | 49.7°        |              |          |                                                                                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | K-value (CD/LM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                           |                  | 1.51             | 1.49         | 1.49         | 1.47         |              |          |                                                                                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Efficiency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Facula                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | See the signature sample                                                                                                                                                                                                                                                                                  |                  |                  |              |              |              |              |          |                                                                                                |  |
| Comprehensive judgment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Qualified                                                                                                                                                                                                                                                                                                 |                  |                  |              |              |              |              |          |                                                                                                |  |
| Remarks:<br>1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.<br>2、Ambient temperature on the size of the product refer to the table on the right                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <div>PMMA product size changes with temperature table</div> <div><div>Length changes (mm)</div><div></div><div>Size: 50mm<br/>Size: 100mm<br/>Size: 150mm<br/>Size: 200mm<br/>Size: 250mm<br/>Size: 300mm</div></div> |                  |                  |              |              |              |              |          |                                                                                                |  |
| Precautions:<br>1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.<br>2. Try to avoid touching the total reflection surface when taking the lens.<br>3. The lens surface is contaminated. Only use a soft cotton cloth dipped in analytically pure neutral solvent to wipe gently. Do not wipe with industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA Body, etc.).<br>4. The working temperature of the lens should be within the temperature resistance limit of the lens material. Exceeding the temperature resistance limit will cause the lens to crack or melt and affect the service life of the lens. It is recommended that the upper surface temperature of the LED colloid should be less than 120 degrees. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                                |  |

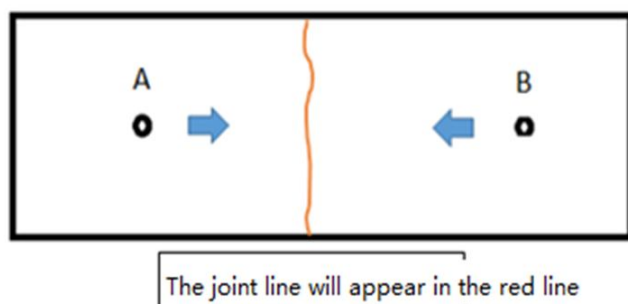
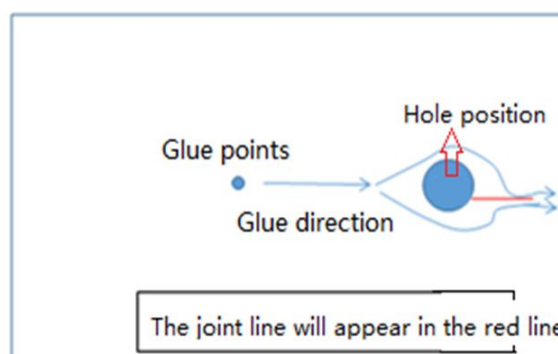
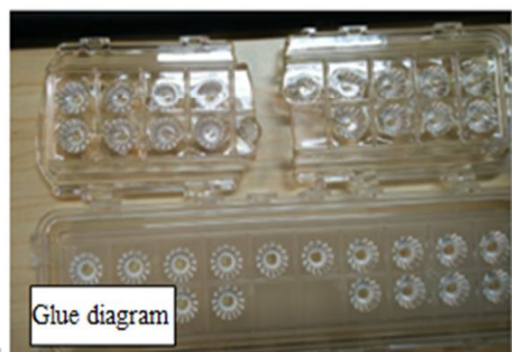
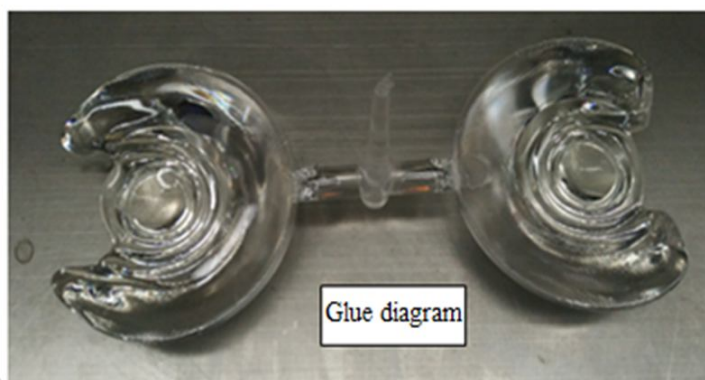
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |                              |                  |              |              |              |              |          |                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------|--------------|--------------|--------------|--------------|----------|----------------------------------------------------------------------------------------------|
| 1.Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Standard size                                                                                                                                                                                                      | Upper Size limit             | Lower size limit | Test result1 | Test result2 | Test result3 | Test result4 | Judgment | Remarks                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | diameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 83                                                                                                                                                                                                                 |                              |                  | 82.99        | 83.01        | 83.05        | 83.06        |          | Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test. |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | height                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 39.7                                                                                                                                                                                                               |                              |                  | 39.69        | 39.65        | 39.7         | 39.72        |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | thickness                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2.5                                                                                                                                                                                                                |                              |                  | 2.73         | 2.73         | 2.75         | 2.76         |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Gate shear can not affect the appearance of the lamp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    |                              |                  |              |              |              |              |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                    |                              |                  |              |              |              |              |          |                                                                                              |
| 2.Appearance Quality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | See attachment "Appearance Inspection Standards"                                                                                                                                                                   | E                            | No burr          | No burr      | No burr      | No burr      | OK           |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |                              | No stains        | No stains    | No stains    | No stains    |              |          |                                                                                              |
| 3.Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PMMA                                                                                                                                                                                                               |                              |                  |              | Color        | Transparent  |              | OK       |                                                                                              |
| 4.Optical index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Testing LED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                    | D14                          |                  |              |              |              |              |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The size and rated power of the light-emitting surface (LES) of the COB recommended by this lens should conform to the parameters in the product basic information table. if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.The Dark series lenses are designed with a cross over design for good anti-glare effect, so we do not recommend to add a honeycomb to the lens.<br>If you put a honeycomb on top of the lens, it is easy to overheat the honeycomb due to the high output at the focal point of the Dark series, which may cause the risk of melting of the lens. |                                                                                                                                                                                                                    |                              |                  |              |              |              |              |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FWHM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                    | See light distribution curve |                  |              |              |              |              |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | angle                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                    |                              | 69.9°            | 69.8°        | 68.4°        | 69.9°        |              |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | K-value (CD/LM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |                              | 0.79             | 0.79         | 0.81         | 0.79         |              |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Efficiency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                    |                              | 91%              | 91%          | 90%          | 91%          |              |          |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Facula                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    | See the signature sample     |                  |              |              |              |              |          |                                                                                              |
| Comprehensive judgment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Qualified                                                                                                                                                                                                          |                              |                  |              |              |              |              |          |                                                                                              |
| Remarks:<br>1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.<br>2、Ambient temperature on the size of the product refer to the table on the right                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <div>PMMA product size changes with temperature table</div> <div><div>Length changes (mm)</div><div></div><div>(℃)</div></div> |                              |                  |              |              |              |              |          |                                                                                              |
| Precautions:<br>1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.<br>2. Try to avoid touching the total reflection surface when taking the lens.<br>3. The lens surface is contaminated. Only use a soft cotton cloth dipped in analytically pure neutral solvent to wipe gently. Do not wipe with industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA Body, etc.).<br>4. The working temperature of the lens should be within the temperature resistance limit of the lens material. Exceeding the temperature resistance limit will cause the lens to crack or melt and affect the service life of the lens. It is recommended that the upper surface temperature of the LED colloid should be less than 120 degrees. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                    |                              |                  |              |              |              |              |          |                                                                                              |

|                     |                                                                                               |                                                                                                                                                 |                  |                |           |      |         |
|---------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|-----------|------|---------|
| PN                  |                                                                                               | HK-HG-83@40-15-D19-21-1g-1                                                                                                                      |                  | Product Name   |           |      |         |
| Product material    |                                                                                               | PMMA                                                                                                                                            |                  |                |           |      |         |
| Package diagram     |                                                                                               | <div><p>Single      Vacuum package      Box package</p></div> |                  |                |           |      |         |
| Product packing     |                                                                                               | 5                                                                                                                                               | A/ Box           | 4              | pcs/Layer |      |         |
|                     |                                                                                               | 8                                                                                                                                               | Layer/Box        | 160            | A/ Carton |      |         |
| Packaging Materials | NO.                                                                                           | Part No                                                                                                                                         | Part name        | Size           | Dosage    | Unit | Remarks |
|                     | 1                                                                                             | 2. 07. 0102                                                                                                                                     | Blister box      | 23cm*21cm      | 32        | BAG  |         |
|                     | 2                                                                                             | 2. 08. 0001                                                                                                                                     | PE film          | 25cm*27cm      | 32        | PCS  |         |
|                     | 3                                                                                             | 2. 06. 0005                                                                                                                                     | Reel label paper | 62mm*42mm      | 32        | PCS  |         |
|                     | 4                                                                                             | 2. 06. 0005                                                                                                                                     | Box label paper  | 62mm*70mm      | 1         | PCS  |         |
|                     | 5                                                                                             | 2. 06. 0003                                                                                                                                     | big plate        | 46cm*42cm      | 9         | PCS  |         |
|                     | 6                                                                                             | 2. 06. 0011                                                                                                                                     | big flat carton  | 48cm*44cm*37cm | 1         | PCS  |         |
| Remarks             | The loose packing is not subject to this specification. Customer's requirements shall prevail |                                                                                                                                                 |                  |                |           |      |         |

## Special notice

When glue pass through holes, columns and other structures, or part of the thin structure, will form a weld line. The product which uses multi-point injection welding line will appear because of the combination of sol, as shown below:

## Synthesis



Please note:

The appearance of lines in the structure of the product as well as at the screw hole is a normal phenomenon, will not affect the actual use of the product, and can not be avoided at this stage.

## Appearance inspection standards

### 1 Operating procedures

#### 1.1.1 Sampling standards, sampling plan and AQL

Test level: GB/T2828.1-2012 The first part is according to the acceptance quality limit (AQL) retrieval batch inspection sampling plan, general inspection level II level, CR class defect coefficient 0, MA defect rejection level AQL = 0.65, MI class defect rejection level AQL = 1.0; defect level please see 5.4.

#### 2 Code table

| Code | Code description | Unit            | Code |  | Code description | Unit |
|------|------------------|-----------------|------|--|------------------|------|
| N    | Amount/pcs       | pcs             | D    |  | Diameter         | mm   |
| L    | Length           | mm              | H    |  | Depth            | mm   |
| W    | Width            | mm              | DS   |  | Distance         | mm   |
| S    | Proportion       | mm <sup>2</sup> | SS   |  | Offset           | mm   |

### 3 Test conditions

3.1 Sight distance and working hours: Sight distance should be 30-35cm, each side of the inspection time does not exceed 12s, the visual angle of 45-135 degrees;

3.2 Light: 2x40w cool white fluorescent lamp, the light source is 500-550mm away from the lens surface; in order to make the appearance defect can be correctly recognized, the illumination should be 500-1000Lux, and the observation time is 10 seconds.

3.3 Visual inspection staff should be 1.0 (including corrected visual acuity) above, no color blindness, color weakness.

## 4 Appearance inspection standards

| Test items       | Judging standard                                                                                                                                                                 | Inspection equipment          | Defect level |    |    |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------|----|----|
|                  |                                                                                                                                                                                  | Testing method                | MI           | MA | CR |
| Check the sample | When start the machine and process, all products have to check the appearance of the sample, the appearance of the sample is divided into qualified samples and limited samples. | Sample comparison<br>, visual |              |    | √  |
|                  | 1: Qualified sample refers to the appearance and structure standard of the product which recognized by the client, the sample size should be confirmed before mass production;   |                               |              |    |    |



|                                           |                                                                                                                                                                                                                                                                                                                                                                                               |                              |  |   |   |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--|---|---|
|                                           | 2: The limited sample refers to the limit of a particular exceptionally developed sample. Limit the sample only for its specific point of exception to confirm;<br>The priority is higher than the other criteria in this table. When there is a limited sample, the limit sample shall prevail.                                                                                              |                              |  |   |   |
| Raw edge                                  | Not allowed to affect the size and assembly                                                                                                                                                                                                                                                                                                                                                   | Visual, point card           |  | √ |   |
| Scratch                                   | 1: Non-optical surface and non-exposed surface scratches should be visually insignificant and the length is less than 1/10 of the maximum surface size.                                                                                                                                                                                                                                       | Visual, point card, calipers |  | √ |   |
| Fingerprint                               | Fingerprints are not allowed on all products                                                                                                                                                                                                                                                                                                                                                  | Visual                       |  | √ |   |
| Foreign objects, black spots, white spots | The product may not be attached to foreign objects, including oil, fiber, dregs of water gap and so on                                                                                                                                                                                                                                                                                        |                              |  |   | √ |
| Deformation                               | Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces.                                                                                                                                                                                                                                                                                                | Visual, feeler               |  |   | √ |
| Poor ejection                             | Products may not appear bad ejection, including no convex top, thimble printed on the assembly surface shall not be higher than the product surface, non-assembled surface thimble height should not exceed the product size tolerances; thimble printing should be less than the product surface and no more than 0.3; thimble surface treatment should be consistent with the product side. | Visual, point card           |  | √ |   |
|                                           | Ejection strain: the optical surface and the appearance of the exposed surface after assembly are not allowed to have a strain, and the structural surface does not allow visual obvious strain.                                                                                                                                                                                              |                              |  |   |   |
| Insufficient filling                      | Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces, The signature sample shall prevail.                                                                                                                                                                                                                                                            | Visual, point card           |  | √ |   |
| Shrink                                    | When the entire surface of the product shrinks, the optical properties and dimensions must meet the requirements, and the visual will not significantly affect the appearance. Part shrink reference point defects                                                                                                                                                                            | Visual, point card           |  | √ |   |
| Flow marks、Welding line                   | 1: Product does not allow the presence of flow marks and welding lines unless the structure can not be avoided;                                                                                                                                                                                                                                                                               | Visual                       |  | √ |   |
|                                           | 2: The remaining flow marks shall not appear in the optical surface, a single $L \leq 10\text{mm}$ , no more than two                                                                                                                                                                                                                                                                         |                              |  |   |   |

|                                           |                                                                                                                                                                                              |                    |   |   |   |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---|---|---|
| Bubble                                    | No bubbles are allowed                                                                                                                                                                       | Visual             |   | √ |   |
| Foreign objects, black spots, white spots | Not obvious or $D \leq 0.3\text{mm}$ black spots and foreign bodies in the area of 100x100mm not more than 1;<br>Exceeded foreign matter black spots is judged bad.                          | Visual, point card | √ |   |   |
| Damaged                                   | No damage is allowed                                                                                                                                                                         | Visual             |   |   | √ |
| Cold glue                                 | Optical surface may not have cold glue, non-optical surface cold glue should meet the visual is not obvious.                                                                                 | Visual             | √ |   |   |
| Bad incision                              | 1: Do not affect the product size, shall not penetrate the optical surface, the cut should be smooth;                                                                                        | Visual             |   |   | √ |
|                                           | 2: Laser cutting products, the optical surface burns shall not occur after the processing is completed. Beading must not affect product installation                                         |                    |   |   |   |
|                                           | 3: Three molds and hot runner gate shall not appear residue.                                                                                                                                 |                    |   |   |   |
| Scrub                                     | Scrub surface should be uniform, off the scrub phenomenon should not be obvious ,<br>A single off scrub imprint requires $D \leq 1\text{ mm}$ and no more than 1 area within a 50x50 mm area | Visual             |   | √ |   |