HERCULUX 恒坤光电

Chengdu HercuLux Photoelectric Technology Co.,Ltd

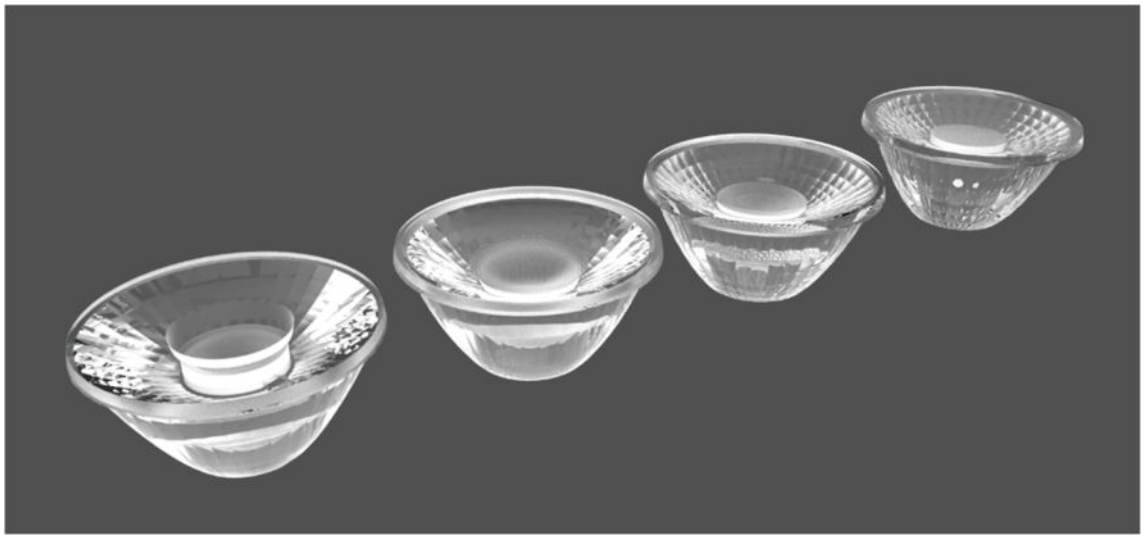
Product Approval

Approval number：

Customer：

Manufacturer：Chengdu HercuLux Photoelectric Technology Co.,Ltd

PN	Code	Product
HK-40@20-15-D6-21-1g-1	1.01.92160	HK KA40@20-15° lens
HK-40@20-24-D9-21-1g-1	1.01.92161	HK KA40@20-24° lens
HK-40@20-36-D9-21-1g-1	1.01.92162	HK KA40@20-36° lens
HK-40@20-60-D9-21-1g-1	1.01.92181	HK KA40@20-60° lens



Supplier confirmation				Client confirmation			
Proposed		DATE		Qualified☐		DATE	
Project manager		DATE		Unqualified☐			
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, Iot 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

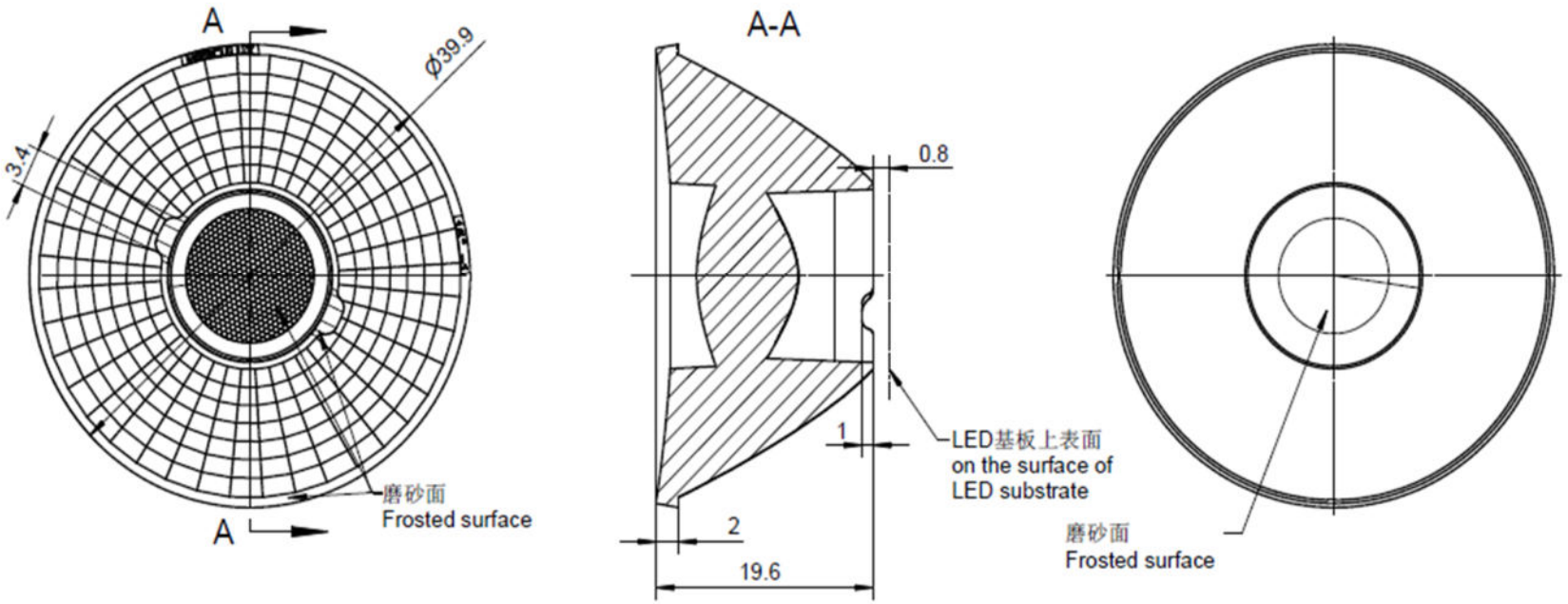
*Approval In duplicate， for both supplier and customer.

HERCULUX 恒坤光电

Basic product information

http://www.herculux.com/ Date updated: 2022/10/14

Product Picture:	
Size(L*W*H/Φ*H):	Φ:30mm; H:14.55mm
Material:	PMMA
Effiency:	\
Temperature(Topr):	Material extreme temperature resistance：-40℃ to +100℃ long-term use temperature：-40℃ to +80℃
FWHM:	15°、24°、36°、60°
Matched LES:	15°-LEDD6，24°、36°、60°-LED D9

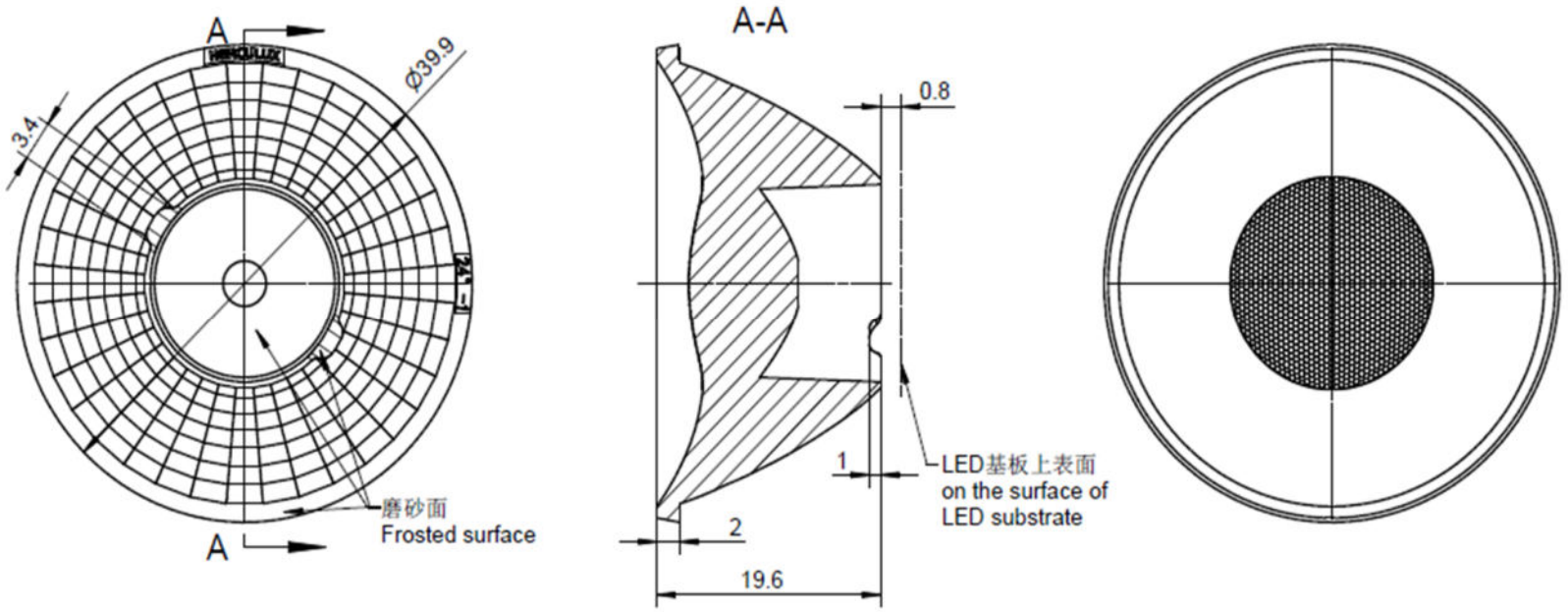


Technical remark:

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<3.2μm

Optical design			HK KA40@20-15ºlens	HK-40@20-15-D6-21-1g-1	
Structure design				1.01.92160	
Review				mber of drawi	qty / weight
Validation			Material:	PMMA	CDHK

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



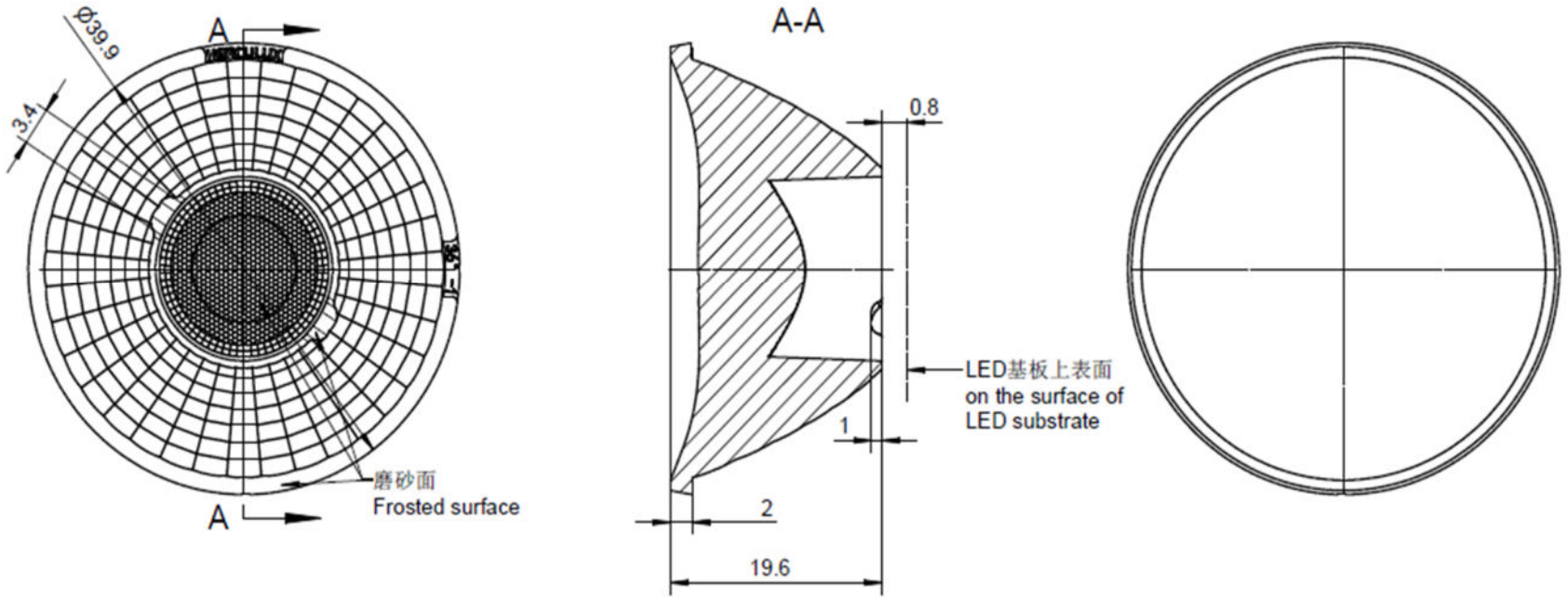
Technical remark:

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<3.2μm

Optical design			HK KA40@20-24ºlens	HK-40@20-24-D9-21-1g-1	
Structure design				1.01.92161	
Review				mber of drawi	qty / weight
Validation			Material:	PMMA	CDHK

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

2D drawing



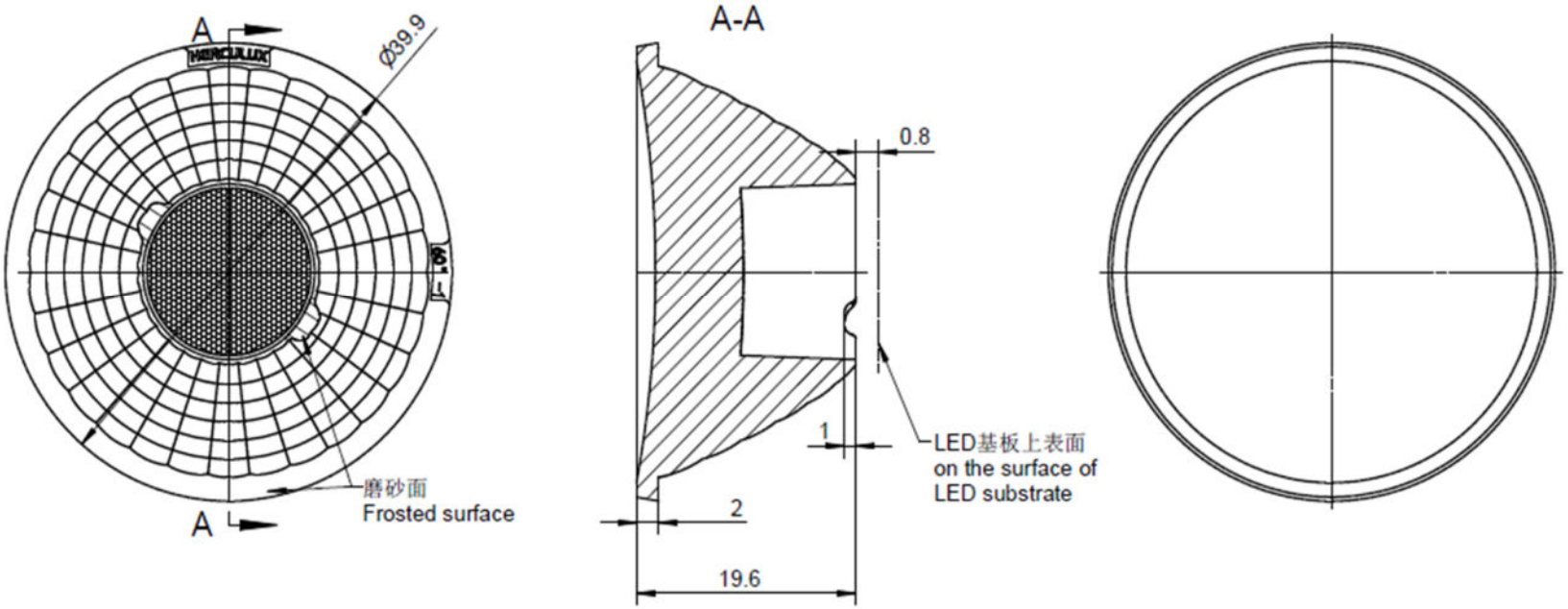
Technical remark:

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<3.2μm

Optical design			HK KA40@20-36ºlens	HK-40@20-36-D9-21-1g-1	
Structure design				1.01.92162	
Review				mber of drawi	qty / weight
Validation			Material:	PMMA	CDHK

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

2D drawing

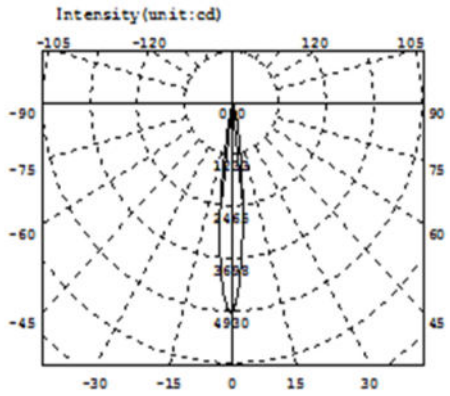


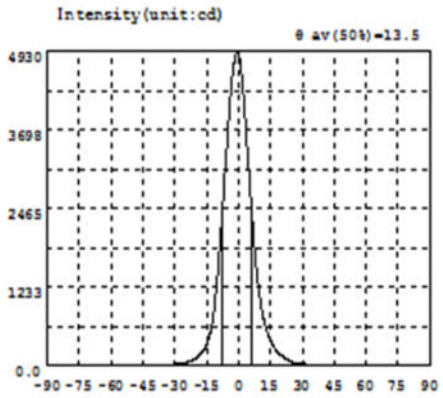
Technical remark:

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<3.2μm

Optical design			HK KA40@20-60ºlens	HK-40@20-60-D9-21-1g-1	
Structure design				1.01.92181	
Review				mber of drawi	qty / weight
Validation			Material:	PMMA	CDHK

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





Intensity data:(deg , cd) C0-180

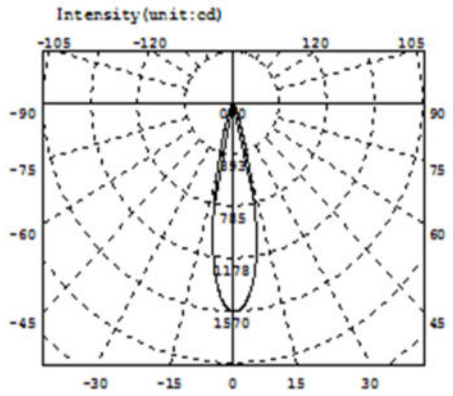
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.3390	-58.5	3.340	-27.0	29.37	4.5	3186	36.0	10.40	67.5	2.132
-88.5	0.3388	-57.0	3.498	-25.5	38.44	6.0	2478	37.5	9.136	69.0	1.805
-87.0	0.3283	-55.5	3.598	-24.0	52.32	7.5	1824	39.0	8.054	70.5	1.461
-85.5	0.3618	-54.0	3.739	-22.5	70.81	9.0	1307	40.5	7.166	72.0	1.151
-84.0	0.3971	-52.5	3.862	-21.0	95.54	10.5	945.4	42.0	6.478	73.5	1.013
-82.5	0.4106	-51.0	4.041	-19.5	128.6	12.0	695.4	43.5	5.916	75.0	0.6499
-81.0	0.4786	-49.5	4.311	-18.0	173.3	13.5	517.6	45.0	5.497	76.5	0.5875
-79.5	0.5102	-48.0	4.640	-16.5	237.0	15.0	391.1	46.5	5.172	78.0	0.5590
-78.0	0.5710	-46.5	5.004	-15.0	333.9	16.5	289.1	48.0	4.915	79.5	0.5039
-76.5	0.7420	-45.0	5.422	-13.5	495.9	18.0	224.2	49.5	4.727	81.0	0.4665
-75.0	1.003	-43.5	5.962	-12.0	769.6	19.5	172.1	51.0	4.602	82.5	0.4226
-73.5	1.223	-42.0	6.568	-10.5	1208	21.0	129.2	52.5	4.551	84.0	0.3656
-72.0	1.430	-40.5	7.281	-9.0	1818	22.5	93.51	54.0	4.462	85.5	0.3390
-70.5	1.746	-39.0	8.102	-7.5	2502	24.0	66.38	55.5	4.383	87.0	0.3125
-69.0	1.971	-37.5	9.151	-6.0	3227	25.5	47.01	57.0	4.245	88.5	0.3217
-67.5	2.232	-36.0	10.34	-4.5	3955	27.0	34.11	58.5	4.090	90.0	0.3153
-66.0	2.493	-34.5	11.83	-3.0	4521	28.5	25.67	60.0	3.866		
-64.5	2.707	-33.0	13.64	-1.5	4864	30.0	20.24	61.5	3.566		
-63.0	2.919	-31.5	15.92	0.0	4891	31.5	16.49	63.0	3.214		
-61.5	3.090	-30.0	18.90	1.5	4527	33.0	13.86	64.5	2.871		
-60.0	3.212	-28.5	23.28	3.0	3871	34.5	11.91	66.0	2.515		

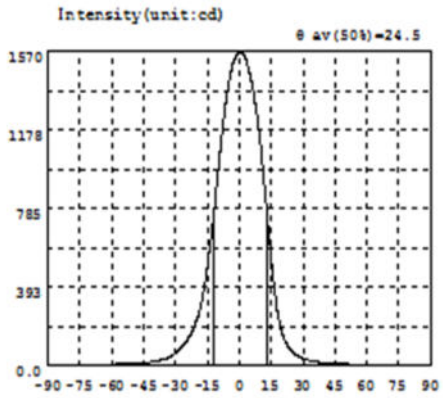
Electricity Parameter:

Current I: 0.1000A Power: 3.500W
Voltage V: 35.00V PF: 1.000

Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: Φ eff= 406.4lm Efficiency: Eff=116.12lm/W
Diffuse angle: @(25%): 19.6deg @(50%): 13.5deg @(75%): 8.3deg @(50%): 13.5deg
Diffuse angle: @(25%): 19.6deg @(50%): 13.6deg @(75%): 8.4deg @(50%): 13.6deg
Imax=4923cd (C=0.0deg,G=-0.5deg) C0-180Plane Imax= 4923cd(G=-0.5deg)
C0-180Plane I0= 4891cd





Intensity data:(deg , cd) C0-180

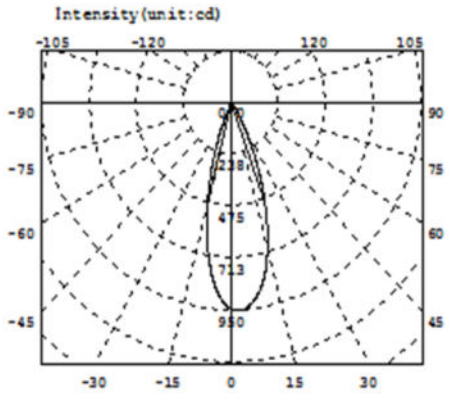
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.2034	-58.5	5.583	-27.0	91.25	4.5	1474	36.0	17.25	67.5	1.991
-88.5	0.2714	-57.0	6.027	-25.5	111.3	6.0	1401	37.5	14.97	69.0	1.762
-87.0	0.2717	-55.5	6.503	-24.0	135.6	7.5	1308	39.0	13.07	70.5	1.525
-85.5	0.3058	-54.0	7.015	-22.5	165.4	9.0	1189	40.5	11.48	72.0	1.291
-84.0	0.3509	-52.5	7.603	-21.0	199.1	10.5	1044	42.0	10.17	73.5	1.058
-82.5	0.3729	-51.0	8.228	-19.5	245.6	12.0	875.0	43.5	9.068	75.0	0.8311
-81.0	0.4062	-49.5	8.928	-18.0	306.0	13.5	695.6	45.0	8.124	76.5	0.6364
-79.5	0.4282	-48.0	9.776	-16.5	388.7	15.0	526.9	46.5	7.301	78.0	0.4835
-78.0	0.4519	-46.5	10.81	-15.0	497.4	16.5	378.8	48.0	6.600	79.5	0.4180
-76.5	0.5913	-45.0	12.09	-13.5	622.5	18.0	261.2	49.5	6.027	81.0	0.3954
-75.0	0.8203	-43.5	13.60	-12.0	762.4	19.5	185.1	51.0	5.527	82.5	0.3924
-73.5	1.092	-42.0	15.42	-10.5	917.9	21.0	135.0	52.5	5.150	84.0	0.3700
-72.0	1.400	-40.5	17.69	-9.0	1073	22.5	101.7	54.0	4.767	85.5	0.3417
-70.5	1.731	-39.0	20.52	-7.5	1222	24.0	79.16	55.5	4.433	87.0	0.3289
-69.0	2.080	-37.5	24.04	-6.0	1344	25.5	62.97	57.0	4.139	88.5	0.3074
-67.5	2.453	-36.0	28.44	-4.5	1440	27.0	51.14	58.5	3.856	90.0	0.3051
-66.0	2.852	-34.5	34.12	-3.0	1508	28.5	41.85	60.0	3.618		
-64.5	3.309	-33.0	41.27	-1.5	1547	30.0	34.46	61.5	3.365		
-63.0	3.914	-31.5	50.18	0.0	1563	31.5	28.49	63.0	2.969		
-61.5	4.595	-30.0	61.22	1.5	1559	33.0	23.84	64.5	2.552		
-60.0	5.177	-28.5	74.84	3.0	1530	34.5	20.16	66.0	2.234		

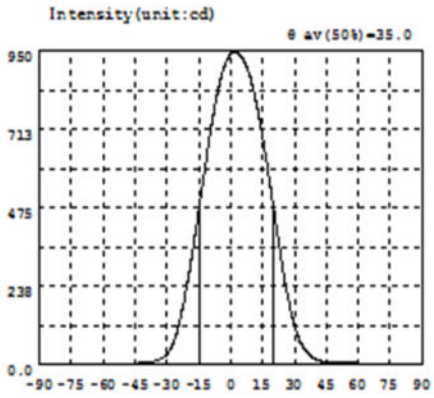
Electricity Parameter:

Current I: 0.1000A Power: 3.259W
Voltage V: 32.59V PF: 1.000

Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: Φ eff= 345.5lm Efficiency: Eff=106.02lm/W
Diffuse angle: @(25%): 32.7deg @(50%): 24.5deg @(75%): 17.1deg @(50%): 24.5deg
Diffuse angle: @(25%): 32.7deg @(50%): 24.5deg @(75%): 17.1deg @(50%): 24.5deg
Imax=1564cd (C=0.0deg,G=0.5deg) C0-180Plane Imax= 1564cd(G=0.5deg)
C0-180Plane I0= 1563cd





Intensity data:(deg , cd)　C0-180

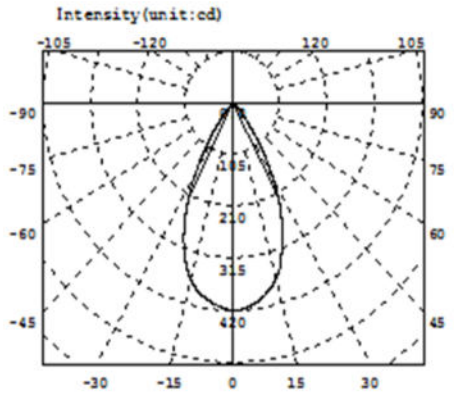
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.2712	-58.5	2.336	-27.0	66.19	4.5	936.5	36.0	34.52	67.5	2.615
-88.5	0.2714	-57.0	2.402	-25.5	95.13	6.0	921.3	37.5	25.41	69.0	2.413
-87.0	0.3047	-55.5	2.459	-24.0	132.4	7.5	899.8	39.0	18.92	70.5	2.207
-85.5	0.2940	-54.0	2.521	-22.5	177.2	9.0	871.6	40.5	14.25	72.0	2.012
-84.0	0.3164	-52.5	2.576	-21.0	226.7	10.5	835.2	42.0	10.76	73.5	1.793
-82.5	0.3381	-51.0	2.628	-19.5	282.3	12.0	792.3	43.5	8.182	75.0	1.580
-81.0	0.3492	-49.5	2.675	-18.0	342.1	13.5	742.6	45.0	6.473	76.5	1.376
-79.5	0.3497	-48.0	2.736	-16.5	405.9	15.0	686.0	46.5	5.339	78.0	0.9972
-78.0	0.3729	-46.5	2.855	-15.0	470.3	16.5	625.1	48.0	4.635	79.5	0.6689
-76.5	0.3376	-45.0	3.059	-13.5	536.0	18.0	563.2	49.5	4.199	81.0	0.4067
-75.0	0.6412	-43.5	3.355	-12.0	602.5	19.5	499.4	51.0	3.917	82.5	0.3677
-73.5	0.9029	-42.0	3.783	-10.5	667.8	21.0	436.8	52.5	3.778	84.0	0.3447
-72.0	1.159	-40.5	4.428	-9.0	728.2	22.5	373.6	54.0	3.682	85.5	0.3317
-70.5	1.350	-39.0	5.439	-7.5	783.9	24.0	307.1	55.5	3.596	87.0	0.3151
-69.0	1.517	-37.5	7.033	-6.0	831.7	25.5	250.8	57.0	3.537	88.5	0.3062
-67.5	1.694	-36.0	9.220	-4.5	872.3	27.0	199.0	58.5	3.454	90.0	0.2417
-66.0	1.831	-34.5	12.14	-3.0	903.2	28.5	153.8	60.0	3.349		
-64.5	1.956	-33.0	16.18	-1.5	926.1	30.0	116.7	61.5	3.248		
-63.0	2.060	-31.5	22.09	0.0	941.8	31.5	86.32	63.0	3.126		
-61.5	2.164	-30.0	31.02	1.5	947.1	33.0	63.32	64.5	2.970		
-60.0	2.247	-28.5	45.35	3.0	944.3	34.5	46.63	66.0	2.785		

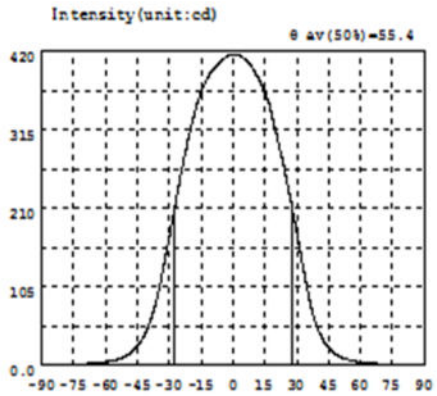
Electricity Parameter:

Current I:　0.1000A　　Power:　3.259W
Voltage V:　32.59V　　PF:　1.000

Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: Φ eff= 356.4lm　　Efficiency: Eff=109.38lm/W
Diffuse angle:　@(25%): 46.5deg @(50%): 35.0deg @(75%): 23.7deg @(50%): 35.0deg
Diffuse angle:　@(25%): 46.6deg @(50%): 35.0deg @(75%): 23.9deg @(50%): 35.0deg
Imax=947.7cd (C=0.0deg,G=2.0deg)　　C0-180Plane Imax= 947.7cd(G=2.0deg)
C0-180Plane I0= 941.8cd





Intensity data:(deg , cd)　C0-180

A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.2712	-58.5	4.349	-27.0	217.4	4.5	411.5	36.0	86.13	67.5	1.566
-88.5	0.2712	-57.0	5.223	-25.5	242.1	6.0	407.7	37.5	68.08	69.0	1.360
-87.0	0.2710	-55.5	6.267	-24.0	263.7	7.5	402.9	39.0	54.14	70.5	1.147
-85.5	0.3045	-54.0	7.595	-22.5	284.5	9.0	397.8	40.5	43.45	72.0	0.9639
-84.0	0.3164	-52.5	9.183	-21.0	303.7	10.5	390.8	42.0	34.92	73.5	0.8011
-82.5	0.3277	-51.0	11.22	-19.5	322.1	12.0	383.1	43.5	28.08	75.0	0.6857
-81.0	0.3395	-49.5	13.63	-18.0	338.7	13.5	374.7	45.0	22.65	76.5	0.5687
-79.5	0.3413	-48.0	16.63	-16.5	353.3	15.0	364.6	46.5	18.33	78.0	0.4763
-78.0	0.3975	-46.5	20.46	-15.0	365.2	16.5	352.6	48.0	14.96	79.5	0.4276
-76.5	0.4881	-45.0	25.19	-13.5	375.9	18.0	338.2	49.5	12.23	81.0	0.3922
-75.0	0.6144	-43.5	31.01	-12.0	384.4	19.5	318.9	51.0	10.08	82.5	0.3616
-73.5	0.7720	-42.0	38.13	-10.5	391.2	21.0	301.7	52.5	8.259	84.0	0.3207
-72.0	0.9419	-40.5	47.07	-9.0	396.7	22.5	283.3	54.0	6.941	85.5	0.3204
-70.5	1.125	-39.0	58.07	-7.5	402.2	24.0	264.3	55.5	5.762	87.0	0.2963
-69.0	1.329	-37.5	71.48	-6.0	406.1	25.5	243.2	57.0	4.825	88.5	0.2735
-67.5	1.556	-36.0	87.45	-4.5	409.7	27.0	221.7	58.5	4.043	90.0	0.2723
-66.0	1.821	-34.5	106.4	-3.0	412.5	28.5	199.5	60.0	3.397		
-64.5	2.162	-33.0	127.3	-1.5	414.8	30.0	176.1	61.5	2.879		
-63.0	2.540	-31.5	149.3	0.0	415.4	31.5	152.2	63.0	2.475		
-61.5	3.023	-30.0	172.5	1.5	415.5	33.0	129.0	64.5	2.114		
-60.0	3.591	-28.5	196.3	3.0	413.9	34.5	106.8	66.0	1.833		

Electricity Parameter:

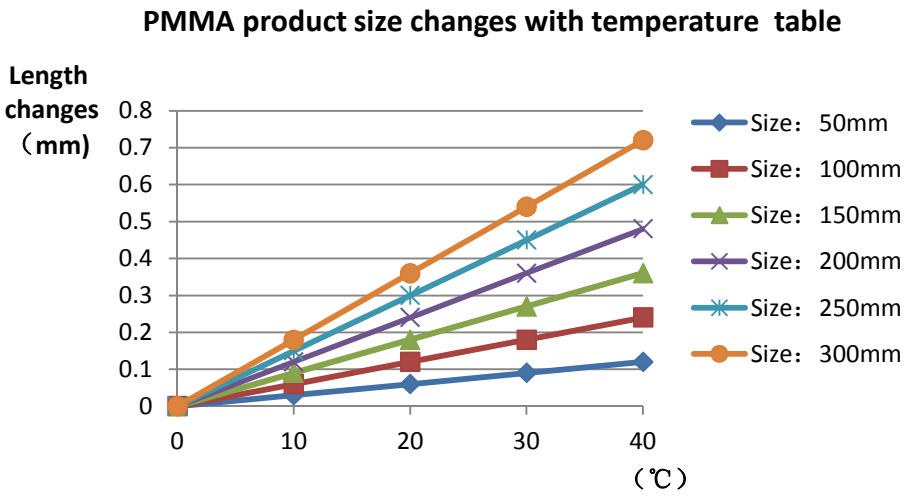
Current I:　0.1000A　　Power:　3.259W
Voltage V:　32.59V　　PF:　1.000

Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: Φ eff= 345.01m　　Efficiency: Eff=105.87lm/W
Diffuse angle:　@(25%): 69.3deg @(50%): 55.4deg @(75%): 40.4deg @(50%): 55.4deg
Diffuse angle:　@(25%): 69.3deg @(50%): 55.4deg @(75%): 40.4deg @(50%): 55.4deg
Imax=415.5cd (C=0.0deg,G=1.5deg)　　C0-180Plane Imax= 415.5cd(G=1.5deg)
C0-180Plane I0= 415.4cd

1.Size		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judg ment	Remarks
	diameter	39.9			39.81	39.81	39.81	39.81		Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test.
	thickness	2			2	2.06	2	2.06		
	height	19.6			19.54	19.575	19.54	19.575		
	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	CREE1304								
	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.									
	FWHM	See light distribution curve								
	angle				13.5	13.3	13.4	13.1		
	K-value (CD/LM)				12.13	12.48	12.31	12.39		
	Efficiency				90.83%	88.37%	90.83%	88.37%		
	Facula	See the signature sample								
Comprehensive judgment	Qualified									

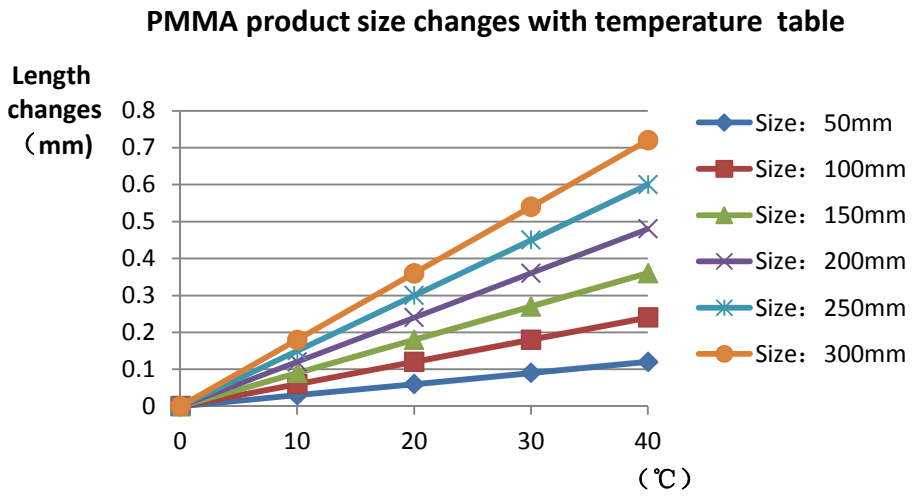
Remarks：
1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.
2、 Ambient temperature on the size of the product refer to the table on the right



Precautions:
1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.
2. Try to avoid touching the total reflection surface when taking the lens.
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.).
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	Judg ment	Remarks
	diameter	39.9			39.8	39.86	39.8	39.86		Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test.
	thickness	2			2.07	2.09	2.07	2.09		
	height	19.6			19.525	19.53	19.525	19.53		
	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		#N/A				Color	Transparent			OK
4.Optical index	Testing LED	CREE1512								
	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.									
	FWHM	See light distribution curve								
	angle				24.3	24.5	24.3	24.3		
	K-value (CD/LM)				4.55	4.53	4.62	4.65		
	Efficiency				90.00%	90.00%	91.00%	91.00%		
	Facula	See the signature sample								
Comprehensive judgment		Qualified								

Remarks：
1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.
2、 Ambient temperature on the size of the product refer to the table on the right



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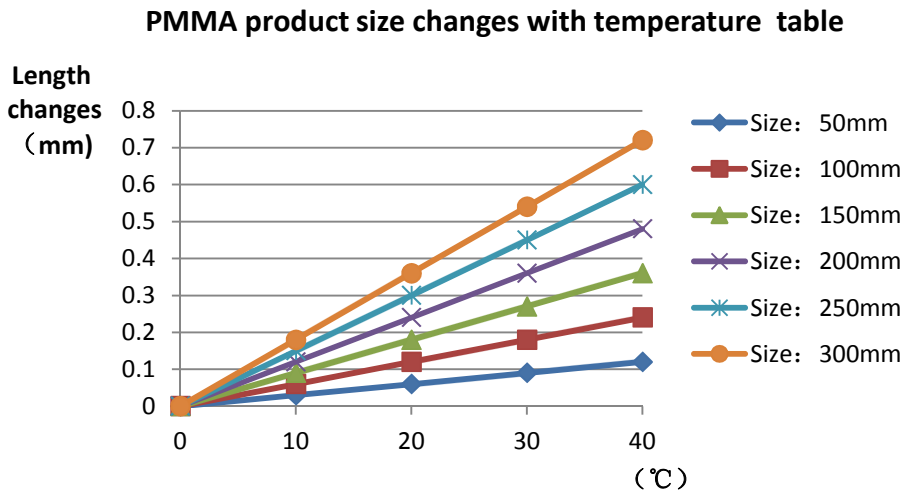
1.Size		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judg ment	Remarks
	diameter	39.9			39. 9	39. 85	39. 9	39. 85		Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test.
	thickness	2			2. 12	2. 1	2. 12	2. 1		
	height	19.6			19. 625	19. 57	19. 625	19. 57		
	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	CREE1512								
	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.									
	FWHM	See light distribution curve								
	angle				36. 6	35	36. 2	35. 7		
	K-value (CD/LM)				2. 47	2. 66	2. 42	2. 56		
	Efficiency				90. 00%	89. 00%	89. 90%	89. 00%		
	Facula	See the signature sample								
Comprehensive judgment	Qualified									

Remarks： 1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual. 2、 Ambient temperature on the size of the product refer to the table on the right	

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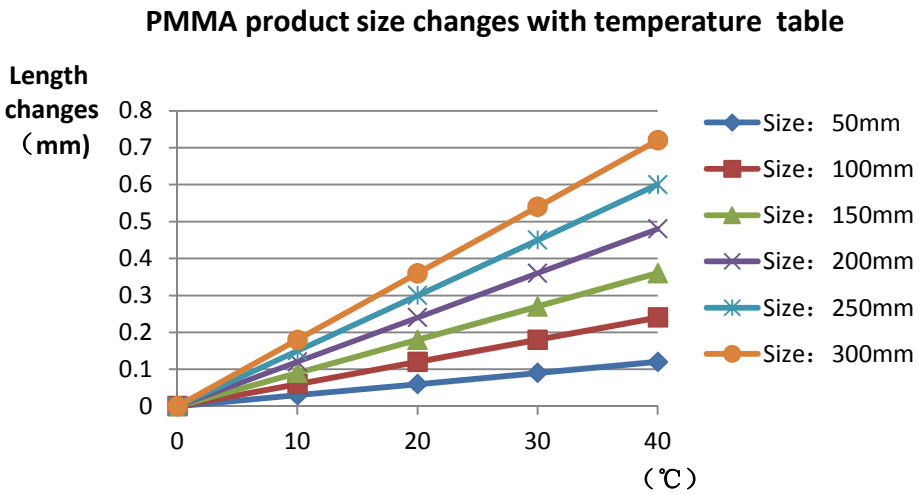
1.Size		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks
	diameter	39.9			39.91	39.92	39.91	39.92		Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test.
	thickness	2			1.96	1.95	1.96	1.95		
	height	19.6			19.56	19.53	19.56	19.53		
	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	CREE1512								
	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.									
	FWHM	See light distribution curve								
	angle				55.8	56.1	59.5	55.4		
	K-value (CD/LM)									
	Efficiency				0.9	0.91	0.91	0.91		
	Facula	See the signature sample								
Comprehensive judgment	Qualified									

Remarks：
1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.
2、 Ambient temperature on the size of the product refer to the table on the right



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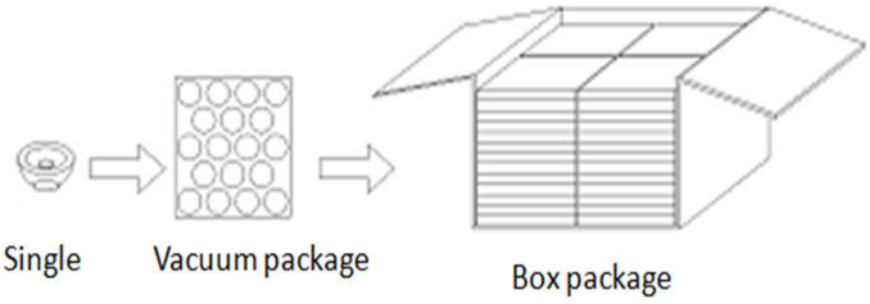
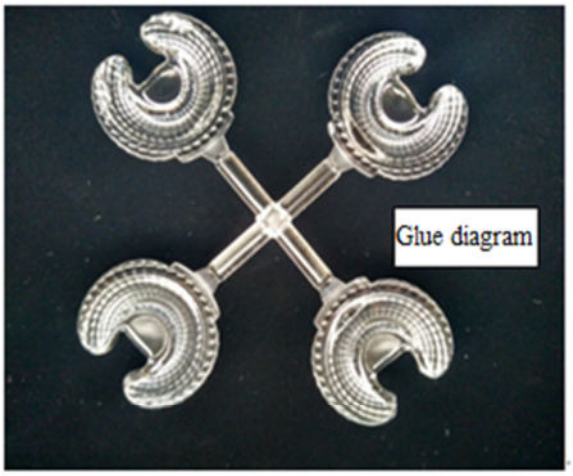
PN	HK-40@20-15-D6-21-1g-1	Product Name	HK KA40@20-15ºlens
Product material	PMMA		
Package diagram			

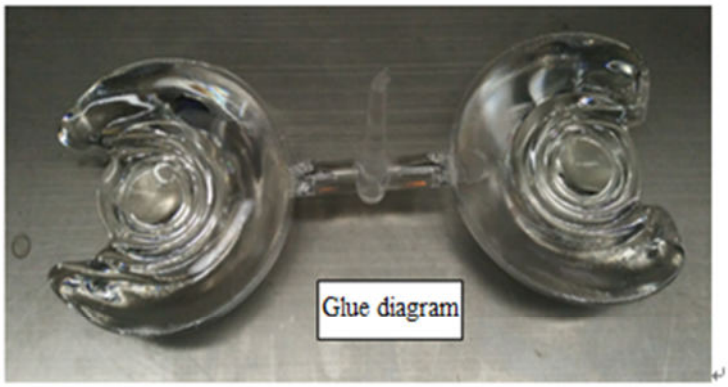
Product packing		18	A/ Box	4	pcs/Layer		
		13	Layer/Box	936	A/ Carton		
Packaging Materials	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
	1	2.07.0042	Blister box	23cm*21cm	52	BAG	
	2	2.08.0001	PE film	30cm*30cm	52	PCS	
	3	2.06.0005	Reel label paper	6.2cm*8cm	52	PCS	
	4	2.06.0005	Box label paper	6.2cm*9.2cm	1	PCS	
	5	2.06.0003	big plate	46.8cm*42.8cm	14	PCS	
	6	2.06.0015	big flat carton	48cm*44cm*19cm	1	PCS	
Remarks	The loose packing is not subject to this specification. Customer's requirements shall prevail						

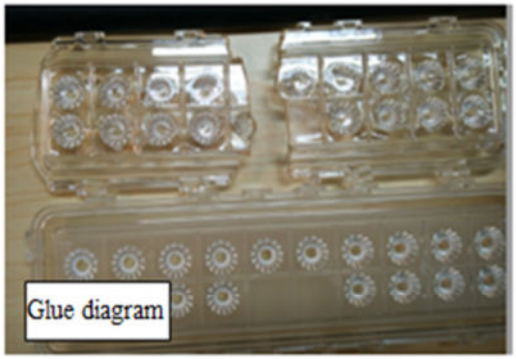
Special notice

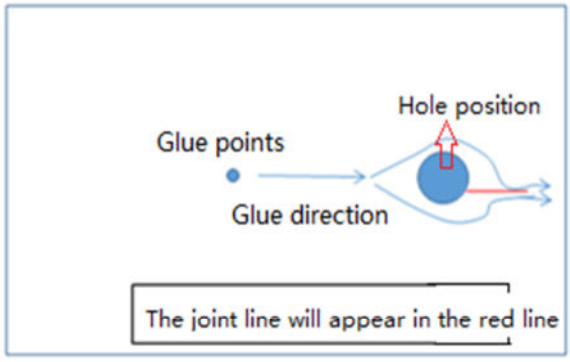
When gule pass through holes, columns and other structures, or part of the thin structure, will form a weld line. The product which uses multi-point injection welding line will appear because of the combination of sol, as shown below:

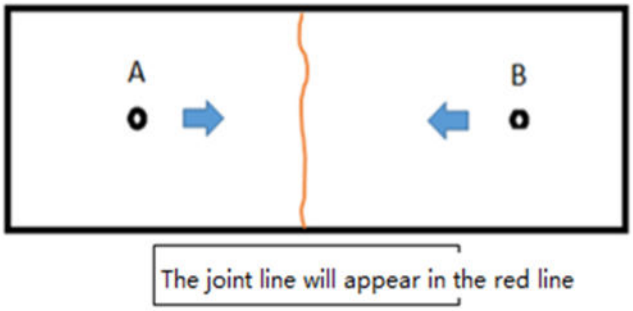
Synthetl











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

1.1.1Sampling standards, sampling plan and AQL

Test level：GB/T2828.1-2012The 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	mm²	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. 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;	Sample comparison, visual			√

	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; 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 ≤ 10mm, no more than two				

Bubble	No bubbles are allowed	Visual		√	
Foreign objects, black spots, white spots	Not obvious or D ≤ 0.3mm black spots and foreign bodies in the area of 100x100mm not more than 1; 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，A single off scrub imprint requires D ≤ 1 mm and no more than 1 area within a 50x50 mm area	Visual		√	